

# ANNUAL REPORT 2016-17

(April, 2016 to March, 2017)

## 1. GENERAL INFORMATION ABOUT THE KVK

### 1.1. Name and address of KVK with phone, fax and e-mail

Address	Telephone		e-mail
	Office	FAX	
Ramkrishna Ashram KVK P.O.Nimpith Ashram South 24-Parganas, West Bengal, Pin-743338	03218- 226002	03218- 226636	KVK.S24Parganas1@icar.gov.in nimpithkvk@rediffmail.com nimpithkvk1979@gmail.com

### 1.2. Name and address of host organization with phone, fax and e-mail

Address	Telephone		e-mail
	Office	FAX	
Sri Ramkrishna Ashram, Nimpith P.O. Nimpith Ashram, South 24-Parganas, West Bengal, Pin-743338	03218- 226001	03218- 226636	KVK.S24Parganas1@icar.gov.in nimpithkvk@rediffmail.com nimpithkvk1979@gmail.com

### 1.3. Name of the Programme Coordinator with phone & mobile No.

Name	Telephone / Contact		
	Residence	Mobile	e-mail
Dr. Nilendu Jyoti Maitra	-	09434437053	njmaitra@rediffmail.com

### 1.4. Year of sanction of KVK: **1979**

### 1.5. Staff Position (as on 1<sup>st</sup> April, 2017)

Sl. No.	Sanctioned post	Name of the incumbent	Designation	Discipline	Pay scale with present basic	Date of joining/ if vacant since when	Permanent /Temporary	Category(SC/ST/OBC/Others)
	Senior Scientist & Head	Dr. Nilendu Jyoti Maitra	Senior Scientist & Head	Administrative & Animal Husbandry	37400- 67000 (GP- 9000) Rs.52250/-	01.06.2010	Permanent	Others
	Subject Matter Specialist	Sri Prasanta Chatterjee	SMS (Fishery)	Fishery	15600- 39100 (GP-6600) Rs.36330/-	28.10.1997	Permanent	Others
	Subject Matter Specialist	Dr. Manasi Chakraborty	SMS (Home Science)	Home Science	15600- 39100 (GP- 6600) Rs.34060/-	08.12.2000	Permanent	Others
	Subject Matter Specialist	Dr. Chandan Kumar Mondal	SMS (Horticulture)	Horticulture	15600-39100 (GP- 6600)  Rs.30350/-	16.05.2005	Permanent	Others
	Subject Matter Specialist	Dr. Subhasis Roy	SMS (Animal Husbandry)	Animal Husbandry	15600- 39100 (GP- 5400) Rs.25080/-	01.07.2010	Permanent	Others
	Subject Matter Specialist	Sri Prabir Kumar Garain	SMS (Plant Protection)	Plant Protection	15600- 39100 (GP- 5400) Rs.23640/-	17.10.2012	Permanent	Others
	Programme Assistant	Dr. Dipak Kumar Roy	Programme Assistant (Agronomy)	Agronomy	9300- 34800 (GP- 4600) Rs.22990/-	12.06.2001	Permanent	Others
	Computer Programmer	Sri Partha Banik	Programme Assistant (Computer)	Office	9300- 34800 (GP- 4600) Rs.22050/-	09.06.2003	Permanent	Others
	Farm Manager	Utpal Maity	Farm Manager	Fishery	9300- 34800 (GP- 4200) Rs.15670/-	02.12.2011	Permanent	Others
	Assistant	Sri Aditya Guchhait	Assistant	Office	9300- 34800 (GP- 4200) Rs.17260/-	01.06.2010	Permanent	Others
	Stenographer	Sri Debjyoti Maitra	Stenographer Grade-III	Office	5200- 20200 (GP- 2400) Rs.11510/-	04.01.2011	Permanent	Others
	Driver	Sri Madhab Chandra Kayet	Driver –cum-Mechanic	Office	5200- 20200 (GP- 2400) Rs.13240/-	01.06.1995	Permanent	Others
	Driver	Sri Birendra Nath Das	Driver –cum-Mechanic	Office	5200- 20200 (GP- 2400) Rs.12530/-	01.09.2003	Permanent	OBC
	Supporting staff	Sri Nema Chand Mondal	Skilled supporting staff	Office	5200- 20200 (GP- 2800) Rs.18040/-	01.02.1982	Permanent	SC
	Supporting staff	Sri Sailen Das	Skilled supporting staff	Office	9300- 34800 (GP- 4200) Rs.20270/-	01.07.1979	Permanent	Others

## 1.6. Total land with KVK (in ha)

S. No.	Item	Area (ha)
1	Under Buildings	0.898 ha
2.	Under Demonstration Units	1.813 ha
3.	Under Crops	8.783 ha
4.	Orchard/Agro-forestry	0.813 ha
5.	Others with details	8.803 ha
	Total	21.11ha

Total ara should be matched with break up

## 1.7. Infrastructure Development:

## A) Buildings and others

S. No.	Name of infrastructure	Not yet started	Completed up to plinth level	Completed up to lintel level	Completed up to roof level	Totally completed	Plinth area (sq.m)	Under use or not*	Source of funding
1.	Administrative Building	-	-	-	-	Totally completed	777.545	Use	ICAR
2.	Farmers Hostel	-	-	-	-	-do-	359.639	Use	ICAR
3.	Farm Women Hostel						521.25		RKVY
4.	Separate Dinning Hall for farmmer						350		RKVY
5.	Staff Quarters (6)	-	-	-	-	-do-	411.680	Use	ICAR
6.	Piggery unit	-	-	-	-	-	-	-	-
7.	Fencing	-	-	-	-	-do-	770.00 (running m)	Use	ICAR
8.	Rain Water harvesting structure	-	-	-	-	-do-	17500	Use	ICAR
9.	Threshing floor	-	-	-	-	-do-	371.720	Use	CAPART
10.	Farm godown	-	-	-	-	-do-	378.790	Use	SDB, GOWB
11.	Dairy unit	-	-	-	-	-do-	3500.00	Use	ICAR &Revolving fund of KVK
12.	Sample testing lab					-	10.00	Use	Revolving fund of KVK
13.	Poultry unit	-	-	-	-	-do-	280.00	Use	Revolving fund of KVK
14.	Goatary unit	-	-	-	-	-do-	2100.00	Use	RKVY
15	Pekind Duck Farm	-	-	-	-	-	104.00	Use	Revolving fund of KVK

Contd...

S. No.	Name of infrastructure	Not yet started	Completed up to plinth level	Completed up to lintel level	Completed up to roof level	Totally completed	Plinth area (sq.m)	Under use or not*	Source of funding
16	Turkey farm						144.00	Use	Revolving fund of KVK
17	Small animal operation theatre						12.00	Use	NAIP
18	Procedure room for animals						6.00	Use	NAIP
19	Hydroponics unit						14.00	Use	Revolving fund of KVK
20	Rabbit farm						16.00	Use	Revolving fund of KVK
21	Ornamental bird unit						12.00	Use	Revolving fund of KVK
22	Meat processing unit						120.00	Use	ATMA
23	Mushroom Lab	-	-	-	-	-	-	-	-
24	Mushroom production unit						100.00	Use	ICAR & Revolving fund of KVK
25	Shade house	-	-	-	-	-do-	300.00	Use	FPI & H
26	Soil test Lab	-	-	-	-	-do-	280.00	Use	ICAR
27	Vermicompost production unit						150.00	Use	ICAR & Susmira
28	Beekeeping						40.00	Use	AICRP Honeybees
29	Pan Boroz						25.00	Use	ICAR & Revolving fund of KVK
30	Green House						300.00	Use	Susmira

If not use then since when and reason for non-use

## B) Vehicles

Type of vehicle	Year of purchase	Cost (Rs.)	Total km. Run	Present status
Tata Sumo Victa	2008-09	6,00,000.00	1,88,000	Running condition

## C) Equipment &amp; AV aids

Name of equipment	Year of purchase	Cost (Rs.)	Present status	Source of fund
<b>a.Lab equipment</b>				
Perkin-elmer UV-Vis Spectrophotomètre (Lamda 25)	2010-11	4,10,000.00	Working condition	ICAR
pH meter	2010-11	4,000.00	Working condition	ICAR
Conductivity meter	2010-11	6,500.00	Working condition	ICAR
Eutech pH-Conductivity meter	2009-10	13,500.00	Working condition	ICAR
Rescholar Laminar Air-flow	2008-09	49,500.00	Working condition	ICAR
Autoclave	2008-09	25,365.00	Working condition	ICAR
Refrigerator (GFE 25/2010)	2010-11	19,560.00	Working condition	NAIP
Rescholar Semi-automatic Corcyra rearing system (10 units)	2008-09	1,53,000.00	Working condition	ICAR
Rescholar Corcyra egg cleaning device	2008-09	18,000.00	Working condition	IRM
Rescholar Corcyra egg sterilization chamber	2008-09	22,500.00	Working condition	IRM
Rescholar Trinocular Zoom stereo microscope with eye-piece camera & software	2008-09	1,20,950.00	Working condition	IRM
Rescholar Binocular Research Microscope	2008-09	18,500.00	Working condition	IRM
Rotary shaker	2010-11	32,500.00	Working condition	ICAR
BOD incubator (Simeco)	2010-11	31,650.00	Working condition	ICAR
Double distillation unit	2010-11	33,250.00	Working condition	ICAR
Afcoset Electronic Balance(Model ER 200A)	2008-09	45,500.00	Working condition	ICAR
REMI Centrifuge (Model R 8C)	2008-09	19,350.00	Working condition	ICAR
REMI Centrifuge (Model R 24)	2008-09	35,950.00	Working condition	NHM
Chlorophyll meter (SPAD 502 plus)	2010-11	2,25,000.00	Working condition	ICAR
Balance	2016-17	35,000.00	Working condition	ICAR
pH-meter	2016-17	20,000.00	Working condition	NICRA, IARI

Name of equipment	Year of purchase	Cost (Rs.)	Present status	Source of fund
<b>a. Lab equipment</b>				
Conductivity meter	2016-17	15,000.00	Working condition	NICRA, IARI
Hot Air oven	2016-17	35,000.00	Working condition	NICRA, IARI
Spectrophotometer (VIS)	2016-17	45,000.00	Working condition	NICRA, IARI
Flame Photometer	2016-17	54,000.00	Working condition	NICRA, IARI
Turbidity Meter	2016-17	25,000.00	Working condition	NICRA, IARI
Hot plate	2016-17	6,000.00	Working condition	NICRA, IARI
Water Bath	2016-17	8,000.00	Working condition	NICRA, IARI
Mechanical Shaker	2016-17	30,000.00	Working condition	NICRA, IARI
Double Distillation plant Glass	2016-17	45,000.00	Working condition	NICRA, IARI
Bottle Top Burrete (digital)	2016-17	1,00,000.00	Working condition	NICRA, IARI
Acid Dispenser	2016-17	42,000.00	Working condition	NICRA, IARI
Muffel Furnace	2016-17	45,000.00	Working condition	NICRA, IARI
Refrigerator	2016-17	26,000.00	Working condition	NICRA, IARI
Sony pico- projector	2016-17	27,000.00	Working condition	RKVY, Govt. of W.B
Public Address System	2016-17	53,000.00	Working condition	RKVY, Govt. of W.B
<b>b. Farm machinery</b>				
Seed grader	2010-11	2,10,000.00	Working condition	TMC
Pump sets	2003-04	50,000.00	Working condition	TMC
Tractor – Mahindra	2003-04	4,49,250.00	Working condition	ICAR
Thresher & Rotavator	2010-11	2,00,000.00	Working condition	ICAR
Disc Harrow	2009-10	70,000.00	Working condition	ICAR
Power Tiller	2009-10	1,43,000.00	Working condition	ICAR
Generator – 25 KVA	2010-11	3,56,852.00	Working condition	ICAR

<b>c. AV Aids</b>				
Camera TRV	2003-04	36,900.00	Working condition	NWDPRA
Printer	2003-04	4,000.00	Working condition	Nutrition project, SDB
Computer (2 nos)	2003-04	76,899.00	One computer is out of order	ICAR
Cannon Digital Camera	2008-09	25,000.00	Working condition	ICAR
V-SAT with e-KVK linkage (5 Dell-optiplex -755 Computer & One HP Leser Printer-1022n , One HP-G3110 Scanner, One TVS –MSP-245-dot-matrix Printer with Server Computer, 5-650VA APC UPS, 3KVA APC make UPS)	2009-10	-	The V-SAT with e-KVK linkage One Dell Optiplex-755 Computer, One HP-G3110 Scanner, One TVS –MSP-245-dot-matrix Printer with Server Computer, One 650VA APC make UPS,3KVA APC make UPS are in working condition	ICAR
Lenovo Laptop	2008-09	48,000.00	Working condition	NHM
Samsung Notebook	2009-10	22,000.00	Working condition	TMC
HP Desk top Computer with Cannon Printer	2010-11	75,0000	Working condition	NAIP
Epson EB-825 Projector	2010	2,20,000.00	Working condition	NAIP
Samsung Touch 400TSn-2				
HP LaserJet M1522nf	2009-10	24,000.00	Working condition	AICRP
HP Color Jeser Jet 1215	2009-10	22,000.00	Out of order	NAIP
<b>AV Aids</b>				
LG LED Projector	2014	1,18,000.00	Working condition	RKVY
Hand Scanner -(1PC)	2016	8000/-	Working condition	ARYA
ITB External HDD - (1PC)	2016	8000/-	Working condition	ARYA
DATA Processing System (I3 Processor, 1 TB HDD, 4GB RAM, 15.6 inch Screen with Graphics Card) -(1PC)	2016	36900/-	Working condition	ARYA

Color Copier Printer- (1PC)	2016	13500/-	Working condition	ARYA
Broadband Router -(1PC)	2016	2300/-	Working condition	ARYA
Biometric Systems Fingerprint Time & Attendance System (Including Battery & Power Adopter) X-990	2016	23500/-	Working condition	ICAR
Olympus phase contrast microscope with CMOS camera, Lenovo Computer, UPS, printer cum scanner	2015-16	5,00,000.00	Working condition	RKVY
Fermenter	2015-16	4,00,000.00	Working condition	RKVY
Samsung refrigerator-192L Model: RR20M272ZU2/NL/2017 with digital inverter technology	2016-17	16350.00 (inclusive of all taxes)	Working condition	RKVY
HP LAPTOP 240 G5 CI3 1AS37PA CORE i3 /4 GB/500GB/14”	2016-17	36,800.00	Working condition	IARI, ICAR
SONY PICO PROJECTOR MODEL CI1	2016-17	26900.00	Working condition	RKVY, Deptt. of Agriculture, W.B.
PA System for Class room	2016-17	48,500.00	Working condition	RKVY, Deptt. of Agriculture, W.B
Wireless MIC for Conference room	2016-17	27,038.00	Working condition	RKVY, Deptt. of Agriculture, W.B.

#### D) Farm implements

Name of equipment	Year of purchase	Cost (Rs.)	Present status	Source of fund
Micro-metos MCR-300 automatic weather station with disease forecasting system (software GENEVA E2C)	2009-10	4,00,000.00	Working condition	NHM
Honda electric lawn mower	2007-08	14,500.00	Working condition	NHM
Al-Ko Electric hedge cutter	2010-11	22,000.00	Working condition	NHM
GPS	2016-17	14,990.00	Working condition	RKVY, Deptt. of Agriculture



## 1.8. A). Details SAC meeting conducted in the year 2016-17

Salient recommendation in bullet form (Attach a copy of SAC proceeding along with list of participants )

Sl.No.	Date	Number of Participants	Salient Recommendations	Action taken	If not conducted, state reason
1.	18.06.2016	36	Action taken should be mentioned with specified quantification	Actions as per the recommendation of SAC Committee has been mentioned in specified quantification in the particular column	
			Soil testing of ponds for aquaculture should be done	Awareness on soil testing of ponds has been organized by the KVK. Now motivated farmers are coming for analyses soil of ponds for aquaculture. 52 samples are analysed so far.	
			In GHG study, Pond system may be incorporated	Study is going on in collaboration with IARI, New Delhi	
			CSSRI, Canning may be collaborated in IARI-NICRA programme	Suggestion is taken from CSSRI, Canning town.	
			Any recommendation from OFT should be intimated to the concerned departments, all concerned Institutes and it may be uploaded to KVK website	Recommendations of OFT and performance of FLD are being intimated to the concerned Department and Institutes and the same has been uploaded to KVK Websites. Different KVKs from all over the country are now making contact for details of OFT & FLD	
			Scientist, Fishery may visit CIBA, Kakdwip for quantification of periphyton in OFT programme	Fishery Scientist has visited CIBA Kakdwip for this purpose.	
			In OFT on Music therapy, the soft music may be specified	The details of the soft music has been given in the OFT results.	
			Participation of KVK scientist in Agri-Horti training programme organised by CIBA, Kakdwip	As when asked for participation is there.	
			Provide expertization in kharif onion cultivation programme organized by Deptt. of FPI & H, GOWB	3time field visit including off-campus programme have been organized.	

			Quantification of enrichment of vermicompost may be specified	Nitrient composition is written in V.C Programme	
			Black carp in FLD should be checked for the species clearance in this country	Yet to be done	
			Vetki along with tilapia and carp may be promoted for additional income in FLD or FLD on Pompino/ Etroplus in slightly saline pond may be conducted and seed may be taken from CIBA	Would be conducted in coming rainy season	
			IR-64 Salt tolerant variety may be tried for Boro rice	Few demonstration were conducted due to less availability of seed.	
			When cassava will be produced in FLD plots, it should be mixed as binder in fish feed	From next season it will be taken into consideration	
			The homemade feed for FLD on koi should be applied in pellet form by the farmers.	Actin taken	
<b>Sl.No.</b>	<b>Date</b>	<b>Number of Participants</b>	<b>Salient Recommendations</b>	<b>Action taken</b>	<b>If not conducted, state reason</b>
2	04.11.2016	29	Much more emphasis should be given for soil analyses and issuing of soil health card for individual farmers	Good number of soil samples are analysed and individual soil health card is issued	
			Integrated farming system including health and vaccination camp may be demonstrated and organized in the MP adopted villages	Already 50 units of IFS model through RKVY and 3 number of animal health of vaccination have been organized	
			The critical inputs may be given to the farmers after completion of training programme organized in collaboration with Forest Deptt., Govt. of W.B.	Critical inputs like chick, specific medicine and vaccine are being provide to the trained farmers	
			WASH programme is to be conducted in school level to make the students aware regarding hygiene and sanitation.	A number of schools have been taken up to make the students understand regarding health and hygiene	
			Marketing linkage is to be established for selling out the produce through ARYA Project	LDC is requested to purchase the produce from ARYA Village	
			Emphasis should be given for production of bio-control agent at village level	Already 300 number of farmers have been trained and supplied with critical inputs through RKVY Project for production of bio-control agent at village level	

(True copy)

**Meeting No. 30**  
**Place : Nimpith**

**Date : 18.06.2016**  
**Time : 10.30 a.m.**

A meeting of the Scientific Advisory Committee of Ramkrishna Ashram Krishi Vigyan Kendra, Nimpith is held to-day, the 18<sup>th</sup> June, 2016 at 10.30 a.m. in the KVK premises with the following members:

**-: Resolutions:-**

**Members Present:**

Sl.No.	Name	Designation
1.	Swami Sadananda,	Chairman, KVK Nimpith
2.	Sri Biswanath Das	MLA, Joynagar Constituency
3.	Dr. N. J. Maitra,	Sr. Scientist & Head, RAKVK Nimpith
4.	Dr. Ajit Kr. Podder	Advisor, VIB, Nimpith
5.	Dr. B.K. Mahapatra	Principal Scientist & OIC, CIFE
6.	Mr. Samarendra Nath Khara	Deputy Director of Horticulture
7.	Balaram Panja	ADFO, South 24 Parganas
8.	Dr. Binayak Purakayastha,	A.D., ARD,SPDF Nimpith
9.	Dr. D. Burman	Head, CSSRI, RRS, Canning Town
10.	Dr. T.K.Ghoshal	Office –In-charge, CIBA, Kakdwip Centre
11.	Sudipta Das	Doordarshan, Kolkata
12.	Mr. Arup Kr. Paul	Ex-ADA & Principal Green College
13.	Tarak Nath Halder	Progressive farmer, Radhakantapur
14.	Bapan Karmakar	Progressive farmer, Radhakantapur
15.	Swapan Kr. Samui	Scientist, Agronomy, RAKVK
16.	Prasanta Chatterjee	Scientist, Fishery, RAKVK
17.	Manasi Chakraborty	Scientist (Home Sc.), RAKVK
18.	Dr.Chandan Kr. Mondal	Scientist (Hort.), RAKVK
19.	Dr.Subhasis Roy	Scientist (A.H) RAKVK
20.	Prabir Kumar Garain	Scientist (P.P.), RAKVK
21.	Dr.Avijit Roy	Jr. Agronomist (AICRP on Sunflower)
22.	Shyam Sundar Lakshman	Jr. Breeder, (AICRP on Sunflower)
23.	Debasis Halder	Technical Expert (AICRP)
24.	Partha Banik	Programme Assistant (Computer), RAKVK Nimpith
25.	Dipak Kumar Roy	Programme Assistant (Agronomy), RAKVK, Nimpith
26.	Utpal Maity	Farm Manager, KVK Nimpith
27.	Aditya Guchhait	Assistant, KVK Nimpith
28.	Sri Gouranga Naskar	Progressive farmer, Kaikhali
29.	Sri Tarun Halder	Progressive farmer, Kaikhali
30.	Amartya Roy	Branch Head, Axis Bank
31.	Tapas Kr. Sahana	SRF, NICRA, RAKVK
32.	Bhaskar Mukherjee	Technical Assistant, RAKVK
33.	Mr. Atit Maji	SRF, NICRA, RAKVK
34.	Ambika Mondal	Progressive Farmer
35.	Sanjoy Mondal	Progressive Farmer
36.	Rehena Dorji	Progressive farmer

1) The minutes of the last meeting are read and confirmed

2) The Senior Scientist & Head of KVK presented the progress of work of KVK for the period from April, 2016 to June, 2016 before the members present in the meeting. Thereafter, Programme Coordinator with all Sectional Incharges of different disciplines of KVK participated in detail discussion on their respective subjects and problems raised on different aspects of work with the members present. After a good deal of discussion, the following recommendations have come out for betterment of the KVK activities.

- i) Action taken should be mentioned with specified quantification
- ii) Soil testing of ponds for aquaculture should be done
- iii) In GHG study, Pond system may be incorporated
- iv) CSSRI, Canning may be collaborated in IARI-NICRA programme
- v) Any recommendation from OFT should be intimated to the concerned departments, all concerned Institutes and it may be uploaded to KVK website
- vi) Scientist, Fishery may visit CIBA, Kakdwip for quantification of periphyton in OFT programme
- vii) In OFT on Music therapy, the soft music may be specified
- viii) Participation of KVK scientist in Agri-Horti training programme organised by CIBA, Kakdwip
- ix) Provide expertization in kharif onion cultivation programme organized by Deptt. of FPI & H, GOWB
- x) Sola Kachu (Swamp taro) may be explored
- xi) Quantification of enrichment of vermicompost may be specified
- i) Black carp in FLD should be checked for the species clearance in this country
- ii) Vetki along with tilapia and carp may be promoted for additional income in FLD or FLD on Pompino/ Etroplus in slightly saline pond may be conducted and seed may be taken from CIBA
- iii) IR-64 Salt tol variety may be tried for Boro rice
- iv) When cassava will be produced in FLD plots, it should be mixed as binder in fish feed
- v) The homemade feed for FLD on koi should be applied in pellet form by the farmers.

3) The progress of work of the projects like, IRM, NICRA, AICRP (Sunflower), AICRP (Honeybees), IWMP, and RKVY for 2016-2017 have been discussed in the meeting and the Committee expresses its satisfaction for the work done during the period under review.

With a vote of thanks to and from the Chair the meeting dissolves.

Sd/- Swami Sadananda

(True copy)

**Meeting No. 31****Date : 04.11.2016****Place : Nimpith****Time : 10.30 a.m.**

A meeting of the Scientific Advisory Committee of Ramkrishna Ashram Krishi Vigyan Kendra, Nimpith is held to-day, the 18<sup>th</sup> June, 2016 at 10.30 a.m. in the KVK premises with the following members:

**-: Resolutions:-****Members Present:**

Sl.No.	Name	Designation
1.	Smt. Pratima Mondal	M.P.- Jaynagar Constituency
2.	Swami Sadananda,	Chairman, KVK Nimpith
3.	Dr. N. J. Maitra,	Sr. Scientist & Head, RAKVK Nimpith
4.	Sri Subrata Rana	Ecodev
5.	Sri Sutanu Ghosh	Ecodev
6.	Dr. Ajit Kr. Podder	Advisor, VIB, Nimpith
7.	Md. Jiaul	M.P. Representative
8.	Swapan Kr. Samui	Scientist, Agronomy, RAKVK
9.	Prasanta Chatterjee	Scientist, Fishery, RAKVK
10.	Manasi Chakraborty	Scientist (Home Sc.), RAKVK
11.	Dr.Chandan Kr. Mondal	Scientist (Hort.), RAKVK
12.	Dr.Subhasis Roy	Scientist (A.H) RAKVK
13.	Prabir Kumar Garain	Scientist (P.P.), RAKVK
14.	Dr.Avijit Roy	Jr. Agronomist (AICRP on Sunflower)
15.	Shyam Sundar Lakshman	Jr. Breeder, (AICRP on Sunflower)
16.	Debasis Halder	Technical Expert (AICRP)
17.	Partha Banik	Programme Assistant (Computer), RAKVK Nimpith
18.	Dipak Kumar Roy	Programme Assistant (Agronomy), RAKVK, Nimpith
19.	Utpal Maity	Farm Manager, KVK Nimpith
20.	Dr. Binayak Purakayastha,	A.D., ARD,SPDF Nimpith
21.	Amartya Roy	Branch Head, Axis Bank
22.	Tapas Kr. Sahana	SRF, NICRA, RAKVK
23.	Bhaskar Mukherjee	Technical Assistant, RAKVK
24.	Mr. Atit Maji	SRF, NICRA, RAKVK
25.	Mr. Arup Kr. Paul	Ex-ADA & Principal Green College
26.	Tarak Nath Halder	Progressive farmer, Radhakantapur
27.	Bapan Karmakar	Progressive farmer, Radhakantapur
28.	Sri Gouranga Naskar	Progressive farmer, Kaikhali
29.	Sri Tarun Halder	Progressive farmer, Kaikhali

2) The minutes of the last meeting are read and confirmed

2) The Senior Scientist & Head of KVK presented the progress of work of KVK for the period from July, 2016 to October, 2016 before the members present in the meeting. Thereafter, Programme Coordinator with all Sectional Incharges of different disciplines of KVK participated in detail discussion on their respective subjects and problems raised on different aspects of work with the members present. After a good deal of discussion, the following recommendations have come out for betterment of the KVK activities.

i) Much more emphasis should be given for soil analyses and issuing of soil health card for individual farmers

ii) Integrated farming system including health and vaccination camp may be demonstrated and organized in the MP adopted villages

iii) The critical inputs may be given to the farmers after completion of training programme organized in collaboration with Forest Deptt., Govt. of W.B.

iv) WASH programme is to be conducted in school level to make the students aware regarding hygiene and sanitation.

v) Marketing linkage is to be established for selling out the produce through ARYA Project

vi) Emphasis should be given for production of bio-control agent at village level

**3) The progress of work of the projects like, IRM, NICRA, AICRP (Sunflower), AICRP (Honeybees), IWMP, and RKVY for 2016-2017 have been discussed in the meeting and the Committee expresses its satisfaction for the work done during the period under review.**

With a vote of thanks to and from the Chair the meeting dissolves.

Sd/- Swami Sadananda

## 2. District level data on agriculture, livestock and farming situation (2016-17)

Sl. no.	Item	Information	
1	Major Farming system/enterprise	Agro based farming system – Paddy (monocropped)	
		Agro based farming system – Paddy-Moong/ Cotton /Sunflower	
		Agro based farming system – Paddy – Khesari (paira crop)	
		Agro-horti based farming system- Paddy- Chilli/ Tomato/ okra	
		Ail-bundh (land embankment) farming system – Okra/ Bitter Gourd- Tomato/ French bean	
		Agri-horti-fishery – Paddy- Chilli/ Tomato/ Okra-IMC	
		Agri-poultry (backyard)- Paddy- Moong/ Khesari/ Indigenous poultry	
2	Agro-climatic Zone	Coastal saline zone	
3	Agro ecological situation	Gangetic Alluvial	
		Coastal Alluvial	
		Coastal Saline	
4	Soil type	Clay, clay loam, sandy loam	
5	Productivity of major 2-3 crops under cereals, pulses, oilseeds, vegetables, fruits and others  Source : District Action Plan 2013-14	Crop	Productivity (kg/ha)
		Paddy ( <i>Aus</i> )	2496.0
		Paddy ( <i>Aman</i> )	2374.0
		Paddy ( <i>Boro</i> )	3134.0
		Khesari	845.0
		Greengram	606.0
		Sunflower	1288.0
		Mustard	1031.0
		Cotton	4.65(bales)
		Tomato	17736.18
		Brijal	17842.86
		cucurbits	9822.394
		Okra	10709.84
		Green chilli	3330.0
		Guava	15151.0
		Sapota	12812.5
Litchi	10108.7		
Betelvine	6428310 no. leaf/ha		
6	Mean yearly temperature, rainfall, humidity of the district	Rainfall- 1641 mm, Temperature- Max. 39.8 <sup>0</sup> C, Mini.10.0 <sup>0</sup> C Humidity- Max. 99.2%, Mini.39.0%	

Contd..

7	Production and productivity of livestock, poultry, fisheries etc. in the district (New census report is awaiting from the State Department)	Category	Population	Production	Productivity
<b>Cattle</b>					
		<i>Crossbred</i>	32550	2,65,8,750 lit	1800-2100 lit/lactation
		<i>Indigenous</i>	968986	19,37,97,200 lit	400-500 lit/lactation
		Buffalo	15604	56,71,300 lit	600-700 lit/lactation
<b>Sheep</b>					
		Crossbred	-	-	-
		<i>Indigenous</i>	212589	22,10,925 kg	10-12 kg/sheep/year
		Goats	696935	78,05,672 kg	11-13 kg/sheep/year
<b>Pigs</b>					
		<i>Crossbred</i>	-	-	-
		<i>Indigenous</i>	32584	12,05,608 kg	35-40kg/pig/year
		Rabbits	-	-	-
		Poultry	2869243		
		Hens (improved)	713137	12,47,98,975 eggs	170 – 180 eggs/yr/bird
		<i>Desi</i>	2156106	19,83,61,752 eggs	90 – 110 eggs/year/bird
		<i>Improved</i>	-	-	-
		Ducks	1058706	7,67,56,185 eggs	140 – 160 eggs/yr/bird
		Turkey and others	75897	6,22,355 kg	6 – 9 kg/year/bird
8.	Production of fish and prawn  (Source: Handbook of Fisheries Statistics 2015-16, Department of Fisheries, Directorate of Fisheries, Govt. of West Bengal)	A. Marine fish-50717 ton B. Marine prawn- 2372 ton C. Inland fish- 155842 ton D. Fish seed production -133 million E. Inland prawn- 31028 ton F. Export of fish and prawn - 91262.931ton worth Rs.3439.29 crores (West Bengal)			



## 2.b. Details of operational area / villages (2016-17)

Sl. No.	Name of Taluk	Name of the block	Name of the villages	Major crops & enterprises	Major problems identified (crop-wise)	Identified Thrust Areas
1.	Baruipur Sub-division	Kultali	Kaikhali, Gopalganj, Madhabpur, Bongheri, Sankijahan, Katamari, Deulbari	Paddy, Cotton, Sunflower, Maize, Chilli, Betelvine, Bitter gourd, Okra, Tomato, nursery raising of carp spawn, Ornamental fish, poultry	<b>Biophysical :</b> <b>i) Yield platuening of major field and horticultural crops</b> * Inappropriate agronomic practices * Poor genetic stock * Inadequate irrigation facilities * Marginal soil <b>ii) High post harvest loss of horticultural crops</b> <b>iii) Lesser extent of crop diversification</b> <b>iv) Poor rate of farm mechanization</b> <b>v) Poor exploitation of aquatic resources</b> * Less availability of good quality carp seed * Poor feed management & improper stocking density *No pond preparation before stocking fish *Improper resource utilization for ornamental fish culture <b>vi) Poor performance of backyard system</b> * Poor productive performance of existing poultry bred * Untapped potentiality of nutrition garden <b>vii) Low profitability from broiler and dairy farming</b> * Poor genetic resources * High cost of commercial feed * High disease incidence <b>Socio economic :</b> <b>i) Very restricted livelihood options</b> <b>ii) Recurrence of glut at pick harvest season</b> <b>iii) Lack of awareness regarding proper management of nutritional garden</b> <b>iv) Lack of market support</b> <b>v) Lack of credit support</b>	* Assimilation of good agri-horticultural practices * Providing good quality crop & fish seed, breed and planting materials * Diversification of existing production system * Introduction of poly house concept for off season vegetable cultivation * Efficient utilization of water resources * Proper feed supplementation for fish & animal farming * Providing animal health care service * Soil health management * Popularization of small tools and implements for drudgery reduction * Improvement of backyard system performance * Widening of livelihood options and improvement of women led vocation through SHG * Post harvest management of crops * Development of marketing channel
		Joynagar- I	Dakshin Barasat, Baharu, Biswaser Chak, Jangalia			
		Joynagar –II	Nimpith, Tulsighata, Hanarbat, Hatchapuri, Kasthamahal, Jouthia, Baishata, Sahajadapur, Bottala, Uttarpara, Gardewani, Bele durganagar			
2.	Kakdwip	Pathar Protima	Achintanagar, Gangadharpur, Digampur, Herambagopalpur, Kuyemuri, Ramganga Banashyamnagar, Kamdebpur, Sridhar Nagar, Lakshmi Janardanpur, Raipur, Pathar Protima, Rakhapur, Purba Sripatinagar, Dakshin Shib ganj			
		Kakdwip	Kamarhat, Takipur Abad, Shibkali Nagar, Madhabnagar			
		Namkhana	Shibnagar, Rajnagar, Shibrampur, Mousuni, Radhanagar, Chandanpiri, Fregarganj, Namkhana			
		Sagar	Krishnanagar, Rudranagar, Khansahebabad, Gangasagar, Sumatinagar, Haradhanpur, Mrityunjoynagar, Manasadip			
3.	Diamond Harbour Sub-Division	Mathurapur-I	Ranaghata, Nalua, Lakshmikantapur, Mathurapur, Lalpur, Uttar Lakshmi Narayanpur			
		Mathurapur-II	Radhakantapur, Gilarchat, Bhadrappara, 27 no. Lat, Mandalpara, Damkal, Mukherjeer Chak, Khari Kashinagar, Kankandighi, Nagendrapur Raidighi,			
		Kulpi Mandirbajar Magrahat – II Diamond Harbour-I	Belpukur, Keoratala, Gopalnagar, Tulshirchak Pukuria, Karbala, Ghataswar, Gabberia, Amratala, Sherpur Kapat Hat			

## 2.(c) Details of village adoption programme:

Name of the villages adopted by PC and SMS in 2016-17 for its development and action plan

Name of village	Block	Action taken for development
Jalalpur, Shivkalinagar, Gabberia, Debipur, Gurguria, Kishorimonpur, Binodpur, Kaikhali, Gopalgang, Dakshin Garankati, Sankijahan, Kantamari	Mandirbazar,Mathurapur-II, Falta, Kakdwip & Kultali	Conducted Cluster Front Line Demonstration on oilseed and SHG & UG group formation and implementation of NRM & farm production & micro enterprise (Poultry rearing, Fishery & vegetable cultivation,vermicomposting) activities under IWMP
Jogigora, Gopalnagar, Taranagar, Kolakhali,	Jonyagar II	Right based approach for food and nutrition security, nutrition camp, swachha bharat abhijan
Bonshyamnagar  Heromogopalpur	Patharpratima  Patharpratima	Overall development of animal husbandry through mobile veterinary clinic and fodder development programme through ARD, GoWB  Overall development of the rural youth through promotion of pekin duck farming, vanaraja farming and creating marketing linkage with Livestock Development Corporation Limited, Govt of West Bengal as convergence programme of ARYA project.
Bongheri	Kultali	Demonstration of climate resilient agro technologies, plant protection measures, composting, livestock development, custom hiring centre, biopesticide preparation

(d) Sansad Adarsh Gram Yojana

MP has selected Rajapur Korberhat village of Joynagar II for its overall development.

- i) Name of the village under Sansad Adarsha Gram Yojana: Rajapur Korberhat
- ii) Contribution of KVK in the programme: KVK have conducted one meeting with Honbl'e MP Smt Pratima Mondal for effective layout of the workplan to be undertaken in the village for its development. Afterwards, on 04.01.2016, one animal health and vaccination camp was organized in the village with full participation of the vilagers having 120 numbers of cows, 24 sheep, 160 goats, 567 poultry, 290 duck with a sizeable number of farmers (107). The village will be stressed on duck farming as it is having good numers of the same. Most of the ducks are not cared properly. For this reason, one awareness camp at the end of the camp was organized. Besides, through RKVY Project, 50 units of integrated farming system models have been demonstrated in the selected village.



## 2.1 Priority thrust areas

S. No	Thrust area
1	Assimilation of good agri-horticultural practices
2	Providing quality seed, breed, bio-agents and planting materials
3	Diversification of existing production system
4	Efficient utilization of water resources
5	Soil health management
6	Popularization of small tools and implements for drudgery reduction
7	Improvement of backyard system performance
8	Widening of livelihood options and improvement of women led vocation through SHG
9	Attaining food & nutrition security at household level
10	Post harvest management of crops
11	Development of marketing channel
12	Introduction of poly house concept for off season vegetable cultivation
13	Improvement of backyard system performance
14	Proper feed supplementation for fish & animal farming
15	Alternative livelihood generation through Animal husbandry activity
16	Promotion of Artificial insemination
17	Providing animal health care service
18	Attracting and retaining youth in agriculture and allied activities
19	Promotion of Climate Resilient Agricultural Practices
20	Promotion of Insecticide Resistance Management
21	Promotion of Integrated Pest Management
22	Promotion of Biological control of pest and diseases
23	Promotion of on-farm mass production of <i>Trichoderma</i>
24	Promotion of Beekeeping as alternate livelihood opportunity

## 3. TECHNICAL ACHIEVEMENTS

## 3.A. Details of target and achievement of mandatory activities by KVK during 2016-17

OFT				FLD			
Number of OFTs		Number of farmers		Number of FLDs		Number of farmers	
Target	Achievement	Target	Achievement	Target	Achievement	Target	Achievement
<b>12</b>	<b>12</b>	<b>100</b>	<b>128</b>	<b>9</b>	<b>11</b>	<b>242</b>	<b>609*</b>

\*No. of farmer increase in FLD due to inclusion of beneficiaries from projects funded by different source like MVC, IWMP, Cotton, NICRA, ATMA & FHFII

Training				Extension activities			
Number of Courses		Number of Participants		Number of activities		Number of participants	
Target	Achievement	Target	Achievement	Target	Achievement	Target	Achievement
<b>103</b>	<b>164*</b>	<b>10550</b>	<b>13852</b>	<b>462</b>	<b>591</b>	<b>6480</b>	<b>10994**</b>

\* Conducted sponsored trainings by outsourcing of funds

\*\* Number of participants increased due to conducting extension activities through different projects like

MVC, IWMP, Cotton, NICRA & ATMA etc.

Seed production (q)		Planting material (Nos.)	
Target	Achievement	Target	Achievement
Paddy – 3.0 ha Green gram – 1.0ha	Paddy – 3.5 ha NC-492( Certified & TL)-21.0 q NC-492( TL)-4.0 q Pratikha (Foundation) -10.99 q Pratikha (certified) -30.40 q Pratikha (TL) -7.30 q Dudshwar (TL)-16.0 q WGL -20471(TL)-0.59 q Swarna Sub-1(TL)-4.17 q PDM-84-139-(TL)-1.78 q	Fruits & vegetables- 137300 no.	Fruits & vegetables – 341723 no.
Turmeric, Ginger, and Elephant Foot Yam	48.3 t		

### 3.1 Achievements on technologies assessed and refined

#### OFT - 1 (2015-16)

1.	Title of On farm Trial	Assessment of production potential and economic feasibility of Sunflower based intercropping system with pulse crops in South 24-Parganas district
2.	Problem diagnose	The productivity of kharif paddy is low due to its high nutrient uptake by sunflower for 2 to 3 consecutive years of cultivation
3.	Details of technologies selected for assessment/refinement	<b>Farmers' practice:</b> Sunflower as sole crop (var. DRSH-1) with a spacing of 60 cm X 30cm, N:P2O5:K2O @ 80:40:40 kg/ha along with 2 irrigation <b>Technology-1 to be assessed:</b> Sunflower with greengram (2:3), Sunflower (var. DRSH-1) at a spacing of 60 cm X 30cm & Greengram(Var.PDM-84-139) at a rows of 30 cm apart, N:P2O5:K2O @ 80:40:40 kg/ha along with 2 irrigation <b>Technology-2 to be assessed:</b> Sunflower with Blackgram (2:3), Sunflower (var. DRSH-1) at a spacing of 60 cm X 30cm & Blackgram(Var.B-76) at a rows of 30 cm apart, N:P2O5:K2O @ 80:40:40 kg/ha along with 2 irrigation
4.	Source of Technology	<b>Source of Technology:</b> Sarkar RK, Sanyal SR (2000).Production potential and economicfeasibility of sesame (Sesame indicum L.) based intercropping system with pulse and oilseed crops on rice-fallow land. Indian Journal of Agronomy, <b>45</b> (3): 545-550.
5.	Production system and thematic area	Production technology through inter cropping
6.	Performance of the Technology with performance indicators	Head diameter of Sunflower, No. of filled seeds/head/pod of sunflower, green gram and black gram, Grain yield of sole and inter crops, Land equivalent ratio (LER), economics & BCR, Soil Test report before and after.
7.	Final recommendation for micro level situation	After 3 years of observation it may be recommended that the sunflower-greengram (2:3) intercropping system is performed better in respect of total return per unit area instead of sunflower as sole crop.
8.	Constraints identified and feedback for research	NA
9.	Process of farmers participation and their reaction	The participants were identified through a group meeting followed by selection of land. The field visit with the farmers has been done regularly.

**Soil Testing Report:**

	Organic Carbon %	pH	EC(ds/m)	Available N (kg/ha)	Available P <sub>2</sub> O <sub>5</sub> (kg/ha)	Available K <sub>2</sub> O(kg/ha)
<b>Before</b>	0.42	6.33	0.54	228.5	29.2	418.1
<b>After</b>						
<b>Farmer's practice</b>	0.44	6.33	0.54	232.7	29.9	420.0
<b>Technology option-1</b>	0.47	6.33	0.54	238.1	34.4	421.3
<b>Technology option -2</b>	0.45	6.33	0.54	230.6	33.8	421.9



Farmers practice  
(Sole Sunflower)



Inter crop (Tech.option-1)



Inter crop (Tech.option-2)

*Thematic area:* Production technology through inter cropping

Problem definition: The productivity of kharif paddy is low due to its high nutrient uptake by sunflower for 2 to 3 consecutive years of cultivation.

Technology assessed:

Technology option	Crop	No. of trial	Yield component			Disease/insect incidence (%)	Yield (q/ha)	
			Head diameter of sunflower (cm)	No. of filled seed/head/pod	1000 seed weight (g)			
Farmers' practice	Sunflower	7	16.2	842.5	41.2	Disease and pest infestation is negligible	14.24	
Technology option-1	Sunflower		16.0	836.1	40.4	Disease and pest infestation is negligible	9.82	
	Greengram		-	9.7	27.6	Pod borer infestation at flowering stage	3.90	
Technology option -2	Sunflower		16.0	835.7	40.1	Disease and pest infestation is negligible	9.80	
	Blackgram		-	6.7	26.5	Disease and pest infestation is negligible	3.15	
SEm ±				0.03	0.308*	0.233*	-	1.07*
CD(0.05)				NS	NS	NS	-	2.18

\* Only for sunflower

Economics:

Treatment	Crop	Gross return (Rs./ha)	Net return (Rs./ha)	Land equivalent ratio of intercropping	BC ratio
<b>Farmer's practice</b>	Sunflower (sole crop)	42720	9725	-	1.29
<b>Technology option-1</b>	Sunflower	29460	6681	1127	1.32
	Greengram	21606	6178		
<b>Technology option -2</b>	Sunflower	29400	6663	1100	1.31
	Blackgram	15750	4117		

- Selling price of Sunflower, Greengram and Blackgram @ Rs.3000/q1, Rs.5540/q and Rs. 5000/q, respectively

$$\text{LER of inter cropping (Sunflower: Greengram)} = \frac{\text{Yield of intercrop sunflower}}{\text{Yield of sunflower as sole crop}} + \frac{\text{Yield of intercrop Greengram}}{\text{Yield of Greengram as sole crop}}$$

LER of sunflower and greengram intercropping system indicates that 15% yield advantage is obtained when grown as intercrop compared to growing as sole crop. Both the intercropping system is given higher LER than sole crop. However, sunflower with greengram is recorded better return as well as BC ratio.



## OFT-2 (2015-16):

1.	Title of On farm Trial	Assessment of profitability through cropping system in medium land under minimum irrigation facility during Rabi-Summer season
2.	Problem diagnose	Generally, after cultivation of sunflower the land remains fallow due to nonavailability of irrigation water. Thus the profitability from this cropping system is less. In this OFT, 3rd crop like green gram or til has been taken under rainfed situation to achieve maximum profit from a unit area.
3.	Details of technologies selected for assessment/refinement	<b>Farmers' practice:</b> Paddy (Var. IET-5656) followed by Sunflower(var. PAC-36) with 2 irrigation <b>Technology option -1 to be assessed:</b> Paddy (var.IET-5656) –Mustard(var.-Jumka)-Moong (PDM-84-139) with 2 irrigation <b>Technology option-2 to be assessed:</b> Paddy (var.IET-5656) –Mustard(var.-Jumka)-Til (Tiloktama) with 2 irrigation
4.	Source of Technology	A. H. Khan, H.Rashid, A. Khatun, M. A. Quddus and A. R. Gomosta, Rice Farming System: improved rice-based cropping systems for different ecosystems. Paper presented at the National Farming Systems Technology Inventory Workshop held at CERDI, Gazipur-1701, July 17-19, 2004.
5.	Production system and thematic area	Cropping System
6.	Performance of the Technology with performance indicators	Date of sowing/transplantingand harvesting of different crops,Test wt. (1000 seeds) of paddy/mustard/green gram/til/Sunflower,No. of filled seed/panicle/pod/head, yeld of different crops (q/ha), disease-pest incidence, economics & cost benefit ratio, Soil Test report before and after.
7.	Final recommendation for micro level situation	After three years of observation it is recommended that the Paddy- Mustard-Moong cropping system is profitable and sustainable instead of Paddy-Sunflower cropping system
8.	Constraints identified and feedback for research	NA
9.	Process of farmers participation and their reaction	The participants were identified through a group meeting followed by selection of land. The field visit with the farmers has been done regularly.

**Soil Testing Report:**

Before	Organic Carbon %	pH	EC(ds/m)	Available N (kg/ha)	Available P <sub>2</sub> O <sub>5</sub> (kg/ha)	Available K <sub>2</sub> O(kg/ha)
	0.42	6.45	0.66	228.4	29.5	379.4
After						
<b>Farmer's practice</b>	0.42	6.45	0.66	229.1	29.5	380.3
<b>Technology option-1</b>	0.46	6.45	0.66	238.7	31.2	397.2
<b>Technology option -2</b>	0.43	6.45	0.66	233.3	30.4	381.8

*Thematic area: Cropping system*

Problem definition: Generally, after cultivation of sunflower the land remains fallow due to non availability of irrigation water. Thus the profitability from this cropping system is less. In this OFT, 3rd crop like green gram or til has been taken under rainfed situation to achieve maximum profit from a unit area.

*Technology assessed:**Result:*

Treatment	No. of trials	Crop	Date of Sowing/Transplanting	Date of harvesting	Av. Diameter/length of pod/capsule/panicle(cm)	No. of filled seeds/panicle/pod/head	1000 seed weight.(g)	Grain yield(q/ha)
<b>Farmer's practice</b>	7	Paddy	25.07.15	22.11.15	21.5	138.2	22.9	38.42
		Sunflower	20.12.15	25.03.16	16.5	859.3	47.7	14.28
<b>Technology option-1</b>		Paddy	25.07.15	22.11.15	21.4	140.4	23.2	38.50
		Mustard	05.12.15	06.03.16	6.2	22.1	3.5	8.10
		Moong	09.03.16	16.05.16	6.9	10.3	32.2	6.85
<b>Technology option -2</b>		Paddy	25.07.15	22.11.15	21.6	139.7	22.8	38.37
		Mustard	05.12.15	06.03.16	6.0	21.6	3.3	7.95
	Sesame	09.03.16	20.05.16	3.5	59.7	4.0	7.26	
SEm ±			-	-	0.074*	1.544*	0.09*	0.013*
CD(0.05)			-	-	NS	3.89	NS	NS

\* only for paddy



Farmers practice (Paddy –Sunflower)



Tech.-Option -1(Paddy- Mustard-Greengram)



Tech.-Option -2(Paddy- Mustard-Sesame)

*Economics:*

Treatment	Crop	Disease & Pest incidence	Cost of Cultivation (Rs./ha)	Gross return (Rs./ha)	Net return (Rs./ha)	Total return in cropping system (Rs./ha)	BC ratio
Farmer's practice	Paddy	Sheath blight infestation at booting stage	35528	56630	21102	29928	1.43
	Sunflower	Disease and pest infestation is negligible	34014	42840	8826		
Technology option-1	Paddy	Sheath blight infestation at booting stage	35781	57750	21969	41360	1.46
	Mustard	Aphid infestation in flowering stage	29524	36352	6828		
	Moong	Pod borer infestation was less in flowering stage	25112	37675	12563		
Technology option -2	Paddy	Sheath blight at booting stage	35700	57555	21855	34375	1.39
	Mustard	Aphid infestation in flowering stage	29483	35679	6196		
	Sesame	Rot & stem rot infestation is very less	22716	29040	6324		

Selling price of Paddy, Sunflower, Mustard, Moong and Sesame @ Rs. 1500/q, Rs.3000/q, Rs.4488/q, Rs. 5500/q and Rs.4000/q, respectively

The result indicates that the higher net return in technology option -1 was recorded followed by technology option -2 and Farmer's practice. The BC ratio was also maximum in technology option -1 followed by Farmer's practice & technology option -2. After three years of observation it is recommended that the Paddy- Mustard-Moong cropping system is profitable and sustainable instead of Paddy-Sunflower cropping system.

## OFT - 3 (2016-17) – Continuing

.1	Title of On farm Trial	Assessment of chlormequat (Chlorocholine Chloride 50%) on Production potential and economic feasibility of cotton (var.Suravi) during rabi-summer season in South 24 Parganas
2.	Problem diagnose	In South 24 Parganas district, cotton is cultivated with var. Suravi during rabi-summer season with 1 to 2 irrigations. Before onset of monsoon, the whole boll is not harvested. In this situation, the application of chlormequat may get earliness in boll maturity.
3.	Details of technologies selected for assessment/refinement	<b>Farmers' practice:</b> Sowing of cotton by direct seeded method (var.Suravi) after soaking seeds with water for 8 hr, spacing of 60 cm X 45cm and N: P2O5: K2O @ 80:40:40 kg/ha along with 2 irrigation <b>Technology-1 to be assessed:</b> Sowing of cotton(var.Suravi) in direct seeded method after soaking seeds in 2ppm chlormequat for 8 hr, spacing of 60 cm X 45cm and N: P2O5: K2O @ 80:40:40 kg/ha along with 2 irrigation <b>Technology-2 to be assessed:</b> Sowing of cotton(var.Suravi) by direct seeded method (var.Suravi) after soaking seeds with water for 8 hr, spacing of 60 cm X 45cm, N: P2O5: K2O @ 80:40:40 kg/ha along with 2 irrigation and one time foliar spray of 6 ppm chlormequat at 80 days after sowing (pre flowering stage)
4.	Source of Technology	<b>Source:</b> i)Lone, N.A., Khan, N.A., Bhat, M.A., Mir, M.R., Razvi, S.M., Baht, K.A., Rather, G.H., Effect of Chlorocholine Chloride (CCC) on plant growth and development, <i>International Journal of Current Research</i> , Vol. 6, pp.001-007, July, 2010  ii)Singh, S.; Kairon, M.S.; Singh, K.; Tomar, O. S. Journal of Research- Punjab Agricultural University, vol. 7 No. 2PP. 158-162
5.	Production system and thematic area	Production technology
6.	Performance of the Technology with performance indicators	<b>Parameters:</b> Plant height, No. of branches, No. of harvested boll/plant, seed cotton wt. per boll, Seed –cotton yield, B:C ratio, disease-pest incidence, Soil Test report before and after.
7.	Final recommendation for micro level situation	OFT is in its 1 <sup>st</sup> year. The seed was soaked in 2ppm chlormequat for 8 hr in both Technology Option-1 & Technology Option-2 before sowing. The crop is in square formation stage, the second time spray will be given before flowering
8.	Constraints identified and feedback for research	NA
9.	Process of farmers participation and their reaction	The participants were identified through a group meeting followed by selection of land. The field visit with the farmers has been done regularly.

## OFT - 4 (2016-17) – Continuing

1.	Title of On farm Trial	Assessment of nutrient management on productivity and profitability of mustard during rabi season in South 24 Parganas district
2.	Problem diagnose	In South 24 Parganas district, mustard is sown in late i.e in the 1 <sup>st</sup> week of December. Generally, the crop is cultivated with complex chemical fertilizer. The farmers are not applied sulphur containing fertilizer. Thus the seed yield as well oil seed are low. To enhance the yield of crop sulphur containing fertilizer along with NPK containing fertilizers are used.
3.	Details of technologies selected for assessment/refinement	Farmers' practice: Sowing of Mustard (var. Pusa Mahak) through broadcasting method along with N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O @ 100:50:50 kg/ha through Urea, DAP and MOP and 2 irrigation  Technology-1 to be assessed: Sowing of Mustard (var. Pusa Mahak) through broadcasting method along with N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O @ 100:50:50 kg/ha through Urea, DAP, SSP (as a source of 15 kg S/ha and phosphorus) and MOP and 2 irrigation  Technology-2 to be assessed: Sowing of Mustard (var. Pusa Mahak) through broadcasting method along with N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O @ 100:50:50 kg/ha through Urea, DAP and MOP and S @15 kg/ha as a source of elemental sulphur) and 2 irrigation
4.	Source of Technology	Source: K. Ray, K. Sengupta, A.K. Pal, H. Banerjee, Effects of sulphur fertilization on yield, S uptake and quality of Indian mustard under varied irrigation regimes, <i>Plant Soil Environ</i> , Vol. 61, 2015, No. 1: 6–10
5.	Production system and thematic area	Nutrient management
6.	Performance of the Technology with performance indicators	Parameters: Plant height, No. of branches, No. of siliqua/plant, No. of seed/siliqua, 1000 seed wt., Yield, economics & B:C ratio, Soil Test report before and after.
7.	Final recommendation for micro level situation	OFT is in its 1 <sup>st</sup> year.
8.	Constraints identified and feedback for research	NA
9.	Process of farmers participation and their reaction	The participants were identified through a group meeting followed by selection of land. The field visit with the farmers has been done regularly.

**Soil Testing Report:**

Before	Organic Carbon %	pH	EC(ds/m)	Available N (kg/ha)	Available P <sub>2</sub> O <sub>5</sub> (kg/ha)	Available K <sub>2</sub> O(kg/ha)
	0.37	6.72	0.81	232.3	33.3	451.5
After						
Farmer's practice	0.39	6.72	0.83	235.5	36.2	455.4
Technology option-1	0.39	6.72	0.83	238.2	36.5	457.9
Technology option -2	0.39	6.72	0.83	238.2	36.7	457.9

**Thematic area:** Nutrient management

**Problem definition:** In South 24 Parganas district, mustard is sown in late i.e in the 1st week of December. Generally, the crop is cultivated with complex chemical fertilizer. The farmers are not applied sulphur containing fertilizer. Thus the seed yield as well oil seed are low. To enhance the yield of crop sulphur containing fertilizer along with NPK containing fertilizers are used.

*Technology assessed:*

*Result:*

Treatment	No. of trials	Date of Sowing	Date of harvesting	Plant height (ft)	No. of branch/plant	No. of siliqua/plant	No. of seed/siliqua	1000 seed wt.(g)	Seed yield (q/ha)	Cost of cultivation (Rs./ha)	Gross return (Rs/ha)	Net return (Rs./ha)	BC ratio
Farmer's practice	7	18.12.2016	20.03.2017	3.9	9	212.5	14	6.2	10.58	35,750.00	47,610.00	11,860.00	1.33
Technology option-1				4.1	10	217.3	16	6.4	11.23	35,890.00	50,535.00	14,645.00	1.40
Technology option -2				4.2	10	230.8	16	6.4	12.30	36,500.00	55,350.00	18,850.00	1.51
SEm ±	-	-	-	0.11	0.38	1.29	0.42	0.05	0.27	-	-	-	-
CD(0.05)	-	-	-	NS	NS	2.64	NS	NS	0.96	-	-	-	-

Results: Result reveals that Technology Option -1 (i.e. 100:50:50 kg/ha through Urea, DAP , SSP (as a source of 15 kg S/ha and phosphorus) and MOP) and Technology Option -2( 100:50:50 kg/ha through Urea, DAP and MOP and S @15 kg/has a source of elemental sulphur) showed better performance than Farmers practice (100:50:50 kg/ha through Urea, DAP and MOP) in respect of B:C ratio and net return. The application of sulphur through SSP and elemental sulphur in technology option -1 and in technology option-2 was recorded higher no. of yield attributing characters over Farmers practice.



## OFT - 5 (2016-17)

1.	Title of On farm Trial	Assessment of different intercropping models in brinjal plot for better profitability during winter season in South 24 Parganas district
2.	Problem diagnose	Brinjal is usually cultivated as sole crop. It takes a long time (usually 80-90 days) to come in production. Also, this crop requires wide spacing, which remains fallow in the early stage of crop growth (usually upto 55 to 60 days). For optimum utilization of this land, as well as to get more return from an unit area, intercropping may be practiced.
3.	Details of technologies selected for assessment/refinement	<ul style="list-style-type: none"> <li>• <b>Farmers' Practice:</b> Cultivation of sole brinjal at a spacing 90 cm x 90 cm (var. Muktakeshi, NPK @ 180: 90:90, Compost @ 20t/ha, Irrigation at 6-8 days interval, Hand weeding at 25-30 days interval, Spraying of Insecticide Flubendiamide and Spinosad alternatively at 15 days interval @ 3ml/10 lt).</li> <li>• <b>Technology Option -1:</b> Farmers' Practice + transplanting of one chilli (var: Tejaswini) seedlings in between two brinjal plants in a row at 30 cm away from brinjal seedling.</li> <li>• <b>Technology Option -2:</b> Farmers' Practice + transplanting of one cabbage (var. Rareball) seedling in between two brinjal plants in a row at 45 cm away from brinjal seedling.</li> </ul>
4.	Source of Technology	<b>Source of Technology:</b> AICRP on Vegetable Crops, BCKV
5.	Production system and thematic area	Production technology through inter cropping

## OFT - 5 (2016-17) Contd....

6.	Performance of the Technology with performance indicators		Plant height of brinjal at 60 DAP (cm)	No. of primary branches of brinjal	Days to 50% flowering in brinjal	No. of fruits in brinjal	Individual Fruit weight (g)	Brinjal yield (Q/ha)	Chilli yield (Q/ha)	Cabbage yield (Q/ha)	BC ratio
		FP	83.4	11.2	54.7	23.7	217.68	634.56	-	-	2.67
		T.O. 1	80.8	10.7	56.4	21.8	216.39	596.87	31.74	-	3.18
		T.O. 2	72.6	6.8	64.5	19.6	220.12	543.59	-	169.34	2.71
		CD (0.05)	2.8	0.9	2.4	2.1	7.38	26.34	-	-	-
7.	Final recommendation for micro level situation	After completion of one years study it has been concluded by the farmers that both Technology Option 1 & 2 are better than sole brinjal crop. Though, final recommendation will be given only after 2 <sup>nd</sup> year of testing.									
8.	Constraints identified and feedback for research	NA									
9.	Process of farmers participation and their reaction	The participants were identified through a group meeting followed by selection of land. The field visit with the farmers has been done regularly.									

*Thematic area: OFT on* Production technology through inter cropping

Problem definition: Brinjal is usually cultivated as sole crop. It takes a long time (usually 80-90 days) to come in production. Also, this crop requires wide spacing, which remains fallow in the early stage of crop growth (usually upto 55 to 60 days). For optimum utilization of this land, as well as to get more return from an unit area, intercropping may be practiced.

## Technology assessed:

- **Farmers' Practice:** Cultivation of sole brinjal at a spacing 90 cm x 90 cm (var. Muktakeshi, NPK @ 180: 90:90, Compost @ 20t/ha, Irrigation at 6-8 days interval, Hand weeding at 25-30 days interval, Spraying of Insecticide Flubendiamide and Spinosad alternatively at 15 days interval @ 3ml/10 lt).
- **Technology Option -1:** Farmers' Practice + transplanting of one chilli (var: Tejaswini) seedlings in between two brinjal plants in a row at 30 cm away from brinjal seedling.



- **Technology Option -2:** Farmers' Practice + transplanting of one cabbage (var. Rareball) seedling in between two brinjal plants in a row at 45 cm away from brinjal seedling.

Technology option	No. of trials	Yield components					Gross plot yield (Q/ha)	Cost of cultivation (Rs./ha)	Gross return (Rs/ha)	Net return (Rs./ha)	BC ratio
		No. of fruit in brinjal	Individual Fruit weight (g)	Brinjal yield (Q/ha)	Chilli yield (Q/ha)	Cabbage yield (Q/ha)					
<b>Farmers' Practice:</b>	10	23.7	217.68	634.56	-	-	634.56	118610.00	317280.00	198670.00	2.67
<b>Technology Option 1</b>		21.8	216.39	596.87	31.74	-	628.61	125480.00	398730.00	273250.00	3.18
<b>Technology Option 2</b>		18.6	220.12	543.59	-	169.34	712.93	131390.00	355460.00	224070.00	2.71
<b>CD (0.05)</b>	-	2.1	7.38	26.34	-	-	31.54	-	-	-	-

Soil Report:

Technology option	Soil Report					
	pH	EC (dS/m)	OC (%)	N (Kg/ha)	P (Kg/ha)	K (Kg/ha)
<b>Farmers' Practice:</b>	7.02	1.23	0.33	342.47	35.71	752.32
<b>Technology Option 1</b>	7.06	1.16	0.36	303.18	33.64	746.88
<b>Technology Option 2</b>	6.95	1.28	0.34	278.69	29.52	712.23

Result: After completion of one years study it has been concluded by the farmers that both Technology Option 1 & 2 are better than sole brinjal crop. Though, final recommendation will be given only after 2<sup>nd</sup> year of testing. Technology Option 1 resulted in highest net return and highest BC ratio. Technology Option 2 also resulted in considerably better performance than farmers practice, which resulted in to better profit and BC ratio for this technology.

## OFT - 6 (2016-17)

1.	Title of On farm Trial	Assessment of application of non-traditional plant growth promoters on plant growth, disease resistance and yield of early Okra in the South 24 Parganas district					
2.	Problem diagnose	Early Okra is sown in the month of January, which faces several biotic and abiotic stresses. A good harvest can be achieved by increasing self defense of the plant. Plant Growth Promoters can be used for this purpose.					
3.	Details of technologies selected for assessment/refinement	<ul style="list-style-type: none"> <li>• <b>Farmers' Practice:</b> Okra cultivation in conventional method (Var. JK-7315, sowing by middle of January-2017, NPK @ 100:50:50 kg/ha, Compost @ 10 t/ha, irrigation at 8-10 days interval) with use of traditional plant growth promoters like amino acid, humic acid, micro nutrients at fortnightly interval @ 1ml/lit .</li> <li>• <b>Technology Option -1:</b> Farmers' Practice + spraying paclobutrazol @ 90 ppm at 7 DAS &amp; 14 DAS.</li> <li>• <b>Technology Option -2:</b> Farmers' Practice + spraying Cycocel 500 ppm @ at 20 DAS &amp; 40 DAS.</li> </ul>					
4.	Source of Technology	Source: Arora, S. K.; Dhankar, B. S.; Sharma, N. K. 1990. Effect of Cycocel and NAA on vegetative growth, flowering, fruit-set and incidence of YVM of okra. <i>Research and Development Reporter</i> . 7 (1-2): 123-129 Benjawan C <sup>1</sup> , Chutichudet P, Chanaboon T. 2007. Effect of chemical paclobutrazol on growth, yield and quality of okra ( <i>Abelmoschus esculentus</i> L.) Har lium cultivar in northeast Thailand. <i>Pak J Biol Sci</i> . 10(3):433-438.					
5.	Production system and thematic area	Use of Plant Growth Regulators in Plant Health Management					
6.	Performance of the Technology with performance indicators		Plant height at 60 DAS (cm)	Days to 50% flowering	PDI*	Yield (Q/ha)	B:C ratio
		FP	68.8	43.1	34.2	111.36	1.97
		T.O. 1	59.7	40.8	26.3	116.41	2.04
		T.O. 2	56.3	37.3	12.4	125.37	2.22
		CD (0.05)	3.62	1.41	2.64	12.96	-
7.	Final recommendation for micro level situation	OFT is in its 1 <sup>st</sup> year. Farmers' response is towards T.O. 2. But, final recommendation will be given only after 2 <sup>nd</sup> year of testing.					
8.	Constraints identified and feedback for research	NA					
9.	Process of farmers participation and their reaction	The participants were identified through a group meeting followed by selection of land. The field visit with the farmers has been done regularly.					

\*PDI denotes Percent Disease Index (for the disease YVMV)

**Thematic area: OFT on Use of Plant Growth Regulators in Plant Health Management**

**Problem definition:** Early Okra is sown in the month of January, which faces several biotic and abiotic stresses. A good harvest can be achieved by increasing self defense of the plant. Plant Growth Promoters can be used for this purpose.

**Technology assessed:**

- **Farmers' Practice:** Okra cultivation in conventional method (Var. JK-7315, sowing by middle of January-2017, NPK @ 100:50:50 kg/ha, Compost @ 10 t/ha, irrigation at 8-10 days interval) with use of traditional plant growth promoters like amino acid, humic acid, micro nutrients at fortnightly interval @ 1ml/lt .
- **Technology Option -1:** Farmers' Practice + spraying paclobutrazol @ 90 ppm at 7 DAS & 14 DAS.
- **Technology Option -2:** Farmers' Practice + spraying Cycocel 500 ppm @ at 20 DAS & 40 DAS.

Technology option	No. of trials	Yield components			Yield (Q/ha)	Cost of cultivation (Rs./ha)	Gross return (Rs/ha)	Net return (Rs./ha)	BC ratio
		Plant height at 60 DAS (cm)	Days to 50% flowering	PDI*					
<b>Farmers' Practice:</b>	10	68.8	43.1	34.2	111.36	39480.00	77950.00	38470.00	1.97
<b>Technology Option 1</b>		59.7	40.8	26.3	116.41	39940.00	81480.00	41540.00	2.04
<b>Technology Option 2</b>		56.3	37.3	12.4	125.37	39530.00	87740.00	48210.00	2.22
<b>CD (0.05)</b>	-	3.62	1.41	2.64	12.96	-	-	-	-

\*PDI denotes Percent Disease Index (for the disease YVMV)

**Results:** After completion of one year of study it has been concluded by the farmers that the T.O. 2 is giving better harvest than traditional method of Okra cultivation. T.O. 1 also resulted in to better profit and BC ratio than farmers practice. The OFT is in its 1<sup>st</sup> year., final recommendation will be given only after 2<sup>nd</sup> year of testing.

## OFT-7 (2016-17)

1.	Title of On farm Trial	Assessment of the effect of soft music on milk production in dairy cows
2.	Problem diagnose	Milk production in the organized dairy as well as small dairy unit is not upto the mark and still there was no such NO COST technology for augmenting better milk production.
3.	Details of technologies selected for assessment/refinement	Farmers' practice: Cross breed cattle (maintained with scheduled deworming and supplementation of oral calcium and other mineral mixture @ 60 ml daily and 60 gms daily respectively every month interval during entire lactation period) milched twice daily with some noise created due to overcrowding/ sound of utensils or sound of milking machine. Technology option-1: Cross breed cattle (maintained with scheduled deworming and supplementation of oral calcium and other mineral mixture @ 60 ml daily and 60 gms daily respectively every month interval during entire lactation period) milched twice daily with soft music playing during the milking time only. Technology option-2: Cross breed cattle (maintained with scheduled deworming and supplementation of oral calcium and other mineral mixture @ 60 ml daily and 60 gms daily respectively every month interval during entire lactation period) milched twice daily with soft music playing from 15 minutes before milking upto complete milking.
4.	Source of Technology	KIYICI, J. M., Kocyigit, R. and Tuzemen, N. (2013). The effect of classical music on milk production, milk components and milking characteristics of Holstein Friesian. Journal of Tekirdag Agricultural Faculty 2013 Vol. 10 No. 3 pp. 74-81.
5.	Production system and thematic area	Livestock based production system, dairy farming
6.	Performance of the Technology with performance indicators	Quantity of milk produced, fat percentage of milk, time to complete milking, milking behavior of the animals and udder health.
7.	Final recommendation for micro level situation	Soft music playing from 15 minutes before milking upto complete milking will enhance the milk production.
8.	Constraints identified and feedback for research	Soft music may be defined in scientific term
9.	Process of farmers participation and their reaction	The trial has been set following problem identification by the farmers. From the exercise it is revealed that instrumental songs may be ear soothing and accordingly it was practiced.

*Thematic area:* Production management

Problem definition: Milk production in the organized dairy as well as small dairy unit is not upto the mark and still there was no such NO COST technology for augmenting better milk production.

Technology assessed:

**Farmers' practice:** Cross breed cattle (maintained with scheduled deworming and supplementation of oral calcium and other mineral mixture @ 60 ml daily and 60 gms daily respectively every month interval during entire lactation period) milched twice daily with some noise created due to overcrowding/ sound of utensils or sound of milking machine.

**Technology option-1:** Cross breed cattle (maintained with scheduled deworming and supplementation of oral calcium and other mineral mixture @ 60 ml daily and 60 gms daily respectively every month interval during entire lactation period) milched twice daily with soft music playing during the milking time only.

**Technology option-2:** Cross breed cattle (maintained with scheduled deworming and supplementation of oral calcium and other mineral mixture @ 60 ml daily and 60 gms daily respectively every month interval during entire lactation period) milched twice daily with soft music playing from 15 minutes before milking upto complete milking.

Treatments	No. of trials	Quantity of milk produced/lactation (lit)	fat percentage of milk	time to complete milking (minutes)	milking behavior of the animals	Udder health against disease reduction (10 point scale)	BC ratio
Farmers' practice	*10	1002.7	3.2	11	Usual with intermittent excitability	4.5	1.39
Technology option -1		1215.2	4.2	9	Calm and quite	7.5	1.94
Technology option -2		1296.4	4.7	6	Calm and quite	9.0	2.01
CD (0.05)		38.44.	0.82	1.36		-	-

\*5 animals / treatment

**Results:** soft music playing from 15 minutes before milking upto complete milkin may increase the production up to 3.5% level with reduced udder disease.

## OFT-8 (2016-17)

1.	Title of On farm Trial	Assessment of benefits of Heat Synchronization in organized dairy farm under intensive farming situation in South 24 parganas district of West Bengal.
2.	Problem diagnose	Cattle management in intensive farming situation is really an important and difficult task especially when the animals are in different productive/reproductive stages. If these animals made into same condition then management would be very easy.
3.	Details of technologies selected for assessment/refinement	<p><b>Farmers' practice:</b> Dairy animals maintained (with scheduled deworming and supplementation of mineral mixture @ 60 gms daily at every month interval) and inseminated as per norms when the animals are coming to heat.</p> <p><b>Technology Option 1:</b> Dairy animals maintained (with scheduled deworming and supplementation of mineral mixture @ 60 gms daily at every month interval) and heat synchronization is done by intravaginal devices and inseminated as per norms when the animals are coming to heat.</p> <p><b>Technology option 2:</b> Dairy animals maintained (with scheduled deworming and supplementation of mineral mixture @ 60 gms daily at every month interval) and heat synchronization is done by oral medication and inseminated as per norms when the animals are coming to heat.</p>
4.	Source of Technology	Mary Vickers. Artificial Insemination (AI) and Oestrus Synchronization of Beef Cattle. <a href="http://beefandlamb.ahdb.org.uk/wp/wp-content/uploads/2014/07/BRP-plus-artificial-insemination090714.pdf">http://beefandlamb.ahdb.org.uk/wp/wp-content/uploads/2014/07/BRP-plus-artificial-insemination090714.pdf</a>
5.	Production system and thematic area	Livestock based production system, dairy farming
6.	Performance of the Technology with performance indicators	AI success rate, time spent in farming, Market opportunities, cost involvement and BC ratio.
7.	Final recommendation for micro level situation	Intravaginal devices are more reliable for heat synchronization programme.
8.	Constraints identified and feedback for research	Expertisation in using intravaginal dervice
9.	Process of farmers participation and their reaction	The trial has been set following problem identification by the farmers running organized dairy farms

*Thematic area:* Production management

**Problem definition:** Cattle management in intensive farming situation is really an important and difficult task especially when the animals are in different productive/reproductive stages. If these animals made into same condition then management would be very easy.

**Farmers' practice:** Dairy animals maintained (with scheduled deworming and supplementation of mineral mixture @ 60 gms daily at every month interval) and inseminated as per norms when the animals are coming to heat.

**Technology Option 1:** Dairy animals maintained (with scheduled deworming and supplementation of mineral mixture @ 60 gms daily at every month interval) and heat synchronization is done by intravaginal devices and inseminated as per norms when the animals are coming to heat.

**Technology option 2:** Dairy animals maintained (with scheduled deworming and supplementation of mineral mixture @ 60 gms daily at every month interval) and heat synchronization is done by oral medication and inseminated as per norms when the animals are coming to heat.

	<b>AI success rate</b>	Time involvement of farmer (hrs/animal)	Market opportunities (10 point scale)	Gross cost (Rs./yr.)	Gross return (Rs./yr.)	<b>BC ratio</b>
FP	34.8	1.4	3.5	6000	8340	1.39
TO-1	41.3	0.5	7.0	7300	15549	2.13
TO-2	37.9	1.0	5.5	6450	12513	1.94
CD (0.05)	2.11	0.47	-		-	-

**Results:** Heat synchronization by intravaginal devices and inseminated as per norms yields maximum benefit to the organized dairy farmers.

## OFT - 9 (2016-17)

1.	Title of On farm Trial	Assessment of the profitability from monosex tilapia farming in South 24 Parganas district through supplementation with periphyton as natural feed
2.	Problem diagnose	Low profitability from monosex tilapia farming due to high feed cost
3.	Details of technologies selected for assessment/refinement	<p><b>Farmers practice :</b> Culture of monosex male tilapia in freshwater ponds (Unit area: 0.065 ha) with usual package of practice including pelleted feed</p> <ol style="list-style-type: none"> <li>i. Pond preparation: Organic manure @ 10,000kg/ha, lime@ 400kg/ha, mahua oil cake@250ppm</li> <li>ii. Stocking of monosex male tilapia @ 60,000/ha</li> <li>iii. Post stocking management: Monthly organic manuring with cow dung @ 1000kg/ha, lime@30kg/ha, daily application of pelleted feed thrice daily as per demand, monthly netting</li> </ol> <p><b>Technology option 1:</b> F.P.+ 40% coverage of the water area with nylon net for periphyton growth</p> <p><b>Technology option 2:</b> F.P.+ 50% coverage of the water area with nylon net for periphyton growth</p>
4.	Source of Technology	<ol style="list-style-type: none"> <li>i) Comparison of periphyton grown on different substrates as food for organic tilapia culture, Ana Milstein, Yakov Peretz and Sheenan Harpaz, <i>The Israeli Journal of Aquaculture – Bamidgeh</i>, 60(4),2008, 243-252.</li> <li>ii) Culture of organic tilapia to market size in periphyton based ponds with reduced feed inputs, Ana Milstein, Yaacov Peretz and Sheenan Harpaz, <i>Aquaculture Research</i>, 2009, 40, 55-59.</li> </ol>
5.	Production system and thematic area	<b>Fish based small production system / Diversified fish farming</b>
6.	Performance of the Technology with performance indicators	<b>Parameters:</b> pH, weight of fish, yield, survivality, saving from feed cost, BC ratio
7.	Final recommendation for micro level situation	-
8.	Constraints identified and feedback for research	-
9.	Process of farmers participation and their reaction	Identification of the problem by farmers followed by designing of the trial jointly by researcher and farmer and managed by farmer

Thematic area: **Diversified fish farming**

Problem definition: Low profitability from monosex tilapia farming due to high feed cost

Technology assessed: Assessment of the profitability from monosex tilapia farming in South 24 Parganas district through supplementation with periphyton as natural feed and reduced feed input



**Farmers practice :** Culture of monosex male tilapia in freshwater ponds (Unit area: 0.065 ha) with usual package of practice including pelleted feed

- i. Pond preparation: Organic manure @ 10,000kg/ha, lime@ 400kg/ha, mahua oil cake@250ppm
- ii. Stocking of monosex male tilapia @ 60,000/ha
- iii. Post stocking management: Monthly organic manuring with cow dung @ 1000kg/ha, lime@30kg/ha, daily application of pelleted feed thrice daily as per demand, monthly netting

**Technology option 1:** F.P. with 60% feed + 40% coverage of the water area with nylon net for periphyton growth

**Technology option 2:** F.P. with 60% feed + 50% coverage of the water area with nylon net for periphyton growth

**Table:**

Technology option	No. of trials	Unit area (ha)	Length – weight relationship				Survivality (%)	Yield (q/ha)	Cost of cultivation (Rs./ha)	Gross return (Rs/ha)	Net return (Rs./ha)	BC ratio
			Initial length of fish (mm)	Final length of fish (mm)	Initial weight of fish (gm)	Final weight of fish (gm)						
Farmers practice	7	0.065	24	215	0.5	150	65	58.50	439200.00	643500.00	204300.00	1.46
Technology option 1		0.065	24	200	0.5	130	64	49.92	290750.00	549120.00	258370.00	1.88
Technology option 2		0.065	24	210	0.5	135	65	52.65	299268.00	579150.00	279882.00	1.93
SEm±			-	1.02	-	1.54	-	0.69	-	-	-	-
CD (p=0.05)				2.09	-	3.15	-	1.41	-	-	-	-

- N.B.
1. Cost of cultivation in **Farmers practice** involves the cost of pelleted feed (Rs.304200/-), monosex tilapia seed (Rs.60000/-) and pond preparation, post stocking management, etc.(75000/-)
  2. Cost cultivation in **Technology option 1** involves cost of pelleted feed (Rs.155750/-), monosex tilapia seed (Rs.60000/-) and pond preparation, post stocking management, etc.(75000/-)
  3. Cost cultivation in **Technology option 2** involves cost of pelleted feed (Rs.164268/-), monosex tilapia seed (Rs.60000/-) and pond preparation, post stocking management, etc.(75000/-)
  4. Gross return is calculated considering the sale price as Rs.110/- per kilogram of fish

**Results:** The main aim of this OFT was to find out the possibility of increasing profit in monosex tilapia farming because it involves huge investment towards the cost of pelleted feed available in the market. It is well established that tilapia being an omnivorous fish, was found to substantially feed on natural feed particularly periphyton. As such, in the two technology options, the quantity of feed is reduced by 40% over that applied in the farmers practice. To compensate the reduced feed ration, substratum for the growth of periphyton was provided in the two options. In technology option 1, the coverage provided for periphyton growth was equivalent to 40% of the surface area while in technology option 2 it was 50%. This was done to find out the most suitable periphyton coverage for the fish.

It was observed that with full allowance of feed, the production was highest in the farmers practice but at the same time net return was lowest due to exceptionally high investment towards feed cost. On the other hand with a reduced feed input in the two technology options, though the production was only about 10%-13% lower than the farmers practice, the net return and the BC ratio was much higher.

Of the two technology options, option 2 gave better result because it seems that the increased coverage for periphyton growth might have a positive bearing towards the growth of fish. This fact alongwith a better survivality rate indicates that technology option 2 may be recommended after conducting the trial for at least two more cycles.

**N.B.** Studies revealed that periphyton cover of less than 40% results in insignificant periphyton growth not sufficient to compliment feeding of the fish while a coverage of over 50% will result in reduced space for fish movement & hence reduced growth and may also contribute to eutrophication of the pond.

## OFT-10 (2016-17)

1.	Title of On farm Trial	Assessment of the growth performance of climbing perch, <i>Anabas testudineus</i> (koi) in ponds of South 24 Parganas district by feeding with formulated homemade feed
2.	Problem diagnose	Low profitability from koi culture due to high feed cost
3.	Details of technologies selected for assessment/refinement	<p><b>Farmers practice</b> : Culture of climbing perch, <i>Anabas testudineus</i> (koi) in domestic ponds (Unit area: 0.065 ha) with commercial pellet feed and usual package of practice like : i) Pond preparation: Organic manure @10,000kg/ha, lime@ 400kg/ha, mahua oil cake@250ppm, ii) Stocking of koi @ 60,000/ha, iii) Post stocking management : Monthly organic manuring with cow dung@1000kg/ha, lime@30kg/ha, feeding with commercial feed @3% body weight, monthly netting</p> <p><b>Technology option 1</b>: F.P.+ replacement of feed with HF 1</p> <p><b>Technology option 2</b>: F.P.+ replacement of feed with HF 2</p> <p>(N.B. <b>HF1</b> =Groundnut oil cake – 20%,Soyabean oil cake – 25%, Rice bran – 40%, Fish meal – 10%, Vegetable oil – 3%, Vitamin &amp; mineral – 2%</p> <p><b>HF2</b> =Groundnut oil cake – 30%,Soyabean oil cake – 20%,Rice bran – 35%, Fish meal – 10%,Vegetable oil – 3%,Vitamin &amp; mineral – 2%)</p>
4.	Source of Technology	Carp feed at farm site, S.C.Rath, Training manual on <i>Summer school on “Aquaculture diversification towards boosting pond productivity and farm income”</i> , 8-28 July, 2015, 137-145
5.	Production system and thematic area	<b>Fish based small production system / Diversified fish farming</b>
6.	Performance of the Technology with performance indicators	<b>Parameters:</b> Yield, length of fish, weight of fish, survivality, BC ratio
7.	Final recommendation for micro level situation	-
8.	Constraints identified and feedback for research	-
9.	Process of farmers participation and their reaction	Identification of the problem by farmers followed by designing of the trial jointly by researcher and farmer and managed by farmer

Thematic area: **Diversified fish farming**

Problem definition: Low profitability from koi culture due to high feed cost

Technology assessed: Assessment of the growth performance of climbing perch, *Anabas testudineus* (koi) in ponds of South 24 Parganas district by feeding with formulated homemade feed

**Farmers practice** : Culture of climbing perch, *Anabas testudineus* (koi) in domestic ponds (Unit area: 0.065 ha) with commercial pellet feed and usual package of practice like : i) Pond preparation: Organic manure @10,000kg/ha, lime@ 400kg/ha, mahua oil cake@250ppm, ii) Stocking of koi @ 75,0000/ha, iii) Post stocking management :Monthly organic manuring with cow dung@1000kg/ha, lime@30kg/ha, feeding with commercial feed @3% body weight, monthly netting

**Technology option 1**: F.P.+ replacement of feed with HF 1

**Technology option 2**: F.P.+ replacement of feed with HF 2

(N.B. **HF1** =Groundnut oil cake – 15%,Soyabean oil cake – 15%, Rice bran – 50%, Fish meal – 15%, Vegetable oil – 3%, Vitamin & mineral – 2%

**HF2** =Groundnut oil cake – 10%,Soyabean oil cake – 20%, Rice bran – 40%, Fish meal – 25%,Vegetable oil – 3%,Vitamin & mineral – 2%)

Table:

Technology option	No. of trials	Unit area (ha)	Length – weight relationship				Survivality (%)	Yield (q/ha)	Cost of cultivation (Rs./ha)	Gross return (Rs/ha)	Net return (Rs./ha)	BC ratio
			Initial length of fish (mm)	Final length of fish (mm)	Initial weight of fish (gm)	Final weight of fish (gm)						
Farmers practice	7	0.065	30	137	0.85	115	65	56.06	604095.00	1121200.00	517105.00	1.85
Technology option 1		0.065	30	128	0.85	92	66	45.54	513341.00	910800.00	397459.00	1.77
Technology option 2		0.065	30	135	0.85	120	68	61.20	598351.2	1224000.00	625648.8	2.04
SEm±		-	-	1.30	-	5.66	0.38	3.73	-	-	-	-
CD (p=0.05)		-	-	2.66	-	11.54	NS	7.61	-	-	-	-

- N.B.
1. Cost of cultivation in **Farmers practice** involves the cost of pelleted feed (Rs.454095/-), climbing perch seed (Rs.75000/-) and pond preparation, post stocking management, etc.(75000/-)
  2. Cost cultivation in **Technology option 1** involves cost of homemade feed 1 (Rs.363341/-), climbing perch seed (Rs.75000/-) and pond preparation, post stocking management, etc.(75000/-)
  3. Cost cultivation in **Technology option 2** involves cost of homemade feed 2 (Rs. 448351.20/-), climbing perch seed (Rs.75000/-) and pond preparation, post stocking management, etc.(75000/-)
  4. Gross return is calculated considering the sale price as Rs.200/- per kilogram of fish

**Results:** The main objective of this OFT was to increase profitability in farming of climbing perch, by reducing feed cost, as it involves huge investment towards the cost of commercially available pelleted feed. In this direction, two homemade feed (HF1 and HF2), with the same ingredients but with different percentage compositions, were prepared for application in the two technology options. The cost analysis of the two feed revealed that HF1 with 28% protein costs Rs.29.55/kg while HF2 with 33% protein costs Rs.33.30/kg. In comparison, the average cost of a commercial pelleted feed (28-30% protein) for climbing perch costs Rs.45.00/kg. It is well established that the protein requirement of this fish varies from 28-45%.

It was observed that with the commercial feed usually applied by the farmers, the production was modest in the farmers practice but the cost of cultivation was also very high mainly due to the high cost of commercial feed. On the other hand in Technology option 2, where the feed contained 33% protein, the yield was higher than the farmers practice and the net return was much more due to less cost of the homemade feed 2 in comparison to the commercial feed. The feed cost was lowest in technology option 1, but the growth and hence the yield was found to be the lowest which may be due to low protein content in homemade feed 2.

Hence, of the two technology options, option 2 gave better result and therefore may be recommended after conducting the trial for at least two more cycles.

## OFT- 11

1.	Title of On farm Trial	Assessment of profitability of bottle gourd ( <i>Lagenaria siceraria</i> ) cultivation by managing of <i>Fusarium</i> Wilt through biofumigation approach in coastal South 24 Parganas						
2.	Problem diagnosed	Low productivity of bottle gourd due to fungal wilt						
3.	Details of technologies selected for assessment/refinement	<p><b>Farmer practice:</b> No soil treatment + No seed treatment + Need based foliar spray of Carbendazim 50WP @ 1g/L</p> <p><b>Technology Option 1:</b> Soil treatment with <i>Trichoderma viride</i> (@ 2.5 kg/ha) + Seed treatment with <i>T. viride</i> + soil drench with <i>T. viride</i> @ 5g/L at 30 days interval</p> <p><b>Technology Option 2:</b> <i>Brassica juncea</i> green manuring + Seed treatment with Carbendazim 50WP@ 2g/kg of seeds + Soil drench with Carbendazim 50WP@ 1g/L at 15 days interval</p> <p><b>Technology Option 3:</b> <i>Brassica juncea</i> green manuring + Soil treatment with <i>Trichoderma viride</i> @ 2.5 kg/ha + Seed treatment with <i>T. viride</i> + soil drench with <i>T. viride</i> @ 5g/L at 30 days interval</p> <p>(Fertilizer: 100:50:50 Kg NPK/ha, Spacing: 2m x 2m, Variety: Jora Bota, same for all treatments)</p>						
4.	Source of Technology	Relevante, C.A. and Cumagun, C.J.R. 2013. Control of Fusarium wilt in bittergourd and bottlegourd by biofumigation using mustard var. Monteverde. Archives of Phytopathology and Plant Protection, Volume 46, Issue 6, pages 747-753						
5.	Production system and thematic area	Horticulture based production system Integrated Disease Management						
6.	Performance of the Technology with performance indicators	<b>Technology option</b>	<b>Disease incidence (% of wilted plants)</b>	<b>Yield (q/ha)</b>	<b>Cost of cultivation (Rs./ha)</b>	<b>Gross return (Rs./ha)</b>	<b>Net return (Rs./ha)</b>	<b>BC ratio</b>
		FP	24.5	239.2	78600	155480	76880	1.98
		TO-1	9.2	265.2	80100	172380	92280	2.15
		TO-2	5.5	297.8	84300	193570	109270	2.30
		TO-3	3.4	314.3	85500	204295	118795	2.39
7.	Final recommendation for micro level situation	The trial needs to be conducted for one more years for final recommendation						
8.	Constraints identified and feedback for research	Late release of land after harvesting of <i>Kharif</i> Paddy						
9.	Process of farmers participation and their reaction	The participants for this trial were identified through a group meeting followed by training on the particular technology. This was followed by regular field visit and monitoring. Considering the past history of the disease incidence and severity in the village, both the beneficiaries as well as the non-beneficiaries took interest in the trial. The OFT was well managed by the beneficiaries themselves.						

### *Thematic area:*

**Problem definition:** Low productivity of bottle gourd due to *Fusarium* Wilt

**Technology assessed:** Assessment of biological and chemical approach of *Fusarium* Wilt management in bottle gourd (*Lagenaria siceraria*) in coastal South 24 Parganas.

*Fusarium oxysporum* f. sp. *lagenariae*, a soil borne fungi is found to be responsible for Wilt in Bottle gourd in South 24 Parganas. The symptoms start as drooping of the green leaves and wilting of the respective vines. Often, one or two vines start wilting though the others are still live. Gradually the entire plant withers. Wilting symptom is also conjugated with golden yellow coloured gum exudation on the stem. Later, the site of gum exudation turns brownish to black and eventually dry up. Pale white mycelia growth with pinkish sporulation is observed over the dried stem. The cross section of the wilted stem show brownish discolouration of vascular bundle. *Fusarium*, being a soil borne, opportunistic fungi, is very difficult to remove from soil. The fungi infect the vascular bundle of the plant through injured root. The injury may be mechanical (during uprooting of seedlings from seedbed or during intercultural operations) or biological (due to nematode attack). There are reports of the pathogen being seed borne also. Mere chemical control neither can keep the pathogen away from the roots in soil for long term, nor can eliminate it from the soil in a cost effective manner. At the same, it is impossible to cure a plant showing wilting symptom since the damage to the vascular bundle is irreparable. So, foliar spray with chemical fungicides does not give a full proof protection against or control over the pathogen. Once the disease is established in a field, the farmer has to drop the crop for next two to three years or more. Bottle gourd is an important vegetable of the district grown during rabi-summer season. Due to inadequate knowledge about the disease, farmers spend lots of money behind indiscriminate fungicidal spray.



To address this problem, KVK, South 24 Parganas has conducted this trial with an alternative management strategy. The principle of bio-fumigation was used for eradication of the pathogen from soil. At the same time biological control was used as preventive measure.

Mustard (*Brassica juncea*) plant has been used here as source of biofumigant. Mustard was broadcasted in the field and incorporated to the soil after 30 days of sowing. The broken and decomposing tissue of mustard produces volatile isothiocyanate compounds into the soil that has antifungal property. On the other hand, soil application, seed treatment and soil drenching of *Trichoderma viride* helps to prevent the infection of *Fusarium* to the seed and the roots.

**Results:**

Technology option	No. of trials	Disease incidence (% of wilted plants)	Yield (q/ha)	Cost of cultivation (Rs./ha)	Gross return (Rs/ha)	Net return (Rs./ha)	BC ratio
Farmer's practice	10	24.5 (14.18)*	239.2	78600	155480	76880	1.98
Technology Option – 1		9.2 (5.28)	265.2	80100	172380	92280	2.15
Technology Option – 2		5.5 (3.15)	297.8	84300	193570	109270	2.30
Technology Option - 3		3.4 (1.95)	314.3	85500	204295	118795	2.39
CD (0.05)		1.29	4.97				
SEM ( $\pm$ )		0.44	1.71				

\* Angular transformed value (Arcsine transformation in degrees)

The technology option -3 (*Brassica juncea* green manuring + Soil treatment, Seed treatment and soil drench with *Trichoderma viride*) gave better result over the other options. The disease incidence was least in this treatment. This helped to decrease the crop loss. The net return was highest in this option. The BC ratio was also higher.



## OFT- 12

1.	Title of On farm Trial	Assessment of profitability of Betelvine ( <i>Piper betle</i> ) cultivation through management of collar rot ( <i>Sclerotium rolfsii</i> ) disease by application of home produced <i>Trichoderma sp.</i> in the coastal South 24 Parganas						
2.	Problem diagnosed	Low productivity of Betelvine due to fungal collar rot						
3.	Details of technologies selected for assessment/refinement	<p><b>Farmer practice:</b> Soil drenching with copper oxy-chloride @ 4g/L + Need based foliar spray of Carbendazim + Mancozeb @ 2g/L</p> <p><b>Technology Option 1:</b> Soil treatment with Taglife (<i>Trichoderma harzianum</i>) (@ 10 kg/ha) + soil drench with Taglife* @ 5g/L at 30 days interval + foliar spray with Taglife* @ 5g/L at 30 days interval</p> <p><b>Technology Option 2:</b> Soil treatment with <b>home produced</b> <i>Trichoderma harzianum</i> (@ 10 kg/ha) + soil drench with <b>home produced</b> <i>Trichoderma harzianum</i> @ 5g/L at 30 days interval + foliar spray with <b>home produced</b> <i>Trichoderma harzianum</i> @ 5g/L at 30 days interval</p>						
4.	Source of Technology	<ol style="list-style-type: none"> <li>National Institute of Plant Health Management (NIPHM), Hyderabad: On-farm Mass Production of <i>Trichoderma</i>, <i>Plant Health News Letter</i>, Vol 4, Issue 2, April-June, 2014.</li> <li>RAKVK, Nimpith: Project report on “On-farm mass production of microbial pesticides”, <i>RKVY funded project</i>, 2015-16</li> <li>Brahmankar, S. B., Dange, N. R. and Tathod, D. G. (2011). Integrated management of betel vine wilt in Vidarbha, <i>International Journal of Plant Protection</i>, 4(1): 146-147</li> </ol>						
5.	Production system and thematic area	Horticulture based production system Integrated Disease Management						
6.	Performance of the Technology with performance indicators	<b>Technology option</b>	<b>Disease incidence (% of wilted plants)</b>	<b>Yield (lakh leaves/ha)</b>	<b>Cost of cultivation (Rs. in lakh/ha)</b>	<b>Gross return (Rs. in lakh/ha)</b>	<b>Net return (Rs. in lakh/ha)</b>	<b>BC ratio</b>
		FP	15.8	21.3	18.75	28.755	10.005	1.53
		TO-1	6.5	26.5	17.75	35.775	18.025	2.02
		TO-2	4.2	27.8	17.42	37.53	20.11	2.15
7.	Final recommendation for micro level situation	The trial needs to be conducted for two more years for final recommendation						
8.	Constraints identified and feedback for research							
9.	Process of farmers participation and their reaction	The participants for this trial were identified through a group meeting followed by training on the particular technology. This was followed by regular field visit and monitoring. Considering the past history of the disease incidence and severity in the village, both the beneficiaries as well as the non-beneficiaries took interest in the trial. The OFT was well managed by the beneficiaries themselves.						

### *Thematic area:*

**Problem definition:** Low productivity of betelvine due to collar rot caused by *Sclerotium rolfsii*

**Technology assessed:** Assessment of biological and chemical approach of collar rot (*Sclerotium rolfsii*) management in betelvine (*Piper betle*) in coastal South 24 Parganas

Betel Vine (*Piper betle* L.) is an important cash crop of the coastal saline zone under South 24 Parganas district of West Bengal. The moist, humid and shady microclimate offered to this perennial vine for its optimum growth also invites a series of aerial and soil borne pathogens. *Sclerotium rolfsii* is such a devastating soil borne fungal pathogen, causing collar rot disease in betelvine. Dasgupta *et. al.* (2000) reported 30-100% crop loss in West Bengal due to *S. rolfsii* infestation. The symptom starts as darkening of the stem at the foot of the plant near ground level. The leaves soon turn yellow, become flacid and drop off. Whole vine ultimately wilts and dries up. White, ropy, fan-shaped mycelial strands creeps over the stem portion, developing small light brown to dark-brown sclerotia on the infected portion. The fungi survives in the soil through these sclerotia. Maiti and Sen (1982) reported that sclerotia survived 225 days under 50% moisture level in natural soil. Hence, chemical control of this soil borne pathogen is very difficult as well as impractical. Besides, the cost of environmental pollution due to the use of chemical pesticides is also very high. Betel leaves, as chewed in raw, can also pose threat to our health if chemical pesticides are used blindly.

Considering all these, biological control approach was selected to manage the disease. The potential for the use of fungal antagonists as bio-control agents of plant diseases was suggested more than 85 years ago by Weindling (1932), who was the first to report the parasitic activity of *Trichoderma spp.* against *Rhizoctonia solani* and *S. rolfsii*.

In the present trial two source of *Trichoderma harzianum* is used to compare their relative efficiency against the farmers practice. The talc formulation of *Trichoderma harzianum* available in the local market (trade name: Taglife, Manufactured and marketed by Tropical Agrosystem India Pvt. Ltd.) was used as Technology option – 1. On the other hand, KVK isolated native strain of *Trichoderma harzianum* was mass multiplied by the farmers themselves with the help of KVK demonstrated low cost technology and used as Technology option – 2.

**Results:**

Technology option	No. of trials	Disease incidence (% of wilted plants)	Yield (lakh leaves/ha)	Cost of cultivation (Rs./ha)	Gross return (Rs/ha)	Net return (Rs./ha)	BC ratio
Farmer's practice	10	15.8 (9.09)*	21.3	1875000	2875500	1000500	1.53
Technology Option – 1		6.5 (3.73)	26.5	1775000	3577500	1802500	2.02
Technology Option – 2		4.2 (2.41)	27.8	1742000	3753000	2011000	2.15
CD (0.05)		0.734	1.614	-	-	-	-
SEM ( $\pm$ )		0.247	0.543	-	-	-	-

\* Angular transformed value (Arcsine transformation in degrees)

The technology option -2 (Soil treatment with **home produced** *Trichoderma harzianum* (@ 10 kg/ha) + soil drench with **home produced** *Trichoderma harzianum* @ 5g/L at 30 days interval + foliar spray with **home produced** *Trichoderma harzianum* @ 5g/L at 30 days interval) gave better result over the other options. The disease incidence was least in this treatment. This helped to decrease the crop loss. The net return was highest in this option. The BC ratio was also higher.



Technology option -1  
OFT-13 (2016-17)



Technology option -1



Technology option -2



Technology option -2

1.	Title of On farm Trial	Assessment of different methodologies for sensitization of womenfolk regarding rights and entitlements to access food and nutrition security
2.	Problem diagnosed	In south 24 pgs there is less awareness about rights and entitlements to access food and nutrition security among womenfolk. They have poor knowledge regarding the rights to food , entitlements regarding different schemes like PDS, Annapurna anatyodaya yojana, ICDS etc. due to lack of knowledge they cannot put their demands to the service providers and they are deprived from their actual privileges. Only awareness generation meeting is not effective methodology to mobilize them for demanding their own entitlements to the service provider.
3	Details of technologies selected for assessment/refinement	Traditional method - sensitization of womenfolk regarding rights and entitlements to access food and nutrition security by awareness programme for community people. Technology option-I- sensitization of womenfolk regarding rights and entitlements to access food and nutrition security through meeting and mobilization of informal mothers group. Technology option –II sensitization of womenfolk regarding rights and entitlements to access food and nutrition security through meeting and mobilization of Self help group. Meeting : Focusing the issue of rights and entitlement regarding access to fund and nutrition like PDS-entitlements, services by AWW, functioning of VHSNC (village health sanitation, nutrition committee) functioning of sub Centre of Health. Sensitization by general meeting of community score card, scoring on services available from PDS, AWW, Sub Centre, VHSNC, Interface meeting with service provider and service taker.
4.	Source of Technology	GENDER EQUALITY AND FOOD SECURITY, Women's Empowerment as a Tool against Hunger, 2013 Asian Development Bank, <a href="https://www.wfp.org/sites/">https://www.wfp.org/sites/</a> ,
5.	Production system and thematic area	Food & nutrition security
6.	Performance of the Technology with performance indicators	Services available from ICDS, , knowledge of farm women regarding entitlements of PDS , organized meeting of VHSNC, PDS shop owner compelled to display the entitlements on board, Prepared action plan in interface meeting , follow up action plan , positive change in PDS
7.	Final recommendation for micro level situation	Technology I performs better due to the better participation of mother group than the SHG group members but final recommendation can be reported after one more trial
8.	Constraints identified and feedback for research	Service providers are reluctant to join interface meeting. Mother groups move backward due to political intervention.
9.	Process of farmers participation and their reaction	Womenfolk have organized the group meetings on their own initiatives . they have participated interface meeting actively and raised their voice against malpractices of service provider with out any intervention of male participants in case of ICDS.

### *Thematic area- Food and nutrition security*

**Problem definition:** In south 24 pgs there is less awareness about rights and entitlements to access food and nutrition security among womenfolk. They have poor knowledge regarding the rights to food, entitlements regarding different schemes like PDS, Annapurna anayodaya yojana, ICDS etc. due to lack of knowledge they cannot put their demands to the service providers and they are deprived from their actual privileges. Only awareness generation meeting is not effective methodology to mobilize them for demanding their own entitlements to the service provider.

**Traditional method** - sensitization of womenfolk regarding rights and entitlements to access food and nutrition security by awareness programme for community people.

**Technology option-I-** sensitization of womenfolk regarding rights and entitlements to access food and nutrition security through meeting and mobilization of informal mothers group.

**Technology option -II** sensitization of womenfolk regarding rights and entitlements to access food and nutrition security through meeting and mobilization of Self help group.

**Meeting :** Focusing the issue of rights and entitlement regarding access to fund and nutrition like PDS- entitlements, services by AWW, functioning of VHSNC (village health sanitation, nutrition committee) functioning of sub Centre of Health.

Sensitization by general meeting of community score card, scoring on services available from PDS, AWW, Sub Centre, VHSNC, Interface meeting with service provider and service taker.

Technology option	No of trial	Service available from ICDS	Service available from PDS	Extent of participation *					Bringing positive change	
				Conduct meeting	Preparation of action plan	Raising voice against malpractice	Community participation	Participatory monitoring	ICDS	PDS
<b>Traditional practice/ Farmers practice</b>	8	i)irregular Cooked food distribution ii) irregular growth monitoring	i)regular service ii)no display board	0	nil	nil	0	0	<b>NIL</b>	NIL
<b>Technology 1:</b>		i)regular Cooked food distribution ii) regular growth monitoring iii)informal education	i)Regular service ii)proper display of entitlements	00	000	000	000	000	i)regular Cooked food distribution i) regular growth monitoring ii)informal education	i)Shifting of PDS center in remote place
<b>Technology 2:</b>		i) regular Cooked food distribution ii) regular growth monitoring	i)Regular service	00	00	000	0	000	i)regular Cooked food distribution	<b>Nil</b>

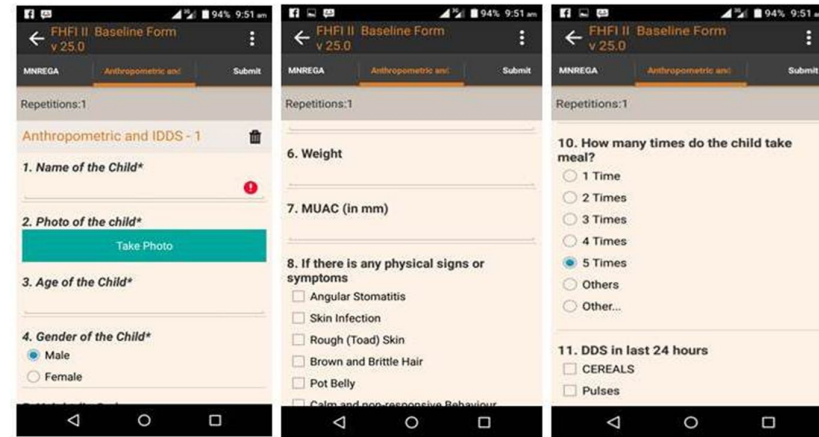
\*Extent of participation is measured by 5 point headonic scale.

## OFT-14 (2016-17)

1.	Title of On farm Trial	Assessment of different tools for tracking and monitoring of malnourished children in backward villages of south 24 pgs district
2.	Problem diagnosed	Malnutrition of children is a serious problem in backward villages of south 24 pargans. Regular tracking and monitoring of malnutrition is essential to reduce the malnutrition among children. Only recording the anthropometric measurement in register with out involvement and sensitization of mother is not enough to improve their nutritional status and to track them.
3.	Details of technologies selected for assessment/refinement	Traditional method - tracking and monitoring of malnourished children in backward villages by the anganwadi worker through register and home visit Technology option –I - tracking and monitoring of malnourished children in backward villages by impact assessment tool box(NGO ideas tool box) and home visit Technology option –II - tracking and monitoring of malnourished children in backward villages by AKVO mobile apps and home visit NGO idea tool box is a participatory monitoring tool is modified by Nimpith KVK has been applied to track the behavioral practices of mother regarding health and nutrition. AKVO mobile apps is a new application and can be applied to collect the data regarding health and nutrition with structured questioners. It is also used to analyzed the data centrally by uploading the data in the dash board.
4.	Source of Technology	Annual review report of FHFII , WHH 2015, NGO-IDE A, Impact Toolbox Participatory Monitoring of Outcome and Impact, Bernward Causemann Eberhard Gohl, November 2009 Chakraborty, M. (2012). Development of participatory Impact assessment tool box- a new initiative of Nimpith. In Growing Agriculturally with Nimpith Kvk.Zonal Project Directorate, Zone II (ICAR), Kolkata:139-146
5.	Production system and thematic area	Food & nutrition security
6.	Performance of the Technology with performance indicators	No of children move from SAM to MAM, No of children move from SAM to normal, No of children move from MAM to normal, No of children deteriorate from MAM to SAM, Adoption of good nutritional practices by mother, Adoption of good health and hygienic practices by mother, No of Referral cases make contact with block hospitals or district hospitals, Average D
7.	Final recommendation for micro level situation	Technology I perform better than technology II as there is direct involvement of mother in the monitoring process.
8.	Constraints identified and feedback for research	Children from the family of brick field labours are very irregular at ICDS centers . The children are often accompanied with their parents to the brick fields so they are unavailable during home visit at the time of data collection or monitoring.
9.	Process of farmers participation and their reaction	Mothers are actively participated in the participatory monitoring process. They are taking initiatives to motivate AWW and ASHA to conduct NGO idea tool box regularly by realizing the positive change of the malnourished children.



*Technology Option-1*



*Technology Option-2*

### *Thematic area-* Food and nutrition security

**Problem definition:** Malnutrition of children is a serious problem in backward villages of south 24 pargans. Regular tracking and monitoring of malnutrition is essential to reduce the malnutrition among children. Only recording the anthropometric measurement in register with out involvement and sensitization of mother is not enough to improve their nutritional status and to track them

**Traditional method** - tracking and monitoring of malnourished children in backward villages by the anganwadi worker through register and home visit

**Technology option –I** - tracking and monitoring of malnourished children in backward villages by NGO ideas tool box and home visit

**Technology option –II** - tracking and monitoring of malnourished children in backward villages by AKVO mobile apps and home visit  
 NGO idea tool box is a participatory monitoring tool is modified by Nimpith KVK has been applied to track the behavioral practices of mother regarding health and nutrition.

AKVO mobile apps is a new application and can be applied to collect the data regarding health and nutrition with structured questioners. It is also used to analyzed the data centrally by uploading the data in the dash board.





**Details of farming situation**

Crop	Season	Farming situation (RF/Irrigated)	Soil type	Status of soil (Kg/ha)			Previous crop	Sowing date	Harvest date	Seasonal rainfall (mm)	No. of rainy days
				N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O					

**Performance of FLD****Oilseeds:**

## Frontline demonstrations on oilseed crops, 2015-16

Crop	Thematic Area	Name of the technology demonstrated	No. of Farmers	Area (ha)	Yield (q/ha)		% Increase	*Economics of demonstration (Rs./ha)				*Economics of check (Rs./ha)			
					Demo	Check		Gross Cost	Gross Return	Net Return	** BCR	Gross Cost	Gross Return	Net Return	** BCR
Sunflower	Crop diversification	Component demonstration: Variety:DRSH-1 with Micro nutrient spray: Boron @ 2.0 g/L of water Local chek: Variety - Ganga Kaveri without Boron spray	50(Sc + St= 27)	20	12.78	10.43	22.53	31500	51120	19620	1.62	28875	41720	12845	1.44
Sesame	Crop diversification, CFLD	Variety-Savitri ,Seed: 6.0 Kg/ha, <i>Trichoderma viride</i> & <i>Pseudomonas fluorescense</i> -1.2 kg/ha each, PSB & PMB- 2.0 kg/ha each Local chek: Variety – B-67	175 (Sc + St=66)	25	9.36	7.78	20.30	21322	37440	16118	1.75	19840	31120	11280	1.56

\* Economics to be worked out based on total cost of production per unit area and not on critical inputs alone. \*\* BCR= GROSS RETURN/GROSS COST

**Details of farming situation**

Crop	Season	Farming situation (RF/Irrigated)	Soil type	Status of soil (Kg/ha)			Previous crop	Sowing date	Harvest date	Seasonal rainfall (mm)	No. of rainy days
				N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O					
Sunflower, 2015-16	Rabi-Summer	Irrigated	Clay	217.8	35.1	392.7	Kharif Paddy	2 <sup>nd</sup> week of January' 16	Last week of April' 16	167.4	4
Sesame, 2015-16	Rabi-Summer	Rainfed	Clay	240.3	31.8	390.7	Kharif Paddy	Last wk. of February' 16	1 <sup>st</sup> wk. of May,2016	143.0	2

## Frontline demonstrations on oilseed crops, 2016-17

Crop	Thematic Area	Name of the technology demonstrated	No. of Farmers	Area (ha)	Yield (q/ha)		% Increase	*Economics of demonstration (Rs./ha)				*Economics of check (Rs./ha)			
					Demo	Check		Gross Cost	Gross Return	Net Return	** BCR	Gross Cost	Gross Return	Net Return	** BCR
Sunflower	Crop diversification	Component demonstration: Variety:KBSH-41, <i>Trichoderma viride</i> & <i>Pseudomonas fluorescense</i> @1.5 kg/ha soil application before sowing and one time spray: Boron @ 2.0 g/L of water Local chek: Variety - Ganga Kaveri without Boron spray	25	5	13.86	12.31	12.59	32124	55440	23316	1.72	31597	49240	17643	1.55

## Details of farming situation

Crop	Season	Farming situation (RF/Irrigated)	Soil type	Status of soil (Kg/ha)			Previous crop	Sowing date	Harvest date	Seasonal rainfall (mm)	No. of rainy days
				N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O					
Sunflower, 2016-17	Rabi- Summer	Irrigated	Clay	234.2	32.9	415.5	Kharif Paddy	22 <sup>nd</sup> December, 2016	28 <sup>th</sup> March ,2017	143.7	4

**Pulses:****Frontline demonstration on pulse crops, 2015-16**

Crop	Thematic Area	Name of the technology demonstrated	No. of Farmers	Area (ha)	Yield (q/ha)		% Increase	*Economics of demonstration (Rs./ha)				*Economics of check (Rs./ha)			
					Demo	Check		Gross Cost	Gross Return	Net Return	** BCR	Gross Cost	Gross Return	Net Return	** BCR
Field Pea	Crop diversification, CFLD	Component demonstration: Variety-Rachana, Seed: 80 kg/ha, Zn- 20.0 kg/ha, Rhizobium-1.5 kg/ha, PSB & PMB-1.5kg/ha each, <i>Trichoderma viride</i> & <i>Pseudomonas fluorescence</i> -1.2 kg/ha each Local chek: Variety – T-163	23 (SC +ST=23)	5	7.74	6.80	6.76	18050	32670	14620	1.80	17675	30600	12925	1.73
Greengram	Crop diversification, CFLD	Variety-PDM-84-139, Seed: 20.0 Kg/ha, Rhizobium-1.0 kg/ha (as seed treatment), <i>Trichoderma viride</i> & <i>Pseudomonas fluorescence</i> -1.2 kg/ha each, PSB & PMB- 2.0 kg/ha each Local chek: Variety – Choiti Moong	110 (SC + ST =90)	20	8.28	6.63	24.88	19548	49680	30132	2.54	18112	39780	21668	2.19

N.B. Due to severe downpour (143 mm on 25<sup>th</sup> -26<sup>th</sup> February, 2016) in the seedling stage of Greengram few FLD plots are damaged to a great extent. The loss has been minimized by providing seeds to the farmers with the support from the Dept. of Agriculture, Govt. of W.B. with close supervision and advisory services.

**Details of farming situation**

Crop	Season	Farming situation (RF/Irrigated)	Soil type	Status of soil (Kg/ha)			Previous crop	Sowing date	Harvest date	Seasonal rainfall (mm)	No. of rainy days
				N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O					
Field Pea, 2015-16	Rabi-Summer	Rainfed	Clay	224.1	26.2	369.5	Kharif Paddy	1 <sup>st</sup> wk. of December' 15	3 <sup>rd</sup> wk. of March, 2016	200.4*	8*
Greengram, 2015-16	Rabi-Summer	Rainfed	Clay	236.7	29.4	388.2	Kharif Paddy	Last wk. of January' 16	1 <sup>st</sup> wk. of April, 2016	167.4*	4*

**Performance of FLD**  
Other crops, 2015-16

Crop	Thematic area	Name of the technology demonstrated	No. of Farmer	Area (ha)	Yield (q/ha)		% change in yield	Other parameters			Economics of demonstration (Rs./ha)				Economics of check (Rs./ha)			
					Demonstration	Check		Parameter	Demo	Check	Gross Cost	Gross Return	Net Return	BCR	Gross Cost	Gross Return	Net Return	BCR
Kharif Onion	Introduction of new crop	Introduction of new crop Kharif Onion (Var. Agri Found dark Red) for better profitability	30 (ST+ScC=7)	1 ha	233.8	Fallow	-	Bulb diameter	5.6 cm	-	128900.00	350700.00	221800.00	2.72	-	-	-	-
Cassava	Introduction of new crop	Introduction of new crop Cassava in backyard system for better profitability	23 (SC+ST=17)	0.5 ha	460.2	Fallow	-	Root length	32.7 cm	-	48700.00	138000.00	89300.00	2.83	-	-	-	-
Pointed Gourd	Yield improvement through pollination management	Introduction of male plant in the conventional pointed gourd cultivation field	21 SC+ST=6	1 ha	-	-	<b>Crop lost due to heavy rain from 09 – 12 March, 17 (143.75 mm)</b>											





**Fisheries**

Category	Thematic area	Name of the technology demonstrated	No. of Farmer	No. of units (0.065ha)	Major parameters /Yield (kg/unit)		% change in major parameter	Other parameter			*Economics of demonstration (Rs./unit)				*Economics of check (Rs./unit)				
					Demo	Check		Items	Demo	Check	Gross Cost	Gross Return	Net Return	** BCR	Gross Cost	Gross Return	Net Return	** BCR	
Common carps																			
Mussels																			
Ornamental fishes																			
Non conventional fish culture	Freshwater fish culture	Introduction of bhetki, <i>Lates calcarifer</i> in carp culture ponds for additional income generation	20	20	Carp-360.0	Carp-311.0	22.5	Av.length (cm)	Carp-24	Carp-21.5	30750/-	Carp-360.0 kg X 120/- = 43200/-	19800/-	1.64	30250/-	Carp-311.0 kg X 120/- = 37320/-	7070/-	1.23	
					Bhetki-21.0				Av.wt.(g)	Carp-615		Carp-560							Bhetki-21.0 kg X 350/- = 7350/-
									Girth of fish(cm)	Carp-8.5		Carp-8.2							Total= 50550/-
									No. stocked	Carp-750		Carp-750							
									Survivability (%)	Carp-78		Carp-74							
Total																			

\* Economics to be worked out based on total cost of production per unit area and not on critical inputs alone. \*\* BCR= GROSS RETURN/GROSS COST

N.B. 1. Gross cost per unit (0.065 ha) in demonstration involves cost of carp and bhetki seed (Rs.1250/-+ Rs. 500/- = Rs.1750/-) and pond preparation, post stocking management including feed etc.(Rs. 29000/-)

2. Gross cost per unit (0.065 ha) in check involves cost of carp seed (Rs.1250) and pond preparation, post stocking management including feed etc. (Rs. 29000/-)

## Other enterprises

Category	Name of the technology demonstrated	No. of Farmer	No. of units	Major parameters		% change in major parameter	Other parameter			*Economics of demonstration (Rs.) or Rs./unit				*Economics of check (Rs.) or Rs./unit			
				Demonstration	Check		parameter	Demonstration	Check	Gross Cost	Gross Return	Net Return	** BCR	Gross Cost	Gross Return	Net Return	** BCR
Oyster mushroom	Innovative (Iron frame of 10" height and 12" diameter having 4ft long perforated plastic pipe - 4" dia, inserted into the centre stand of iron frame) production technique of oyster mushroom	35	30 (8nos/unit)	1.30kg/kg straw	0.9kg/2 kg straw (Traditional practice: Small plastic bag placed upon bamboo rack)	44%	-	-		16630	37450	20820	2.25	11410	19000	7590	1.66
Button mushroom																	
Vermi compost	Production of Enriched Vermicompost at domestic level (Addition of <i>Trichoderma harzianum</i> , <i>Pseudomonas fluorescens</i> , <i>Metarrhizium anisopliae</i> , <i>Azotobactor</i> , PSB @ 500 g per quintal finished Vermicompost at the time of bagging)	50	50	310 q/unit/year	Normal vermin-Compost production @ 310 q/year/farmer	-	Effect on Plant growth (farmers reaction in 10 point scale)	7	4								
							Effectiveness in pest & disease management as compared to other compost/vermicompost (farmers reaction in 10 point scale)	6	2	79600.00 per unit per year	201500.00 per unit per year	121900.00	2.53	13800.00	65000.00	51200.00	4.71



Contd...

Sericulture																	
Apiculture																	
Biocontrol agent	<b>On-farm farm mass production of microbial pesticide (<i>Trichoderma</i>)</b>	200	200	Accessibility to <i>Trichoderma</i> in remote villages: 12 (twelve) application of <i>Trichoderma</i> per year	Accessibility to <i>Trichoderma</i> in remote villages: 2 (two) application of <i>Trichoderma</i> per year	500%	CFU : 7.1 x 10 <sup>9</sup>	CFU: 2 x 10 <sup>6</sup>		Cost of production – Rs. 50/kg				Cost of purchase – Rs. 200/kg			
<b>Total</b>		<b>285</b>	<b>280</b>														

**Women empowerment**

Category	Name of technology	No. of demonstrations	Observations		
			Parameters	Demonstration	Check
Farm Women	Linking Agriculture and Natural resource with Nutrition (LANN) *	4 backward village (183)	i) Minimum Diet diversity Score	6.3	3.4
			ii) No of malnourished children attending ICDS with the participation of mother	17	Nil
			iii) No of Moderately acute malnourished children move to normal children	53	11
			iv) promotion of nutrition garden %	84	38
			v) Family level crop planning at backyard	Leafy vegetables(5-6 types) , protein rich vegetables- bean, board bean, cow pea, other vegetables	Leafy vegetables (1-2 types) , other vegetables
			vi) other initiatives	Oyster mushroom , paddy straw mushroom cultivation for household nutrition security	Nil

Contd...

Pregnant women					
Adolescent Girl					
Other women					
Children	Special nutritional camp and community management of acute malnourished children with out infection	6 villages (217)	Maximum weight gain g Minimum weight gain g Adoption of IYCF by mother % Adoption of hand wash practices % Adoption of proper timing and frequency of meal %	980 520 76 88 74	440 250 17 37 5
Neonatal					
Infants					

\*LANN is Community-based, multi-sectoral training approach and “toolbox” for nutrition education Developed in Laos in 2010 for a consortium of 7 INGOs

### Objective of LANN

Overall Objective: Create higher convergence between agriculture, natural resource management, income generation, hygiene and food consumption to reduce House hold level malnutrition through a participatory process

Specific objective: Improve Knowledge and practices related to good nutrition through a community based training approach

Farm implements and machinery

Name of the implement	Crop	Name of the technology demonstrated	No. of Farmer	Area (ha)	Filed observation (output/man hour)		% change in major parameter	Labor reduction (man days)				Cost reduction (Rs./ha or Rs./Unit)					
					Demonstration	Check											

\* Economics to be worked out based on total cost of production per unit area and not on critical inputs alone.

\*\* BCR= GROSS RETURN/GROSS COST





**Technical Feedback on the demonstrated technologies**

S. No	Crop	Feed Back
1	Enriched Vermicompost	After applying vermicompost in their own crop field, farmers are experiencing a better crop growth and fewer occurrences of pest & diseases in their vegetable crops. The technology is well established, but it needs monitoring and followup for the quality of the vermicompost.
2	Kharif Onion	Kharif onion is a new crop for this high rainfall prone lower gangetic plain. The crop stand was not satisfactory till September. But, after recess of monsoon, the crop started a vigorous growth from October and become harvestable by middle of December.
3	Cassava	Cassava, which is completely a new crop, was introduced in the backyard system to familiarize the crop among vegetable growers. The land used for this crop was earlier remain fallow or unutilized. The cutting was transplanted during kharif season and root become harvestable by end of December.
4	Bhetki	Due to increasing input cost, carp culture is gradually becoming less remunerative. Hence the introduction of the high valued bhetki, at low density and after the carp has reached a size which is inconvenient for this carnivorous fish to prey upon, has given better return
5	Music therapy for better milk production	Obtaining better result
6	Heat synchronization by intravaginal devices	Requires technical expertise, hence simple method which can be done by the farmers themselves may be tried
7	Broiler duck farming	Availability of duckling is a problem. Hence maintaining parent stock at Nimpith may be opted
8	Fodder cultivation	Availability of land for fodder cultivation is minimum
9	Linking Agriculture and Natural resource with Nutrition	The technology is applied through Participatory learning cycles so it is effectively impressing the target group to adopt the component of the technology
10	Special nutritional camp and community management of acute malnourished children with out infection	The technology is demonstrated in collaboration with health and ICDS so it is helpful to make linkage of the target group with the department to have a better access to nutrition and health security
11	Chilli leaf curl management	Use of mosquito net in nursery bed and seed treatment, helped to reduce the no. of spraying in the crop
12	On-farm mass production of <i>Trichoderma viride</i>	The technology is very simple, low cost and can be prepared with easily available materials

### Extension and Training activities under FLD

SL. No.	Activity	Date	No. of activities organized	Number of participants	Remarks
1.	Field days	21.04.16 (On maize), 27.04.16 (On Sunflower) 03.03.17 (On Lentil-CFLD) 10.03.17 (on Mustard-CFLD) 20.03.17 (On Sunflower) 16.04.13(On Sesame)	5	193	Field days were observed with Progressive farmers, Input Dealers, Field Consultants, Dept. of FPI & Hort. GoWB, Panchayat members etc. and with officials of other KVKs.
		02.03.17 (Cassava) 16.12.16 ( Kharif Onion)	2	85	Field days were observed with Progressive farmers, Input Dealers, Field Consultants, Dept. of FPI & Hort. GoWB, Panchayat members etc. and with officials of other KVKs.
2.	Farmers Training	03.06.16	2	26	
		1.04.16,04.04.16, 08.04.16, 16.04.16,21.04.2016, 02.05.2016, 04.05.2016, 03.06.2016, 03.06.2016, 04.07.2016, 12.07.2016, 13.07.2016, 15.07.2016, 27.07.2016, 04.08.2016, 25.08.2016, 1.09.2016, 03.09.2016,05.09.2016, 01.11.2016,02.11.2016, 01.11.2016, 1.12.2016, 02.12.2016, 03.12.2016, 1.12.2016, 21.01.2017, 23.01.2017, 30.01.2017, 22.02.2017, 2.03.2017, 6.03.2017 (LANN)	32	881	Off campus training programme
		Production of enriched vermicompost (20.06.16-23.06.16), (08.07.16), (13.12.16 – 16.12.16)  Scientific methods of kharif onion and rabi onion cultivation (20.06.16), (23.01.17)  Cultivation of non-conventional vegetables including Cassava (08.01.17 - 14.01.17)	7	265	
		FLD on <i>Trichoderma</i> 06.09.2016 to 09.09.2016 14.09.2016 to 17.09.2016 21.09.2016 to 24.09.2016 28.09.2016 to 01.10.2016	4	200	4 days long training were conducted to demonstration the method of On-farm mass production of <i>Trichoderma</i>
3.	Media coverage	Radio programme 09.04.2016 (FLD on <i>Trichoderma</i> ) News paper publication on FLD-Onion on 12.07.16	2	-	Radio programme, TV programme and news paper publication
4	Training for extension functionaries				

**Performance of the demonstration under CFLD on Pulse and Oilseed Crops during Rabi 2016-**

**A. Technical Parameters:**

**CFLD on Oilseed**

**Crop: Rapeseed and Mustard**

Sl. No.	Crop demonstrated	Existing (Farmer's) variety name	Existing yield (q/ha)	Yield gap (Kg/ha) w.r.to			Name of Variety + Technology demonstrated	Number of farmers	Area in ha	Yield obtained (q/ha)			Yield gap minimized (%)		
				District yield (D)	State yield (S)	Potential yield (P)				Max.	Min.	Av.	D	S	P
1	Rapeseed and Mustard	B-9	6.87	8.31	1003	1049	i) Variety-Pusa Mahak ii) Basal application of bio-fertilizer (Azotobacter) & <i>Trichoderma</i> and <i>Pseudomonas</i> with compost	127	20	9.95	6.92	8.46	1.77	-	-

Sl. No.	Crop demonstrated	Existing (Farmer's) variety name	Existing yield (q/ha)	Yield gap (Kg/ha) w.r.to			Name of Variety + Technology demonstrated	Number of farmers	Area in ha	Yield obtained (q/ha)			Yield gap minimized (%)		
				District yield (D)	State yield (S)	Potential yield (P)				Max.	Min.	Av.	D	S	P
2	Sesame	Savitri		712	851	1200	Varietal replacement, use of Azotobacter and PSB and basal application of <i>Trichoderma</i> & <i>Pseudomonas</i> and also one time boron spray	75	10	The crop is in growth stage. About 15-20 % plants were damaged due to heavy rainfall(143.7mm) on 8 <sup>th</sup> to 11 <sup>th</sup> March, 2017 at seedling stage.					



**B. Economic parameters**

Sl. No.	Variety demonstrated & Technology demonstrated	Farmer's Existing plot				Demonstration plot			
		Gross Cost (Rs/ha)	Gross return (Rs/ha)	Net Return (Rs/ha)	B:C ratio	Gross Cost (Rs/ha)	Gross return (Rs/ha)	Net Return (Rs/ha)	B:C ratio
1	i)Variety-Pusa Mahak ii)Basal application of bio-fertilizer (Azotobacter) & <i>Trichoderma</i> and <i>Pseudomonas</i> with compost	24900	33480	8580	1.34	26865	40300	13435	1.50

**C. Socio-economic impact parameters**

Sl. No.	Crop and variety Demonstrated	Total Produce Obtained (kg)	Produce sold (Kg/household)	Selling Rate Rs/Kg)	Produce used for own sowing (Kg)	Produce distributed to other farmers (Kg)	Purpose for which income gained was utilized	Employment Generated (Mandays/house hold)
1	Rapeseed, Pusa Mahak	11750	45.0	50.00	254	1870	Family maintenance and invested in bank	12

**D. Oilseed Farmers' perception of the intervention demonstrated**

Sl. No.	Technologies demonstrated (with name)	Farmers' Perception parameters					
		Suitability to their farming system	Likings (Preference)	Affordability	Any negative effect	Is Technology acceptable to all in the group/village	Suggestions, for change/improvement, if any
1	i)Variety-Pusa Mahak ii)Basal application of bio-fertilizer (Azotobacter) & <i>Trichoderma</i> and <i>Pseudomonas</i> with compost	As it is grown during Rabi season, it is need to sow by the last week of November. In the district of South 24 Parganas, the medium land situation becomes ready for sowing in the mid of December. Thus the crop yield is less.	To fulfill their daily oil requirement, they cultivate mustard in the raised Land embankment ( <i>Ail</i> ).	As the organic matter content in soil is very low, they are convinced to apply organic manures during land preparation	The productivity of Rapeseed is higher in <i>Ail</i> cultivation than the cultivation in main land	The productivity of this variety is better in late sown situation	Use of bio agents against root rot and other fungal diseases

### E. Specific Characteristics of Technology and Performance

Specific Characteristic	Performance	Performance of Technology vis-a vis Local Check	Farmers Feedback
i) Variety –Pusa Mahak	Bold seed and brown in colour, plant height (4.5ft) and more branches (10 nos.)	i)No. of Pod/plant-Demo.-178, L. Check-145 ii)No. of seed/siliqua-Demo.-18, L. Check-12	
ii)Azotobacter-105kg/ha	Better crop growth	Saved 10.0 kg nitrogen /ha	
iii) <i>Trichoderma viride</i> & <i>Pseudomonas fluorescence</i> @ 1.5 kg/ha each	No disease infestation is observed	Root rot or Alternaria leaf spot are not recorded	

### F. Extension activities under FLD conducted till dates:

Sl. No.	Extension Activities organized	Date and place of activity	Number of farmer attended
1.	Training programme	28.11.2016 at Binodpur	47
		29.11.2016 at Kishorimohanpur	40
		02.12..2016 at Gillerchat	34
		05.12.2016 at Debipur	30
2.	Field visit	15.12.2016 at Binodpur	45
		19.12.2016 at Kishorimohanpur	30
3.	Field Days	22.03.2017 at Bhadrapara	35

**G. Sequential good quality photographs (as per crop stages i.e. growth & development)**



**H. Farmers' training photographs**



**I. Quality Photographs of field visits/field days and technology demonstrated.**



**CFLD on Pulses****A. Crop: Lentil and greengram**

Sl. No.	Crop demonstrated	Existing (Farmer's) variety name	Existing yield (q/ha)	Yield gap (Kg/ha) w.r.to			Name of Variety + Technology demonstrated	Number of farmers	Area in ha	Yield obtained (q/ha)			Yield gap minimized (%)		
				District yield (D)	State yield (S)	Potential yield (P)				Max.	Min.	Av.	D	S	P
1	Lentil	B-77	6.15	612	575	1500	Varietal replacement , <i>Rhizobium</i> seed inoculation and use of <i>Trichoderma</i> & <i>Pseudomonas</i> during land preparation	105	20	6.64	6.15	6.47	5.72	12.52	-

Sl. No.	Crop demonstrated	Existing (Farmer's) variety name	Existing yield (q/ha)	Yield gap (Kg/ha) w.r.to			Name of Variety + Technology demonstrated	Number of farmers	Area in ha	Yield obtained (q/ha)			Yield gap minimized (%)		
				District yield (D)	State yield (S)	Potential yield (P)				Max.	Min.	Av.	D	S	P
2	Greengram	Choti Moong	-	647	580	1200	Varietal replacement, seed treatment with Rhizobium, use of PSB, neem based pesticides and other bio agents against pod borer	75	10	The crop is in growth stage. About 15-20 % plants were damaged due to heavy rainfall(143.7mm) on 8 <sup>th</sup> to 11 <sup>th</sup> March, 2017 at seedling stage.					

**B. Economic parameters**

Sl. No.	Variety demonstrated & Technology demonstrated	Farmer's Existing plot				Demonstration plot			
		Gross Cost (Rs/ha)	Gross return (Rs/ha)	Net Return (Rs/ha)	B:C ratio	Gross Cost (Rs/ha)	Gross return (Rs/ha)	Net Return (Rs/ha)	B:C ratio
1	Variety-Moitree (WBL-77) <i>Rhizobium</i> seed inoculation and use of <i>Trichoderma</i> & <i>Pseudomonas</i> during land preparation	23040	33825	10785	1.47	23622	36520	12898	1.54



**C. Socio-economic impact parameters**

Sl. No.	Crop and variety Demonstrated	Total Produce Obtained (kg)	Produce sold (Kg/household)	Selling Rate Rs/Kg)	Produce used for own sowing (Kg)	Produce distributed to other farmers (Kg)	Purpose for which income gained was utilized	Employment Generated (Mandays/house hold)
1	Lentil, Variety-WBL-77	11360	55.0	60.00	790	600	Family maintenance and invested in bank	11

**D. Pulse Farmers' perception of the intervention demonstrated**

Sl. No.	Technologies demonstrated (with name)	Farmers' Perception parameters					
		Suitability to their farming system	Likings (Preference)	Affordability	Any negative effect	Is Technology acceptable to all in the group/village	Suggestions, for change/improvement, if any
1	Variety-Moitree (WBL-77) <i>Rhizobium</i> seed inoculation and use of <i>Trichoderma</i> & <i>Pseudomonas</i> during land preparation	As it is grown during Rabi season, it is need to sow by the last week of November. In the district of South 24 Parganas, the medium land situation becomes ready for sowing in the mid of December. Thus the crop yield is less as per the potential yield	i)It is more remunerative crop ii) Used for dal iii) It also improves soil fertility	As the organic matter content in soil is very low, they are convinced to apply organic manures during land preparation	Plants are stunted in growth in few plots due to soil salinity	The productivity of this variety is better in late sown situation	Use of bio agents against root rot and other fungal diseases

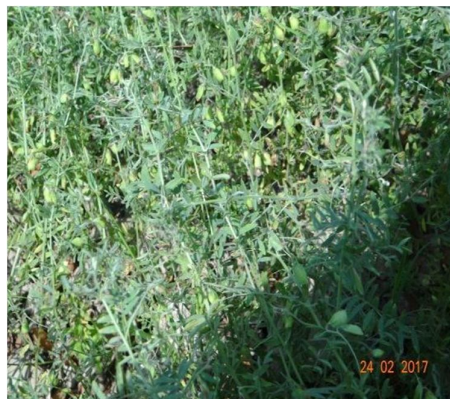
### E. Specific Characteristics of Technology and Performance

Specific Characteristic	Performance	Performance of Technology vis-a vis Local Check	Farmers Feedback
Variety –Moitree(WBL-77)	Better crop growth i.e. higher no. of branches & higher plant height	i) No. of pod /plant (Demo.-22.7, L. Check-18.4 ii)Bold grain iii)Test wt.(100 seed) (Demo.-19.1g, L. Check-16.7g)	
2. Rhizobium-1.5 kg/ha (as seed treatment)	Crop growth is better than farmers plot	Saved 10 kg chemical nitrogenous fertilizer /ha	
3. PSB-1.5 kg/ha (used before sowing with organic manure)	Crop growth is better than farmers plot	Yield of the crop was recorded better by reducing 15 kg P <sub>2</sub> O <sub>5</sub> /ha in medium phosphate level (45-50 kg/ha)	
4.Trichoderma viride & Pseudomonas fluorescence -1.5 kg/ha each (used before sowing with organic manure)	No appearance was found on disease infestation during crop period	Control powdery mildew disease and also root rot disease	

**F.Extension activities under FLD conducted till dates:**

Sl. No.	Extension Activities organized	Date and place of activity	Number of farmer attended
1.	Training programme	16.11.2016 at Jalalpur	60
		06.12.2016 at Paschim kultali	18
		05.01.2017 at Jalalpur	90
		30.01.2017 at Sibkalinagar	30
		25.01.2017 at 27 No. Lat	27
		05.02.2017 at Kaikhali	32
2.	Field visit	18.01.2017 at Maipith	21
		30.01.2017 at Baikunthapur	23
		16.02.2017 at Jalalpur	39
		24.02.2017 at Gabberia	20
3.	Field Days	10.03.2017 at Jalalpur	40

**F. Sequential good quality photographs (as per crop stages i.e. growth & development)**



**G. Farmers' training photographs**



**H. Quality Photographs of field visits/field days and technology demonstrated.**



**J. Details of budget utilization**

Crop (provide crop wise information )	Items	Budget Received (Rs.)	Budget Utilization (Rs.)	Balance (Rs.)
Pulse (Lentil & Greengram)	i) Critical input	3,37,500.00	3,39,289.00	25
	ii) TA/DA/POL etc. for monitoring	37,500.00	35,696.00	
	iii) Extension Activities (Field day)			
	iv)Publication of literature			
Total		3,75,000.00	3,74,975.00	

Crop (provide crop wise information )	Items	Budget Received (Rs.)	Budget Utilization (Rs.)	Balance (Rs.)
Oilseed (Rapeseed & Sesame )	i) Critical input	81,000.00	62,044.00	1.00
	ii) TA/DA/POL etc. for monitoring	9,000.00	27,955.00	
	iii) Extension Activities (Field day)			
	iv)Publication of literature			
Total		90,000.00	89,999.00	

**K.List of Farmer under FLD (Crop wise)  
CFLD – Oilseed – Rapeseed & Mustard**

Sl No	Name of farmer's	Father's name	Village	Block	Mobile No	Email ID	GPS Coordinates		Soil testing done (Yes/No)	Recommendations based on soil test value	Brief technology intervention	Var.	Seed quantity used	Demo. Yield (q/ha)			Yield of local check q/ha	% increase
							Latitude	Longitude						H	L	A		
													9.95	6.92	8.46	6.87	18.79	
1	Jharna Sheet	Basudeb	Kishorimohanpur	Kultali	8170921862	Nil	21°52'405"N	88°31'522"E	Yes	40:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 5-6 qt/ha Cao	Basal application of bio-fertilizer (Azotobacteria and Pseudomonas with compost	Pusa Mahak	6.0kg/ha	8.14				
2	Sanaka Naskar	Nabin	Kishorimohanpur	Kultali	7797318850	Nil	21°53'333"N	88°31'617"E	Yes	50:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	8.62				
3	Arati Naiya	Bankim	Kishorimohanpur	Kultali	8016316852	Nil	21°52'272"N	88°31'577"E	Yes	40:30:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 4-5 qt/ha Cao	do	do	do	8.24				
4	Gouri Maity	Nanigo pal	Kishorimohanpur	Kultali	9593177443	Nil	21°52'263"N	88°31'560"E	Yes	50:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 4-5 qt/ha Cao	do	do	do	8.16				
5	Sumitra Giri	Panchanan	Kishorimohanpur	Kultali	7583991792	Nil	21°52'260"N	88°31'542"E	Yes	40:30:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	8.56				
6	Supada Tanti	Dipak	Kishorimohanpur	Kultali	8016083223	Nil	21°52'333"N	88°31'549"E	Yes	40:30:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 5-6 qt/ha Cao	do	do	do	8.31				
7	Arun Das	Lakshman	Kishorimohanpur	Kultali	8016710967	Nil	21°52'356"N	88°31'504"E	Yes	50:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	8.85				
8	Supriya Dalapati	Swapan	Kishorimohanpur	Kultali		Nil	21°52'194"N	88°31'559"E	Yes	40:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 5	do	do	do	8.04				
9	Parbati Mantri	Pratap	Kishorimohanpur	Kultali	9800093292	Nil	21°52'355"N	88°31'542"E	Yes	50:30:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 4-5 qt/ha Cao	do	do	do	8.44				
10	Maheswar Kayal	Pachugopal	Kishorimohanpur	Kultali	8653237387	Nil	21°52'950"N	88°31'485"E	Yes	40:30:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 4-5 qt/ha Cao	do	do	do	8.51				

11	Bimal Jana	Sunil	Kishorimohanpur	Kultali	82934 82320	Nil	21°52'3 62"N	88°31'5 13"E	Yes	50:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 5-6 qt/ha Cao	do	do	do	8.39				
12	Binod bihari Hazra	Atul	Kishorimohanpur	Kultali	99338 86488	Nil	21°52'2 60"N	88°31'3 15"E	Yes	50:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 5 qt/ha Cao	do	do	do	7.92				
13	Arun kumar Patra	Aswini	Kishorimohanpur	Kultali	99321 28874	Nil	21°52'1 94"N	88°31'4 08"E	Yes	40:30:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 4-5 qt/ha Cao	do	do	do	7.90				
14	Archana Patra	Balaram	Kishorimohanpur	Kultali	81709 62868	Nil	21°52'1 67"N	88°31'4 33"E	Yes	40:30:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	8.24				
15	Parikshit Bhandari	Hrishikesh	Kishorimohanpur	Kultali	82763 31249	Nil	21°52'2 04"N	88°31'5 62"E	Yes	50:30:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 4-5 qt/ha Cao	do	do	do	8.57				
16	Haranath Midde	Dibakar	Kishorimohanpur	Kultali	99320 78280	Nil	21°52'2 15"N	88°31'4 79"E	Yes	40:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	7.70				
17	Budhiswar Kayal	Anukul	Kishorimohanpur	Kultali	97752 13638	Nil	21°52'0 49"N	88°31'5 27"E	Yes	50:30:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 4-5 qt/ha Cao	do	do	do	8.58				
18	Srimanta Majhi	Nabakumar	Kishorimohanpur	Kultali	73194 27706	Nil	21°52'3 31"N	88°31'4 81"E	Yes	50:30:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 5.5-6 qt/ha Cao	do	do	do	8.11				
19	Sujata Duari	Subhas	Kishorimohanpur	Kultali	70634 84336 3	Nil	21°53'3 70"N	88°31'2 94"E	Yes	50:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 4.5-5 qt/ha Cao	do	do	do	8.49				
20	Jagadish Payra	Krishna	Kishorimohanpur	Kultali	97339 77183	Nil	21°53'4 12"N	88°31'3 44"E	Yes	50:30:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 5-6 qt/ha Cao	do	do	do	7.71				
21	Niranjana Samanta	Ganesh	Baikunthapur	Kultali		Nil	21°53'4 59"N	88°31'3 02"E	Yes	40:30:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	7.85				
22	Ashapurna Duari	Banabihari	Baikunthapur	Kultali	75848 05405	Nil	21°53'6 07"N	88°31'0 74"E	Yes	40:30:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 5 qt/ha Cao	do	do	do	8.18				
23	Kunti Duari	Gadadhar	Baikunthapur	Kultali		Nil	21°53'47 2"N	88°31'23 9"E	Yes	40:30:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha& 5.5-6 qt/ha Cao	do	do	do	8.69				



24	Kanchan Mondal	Balai	Baikunthapur	Kultali		N i l	21°53'606"N	88°31'073"E	Yes	40:20: 20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/h a& 5.5-6 qt/ha Cao	do	do	do	7.60				
25	Bidyabati Halder	Mrinmoy	Baikunthapur	Kultali		N i l	21°53'467"N	88°31'249"E	Yes	40:30: 20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/h a& 5-6 qt/ha Cao	do	do	do	8.29				
26	Sonali Patra	Kanai	Baikunthapur	Kultali	9932632034	N i l	21°53'812"N	88°31'210"E	Yes	40:20: 20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/h a & 6- 7 qt/ha Cao	do	do	do	8.15				
27	Kakali Maity	Kalipada	Baikunthapur	Kultali	8653237288	N i l	21°52'820"N	88°31'207"E	Yes	40:30: 20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/h a & 5.5-6 qt/ha Cao	do	do	do	8.42				
28	Kabita Payra	Asutosh	Baikunthapur	Kultali		N i l	21°52'834"N	88°31'210"E	Yes	50:20: 20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/h a	do	do	do	8.10				
29	Suchitra Jana	Iswar	Baikunthapur	Kultali		N i l	21°52'942"N	88°31'257"E	Yes	40:30: 20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/h a& 5.5-6 qt/ha Cao	do	do	do	7.55				
30	Shya	Chinta	Baikunthapur	Kultali	9635195339	N	21°53'55"N	88°31'4	Yes	40:30:	do	do	do	7.94				

	m Pada Mahap atra	moni	apur			i l		25"E		20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 5 qt/ha Cao								
31	Nanda dulal Das	Gurup ada	Baikunth apur	Kultali	9932188090	N i l	21°53'55"N	88°31'4 14"E	Yes	50:20: 20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 5.5-6 qt/ha Cao	do	do	do	7.78				
32	Dipak Das	Amal	Baikunth apur	Kultali	8159818968	N i l	21°53'038"N	88°31'4 26"E	Yes	40:30: 20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 5 qt/ha Cao	do	do	do	7.52				
33	Debasi s Payra	Ratan	Baikunth apur	Kultali	7797173724	N i l	21°53'030"N	88°31'4 19"E	Yes	50:20: 20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 5.5-6 qt/ha Cao	do	do	do	7.80				
34	Ranu Kar	Niranj an	Baikunth apur	Kultali		N i l	21°53'333"N	88°31'3 05"E	Yes	40:30: 20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha a	do	do	do	7.91				
35	Goura nga Maity	Amuly a	Baikunth apur	Kultali	7063843363	N i l	21°53'334"N	88°31'2 77"E	Yes	40:20: 20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha a	do	do	do	7.57				
36	Chand ana Payra	Tapan	Baikunth apur	Kultali	7384173972	N i l	21°53'161"N	88°31'3 60"E	Yes	40:30: 20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O & 5/ha qt/ha	do	do	do	7.77				

										Cao									
37	Kabita Payra	Swapan	Baikunthapur	Kultali	8116568447	N i l	21°53'155 "N	88°31'344"E	Yes	50:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	8.38					
38	Alpana Payra	Ashis	Baikunthapur	Kultali	9800265487	N i l	21°53'158 "N	88°31'335"E	Yes	40:30:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 5 qt/ha Cao	do	do	do	8.16					
39	Santosh Payra	Bimal	Baikunthapur	Kultali	8016251578	N i l	21°53'120 "N	88°31'350"E	Yes	40:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	7.74					
40	Kanchan Mondal	Sunil	Baikunthapur	Kultali		N i l	21°53'410 "N	88°31'320"E	Yes	40:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 5-6 qt/ha Cao	do	do	do	7.70					
41	Swapan Kumar Jana	Bhim	Binodpur	Kultali	7584803607	N i l	21°54'37.9 "N	88°31'58"E	Yes	30:30:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 6-7 qt/ha Cao	do	do	do	7.92					
42	Gobinda Giri	Sudhir	Binodpur	Kultali	8163963488	N i l	21°54'38" N	88°31'45"E	Yes	40:30:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 6- 6.5 qt/ha Cao	do	do	do	7.77					
43	Chandana Nayek	Madhab	Binodpur	Kultali	7586067269	N i l	21°54'27.9 "N	88°32'2.4"E	Yes	40:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	8.25					
44	Paresh Patra	Nanda	Binodpur	Kultali	9932293972	N i l	21°54'43.7 "N	88°31'54.6"E	Yes	40:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 5-6 qt/ha Cao	do	do	do	8.12					
45	Sahadeb Halder	Netai	Binodpur	Kultali	9635899392	N i l	21°54'6.6" N	88°32'3.38"E	Yes	50:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 4- 4.5 qt/ha Cao	do	do	do	7.56					

46	Prabir Halder	Amulya	Binodpur	Kultali	8793666770	Nil	21°54'20.0"N	88°31'21.8"E	Yes	30:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 6-6.5 qt/ha Cao	do	do	do	7.81				
47	Ajjulla Sekh	Ebam	Binodpur	Kultali		Nil	21°54'20.1"N	88°31'22.2"E	Yes	30:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 6-6 qt/ha Cao	do	do	do	7.80				
48	Pankaj Mondal	Nani	Binodpur	Kultali	8116630792	Nil	21°54'25"N	88°31'28"E	Yes	50:30:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 6.5-7 qt/ha Cao	do	do	do	7.78				
49	Fakir Halder	Kalipada	Binodpur	Kultali	8293496579	Nil	21°54'25.1"N	88°31'27.07"E	Yes	40:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 5-6 qt/ha Cao	do	do	do	8.05				
50	Harisadhan Halder	Amulya	Binodpur	Kultali	9775502080	Nil	21°54'26.8"N	88°31'26.8"E	Yes	40:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 6-6.5 qt/ha Cao	do	do	do	8.34				
51	Parimal Jit	Baneswar	Binodpur	Kultali		Nil	21°54'27.2"N	88°31'27.0"E	Yes	40:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 5.5-6 qt/ha Cao	do	do	do	8.14				
52	Usha Payra	Netai	Binodpur	Kultali	9679600635	Nil	21°54'26.8"N	88°31'26.8"E	Yes	40:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 6-7 qt/ha Cao	do	do	do	7.81				
53	Kabita Payra	Swapan	Binodpur	Kultali	9635053594	Nil	21°54'32.1"N	88°31'25.7"E	Yes	40:30:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 7-7.5 qt/ha Cao	do	do	do	7.62				
54	Basanti Payra	Benu	Binodpur	Kultali	9735409741	Nil	21°54'33.4"N	88°31'24.9"E	Yes	40:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 5-6 qt/ha Cao	do	do	do	7.61				
55	Supriya Jana	Somnath	Binodpur	Kultali	9800101576	Nil	21°54'40.2"N	88°31'1.8"E	Yes	40:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 5.5-6	do	do	do	7.83				

										qt/ha Cao								
56	Shefali Halder	Ratan	Binodpur	Kultali	9647204371	Nil	21°54'2.9"N	88°30'28.9"E	Yes	40:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 5-6 qt/ha Cao	do	do	do	7.46				
57	Bani Halder	Kartik	Binodpur	Kultali	9933892342	Nil	21°54'48.4"N	88°31'27.4"E	Yes	50:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 6-7 qt/ha Cao	do	do	do	7.19				
58	Mamata Natua	Ashis	Binodpur	Kultali		Nil	21°54'48.7"N	88°30'27.5"E	Yes	40:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	7.70				
59	Archana Ghormi	Bishnu	Binodpur	Kultali	9547562598	Nil	21°54'34.4"N	88°31'57.8"E	Yes	30:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 5-6 qt/ha Cao	do	do	do	7.92				
60	Kanaklata Naiya	Kartik	Binodpur	Kultali	8967200847	Nil	21°54'8.0"N	88°30'29.3"E	Yes	40:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 4.5-5 qt/ha Cao	do	do	do	6.92				
61	Basant Halder	Subal	Binodpur	Kultali	7585828321	Nil	21°54'57.7"63N	88°31'27.4"E	Yes	50:30:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	7.30				
62	Urmila Halder	Panchu	Binodpur	Kultali	9933131707	Nil	21°54'5.1"N	88°30'31.02"E	Yes	30:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 6-6.5 qt/ha Cao	do	do	do	7.60				
63	Dipali Bajka	Kopil	Binodpur	Kultali	9800408004	Nil	21°54'0.7"N	88°30'31.03"E	Yes	30:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 4-5 qt/ha Cao	do	do	do	7.88				
64	Basant Mondal	Goshta	Binodpur	Kultali	8001362657	Nil	21°54'35.01"N	88°30'31.02"E	Yes	40:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 6-7 qt/ha Cao	do	do	do	8.22				
65	Janaki Pramanik	Thaneswar	Binodpur	Kultali	8967802381	Nil	21°54'35.01"N	88°32'06"E	Yes	30:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 5.5-6 qt/ha Cao	do	do	do	7.76				
66	Prabhash Nayak	Dhiren	Binodpur	Kultali	4051997798	Nil	21°54'46.6"N	88°31'38.3"E	Yes	50:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	7.49				
67	Kartik Mond	Mirtunjoy	Binodpur	Kultali	9547020186	Nil	21°54'39.0"N	88°32'00"E	Yes	40:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 4-5	do	do	do	8.16				

	al									qt/ha Cao								
68	Nemai Halder	Satish	Binodpur	Kultali	9734015486	Nil	21°54'49.4"N	88°31'27.7"E	Yes	40:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 5-6 qt/ha Cao	do	do	do	7.69				
69	Biswanath Halder	Rasik	Binodpur	Kultali	7407278387	Nil	21°54'38.8"N	88°31'44.7"E	Yes	50:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 5-6 qt/ha Cao	do	do	do	7.56				
70	Swapan Giri	Balai	Binodpur	Kultali	9002615781	Nil	21°54'46.6"N	88°31'38.3"E	Yes	40:30:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 4.5-5 qt/ha Cao	do	do	do	8.44				
71	Chaitanya Mondal	Mirtunjoy	Binodpur	Kultali	7501714040	Nil	21°54'45.0"N	88°31'39.0"E	Yes	40:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 6-7 qt/ha Cao	do	do	do	8.09				
72	Harisadhan Niyogi	Tapan	Binodpur	Kultali	9062823671	Nil	21°54'40.12"N	88°31'59.0"E	Yes	40:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 6-7 qt/ha Cao	do	do	do	7.75				
73	Ajoy Kumar Das	Anil	Binodpur	Kultali	9800736415	Nil	21°54'46.14"N	88°31'40.20"E	Yes	40:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 6-7 qt/ha Cao	do	do	do	7.64				
74	Bandana Jana	Nemai	Binodpur	Kultali	9002611757	Nil	21°54'49.20"N	88°31'48.10"E	Yes	30:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 7-8 qt/ha Cao	do	do	do	7.94				
75	Sikha Dey	Purna	Binodpur	Kultali	7501353069	Nil	21°54'45.12"N	88°31'49.22"E	Yes	40:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 5.5-6 qt/ha Cao	do	do	do	8.36				
76	Panchanan Giri	Balai	Binodpur	Kultali	9002615781	Nil	21°54'40.11"N	88°31'54.0"E	Yes	40:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 5.5-6 qt/ha Cao	do	do	do	8.31				
77	Astami Mondal	Shyam pada	Bhubeneswari Char	Kultali	9735811998	Nil	21°54'25.1"N	88°31'42.16"E	Yes	40:30:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 7-7.5 qt/ha Cao	do	do	do	8.19				

78	Shefali karan	Bhagyadhar	Bhubenswari Char	Kultali	8670677408	Nil	21°54'12.4"N	88°30'50.09"E	Yes	50:30:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	7.69				
79	Dasi Halder	Amulya	Bhubenswari Char	Kultali	8972649565	Nil	21°54'10.03"N	88°30'48.08"E	Yes	30:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	7.47				
80	Malati Das	Khokan	Bhubenswari Char	Kultali	9933142427	Nil	21°54'10.07"N	88°30'33.01"E	Yes	40:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 6-7 qt/ha Cao	do	do	do	8.68				
81	Maya Naskar	Sashadhar	Bhubenswari Char	Kultali	8609791638	Nil	21°54'25.1"N	88°31'10.0"E	Yes	40:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	7.71				
82	Minoti Mondal	Ashok	Bhubenswari Char	Kultali	8420211134	Nil	21°54'13.0"N	88°31'22.7"E	Yes	30:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 6-7 qt/ha Cao	do	do	do	7.96				
83	Kuntabala Halder	Rebati	Bhubenswari Char	Kultali			21°54'20.0"N	88°30'22.8"E	Yes	40:30:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 6.5-7 qt/ha Cao	do	do	do	7.82				
84	Priyanka Gayen	Kartik	Bhubenswari Char	Kultali	9635726825	Nil	21°54'12.5"N	88°30'50.01"E	Yes	40:30:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 5.5-6 qt/ha Cao	do	do	do	7.52				
85	Barnali Gayen	Nemai	Bhubenswari Char	Kultali	8670083906	Nil	21°54'12.06"N	88°31'27.07"E	Yes	40:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 6-7 qt/ha Cao	do	do	do	8.15				
86	Sipra Halder	Bijoy	Bhubenswari Char	Kultali	8016761314	Nil	21°54'48"N	88°30'12.06"E	Yes	40:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 6-6.5 qt/ha Cao	do	do	do	7.64				
87	Janmejoy Kapat	Nalini	Bhubenswari Char	Kultali	7478338042	Nil	21°54'48.4"N	88°31'27.4"E	Yes	40:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 4.5-5 qt/ha Cao	do	do	do	7.96				
88	Bhriuram Halder	Shiv Charan	Bhadrapara	Mathurapur II	7407203122	Nil	22°03'15.52"N	88°27'45.54"E	Yes	40:30:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 4-5 qt/ha Cao	do	do	do	9.76				
89	Saroj Halder	Anadi	Bhadrapara	Mathurapur II	9735709724	Nil			Yes	40:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 4-5 qt/ha Cao	do	do	do	9.94				

90	Panchu gopal Halder	Manaranjan	Bhadrapara	Mathurapur II	9735305506	Nil	22°03'17"N	88°28'3.2"E	Yes	40:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	9.10				
91	Sadhana Tanti	Dilip	Bhadrapara	Mathurapur II	8609750445	Nil	22°04'2.65"N	88°27'33.25"E	Yes	40:30:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 4.5-5 qt/ha Cao	do	do	do	9.85				
92	Buddhanath Gayen	Panchanan	Bhadrapara	Mathurapur II	9933191990	Nil	22°02'54"N	88°27'60"E	Yes	50:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	9.46				
93	Khokan Halder	Montu	Bhadrapara	Mathurapur II	9733539441	Nil			Yes	40:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 4-5 qt/ha Cao	do	do	do	9.74				
94	Nemai Gayen	Manmatha	Bhadrapara	Mathurapur II	9933191990	Nil			Yes	40:30:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 4.5-5 qt/ha Cao	do	do	do	9.28				
95	Panchu Niyogi	Gobinda	Lot No. 27	Mathurapur II	9093868557	Nil	22°03'45.47"N	88°27'52.34"E	Yes	40:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	9.10				
96	Nabaranjan Halder	Kapilanda	Lot No. 27	Mathurapur II	9153090350	Nil	22°03'8.59"N	88°28'12.59"E	Yes	40:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	9.68				
97	Anup Naiya	Arjun	Lot No. 27	Mathurapur II	9832581420	Nil	22°03'7.3"N	88°28'10.34"E	Yes	40:30:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 4-5 qt/ha Cao	do	do	do	9.28				
98	Susanta Naiya	Kamal	Lot No. 27	Mathurapur II	8512949597	Nil	22°03'36.07"N	88°27'17.76"E	Yes	40:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	9.77				
99	Uttam Mayra	Karna	Lot No. 27	Mathurapur II	9732982365	Nil	22°03'42.63"N	88°27'52.66"E	Yes	40:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	9.41				
100	Narayan Halder	Kanai	Lot No. 27	Mathurapur II	9153090370	Nil	22°03'41.67"N	88°27'52.60"E	Yes	50:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 4.5-5 qt/ha Cao	do	do	do	9.22				
101	Manik Naskar	Nagen	Lot No. 27	Mathurapur II	9733536322	Nil	22°03'24.40"N	88°27'19.79"E	Yes	40:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	9.31				
102	Aloke Halder	Radhanath	Lot No. 27	Mathurapur II	9093023371	Nil	22°03'19.81"N	88°28'33.0"E	Yes	40:30:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 4-5 qt/ha Cao	do	do	do	9.88				
103	Arun Niyogi	Khierod	Lot No. 27	Mathurapur II		Nil	22°03'38.55"N	88°28'15.0"E	Yes	40:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	9.61				
104	Bhaktaram	Nani	Lot No. 27	Mathurapur II	9734340966	Nil	22°03'54"N	88°27'52.60"E	Yes	40:30:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	9.17				



	Halder									a								
105	Arabin du Halder	Arun	Lot No. 27	Mathurapu r II	8512921575	Nil	22°03'39.98"N	88°28'13.47" E	Yes	40:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/h a	do	do	do	9.36				
106	Debasi sh Purkait	Banki m	Kultali	Mathurapu r II	7699245596	Nil	22°03'50.64"N	88°28'7.35"E	Yes	40:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/h a	do	do	do	9.47				
107	Md. Faroj Baidya	Jiad	Vill+P.O.- Kultali	Mathurapu r II		Nil	22°03'25.31"N	88°27'29"E	Yes	50:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/h a	do	do	do	9.27				
108	Jayanta Naskar	Mahad eb	Kultali	Mathurapu r II	9091880502	Nil	22°03'39.16"N	88°28'26.57" E	Yes	40:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/h a& 4-5 qt/ha Cao	do	do	do	9.18				
109	Prasant a Niyogi	Basant a	Kultali	Mathurapu r II	8609203477	Nil	22°03'47.97"N	88°28'5.0"E	Yes	40:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/h a	do	do	do	9.75				
110	Sharmi la Niyogi	Madhu	Kultali	Mathurapu r II		Nil	22°03'36.57"N	88°28'6.41"E	Yes	40:20:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/h a	do	do	do	9.81				
111	Swapa n Das	Shin Charan	Kultali	Mathurapu r II	7699667801	Nil	22°03'40.17"N	88°28'14.84" E	Yes	40:30:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/h a	do	do	do	9.15				

**Crop: Sesame**

1	Tilattama Samanta	Basanta	Kishorimohanpur	Kultali	8115984197	Ni1	21°52'56.3"N	88°31'28.0"E	Yes	60:30:30 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	Varietal replacement, use of Azotobacter and PSB and basal application of <i>Trichoderma</i> & <i>Pseudomonas</i> and also one time boron spray	Savitri	6.0 kg/ha	The crop is in growth stage.
2	Gitasri Giri	Anil	Kishorimohanpur	Kultali	9932818495	Ni1	21°52'54.3"N	88°31'27.9"E	Yes	50:25:25 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha				
3	Keshab Kayal	Probhas	Kishorimohanpur	Kultali	9593127535	Ni1	21°52'54"N	88°31'28.7"E	Yes	50:25:25 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha				
4	Khokan Bag	Gour	Kishorimohanpur	Kultali	8159830157	Ni1	21°52'06.9"N	88°31'29.4"E	Yes	60:30:30 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha				
5	Debabrata Prodhan	Krittibas	Kishorimohanpur	Kultali	8170893090	Ni1	21°52'56.5"N	88°31'42.9"E	Yes	50:25:25 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha				
6	Binay Shyamal	Sudhir	Kishorimohanpur	Kultali	9932396886	Ni1	21°52'21.3"N	88°31'17.6"E	Yes	50:25:25 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha				
7	Sukdeb Baur	Ganga	Kishorimohanpur	Kultali	8116471928	Ni1	21°52'59.4"N	88°31'45.4"E	Yes	50:25:25 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha				
8	Gitanjali De	Srimanta	Baikunthapur	Kultali	8345955417	Ni1	21°53'10.9"N	88°31'30.9"E	Yes	60:30:30 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha				
9	Gouranga Bhandari	Shambhu	Kishorimohanpur	Kultali	7584024802	Ni1	21°52'53.0"N	88°31'27.9"E	Yes	50:25:25 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha				
10	Tarun Panda	Nabakumar	Kishorimohanpur	Kultali	9932101012	Ni1	21°52'02.2"N	88°31'40.3"E	Yes	50:25:25 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha				

1 1	Tapan Payra	Digambar	Baikunthapur	Kultali	98002654 87	Ni l	21°53'20.1" N	88°31'31.6" E	Ye s	60:30:30 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha								
1 2	Swapan Payra	Digambar	Baikunthapur	Kultali	99330686 38	Ni l	21°52'30.7" N	88°31'29.5" E	Ye s	60:25:25 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha								
1 3	Swapan Dalapati	Naren	Kishorimohanpur	Kultali	96355619 53	Ni l	21°52'50.0" N	88°31'28.09" E	Ye s	60:25:25 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha								
1 4	Kalipada Jana	Ratan	Kishorimohanpur	Kultali	90025185 47	Ni l	21°52'01.5" N	88°31'40.4" E	Ye s	60:30:25 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha								
1 5	Paramanan da Kar	Shyam	Kishorimohanpur	Kultali	81708606 38	Ni l	21°52'56.9" N	88°31'40.0" E	Ye s	50:25:25 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha								
1 6	Sujata Duari	Subhas	Baikunthapur	Kultali	70638433 63	Ni l	21°53'57.5" N	88°31'29.4" E	Ye s	50:25:25 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha								
1 7	Sibabrata Maity	Bhayabati	Baikunthapur	Kultali	99321880 94	Ni l	21°53'41.4" N	88°31'26.6" E	Ye s	60:30:30 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha								
1 8	Sambhu Jana	Bholanath	Kishorimohanpur	Kultali	96792327 35	Ni l	21°52'52.6" N	88°31'29.6" E	Ye s	60:30:30 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha								
1 9	Saraswati De	Madan	Baikunthapur	Kultali	77970061 03	Ni l	21°53'38.1" N	88°31'30.4" E	Ye s	50:25:25 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha								
2 0	Sudarshan Dalapati	Bijay	Kishorimohanpur	Kultali	90029761 22	Ni l	21°51'52.5" N	88°31'29.0" E	Ye s	50:30:25 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha								
2 1	Biren Halder	Surendra	Binodpur	Kultali	82936612 82	Ni l	21°54'700" N	88°39'87"E	Ye s	50:25:25 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha								
2 2	Sankar Manna	Naren	Maipith	Kultali	70632762 03	Ni l	21°54'813" N	88°32'6.39" E	Ye s	50:25:25 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha								
2 3	Srihari Mondal	Bhagyadhar	Maipith	Kultali	89672354 12	Ni l	21°16'181" N	88°26'575"E	Ye s	60:30:25 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha								
2	Madan	Joylish	Maipith	Kultali	70638009	Ni	21°04'335"	88°32'776"E	Ye	60:30:30 kg								

4	Mondal				61	l	N		s	N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha								
2 5	Pabitra Halder	Amulya	Binodpur	Kultali	95473839 96	Ni l	21°54'835" N	88°32'843"E	Ye s	60:30:30 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha								
2 6	Mantu Halder	Sanatan	Binodpur	Kultali	81167318 39	Ni l	21°54'752" N	88°32'993"E	Ye s	50:25:25 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha								
2 7	Mohadev Halder	Buddiswar	Binodpur	Kultali	75019190 63	Ni l	21°54'709" N	88°33'072"E	Ye s	50:25:25 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha								
2 8	Amith Halder	Tarak	Binodpur	Kultali	76027373 31	Ni l	21°56'682" N	88°33'115"E	Ye s	60:30:30 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha								
2 9	Pankaj Mondal	Nani	Binodpur	Kultali		Ni l	21°54'669" N	88°33'136"E	Ye s	50:25:25 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha								
3 0	Ashok Halder	Sindhu	Binodpur	Kultali	99330446 96	Ni l	21°56'663" N	88°33'147"E	Ye s	60:30:30 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha								
3 1	Sumita Jana	Ashok	Binodpur	Kultali	81720321 84	Ni l	21°54'660" N	88°33'175"E	Ye s	50:25:25 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha								
3 2	Kabita Roy	Uttam	Binodpur	Kultali	98001015 76	Ni l	21°54'660" N	88°33'201"E	Ye s	50:25:25 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha								
3 3	Susanta Mondal	Subal	Binodpur	Kultali	99339334 26	Ni l	21°54'662" N	88°33'269"E	Ye s	60:30:30 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha								
3 4	Sabita Giri	Mahadev	Binodpur	Kultali	96356743 68	Ni l	21°54'660" N	88°33'362"E	Ye s	60:25:25 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha								
3 5	Prafullya Payra	Gour	Binodpur	Kultali	81709585 60	Ni l	21°54'659" N	88°33'422"E	Ye s	50:30:25 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha								
3 6	Kalpana De	Ananta	Binodpur	Kultali	98000134 08	Ni l	21°54'660" N	88°33'495"E	Ye s	50:25:25 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha								
3 7	Gopal Bera	Ramchand ra	Binodpur	Kultali	96353462 80	Ni l	21°54'658" N	88°33'523"E	Ye s	60:30:30 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha								



51	Sumangal Halder	Bhrigu	Bhadrapara	Mathurapur -II	8609203962	Ni l	22°03'15"N	88°27'48"E	Yes	50:25:25 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha								
52	Asit Naskar	Manik	27 no.Lat	Mathurapur -II	9733536322	Ni l	22°03'19"N	88°27'24"E	Yes	50:30:25 kg N:P <sub>2</sub> :K <sub>2</sub> O/ha								
53	Bilu Baidya	Subhas	Gilarchat	Mathurapur -II	9093021992	Ni l	22°03'25"N	88°28'14"E	Yes	60:25:25 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha								
54	Debasish Purkait	Bankim	Kultali	Mathurapur -II	7699245596	Ni l	22°03'50"N	88°28'07"E	Yes	50:25:25 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha								
55	Deb Kumar Karmakar	Bharat	Gilarchat	Mathurapur -II	9775294609	Ni l	22°03'53"N	88°28'04"E	Yes	50:25:25 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha								
56	Prabitra Halder	Monmotha	Uttar Debipur	Kultali	7602213990	Ni l	21°58'06"N	88°31'22"E	Yes	50:25:25 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha								
57	Basudev Bhakta	Mahadev	Purba Debipur	Kultali	9933883137	Ni l	21°58'21"N	88°31'43"E	Yes	60:30:25 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha								
58	Bapi Jana	Gourhari	Purba Debipur	Kultali	9732375464	Ni l	21°58'25"N	88°31'01"E	Yes	50:25:25 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha								
59	Animesh Baidya	Mohan	Bhubaneswari	Kultali	8346917085	Ni l	21°56'47"N	88°32'28"E	Yes	50:30:25 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha								
60	Bhabatosh Dolui	Sudhansu	Bhubaneswari	Kultali	8159912510	Ni l	21°56'52"N	88°32'20"E	Yes	50:25:25 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha								
61	Kamalesh Baidya	Mohan	Bhubaneswari	Kultali	8972647214	Ni l	21°56'48"N	88°32'27"E	Yes	60:30:25 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha								
62	Debasish Mondal	Dharambir	Bhubaneswari	Kultali	9674203462	Ni l	21°56'47"N	88°31'52"E	Yes	50:25:25 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha								
63	Biswanath Mistry	Ananta	Bhubaneswari	Kultali	9831912069	Ni l	21°56'47"N	88°31'39"E	Yes	50:25:25 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha								
64	Budhadev Halder	Mrinmoyee	Bhubaneswari	Kultali		Ni l	21°56'50"N	88°31'52"E	Yes	60:30:30 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/								

										ha									
65	Asima Halder	Sukdev	Bhubaneswari	Kultali	9831245999	Nil	21°56'50"N	88°31'55"E	Yes	60:30:30 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha									
66	Sulata Halder	Nikhilesh	Bhubaneswari	Kultali		Nil	21°56'50"N	88°31'56"E	Yes	60:30:25 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha									
67	Moyna Halder	Nirmal	Bhubaneswari	Kultali		Nil	21°56'49"N	88°31'56"E	Yes	50:25:25 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha									
68	Bharati Halder	Ardhendu	Bhubaneswari	Kultali	8515893696		21°56'44"N	88°31'52"E	Yes	50:25:25 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha									
69	Prativa Kansari	Rajkumar	Bhubaneswari	Kultali			21°56'48"N	88°31'52"E	Yes	50:25:25 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha									
70	Padmabati Halder	Rabindra	Bhubaneswari	Kultali	7602830048		21°56'51"N	88°31'55"E	Yes	60:25:25 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha									
71	Sukdev Halder	Pranab	Bhubaneswari	Kultali	8116874393		21°56'53"N	88°32'18"E	Yes	50:25:25 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha									
72	Sumitra Mondal	Jatish	Debipur	Kultali	9002900900		21°58'30"N	88°30'28"E	Yes	60:30:25 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha									
73	Sahadev Prodhan	Achinta	Debipur	Kultali	8170921292		21°57'46"N	88°31'41"E	Yes	50:25:25 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha									
74	Santosh Sahoo	Bhaskar	Debipur	Kultali	9932813674		21°58'08"N	88°31'37"E	Yes	60:30:30 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha									
75	Subal Jana	Gunadhar	Debipur	Kultali	9932318989		21°58'06"N	88°31'40"E	Yes	50:25:25 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha									

**a) Crop2**

**CFLD-Pulses  
Crop-1: Lentil**

Sl No	Name of farmer	Father's name	Village	Block	Mobile No	Email ID	GPS Coordinates		Soil testing done (Yes/No)	Recommendations based on soil test value	Brief technology intervention	Variety	Seed quantity used	Demo. Yield (q/ha)			Yield of local check q/ha	% increase
							Latitude	Longitude						H	L	A		
														6.64	6.15	6.47		
1	Paresh Chaule	Bhim	Jalapur	Falta	9635503936	Nil	22°17'21"N	88°07'8.5"E	Yes	30:50:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & Zypsum 5qt/ha	Varietal replacement , <i>Rhizobium</i> seed inoculation and use of <i>Trichoderma</i> & <i>Pseudomonas</i> during land preparation	Moitre (WBL-77)	37.5 kg/ha	6.35				
2	Dilip Kr. Bera	Basari	Jalapur	Falta	8116391970	Nil	22°17'14"N	88°07'9"E	Yes	20:50:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.29				
3	Amar Chaulay	Bankim	Jalapur	Falta	7797124454	Nil	22°17'20.8"N	88°07'9"E	Yes	20:50:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.21				
4	Avijit Das	Ramapada	Jalapur	Falta	7063382963	Nil	22°17'16"N	88°06'54"E	Yes	20:50:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.56				
5	Prakash Chaulay	Jugal	Jalapur	Falta		Nil	22°17'10.1"N	88°07'3.1"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.23				
6	Murarimohan Mondal	Khagen	Jalapur	Falta	7063382963	Nil	22°17'15.8"N	88°07'10"E	Yes	30:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 5 qt/ha Zypsum	do	do	do	6.42				
7	Monoranjan Mondal	Lt. Khagen	Jalapur	Falta	7063382963	Nil	22°17'10"N	88°07'5.3"E	Yes	20:50:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.33				
8	Chiranjnan Mondal	Sudhannya	Jalapur	Falta		Nil	22°17'50"N	88°06'51.9"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.33				
9	Tapan Chaulay	Debendra	Jalapur	Falta		Nil	22°17'21"N	88°07'7"E	Yes	20:50:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.50				
10	Bachaspati Chaulay	Jiten	Jalapur	Falta	8768373981	Nil	22°17'3.3"N	88°06'52.2"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.62				
11	Arun Chaulay	Birendra	Jalapur	Falta		Nil	22°17'10.6"N	88°06'56"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.35				
12	Chhabi Das	Amolesh	Jalapur	Falta		Nil	22°17'11.6"N	88°06'4.6"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.49				
13	Anjali Das	Modan	Jalapur	Falta		Nil	22°17'10.4	88°06'56.8	Yes	20:50:20 kg	do	do	do	6.6				



			ur				"N	"E		N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha				4			
14	Madhabi Baitalick	Bikash	Jalalpur	Falta	8116724679	Nil	22°17'9.7"N	88°07'6.4"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.22			
15	Sudha Malakar	Sukumar	Jalalpur	Falta		Nil	22°17'19.6"N	88°07'8.9"E	Yes	30:50:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 6 qt Zypsum/ha	do	do	do	6.22			
16	Tanushri Adhikari	Dulal	Jalalpur	Falta		Nil	22°17'14"N	88°07'7.9"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.46			
17	Swapana Adhikari	Sushil	Jalalpur	Falta		Nil	22°17'14.7"N	88°07'8"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.30			
18	Archana Mondal	Dipankar	Jalalpur	Falta		Nil	22°17'14.3"N	88°07'3"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.34			
19	Gour Hari Maji	Jotin	Jalalpur	Falta		Nil	22°17'15"N	88°07'8"E	Yes	20:50:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.41			6.45
20	Dilip Chaulay	Nalin	Jalalpur	Falta		Nil	22°17'4"N	88°6'55"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.54			
21	Amal Mondal	Annanda	Jalalpur	Falta	7584821593	Nil	22°17'12"N	88°07'07"E	Yes	30:50:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 5qt Zypsum/ha	do	do	do	6.23			
22	Samir Manna	Nitya Gopal	Jalalpur	Falta	8768146469	Nil	22°17'16"N	88°07'9.5"E	Yes	20:50:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.43			
23	Nityagopal Manna	Tinkori	Jalalpur	Falta	8768146469	Nil	22°17'13.3"N	88°07'7"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.35			
24	Sunil Manna	Nitya Gopal	Jalalpur	Falta		Nil	22°17'16"N	88°06'55"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.40			
25	Tarapada Chaulay	Subarna	Jalalpur	Falta		Nil	22°17'3.1"N	88°06'52.5"E	Yes	30:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 5 qt/ha Zypsum	do	do	do	6.38			
26	Prabhas Chaulay	Bechuram	Jalalpur	Falta	9647966959	Nil	22°17'13"N	88°07'6.4"E	Yes	20:50:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	3			
27	Shova Maji	Sashanka	Jalalpur	Falta		Nil	22°17'4.3"N	88°06'50.8"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.57			
28	Sankar Mondal	Surendra	Jalalpur	Falta		Nil	22°17'5.1"N	88°06'48.3"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.51			
29	Bharati Chaule	Asit	Jalalpur	Falta		Nil	22°17'9.2"N	88°07'6.0"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.22			
30	Sukumar Mondal	Kanai	Jalalpur	Falta		Nil	22°17'7.9"N	88°06'49.7"E	Yes	30:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 5 qt/ha Zypsum	do	do	do	6.25			
31	Shyamali	Aloke	Jalalpur	Falta		Nil	22°17'3.8"N	88°06'48"E	Yes	20:40:20 kg	do	do	do	6.6			

	Chaule		ur	Falta		N				N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha				0				
32	Uttam Chaule	Nalini	Jalalpur	Falta	9735353462	Nil	22°17'8"N	88°06'50.4"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.33				
33	Kalachand Manna	Niroj	Jalalpur	Falta		Nil	22°17'18.8"N	88°07'76"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.65				
34	Puluk Chaule	Nalini	Jalalpur	Falta		Nil	22°17'8.2"N	88°06'45.7"E	Yes	20:50:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.30				
35	Basudeb Chaule	Srinibas	Jalalpur	Falta	8293683985	Nil	22°17'8.4"N	88°6'45.8"E	Yes		do	do	do	6.61				
36	Bimal Mondal	Bhagya-dhar	Jalalpur	Falta	8016515738	Nil	22°17'20"N	88°07'63"E	Yes	30:50:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.34				
37	Aprana Mondal	Dipankar	Jalalpur	Falta	8436958154	Nil	22°17'14.3"N	88°07'3.0"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.27				
38	Yadab Maji	Sujoy	Jalalpur	Falta		Nil	22°17'5.5"N	88°06'42.3"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.49				

39	Ramesh Maji	Jotindra	Jalalpur	Falta		8145315376	Nil	22°17'6.4"N	88°06'50.2"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.56			
40	Swapana Pore	Mrityunjoy	Jalalpur	Falta			Nil	22°17'21"N	88°07'02"E	Yes	20:50:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.25			
41	Tapasi Pore	Biswajit	Jalalpur	Falta			Nil	22°17'8.8"N	88°07'6.7"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.58			
42	Aprana Pore	Biswajit	Jalalpur	Falta			Nil	22°17'12.9"N	88°06'58.9"E	Yes	30:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 5 qt/ha Zypsum	do	do	do	6.40			
43	Krishna Adhikari	Dudh Kumar	Jalalpur	Falta			Nil	22°17'12.4"N	88°06'58.0"E	Yes	30:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 5 qt/ha Zypsum	do	do	do	6.58			
44	Naichand Manna	Niroj	Jalalpur	Falta			Nil	22°17'12.4"N	88°06'58.0"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.52			
45	Barin Patla	Jiten	Jalalpur	Falta		8967381046	Nil	22°17'07"N	88°06'59.3"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.24			
46	Pompa Pore	Tutul	Jalalpur	Falta			Nil	22°17'07"N	88°06'59.3"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.66			
47	Gouri Roy	Kartik	Jalalpur	Falta			Nil	22°17'9.5"N	88°07'6.0"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.20			
48	Paritosh Maji	Jiban	Jalalpur	Falta			Nil	22°17'19"N	88°07'08"E	Yes	20:50:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.57			
49	Ramesh Chaule	Bhagya-dhar	Jalalpur	Falta		8145373780	Nil	22°17'12"N	88°07'3.8"E	Yes	20:50:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.50			

50	Subhash Chaule	Haradhan	Jalalpur	Falta	9932234793	Nil	22°17'10.9"N	88°07'4.8"E	Yes	20:50:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 5qt/ha Cao	do	do	do	6.41				
51	Monimohan Chaulay	Kiron	Jalalpur	Falta	9732734884	Nil	22°17'7.5"N	88°07'48.6"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.62				
52	Santiram Bisoy	Monmatha	Jalalpur	Falta		Nil	22°17'21"N	88°07'7.5"E	Yes	20:50:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.63				
53	Swapan Patra	Feluram	Jalalpur	Falta	9333324282	Nil	22°17'13"N	88°06'54"E	Yes	30:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 5 qt/ha Zypsum	do	do	do	6.24				
54	Achinta Chaulay	Ganesh	Jalalpur	Falta		Nil	22°17'49"N	88°06'56.6"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.49				
55	Ashok Mondal	Pulin	Jalalpur	Falta		Nil	22°17'10.7"N	88°06'54.7"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.58				
56	Shushil Maji	Dudh Kumar	Jalalpur	Falta		Nil	22°07'6.6"N	88°06'43.8"E	Yes	30:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 5 qt/ha Zypsum	do	do	do	6.30				
57	Prakash Panda	Jugal	Jalalpur	Falta		Nil	22°17'10.1"N	88°07'3.1"E	Yes	20:50:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.41				
58	Krishna Kanta Das	Kochiram	Jalalpur	Falta		Nil	22°17'20"N	88°07'01"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.22				
59	Ashis Maity	Krishna	Jalalpur	Falta	9093226225	Nil	22°17'10.3"N	88°06'55.9"E	Yes	30:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 5 qt/ha Zypsum	do	do	do	6.50				
60	Kamal Maity	Subir	Jalalpur	Falta	8348420998	Nil	22°17'10.1"N	88°06'54.6"E	Yes	20:50:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & Zypsum 5qt/ha	do	do	do	6.37				
61	Dilip Mondal	Atul	Jalalpur	Falta		Nil	22°17'4.8"N	88°06'54.5"E	Yes	20:50:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 5qt/ha Cao	do	do	do	6.20				
62	Ashutosh Maji	Jiban	Jalalpur	Falta		Nil	22°17'18.0"N	88°07'08"E	Yes	20:50:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.66				
63	Anath Maji	Sitanath	Jalalpur	Falta	8967951714	Nil	22°17'13.7"N	88°07'7.9"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.32				
64	Purna Chaulay	Debendra	Jalalpur	Falta	9733587001	Nil	22°17'10.4"N	88°07'0.4"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.33				
65	Shyamal Mistry	Amitra	Jalalpur	Falta	9609128933	Nil	22°17'9.9"N	88°07'4.6"E	Yes	30:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.64				
66	Nabin Mondal	Akrur	Jalalpur	Falta	9002374811	Nil	22°17'14.0"N	88°07'4.8"E	Yes	30:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.59				

										& 4qt Zypsum/ha								
67	Rabin Mondal	Akrur	Jalalpur	Falta	9002374811	Nil	22°17'11.1"N	88°07'4.4"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.53				
68	Sandip Maji	Jagadish	Jalalpur	Falta	9733812322	Nil	22°17'13.8"N	88°06'59.6"E	Yes	30:50:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.45				
69	Pradip Mondal	Atul	Jalalpur	Falta	9735244850	Nil	22°17'4.9"N	88°07'4.6"E	Yes	20:50:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.42				
70	Ajoy Chaulay	Bhagya-dhar	Jalalpur	Falta		Nil	22°17'9.4"N	88°07'4.6"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.36				
71	Sanatan Bisoyee	Gostha-bihari	Jalalpur	Falta		Nil	22°17'20"N	88°07'05"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.52				
72	Barun Maji	Birendra	Jalalpur	Falta		Nil	22°17'5.3"N	88°06'48.9"E	Yes	20:50:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.35				
73	Rabin Mondal	Bhojohari	Jalalpur	Falta		Nil	22°17'6.7"N	88°06'48.1"E	Yes	20:50:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.42				
74	Lakshman Das	Biphal	Jalalpur	Falta		Nil	22°17'4.3"N	88°06'56.4"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.23				
75	Ram Das	Biphal	Jalalpur	Falta		Nil	22°17'7.3"N	88°06'44.7"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.245				
76	Netei Mondal	Motibal	Jalalpur	Falta		Nil	22°17'7.3"N	88°06'47.8"E	Yes	30:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 5 qt/ha Zypsum	do	do	do	6.49				
77	Soumen Chaulay	Birendra	Jalalpur	Falta	9563806108	Nil	22°17'2.9"N	88°06'47.3"E	Yes	20:50:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.22				
78	Goutam Adhikari	Bhim	Jalalpur	Falta		Nil	22°17'10.9"N	88°06'55.3"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.50				
79	Manbendra Chaulay	Hemanta	Jalalpur	Falta		Nil	22°17'3.7"N	88°06'44.0"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.53				
80	Kishor Chaulay	Bishnu-pada	Jalalpur	Falta		Nil	22°17'6.6"N	88°06'55.3"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.63				
81	Swapan Chaulay	Jugal	Jalalpur	Falta		Nil	22°17'5.2"N	88°07'3.3"E	Yes	30:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 5 qt/ha Zypsum	do	do	do	6.52				
82	Modan Chaulay	Sudhir	Jalalpur	Falta		Nil	22°17'12.3"N	88°06'47.1"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.30				
83	Pranab Chaulay	Asit	Jalalpur	Falta		Nil	22°17'4.3"N	88°07'5.4"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.38				
84	Ranjit Maji	Jogodish	Jalalpur	Falta		Nil	22°17'13"N	88°06'50.9"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.44				
85	Krishna Pada Gayen	Jiten	Jalalpur	Falta		Nil	22°17'11.1"N	88°06'57.5"E	Yes	20:50:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.59				

86	Ganesh Panda	R. Panda	Jalalpur	Falta		Nil	22°17'5.9"N	88°07'4.9"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.63				
87	Krishna Chaulay	Rupchand	Jalalpur	Falta		Nil	22°17'9.5"N	88°07'7.5"E	Yes	20:50:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.20				
88	Banamali Bisoyee	Sanatan	Jalalpur	Falta		Nil	22°17'13.2"N	88°06'43.2"E	Yes	20:50:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.48				
89	Biswanath Mondal	Rabin	Jalalpur	Falta		Nil	22°17'9"N	88°07'7.5"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.43				
90	Anjali Mondal	Pulin	Jalalpur	Falta		Nil	22°17'20"N	88°07'05"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.61				
91	Asit Naskar	Manik	Vill-27 no Lat,P.O.- P.Kultali	Kultali	9733536322	Nil	22°03'19.52"N	88°27'24.85"E	Yes	20:50:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha &5-6 qt/ha Cao	do	do	do	6.35				
92	Susanta Naiya	Kamal	Vill-27 no Lat,P.O.- P.Kultali	Kultali	9832581420	Nil	22°03'36.7"N	88°27'17.76"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 4qt/ha Cao	do	do	do	6.25				
93	Astik Mayra	Madhai	Vill-27 no Lat,P.O.- P.Kultali	Kultali	7074639189	Nil	22°03'45"N	88°28'17.07"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.24				
94	Basudev Niogi	Mantu	Vill-27 no Lat,P.O.- P.Kultali	Kultali	8512949597	Nil	22°02'56.16"N	88°28'8.23"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.18				
95	Anup Naiya	Arjun	Vill-27 no Lat,P.O.- P.Kultali	Kultali	9832581420	Nil	22°03'36.7"N	88°27'17.76"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.42				
96	Ashok Adhikari	Joydeb	Vill+P.O.- P.Kultali	Kultali	8648022855	Nil	22°03'19.84"N	88°28'7.07"E	Yes	20:50:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha &4qt/ha Cao	do	do	do	6.33				
97	Asit Chhatui	Ratan	Vill+P.O.- P.Kultali	Kultali	8514847599	Nil	22°03'26.53"N	88°28'6.60"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.24				
98	Shyamalendu Mondal	Madhusudan	Vill+P.O.- P.Kultali	Kultali	9732733091	Nil	22°03'9.02"N	88°28'11.38"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.37				
99	Sahadeb Niyogi	Sanyashi	Vill+P.O.- P.Kultali	Kultali	9732880918	Nil	22°03'16.17"N	88°28'8.66"E	Yes	20:50:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 4qt/ha Cao	do	do	do	6.21				
100	Sailen Das	Joydeb	Gilerchat	Mathurapur-II	9732668926	Nil	22°03'1.71"N	88°28'4.77"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.23				
101	Prasenjit Sarkar	Hridoy	Gilerchat	Mathurapur-II	9153555090	Nil	22°03'55.63"N	88°26'88"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.42				
102	Swapan Adhikari	Joydeb	Gilerchat	Mathurapur-II	8641023073	Nil	22°02'49"N	88°28'30"E	Yes	20:50:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha &4qt/ha Cao	do	do	do	6.23				
103	Rajendra pasad	Surendranath	Gilerchat	Mathurapur-II		Nil	22°03'18.0"N	88°28'29.0"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.30				

	Mondal																	
104	Jaydeb Niyogi	Ganesh	Gilerchat	Mathurapur-II	8478893790	Nil	22°02'58.75"N	88°28'5.09"E	Yes	20:50:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 5qt/ha Cao	do	do	do	6.21				
105	Ajoy Das	Sailen	Gilerchat	Mathurapur-II	9647419099	Nil	22°03'19.81"N	88°28'73.7"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do	6.36				

## Crop: Greengram

Sl No.	Name of farmer	Father's name	Village	Block	Mobile No	Email ID	GPS Coordinates		Soil testing done (Yes / No)	Recommendations based on soil test value	Brief technology intervention	Variety	Seed quantity used	Demo. Yield (q/ha)			Yield of local check q/ha	% increase
							Latitude	Longitude						H	L	A		
1	Swapan Sardar	Pulin	Kaikhali	Kultali	7074837966	Nil	22°01'41" N	88°36'18" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 4qt/ha Cao	Varietal replacement, seed treatment with Rhizobium, use of PSB, neem based pesticides and other bio agents against pod borer	PD M-84-139	20.0 kg/ha	The crop is in pod formation stage and the harvesting will be strated by the 3 <sup>rd</sup> wk. of April, 2017				
2	Bhismad eb Sardar	Dhiren	Kaikhali	Do	8348408367	Nil	22°01'41" N	88°36'19" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 4qt/ha Cao	do	do	do					
3	Sankar Naskar	Surath	Kaikhali	Kultali	8001958850	Nil	22°01'48" N	88°36'26" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					

4	Ajoy Sardar	Sanatan	Kaikhali	Kultali		Nil	22°01'48" N	88°36'26" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha	do	do	do					
5	Mahadeb Mondal	Basudeb	Kaikhali	Kultali		Nil	22°01'57" N	88°36'25" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha	do	do	do					
6	Ajoy Mondal	Haranda	Kaikhali	Kultali	9735513 015	Nil	22°01'57" N	88°36'24" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha	do	do	do					
7	Kamal Mondal	Arjun	Kaikhali	Kultali	7047785 310	Nil	22°01'58" N	88°36'22" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha	do	do	do					
8	Bhusan Sardar	Atal	Kaikhali	Kultali	8768254 378	Nil	22°01'55" N	88°36'30" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha	do	do	do					
9	Gobinda Sardar	Swapan	Kaikhali	Kultali	7679819 307	Nil	22°01'44" N	88°36'19" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha	do	do	do					
10	Basudeb Sardar	Kartick	Kaikhali	Kultali	9735805 640	Nil	22°01'40" N	88°33'20" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha	do	do	do					
11	Phatik Sardar	Pulin	Kaikhali	Kultali	7797713 423	Nil	22°01'55" N	88°36'27" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha & 3qt/ha Cao	do	do	do					
12	Rabiram Naskar	Hari-pada	Kaikhali	Kultali	9002310 081	Nil	22°01'57" N	88°36'26" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha	do	do	do					
13	Shyamal Mondal	Harananda	Kaikhali	Kultali		Nil	22°01'47" N	88°36'26" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha	do	do	do					
14	Nirmal Naskar	Surya-kanta	Kaikhali	Kultali	9547600 590	Nil	22°01'46" N	88°36'23" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha & 3qt/ha Cao	do	do	do					
15	Mahim Naskar	Surath	Kaikhali	Kultali	7047785 314	Nil	22°01'49" N	88°36'18" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha	do	do	do					
16	Sudhamo y Naskar	Hari-pada	Kaikhali	Kultali		Nil	22°01'49" N	88°36'22" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha	do	do	do					

										ha								
17	Sudhir Naskar	Balai	Kaikhali	Kultali		Nil	22°01'51" N	88°36'22" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
18	Joydeb Mondal	Hara-nanda	Kaikhali	Kultali		Nil	22°01'57" N	88°36'29" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
19	Ruhitosh Naskar	Adhir	Kaikhali	Kultali		Nil	22°02'0"N	88°36'23" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
20	Prabhas Mondal	Hara-nanda	Kaikhali	Kultali		Nil	22°01'47" N	88°36'20" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 3qt/ha Cao	do	do	do					
21	Sankha Naskar	Adhir	Kaikhali	Kultali		Nil	22°01'55" N	88°36'31" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
22	Dilip Naskar	Nanda	Kaikhali	Kultali		Nil	22°01'58" N	88°36'27" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
23	Jiten Naskar	Hari-pada	Kaikhali	Kultali	9732490436	Nil	22°01'55" N	88°36'21" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
24	Adhir Naskar	Balai	Kaikhali	Kultali		Nil	22°01'55" N	88°36'23" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
25	Ramdeb Mondal	Hara-nanda	Kaikhali	Kultali	7407936386	Nil	22°01'55" N	88°36'32" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
26	Nirmal Mondal	Arjun	Kaikhali	Kultali		Nil	22°01'59" N	88°36'26" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 4-5qt/ha Cao	do	do	do					
27	Nemai Naskar	Dwijopada	Kaikhali	Kultali	7047785165	Nil	22°01'58" N	88°36'26" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
28	Sannyasi Naskar	Ganesh	Kaikhali	Kultali	9088452592	Nil	22°02'58" N	88°36'23" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
29	Dilip	Dhanan	Kaikhali	Kultali	9732546	Nil	22°01'47" N	88°36'23" E	Yes	20:40:20 kg	do	do	do					



	Mondal	-jay			852	Nil	N	E		N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha & 4qt/ha Cao								
30	Gour Charndra Naskar	Adhir	Kaikhali	Kultali		Nil	22°02'01" N	88°36'24" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha	do	do	do					
31	Manik Patra	Padma-lochan	Maipith	Kultali	8159075 988	Nil	21°55'185" N	88°32'676" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha & 3qt/ha Cao	do	do	do					
32	Shyamal Chakraborty	Murari	Maipith	Kultali	7063743 735	Nil	21°55'154" N	88°32'677" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha	do	do	do					
33	Badal Maity	Bihari	Bhubeneswari char	Kultali	8972257 568	Nil	21°54'496" N	88°31'473" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha	do	do	do					
34	Mohan Mondal	Jotish	Maipith	Kultali	8159000 690	Nil	21°54'994" N	88°32'659" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha	do	do	do					
35	Kajal Khanra	Anadi	Maipith	Kultali	9647179 986	Nil	21°55'185" N	88°32'676" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha	do	do	do					
36	Tapan Giri	Balai	Binodpur	Kultali	9002615 781	Nil	21°54'628" N	88°49'800" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha & 3qt/ha Cao	do	do	do					
37	Kartick Halder	Surya-kanta	Binodpur	Kultali	9933892 342	Nil	21°54'620" N	88°31'622" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha	do	do	do					
38	Badal Das	Iswar	Bhubeneswari char	Kultali	7044103 069	Nil	21°54'501" N	88°31'448" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha	do	do	do					
39	Mira Halder	Hari-sadhan	Binodpur	Kultali	9775502 080	Nil	21°54'474" N	88°31'574" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha	do	do	do					
40	Ramchandra Saha	Subal	Binodpur	Kultali	9775741 949	Nil	21°54'667" N	88°31'606" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha	do	do	do					
41	Supriya Mondal	Ashok	Binodpur	Kultali	9800101 576	Nil	21°54'730" N	88°31'967" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha	do	do	do					

										ha								
42	Chandana Nayek	Bhakta	Binodpur	Kultali	9002741522	Nil	21°54'481" N	88°31'556" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
43	Chhabi Roy	Lakshman	Binodpur	Kultali		Nil	21°54'465" N	88°31'805" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
44	Gouri Pal	Mahadev	Binodpur	Kultali	9002012905	Nil	21°54'461" N	88°31'688" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
45	Sunita Das	Kartick	Binodpur	Kultali		Nil	21°54'459" N	88°31'840" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
46	Lakshmi Payra	Debakar	Binodpur	Kultali	8967345354	Nil	21°54'48" N	88°31'710" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 3qt/ha Cao	do	do	do					
47	Ashalata Manna	Pankaj	Maipith	Kultali	9679423021	Nil	21°55'251" N	88°32'665" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
48	Shyamal Chakraborty	Gonesh	Maipith	Kultali	9932129147	Nil	21°55'350" N	88°32'650" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
49	Netai Mondal	Mritunjay	Binodpur	Kultali	7501714040	Nil	21°54'85" N	88°31'682" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
50	Sashadhar Mondal	Basudeb	Binodpur	Kultali	9679129533	Nil	21°37'942" N	88°31'699" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
51	Samir Pal	Santosh	Binodpur	Kultali	8170959983	Nil	21°54'835" N	88°31'600" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
52	Ananda Mondal	Pratap	Binodpur	Kultali	9547946271	Nil	21°54'473" N	88°31'584" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
53	Bablu Jana	Kanai	Binodpur	Kultali	8348633951	Nil	21°54'481" N	88°31'556" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
54	Kamal Giri	Ashok	Binodpur	Kultali	8348302156	Nil	21°54'505" N	88°31'609" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					

										ha& 3qt CaO/ha								
55	Ramchan dra Payra	Satish	Binodpur	Kultali	9609337 935	Nil	21°54'612" N	88°31'672" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha	do	do	do					
56	Gopal Giri	Sudhir	Binodpur	Kultali	9163963 488	Nil	21°54'835" N	88°31'600" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha & 3qt/ha Cao	do	do	do					
57	Ghanash yam Halder	Dhiren- dra	Bhubenesw ari char	Kultali	8972957 576	Nil	21°54'479" N	88°31'555" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha	do	do	do					
58	Kapil Bajka	Panchu	Bhubenesw ari char	Kultali	8972383 492	Nil	21°54'494" N	88°31'489" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha	do	do	do					
59	Indrajit Das	Mono- ranjan	Maipith	Kultali	8016303 401	Nil	21°55'482" N	88°32'628" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha	do	do	do					
60	Kamal Dandapat	Bankim	Maipith	Kultali	9734575 414	Nil	21°55'454" N	88°32'585" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha	do	do	do					
61	Bharat Das	Nalini	Kisorimoha npur	Kultali	7602246 291	Nil	21°52'13.4 N	88°31'28. 9"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha	do	do	do					
62	Khokan Patra	Bhusan	Kisorimoha npur	Kultali	8116506 185	Nil	21°52'5.1" N	88°31'29" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha & 4-5qt/ha Cao	do	do	do					
63	Keshab ch. Kayal	Probhas	Kisorimoha npur	Kultali	9593127 535	Nil	21°52'21.1 N	88°31'19. 2"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha	do	do	do					
64	Pratima Gayen	Anil	Kisorimoha npur	Kultali	9747324 001	Nil	21°52'7.0" N	88°31'26. 4"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha	do	do	do					
65	Rikta Halder	Laksh- man	Kisorimoha npur	Kultali	9126301 520	Nil	21°52'21.1 N	88°31'20. 3"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha & 4-5qt/ha Cao	do	do	do					
66	Buddhis war Jana	Panch- anan	Kisorimoha npur	Kultali	8174222 510	Nil	21°52'21.8 N	88°31'23. 2"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/	do	do	do					

										ha & 4-5qt/ha Cao								
67	Champa Dalapati	Dilip	Kisorimohanpur	Kultali	9635254057	Nil	21°52'20.8"N	88°31'21.6"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 4-5qt/ha Cao	do	do	do					
68	Kajal Manna	Samir	Kisorimohanpur	Kultali	9933070205	Nil	21°52'20.6"N	88°31'17.8"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 3qt/ha Cao	do	do	do					
69	Jharna Maity	Tapan	Kisorimohanpur	Kultali	9532178132	Nil	21°52'20.3"N	88°31'18.5"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
70	Balaram Patra	Nani-gopal	Kisorimohanpur	Kultali	8159728420	Nil	21°52'20.3"N	88°31'18.5"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
71	Sukumar Hazra	Atul	Kisorimohanpur	Kultali	7407224948	Nil	21°52'19.2"N	88°31'18.7"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 4-5qt/ha Cao	do	do	do					
72	Probhakar Majhi	Hara-dhan	Kisorimohanpur	Kultali	9735671570	Nil	21°52'19.2"N	88°31'20.5"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
73	Akul Purkait	Srikanta	Kisorimohanpur	Kultali	9609158231	Nil	21°52'20.1"N	88°31'24.1"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 3-4qt/ha Cao	do	do	do					
74	Haripada Kayal	Buddhi-swar	Kisorimohanpur	Kultali	8159082002	Nil	21°52'11.6"N	88°31'24.6"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
75	Ghanashyam Das	Banamali	Kisorimohanpur	Kultali	7074578559	Nil	21°52'12.4"N	88°31'25.6"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 3qt/ha Cao	do	do	do					
76	Mrinal Samanta	Lakshman	Kisorimohanpur	Kultali	7363808859	Nil	21°52'6.0"N	88°31'28.0"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
77	Hrisikesh Bhandari	Hara-dhan	Kisorimohanpur	Kultali	9800728729	Nil	21°52'13.4"N	88°31'29.6"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					

78	Uttam Patra	Asit Baran	Kisorimohapur	Kultali	7584080796	Nil	21°52'5.4" N	88°31'27.5"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
79	Sunil Majhi	Adhar	Kisorimohapur	Kultali	9679870410	Nil	21°52'4.6" N	88°31'26.4"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
80	Prokash Kanti Mishra	Ramani	Kisorimohapur	Kultali	8159002046	Nil	21°52'3.3" N	88°31'26.8"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
81	Kishori Mondal	Shrihari	Baikunthapur	Kultali	7319056655	Nil	21°53'9.5" N	88°31'21.3"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					

82	Subal Paik	Tapan	Baikunthapur	Kultali	8346916276	Nil	21°53'9.6" N	88°31'20.1"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
83	Dipak Bera	Samar	Baikunthapur	Kultali	7363808970	Nil	21°53'10.2"N	88°31'19.3"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
84	Jyotirmoy Halder	Netai	Kisorimohapur	Kultali	9593492146	Nil	21°52'25.0"N	88°31'24.8"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 3qt/ha Cao	do	do	do					
85	Kartick Das	Dayal	Kisorimohapur	Kultali	8016904674	Nil	21°52'11" N	88°31'22" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
86	Susanta Das	Anil	Baikunthapur	Kultali	8670777921	Nil	21°53'10.7"N	88°31'18.8"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
87	Kanai Sasmal	Atul	Kisorimohapur	Kultali	7602501653	Nil	21°52'5.8" N	88°31'25.6"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 3qt/ha Cao	do	do	do					
88	Kirtibas Mondal	Palas	Baikunthapur	Kultali	9932166102	Nil	21°53'11.8"N	88°31'20.3"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
89	Aradhana Halder	Nemai	Kisorimohapur	Kultali	9051617937	Nil	21°52'9.7" N	88°31'25.6"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 3qt/ha Cao	do	do	do					

90	Debabrata Maity	Bhagabati	Baikunthapur	Kultali	8972207798	Nil	21°53'12.1"N	88°31'31.6"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
91	Alok Halder	Tarak	27 no.Lat	Mathurapur-II	9733539441	Nil	21°03'17"N	88°27'59"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
92	Jharna Karmakar	Bapan	Gillerchat	Mathurapur-II	9091880502	Nil	22°03'10"N	88°28'10"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
93	Arpita Mondal	Shyamal	Kultali	Mathurapur-II	9564221888	Nil	22°03'43"N	88°27'52"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
94	Prabir Neogi	Manmatha	Kaltali	Mathurapur-II		Nil	22°03'27"N	88°27'57"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
95	Arabindu Halder	Tarak	27 no.Lat	Mathurapur-II	8512921575	Nil	22°03'17"N	88°28'01"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
96	Bhagyadhar Halder	Shibcharan	Bhadrapara	Mathurapur-II	8001362613	Nil	22°03'27"N	88°28'13"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
97	Sushil Neogi	Promotaha	Kultali	Mathurapur-II	9732880918	Nil	21°03'34"N	88°28'06"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
98	Priya Ranjan Halder	Deban	Kultali	Mathurapur-II	9153090350	Nil	22°03'43"N	88°27'52"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
99	Tapan Karmakar	Mohan	Gillerchat	Mathurapur-II	9768619855	Nil	22°02'56"N	88°28'08"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
100	Harendra Nath Sardar	Dhiren	P.Kultali	Mathurapur-II	8609103120	Nil	22°03'35"N	88°28'29"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
101	Arup Neogi	Promataha	P.Kultali	Mathurapur-II	9051217084	Nil	22°03'24"N	88°28'07"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
102	Anil Neogi	Promataha	P.Kultali	Mathurapur-II	9647909578	Nil	22°03'16"N	88°27'56"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					

103	Basudeb Neogi	Mantu	P.Kultali	Mathurapur -II	8512949597	Nil	22°03'12" N	88°28'07" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
104	Shyamali Mondal	Angira	P.Kultali	Mathurapur -II	7074479399	Nil	22°03'39" N	88°28'06" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
105	Netai Purkait	Srinibas	P.Kultali	Mathurapur -II	7699245596	Nil	22°03'27" N	88°27'59" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
106	Ram Ratan Pramanick	Satish	Gillerchat	Mathurapur -II		Nil	22°04'02" N	88°28'13" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
107	Shyam Sundar Khamaru	Dilip	Gillerchat	Mathurapur -II	9093092276	Nil	22°04'09" N	88°28'19" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
108	Sudhyamaya Halder	Khagen	Kultali	Mathurapur -II		Nil	22°03'34" N	88°28'26" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
109	Sudhakar Baidiya	Subhas	Gillerchat	Mathurapur -II	9093021992	Nil	22°03'55" N	88°27'36" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
110	Santi Naiya	Sailen	Kultali	Mathurapur -II	9641559257	Nil	22°03'41" N	88°27'49" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
111	Samir Pramanik	Netai	Kultali	Mathurapur -II	8001202770	Nil	22°03'18" N	88°28'27" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
112	Prabir Pramanik	Netai	Kultali	Mathurapur -II	8001202770	Nil	22°03'17" N	88°28'27" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
113	Prasanta Khamaru	Dilip	Gillerchat	Mathurapur -II	9093092276	Nil	22°04'09" N	88°28'19" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
114	Sahadev Neogi	Sannyasi	Kultali	Mathurapur -II	9732880918	Nil	22°03'16" N	88°28'0"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
115	Joydev Neogi	Gonesh	Kultali	Mathurapur -II	8478893709	Nil	22°02'58.75"N	88°28'5.9"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					





129	Sombhu Das	Pulin	Uttar Debipur	Kultali	9093681780	Nil	21°57'48" N	88°31'16" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
130	Panchanan Mondal	Bipin	Uttar Debipur	Kultali	9932818699	Nil	21°58'04" N	88°31'31" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 4qt CaO/ha	do	do	do					
131	Bablu Roy	Amullya	Uttar Debipur	Kultali	7384648506	Nil	21°58'32" N	88°30'33" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
132	Srihari Jana	Bhaku	Madhya Gurguria	Kultali	8116567402	Nil	21°58'13" N	88°32'22" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
133	Naresh Bairagi	Ramani	Debipur	Kultali	8670031111	Nil	21°58'49" N	88°31'12" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
134	Srimanta Sheet	Abanti	Debipur	Kultali	8670365393	Nil	21°58'06" N	88°31'56" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
135	Bishnupada Sheet	Bhutnath	Debipur	Kultali	9564228818	Nil	21°58'06" N	88°31'59" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
136	Achinta Pradhan	Jogendra	Debipur	Kultali	8116521793	Nil	21°57'48" N	88°31'19" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
137	Pulak Sahoo	Jharu	Debipur	Kultali	8972580671	Nil	21°58'13" N	88°31'40" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
138	Buddhab Mondal	Megnat	Debipur	Kultali	7602614153	Nil	21°58'13" N	88°31'41" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 4qt CaO/ha	do	do	do					
139	Swapn Mondal	Ramhari	Debipur	Kultali	9933839334	Nil	21°58'19" N	88°31'49" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
140	Radhkrisna Sheet	Atul	Debipur	Kultali	7602813184	Nil	21°58'06" N	88°31'54" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
141	Sailen Mondal	Jiten	Debipur	Kultali	9933068691	Nil	21°57'46" N	88°31'17" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					

										ha								
14 2	Dinaband hu Jana	Nemai	Debipur	Kultali	9732962 276	Nil	21°58'11" N	88°31'46" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha	do	do	do					
14 3	Subhend u Khatua	Bhopen	Debipur	Kultali	9732772 729	Nil	21°58'01" N	88°31'12" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha	do	do	do					
14 4	Kartik Mondal	Kritibas h	Debipur	Kultali	9002478 959	Nil	21°58'17" N	88°31'44" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha	do	do	do					
14 5	Goutam Maisal	Saktipa da	Purba Gurguria	Kultali	9932619 725	Nil	21°58'65" N	88°33'81" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha	do	do	do					
14 6	Uttam Bhunias	Sudhan su	Debipur	Kultali	9933911 009	Nil	21°57'56" N	88°31'11" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha	do	do	do					
14 7	Mritunja y Sahoo	Adhar	Debipur	Kultali	9797833 105	Nil	21°57'49" N	88°31'09" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha	do	do	do					
14 8	Parames war Bhunias	Atul	Debipur	Kultali	9564804 142	Nil	21°58'06" N	88°31'23" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha	do	do	do					
14 9	Netai Bhunias	Atul	Debipur	Kultali	8116515 681	Nil	21°58'06" N	88°31'17" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha	do	do	do					
15 0	Dinesh Maity	Surath	Debipur	Kultali	9679508 902	Nil	21°58'14" N	88°31'45" E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha	do	do	do					
15 1	Bablu Banerjee	Badal	Shibkalinag ar	Kakdwip	9734940 188	Nil	21°57'55.5 "N	88°11'58. 2"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha	do	do	do					
15 2	Nalinika nta Bairagi	Jogendr anath	Shibkalinag ar	Do	8343005 354	Nil	21°57'55.5 "N	88°11'58. 2"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha	do	do	do					
15 3	Bapi Patra	Prabhas	Shibkalinag ar	Do	8001881 722	Nil	21°57'03" N	88°11'59. 2"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha	do	do	do					
15 4	Motilal Bera	Sudhan su	Shibkalinag ar	Do	9732880 604	Nil	21°57'57.7 "N	88°11'58. 9"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ ha	do	do	do					

155	Anup Kr. Mondal	Buddhiswar	Shibkalinagar	Do	9647140840	Nil	21°57'57.9"N	88°11'58"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do				
156	Bablu Bairagi	Dhananjay	Shibkalinagar	Do		Nil	21°57'57.2"N	88°11'57.4"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do				
157	Mohan Pramanik	Sukdeb	Shibkalinagar	Do		Nil	21°57'55.2"N	88°11'56.7"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do				
158	Sudhansu Maity	Santosh	Shibkalinagar	Do	7872222417	Nil	21°55'47.9"N	88°10'57.1"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do				
159	Subarna Giri	Bagambar	Shibkalinagar	Do	9609231135	Nil	21°56'5.4"N	88°10'59.5"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do				
160	Surya Giri	Bagambar	Shibkalinagar	Do	8926973322	Nil	21°56'5.9"N	88°10'59.2"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do				
161	Nirapada Giri	Bagambar	Shibkalinagar	Do	7679324100	Nil	21°56'5.9"N	88°10'58.9"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do				
162	Amal Das	Abhiram	Shibkalinagar	Do	8927140277	Nil	21°56'5.6"N	88°10'58.1"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do				
163	Anup Das	Pulin	Shibkalinagar	Do	8336914375	Nil	21°56'6.4"N	88°10'56.3"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do				
164	Madan Khatuya	Shyam	Shibkalinagar	Do	7029325450	Nil	21°56'9.2"N	88°10'56.2"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do				
165	Bankim Singh	Abhinaya	Shibkalinagar	Do	9002835084	Nil	21°56'12.5"N	88°10'53.8"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do				
166	Nandiram Dolui	Annayada	Shibkalinagar	Do	9800709585	Nil	21°56'17.8"N	88°10'52.6"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do				
167	Gour Halder	Sudhir	Shibkalinagar	Do	9593218704	Nil	21°56'19.5"N	88°10'52.7"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do				
168	Krishnap	Rabindr	Shibkalinagar	Do	7686844	Nil	21°56'22.3"N	88°10'54.4"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do				

8	ada Dolui	anath ar			388		"N	3"E		N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha								
169	Sukdeb Maity	Ashok	Shibkalinagar	Do	8158928142	Nil	21°56'22.0"N	88°10'45.3"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
170	Badal Gharami	Manya bar	Shibkalinagar	Do	7029258209	Nil	21°56'23.4"N	88°10'45.6"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
171	Chandan Dolui	Annaya da	Shibkalinagar	Do	7063843691	Nil	21°56'20.8"N	88°10'46.3"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
172	Goutam Das	Dhiren	Shibkalinagar	Do	9153288522	Nil	21°56'20.4"N	88°10'40.4"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
173	Moni Dolui	Rabindr anath	Shibkalinagar	Do	9609332792	Nil	21°56'20.4"N	88°10'40.4"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
174	Pulin Halder	Sudhir	Shibkalinagar	Do	9735472030	Nil	21°56'49.6"N	88°10'39.8"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
175	Netai Halder	Sudhir	Shibkalinagar	Do	9831249425	Nil	21°56'18.7"N	88°10'39.0"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
176	Susanta Dalui	Balaram	Shibkalinagar	Do	9851743472	Nil	21°56'17.7"N	88°10'38.5"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
177	Arun Halder	Sudhir	Shibkalinagar	Do	8670541394	Nil	21°56'17.3"N	88°10'38.1"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
178	Narugopal Halder	Rabindr anath	Shibkalinagar	Do	8101622792	Nil	21°56'17.4"N	88°10'39.6"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 3qt CaO/ha	do	do	do					
179	Gobinda Halder	Gurupada	Shibkalinagar	Do	7063701932	Nil	21°56'3.9"N	88°10'45.9"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
180	Gopal Halder	Gurupada	Shibkalinagar	Do	7679917588	Nil	21°56'52.0"N	88°10'46.7"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
181	Sailen Maji	Dhananjay	Gabberia	Mandir Bazar	8926198417	Nil	22°05'04"N	88°18'14.8"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					



195	Gopal Sardar	Amullya	Madhusudanpur	Do	9732503976	Nil	22°05'27.7"N	88°18'25.4"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
196	Netai Halder	Rajkumar	Madhusudhanpur	Do	9732503976	Nil	22°05'21.7"N	88°17'22.4"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
197	Ramkrishna Halder	Rajkumar	Madhusudanpur	Do	9734644143	Nil	22°05'20.7"N	88°17'25.5"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
198	Badal Sardar	Amullya	Madhusudanpur	Do	7501244908	Nil	22°05'20.7"N	88°17'22.5"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
199	Utpal Sardar	Badal	Madhusudhanpur	Do	7501244908	Nil	22°05'04"N	88°17'25.5"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
200	Mangal Purkait	Sailen	Gabberia	Do	9733573488	Nil	22°05'1.6"N	88°17'92"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
201	Sunirmal Pramanik	Chandicharn	Gabberia	Do	7797683455	Nil	22°05'20.8"N	88°17'24.1"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
202	Uttam Gharami	Sunil	Gabberia	Do	8116990169	Nil	22°05'24.8"N	88°18'1.7"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
203	Bapi Sardar	Amullya	Madhusudanpur	Do	9593219271	Nil	22°05'43.9"N	88°17'54.6"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
204	Sandip Halder	Panchanan	Gabberia	Do	8116587339	Nil	22°05'39.7"N	88°17'55.6"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha & 3qt CaO/ha	do	do	do					
205	Sukdeb Chowdhury	Sudhir	Gabberia	Do	7872737387	Nil	22°05'22.3"N	88°18'5.4"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
206	Kartick Maji	Nakul	Gabberia	Do	8697178302	Nil	22°05'41.0"N	88°17'56.9"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					

207	Saday Kayal	Manick	Gabberia	Do	9932097662	Nil	22°05'2.6"N	88°17'44.7"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
208	Dinesh Maji	Nakul	Gabberia	Do	9932168077	Nil	22°05'41.8"N	88°17'55.8"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
209	Panchanan Chowdhury	Biswanath	Gabberia	Do	9735815125	Nil	22°05'41.0"N	88°17'57.2"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					
210	Atish Chakraborty	Tripurari	Gabberia	Do	9735524401	Nil	22°05'5.6"N	88°17'51.5"E	Yes	20:40:20 kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O/ha	do	do	do					









Thematic Area	No. of Courses	No. of Participants									Grand Total		
		Other			SC			ST					
		M	F	T	M	F	T	M	F	T	M	F	T
Designing and development for high nutrient efficiency diet													
Minimization of nutrient loss in processing													
Gender mainstreaming through SHGs													
Storage loss minimization techniques													
Enterprise development	1	-	11	11	11	15	26				11	26	37
Value addition	1	12	-	12	15	-	15				27	-	27
Income generation activities for empowerment of rural Women	5	-	45	45	1	60	61	-	-	-	1	105	106
Location specific drudgery reduction technologies													
Rural Crafts													
Capacity building													
Women and child care													
Others, if any (Food Processing)	1	-	6	6	-	22	22				-	28	28
VI. Agril. Engineering													
Installation and maintenance of micro irrigation systems													
Use of Plastics in farming practices													
Production of small tools and implements													
Repair and maintenance of farm machinery and implements													
Small scale processing and value addition													
Post Harvest Technology													
Others, if any													
VII. Plant Protection													
Integrated Pest Management	2	69	6	75	9	3	12	13	0	13	91	9	100
Integrated Disease Management	2	41	10	51	18	13	31	0	0	0	59	23	82
Bio-control of pests and diseases													
Bio intensive IDM													
Organic Farming													
Production of bio control agents and bio pesticides	5	185	5	190	55	0	55	2	0	2	242	5	247
Others, if any													
Beekeeping	2	0	0	0	0	0	0	25	8	33	25	8	33
Organic Farming	3	45	5	50	48	7	55	0	0	0	93	12	105
VIII. Fisheries													
Integrated fish farming	3	14	1	15	48	34	82	4	4	8	66	39	105





Thematic Area	No. of Courses	No. of Participants									Grand Total		
		Other			SC			ST					
		M	F	T	M	F	T	M	F	T	M	F	T
Production of quality animal products	1	19	3	22	16	14	30	0	0	0	35	17	52
Dairying	1	38	3	41	38	1	39	0	0	0	76	4	80
Sheep and goat rearing													
Quail farming													
Piggery													
Rabbit farming													
Ornamental bird rearing	3	59	28	87	11	18	29	0	0	0	70	46	116
Poultry production	1	2	14	16	0	3	3	0	0	0	2	17	19
Ornamental fisheries													
Enterprise development													
Duck rearing	1	20	2	22	19	2	21	0	0	0	39	4	43
Para vets													
Para extension workers	1	0	32	32	0	12	12	0	0	0	0	44	44
Composite fish culture	3	51	22	73	22	3	25	2	-	2	75	25	100
Freshwater prawn culture	1	14	-	14	6	1	7	-	-	-	20	1	21
Shrimp farming													
Pearl culture													
Cold water fisheries													
Fish harvest and processing technology													
Carp breeding and hatchery management													
Fry and fingerling rearing	1	6	1	7	8	-	8	-	-	-	14	1	15
Integrated fish farming	1	13	-	13	10	-	10	-	-	-	23	-	23
Breeding of endangered indigenous fish	2	28	-	28	25	1	26	-	-	-	53	1	54
Small scale processing													
Post Harvest Technology													
Tailoring and Stitching													
Rural Crafts													
Agri-clinic and agri-business													
Integrated Pest Management													
Integrated Crop Management													
Export quality betel vine production													
Others – reproductive health													
Others – Production of low volume and high value vegetable crops	1	12	0	12	8	0	8	0	0	0	20	0	20
Plantation crops: Protective cultivation (Green Houses, Shade Net etc.)	1	16	0	16	11	4	15	0	0	0	27	4	31

Thematic Area	No. of Courses	No. of Participants									Grand Total		
		Other			SC			ST					
		M	F	T	M	F	T	M	F	T	M	F	T
Plantation crops: Crop Doctor	3	51	0	51	68	0	68	1	0	1	120	0	120
<b>TOTAL</b>	<b>28</b>	<b>457</b>	<b>105</b>	<b>562</b>	<b>335</b>	<b>60</b>	<b>395</b>	<b>4</b>	<b>0</b>	<b>4</b>	<b>796</b>	<b>165</b>	<b>961</b>

### B. Extension Personnel (on campus)

Thematic Area	No. of Courses	No. of Participants									Grand Total		
		Other			SC			ST					
		M	F	T	M	F	T	M	F	T	M	F	T
Productivity enhancement in field crops													
Value addition	1	12	-	12	15	-	15				27	-	27
Integrated Pest Management													
Integrated Disease Management													
Biological Control													
Integrated Nutrient management													
Management of problematic soil													
Rejuvenation of old orchards													
Protected cultivation technology (Green Houses, Shade Net etc.) of vegetables (for BENFED officers)	1	19	4	23	3	0	3	1	0	1	23	4	27
Formation and Management of SHGs	3	-	1	1	-	83	83	-	-	-	-	84	84
Group Dynamics and farmers organization													
Leadership development													
Information networking among farmers													
Capacity building for ICT application													
Capacity building for Watershed Management													
Care and maintenance of farm machinery and implements													
WTO and IPR issues													
Management in farm animals													
Livestock feed and fodder production													
Integrated fish farming													
Carp breeding and hatchery management													
Breeding of endangered indigenous fish													
Composite fish culture													
Artificial insemination													
Primary veterinary service provider													
Azolla cultivation													
Prani Mitra (14days)	4	0	111	111	0	42	42	0	0	0	0	153	153











Thematic Area	No. of Courses	No. of Participants									Grand Total		
		Other			SC			ST					
		M	F	T	M	F	T	M	F	T	M	F	T
Production of small tools and implements													
Repair and maintenance of farm machinery and implements													
Small scale processing and value addition													
Post Harvest Technology													
Others, if any													
VII. Plant Protection													
Integrated Pest Management													
Bio-intensive IDM													
Bio-intensive IPM													
Integrated pest and Disease Management													
Bio-control of pests and diseases													
Integrated Disease Management	3	100	9	109	53	9	62	0	0	0	153	18	171
Indigenous Technological Knowledge (ITK)													
Production of bio control agents and bio pesticides													
Others, if any													
VIII. Fisheries													
Integrated fish farming													
Carp breeding and hatchery management													
Carp fry and fingerling rearing													
Composite fish culture & fish disease	1	5	-	5	14	-	14	1	4	5	20	4	24
Fish feed preparation & its application to fish pond, like nursery, rearing & stocking pond													
Hatchery management and culture of freshwater prawn													
Breeding and culture of ornamental fishes													
Portable plastic carp hatchery													
Pen culture of fish and prawn													
Shrimp farming													
Edible oyster farming													
Pearl culture													
Fish processing and value addition													
Others, as mentioned below													
<b>Pond preparation for freshwater fish and prawn culture</b>	2	55	11	66	11	1	12	-	-	-	66	12	78

Thematic Area	No. of Courses	No. of Participants									Grand Total		
		Other			SC			ST					
		M	F	T	M	F	T	M	F	T	M	F	T
Introduction of new species and varietal replacement													
Tilapia culture													
Culture of stress tolerant fish													
Breeding and culture of endangered indigenous fish													
IX. Production of Inputs at site													
Seed Production													
Planting material production													
Bio-agents production													
Bio-pesticides production													
Bio-fertilizer production													
Vermi-compost production													
Organic manures production													
Production of fry and fingerlings													
Production of Bee-colonies and wax sheets													
Small tools and implements													
Production of livestock feed and fodder													
Production of Fish feed													
Others, if any													
X. Capacity Building and Group Dynamics													
Leadership development													
Group dynamics													
Formation and Management of SHGs													
Mobilization of social capital													
Entrepreneurial development of farmers/youths													
WTO and IPR issues													
Others, if any													
XI Agro-forestry													
Production technologies													
Nursery management													
Integrated Farming Systems													
XII. Others (Pl. Specify)													
Climate Change	1	4	0	4	18	12	30	0	0	0	22	12	34
<b>TOTAL</b>	<b>167</b>	<b>2162</b>	<b>803</b>	<b>2931</b>	<b>896</b>	<b>627</b>	<b>1523</b>	<b>464</b>	<b>325</b>	<b>789</b>	<b>3530</b>	<b>1747</b>	<b>5277</b>



Thematic Area	No. of Courses	No. of Participants									Grand Total		
		Other			SC			ST					
		M	F	T	M	F	T	M	F	T	M	F	T
Pearl culture													
Cold water fisheries													
Fish harvest and processing technology													
Fry and fingerling rearing													
Small scale processing													
Post Harvest Technology													
Tailoring and Stitching													
Rural Crafts													
Others, if any													
Plantation crops: Protective cultivation (Green Houses, Shade Net etc.)	1	20	0	20	0	0	0	0	0	0	20	0	20
Breeding and culture of endangered indigenous fish	2	28	-	28	8	-	8	12	1	13	48	1	49
<b>Freshwater fish culture</b>	1	13	-	13	5	-	5	-	-	-	18	-	18
<b>Brood fish management of carp and catfish</b>	3	20	2	22	11	-	11	14	3	17	45	5	50
<b>TOTAL</b>	<b>180</b>	<b>2059</b>	<b>885</b>	<b>2944</b>	<b>765</b>	<b>475</b>	<b>1240</b>	<b>384</b>	<b>152</b>	<b>536</b>	<b>3208</b>	<b>1512</b>	<b>4720</b>

### E. Extension Personnel (Off Campus)

Thematic Area	No. of Courses	No. of Participants									Grand Total		
		Other			SC			ST					
		M	F	T	M	F	T	M	F	T	M	F	T
Productivity enhancement in field crops													
Integrated Pest Management													
Integrated Nutrient management													
Rejuvenation of old orchards													
Protected cultivation technology													
Formation and Management of SHGs	5	64	26	90	27	17	44				91	43	134

Thematic Area	No. of Courses	No. of Participants									Grand Total		
		Other			SC			ST			M	F	T
		M	F	T	M	F	T	M	F	T			
Group Dynamics and farmers organization	2	16	58	74	3	10	13		2	2	19	70	89
Information networking among farmers													
Capacity building for ICT application													
Care and maintenance of farm machinery and implements													
WTO and IPR issues													
Management in farm animals													
Livestock feed and fodder production													
Household food security													
Women and Child care													
Low cost and nutrient efficient diet designing													
Production and use of organic inputs													
Gender mainstreaming through SHGs													
Group sensitization programme for SHGs & WC members	2	16	58	74	3	10	13	-	2	2	19	70	89
Awareness programme for SHGs & UGS	7	53	63	116	54	60	114		6	6	107	129	236
Crop intensification													
<b>TOTAL</b>	<b>16</b>	<b>149</b>	<b>205</b>	<b>354</b>	<b>87</b>	<b>97</b>	<b>184</b>		<b>10</b>	<b>10</b>	<b>236</b>	<b>312</b>	<b>548</b>











Thematic Area	No. of Courses	No. of Participants									Grand Total		
		Other			SC			ST			M	F	T
		M	F	T	M	F	T	M	F	T			
irrigation systems													
Use of Plastics in farming practices													
Production of small tools and implements													
Repair and maintenance of farm machinery and implements													
Small scale processing and value addition													
Post Harvest Technology													
Others, if any													
VII. Plant Protection													
Integrated Pest Management	2	69	6	75	9	3	12	13	0	13	91	9	100
Integrated pest and disease management													
Integrated Disease Management	5	141	19	160	71	22	93	0	0	0	212	41	253
Bio-control of pests and diseases													
Bio-intensive IDM													
Bio-intensive IPM													
Indigenous Technological Knowledge (ITK)													
Organic farming													
Production of bio control agents and bio pesticides	5	185	5	190	55	0	55	2	0	2	242	5	247
Others, if any													
Beekeeping	2	0	0	0	0	0	0	25	8	33	25	8	33
Organic Farming	3	45	5	50	48	7	55	0	0	0	93	12	105
VIII. Fisheries													
Integrated fish farming	3	14	1	15	48	34	82	4	4	8	66	39	105
Carp breeding and hatchery management													
Carp fry and fingerling rearing													
Composite fish culture & fish disease	3	27	-	27	49	-	49	1	4	5	77	4	81
Fish feed preparation & its application to fish pond, like nursery, rearing & stocking pond													
Hatchery management and culture of freshwater prawn													
Breeding and culture of ornamental fishes	1	35	-	35	-	-	-	-	-	-	35	-	35



Thematic Area	No. of Courses	No. of Participants									Grand Total			
		Other			SC			ST			M	F	T	
		M	F	T	M	F	T	M	F	T				
Entrepreneurial development of farmers/youths														
WTO and IPR issues														
Others, if any														
XI Agro-forestry														
Production technologies														
Nursery management														
Integrated Farming Systems														
XII. Others (Pl. Specify)														
Climate Change	1	4	0	4	18	12	30	0	0	0	22	12	34	
<b>Total</b>	<b>216</b>	<b>3084</b>	<b>959</b>	<b>4023</b>	<b>1364</b>	<b>787</b>	<b>2142</b>	<b>554</b>	<b>349</b>	<b>903</b>	<b>5010</b>	<b>2077</b>	<b>7147</b>	

ii.

**RURAL YOUTH (On and Off Campus)**

Thematic Area	No. of Courses	No. of Participants									Grand Total		
		Other			SC			ST			M	F	T
		M	F	T	M	F	T	M	F	T			
Mushroom Production	2	1	27	28	10	27	37	-	-	-	11	54	65
Bee-keeping	3	9	0	9	34	1	35	14	11	25	57	12	69
Integrated farming													
Seed production													
Production of organic inputs													
Integrated Farming													
Integrated crop management (vegetables)													
Planting material production													
Vermi-culture													
Sericulture													
Protected cultivation of vegetable crops	1	12	0	12	5	0	5	0	0	0	17	0	17
Commercial fruit production													
Repair and maintenance of farm machinery and implements													
Nursery Management of Horticulture crops	4	107	0	107	54	0	54	1	0	1	162	0	162





Thematic Area	No. of Courses	No. of Participants									Grand Total		
		Other			SC			ST			M	F	T
		M	F	T	M	F	T	M	F	T			
Others, if any													
Production of low volume and high value vegetable crops	1	12	0	12	8	0	8	0	0	0	20	0	20
Plantation crops: Protective cultivation (Green Houses, Shade Net etc.)	2	32	0	32	8	0	8	0	0	0	40	0	40
Plantation crops: Crop Doctor	3	51	0	51	68	0	68	1	0	1	120	0	120
Freshwater fish culture	1	13	-	13	5	-	5	-	-	-	18	-	18
Brood fish management of carp and catfish	3	20	2	22	11	-	11	14	3	17	45	5	50
Agri-clinic and agri-business													
Integrated Pest Management													
Integrated Crop Management													
Modern technology for export quality betel vine production													
<b>TOTAL</b>	<b>207</b>	<b>2510</b>	<b>976</b>	<b>3486</b>	<b>1097</b>	<b>528</b>	<b>1625</b>	<b>388</b>	<b>152</b>	<b>540</b>	<b>3995</b>	<b>1656</b>	<b>5651</b>

## iii.

**Extension Personnel (On and Off Campus)**

Thematic Area	No. of Courses	No. of Participants									Grand Total		
		Other			SC			ST			M	F	T
		M	F	T	M	F	T	M	F	T			
Productivity enhancement in field crops													
Integrated Pest Management													
Integrated Disease Management													
Biological Control													
Management of Problematic Soil													
Integrated Nutrient management													
Rejuvenation of old orchards													
Value addition	1	12	-	12	15	-	15	-	-	-	27	-	27
Protected cultivation technology (Green Houses, Shade Net etc.) of vegetables (for BENFED officers)	1	19	4	23	3	0	3	1	0	1	23	4	27



Cluster													
National Vegetable Initiative for Urban Cluster													
Hi-Tech Horticulture for the East Singhum District of Jharkhand													
Crop intensification													
Evaluation and monitoring tool													
Training of Programme Coordinators													
Training of Programme Coordinators (MDP) (10 days duration)	2	9	1	10	-	-	-	-	-	-	9	1	10
KPS Training (six month duration)	1	16	0	16	11	0	11	4	0	4	31	0	31
Field Experience Training of 104 FOCARS (21 days duration)	1	2	2	4	1	1	2	1	0	1	4	3	7
Technological interventions for coastal agri-horticulture for the extension personnel of Puduchery													
Diploma in Agriculture Extension Services for Input Dealers (DAESI)	2	66	1	67	12	1	13	0	0	0	78	2	80
<b>TOTAL</b>	<b>34</b>	<b>371</b>	<b>267</b>	<b>638</b>	<b>197</b>	<b>214</b>	<b>411</b>	<b>6</b>	<b>8</b>	<b>14</b>	<b>574</b>	<b>489</b>	<b>1063</b>

Please furnish the details of training programmes as Annexure in the proforma given below

Discipline	Clientele	Title of the training programme	Duration in days	Venue (Off / On Campus)	Number of participants			Number of SC/ST		
					Male	Female	Total	Male	Female	Total
Agronomy	PF	Quality management of cotton	1 day	Off	34	-	34	-	-	-
Agronomy	PF	Selection of rice varieties as per land situation, seed treatment and nursery management	4 days	On	21	-	21	2	-	2
Agronomy	PF	Soil test based fertilizer management through organic manures and fertilizers in kharif paddy	4 days	On	23	-	23	-	-	-
Agronomy	PF	Selection of rice varieties as per land situation, seed treatment and nursery management	4 days	On	17	20	37	-	8	8
Agronomy	PF	Selection of rice varieties as per land situation, seed treatment and nursery management	4 days	On	50	-	50	-	-	-
Agronomy	PF	Soil test based fertilizer management through organic manures and fertilizers in kharif paddy	4 days	On	29	-	29	10	-	10
Agronomy	PF	Management of saline soil and selection of salt tolerant kharif paddy varieties	1 day	Off	30	5	35	2	3	5
Agronomy	PF	Soil test based fertilizer management through organic manures and fertilizers in kharif paddy	4 days	On	29	-	29	13	-	13
Agronomy	PF	Techniques of in kharif paddy seed production	4 days	On	6	21	27		6	6
Agronomy	EP	Formation of SHGs under IWMP	1 day	Off	29	12	41	9	7	16
Agronomy	PF	Suitable cropping pattern for Rabi-Summer season in land shaping plot	4 days	On	24	15	39	8	9	17
Agronomy	PF	Techniques of in kharif paddy seed production	1 day	Off	27	7	34	-	-	-
Agronomy	EP	Monitoring of user groups under IWMP-7	1 day	Off	9	6	15	-	-	-
Agronomy	EP	Monitoring of user groups under IWMP-7	1 day	Off	8	24	32	-	-	-
Agronomy	PF	Weed Management practices in Medium and low land paddy	1 day	Off	12	2	14	3	-	3
Agronomy	PF	Integrated Farming	5 days	On	31	-	31	4	-	4
Agronomy	PF	Suitable cropping pattern for Rabi-Summer season in land shaping plot	4 days	On	29	-	29	11	-	11
Agronomy	PF	Integrated Farming	5 days	On	32		32	7		7
Agronomy	EP	Account maintenance and book keeping for SHG members under IWMP	1 day	Off	16	2	18		2	2

Agronomy	EP	Account maintenance and book keeping for SHG members under IWMP	1 day	Off	5	13	18	1	1	2
Agronomy	EP	Formation of SHG under IWMP	1 day	Off	32	10	42	17	7	24
Agronomy	PF	Nutrient management in kharif rice under NFSM programme	1 day	Off	26	4	30	8	2	10
Agronomy	PF	Sustainable Agricultural practices	5days	On	10	10	24	3	4	7
Agronomy	PF	Suitable cropping pattern for Rabi-Summer season in land shaping plot	2 days	On	40		40	18		18
Agronomy	PF	Method of sowing, use of bio fertilizers and seed treatment of lentil	1 day	Off	43	17	60	7	2	9
Agronomy	PF	Method of sowing, use of bio fertilizers and seed treatment of lentil	1 day	Off	21	26	47	10	20	30
Agronomy	PF	Method of sowing, use of bio fertilizers and seed treatment of lentil	1 day	Off	19	21	40	14	4	5
Agronomy	EP	Sensitization programme for watershed committee members	1 day	Off	12	5	17	1	3	4
Agronomy	EP	Sensitization programme for SHG members under IWMP-7	1 day	Off	7	65	72	2	9	11
Agronomy	EP	Awareness programme for SHGs under IWMP	1 day	Off	5	45	50	2	9	11
Agronomy	EP	Awareness programme for SHGs under IWMP	1 day	Off	5	4	9		1	1
Agronomy	EP	Awareness programme for SHGs under IWMP	1 day	Off	17	17	34	2	2	4
Agronomy	EP	Awareness programme for SHGs under IWMP	1 day	Off	8	8	46	2		2
Agronomy	EP	Awareness programme for SHGs under IWMP	1 day	Off	37	17	54	24	16	40
Agronomy	EP	Awareness programme for SHGs under IWMP	1 day	Off	17	31	48	31		31
Agronomy	EP	Awareness programme for SHGs under IWMP	1 day	Off	18	7	25	7	7	14
Agronomy	PF	Method of sowing, use of bio fertilizers and seed treatment of lentil	1 day	Off	32	2	34	-	-	-
Agronomy	PF	Suitable short duration cotton varieties and management practices	1 day	Off	34		34	31		31
Agronomy	PF	Method of sowing, use of bio fertilizers and seed treatment of lentil	1 day	Off	16	2	18	5	2	7
Agronomy	PF	Suitable short duration cotton varieties and management practices	1 day	Off	34		34	-	-	-
Agronomy	PF	Inter culture operation in lentil	1 day	Off	72	18	90	17	4	21
Agronomy	PF	Use of bi fertilizers and bio pesticides in greengram	1 day	Off	28		28	8		8
Agronomy	EP	Sensitization programme for watershed committee members under IWMP-6	1 day	On	10	2	12	4		4

Agronomy	PF	Integrated nutrient management in lentil	1 day	Off	40		40	8		8
Agronomy	PF	Production of vermin compost	3 days	On	26	3	29	5		5
Agronomy	PF	Production of vermin compost	3 days	On		31	31		8	8
Agronomy	PF	Integrated farming with special emphasis to "Modern Agri.- Horticultural practices	4 days	On	1	40	41		25	25
Agronomy	PF	Scientific method of oilseed and pulse cultivation	4 days	On	24		24	13		13
Agronomy	PF	Soil test based nutrient management in boro paddy	1 day	Off	25		25	8		8
Horticulture	PF	Production technology of Enriched Vermicompost	4	on	42	0	42	10	0	10
Horticulture	PF	Improved methods of early winter Vegetable cultivation	5	on	11	0	11	4	0	4
Horticulture	PF	Improved method of Non traditional Vegetable cultivation	5	on	19	0	19	3	0	3
Horticulture	PF	Establishment & management of fruit orchard for better climatic resilience	6	on	40	0	40	10	0	10
Horticulture	PF	Establishment & management of fruit orchard for better climatic resilience	6	on	38	0	38	26	0	26
Horticulture	PF	Market oriented and high value vegetable cultivation in the peri-urban area	4	on	27	0	27	1	0	1
Horticulture	PF	Production of enriched vermicompost	4	on	12	8	20	12	8	20
Horticulture	PF	Importance, utility and mechanism of micro-irrigation in cultivation of fruits and vegetables	6	on	40	0	40	17	0	17
Horticulture	PF	Innovative technique of vegetable production on <i>Ail</i> land	6	on	40	0	40	18	0	18
Horticulture	PF	Innovative technique of vegetable production on <i>Ail</i> land	4	on	26	0	26	23	0	23
Horticulture	PF	Beetle vine cultivation in Climate smart hi-tech boro for quality leaf production	6	on	34	0	34	8	0	8
Horticulture	PF	Management of salinity through cultivation of salt tolerant crops	1	OFF	46	4	50	29	3	32
Horticulture	PF	Scientific methods of kharif onion and rabi onion cultivation	1	OFF	74	9	83	5	0	5
Horticulture	PF	Production of enriched vermicompost	1	OFF	55	0	55	22	0	22
Horticulture	PF	Identification of different physiological disorders of vegetables & their management	1	OFF	38	7	45	29	6	35
Horticulture	PF	Management of Cassava plant during post monsoon season	1	OFF	25	0	25	8	0	8
Horticulture	PF	Weed management practices in onion crop	1	OFF	23	0	23	9	0	9
Horticulture	PF	Management of salinity through cultivation of salt tolerant crops	1	OFF	27	0	27	13	0	13
Horticulture	PF	Identification of different physiological disorders of vegetables & their management	1	OFF	38	8	46	38	8	46
Horticulture	PF	Improved methods of Late winter & early summer Vegetable cultivation	1	OFF	13	17	30	13	17	30
Horticulture	PF	Improved methods of Late winter & early summer Vegetable cultivation	1	OFF	50	3	53	19	3	22
Horticulture	PF	Scientific methods of kharif onion and rabi onion cultivation	1	OFF	43	5	48	3	0	3
Horticulture	RY	Self employment generation through cultivation of conventional and non-conventional vegetables	4	on	20	0	20	8	0	8
Horticulture	RY	Self-employment generation through establishment,	6	on	42	0	42	12	0	12

		maintenance and management of horticultural nursery								
Horticulture	RY	Self-employment generation through establishment, maintenance and management of horticultural nursery	6	on	40	0	40	15	0	15
Horticulture	RY	Self-employment generation through establishment, maintenance and management of horticultural nursery	6	on	40	0	40	14	0	14
Horticulture	RY	Protected Cultivation of Hi-value Vegetables	7	on	17	0	17	5	0	5
Horticulture	RY	Self employment generation through Coconut Farming	6	on	40	0	40	17	0	17
Horticulture	RY	Beetle vine cultivation in Climate smart hi-tech boroz for quality leaf production	3	on	27	4	31	11	4	15
Horticulture	RY	Self-employment generation through establishment, maintenance and management of coconut nursery	6	on	40	0	40	14	0	14
Horticulture	RY	Self-employment generation as Coconut Doctor	6	on	40	0	40	31	0	31
Horticulture	RY	Self-employment generation as Coconut Doctor	6	on	40	0	40	21	0	21
Horticulture	RY	Beetle vine cultivation in Climate smart hi-tech boroz for quality leaf production	1	OFF	20	0	20	0	0	0
Horticulture										
Horticulture	EP	Production parameters of AgriHorti Produce for better marketing	2	on	23	4	27	4	0	4
Horticulture	EP	Field Experience Training of 104th FOCARS	21	on	4	3	7	2	1	3
Horticulture	EP	FOCT	6	on	40	0	40	12	0	12
Horticulture	EP	FOCT	6	on	40	0	40	14	0	14
Horticulture	EP	FOCT	6	on	40	0	40	11	0	11
Horticulture	EP	FOCT	6	on	40	0	40	34	0	34
Horticulture	EP	KPS	180	on	31	0	31	15	0	15
Fishery	PF	Pond preparation for freshwater fish and prawn culture	1	Off	38	12	50	4	1	5
Fishery	RY	Breeding and culture of indigenous fish in backyard system	1	Off	20	1	21	13	1	14
Fishery	RY	Breeding and culture of indigenous fish in backyard system	1	Off	28	-	28	7	-	7
Fishery	PF	Pond preparation for freshwater fish and prawn culture	1	Off	28	-	28	7	-	7
Fishery	PF	Mixed culture of carp and prawn	4	On	25	-	25	14	-	14
Fishery	RY	Management of carp grow out ponds	4	On	23	-	23	10	-	10
Fishery	RY	Diverse freshwater fish culture technologies for boosting farm production	15	On	23	-	23	10	-	10
Fishery	PF	Mixed culture of carp and prawn	1	Off	20	4	24	15	4	19
Fishery	RY	Management of carp grow out ponds	1	Off	22	4	26	19	4	23
Fishery	RY	Mixed fish and prawn culture in Sundarbans	1	Off	36	2	38	36	2	38
Fishery	RY	Small scale seed production and larval rearing of Asian catfish and singhi	5	On	24	-	24	15	-	15

Fishery	RY	Small scale seed production and larval rearing of Asian catfish and singhi	5	On	29	1	30	10	1	11
Fishery	PF	Carp fry and fingerling production in freshwater ponds	5	On	30	-	30	13	-	13
Fishery	RY	Management of carp growout ponds & their value addition through culture of freshwater giant prawn	5	On	32	25	57	7	3	10
Fishery	RY	Management of carp growout ponds	4	On	20	-	20	7	-	7
Fishery	RY	Fish rearing and management	7	On	14	1	15	8	-	8
Fishery	RY	Brood fish management of carp and catfish	1	Off	13	2	15	11	2	13
Fishery	RY	Brood fish management of carp and catfish	1	Off	17	1	18	13	1	14
Fishery	RY	Brood fish management of carp and catfish	1	Off	15	2	17	1	-	1
Fishery	PF	Mixed culture of carp and prawn	4	On	32	-	32	21	-	21
Fishery	PF	Training on integrated farming	5	On	42	-	42	37	-	37
Fishery	RY	Fresh water fish farming	1	Off	18	-	18	5	-	5
Fishery	RY	Fresh water fish and prawn culture	4	On	20	1	21	6	1	7
Fishery	PF	Breeding and culture of ornamental fishes	4	On	35	-	35	-	-	-
Fishery	PF	Integrated fish farming	4	On	15	-	15	6	-	6
Fishery	PF	Integrated fish farming	5	On	9	39	48	9	38	47
Animal Husbandray	F&FW	Ornamental bird rearing	1	On	28	1	29	8	1	9
Animal Husbandray	RY	Duck farming	5	On	39	4	43	19	2	21
Animal Husbandray	F&FW	Dairy farming	5	On	16	0	16	7	0	7
Animal Husbandray	EP	Prani Mitra	14	On	0	37	37	0	10	10
Animal Husbandray	RY	Ornamental bird rearing	1	On	18	0	18	5	0	5
Animal Husbandray	EP	Prani Mitra	14	On	0	35	35	0	10	10
Milti Discipilnery	F & FW	Integrated farming	5	On	22	0	22	21	0	21
Animal Husbandray	RY	Dairy farming	4	On	76	4	80	38	1	39
Animal Husbandray	EP	Prani Mitra	14	On	0	38	38	0	9	9
Animal Husbandray	RY	Strengthening of backyard Poultry	4	On	2	17	19	0	3	3
Animal Husbandray	F&FW	Feed management of ornamental BIRDS	4	On	0	18	18	0	18	18
Animal Husbandray	F&FW	Diseases of Poultry and their management	4	On	12	18	30	2	4	6
Animal Husbandray	EF	MAITRI training	45	On	25	0	25	0	0	0
Animal Husbandray	RY	Production of quality animal products	6	On	35	17	52	16	14	30
Animal Husbandray	F&FW	Production of quality animal products	6	On	51	6	57	25	6	31
Animal	F&FW	Poultry management	4	On	2	28	30	0	5	5



Husbandray										
Animal Husbandray	F&FW	Health management of backyard poultry and duck	4	On	8	22	30	7	14	21
Animal Husbandray	RY	Para Extension worker	18	On	0	44	44	0	12	12
Animal Husbandray	F&FW	Production of livestock feed and fodder	4	On	2	21	23	2	19	21
Animal Husbandray	EF	Prani Mitra	14	On	0	43	43	0	13	13
Home Science	F&FW	LANN-Nutritional management of children	1	off	9	18	27	5	3	8
Horticulture & Home Science	F&FW	LANN-preparation & management of nutrition garden	1	off	7	15	22	4	4	8
Plant Protection & Home Science	F&FW	LANN- preparation of organic manure from household waste	1	off	9	37	46	6	17	23
Home Science	F&FW	LANN-Nutritional management of Adolescent	1	off	10	35	45	6	14	20
Plant Protection & Home Science	F&FW	LANN- preparation of organic manure from household waste	1	off	10	13	23	6	10	16
Home Science	F&FW	integrated farming system	4	On	11	26	37	11	15	26
Plant Protection & Home Science	F&FW	LANN- preparation of organic manure from household waste	1	off	7	12	19	3	12	15
Horticulture & Home Science	F&FW	LANN-preparation & management of nutrition garden	1	off	5	18	23	4	6	10
Multi Disciplenry	EP	MDP programme for newly recruited Programme Coordinators of KVK	10	on	5	-	5	-	-	-
Home Science	F&FW	LANN-Nutritional management of children	1	off	7	13	20	3	5	8
Home Science	EP	Strengthening of SHG	4	on	-	32	32	-	31	31
Home Science	F&FW	LANN-preparation & management of nutrition garden	1	off	1	12	13	2	6	8
Home Science	EP	Strengthening of SHG	4	on	-	5	5	-	32	32
Home Science	F&FW	LANN- preparation of organic manure from household waste	1	off	14	16	30	10	16	26
Home Science	F&FW	Income generating activities of SHG members through food processing	4	on	-	14	14	-	14	14
Plant Protection & Home Science	EP	Production technology on enriched vermin composting	4	on	27	-	27	15	-	15
Home Science	F&FW	Income generating activities of SHG members through food processing	4	on	-	12	12	-	9	9
Plant Protection & Home Science	F&FW	LANN- preparation of organic manure from household waste	1	off	13	13	26	7	4	11
Home Science	F&FW	LANN- preparation of nutrition Garden in backyard to attain food	1	off	12	11	23	6	4	10

		security								
Home Science	F&FW	LANN- Preparation of nutrient rich diet from less familiar foods	1	off	10	13	23	4	9	13
Plant Protection & Home Science	F&FW	LANN- preparation of organic manure from household waste	1	off	7	12	19	5	5	10
Home Science	EP	Strengthening of SHG	2	on	-	47	47	-	20	20
Plant Protection & Home Science	RY	Production of oyster Mushroom	1	off	-	35	35	-	8	8
Plant Protection & Home Science	F&FW	Production of oyster Mushroom to attain nutrition security	2	on	4	12	16	3	5	8
Home Science	F&FW	LANN- Preparation of nutrient rich diet from less familiar foods	1	off	6	9	15	5	4	9
Home Science	F&FW	LANN- preparation of weaning food from locally available foods	1	off	3	14	17	2	5	7
Plant Protection & Home Science	RY	Production of oyster mushroom	1	off	11	19	29	10	19	19
Home Science	F&FW	LANN- preparation of weaning food from locally available foods	1	off	4	16	20	2	5	7
Home Science	F&FW	LANN- preparation of nutrient rich diet for expectant mother	1	off	2	19	21	2	4	6
Home Science	F&FW	LANN- Nutritional care of mother and child	1	off	3	20	23	1	3	4
Home Science	F&FW	LANN- preparation of nutrient rich diet for expectant mother	1	off	12	13	25	3	6	9
Home Science	F&FW	LANN- Nutritional care of mother and child	1	off	8	14	22	5	5	10
Home Science	F&FW	LANN- Preparation of nutrient rich diet from less familiar foods	1	off	7	13	20	6	9	15
Agronomy & Home Science	F&FW	LANN- preparation of organic manure from household waste	1	off	13	14	27	3	5	8
Home Science	F&FW	LANN- nutritional care during adolescent period	1	off	8	15	23	5	4	9
Home Science	F&FW	LANN- preparation of nutrient rich diet for expectant mother	1	off	8	17	25	6	8	14
Home Science	F&FW	LANN- Preparation of nutrient rich diet from less familiar foods	1	off	10	15	25	7	12	19
Home Science	F&FW	LANN- preparation of weaning food from locally available foods	1	off	8	14	22	3	9	12
Plant Protection & Home Science	F&FW	LANN- preparation of organic manure from household waste	1	off	8	15	23	2	9	11

Animal Husbandry & Home Science	RY	Ornamental Bird rearing for Income generation of SHG group	4	on	26	23	49	3	9	12
Animal Husbandry & Home Science	RY	Ornamental Bird rearing for Income generation of SHG group	4	on	26	23	49	3	9	12
Home Science	F&FW	LANN- preparation of nutrition Garden in backyard to attain food security	1	off	12	14	26	2	5	7
Home Science	F&FW	LANN- nutritional care during adolescent period	1	off	8	16	24	4	6	10
Home Science	F&FW	LANN- preparation of weaning food from locally available foods	1	off	6	17	23	6	12	18
Plant Protection & Home Science	F&FW	Nutrition gardening, vermin composting, mushroom cultivation	4	on	27	30	57	1	2	3
Home Science	F&FW	Income generating activities of SHG members through food processing	4	On	-	36	36	-	12	12
Multi Discipline ry	EP	MDP programme for newly recruited Programme Coordinators of KVK	10	on	4	1	5	-	-	-
Plant Protection & Home Science	F&FW	Production of oyster mushroom	4	On	-	28	28	-	22	22
Home Science	F&FW	Income generating activities of SHG members through food processing	4	On	1	20	21	1	2	3
Home Science	F&FW	LANN- preparation of organic manure from household waste	1	off	12	14	26	2	5	7
Home Science	F&FW	LANN- nutritional care during adolescent period	1	off	8	14	22	4	6	10
Home Science	F&FW	LANN- Preparation of nutrient rich diet from less familiar foods	1	off	6	17	23	6	12	18
Home Science	F&FW	LANN- nutritional care during adolescent period	1	off	8	16	24	4	6	10
Home Science	F&FW	LANN- preparation of weaning food from locally available foods	1	off	6	17	23	6	12	18
Home Science	F&FW	Income generating activities of SHG members through food processing- cake making	4	on	-	23	23	-	23	23
Home Science	F&FW	LANN- Preparation of nutrient rich diet from less familiar foods	1	off	12	14	26	2	5	7
Home Science	F&FW	LANN-preservation of vegetables and fruits for minimization of loss	1	off	8	16	24	4	6	10
Home Science	F&FW	LANN-preservation of vegetables and fruits for minimization of loss	1	off	6	17	23	6	12	18

Plant Protection	F & FW	Bio-intensive organic farming - Principles and Practices	4	On	24	0	24	9	0	9
Plant Protection	F & FW	Production of bio-control agents and their use in Agriculture	4	On	44	3	47	11	0	11
Plant Protection	RY	Scientific collection of forest honey	1	Off	14	11	25	14	11	25
Plant Protection	F & FW	Plant protection measures in organic vegetable production	1	On	32	8	40	19	3	22
Plant Protection	F & FW	Betelvine cultivation: With special emphasis on disease pest management	1	Off	72	10	82	6	1	7
Plant Protection	F & FW	IPM of major agricultural and horticultural crops	4	On	56	1	57	8	0	8
Plant Protection	F & FW	Integrated disease management of paddy, oilseeds and pulses	4	On	24	15	39	16	12	28
Plant Protection	F & FW	Integrated Crop management during Kharif season	4	On	22	0	22	21	0	21
Plant Protection	F & FW	Bio-intensive pest management in field crops and vegetables	4	On	35	8	43	14	3	17
Plant Protection	RY	Scientific management practices in beekeeping & forest honey collection	4	On	23	1	24	14	1	15
Plant Protection	F & FW	On-farm Mass Production of Microbial Pesticides	4	On	72	0	72	18	0	18
Plant Protection	F & FW	On-farm Mass Production of Microbial Pesticides	4	On	58	2	60	17	0	17
Plant Protection	F & FW	On-farm Mass Production of Microbial Pesticides	4	On	41	0	41	2	0	2
Plant Protection	F & FW	On-farm Mass Production of Microbial Pesticides	4	On	27	0	27	9	0	9
Plant Protection	EP	Diploma in Agricultural Extension Services for Input Dealers	365	On	40	0	40	7	0	7
Plant Protection	EP	Diploma in Agricultural Extension Services for Input Dealers	365	On	38	2	40	5	1	6
Plant Protection	F & FW	Integrated Disease Management in Betelvine	1	Off	39	0	39	5	0	5
Plant Protection	F & FW	Integrated Disease Management in Winter Vegetables	1	Off	42	8	50	42	8	50
Plant Protection	RY	Beekeeping as alternative livelihood option for the honey hunters of Sundarban	4	On	20	0	20	20	0	20
Plant Protection	F & FW	Mitigation of climate change in Coastal Sundarban villages	1	Off	22	12	34	18	12	30
Plant Protection	F & FW	Nematode Awareness Day	1	On	35	8	43	2	1	3
Plant Protection	F & FW	Organic plant protection through botanicals, bio-agents and bio-pesticides	4	On	37	4	41	20	4	24
Plant Protection	F & FW	Scientific Beekeeping as an alternative livelihood option	6	On	14	4	18	14	4	18
Plant Protection	F & FW	Scientific Beekeeping as an alternative livelihood option	6	On	11	4	15	11	4	15

**(H) Vocational training programmes for Rural Youth**

Crop / Enterprise	Identified Thrust Area	Training title*	Duration (days)	No. of Participants			Self employed after training			Number of persons employed else where
				Male	Female	Total	Type of units	Number of units	Number of persons employed	
Carp	Efficient utilization of water resources	Management of carp grow out ponds	4	23	-	10	Small and medium ponds	10	10	5
Carp + other fish	Efficient utilization of water resources	Diverse freshwater fish culture technologies for boosting farm production	15	23	-	18	Medium and big ponds	18	18	5
Desi magur (Asian catfish)	Improvement of backyard system performance	Small scale seed production and larval rearing of Asian catfish	5	24	-	11	Backyard hatchery	11	11	9
Vegetable crops	Production of low volume and high value crops	Self employment generation through cultivation of conventional and non-conventional vegetables					Small scale production unit	12	16	5
			4	20	0	20				
Horticultural nursery	Nursery raising	Self-employment generation through establishment, maintenance and management of horticultural nursery					Horticulture nursery	26	74	49
			6	122	0	122				
Vegetable crops	Exotic vegetables	Protected Cultivation of Hi-value Vegetables	7	17	0	17	Small scale production unit	2	5	7
Coconut Farming	Plantation crops: Production and Management technology	Self employment generation through Coconut Farming	6	40	0	40	Small scale production unit	16	21	13
Beetle vine cultivation	Plantation crops: Protective cultivation (Green Houses, Shade Net etc.)	Beetle vine cultivation in Climate smart hi-tech boroz for quality leaf production	3	27	4	31	Small scale production unit	19	24	12
Coconut Doctor	Plantation crops: Production and Management technology	Self-employment generation as Coconut Doctor	6	120	0	120	Crop Doctor-cum consultant	42	42	19

\*training title should specify the major technology /skill transferred

## I) Sponsored Training Programmes

Sl. No	Title	Thematic area	Month	Duration (days)	Client	No. of courses	No. of Participants										Sponsoring Agency
							PF/R/Y/EF	Male			Female			Total			
					Others			SC	ST	Others	SC	ST	Others	SC	ST	Total	
1.	Soil test based fertilizer management through organic manures and fertilizers in kharif paddy	Integrated nutrient management	June	4 days	PF	1	17				7	1	29	7	1	37	ATMA
2.	Formation of SHG	Group Dinamics	July	1 day	EP	1	20	9		5	7		25	16		41	IWMP-7
3.	Monitoring of user groups	Group Dinamics	August	1 day	EP	2	17			30			47			47	IWMP-7
4.	Account maintenance and book keeping	Group Dinamics	August	1 day	EP	1	16				2		16	2		18	IWMP-7
5.	Formation of SHG	Group Dinamics	September	1 day	EP	1	15	17		3	7		18	24		42	IWMP-6
6.	Sustainable Agricultural practices under LIFE-MGNREGA	Integrated Farming	October	5 days	PF	1	11	3		6	4		17	7		24	DRDC, South 24 Parganas, Govt. of W>B
7.	Sensitization programme for WC and SHG members	Group Dinamics	November	1 day	EP	2	16	3		58	10	2	74	13	2	89	IWMP-6 & 7
8.	Vermicompost Production	Organic inputs	January	4 days	PF	1	21	4	1	3			24	4	1	29	IWMP-7
9.	Ornamental fish farming and aquarium maintenance	Ornamental fisheries	April	1	RY	1	7	6	-	3	4	-	10	10	-	20	Sripat Singh College, Jiaganj, Mursidabad
10.	Fresh water fish culture	Composite fish culture	May	1	PF	1	11	4	4	-	-	-	11	4	4	19	CIFE
11.	Fresh water fish culture	Composite fish culture	May	1	PF	1	31	8	-	-	-	-	31	8	-	39	CIFE

12.	Diverse freshwater fish culture technology for boosting farm production	Composite fish culture	May	15	RY	1	13	10	-	-	-	-	13	10	-	23	Green College, WHH
13.	Fresh water fish culture	Composite fish culture	June	1	PF	1	21	29	-	-	-	-	21	29	-	50	SDB
14.	Fresh water fish culture	Composite fish culture	June	1	PF	1	40	10	-	-	-	-	40	10	-	50	SDB
15.	Small scale seed production and larval rearing of Asian catfish – magur and singhi	Breeding of endangered indigenous fish	August	5	RY	1	19	10	-	-	1	-	19	11	-	30	NFDB, Hyderabad
16.	Carp fry and fingerling production in freshwater ponds	Production of fry and fingerlings	August	5	PF	1	17	13	-	-	-	-	17	13	-	30	NFDB, Hyderabad
17.	Fresh water fish culture	Composite fish culture	September	1	RY	1	9	-	3	3	-	3	12	-	6	18	Raha College of fisheries
18.	Mixed fish and prawn farming	Composite fish culture	January	1	RY	1	9	2	-	6	1	-	15	3	-	18	Sammilani Mahavidyalaya
19.	Mixed fish and prawn farming	Composite fish culture	January	1	RY	1	33	5	-	17	1	-	50	6	-	56	City College
20.	Fish rearing and management	Fry and fingerling rearing	January	7	RY	1	6	8	-	1	-	-	7	8	-	15	SAMETI, Narendrapur
21.	Fresh water fish culture	Composite fish culture	February	1	PF	1	11	-	-	-	-	-	11	-	-	11	CIFE
22.	Mixed fish and prawn farming	Composite fish culture	February	1	RY	1	11	1	-	25	1	1	36	2	1	39	Serampur College
23.	Integrated farming	Integrated farming	February	5	PF	1	5	33	4	-	-	-	5	33	4	42	Dept. of Forest, GOWB
24.	Integrated fish farming	Integrated farming	March	5	PF	1	-	9	-	1	34	4	1	43	4	48	Dept. of Forest, GOWB
25.	Coconut Palm Doctor	FOCT	Jan. To Mar., 17	6	EP	4	89	71	0	0	0	0	89	71	0	160	CDB
26.	Production parameters of AgriHorti Produce for better marketing	Technological advancement in horticultural production system	June, 16	2	EP	1							23	3	1	27	BENFED
							19	3	1	4	0	0					

27.	In-service training of newly recruited KPS of Dept. of Ag. GoWB	KPS training	Mar, 17 to Sept. 17	180	EP	1	16	11	4	0	0	0	16	11	4	31	Dept. of Ag. GoWB
28.	Field Experience Training of 104th FOCARS	FET-NAARM	Aug., 16	21	EP	1	2	1	1	2	1	0	4	2	1	7	NAARM
29.	Protected Cultivation of Hi-value Vegetables	Exotic vegetables	Jan., 17	7	RY	1	12	5	0	0	0	0	12	5	0	17	SAMETI, WB (STRY)
30.	Cultivation of Horticultural crops in Climate smart hi-tech system	Protective cultivation (Green Houses, Shade Net etc.)	Mar., 17	3	RY	1	16	11	0	0	4	0	16	15	0	31	ADA, Joy-II, Dept. of Ag. GoWB
31.	Self-employment generation as Coconut Doctor	Plantation crops: Production and Management technology	Feb. To Mar., 17	6	RY	3	54	65	1	0	0	0	54	65	1	120	CDB
32.	Prani Mitra	Disease management	May,16	15	EF	1	0	0	0	27	10	0	27	10	0	37	ARD, South 24 Pgs
33.	Prani Mitra	Disease management	July,16	15	EF	1	0	0	0	25	10	35	25	10	0	35	ARD, South 24 Pgs
34.	Integrated farming	Poultry management	August,16	5	F & FW	1	1	21	0	0	0	0	1	21	0	22	STR, GOWB
35.	Prani Mitra	Disease management	September, 16	15	EF	1	0	0	0	29	9	0	29	9	0	38	ARD, South 24 Pgs
36.	Strengthening of backyard poultry	Poultry management	October,16	4	RY	1	2	0	0	14	3	0	16	3	0	19	NWDPRA, GOWB
37.	MAITRI training	Dairy management	December, 16	45	EF	1	25	0	0	0	0	0	25	0	0	25	Sikkim Govt
38.	Production of quality animal products	Dairy management	December, 16	6	RY	1	19	16	0	3	14	0	22	30	0	52	Dumka, Jharkhand
39.	Production of quality animal products	Dairy management	December, 16	6	F & FW	1	26	19	6	0	4	2	26	23	8	57	Dumka, Jharkhand
40.	Scientific management of backyard poultry	Poultry management	January,17	4	F & FW	1	2	0	0	23	5	0	25	5	0	30	IWMP, GOWB
41.	Health management of backyard poultry and duck	Poultry management	January,17	4	F & FW	1	1	7	0	8	14	0	9	21	0	30	IWMP, GOWB



42.	Paraextension worker	Livestock management	January-February.17	15	RY	1	0	0	0	32	12	0	32	12	0	44	ARD, South 24 Pgs
43	Production of livestock feed and fodder	Poultry management	February,17	4	F & FW	1	0	2	0	2	19	0	2	21	0	23	IWMP, GOWB
44	Prani Mitra	Disease management	March, 17	14	EF	1	0	0	0	30	13	0	30	13	0	43	ARD, South 24 Pgs
45	Ornamental fish farming and aquarium maintenance	Ornamental fisheries	April	1	RY	1	7	6	-	3	4	-	10	10	-	20	Sripat Singh College, Jiaganj, Mursidabad
46	Fresh water fish culture	Composite fish culture	May	1	PF	1	11	4	4	-	-	-	11	4	4	19	CIFE
47	Fresh water fish culture	Composite fish culture	May	1	PF	1	31	8	-	-	-	-	31	8	-	39	CIFE
48	Fresh water fish culture	Composit fish culture	June	1	PF	1	21	29	-	-	-	-	21	29	-	50	SDB
49	Fresh water fish culture	Composit fish culture	June	1	PF	1	40	10	-	-	-	-	40	10	-	50	SDB
50	Fresh water fish culture	Composite fish culture	September	1	RY	1	9	-	3	3	-	3	12	-	6	18	Raha College of fisheries
51	Mixed fish and prawn farming	Composite fish culture	January	1	RY	1	9	2	-	6	1	-	15	3	-	18	Sammilani Mahavidyalaya
52	Mixed fish and prawn farming	Composite fish culture	January	1	RY	1	33	5	-	17	1	-	50	6	-	56	City College
53	Fresh water fish culture	Composite fish culture	February	1	PF	1	11	-	-	-	-	-	11	-	-	11	CIFE
54	Mixed fish and prawn farming	Composite fish culture	February	1	RY	1	11	1	-	25	1	1	36	2	1	39	Serampur College
55	Integrated farming	Integrated farming	February	5	PF	1	5	33	4	-	-	-	5	33	4	42	Dept. of Forest, GOWB
56	Integrated fish farming	Integrated farming	March	5	PF	1	-	9	-	1	34	4	1	43	4	48	Dept. of Forest, GOWB
57	Bio-intensive organic farming - Principles and Practices	Organic Farming	May	4	PF	1	15	9	0	0	0	0	15	9	0	24	ADMI
58	Scientific collection of forest honey	Bee Keeping	June	1	RY	1	0	0	14	0	0	11	0	0	25	25	AICRP (HB&P)

59	Plant protection measures in organic vegetable production	Organic Farming	June	1	PF	1	13	19	0	5	3	0	18	22	0	40	NVUIC
60	Scientific management practices in beekeeping & forest honey collection	Bee Keeping	August	4	RY	1	9	14	0	0	1	0	9	15	0	24	AICRP (HB&P)
61	On-farm Mass Production of Microbial Pesticides	Production of bio-control agents	September	4	PF	4	152	44	2	2	0	0	154	44	2	200	RKVY
62	Diploma in Agricultural Extension Services for Input Dealers	Diploma in Agricultural Extension	November to October	365	EP	2	66	12	0	1	1	0	67	13	0	80	GoI and Self-sponsored
63	Beekeeping as alternative livelihood option for the honey hunters of Sundarban	Beekeeping	January	4	RY	1	0	20	0	0	0	0	0	20	0	20	AICRP (HB&P)
64	Nematode Awareness Day	Integrated disease management	February	1	PF	1	33	2	0	7	1	0	40	3	0	43	AICRP (Nematodes), ISI
65	Scientific Beekeeping as an alternative livelihood option	Beekeeping	March	6	PF	2	0	0	25	0	0	8	0	0	33	33	AICRP (HB&P) TSP
66	Strengthening of SHG	Gender mainstreaming through SHGs	June 2016, July 2016	4	EF	3	-	-	-	84	83	-	84	83	-	167	DRDC, South 24 pgs
67	Ornamental bird rearing for income generation of SHG	Bird rearing	November 2016	4	RY	2	52	6	-	46	18	-	98	24	-	122	Green college, WHH

## 3.4. A. Extension Activities (including activities of FLD programmes)

Nature of Extension Activity	No. of activities	Farmers			Extension Officials			Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Field Day	8	213	103	316	19	3	22	232	106	338
Kisan Mela	4	14013	5046	19059	46	11	57	14059	5057	19116
Kisan Ghosthi										
Exhibition	2	13200	6225	19425	37	23	60	13237	6248	19485
Flower & Vegetable competition (04.02.17 - 06.02.17)	1	3649	1542	5191	32	15	47	3681	1557	5238
Film Show	15	401	42	443	3	-	3	404	42	446
Method Demonstrations	11	843	173	1016	0	0	0	843	173	1016
Farmers Seminar	3	242	123	365	28	19	47	270	142	412
Workshop	4	146	26	172	14	4	18	160	30	190
Group meetings	12	540	342	882	6	3	9	546	345	891
Lectures delivered as resource persons	25	662	33	695	63	5	68	725	38	763
Advisory Services	430	977	193	1170	0	0	0	977	193	1170
Scientific visit to farmers field	296	2205	540	2745	45	33	78	2250	573	2823
Farmers visit to KVK	900	2266	656	2922	13	2	15	2279	658	2937
Diagnostic visits	263	249	15	264	0	0	0	249	15	264
Exposure visits	73	1895	869	2764	90	11	101	1985	880	2865
Ex-trainees Sammelan	2	119	1	120	0	0	0	119	1	120
Soil health Camp	5	623	129	752	0	0	0	623	129	752
Animal Health Camp	1167	4567	1569	6136	0	0	0	4567	1569	6136
Soil test campaigns	7	462	38	500	19	6	25	481	44	525
Farm Science Club Conveners meet	5	152	29	181	0	0	0	152	29	181
Self Help Group Conveners meetings	5	142	41	183	0	0	0	142	41	183
Mahila Mandals Conveners meetings	-	-	-	-	-	-	-	-	-	-
Celebration of important days										
Celebration of ICAR foundation day	1	56	19	75	3	1	4	59	20	79
National fish farmers day-10.07.16	1	95	18	113	4	1	5	99	19	118
World Fisheries Day – 21.11.16	1	47	6	53	3	-	3	50	6	56
International womens' day 2017	1		183	183	5	8	11	5	191	196
National Science day (28.02.17)	1	189	17	206	3	0	3	192	17	209
International Soil Health Day - 05.12.2016	1	173	3	176	0	0	0	173	3	176
Kisan Diwas (Farmer's day) on 23rd Dec' 16	1	121	13	134	0	0	0	121	13	134
Celebration of important days Jatio Prani Sampad Saptaho (Sandeshkhali -I	1	234	122	356	24	32	56	258	154	412

Celebration of important days Jatio Prani Sampad Saptaho (Sandeshkhali - II	1	320	133	453	32	21	53	352	154	506
Community score card	4	51	38	89	3	8	11	54	59	113
Surgical cases (operations done)	16	14	2	16	0	0	0	14	2	16
<b>Total</b>	<b>3267</b>	<b>48866</b>	<b>18289</b>	<b>67155</b>	<b>492</b>	<b>206</b>	<b>696</b>	<b>49358</b>	<b>18508</b>	<b>67866</b>

### 3.4.B. Other Extension activities

Nature of Extension Activity	No. of activities	Farmers			Extension Officials			Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Newspaper coverage	1	-	-	-	-	-	-	-	-	-
Radio talks	6	-	-	-	-	-	-	-	-	-
TV talks	2	-	-	-	-	-	-	-	-	-
Popular articles	3	-	-	-	-	-	-	-	-	-
Extension Literature	3									
Other, if any (Posters – NICRA technologies, AICRP Honeybee, Trichoderma production, Vermicomposting)	15									

### 3.5. Production and supply of Technological products

#### Village seed

Crop	variety	Quantity of seed (q)	Value (Rs)	Number of farmers provided
Dual prupose poultry chicks	RIR	330	5940.00	12
Dual prupose poultry chicks	Vanaraja	120	2640.00	8
Dual prupose poultry chicks	Hitkari	130	2860.00	13
Dual prupose poultry chicks	Kaveri	180	4680.00	19
Foder (cutting)	HY Napier	270 nos	-	6
Rabbit	White Chinchila	41 nos	8200.00	9
Broiler Duck	White Pekin	400 nos	20,000.00	21
Goat	Black Bengal	80 nos	1,60,000.00	12
Cattle	Cross Jersey, HF	13 nos	2,60,000.00	-
Hydroponics fodder	Maize	720n Kg	-	-
<b>Total</b>			<b>4,64,320.00</b>	

## KVK farm

Crop	variety	Quantity of seed (q)	Value (Rs)	Provided to number of farmers
Paddy	NC-492 (C)	21.16	63480	122
	NC-492 (TL)	4.0	10000	26
	Pratikha (F)	11.0	38500	98
	Pratikha (C)	30.40	91200	171
	Dudshwar (TL)	16.0	35200	112
	WGL-20471(TL)	0.60	1500	6
	Swarna Sub-1(TL)	4.20	10500	48
<b>Grand Total</b>		<b>90.36</b>	<b>250380</b>	<b>583</b>

**Production of planting materials by the KVKs**

Crop	Variety	Quantity of seed/seedling	Value (Rs)	Number of farmers provided	
<b>Vegetable seedlings</b>					
Cauliflower	Meerit	9600	6720.00	26	
Cabbage	Rare Ball	24900	17430.00	41	
Knolkhol	Winner	9500	4750.00	21	
Broccoli	Emereld	1200	1080.00	5	
Tomato	SG-1458 (F <sub>1</sub> ), DEV ( F <sub>1</sub> )	24300	21870.00	103	
Brinjal	Bhangor, Muktakeshi	22750	6825.00	86	
Chilli	Tejaswini	170000	85000.00	138	
Onion	Agrifound Dark Red	8900	2670.00	42	
Pointed gourd rooted cutting	Male plant	5000	30000.00	25	
Others					
<b>Fruits</b>					
Mango	Himsagar, Amrapali, Mallika	1350	67500.00	234	
Sapota	Cricket Ball	2180	109000.00	386	
Guava	Allahabad Safeda, Baruipur Khaja, L-49	8815	264450.00	254	
Lime	Pati	1368	47880.00	105	
Papaya	Ranchi	1580	6320.00	76	
Ber	BAU	7700	423500.00	169	
Coconut	COD	5000	175000.00	78	
Betel vine cutting	Mitha pata, Bangla	16800	336000.00	36	
Others (Cassava cutting)	Sree Jaya	2000	10000.00	118	
Ornamental plants	Inca, Chrysanthemum, Dahlia	18780	13146.00	684	
Medicinal and Aromatic					
Plantation					
Spices					
Turmeric	Local	15 t	300000.00	32	
Ginger	Local	0.3 t	9000.00	16	
Colocasia					
Elephant Foot Yam	Gajendra	33 t	660000.00	79	
Fodder crop saplings					
Forest Species					
Others, pl.specify					
<b>Total</b>			<b>341723 No. &amp; 48.3 t</b>	<b>2598141.00</b>	<b>2754</b>

**Production of Bio-Products**

Name of product	Quantity	Value (Rs.)	No. of Farmers
	Kg		
Bio Fertilisers			
Bio-pesticide			
<i>Metarhizium anisopliae</i>	219.70	32,955.00	62
Bio-fungicide			
<i>Trichoderma harzianum</i>	1104.10	1,65,615.00	384
<i>Pseudomonas fluorescens</i>	1081.10	1,62,165.00	371
Bio Agents			
Organic manure Vermicompost	162 q	162000.00	342
Others			
Total			

**Production of livestock materials**

Particulars of Live stock	Name of the breed	Number	Value (Rs.)	No. of Farmers
Dairy animals				
Cows	J.C, HF. C, GIR Sahiwal C. Red Suindhi C	61	22,61,173.00	-
Buffaloes				
Calves	-	5	90,000.00	-
Others (Pl. specify)				
Poultry	RIR	330	5940.00	5
	Vanaraja	120	2640.00	-
	Hitkari	130	2860.00	
	Kaveri	180	4680.00	
Broilers	Hygrow	200 (4 cycle)	152000.00	
Goat	Black Bengal	80 nos	1,60,000.00	12
Rabbit	White New Zealand	41 nos	8200.00	9
Guinea pig	-	10	12200.00	-
Ornamental bird	Budgerigar, Cockatail	210	34000.00	29
Japanese Quail				
Turkey		10	12,000.00	
Quali		40	1200.00	
Ducks	Peking duck	400 nos	20,000.00	21
Others (Pl. specify)				
Piggery				
Piglet				
Grand Total			27,66,893.00	76
Others (Pl. specify)				

<b>Fisheries</b>				
Indian carp-Spawn	Catla, rohu, mrigal, calbasu, bata	3.92 million	12250.00	17
Indian carp-fry & fingerlings	Catla, rohu, mrigal, calbasu, bata	837.0 kg	140583.00	83
Exotic carp (fry & fingerlings)	Silver carp, java punti, common carp	580.0kg	97417.00	57
Others (Pl. specify)				
1.Ornamental fish	Gold fish, angel, koi carp,milky carp, rosy barb, venus tetra, gourami, fighter, guppy, molly, swordtail, platy	3552no.	28496.00	16
2.Cat fish fingerlings	<i>Clarias batrachus</i>	79700no.	181270.00	61
	<i>Heteropneustes fossilis</i>	6450no.	12900.00	7
3.Climbing perch fry	<i>Anabas testudineus</i>	69854no.	44275.00	21
4. Butter fish fingerlings	<i>Ompok pabda</i>	200no.	1000.00	2
<b>Grand Total</b>			<b>535591.00</b>	<b>292</b>

### 3.6. (A) Literature Developed/Published (with full title, author & reference)

Item	Title	Authors name	Number	Circulation
Research paper	Safety and efficacy of additive and subtractive surface modification of Ti 6Al4V endosseous implant in goat bone	Mistry, S., Roy, S., ...Sarkar, S.	1	
	A novel multibarrier drug eluting calcium sulphate/biphasic calcium phosphate biodegradable composite bone cement.....rabbit model	Mistry, S., Roy, S., ...Joy, M.	1	
	Understanding osteomyelitis and its treatment through local drug delivery system	Samit Kumar Nandi,, Samiran Bandhopadhyay, Das, P., samanta I., Mukherjee, P. and Roy, S.	1	
	Evaluation of fungicides against collar rot disease of Sunflower caused by <i>Sclerotium rolfsii</i> Sacc. in Sundarbans of West Bengal. International Journal of Agricultural Science and Research, 6 (3) 583-588 (2016)	A. Maji, R. Nath, P.K. Garain and S.S. Laxman,	1	
	Occurrence of bacterial wilt of bitter melon in Sundarban region of West Bengal, India. European Journal of Biotechnology and Bioscience .8 (4): 01-03. (2016)	B. Mondal, S. Mandal, C.K. Mondal, D.C. Khatua	1	
	Study on genetic diversity in chilli ( <i>Capsicum annum</i> ) based on multivariate analysis and isozyme analysis . Journal of Applied and Natural Science. 8 (4): 1884-1892. (2016)	C. K. Mondal, P. Acharyya, and U. Saha	1	

Seminar /conference/ symposia papers	“Novel immunostimulator /immunomodulator from marine <i>mollusk telescopium telescopium</i> from 28-30 November, 2016 at Gowalior, Kolkata	Roy, S., Datta, U., Maitra N.J. and Rahaman, F.H.	1	-
	International Conference on ‘Agriculture, Food Science, Natural Resource Management and Environmental Dynamics: The Technology, People and Sustainable Development’ from August, 14-15, 2016 at FACC, BCKV, Kalyani, Nadia, W.B.- 741235	Dr. Chandan Kumar Mondal		
	National Conference on “SMART SUMMIT – 2016”(Science, Medicine, Agriculture, Research and Technology) on 10th December, 2016 at Madurai, Tamil Nadu, India. Organised by Pearl Foundation Received ‘Best Young Scientist Award’ in Horticulture	Dr. Chandan Kumar Mondal		
	International Symposium on ‘Eco-Efficiency in Agriculture & Allied Research’ from January, 20-23, 2017 at FACC, BCKV, Kalyani, Nadia, W.B.- 741235	Dr. Chandan Kumar Mondal		
	International Conference on “Bio-resource, Environment and Agricultural Sciences (ICBEAS)” from February, 04-06, 2017 at The Institute of Agriculture, Visva-Bharati, Birbhum, West Bengal.	Dr. Chandan Kumar Mondal		
	Oral presentation and publication of Abstract titled “Effectiveness of linking Agricultural Input Dealers in mainstream extension delivery mechanism in the West Bengal perspective” in the International Conference on Agriculture, Food Science, Natural Resource Management and Environmental Dynamics: The Technology, People and Sustainable Development Held at BCKV, Mohanpur on 13 <sup>th</sup> and 14 <sup>th</sup> August 2016.	P. K. Garain		
	Poster presentation and publication of Abstract on “Phytophthora Rot in Guava and its Integrated Management in Baruipur Area of South 24 Parganas” in the National Seminar on Recent Trends in agriculture and Allied sciences for better tomorrow (NSRTAS-2016) at Visva-Bharati, Sriniketan on 4th December 2016.	P. K. Garain		
	Poster presentation and publication of Abstract on “Management of Guava Wilt through On-farm Mass Production of <i>Trichoderma harzianum</i> in Baruipur Area of South 24 Parganas” in the National Symposium on Impact of Climate Change, Biodiversity and Good Plant Protection Practices for Crop Productivity at FACC, BCKV, on December 22-23, 2016	P. K. Garain		
Poster presentation and publication of Abstract on “Use of <i>Trichoderma harzianum</i> as plant growth promoter in Betelvine cultivation in Sagar Island of South 24 Parganas” in the National Seminar on “Maximizing Fertilizer Use Efficiency and Environmental Health for Posterity” to held at R. K. M.V.U., Narendrapur on 08 March, 2017	P. K. Garain			
Books	Badri Pakhir Chas	S.Roy	1	59
	Scientific Goat Farming	S.Roy	1	23
	On-farm mass production of microbial pesticide - <i>Trichoderma</i>	P. K. Garain	50	
Bulletins				
News letter				



Popular Articles	“Ghoroa paddhatite joiba chotraknasak Trichoderma toiri o joiba krishite tar babohar” in Krishi Jagaran, Year 2 Issue 12 December 2016.	P. K. Garain & A. Maji		
	‘Sundarbaner Krishi Arthanitite Ail-e Sabji chaser Gurutwa o Prabhab’. In: Krishi Jagaran magazine, July, 2016	U. Maity, C. K. Mondal and A.Maji	1	
	‘Nichu Jamite Sabeda Bagan – Adhik Ai-er natun diganta’. In: Sar Samachar magazine, August, 2016	C. K. Mondal, U. Maity and N.J. Maitra	1	
Book Chapter				
Extension Pamphlets/ literature	Sahaj upaye barite <i>Trichoderma</i> toiri	P. K. Garain	1000	
	Mathe ghathe sangrihito o alpa parichito khabarer bahar	Edited by Manasi Chakraborty	2000	1532
	Ma o sisur prapya adhiker ebong kharber bastab chalchitra	Manasi Chakraborty, Sulagna sarkar	1000	678
Technical reports	Monthly reports of MVC projects	S.Roy	72	-
	Annual Report of RKVY funded Project: On-farm mass production of microbial pesticides	P. K. Garain	1	
	Monthly Report of NICRA Project funded by CRIDA, Hyderabad	P. K. Garain	12	
	Annual Report of CRIDA, Hyderabad funded Project: NICRA	P. K. Garain	1	
	Annual report of AICRP on Honeybees and Pollinators	P. K. Garain	1	
	EFC proposal of AICRP on Honeybees and Pollinators	P. K. Garain	1	
Electronic Publication (CD/DVD etc)	MVC success story	S.Roy		
TOTAL				

N.B. Please enclose a copy of each. In case of literature prepared in local language please indicate the title in English

**(B) Details of HRD programmes undergone by KVK personnel:**

S. No.	Name of programme	Name of course	Name of KVK personnel and designation	Date and Duration	Organized by
	Zonal workshop	NICRA	Dr. N. J. Maitra (Sr. Scientist and Head) & P. K. Garain (SMS – plant Protection)	21-22 April, 2016 (2 days)	ICAR-ATARI, Kolkata
	Knowledge network Workshop	Knowledge network Workshop on climate change	Mr.P.k. Garain (SMS, Plant Protection)	28 <sup>th</sup> to 29 <sup>th</sup> April 2016	IARI, New Delhi
	National Workshop	Workshop on FLD of pulse and oilseed	Dr. N.J. Maitra (Senior Scientist & Head) S.K. Samui ( SMS, Agronomy)	16 <sup>th</sup> to 17 <sup>th</sup> May,2016	ICAR, New Delhi
	Interface meeting	Contingency planning	P. K. Garain (SMS – plant Protection)	31 <sup>st</sup> May, 2016 (1 Day)	Dept. of Agriculture, GoWB and ICAR-ATARI, Kolkata

	TOT Programme	TOT on identification of area for conducting training for entrepreneurship	Dr. Manasi Chakraborty (SMS, Home Science)	30 th to 6 th July, 2016	WHH , Kolkata
	Zonal workshop	CFLD on Oilseed and Pulses	Sri Swapan Kumar Samui, SMS (Agronomy)	19.07.2016 (1 day)	ATARI, Kolkata
	Workshop	MIS & PMS of IWMP programme	Dr. Dipak Kumar roy, Programme Assistant (Agronomy)	29.07.2016 (1 day)	WCDC, Govt. of W.B., Alipur, South 24 Parganas
	NIFTD		Dr. Subhasis Roy	11 <sup>th</sup> August, 2016	ATARI, Kolkata
	International Conference		Dr. C. K. Mondal (SMS, Horticulture) Mr.P.k. Garain (SMS, Plant Protection)	13 <sup>th</sup> to 14 th August, 2016	BCKV, Nadia
	Workshop	Workshop on Sustainable Goal	Dr. Manasi Chakraborty (SMS, Home Science)	22 <sup>nd</sup> to 24 th August,2016	WHH , Kolkata
	Training	PMKSY	Dr. Dipak Kumar roy, Programme Assistant (Agronomy)	26.08.2016 (1 day)	WCDC, Govt. of W.B., Alipur, South 24 Parganas
	Workshop	ATMA Convergence	P. K. Garain (SMS – plant Protection)	26 August 2016 (1 day)	SAMETI, Narendrapur
	Training	m Extension all-in-one mobile phone of Agricultural Extension	Mr. Partha Banik (Computer Prog.)	12 <sup>th</sup> to 16 <sup>th</sup> September,2016	TNAU (SE & RI, Maduri)
	Meeting	Admission of candidates for DAESI programme	P. K. Garain (SMS – plant Protection)	29 <sup>th</sup> September, 2016 (1 Day)	SAMETI Narendrapur
	Training Programme	Climate resilient husbandry practices in Livestock and Fishery	Mr.P. Chatterjee, (SMS, Fishery) Dr. Subhasis Roy (SMS, AH) Dr. Manasi Chakraborty (SMS, Home Science)	3 <sup>rd</sup> to 4 <sup>th</sup> October,2016	WBUAFS , Kolkata
	Biennial Review Workshop	AICRP on Honeybees and Pollinators	P. K. Garain (SMS – plant Protection and PI-AICRP)	14-16 October 2016 (3 days)	AICRP (HB & P) and YSP university of Horticulture & Forestry, Nauni
	Inauguration Programme	DAESI	P. K. Garain (SMS – plant Protection and PI-AICRP)	27 October 2016 (1 Day)	SAMETI Narendrapur
	Workshop	Training module preparation	Mr.P. Chatterjee, (SMS, Fishery)	8 <sup>th</sup> -11 <sup>th</sup> November, 2016	SAMETI, Narendrapur
	Training programme	Modern technologies in agriculture and allied sector	Dr. D.K.Roy (Prog. Asst, Agronomy)	22 <sup>nd</sup> -24 <sup>th</sup> November, 2016	DEE, BCKV,Nadia
	National Conference	Young Scientist award programme	Dr. N.J. Maitra (Senior Scientist & Head)	28 <sup>th</sup> -30 <sup>th</sup> November, 2016	ISSE, RVSKVV, Gwualior
	Annual Review Workshop	NICRA	Dr. N. J. Maitra (Sr. Scientist and Head) & P. K. Garain (SMS – plant Protection)	15-17 December 2016 (3 Days)	ICAR-ATARI, Kolkata and KVK Darjeeling, Kalimpong
	Zonal workshop	CFLD on Oilseed and Pulses	Sri Swapan Kumar Samui, SMS (Agronomy)	20.12.2016 (1 day)	ATARI, Kolkata

Training programme	Fishery project preparation and DPR Preparation	Mr.P. Chatterjee, (SMS, Fishery)	27 <sup>th</sup> -3 <sup>rd</sup> December, 2016	NFDB, Hyderabad
National Conference	Young Scientist award programme	Dr. C. K. Mondal (SMS, Horticulture)	10 <sup>th</sup> Deceber,2016	Pearl foundation, Maduri
Workshop	Zonal worshop of NICRA	Dr. N.J. Maitra (Senior Scientist & Head) & Mr.P.k. Garain (SMS, Plant Protection)	14 <sup>th</sup> -17 <sup>th</sup> December, 2016	ATARI, Kolkata
Training	HRD training for Programme	Mr. Partha Banik (Computer Prog.)	17 <sup>th</sup> -19 <sup>th</sup> December,2016	DEE, BCKV, Nadia
Training programme	Strenthening of production system for sustainable animal husbandary and fishery farming practices	Mr.P. Chatterjee, (SMS, Fishery) Mr. Utpal Maity (Farm Manager)	4 <sup>th</sup> -6 <sup>th</sup> January, 2017	WBUAFS , Kolkata
Training Programme	Food and Nutrition security at Household level- role of KVK	Dr. Manasi Chakraborty (SMS, Home Science)	25 <sup>th</sup> to 27 <sup>th</sup> January,2017	WBUAFS , Kolkata
Workshop	Social Behavioral changes communication	Dr. Manasi Chakraborty (SMS, Home Science)	1 st to 3 <sup>rd</sup> February,2017	WHH, New Delhi
International Conference	“Bio-resource, Environment and Agricultural Sciences (ICBEAS)”	Dr. C. K. Mondal (SMS, Horticulture) P. K. Garain (SMS – plant Protection) Dr. Manasi Chakraborty (SMS, Home Science) Dr. D.K.Roy (Prog. Asst, Agronomy)	4 <sup>th</sup> to 6 <sup>th</sup> February,2017	Viswa -Bharati, Santinikatan, Bolpur
Workshop	Orientation of DEASI Coordinator	Mr.P.k. Garain (SMS, Plant Protection)	7 <sup>th</sup> -9 <sup>th</sup> February, 2017	MANAGE, NIPHM, Hyderabad

### 3.7. Success stories/Case studies, if any (two or three pages write-up on each case with suitable action photographs)

#### 3.7.1 Establishment of village level meat processing unit for creating marketing facility in PPP mode with LDC, GOWB

Animal husbandry and its allied activities have the potential to revolutionize the rural economy. These sectors have capacity to provide opportunities for livelihood to people at a large. However, promoting small units in poultry, goater, sheep farming and dairy for rural families below the poverty line may be the key for poverty alleviation. Besides, ornamental husbandry practices of birds, guinea pig, rabbit is also in gaining interest for its effective money fetching opportunities.

Poverty reduction is an imperative for the millions of rural poor. The possibilities for improving living conditions of the poor people through innovative livelihood options are high. Alternative livelihoods continue to be based primarily on animal husbandry, and the extraction of natural resources.

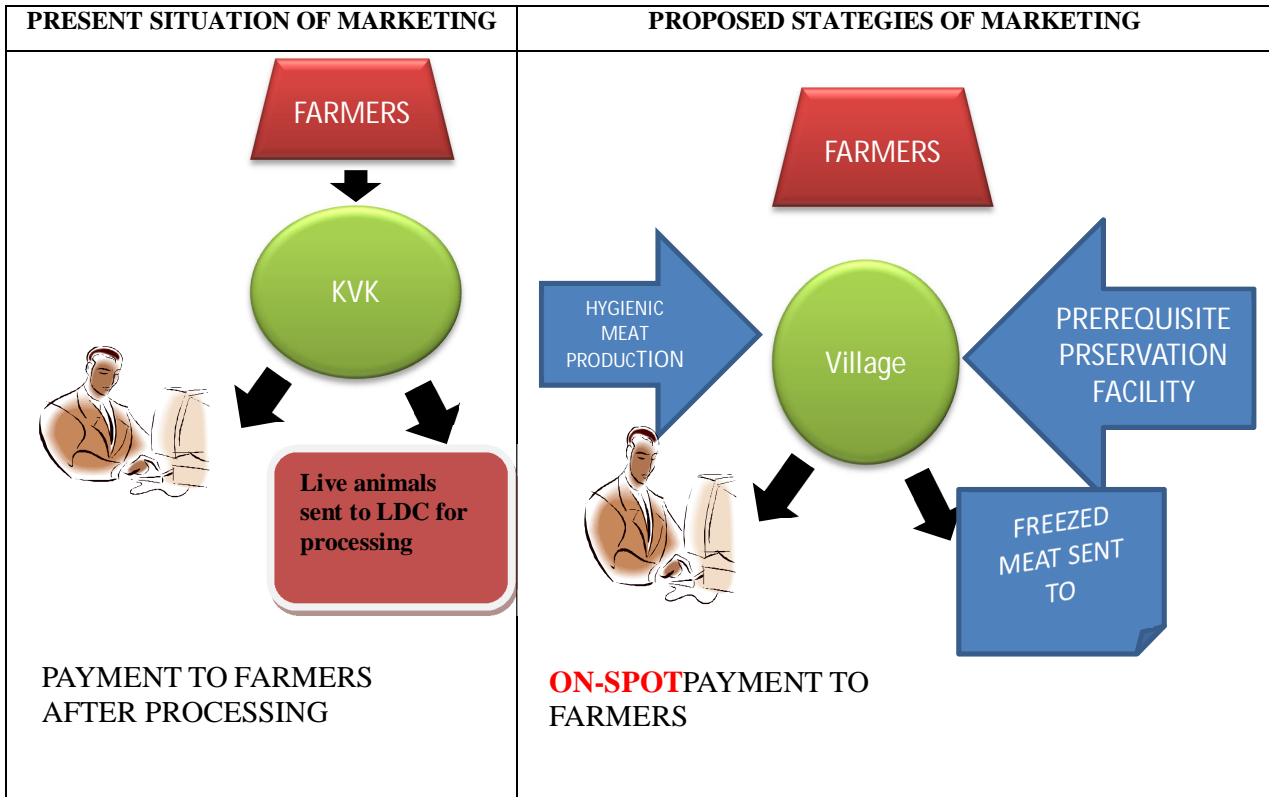
Rearing of garole sheep and black Bengal goat is one of the important activities taken up by the rural farmers of Sundarbans since long back being the advantage of higher fecundity, lower disease resistance and foraging behavior even in water logged condition. The cost of farming is also

significantly low. The market price of these meats is high; still the farmers are not getting the proper value due to middle man. Here in this junction, KVK has taken a new venture in a collaborative way with Livestock Development Corporation of West Bengal, Govt. of West Bengal for assured marketing of the produce because creation of marketing opportunity may play a pivotal role for promoting different animal husbandry activities by the rural farmers.

KVK has initiated the prescheduled and assured marketing for the enlisted farmers who are directly selling the live animals to LDC. The said Corporation is also paying the amount to the farmers' account directly.

But, the problem of transportation of live animals to far distance is difficult and risky. If any processing unit is established in KVK, then this problem will be overcome and the farmers will get additional benefit along with production of hygienic meat.

Sri Bikasa Giri of patharpratima is a farmer of Attracting and Retaining Youth in Agriculture (ARYA) project and was practicing vanaraja, pekin duck and poultry farming since last two years. The total farmers under the project was nearly 80. The produce from this farming group used to be marketed by LDC, GOWB. But after certain period they faced a problem of weight reduction during transportation to LDC from village and the loss due to transportation was borne by the farmers only. With this backdrop KVK discussed the matter with LDC and accordingly a semi-automatic meat processing plant was established at patharpratima village with the objective of processing of their produce at village level so that there is no loss due to transportation. Now this unit is running successfully and a cost of Rs. 4/kg of meat is taken from the farmers as recurring cost to run the unit.



### **3.7.2. Extension of Animal Health care Services in Remote Areas of West Bengal through Mobile Veterinary Clinic (MVC) – an inimitable steps towards better profitability, productivity and sustenance from animal rearing**

#### **Background**

In West Bengal Animal husbandry contributes a major portion in the growth of the state where services to the livestock sector is mainly provided by the Animal Resource Development Department. The livestock sector comprises mostly of dairy, goatery, piggery and backyard farming of poultry and duckery. As most of the agricultural land in the state is fragmented and of small holding in nature, the importance of this sector is paramount in respect of alternative income generation for livelihood. West Bengal comprises of different agroclimatic zones where some of the areas are ill communicated and challenged in terms of transportation and services like Some hilly areas Red laterite zones (Purulia, Bankura etc), Sunderbans (North & South 24 Parganas) and part of West Midnapur. These areas face several problems like poor veterinary services, lack of primary veterinary aids vis-à-vis distant and difficult communication to avail animal husbandry services rendered by the ARD department through different block hospitals, additional block hospitals etc. Among all these, Sunderbans is the most complex area where a number of blocks are island based and the local farmers face the problem of availing health care from the block health centers or additional block health centers which are situated in mainland situation and access to these areas is difficult, risky and depends on high tide and time bound. In this background, Directorate of Animal Resource and Animal Health with financial assistance from RKVY scheme and in collaboration with Ramkrishna Ashram Krishi Vigyan Kendra, Nimpith have conceptualized the idea of mobile veterinary clinic in South 24 PGS to cater the need of the animal rearers of this challenged area.

#### **The technology**

The programme aims to fulfill the basic needs of the farmers like – Doorstep diagnosis, treatment of ailing animals, preventive care & management, proper guidance on marketing and awareness generation to boost up skill & attitude of the farmers with these objectives the programme is finalized one month. During selection of venue & date, the PRI members are being consulted on a daily manner, conveyed to the respective BLDO's for their approval & the finalized programme for the next month is being displayed to the respective places for wide circulation through walling along with miking. The programme is implemented by a dedicated team of veterinary Doctor, Para Vet, LDA through fixed vehicles / Boat. The camp is generally organized in such a place, so as to enable the farmers to attain the camp with their animals. The following services is being provided like—

- Proper Diagnosis & the treatment.
- On spot stool examination.
- Necessary further intervention examination.
- Preventive health care & management.
- Routine deworming & supplementation.
- Surgical intervention for correcting obstructive cases.
- Providing consultancy to the entrepreneurs.
- Organizing awareness camp.
- Making liaison with other GO's & NGO's.
- Focus on insurance of animals.
- Inculcated the related Animal Husbandry schemes rendered by State Govt.
- Encourage the women farmers in farming.
- Inspire the rural youth for alternative & lucrative Animal Husbandry Practices to attract & retain them in farming condition.
- Emphasis the reproductive performance of the animals.
- Judicious use of medicine through different deworming & diagnostic test by centralized sample testing laboratory at KVK.

The programme not only ends with implementation but also include evaluation by annually. Modification like use of Banner/ Poster/ Leaflet/ Poster/ Projector for successful impact on the farming community is also taken.

Items	Sandeshkhali I	Sandeshkhali II	Hingalganj
<b>Total Treatment</b>	<b>40481</b>	<b>63744</b>	<b>69630</b>
<b>Total Vaccination</b>	<b>42901</b>	<b>26581</b>	<b>31833</b>
<b>Total Castration</b>	<b>145</b>	<b>24</b>	<b>289</b>
<b>Total Diagnosis</b>	<b>17050</b>	<b>17051</b>	<b>27060</b>
<b>Farmers benefited</b>	<b>11562</b>	<b>8727</b>	<b>13223</b>
<b>Total Awareness Camp</b>	<b>88</b>	<b>87</b>	<b>88</b>
<b>Total Camp</b>	<b>252</b>	<b>251</b>	<b>251</b>
<b>Total G.P. covered</b>	<b>8</b>	<b>8</b>	<b>9</b>
<b>Village covered</b>	<b>81</b>	<b>75</b>	<b>119</b>

### Suitability with existing farming system (comparative study)

Parameters	Before	After
Occupation	Prawn seed catching and maid servant and non-profitable farming	Rearing of animals with enhanced profitability
Duration of work (hrs/day)	6.5	3.5
Place of work	Brackishwater rivers & estuaries infested with crocodiles	Homestead
Risk of work (%)	80	0
Occupational health hazards (skin diseases, extremes of climate, communicable diseases) (%)	75	20
Biodiversity damage	About 52 nos of fish species are destroyed due to the use of small meshed net and decanting of water in the river after separation of prawn seed.	No effect on biodiversity
Monthly income (Rs)	300	1200-3500
Marketing	Unstable	Stable

### **Farmers' view with respect to acceptance of this technology**

The mobile veterinary clinic is a very innovative approach to reach the expense of animal rearers of the state in general and district in particular. Now the farmers are getting door step diagnosis, treatment and all other preventive management with scientific knowledge gain through this programme. The habit to visit the doctors is achieved through constant service and now the farmers are willing to purchase the medicines as prescribed by the doctors of the unit. The demand for more and more number of visits in a particular area is increasing day by day. However, certain areas of the project like facility of Artificial Insemination need to be addressed for fulfillment of additional requirement of the stakeholders.

### **Horizontal spread of the technology**

The technology was initially introduced among some selected areas of the three blocks of North 24 Parganas and in an integrated way it was attempted to develop those areas. After 1.5 years of intensive try, the benefit of the programme in those areas attracts other neighboring villages, gram panvhyet to have the facility of the programme. Now this technology is almost covering 25 numbers of GPs and 275 villages.



## Substitution

The previous practice of hospital case treatment and vaccination camp has been substituted with homestead treatment with door step vaccination. The women folk were engaged in either prawn seed catching or working as maid servant. The benefit of this service by enhanced profitability, has changed their life both economically and morally with greater sustainability and assurance. Nowadays they neither go for prawn seed catching nor adopt any other exploitable alternative options. This technology has substituted the traditional practice vis-a-vis uplifting the poorer section faced with devastating natural calamities.

## Social impact of the technology

Introduction of this technology by RAKVK, Nimpith have contributed to the rural economy in general and *Aila* affected families in particular. This technology is providing the farming community with a steady cash flow to sustain their livelihood. This technology not only provides additional income generation from the same existing stock, but also empowers them by providing the concept of proper marketing. Previously the animals were uncared for and thus profit from the farming was either negative or negligible. Thus interest towards animal rearing was decreasing day by day. This programme has created a havoc enthusiasm and became successful one for attracting and retaining rural youth in animal husbandry practices.





**Case study:****Background information:**

Village level production of puffed rice is done mostly by primitive technology. Profitable business with production of puffed rice is rare. The innovative technology of making puffed rice may be profitable venture.

**Farmers involved:**

Ashok Bar, Bamunerchak, P.O. Bakultala Hat, P.S. Joynagar, 743338, South 24 Parganas, West Bengal, phone-9735817615, age-39,  
 Sujauddin Molla, Bamunerchak, P.O. Bakultala Hat, P.S. Joynagar, 743338, South 24 Parganas, West Bengal, phone-9593469899, age-28,

**Strategies:**

These two farmers are doing this operation since last 1 year. Concept was that many ration dealers are there from where people used to buy rice and get fried over here. According to the farmers, the concept was taken from a farmer of kardwip where he used two stranded channels which were having the problem of shaking during running. But in this innovative model no shaking is there. The motor which is used in this innovative model is of 2 hp which can operate 4 chula at a time with a capacity of production of 70-80 kg fried rice in an hour. The farmers used shell of cashew nut as fuel as it is having more oily substances that is why it can retain heat. 200 gms of shell can generate and retain heat upto 30 minutes.

**Process of frying:**

- 1<sup>st</sup>-rice and salt water. Minimum heat to dry the water. 5 kg rice and 1 cup water. Heat for 1 minute (Near to exhaust pipe). Chula made of Cast iron
- Transferred to 2<sup>nd</sup> chula- keep for 30 seconds. Chula made of Cast iron
- 3<sup>rd</sup> chula- 30 seconds. Chula made of Cast iron
- 4<sup>th</sup> chula- final puffed. More heat. 3-4 seconds. This is made up of iron (petai loha)

**Challenges:**

1. Initial standardization of the process
2. Social taboos of traditional system of frying
3. Availability of shell of cashew nut

**Outcome/lesson learned:**

This model of puffed rice making yielded profit of Rs. 7000/ month.



### 3.7.3. The Organic Betelvine grower from Sagar Island

Sri Swapan Bhuia is a progressive farmer of remote Sagar Island in extreme south of South 24 Parganas. Apart from paddy and vegetable farming, he is better known as a betelvine farmer. Betelvine is an important cash crop in Sagar Island. Especially the Mitha Pata variety grown here, is very famous, countrywide. But, due to the use of excessive and injudicious use of chemical fertilizers, the betelvine leaves of Sagar Island is losing its characteristics aroma, flavour and other distinguished qualities. As betelvine cultivation requires a special moist and shady environment for its proper growth, it also attracts various pests and diseases. And farmers depend solely upon chemical pesticides for its protection against pests and diseases. Mr. Bhuia was not an exception to this chemical farming, three years ago. But the productivity was declining year after year along with increase of costs of chemicals. At certain point of time he even thought of leaving this betelvine cultivation.



Under such circumstances, he came in contact with Ramkrishna Ashram Krishi Vigyan Kendra. He participated in some training courses on organic farming and production of organic inputs that changed his mind and encouraged him to stay with betelvine cultivation. In one of such training he came to know about some Government Schemes. With the help of these trainings and schemes he is now growing betelvine in an environment friendly method. The betel leaves from his Boroz fetches better price in the market than the conventional ones.

First off all, with the financial help of National Horticulture Mission and technical guidance of KVK, Nimpith, Mr. Bhuia converted his traditional Boroz into Hi-tech Shade Net Boroz. This special system of boroz allows equal distribution of shade and light to the every corner inside it. The betel leaves grown in this kind of boroz are better in shape, weight, brittleness and luster. The sprinkler system of irrigation and clean cultivation prevents contamination and spread of soil-borne disease propagules. The iron structure gives strength to the boroz to withstand frequent cyclones of the coastal area. The structures can last for more that 10-15 years. And the maintenance cost is minimal in comparison to the traditional boroz made up off biodegradable bamboo poles, jute sticks and straw.

Considering the ill effect of chemical pesticides on our human health and environment, Mr. Bhuia used to think of applying biopesticides and biocontrol agents. He used to travel for 8-12 hours to visit biocontrol laboratory in KVK Nimpith or pesticide shops near Kolkata, for collecting biocontrol agents available there. Because, good quality biocontrol agents were not available in pesticide shops of Sagar Island. It was becoming very difficult for him to continue this way. He again became frustrated and one day asked the KVK scientists, "How am I going to continue Organic Farming, if the organic farming inputs are not available in the local market?" This question was a hidden feeling of many such farmers like Mr. Bhuia, who actually thinks about the environmental health, wants to change into organic farmer, but lacks the quality inputs required, in time.



But he didn't stop coming to the KVK, again and again. And one day, as a reward to his patience and persistence, he came to know about a low cost and simple technology of producing microbial pesticides

(biocontrol agent), at home. He got the necessary trainings and some inputs under Rashtriya Krishi Vikas Yojana, implemented by the KVK. With the help of a mere pressure cooker and a specially designed wooden box, he started preparing his own bio-fungicide – *Trichoderma* and own bioinsecticide – *Metarhizium*.

Today Mr. Bhuia does not use any chemical pesticides for treatment of his betelvine saplings, the soil of his boroz, and for spraying over the vines. The use of *Trichoderma* (bio-fungicide) helped to eradicate the pathogens of *Phytophthora* rot (Phopsa/Togra), *Sclerotium* collar rot (Gendi) and *Colletotrichum* leaf spot (Kath chitla). The *Metarhizium* (bio-insecticide) takes care of sucking pests, like Thrips. He also uses *Pseudomonas fluorescens*, neem oil, *Bt*, *Beauveria* as other biopesticides. In place of chemical fertilizers, he depends upon vermicompost, oilcakes, and biofertilizers like *Azotobacter*, PSB, VAM, etc.

Earlier, by conventional means, he used to sell betel leaves worth Rs. 6.30 lakhs after investing Rs. 1.5 lakh in a year. Now he earns Rs.8 lakh lakh per year after investing Rs. 0.80 lakh only.

In the words of Mr. Swapan Bhuia – “The leaf of betelvine is considered as symbol of blessings. How can we use such leaves poisoned by chemicals, in our culture?” So he chose to grow betel leaves by organic way. Hope the other farmers will also come forward for organic farming, like Mr. Bhuia, someday.

#### 3.7.4

Culture of the high valued air breathing fish, *Anabas testudineus*, commonly known as climbing perch, has become very popular among the fish farmers of South 24 Parganas district. This popularity of the culture of climbing perch has gained momentum when one of the progressive fish farmers of the district, Sri Tilak RoyChowdhury of Baikunthapur village of Kultali block successfully demonstrated the profitability of its culture.

Tilak had received a 10-day NFDB sponsored training on “Freshwater fish and prawn farming” from 24.03.2008-02.04.2008 from the KVK. Thereafter he started fish and prawn farming in his 0.195 ha pond and began to make sufficient profit so as to send both his daughters to school and make a livelihood from the income. Since then he was supporting a family of 5 members. The outcome of his success became contagious as more and more farmers of his locality came to him for suggestion regarding scientific method of farming for increasing income from fish culture. Tilak has been generous in his approach to help out fellow farmers and guide them whenever they faced any difficulty.



He was in constant touch with the KVK since then and hence came to know about the profit attached to the farming of high value air breathing fish – the climbing perch. In the meantime he also experimented with farming of monosex tilapia, indigenous magur, and other catfish. However, he was convinced that of all the farming methods, culture of climbing perch would be more profitable due to its high market demand and short duration of culture. He was particularly concerned about the gradual diminishing of the water level of ponds in his

locality which does not augur well for any other fish farming methods.

Tilak also convinced his fellow farmers that before going into the venture, they need to know the nitty gritty of the farming of climbing perch for which he organized trainings for them by inviting the fishery expert of the KVK.

Tilak found that previously he could earn around Rs. 90000.00 from carp and prawn from his 0.195 ha pond from 11 months of culture period. However, by culturing climbing perch in the same pond he could earn Rs.180000.00 from only 4-5 months of farming. This approach was particularly lucrative for those farmers whose ponds could not retain water for more than 6 months. This farming became more popular through the approach of the KVK to easily breed the fish so as to make availability of seeds easier in the locality.



Hence, the success of Tilak caught up with others and hence the farming of climbing perch became a good example of farmer-led extension supported by the KVK.



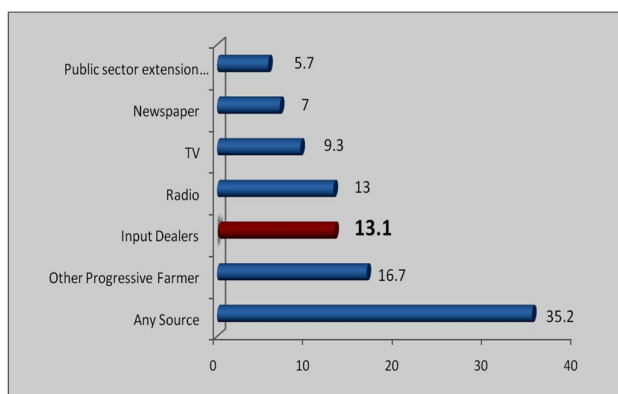
### 3.8. Give details of innovative methodology or innovative technology of Transfer of Technology developed and used during the year

#### 3.8.1. Effectiveness of Linking Agricultural Input Dealers in Main-stream Extension Delivery Mechanism in the West Bengal Perspective

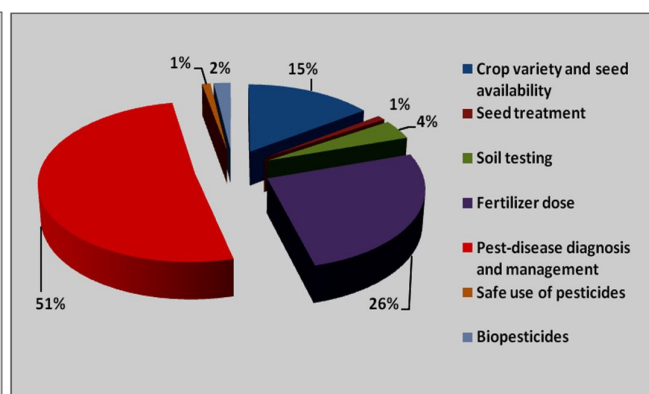
##### Background:

Agricultural Extension system in India is formally governed by Government Institutions like SAUs, State Department of Agriculture, KVKs, ICAR institutes etc., which are literally not sufficient in volume to cater the vast farming community. The ratio between cultivators and extension workers in our country is too wide (1156:1).

Informally, farmers get their agri-related counseling, services and inputs from the local Input dealers (seed, pesticide and fertilizer retailer), who have, usually, little or no formal education in Agriculture. The ratio between cultivators and input dealers is 393:1. There are approximately 118 million cultivators and 0.3 million input dealers, presently. Input dealers play as the most influentive sector to the Indian farming community, impacting the farmers choice in plant nutrition, plant protection and crop varieties. They are also one of the largest source of informal credit to the farmers at the beginning of crop season.



**Contribution of various source of agricultural information to farmers**



**Agricultural information sought by the farmers from the input dealers**

But 90% of the input dealers lack any formal agricultural education. They seldom realize the laws related to handling of agricultural inputs and their implications. They basically act as businessman guided by market forces and profit making attitude.

##### Diploma in Agricultural Extension Services for Input Dealers:

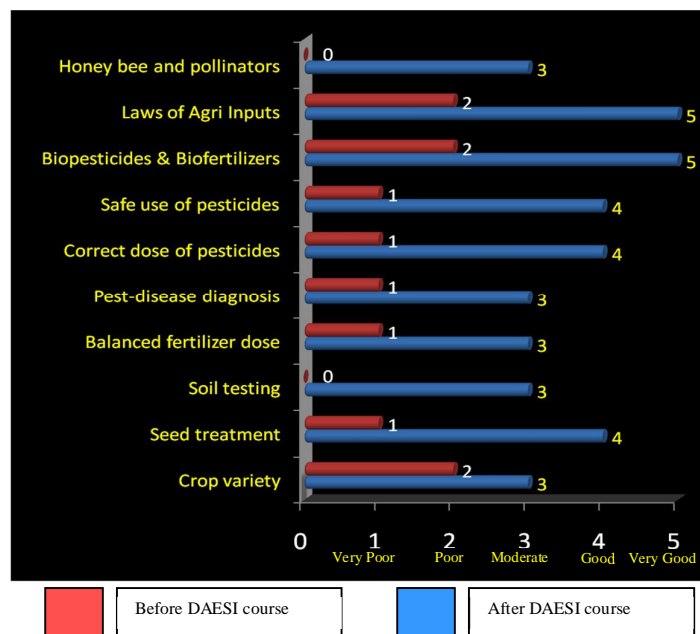
MANAGE started a 50 weeks long Diploma course “DAESI” (Diploma in Agricultural Extension Services for Input Dealers) for the Input dealers with a view to educate them and to include them in the formal agricultural extension system. This DAESI programme has been started in the Eastern India as a pilot basis from September, 2013 in the South 24 Parganas district. Ramkrishna Ashram KVK is one of the centers to host this programme, which, so far has trained 121 number of Input dealers from the remote island blocks of Sundarbans. Presently, another two batches, including 80 dealers, are being pursued.

The present study was undertaken to find out effectiveness of this programme towards farmers benefit and overall agricultural development. The study was conducted with such input dealers completing the DAESI course at KVK-Nimpith centre up to 2016. 30 dealers holding DAESI certificate and 30 dealers, without any formal education were surveyed through structured interview schedule. 200 farmers were also surveyed for their opinion.

Parameters used for this study were:

- Improvement in knowledge and behaviour,
- Contribution in beneficiary selection in KVK demonstration programme,
- Contribution in agro-advisory services, and
- Dissemination of weather and disease forecasting information.

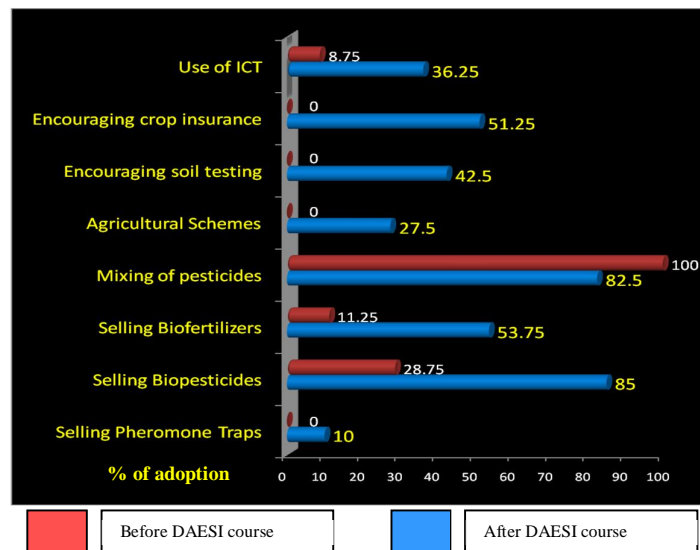
### Change in knowledge among Input Dealers:



Before the start of the DAESI course, the Dealers had no knowledge on the importance of soil testing and the role of pollinators in crop production. They also had very poor knowledge in safe use of pesticides, correct dose of pesticides, pest-disease diagnosis, balanced fertilizer dose and seed treatment. After the DAESI course the dealers improved their knowledge in all these aspects. Now they are well aware about the role of soil testing and seed treatment. They know when to apply pesticides to minimize their impacts on honeybees and pollinators. All the trained dealers are now promoting biopesticides and biofertilizers. The correct knowledge of the laws of agri

inputs has transformed them more responsible to the farming community.

### Behavioral change among Input Dealers:



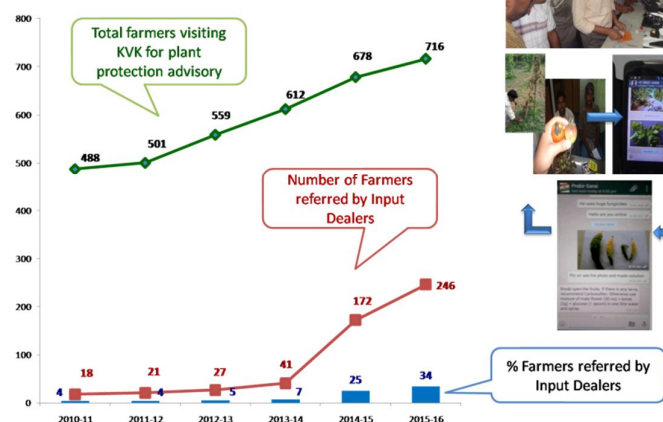
The DAESI course brought tremendous impact among the dealers regarding their behavior and attitude for overall development of the farming community. Earlier, they paid no interest in disseminating information nonrelated to their business interest. Now they are encouraging farmers for crop insurance and soil testing. They are also providing information on various agricultural schemes available to the farmers. The trained dealers are now more favourable to organic inputs. The most important change is regarding use of ICT in pest-disease diagnosis. Many dealers are referring field

photos to the KVK scientist to have proper diagnosis and advisory to minimize miss selling of their product. Farmers also are happy with this service as the cost of plant protection measure is going down.



### DAESI dealers acting as a linkage between Farmers and KVK:

#### Linking of Farmers to KVK, Nimpith for Pest-Disease Diagnosis by Input Dealers



The trained dealers have taken this opportunity to bridge the gap between farmers and the Krishi Vigyan Kendra. The number of farmers visiting the KVK for plant protection advisory has increased after the introduction of this course. The nearby trained dealers send the farmers to the KVK scientist for proper diagnosis of any pest and disease. The farmers also realize the benefit of visiting the KVK as they can access all information of farming (agriculture, fishery, dairy, poultry, etc) in one place. There has been a reduction of pesticide spray in chilli crops from 14.5 to 5.5

numbers as informed by the farmers.

### Dissemination of Agricultural information and follow-up:

A study was undertaken while selecting beneficiaries for a RKVY funded project on “on-farm mass production of microbial pesticide - *Trichoderma*” during 2016-17. 200 beneficiaries were selected for this programme. Apart from news paper advertisement and notice board publication, the DAESI trained dealers were also involved in beneficiary selection. More number of applications was received through the Dealers than the conventional advertisement. It was also observed that adoption rate of the demonstrated technology was very high (84.91%) when it is done taking help from Input Dealers as compared to beneficiary selection by conventional methods (51.22%). This was possible due to the close monitoring by the dealers apart from the KVK staff.

Mode of advertisement (Information dissemination)	No. of application received	No. of applicants having experience of using <i>Trichoderma</i>	No. of applicants turned up for training	No. of Trainee started <i>Trichoderma</i> production at their house	No. of Trainee attended the refresher training course	No. of Trainee continuing <i>Trichoderma</i> production after 4 months of 1 <sup>st</sup> training	% of adoption
Newspaper publication, Notice board	104	51	41	41	40	21	51.22%
Through DAESI trained Agri Input Dealers	171	168	159	159	159	135	84.91%

So, it can be concluded that scientific agricultural training of Agri-Input Dealers and inclusion of them in Mainstream Agri-Extension System would be helpful in overall Agricultural development of the country.



**Subhendu Mondal, S/o: Buddhiswar Mondal**

Vill: Ullon, PO- Ramlochanpur, Mandirbazar, South 24 Parganas - 743336  
Mobile & WhatsApp No.: 9733635633

Earlier we, the input dealers, used to be treated as a mere business personal in the locality. After undergoing the DAESI course and implementing the learning, now we are also being recognized as responsible friends of the farmers. This has improved our social prestige.

### 3.8.2. Strengthening of VHSNC :

One of the key elements of the National Rural Health Mission is the Village Health, Sanitation and Nutrition committee (VHSNC). The committee has been formed to take collective actions on issues related to health and its social determinants at the village level. They are particularly envisaged as being central to 'local level community action' under NRHM, which would develop to support the process of Decentralised Health Planning. Thus the committee is envisaged to take leadership in providing a platform for improving health awareness and access of community for health services, address specific local needs and serve as a mechanism for community based planning and monitoring.

The committee is formed at the village level and it should act as a sub-committee of the Gram Panchayat. It should have a minimum of 15 members which should comprise of elected member of the Panchayat who shall lead the committee, all those working for health and health related services should participate, community members/ beneficiaries and representation from all community sub-groups especially the vulnerable sections and hamlets/ habitations. ASHA residing in the village shall be the member secretary and convener of the committee

#### Roles and Responsibilities

- Create awareness about nutritional issues and significance of nutrition as an important determinant of health.
- Carry out survey on nutritional status and nutritional deficiencies in the village especially among women and children.
- Identify locally available food stuffs of high nutrient value as well as disseminate and promote best practices (traditional wisdom) congruent with local culture, capabilities and physical environment through a process of community consultation.
- Inclusion of Nutritional needs in the Village Health Plan – The committee will do an in-depth analysis of causes of malnutrition at the community and household levels, by involving the ANM, AWW, ASHA and ICDS Supervisors.
- Monitoring and Supervision of Village Health and Nutrition Day to ensure that it is organized every month in the village with the active participation of the whole village.
- Facilitate early detection of malnourished children in the community; tie up referral to the nearest Nutritional Rehabilitation Centre (NRC) as well as follow up for sustained outcome.
- Supervise the functioning of Anganwadi Centre (AWC) in the village and facilitate its working in improving nutritional status of women and children.
- Act as a grievances redressal forum on health and nutrition issues.

The committee may, preferably, act as a sub-committee of Gram Panchayat and function under the overall supervision of Gram Panchayat. States are accordingly advised to issue the necessary

notifications and guidelines on constitution of VHSNC to all concerned. States are also requested to consider notifying VHSNC as a subcommittee of Gram Panchayat.

### **Role of KVK Nimpith to strengthening the VHSNC:**

Most of the VHSNC in the villages of south 24 pgs are non functioning. KVK has taken initiative to sensitize the elected members of the gram panchayat, ASHA, ANM, mothers from the concern area to play their role for monitoring and supervising VHND and carry out the action related to nutrition and health in the Beledurganar and Baishhata gram panchayet in Joynagar II block.




Community Consultation to identify locally available food stuffs of high nutrient value as well as disseminate and promote best practices

### **Implementation of Community Score Card**

Community Score Card, a community based monitoring tool was conducted on the services of ICDS center(AWC no.275) at Gopalnagar village of Baishhata grampanchayet, to get immediate feedback on quality and adequacy of services provided. After identifying the service area preparatory ground work was done within the facilitator and informed the community and service providers about the programme. Then input tracking was done on the entitlements of the services with community and service providers. CSC was performance of the service which was evaluated by the communities/users themselves. On the basis of the problematic situations, action plan was developed through a interface meeting.

- 3.9 Give details of indigenous technology practiced by the farmers in the KVK operational area which can be considered for technology development (in detail with suitable photographs)

S. No.	Crop / Enterprise	ITK Practiced	Purpose of ITK
1.	Tomato (Management of bacterial wilt disease)	Soil application of common salt for controlling bacterial wilt	Reduction of bacterial wilt incidence

Farmers' Name	Bikash Purkait	
Age	40	
Farmers' address	S/O: Mrityunjoy Purkait Vill: Keorakhali, Block- Patharpratima, Dist: South 24 Parganas	
Education	Class VIII	
Landholding	6 bigha	
Details about livestock	2 no.	
Farming experience	22 years	
		
The Problem	Tomato is the main cash crop of Patharpratima block of South 24 Parganas. The crop is severely affected by Bacterial wilt (10-50% disease incidence).	
Existing practice	Farmers generally depend upon symptomatic spraying of Streptocycline (100 - 1000 ppm) with no economic gain.	
Description of Innovation	<b>Application of common salt (NaCl) to the soil to control bacterial wilt.</b>	
Specifications of the practice	Common salt (NaCl) available at local market is applied in the soil @ <b>2.5 q per bigha</b> . The salt is applied at 30 days after transplanting of tomato seedlings in the main field. 2500-3000 plants are maintained per bigha. Approximately, 100 g of Salt is applied around the base of the plant (6 inch away from the base) and mixed with the soil. Then the field is irrigated.	
Practical Utility of Innovation	The practice of salt application is an innovative one. He was inspired by one age-old practice followed by some aged farmers residing near the brackish water creeks/rivulets. Those farmers sometimes used to flood their tomato fields with the brackish water. Mr. Bikash observed that those fields flooded with brackish water were least affected by tomato bacterial wilt.  6 years back, there was a heavy infestation of Bacterial wilt in the village. Mr. Bikash applied some common salt in 5 rows of tomato and surprisingly noticed that there was least infestation of bacterial wilt in those plants. Then onwards, he started experimenting with the dose of common salt and adjusted it to 2.5-3 q per bigha, without hampering the crop growth. The average disease incidence is 4-6% in the salt applied field in comparison to 25-30% in the traditional practices.	
Adoption of the innovation by other farmers in the village	Around 100 farmers in Patharpratima now following the practice showed by Mr. Purkait.	
Economics of innovation	<b>Traditional practice</b>	<b>Innovative practice</b>
	Cost of application of Bactericide and Copper Fungicide: Rs. 800+Rs. 2500 = Rs. 3300 per bigha	Cost of application of Salt: Rs. 4 x 250 kg = Rs. 1000 per bigha
Crop yield	Variety: SG 1458 175 q/bigha	Variety: SG 1458 200 q/bigha
Total return	175q x Rs. 700 = Rs. 122500	200qxRs. 700 = Rs. 140000
Expenses incur (Rs/bigha)	Rs. 47000	Rs. 44000
Net returns (Rs/ha/year)	Rs. 75500	Rs. 96000
B:C ratio	2.61	3.19

**Study undertaken by KVK**

It was noticed that the salinity (EC) of the soil varied from 0.23 to 0.35 ( $\text{dSm}^{-1}$ ) at 25°C.

After application of salt and irrigating the field the salinity (EC) rose to 2.1 to 2.95 ( $\text{dSm}^{-1}$ ) at 25°C.

But after 15 days to 30 days, the salinity level could be brought down to 0.38 ( $\text{dSm}^{-1}$ ) at 25°C, due to frequent irrigation.

Tomato can tolerate salinity level upto 2 ( $\text{dSm}^{-1}$ ) at 25°C.

So the innovative practice reduced the bacterial load in the soil without affecting the economic crop yield. However detailed study is being conducted by the KVK to find out the level of bacterial load in the soil before, during and after salt application in the infected soils.



### 3.10 Indicate the specific training need analysis tools/methodology followed by the KVK

- Identification of courses for farmers/farm women
  - Rural Youth
  - In-service personnel

Applications are invited from the interested people through the farm science club or may be collected directly from the KVK. On receiving the application, structure questionnaires are given to the prospective trainees to fill up and submit the same to KVK.

The applications are scrutinize by the respective disciplines and called for to appear in a semi-structure interview for final selection. Participants are also selected by conducting PRA in villages where basing on their needs and problems, the interventions are made which quiet often points to training. Subsequently schedules of training programme are set according to seasonality and included in the KVK action plan for the particular year.

In addition to the above mentioned procedures for selecting participants for a training programme, persons are also open to apply through website or by contacting respective experts over mobile phone, the number of which is generally obtained from KVK web site, ZPD web site, Kisan Call Center, ETV Annadata, Doordarshan Agricultural programme and other sources.

#### 3.11. a.Details of equipment available in Soil and Water Testing Laboratory

Sl. No	Name of the Equipment	Quantity
1	Systronics Spectrophotometer (Model 167)	1
2	Systronics pH meter (Model 335)	1
3	Systronics Conductivity Bridge (Model 304)	1
4	Flame Photometer (Model 128)	1
5	Afcoset Electronic Balance(Model EK1200G)	1
6	Afcoset Electronic Balance(Model ER 200A)	1
7	REMI Centrifuge (Model R 23)	1
8	Head of the REMI Centrifuge(Cat.R236)	1
9	REMI Magnetic Stirrer (Model 1)	1
10	REMI Magnetic Stirrer (Model 2)	1
11	REMI Stirrer (Model RQ 121D)	1
12	Refrigerator LG Brand - 20 lits	1
13	Suction Pump PRECIVAC (Model DC 101)	1
14	Silica Crucible 100 ml.	6
15	Scientific Calculator FX	2
16	Rubber Cork Borer	1
17	Thermometre 360°C	4
18	Moisture Box	6
19	Stop Watch	1
20	Mortar and Pestle (Wooden)	1
21	Mortar and Pestle (Porcelain)	6
22	Filter Paper (Whatman)	10
23	Seive	6
24	Hand Vaccum Pump (Terson)	1
25	Almirah	1
26	Double Glass Distillation Apparatus- 5 lits	3
27	Barnstead Type Distillation – Table model	1
28	Stokes Type Wall Hanging Distillation	1
29	Micro Kjeldhal Digestion Apparatus	1
30	Micro Digestion Apparatus (Mantle Heaters)	1
31	Micro Distillation Unit – Improved-Wangner	1
32	Micro Distillation Set (with S.S.Tank)	1
33	Kjeldhal Flask of BOROSIL	18
34	Kjeldhal Flask Head	6
35	Blower for Kjeldhal Flask of BOROSIL	2
36	Mechanical Shaker	1
37	Over (Digital controller)	1

38	Raymond Mill	1
39	Muffle Furnace (Upto 1200°C)	1
40	High Precision Water Bath-12”X10”X8”	1
41	Hot Plate 12”X10”	1
42	C.V.T. Input – 2 KVA	1
43	C.V.T. – 5 KVA	1
44	Filtering Flask – 250 ml Borosil	6
45	Filtering Flask – 500 ml Borosil	6
46	Burette - 50 ml Borosil	6
47	Burette – 10 ml Borosil	2
48	Rubber Cork	100
49	Weight Box – 1 set	1 set
50	Platinum Crucible - 20–25 ml	1
51	Mridha parikshak –IISS-ICAR -	1 set
52	PUSA -STFR	1 set
53	Balance	1
54	pH-meter	1
55	Conductivity meter	1
56	Hot Air oven	1
57	UV-VIS Spectrophotometer	1
58	Flame Photometer	1
59	Turbidity Meter	1
60	Hot plate	1
61	Water Bath	1
62	Mechanical Shaker	1
63	Double Distillation plant Glass	1
64	Bottle Top Burrete	1
65	Acid Dispenser	1
66	Muffel Furnace	1
67	Refrigerator	1

## 3.11.b. Details of samples analyzed so far :

Details	No. of Samples	No. of Farmers	No. of Villages	Amount realized
Soil Sample analyzed for pH, EC, OC, N, P, K, S, B, Fe, Cu	1812	1812	187	1,81,200.00
Total	1812	1812	187	1,81,200.00

## 3.12. Activities of rain water harvesting structure and micro irrigation system: Outsourced from RKVY, GoWB

No of training programme	No of demonstrations	No of plant material produced	Visit by the farmers	Visit by the officials
8	401	-	-	Evaluation of the project by 3 <sup>rd</sup> party

### 3.13 Technology week celebration on “Attracting Rural Youth in Agriculture through Climate Smart technology”

Type of activities	No. of activities	Number of participants	Related crop/livestock technology
Seminar, Demonstration,, Exhibition, Crop and animal show -cum-competition, <b>quiz competition on Agriculture</b> , A drama namely “ <b>School Chut Kamate Sangi Shikshan</b> , prize distribution and cultural programmes.	14	More than 20000 no.	“Attracting Rural Youth in Agriculture through Climate Smart technology”

### 3.14. RAWE programme - is KVK involved? NA

No of student/ARS trained	No of days stayed

### 3.15. List of VIP visitors (MP/MLA/DM/VC/Zila Sabhadipati/Other Head of Organization/Foreigners)

Date	Name of the person	Purpose of visit
05.04.16	Dr.Sudhir Saxena, CCUBGA, IARI	Observing KVK activities
16.04.2016	<b>Mr. Sujit Mitra</b> – Director of Finance, ICAR	Observing KVK activities
02.05.16	Field Director, Sundarban Biosphere Reserve	Observing KVK activities
01.06.16	Dr. Md. Osman, Principal Scientist & NICRA Coordinator	NICRA activities in village
18.06.2016	Sri Biswanath Das MLA, Joynagar Constituency	SAC Meeting
27.06.2016	<b>Shri R.P. Singh</b> Member of Governing Body ICAR New Delhi	Observing KVK activities
26.07.2016	<b>Shri Purnendu Basu</b> Hon'ble MIC, Department of Agriculture, Government of West Bengal	Observing KVK activities
26.07.2016	<b>Dr. Paritosh Bhattacharyya</b> OSD & Ex Officio, Director of Agriculture, Govt. of W.B.	Observing KVK activities
26.07.16	Dr. Arunashis Goswami, Controller of Exams. & DEE, WBUAFS	Observing KVK activities
18.08.16	Dr. A.K.Singh, VC, BAU	Observing KVK activities
29.08.16	MD, CCI	Observing KVK activities



Contd...

5 <sup>th</sup> November, 2016	Hon'ble Member of Parliament, Mrs. Pratima Mondal (Joynagar Constituency)	To attend SAC Meeting and vigilance awareness week
	Mr. Soumen Mitra, IPS, Additional Director General and Inspector General of Police, (Training) Kolkata	Observation of Vigilance Awareness Week
	Mr. Tapan Chakraborty, AGM, Vigilance, SBI	
10.11.2016	Shri Ashis Banerjee, Hon'ble MIC, Department of Science and Technology, Government of West Bengal	Observing KVK activities
23.12.2016	Shri Chandra Nath Singha Hon'ble MIC, Department of Fishery, Government of West Beng	Observing KVK activities
13.10.2016	Dr. Y. G. Prasad Coordinator, NICRA-TDC, CRIDA, Hyderabad	To monitor NICRA project implemented by RAKVK, Nimpith
10.01.17	Swami Prabhananda, Vice President, Ramakrishna Math & Mission, Belur	Observing KVK activities
25.01.2017	Dr. R. K. Thakur Project Coordinator, AICRP on Honeybees and Pollinators, ICAR, New Delhi	To monitor the activities of AICRP (HB & Pollinators) centre at RAKVK Nimpith
28.01.2017	Prof. (Dr.) R. K. Walia Project Coordinator, AICRP on Nematodes, ICAR, New Delhi	To visit RAKVK, Nimpith and finalize the venue and programme planning for conducting field visit programme at RAKVK under the Annual meeting of AICRP (Nematodes).
25.02.2017	Dr. P. K. Chakrabarty ADG (Plant Protection), ICAR, New Delhi	To visit RAKVK, Nimpith and discuss the activities of AICRP (HB & Pollinators) centre at RAKVK Nimpith. Also participated in the Annual meeting of AICRP (Nematodes) organized by ISI, Giridih Centre of AICRP (Nematodes) at RAKVK, Nimpith.
25.02.2017	Dr. M. R. Khan AICRP (Nematodes), BCKV	Annual Review Meeting of AICRP Nematodes

Contd...

15.03.2017	Smt. Sutapa Datta Gupta Station Director Prasar Bharati All India Radio Sri Soumen Basu Asst. Station Director Prasar Bharati All India Radio	RPAC Meeting
18.03.17	Sri Jayanta Aikat, Director, FPI & H, GOWB	Observing KVK activities

#### 4.0. IMPACT

##### 4.1. Impact of KVK activities (Not to be restricted for reporting period).

Name of specific technology/skill transferred	No. of participants	% of adoption	Change in income (Rs.)	
			Before (Rs./Unit)	After (Rs./Unit)
Seed production of indigenous high value Asian catfish	89	24	-	100000.00 (in 3 months breeding season)
Farming of climbing perch	142	25	35000.00/0.065ha	60000.00/0.065ha
Farming of diverse fish species with carps	231	55	35000.00/0.065ha	47000.00/0.065ha
Hydroponics fodder cultivation	54	31%	3500/month/reabbit farm	4700/month/ unit
Use of soft music 30 minutes before milking	250	85%	22000/year/3 dairy unit	26000/year/3 dairy unit
On-farm mass production of <i>Trichoderma</i>	200	98%	Rs. 2,91,000/ha	Rs. 3,72,000/ha

NB: Should be based on actual study, questionnaire/group discussion etc. with ex-participants

#### 4.2 Cases of large scale adoption

(Please furnish detailed information for each case)

Horizontal spread of technologies	
Technology	Horizontal spread
Use of <i>Trichoderma harzianum</i> and <i>Pseudomonas fluorescens</i> in disease management	384 farmers
On-farm mass production of <i>Trichoderma</i> by the farmers	310 farmers
Landshaping Technology	401

#### 4.3 Details of impact analysis of KVK activities carried out during the reporting period

##### Impact analysis of RKVY funded projects

**Landshaping project: The project has been evaluated by** by third party evaluator, Mr. Biplab Nandi of IWIN, Kolkata. The implemented project work is appreciated by third party evaluator.

##### Biopesticide project:



KVK Nimpith implemented a two years project on “On-farm mass production of microbial pesticides” under RKVY scheme through Dept. of Agriculture, GoWB. The project was successfully completed benefiting 300 farmers and rural youths directly and many more, indirectly. An impact analysis was conducted jointly by third party evaluator, Mr. Biplab Nandi of IWIN, Kolkata and Scientists from KVK, to document the project impact on the farming community. The following outcomes were observed:

- Farmers are successfully producing *Trichoderma* at their house.
- From 20 kg grains, 10 kg bio-pesticides are prepared. From 60 quintal grains (300 beneficiary x 20 kg), 30 quintal bio-pesticides were prepared per cycle. In four cycles in a year, around 120 quintal bio-pesticide were prepared on-farm. At a nominal cost of Rs. 100/- per kg, there were an annual turnover of Rs. 12 lakh during 2016-17
- Farmers now don't depend upon pesticide shops mercy for timely supply of quality biopesticide.
- Some of the beneficiaries are acting as master trainer and thus disseminating the technology manifolds in the district
- Farmers became enthusiastic in adoption of low cost on-farm mass production of other available bio-control agents like – Entomopathogenic fungi (*Metarhizium anisopliae*)

Considering the paucity and timely un-availability of quality bio-control agents in the markets of remote areas in Sundarbans, this project will certainly bring smile to the farmers who are already aware of the malady of chemical farming.



## 4.4 Details of innovations recorded by the KVK

Thematic area	Climate resilient agriculture	
Name of the Innovation	<b>Floating Seedbed of Paddy</b>	
Details of Innovator	Name	Madan Mandal
	Age	49
	Address	Village : Bongheri, Dist.: South 24 Pgs, P.O.: Kaikhali Ashram, West Bengal, PIN: 743338 Mobile no: 8016319599
	Education	Primary
	Landholding	1 ha (irrigated)
	Livestock	4 cows
	Farming experience	25 years
		
Back ground of innovation	<p><b>Existing Practice:</b></p> <ul style="list-style-type: none"> <li>• Paddy seedbed by traditional method (water soaked paddy seeds are sown in soil)</li> <li>• Chance of damage due to excessive rainfall in short times pan and subsequent flooding.</li> <li>• Cost of cultivation increases</li> <li>• Chance of total crop loss</li> </ul> <p>The village falls under the coastal agro-ecological zone and suffers from occasional torrential rain during Monsoon. Paddy is the major crop during Monsoon season. More than 75% of the agricultural lands are low lying and hence the Kharif paddy suffers prolonged submergence after any intensive precipitation (&gt;60 mm per day).</p> <p>Due to climate change there is an increase in intensity of precipitation during the initial monsoon days (June-July) resulting into prolonged submergence (10-12 days). This causes havoc damage to the seedbed preparation as well as to the standing seedbeds of paddy.</p>	
Technology details	<p><b>Floating seedbed of paddy:</b></p> <p>The entire seedbed is prepared on a bamboo frame that can float over water so that the paddy seedlings are protected from submergence during excess rainfall.</p> <p>Process:</p> <ul style="list-style-type: none"> <li>• A 10ft x 4ft size bamboo frame is prepared</li> <li>• A polythene sheet is covered over the bamboo frame</li> <li>• A thin layer of top soil is spread over it.</li> <li>• The frame is either fixed with bamboo poles at four corners and manually lifted with the rise of water level or fixed with empty plastic vessels to keep it floating.</li> <li>• Paddy seeds are sown on the floating seedbed</li> </ul> <p><b>Specifications of the practice</b></p> <ul style="list-style-type: none"> <li>• Seed rate of paddy: 50kg/ha</li> <li>• Floating seedbed size: 10ft x 4ft</li> <li>• No. of floating seedbeds: 25no./ha</li> <li>• Age of seedling at transplantation: 24 days</li> <li>• Materials required: bamboo split, string, polythene sheet/banana leaves, soil and compost, seed, plastic vessels</li> </ul>	
Practical utility of innovation	<p>The innovation helped to save the paddy seedbeds from prolonged submergence and subsequent crop loss. The seedbed floats over the standing water and thus escapes any immediate damage. Moreover, seedbed preparation is neither delayed nor hampered due to heavy precipitation during initial phases of monsoon. The seedlings of floating seedbed were ready for transplantation at 24 days after sowing compared to 30-35 days in case of traditional method.</p> <ol style="list-style-type: none"> <li>Timely preparation of seedbed</li> <li>Escape from submergence</li> <li>Early transplanting</li> </ol>	

	Economics of innovation	Farmers practice	Innovation
	Crop yields (kg/ha)	Variety: Dudheswar 27 q/ha	Variety: Dudheswar 33 q/ha
	Cost of cultivation	Rs. 34000/ha/year	Rs. 39000/ha/year
	Net returns (Rs/ha/year)	Rs. 20000/ha/year	Rs. 27000/ha/year
	B:C ratio	1.59	1.69
	Other benefits	a) Farmers use higher seed rate to compensate seedling loss. b) Farmers engage extra labour and fertilizer in case of damage to the seedbed.	a) Timely preparation of seedbed b) Escape from submergence c) Early transplanting

#### Photographs of Floating Seedbed of Paddy



#### 4.5 Details of entrepreneurship development

S. No	Name of the enterprise	Broiler poultry chick, feed and production farm
1.	Name & complete address of the entrepreneur	Sri Shakti Halder Vill: Nimpith, PO: Nimpith Ashram, South 24 Parganas, 7433308 9733749554
	Intervention of KVK with quantitative data support:	Training, advisory, monitoring, linkage with Poultry Federation of West Bengal, financial organization, refresher training and orientation in different training class.
	Time line of the entrepreneurship development	5 Year
	Technical Components of the Enterprise	5000 capacity of production unit, one hatching machine of 2000 egg capacity and one rural poultry feed plant.
	Status of entrepreneur before and after the enterprise	Before the entrepreneurship he was a farmer of only 2000 capacity broiler producer. Now, along with his farming he employed 15 persons in his farm-cum business centre with feed dealership and chick production unit. More than 50 rural youth have taken the small scale broiler farming from him as one of the income generating activity. Presently the economics of the enterprise for 1000 bird cycle is Gross expenditure: 169500.00, Profit: 254500.00 and B:C ratio 1.50

Present working condition of enterprise in terms of raw materials availability, labour availability, consumer preference, marketing the product etc. (Economic viability of the enterprise):	In his farm cum business centre, he used to supply chicks, feeds, primary consultation etc to the farmers who are taking this farming as their income generating activity. He assures the quality of chicks and feeds and hence the trust and confidence of the fellow farmers of him became a prime asset of Sri Halder's business. The main success key in his business is his 'After sales care'. He usually visits the farmers filed to whom he supplied his produce, atleast once in 15 days during the productive cycle. He himself, being a successful farmer, provides guidance to his consumer farmers, making their farming successful. In most of the cases, he consults KVK expert for guiding his farmers. For this reason, his consumer farmers rely upon him very much.
Horizontal spread of enterprise	2 nos (having 4000 capacity of production unit and additionally feed dealership for distributing to the contacted farmers)

#### 4.6. Any other initiative taken by the KVK

##### 4.6.1. Rooftop organic aquaponics

Aquaponics is a combination of aquaculture (the growing of aquatic organisms) and hydroponics (the growing of plants in water without soil). This integrated system works by the formation of a symbiotic relationship wherein the nutrients and resources are recycled between the two systems. The fish provides wastes, which the bacteria turn into plant nutrients, providing the plants with food and the fish with clean water.

In this integrated system, a **circular fish chamber** of 8 ft. diameter with a capacity of approx. 2000lts. was stocked with the omnivorous fish *Tilapia* at a stocking density of approximately 1 fish per 22.5lts. of water i.e. 90 fish. The fish are fed with formulated dry feed prepared with locally available ingredients @ 3% of their body weight twice daily. The fibre glass fish chamber was kept on the roof of the soil testing laboratory of the KVK.

A platform along the parapet wall of the roof was made to hold two grow out beds for plants (**plant bed**) with dimensions of 6 ft. X 2.5 ft. X 8 inch each. The two grow beds are filled with stone chips. In each bed seeds of spinach were scattered in between 1 row each of broccoli and tomato (6 saplings each). Each plant bed was also provided with 2 saplings of bottle gourd. Trellis for growing of bottle gourd was also made extending from near the plant bed to an adjoining roof.

A **nitrification chamber** of dimensions 1m X 1m X 0.75m was kept on the designated roof and was provided with stone chips bed for the growth of beneficial nitrifying bacteria which converts the harmful nitrites into nitrates. This chamber was also provided with a underwater pump for lifting nutrient rich water from this chamber to the plant bed.

When the system is operated, the pump lifts water from the nitrification chamber and is guided to the plant beds by a flexible hard pipe where it is fitted to perforated PVC pipe for dripping of water on the bed. From here there is a system by which the excess water from the beds falls into the fish chamber through a central outlet. This water is clean as the plants absorb the nutrients for their growth. Again from the fish chamber the surplus water with fish metabolites and feed residues are passed into the nitrification chamber.

To make the system effective, before sowing/planting in plant bed, the system with fish in the fish chamber should be operated for at least 2-3 weeks for the nitrifying bacteria to grow in the nitrification chamber.

The aquaponics system was operated for a period of 3 months from which the following quantity of vegetables and fish were obtained:

- a) Spinach – 2kg
- b) Broccolo – 12pc.
- c) Tomato – 22kg
- d) Bottle gourd – 2pc.
- e) Fish – 9kg



Present roof top aquaponics is a marked improvement over the previous indoor aquaponics in the KVK

4.6.2

# HYDROPONICS FODDER PRODUCTION

## WHAT?

- Growing plant without soil
- Growing seeds in water and nutrient rich solution

## Why?

- No requirement of land
- Year round cultivation regardless of climate
- 25% higher production than field crops
- Very minimum water requirement
- Less time for production
- Reduced labour
- High nutritional value
- No soil borne disease
- Fodder having anti-oxidant property
- Contains more folic acids, omega 3 fatty acids,

## How?

- ‘0’ day:** 24 hrs. soaking of seeds (Maize, barley)
- 1<sup>st</sup> day:** soaked seed transferred to tray and spayed uniformly and loaded to 1<sup>st</sup> row of rack
- 2<sup>nd</sup> day:** 1<sup>st</sup> day tray shifted to 2<sup>nd</sup> rack. ....likewise till bottom rack.
- 7<sup>th</sup> day:** fodder harvested from bottom rack and feed to the animals
- ✓ Wider range of temperature- 15-32°C

## Where?

- 300 kg/day production
- 25 numbers of cows
- 85 numbers of goats and sheep
- 7-8 kg green fodder replaced with 1 kg concentrate
- Maximum 20 kg/day replacement/cow as it is

Attributes	Conventional green fodder	Hydroponic green fodder
Area	10.000 Sq.mts.	50 Sq.mts.
Land fertility	Essential	No Essential
Fertilizers	Required	Not required
Water and electricity	Very high	Very low
Labour requirement	More	Less
Growth period	45-60 days	7 days
Fodder yield	Based on Climate	Under control environment
Fencing and production	Required	Not required



Seed soaking



1<sup>st</sup> day



2<sup>nd</sup> Day



5<sup>th</sup> Day



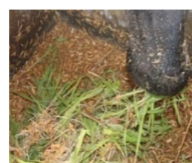
6<sup>th</sup> Day



7<sup>th</sup> Day



Mat like appearance



Fed to cows



### 4.6.3

#### Participating in Krishi Mela in collaboration with IVRI, ERS



A krishiMela was organised at SSKVK, Narendrapur in collaboration with IVRI, ERS on 14.12.2016. RAKVK, Nimpith also participated in that Mela and different live model of animal husbandry practices were demonstrated.



### 4.6.4

#### Celebration of joy Vigyan joy kishan week -23-29 November



A special awareness programme was organized at NICRA village (Bongheri) on scientific rearing of animals with special emphasis on prevention of animal diseases. The programme was organized in collaboration with IVRI, ERS.

#### 4.6.5

##### Celebration of 20<sup>th</sup> Jatio Prani Sampad Saptaho:

ARD Department celebrates Jatio Prani Sampad Saptaho from 13-19 November every year. This year also RAKVK-MVC unit participated in this programme and different programs like animal health camp, vaccination camp and awareness campaigning were carried out.



#### 4.6.6

##### Celebration of World veterinary day:



Animal Husbandry section of RAKVK, Nimpith celebrated world veterinary day on 30.04.2016 by organizing awareness camp on Rabies and also by conducting one health cum-vaccination camp in the riverine village of Kultali block. FMD, Goat Pox, RD, Duck Plague, ARV were conducted and more than 230 number of animals were treated in the camp.

#### 4.6.7

##### Integrated development of MP's village:

RAKVK organized one special meeting with MP of Joynagar-majilpur constituency on 04.11.2016 for overall development of MP's village-Rajapurkorber Hat. During the discussion different aspect of development was discussed and it was decided that initially one health camp will be organized to the village as entry point activity and accordingly a camp was done in that village on 04.01.2017 with 76 numbers of farmers participation. Total 90 cows, 124 goats, 76 sheep, 268 poultry, 276 ducks were treated.



#### 4.6.8

##### Dignitaries/guest visit at AH section:



Additional Director General, Kolkata Police, Sri SoumenMitra is paying visit at Poultry section



Programme coordinators from different states are interacting regarding strategic development based on animal husbandry activities

#### 4.6.9

##### Organising special health camp in collaboration with IVRI, ERS

RAKVK, Nimpith conducted several animal health-cum-screening camps at different blocks of south 24 parganas. Screening of tuberculosis and parasitic diseases are one of them. Animal vaccination along with distribution of literature is the major activities undertaken in the camp.



#### 4.6.10

##### Conducting special training from *outside the state*

###### ➤ From Jharkhand:

Two batches of training each of 6 days duration were conducted on animal husbandry especially on dairy farming. Initially expectation drawing was done to formulate the training module. Different aspect of modern dairy were highlighted along with measures to reduce the disease incidence were of prime importance of the training. Hands on practice for administering medicines were done.



#### 4.6.11

##### ➤ From Sikkim Livestock Development Board

25 rural youth from Sikkim undergone MAITRI (Multiple AI technician for rural India) training at Nimpith KVK dairy-Govt of India accredited AI centre. The training was of 45 days duration. The main objective of the training was to make these youth expert for Artificial insemination along with providing other primary modalities of dairy farming to the rural part of Sikkim Govt. much emphasis was given on practical exposure along with field exposure.



#### 4.6.12

##### Women empowerment through special training of 15 days duration on animal husbandry

##### ➤ Prani Mitra training:

Selected female rural youths (110) were imparted training on animal husbandry activities. The training aimed to make the participants capable for performing vaccination to small ruminants along with educating them regarding deworming schedule including other managerial practices. Self employment generation through this vaccination of animals was targeted and the total process was tagged with line department so that the trainees can get the necessary inputs like vaccine and other things from ARD Department.



##### ➤ Empowerment of women through “Linking in Agriculture, Natural resource management and Nutrition (LANN)” programme of Rural Development wing of Sri Ramkrishna Ashram, Nimpith



25 numbers of female of Village -Jouthia, Baishata- GP, and JOYNAGAR –II Block were trained on backyard poultry and they were provided with critical inputs. The training was imparted in such a way in the farmer's field so that the farmers can share their problem of existing stock so as to enable the training more successful and the effort more fruitful.



#### 4.6.13. On-farm mass production of Microbial pesticide (*Trichoderma sp.*)

##### Background:

The chemical intensive pest control has led to intensified pest and disease incidence, resurgence, pesticide resistance and residue problems. In the district of South 24 Parganas, a growing intensity of soil borne fungal pathogens causing root rots, stem rots and vascular wilts and of several pests like *Spodoptera sp.*, *Leucinodes orbonalis*, thrips, jassids and mealy bugs, are being noticed. Chemical pesticides are used as sole weapon against these pest and diseases, thus affecting the farmers' economy and the consumers' health and hygiene. Added to these are the environmental issues like selection pressure on pests and pathogens due to indiscriminate use of chemical pesticides. This artificial selection pressure helps the pests and pathogens to develop pesticide resistance more often than developing any new pesticide molecules by us.

But there are some proven Biopesticides that can manage the above pest-disease problems along with taking care of the issues faced both by the growers, consumers and environment. Biopesticides are either microbial in nature, like *Trichoderma sp.*, *Pseudomonas fluorescens*, *Metarhizium anisopliae*, *NPV*, *Bt*, etc. or may be some beneficial insects, like *Trichogramma*, or any botanical products like Neem oil.

##### Initiative by Ramkrishna Ashram Krishi Vigyan Kendra:

Under such circumstances RAKVK, Nimpith came out with a novel idea of empowering the rural farmers in producing certain bio-control agents at homestead level. The protocols standardized by National Institute of Plant Health Management (NIPHM), Hyderabad, were followed for this purpose. Accordingly, a project, named "On-farm mass production of microbial pesticides" was prepared by RAKVK, Nimpith and sanctioned by the Department of Agriculture, Govt. of West Bengal, under Rashtriya Krishi Vikas Yojana (RKVY) for 2015-16 & 2016-17.

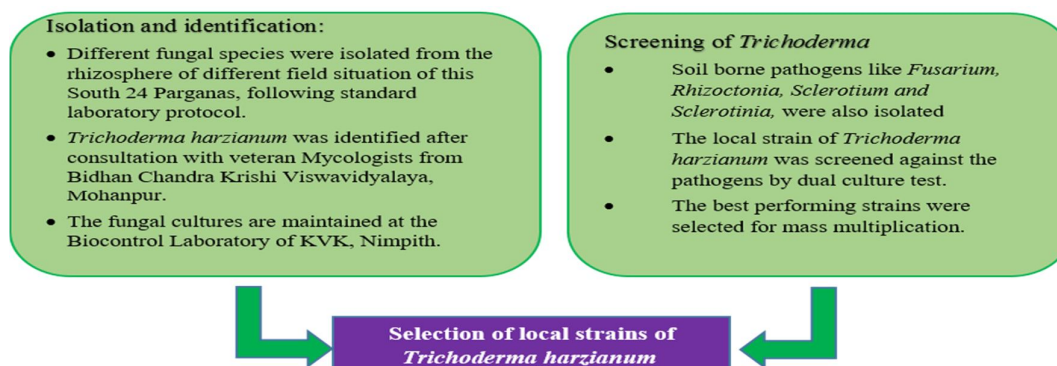
The objective of the 2-year project was to isolate local strains of fungal bio-control agent (*Trichoderma sp.*) and mass production of the promising strain by the farmers for their own use.

As production of bio-control agents for own consumption does not warrant



registration, larger number of agro-ecological zones can be covered with zone specific strains without waiting for their registration and commercial production eternally.

Isolation of local strains was done in the bio-control laboratory of the KVK. Such strains with better adaptability to the edapho-climatic situation of the South 24 Parganas District were selected.



### Beneficiary selection and capacity building

**Project beneficiaries:** 300 farmers, engaged in vegetable and betelvine cultivation were selected from South 24 Parganas, Nadia, Burdwan, Hooghly and Midnapore. Progressive farmers and rural youths, familiar with the use of *Trichoderma* and other biocontrol methods were given priority for successful implementation of the project.

**Demonstration Training:** In 2015-16, three-day long residential trainings were organized at the KVK campus for demonstration of *Trichoderma* production technique. During 2016-17, four-day long residential trainings were organized to accommodate more time on practice of the techniques by the farmers.



**Refresher training and review:** A one-day refresher training was conducted each year for sharing of experiences and to undertake any further refinement of the technology if required at field level.

Year	Training	Date	Trainee
2015-16	Demonstration Training	19-20 Nov 2015	43
		26-28 Nov 2015	36
		07-09 Dec 2015	21
	Refresher Training	10 Mar 2016	100
2016-17	Demonstration Training	6-9 Sep 2016	72
		14-17 Sep 2016	60
		21-24 Sep 2016	41
		28 Sep – 1 Oct 2016	27
	Refresher Training	5 Jan 2017	200

### Distribution of inputs:

All the trained farmers (100 in 2015-16 and 200 in 2016-17) were given the training kit containing inputs for *Trichoderma* production. The beneficiaries were given a pressure cooker, a specially designed wooden box, trays, cotton, polypropylene bags, spirit lamp, spirit and mother culture.



### Production of *Trichoderma* and use:

The trained farmers started production of *Trichoderma viride* at their premises with active guidance and monitoring by the KVK scientists. All of the 100 beneficiaries have produced *Trichoderma* and applied to their field.



Mr. Swapan Bhuiya, a veteran Betelvine grower from farthest Sagar Island has now converted his entire boroz into organic farming and now has got the technological backup to continue it. Apart from *Trichoderma*, he has also explored production of mushroom spawn with the help of the training kit very successfully.

From 20 kg grains, 10 kg bio-pesticides are prepared. From 60 quintal grains (300 beneficiary x 20 kg), 30 quintal bio-pesticides were prepared per cycle. In four cycles in a year, around 120 quintal bio-pesticide were prepared on-farm. At a nominal cost of Rs. 100/- per kg, there were an annual turnover of Rs. 12 lakh during 2016-17.

- Farmers now don't depend upon pesticide shops mercy for timely supply of quality *Trichoderma*.
- Some of the beneficiaries are acting as master trainer and thus disseminating the technology manifolds in the district
- Farmers became enthusiastic in adoption of low cost on-farm mass production of other available bio-control agents like – Entomopathogenic fungi (*Metarhizium anisopliae*)



Parameters	Market available <i>Trichoderma</i> (popular Talc formulations)	<i>Trichoderma</i> produced by the trained farmers at their own farm
Accessibility to use of <i>Trichoderma</i> in remote villages	2.5 times per year	12 times per year
Cost of <i>Trichoderma</i>	Rs. 200 per kg	Rs. 50 per kg
Incidence of root rot, collar rot and fungal wilt diseases	20-30%	5-8%

#### The way forward:

Considering the paucity and timely un-availability of quality bio-control agents in the markets of remote areas in Sundarbans, this project will certainly bring smile to the farmers who are already aware of the malady of chemical farming. And hope this small effort help to take a little step towards sustainability of soil health and production of Green Food in collaboration with the Department of Agriculture, GoWB.

#### 4.6.14

##### Diploma in Agricultural Extension Services for Input Dealers (DAESI)

The public extension system of our country alone is not enough to make our farming community keep appraised on the daily developments in Agriculture. Hence the Ministry of Agriculture, Govt. of India in its National Agricultural Policy and in the 10th Plan approach paper emphasized on the need for reforms in agricultural extension of our country through increased participation of Multi Agency Extension Services like Multi National Companies, corporate bodies, Voluntary Organizations, Farmers' Associations and Input Dealers, etc.

The large network of about 3 lakh Agri-Input Dealers in our Country are acting as an important source of Farm Information to the Farming Community. However, nearly 90% of them do not have any formal Agricultural Education. They act basically as businessmen without realizing the implication of "laws" relating to handling of Agricultural Inputs. If they are transformed into para-professionals by providing adequate agricultural knowledge, they can be very useful in Market led Extension.

Considering all these facts and opportunities, the National Institute of Agricultural Extension Management (MANAGE), Hyderabad, has designed Diploma in Agricultural Extension Services for Input Dealers (DAESI), a One Year Diploma Course which imparts formal agricultural education to the dealers so that they can couple their business with extension services.

#### Objectives of the Course:

- To orient on location specific crop production technologies of broad-based agriculture and specific package of practices related to field problems
- To build capacity of Input dealers in efficient handling of Inputs
- To impart knowledge about the laws governing regulation of Agricultural Inputs
- To make Input Dealers an effective source of farm information at the village level (one stop shop) for the farmers/farm women

#### Initiative taken by RAKVK, Nimpith:

This course has been popularized since 2004-05, but mostly in South Indian States like, Andhra Pradesh, Tamilnadu, etc. It is the first time that any States from the Eastern part of the country has thought off such programme in 2013-14. Ramkrishna Ashram Krishi Vigyan Kendra, Nimpith and

SAMETI, Narendrapur are the two pioneer Institutes that have taken initiative to implement this diploma course for the benefit of the farmers of South 24 Parganas District. 40 Agricultural Input Dealers from different Blocks of the District are selected for each batch per center. The course started with the 1<sup>st</sup> batch in 2013-14. During this financial year 2 batches of the diploma course is being run by this KVK.

Year	Enrolled candidates	Passed out candidates
2013-14 (1 batch)	40	40
2014-15 (1 batch)	41	41
2015-16 (1 batch)	40	40
2016-17 (2 batches)	80	Pursuing

#### Methodology:

The course is completed in 48 weekly classroom interactions as well as practicals and field visits. The weekly classes are mutually agreed upon to be conducted on every Thursday (market holiday for most Dealers). Supply of study materials, use of multi-media instructional devices and engagement of experts as Resource Persons and continuous monitoring as well as final evaluation are followed upon.

#### Content and coverage:

Along with the basic Agricultural knowledge and practices, more emphasis is given on development of problem-solving apprehensive capabilities among the trainees. This will help the farmers to be mostly benefitted from the course. The overall course is divided into some modules like (a) Local Agro-ecological situation, (b) Soil and integrated nutrient management, (c) Crop production technology, (d) Integrated Pest and Disease Management, (e) Water management, (f) Extension management and (g) Agriculture related Laws.

Till date three batches (121 dealers) have been completed at KVK Nimpith center. The 2016-17 course has been started with 2 batches (Total 80 candidates) from November 2016. More and more numbers of Agri-Input Dealers are enquiring for enrollment for the next session. Hope this novel approach will bring enormous changes in the mind of the Input Dealers towards a sustainable production system with minimal exploitation of ecological resources.



#### 4.6.15.

##### Establishment of Vermicomposting demonstration unit

As an effort to replenish soil health, various models of vermicomposting structures have been constructed in the KVK Instructional Farm. Production of vermicompost has been started under the supervision of Plant Protection Section of the KVK. Raw biomass (cow dung and water hyacinth) are collected and partially decomposed before feeding the earthworms. *Eisenia fetida*, *Perionyx excavates* and *Eudrilus eugeniae* are used for vermicomposting.

**Two-chamber model:** The tank comprises of two chambers each with a dimension of 25 feet in length, 1.5 feet in width and 3 feet in height. The wall separating the two chambers is provided with an arrangement for ventilation and the tank is so designed that it is provided with a peripheral water holding channel all around the surface border of the tank. This protects the earthworms from ants, etc.



**Four-chamber model:** Here a 2m x 2m tank is divided into four chambers. The separating walls are perforated to allow movement of earthworms in between the adjacent chambers. Partial decomposition of organic matter and vermicomposting is continued in one after the adjacent chambers.

**Heap method:** The organic matter is placed on a raised floor under a shade and allowed to decompose. After partial decomposition, earthworms are released on these heaps and covered by wet gunny bags.

**Bag method:** Specially designed bags are used to house the composting and vermicomposting process. The bags can be removed and transferred to any convenient place under a shade.

The demonstration unit is used for training farmers and also as commercial production center.

#### 4.6.16.

##### Establishment of Beekeeping demonstration unit

Honeybees not only help us by providing highly nutritive 'honey' but also play an important role in increasing the productivity of crops through pollination. Almost one third of the arable crops in the world are pollinated by bees and non-bee pollinators. Considering pollination services for the farm crops and production of honey as bi-product, a beekeeping demonstration unit was set up in the KVK Instructional farm.



Two species of Bees (12 hives of *Apis cerana* and 2 hives of *Apis mellifera*) are being maintained in the farm. To increase honey production, bee loving crops and flowering plants are also introduced into the cropping system of the farm.

A small, manual honey filtering unit has also been set up for pasteurization, filtering and bottling of the farm produced honey.



#### 4.6.17

##### 1. Management of Chilli leaf curl disease complex

Chilli is one of the major crop of economic importance in South 24 Parganas District of west Bengal. Leaf curl complex, often referred as “Kuthe Rog” complex caused by thrips, mite and begomovirus cause severe loss in this region. It is also plagued by soil borne pathogens like *Phytophthora*, *Sclerotium*, *Rhizoctonia* and *Fusarium*. The damage is so severe that the cultivated area has been halved over the last decade. Due to high value of the crop, farmers give top priority to protect the crop and in the process use large amount of pesticides. This has caused resurgence of the pests, phytotoxicity, destruction of earthworm and natural enemies, killing of pollinators and high amount of pesticide residue in several regions in vegetables and field crops.

For an effective management of this disease complex, a collaborative research project has been undertaken by the KVK with the National Research Centre for Integrated Pest management (NCIPM), ICAR, New Delhi. The objective of the project are:

- Management of leaf curl complex of chilli
- Management of soil borne pathogens of chilli
- Studies on economic impact of management strategies against chilli leaf curl



Experimental plot of “Management of Chilli Leaf Curl Complex” project at KVK Instructional Farm



Data collection on chilli leaf curl infestation at Experimental plot

Two sets of experiments were set up. The first experiment is on studying the effect and interaction of green manuring, seed treatment and seedling treatment with biocontrol agents and chemical pesticides on the incidence of fungal collar rot, leaf curl complex and yield of the crop. The second

experiment was conducted to study the effect of different pesticide schedules (chemical and biological) on the incidence and severity of leaf curl complex and yield.

The results of first year data suggests delay in incidence of chilli leaf curl complex due to seed and seedling treatment. T7 spray schedule in experiment-II also provided better management of leaf curl complex over the control and other treatments.

#### 4.6.18

#### Study on the Incidence of Groundnut Bud Necrosis TOSPO virus in Tomato in Coastal & Saline Agro-ecological Zone of West Bengal

Tomato, an important cash crop of the Coastal and Saline Agro-ecological Zone of West Bengal is infested by various fungal, bacterial and viral diseases. A recent survey in five villages from five Blocks of South 24 Parganas district of this zone revealed symptoms resembling tomato spotted wilt virus infection.

The symptoms were studied at pre-flowering, flowering and fruiting stage. The symptoms were studied at different crop growth stage and that varied from chlorotic leaf mottling, stunted crop growth, dark rings on leaves with green islands at the centre, necrotic streaks on leaf veins and stem, necrosis of terminal bud to concentric rings on fruits.

Disease incidence was recorded at weekly interval during September to December, 2016 and it ranged from 0-32%.

Infected plant samples were deposited with the Advanced Centre for Plant Virology, IARI, New Delhi, where the same were studied by Dr. B. Mandal, Principal Scientist.

Extracts from the field samples reacted with polyclonal antiserum to Groundnut Bud Necrosis Virus (GBNV) in direct antigen coated ELISA, suggesting the association of

a TOSPO virus antigenically related to serogroup IV Tospovirus.

The farmers were suggested for Thrips management as the virus is transmitted by Thrips.



Dr. M. N. Bhatt, NCIPM and Dr. B. Mandal, IARI, visiting the experimental plot along with KVK Scientist



Field survey on incidence of TOSPO Virus in Tomato in Patharpratima block



Field symptom of TOSPO Virus in Tomato in Joynagar-II block



Field sample of TOSPO Virus infected Tomato leaves

#### 4.6.19

##### Study on the effect of pesticides on Giant Honeybee (*Apis dorsata*) in Coastal & Saline Agro-ecological Zone of West Bengal

Increased use of insecticides in crop protection exercises has severely affected the survival of giant honey bee (*Apis dorsata*) which is a very good pollinator of various entomophilous crops like bittergourd, cucumber, cotton, Sunflower, Guava, etc, in this region. The role played by honey bees in increasing the crop yield is 10-20 times greater than their values in honey production. Unfortunately this useful aspect of honey bee is being ignored as the crops are heavily and injudiciously flooded with pesticides to combat various pest problems. This results in drop of pollinator population during the flowering period of the crops resulting in 10-20% reduction of seed setting and crop yield.

Effect of 19 insecticides (chlorpyrifos, cypermethrin, triazophos, profenophos, Imidacloprid, Thiamethoxam, fipronil, acephate, buprofezin, Oberon, spiromesifen, flubendiamide, novaluron, emamectin benzoate, spinosad, flonicamid, dimethoate, difenthiuron and azadiractin) was studied on *A. dorsata*.

Glass beakers covered by muslin cloth secured using rubber band were used for the experiment to allow adequate aeration for the bees. Filter papers were placed inside the container and then wetted with 1 ml of different concentration of the insecticides and then allowed to dry. Honey bees were kept in refrigerator for ten minutes at a temperature of 4°C prior to test so as to calm them for easy handling. They were transferred at the rate of 10 per container. After exposure for an hour the bees were transferred to polythene bags and cotton wool dipped in 40 per cent sucrose solution was provided as food. The bee mortality was observed after 12 hours of treatment and corrected per cent mortality worked out using Abbot's formula (Abbot, 1925).

Imidacloprid was found to be most toxic where as Azadiractin was least toxic to giant honeybees at field recommended doses.



#### 4.6.20

### Pollination service by Indian Honeybee (*Apis cerana*) increases seed setting and yield of Pusa Mahak variety of Rapeseed (*Brassica campestris* var. brown sorson) in Coastal & Saline Agro-ecological Zone of West Bengal

Seed setting in oilseeds is an important factor for increasing its yield. Rapeseed (*Brassica campestris* var. brown sorson) is a cross pollinated crop that is highly dependent upon insect pollination (bee and non-bee insects). A comparative study was undertaken between open pollinated and bee pollinated Rapeseed fields.

Pollination treatment was applied 35 days after sowing when the plants had attained the mature flower stage. One Beehive (*Apis cerana*) was kept near a one-bigha plot. Data collected from this plot was treated as bee pollinated crop data.

Another plot was selected at 1 km away, without any beehive. Data collected from this plot was treated as open pollinated crop data.



	Open pollination	Pollination service
No. of branch/plant	9-10	9-10
No. of silique/plant	252-277	253-276
No. of Seed/silique	14-19	16-21
Test weight of seed (g/1000 seed)	3.6-3.9 g	3.8-4.1 g
Yield (q/ha)	8.72.6	9.8 q/ha

The results show that there is no significant difference between numbers of silique per plant. But the number of seeds per silique and test weight of seeds were significantly higher under pollination service over open pollination situation. The yield in bee pollinated plot was 12.6% more than open pollinated plot.

## 4.6.21

### Observation of World Fisheries Day

The World Fisheries Day was organized by RAKVK, Nimpith on 21.11.2016 to spread awareness on fish culture as a lucrative alternative for livelihood generation in the district of South 24 Parganas where each and every household possess at least one freshwater domestic pond. The programme was attended by 42 farmers from different coastal blocks like Namkhana, Patharpratima, Kultali, Sagar, etc. The programme started by deliberating the participants about the importance of observing World Fisheries Day.

The participants were made aware of the Governments recent decision of stocking at least 50 different species of fish in freshwater ponds to augment production.

They were also made aware of the importance of emerging fish species as stocking materials in freshwater ponds. Netting operation was conducted in the KVK farm to show the participants new species suitable for stocking with carps like *Ompok pabda*, *Osteobrama belangeri*, *Mylopharyngodon piceus*, etc.

Awareness was also given on the importance of preservation and propagation of indigenous fish species and the prospect of controlled breeding of such fish for self employment generation through capacity building from the KVK.

The participants were made aware of the deleterious effect of trading wild natural fish species which is disturbing the eco-system and contribution of this activity towards extinction of several species.





**4.6.22****Observation of Vigilance Awareness Week by RAKVK, Nimpith**

(31<sup>st</sup> October – 5<sup>th</sup> November, 2016)

The Vigilance Awareness Week has been observed from 31<sup>st</sup> October – 5<sup>th</sup> November, 2016 by RAKVK Nimpith focusing on **“Public Participation in Promoting Integrity and Eradicating Corruption.”**

The programme is inaugurated with the pledge by all officials of KVK in presence of Hon’ble Member of Parliament, Mrs. Pratima Mondal (Joynagar Constituency), Mr. Soumen Mitra, IPS, Additional Director General and Inspector General of Police, (Training) Kolkata and Mr. Tapan Chakraborty, AGM, Vigilance, SBI. Different participants like Agriculture Input dealers, Bank officials from SBI, AXIS, Bandhan Bank, Police officials, PRI members and Extension Officials of line department were also invited in different days to take initiatives for public promotion to eradicate corruption. Respected dignitaries have shared their views in different fields to be vigilant for any type of corruption in every sphere of life. Bank Officials have discussed about the cyber crime and possible measures to prevent this crime. Mr. Soumen Mitra, ADG and IGP (Training) Kolkata police explained the procedure of complaints under “Public Interest Disclosure and Protection of Informer Resolution” (PIDPIR) commonly known as **Whistle Blower** complaints.

KVK staffs are taking Pledge in presence of Smt. Pritima Mondal, Hon'ble Member of Parliament, Joynagar Constituency during the observation of Awareness Week on and from 31<sup>st</sup> October – 5<sup>th</sup> November, 2016 at Nimpith KVK



Dr. N. J. Maitra, Senior Scientist and Head, RAKVK, Nimpith sharing his views with the agri input dealers on the occasion of Vigilance Awareness Week



Mr. Tapan Chakraborty, AGM, Vigilance, SBI discussing about the Cyber Crime



Mr. SoumenMitra, ADG and IGP (Training) Kolkata police explaining the procedure of complaints under “Public Interest Disclosure and Protection of Informer Resolution”

## 4.6.23

**Observation of “World Soil Day-2016” held on 05.12.2016**

Venue of the Programme	No. of Participants	No. of Soil Health Cards distributed	Name of public representative /or other dignitaries	Specific KVK wise highlights (2-3)
KVK Conference Hall	171	57	<b>Dr. Joydip Mukhopadhyay</b> Assistant Director of Agriculture, Joynagar-II	<ul style="list-style-type: none"> <li>• Presentation on “<b>Importance of soil testing and procedure of soil sample collection</b>”</li> <li>• Farmers scientist interaction</li> </ul>

Today, the 5<sup>th</sup> December, 2016, the Nimpith KVK observed the “**World Soil Day-2016**” where 171 numbers of farmer attended the programme. A total of 57 numbers of Soil Health Card were distributed in this occasion. A valuable interaction with the farmers and KVK Scientist was also organized through which the importance of the day and its implication were also inculcated to the farmers.



Distribution of Soil Health Card by Dr. N.J. Maitra, Senior Scientist and Head, RAKVK, Nimpith



Mr. P.K. Garain, Scientist (Plant Protection) delivering his valuable speech in the occasion of World Soil Day 2016



Interaction with the farmers and KVK Scientiston the occasion of World Soil Day 2016 on 05.12.16



#### 4.6.24

### Celebration of Jai Kisan Jai Vigyan Week

(23<sup>rd</sup> December to 29<sup>th</sup> December, 2016)

On the occasion of the birth anniversary of former Prime Minister Shri Atal Bihari Vajpayeeji and Late Shri Chaudhary Charan Singh, the **Nimpith Ramkrishna Ashram Krishi Vigyan Kendra**, South 24 Parganas, West Bengal celebrates '**Jai Kisan Jai Vigyan Week**' on and from 23<sup>rd</sup> December to 29<sup>th</sup> December, 2016 where 168 number of farmers participated. Different awareness programme like importance of soil testing, rain water harvesting & its judicious use, scientific cultivation of oilseed and pulse during *rabi* summer season and showcasing of different KVK assessed & refined technologies to improve the productivity is discussed and demonstrated.



#### 4.6.25

### Observation of International Women's Day 2017

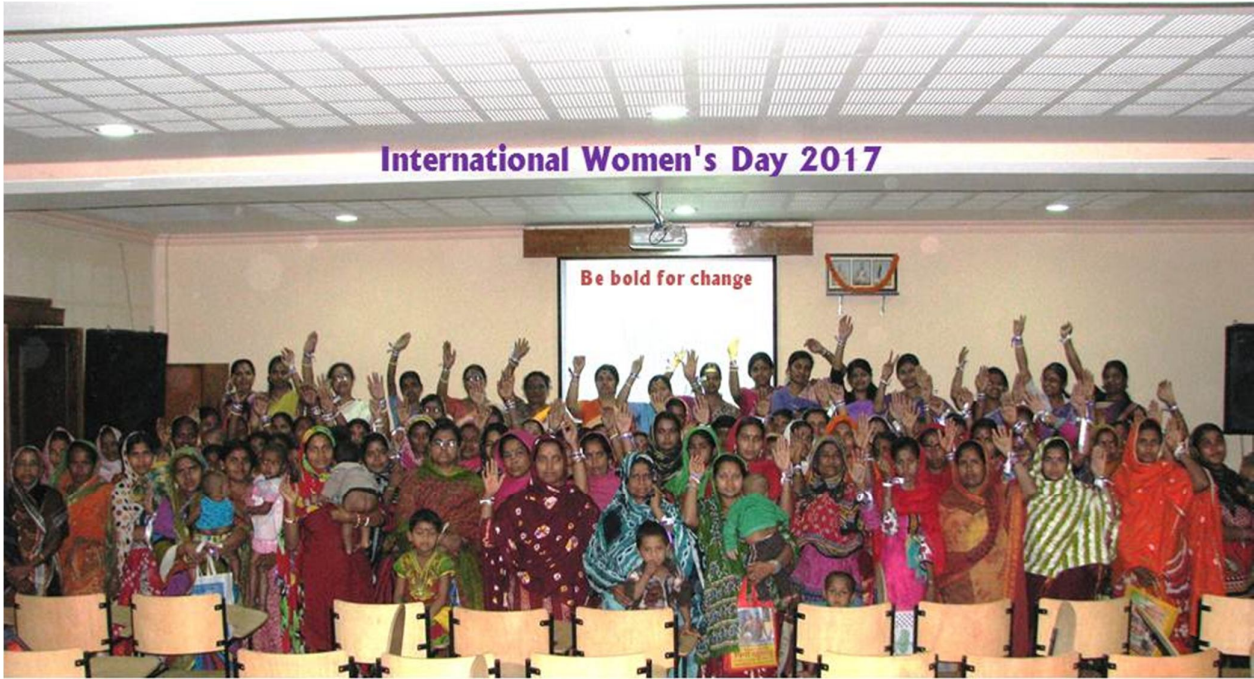
From women's suffrage to equal parenting and representation in politics, International Women's Day (IWD) has been celebrating the social, cultural, economic and political achievements of women for more than 100 years. The day is observed on the 8<sup>th</sup> March, for reflection, advocacy and action, both locally and at a global level.

The theme for 2017 is **“Be Bold for change”**. In 2014, the World Economic Forum (WEF) predicted it would take until 2095 to achieve global gender parity. After one year, WEF estimated a slowdown like glacial pace of progress which indicates the gender gap would not close entirely until 2133.

In this context, RAKVK, Nimpith has observed International Women's Day through different activities in the KVK campus on the **8<sup>th</sup> March 2017**. Farm Women different blocks like Joynagar-II, Canning -I, Mathurapur I &II, Kultali of South 24 Pgs. have been actively participated in the programme. The programme has inaugurated by Mrs. Antima Halder, ADA, Joynagar-II. Swami Sadananda, Chairman, RAKVK, Dr. N.J. Maitra, Senior Scientist and Head, RAKVK, ICDS Supervisor, Joynagar-II Block, BPHN, Nimpith, Rural Hospital have grace the occasion with their valuable speech. Dr. Manasi Chakraborty Scientist (Home Sc.) has narrated the theme and objective of the day. Mrs. Sulagna Sarkar, Project Coordinator, FHFII Phase II has discussed the Gender Equity issue in the light of the social status of Sundarbans Area. All the participants have shared their positive attitude towards the change of practices which have learned through the FLD Programme on LANN regarding Agriculture, Health and Nutrition. A film on Prevention on Child Marriage namely “Joyee” has been shown to the participants.



Inauguration of the Programme



Moments of the Programme

## 4.6.25

- (a) Home Science Section conducted a exposure visit of Good Shepherd School to RAKVK on 14<sup>th</sup> Decmber, 2016 to increase the knowledge on agricultural practice for the school students.
- (b) Home Science Section attended NFSM 2015-16 porgramme organized by Thakurpukur Metiaburuz Block on 09.02.2017 to 10.02.2017.
- (c) Home Science Section attended workshop on innovative approaches midday meal programme organized by SIPRD Kalyani on 16.12.2016 and 06.04.2017 as resourcr person.

#### 4.6.26 Demonstration of Shade House by SASMIRA (Synthetic & Art Silk Mills' Research Association):

A demonstration unit on use of synthetic agro-textile in Agriculture has been established at KVK Instructional Farm by SASMIRA during August, 2016. The demonstration unit comprised of four components namely shade net house for



vegetable cultivation, ground cover for fruit crops, vermicomposting chamber under shade net house structure and pond lining. A number of training & demonstration programme are organised



at KVK, where these demonstration units are used as exposure site. After receiving a good positive feedback and interest from the trainee farmers, SASMIRA has sanctioned 20 number of farmers' demonstration kit. Each kit consisted of one 500 sqm shade net house structure for vegetable growing and 10 vermicomposting chamber under shade net house structure. Farmers have started vegetable growing successfully in this structure.

#### 4.6.27 Varietal Evaluation of Longan in collaboration with ICAR-NRC Litchi:

To find out indigenous Longan variety in Southern Bengal, a varietal evaluation programme has been initiated by ICAR-NRC Litchi in collaboration with RAKVK Nimpith. The work has been started from February, 2017. 100 numbers of Longan orchards have been surveyed so far with detail GPS data. DUS characterization of each different germplasm is going on. The work will continue till August for this year.

#### 4.6.28 Implementation of NICRA programme as partner Institute with IARI:

As part of NICRA programme of IARI on development of Climate Resilient Technology in the Lower Gangetic Plain, RAKVK as partner institute of IARI is conducting a trial with five interventions including Land shaping & rain water harvesting in existing low-lands and Land modification/Embankment strengthening. In this programme major activities include measurement of Green House Gas in Low land Rice as well as Up land rice of Land-shaping plots, measurement of Ground water status and ground water recharge status with respect to Land-shaping & rain water harvesting structure. The work has been started from June, 2016 and will continue till end of 2017.





## 5.0 LINKAGES

### 5.1 Functional linkage with different organizations

Sl. No.	Name of organization	Nature of linkage
1.	WBLDC	Marketing of goat, sheep and broiler duck meat from the farmers production, Marketing of peking duck meat, and ARYA farmers produce
2.	Dept of Forest, Govt of West Bengal	Training on poultry, goatery, and duckery as alternative livelihood option.
3.	West Bengal university of animal and fishery sciences	Different on farm research, conduction of health cum vaccination camp, organizing exposure visit for veterinarians of different states of West Bengal
4.	Animal Resource development department, South 24 Pgs district	Implementing Prani Mitra programme, Mobile veterinary Clinic programme
5.	Institute of Animal Health and Veterinary Biologicals, Kolkata, West Bengal	Joint diagnostic survey
6.	SIPRD, West Bengal	Research and Extension
7.	Central Glass and Ceramic Research Institute	
8.	Central Institute of Fisheries Education, Salt Lake, Kolkata	
9.	University of Calcutta, West Bengal	Training and Extension
10.	University of Kalyani, Kalyani, Nadia, West Bengal	
11.	West Bengal State University, Barasat	
12.	District Rural Development Cell, North- 24 Parganas, WB	
13.	District Rural Development Cell, South- 24 Parganas, WB	
14.	SDB, GOWB	
15.	Serampur College, Kolkata	
16.	City College, Kolkata	
17.	Vivekananda College, Kolkata	
18.	ATMA, Howrah	
19.	ATC & SAMETI, Narendrapur	
20.	ATMA, South 24 Parganas	Demonstration
21.	TMC MM-II, DOCD, GOI (Cotton)	
22.	SDB, GOWB (Cotton Cultivation)	
23.	CICR, Nagpur (IRM)	
24.	Advanta, Excel Crop Care Ltd.	
25.	National Horticulture Mission, Mayukh Bhavan, Salt Lake, Kolkata, West Bengal	
26.	District Horticulture Office, Alipur, South 24 Parganas	Collaborating work
27.	Directorate of Oilseed Research, Hyderabad	
28.	National food security mission	
29.	Directorate of Extension, BCKV, Mohanpur, Nadia	Collaborative programme
30.	Sundarban Milk Union Limited, South 24 – Parganas	
31.	Central Institute of Fisheries Education, Salt Lake, Kolkata & Versova, Mumbai	
32.	Cotton Corporation of India (CCI), Kolkata	Marketing of farm produce

33.	Rural Development Wing of Ramkrishna Ashram	Conducting flood relief animal health camp at different block of Joynagar-II and Kultali.
34.	ARD Dept, Govt of West Bengal	Implementing Prani Mitra programme, Mobile veterinary Clinic programme
35.	PBGSBS	Implementation of Artificial insemination technology
36.	Chittaranjan National Cancer Institute	Providing expertise as veterinarian member of IAEC.
37.	National dairy Research Institute, Kalyani	Technology dissemination at field level and organizing farmers meet
38.	Poultry Federation, West Bengal Chapter	Attending Poultry Mela, farmers meet
39.	MANAGE, Hyderabad	A one-year diploma course is being implemented by the KVK in collaboration with MANAGE, Hyderabad. The name of the course is "Diploma in Agricultural Extension Services for Input Dealers". 40 Agri input dealers from different blocks of the District are studying this course. Weekly classes (every Thursday) are arranged for this 48 week long course.
40.	National Centre for Integrated Pest Management (NCIPM), New Delhi	Collaborative research project
41.	AICRP (HB & P), ICAR, New Delhi	Voluntary Centre of AICRP

**5.2. List special programmes undertaken during 2016-17, by the KVK, which have been financed by ATMA/ Central Govt/ State Govt./NHM/NFDB/Other Agencies**

**a) Programmes for infrastructure development**

Sl. No.	Name of the programme/scheme	Purpose of the programme	Date/ Month of initiation	Funding agency	Amount (2016-2017) (in lakh)
1	All India Coordinated Research Project on Sunflower(AICRP)	Development of early duration Hybrids for rainfed situations and Rabi-Summer	July,2009	Indian Institute of Oil Seeds Research, Rajendranagar, Hyderabad	20.038
2.	FLD on Sunflower	Demonstration on Sunflower cultivation	2011-12	Director of Oil Seeds Research, Rajendranagar, Hyderabad	2.16
3.	Tribal Sub Plan	Popularization of Sunflower cultivation in the tribal belt of West Bengal	Dec., 2011	Director of Oil Seeds Research, Rajendranagar, Hyderabad	4.25

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4.	Cotton Development Mission (CDM)	Production of Raw Cotton and improve the bio mass statusof the North and South 24-Parganas districts.	2007-2008	Directorate of Agriculture, Govt. of West Bengal	25.10
5.	NFSM (Commercial crops)	Intensive Cotton Development in the North and South 24-Parganas districts.	2014-15	Department of Agriculture, (Development Branch) Govt.of West Bengal	20.58
6.	National Innovations in Climate Resilient Agriculture (NICRA)	Strategies to enhance adaptive capacity to climate change in vulnerable regions of district	March, 2011	ICAR, New Delhi	14.52
7.	IWMP-6	Integrated watershed development programme	Oct., 2012	Deptt. Of Agril. Govt. W.B.	63.18640
8.	IWMP-7	Integrated watershed development programme	Oct., 2012	Deptt. Of Agril. Govt. W.B.	65.66255
9.	IFS programme through RKVY in South 24 Parganas	KVK Landshaping Programme	2016-17	Deptt. Of Agril. Govt. W.B.	329.00
10.	AICRP on Honey Bees & Pollinators (Voluntary Centre)	Research and Development of beekeeping and pollination services in South 24 Parganas	April, 2015	Division of Entomology, IARI, New Delhi	6.50
11.	On-farm mass production of microbial pesticides	Production of <i>Trichoderma viride</i> at household level by the farmers	April, 2015	Deptt. Of Agril., Govt. of W.B. under RKVY	30.79
12.	Attracting and Retaining Youth in Agriculture (ARYA)	Establishment of Carp and Catfish Hatcheries in villages	March, 2017	ICAR	24.00
13.	NICRA (National Inovations in Resilient Agriculture)	Landshaping and Rainwater Harvesting, Land Embankment Cultivation, crop diversification, crop intensification	2015-16	IARI, New Delhi (Centre for Environment Science and Climate Resilient Agriculture)	7.15
14.	FLD Oil seed		2015-16	ICAR	.90
15.	FLD Pulse		2015-16	ICAR	3.75

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16.	MVC South	Extension of animal health care services in remot areas in west bengal through mobile veterinary clicnic		ARD Department, GOWB	12.51
17.	MVC North	Extension of animal health care services in remot areas in west bengal through mobile veterinary clicnic		ARD Department, GOWB	12.51
18.	DAC (NMOOP Trg.)	Farmers development	2015-16	Indian Institue of Oil Seeds Research, Rajendranagar, Hyderabad	3.20
19.	Management of Chilli Leaf Curl	Management of leaf curl complex of chilli	April, 2016	NCIPM, Delhi	1.32

(b) Programme for other activities (training, FLD,OFT, Mela, Exhibition etc.)

<b>Name of the programme/scheme</b>	<b>Purpose of programme</b>	<b>Date/ Month of initiation</b>	<b>Funding agency</b>	<b>Amount (Rs.)</b>
Technology Week and Anual Agriculture Exihibition	Demonstration of Innovative technologies for lage scale adoption	February, 2017	NABARD	1.50
Diverse freshwater fish culture technology for boosting farm production	Capacity and skill development of youths for livelihood generation through fishery activities	11.05.16-25.05.16	Green College, WHH, Germany	
Small scale seed production and larval rearing of Asian catfish – magur and singhi	Livelihood generation through establishment of backyard hatcheries for seed production of indigeous fish including the Asian catfish	08.08.16-12.08.16	NFDB, Hyderabad	Rs. 57250.00
Carp fry and fingerling production in freshwater ponds	Carp seed production in villages	23.08.16-27.08.16	NFDB, Hyderabad	Rs. 57250.00

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Skilled Training for Rural Youth	Capacity and skill development on fish rearing and management	08.01.17-14.01.17	SAMETI, Narendraput	Rs.42000.00
IWMP	Capacity and skill development of farmers for livelihood generation through fishery activities and fish seed distribution	April' 16 Feb.' 17	DOA, GOWB	Rs.128800.00
Foundation stone laying ceremony of CRIJAF, Barackpore	Strall to exhibit different acitivities of KVK	13.02.2017	ATARI,Kolkata	
Rajarhat Gopalpur, Krishi Mela	Strall to exhibit different acitivities of KVK	4 <sup>th</sup> -6 <sup>th</sup> March	Deptt. of Agriculture, Govt. of W.B	
Krishi Mela, Bhangore Block	Strall to exhibit different acitivities of KVK		Deptt. of Agriculture & Horticulutre Govt. of W.B	

## 6. PERFORMANCE OF INFRASTRUCTURE IN KVK

### 6.1 Performance of demonstration units (other than instructional farm)

Sl. No.	Name of demo Unit	Year of estt.	Area (Sq. mt)	Details of production			Amount (Rs.)		Remarks (Approx. stock remaining)
				Variety/breed	Produce	Qty.	Cost of inputs	Gross income	
1.	Carp hatchery	1989-90	355.0	Indian major carps and exotic carps (catla, rohu, mrigal, calbasu, bata, silver carp, java punti, common carp)	Carp spawn	3.92 million	7150.00	12250.00	-
2.	Nursery and grow-out ponds	1985-86	4.276 ha	Indian major carps and exotic carps and tilapia (catla, rohu, mrigal, calbasu, bata, silver carp, java punti, common carp)	1.Carp fry & fingerlings	1417.0 kg	178750.00	238000.00	400kg
					2.Tablefish (carp)	958.5 kg	93750.00	116080.00	300kg
				Sea bass (Lates calcarifer)	Fingerlings	400no.	1600.00	10000.00	-
				Prawn(Macrobachium rosenbergii)	Juveniles	300no.	600.00	1800.00	1000no.
				Monosex tilapia (T.nilotica)	Fry	28000no.	2445.00	5600.00	
3.	Ornamental fish and catfish breeding cum rearing unit	1997-98	505.0	Ornamental fish (goldfish, angel, koi carp, milky carp, rosy barb, venus tetra, gourami, fighter, guppy, molly, swordtail, platy)	Fry & adult	3552no.	18520.00	28496.00	1500no.
					Catfish (Clarias batrachus & Heteropneustes fossilis)	Fingerlings	86150 no.	102344.00	194170.00
				Climbing perch (Anabas testudineous)	Fry	69854no.	25375.00	44275.00	-
				Butter fish (Ompok pabda)	Fingerlings	200no.	250.00	1000.00	-
Total							430784.00	624521.00	

## 6.2 Performance of instructional farm (Crops)

Name of the crop	Date of sowing	Date of harvest	Area (ha)	Details of production			Amount (Rs.)		Remarks
				Variety	Type of Produce	Qty.(q)	Cost of inputs	Gross income	
Cereals									
Paddy	08.06.16	07.11.16	0.4	Pratikha	Foundation	11.0	16250	38500	
	08.06.16	07.11.16	1.3	Pratikha	Certified	30.40	48620	91200	
	03.06.16	10.11.16	0.94	NC-492	Certified	21.16	33725	63480	
	03.06.16	10.11.16	0.16	NC-492	TL	4.0	5735	10000	
	05.06.16	08.11.16	0.80	Dudshwar	T.L	16.0	30780	35200	
	10.07.16	12.11.16	0.013	WGL-20471	T.L	0.60	1100	1500	
	12.06.16	13.11.16	0.13	Swarna Sub-I	TL	4.20	5115	10500	
Pulses Greengram	08.06.16	07.11.16	0.40	Pratkha	Non seed	9.80	10974	11760	
	06.02.16	20.04.16	1.0	PDM-84-139	T.L	1.78	5640	8900	
Oilseeds- Seasame	28.02.17	26.05.17	0.065	Savitri	TL	Growth stage	-	-	
Sunflower	07.01.2017	13.04.2017	0.40	DRSH-1/LSFH	Hybrid	Harvesting stage	-	-	
Fibers									
cotton	02.01.16	04.06.17	0.20	Surabhi	Fiber	Square formation stage	-	-	
Sapota	Orchard	July – August, 2016 & December, 2017	0.7	Cricket ball & Kalipatti	Ripe fruit	196	16300	42500	
Mango	Orchard	May – June, 2016	0.5	Amrapali, Mallika, Himsagar	Ripe fruit	72	8600	16700	
Lime	Orchard	July to October, 2016	0.2	Pati, Kagji	Mature fruit	22	4100	12300	
Guava	Orchard	July to September, 2016	0.1	Allahabad Safeda, Baruipur	Mature fruit	27	5300	14200	
Brinjal	01.10.16	Nov., 16 to March., 17	0.16	Bhangar, Muktakeshi	Fresh vegetable (immature fruit)	59	19300	36700	
Tomato	16.09.16	Oct., 16 to February., 17	0.13	SG 1458, DEB	Fresh vegetable (ripe fruit)	38	10800	19200	
Cabbage	23.10.16	January to March, 17	0.4	Rareball	Fresh vegetable (Head)	85	19200	43600	
Chilli	12.07.16	Oct. to Dec., 16	0.25	Tejaswini	Fresh vegetable (mature fruit)	21	12400	52600	

## 6.3 Performance of Production Units (bio-agents / bio pesticides/ bio fertilizers etc.)

Sl. No.	Name of the Product	Qty (Kg)	Amount (Rs.)		Remarks
			Cost of inputs	Gross income	
1.	<i>Trichoderma harzianum</i>	1104.10	88,328.00	1,65,615.00	
2.	<i>Pseudomonas fluorescens</i>	1081.10	86,488.00	1,62,165.00	
3.	<i>Metarhizium anisopliae</i>	219.70	17,576.00	32,955.00	
4	Vermicompost	16200	42500.00	162000.00	A good volume has been used in KVK instructional Farm, which has been included in gross income

## 6.4 Performance of instructional farm (livestock and fisheries production)

Sl. No	Name of the animal / bird / aquatics	Details of production			Amount (Rs.)		Remarks (Approx. stock remaining)
		Breed	Type of Produce	Qty. sold	Cost of inputs	Gross income	
1	Indian major carps and exotic carps	Catla, rohu, mrigal, calbasu, bata, silver carp, java punti, common carp	Carp spawn	3.92 million	7150.00	12250.00	-
2	Indian major carps and exotic carps	Catla, rohu, mrigal, calbasu, bata, silver carp, java punti, common carp	Carp fry & fingerlings	1417.0 kg	178750.00	238000.00	400kg
3	Indian major carps and exotic carps	Catla, rohu, mrigal, calbasu, bata, silver carp, java punti, common carp	Tablefish	958.5 kg	93750.00	116080.00	300kg
4	Ornamental fish	Goldfish, angel, koi carp, milky carp, rosy barb, venus tetra, gourami, fighter, guppy, molly, swordtail, platy	Fry and adult	3552no.	18520.00	28496.00	1500no.
5	Catfish	<i>Clarias batrachus</i> <i>Heteropneustes fossilis</i>	Fingerlings	79700no.	96119.00	181270.00	-
			Fingerlings	6450no.	6225.00	12900.00	
6	Climbing perch	<i>Anabas testudineous</i>	Fry	69854no.	25375.00	44275.00	-
7	Butter fish	<i>Ompok pabda</i>	Fingerlings	200no.	250.00	1000.00	-
8	Sea bass	<i>Lates calcarifer</i>	Fingerlings	400no.	1600.00	10000.00	-
9	Prawn	<i>Macrobrachium rosenbergii</i>	Juveniles	300no.	600.00	1800.00	1000no.
10	Monosex tilapia	<i>T.nilotica</i>	Fry	28000no.	2445.00	5600.00	-
<b>Total</b>					<b>430784.00</b>	<b>624521.00</b>	



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11	Poultry	Vanaraja	Meat	150	31000.00	45000.00	
		Kaberi	Meat	150	30500.00	43700.00	
12	Broilers	Hygrow	Meat	200 (4 cycle)	41000.00	47000.00	
14	Duals (broiler and layer)	RIR, Nirvik, Hitkari, Upkari	Meat, egg	200	23000.00	26000.00	
15	Goat	Black Bengal	Meat, kid	70	86000.00	115000.00	
16	Rabbit	White New Zealand	Meat	18	6000.00	8000.00	
17	Ornamental bird	Budgerigar, Cockatail	Live bird	200	20000.00	29000.00	
18	Ducks	Peking duck	Meat	5000	125500.00	160000.00	
19	Cows	J.C, HF. C, GIR Sahiwal C. Red Suindhi C	Milk, cow dung	91	3250000.00	3550000.00	
<b>Total</b>					<b>3613000.00</b>	<b>4023700.00</b>	

**6.5 Utilization of hostel facilities**

Accommodation available (No. of beds)

Months	No. of trainees stayed	Trainee days (days stayed)	Reason for short fall (if any)
April, 2016	194	977	-
May, 2016	220	1375	-
June, 2016	223	744	-
July, 2016	311	1102	-
August, 2016	197	1400	-
September, 2016	606	2853	-
October, 2016	170	893	-
November, 2016	496	2011	-
December, 2016	303	2773	-
January, 2017	322	1906	-
February, 2017	396	1585	-
March, 2017	340	2187	-
<b>Total</b>	<b>3778</b>	<b>19806</b>	-

(For whole of the year)

**6.6 Utilization of staff quarters**

Whether staff quarters has been completed: Yes and No. of staff quarters:

Date of completion:

Occupancy details:

Months	Q I	Q II	Q III	Q IV	Q V	Q VI
April, 2016	Full	Full	Full	Full	Full	Full
May, 2016	Full	Full	Full	Full	Full	Full
June, 2016	Full	Full	Full	Full	Full	Full
July, 2016	Full	Full	Full	Full	Full	Full
August, 2016	Full	Full	Full	Full	Full	Full
September, 2016	Full	Full	Full	Full	Full	Full
October, 2016	Full	Full	Full	Full	Full	Full
November, 2016	Full	Full	Full	Full	Full	Full
December, 2016	Full	Full	Full	Full	Full	Full
January, 2017	Full	Full	Full	Full	Full	Full
February, 2017	Full	Full	Full	Full	Full	Full
March, 2017	Full	Full	Full	Full	Full	Full

## 7. FINANCIAL PERFORMANCE

### 7.1 Details of KVK Bank accounts

Bank account	Name of the bank	Location	Account Number
With Host Institute	-	-	-
With KVK	State Bank of India	Nimpith	11259497721

### 7.2 Utilization of funds under FLD on Oilseed (*Rs. In Lakhs*): From DOR, Hyderabad

Item	Released by ICAR		Expenditure		Unspent balance as on
	Kharif	Rabi	Kharif	Rabi	
Sunflower	-	2.16	-	2.16	-

### 7.3 Utilization of funds under FLD on Pulses (*Rs. In Lakhs*)

Item	Released by ICAR		Expenditure		Unspent balance as on 31 <sup>st</sup> March, 2017
	Kharif	Rabi	Kharif	Rabi	
Lentil & Greengram	-	3.75	-	3.74975	0.00025

### 7.4 Utilization of funds under FLD on Oilseed (*Rs. In Lakh*)

Item	Released by ICAR		Expenditure		Unspent balance as on 31 <sup>st</sup> March, 2017
	Kharif	Rabi	Kharif	Rabi	
Rapeseed & Mustard and Sesame	-	0.90	-	0.89999	0.00001
<b>TOTAL</b>					

### 7.5 Utilization of KVK funds during the year 2016-17 (Not audited)

S. No.	Particulars	Sanctioned	Released	Expenditure
<b>A. Recurring Contingencies</b>				
1	Pay & Allowances	15763000.00	15463000.00	14930675.87
2	Traveling allowances	170000.00	170000.00	127261.00
3	HRD	50000.00	50000.00	49064.00
4	Contingencies			
A	Stationery, Stamp and other expenditure			438107.89
B	POL, repair of vehicles, tractors and equipment etc	440000.00	440000.00	
C	Training of farmers			
D	Training materials	330000.00	330000.00	329886.00
E	Frontline Demonstration	220000.00	220000.00	219604.00
F	On Farm Testing	110000.00	110000.00	109813.00
G	Maintenance of Building	1900000.00	1900000.00	1899386.00
H	TSP	300000.00	300000.00	299797.00
I				
J				
<b>TOTAL (A)</b>		<b>19283000.00</b>	<b>18983000.00</b>	<b>18403594.76</b>
<b>B. Non-Recurring Contingencies</b>				
1	Vehicle and Implement Shed	498000.00	498000.00	498000.00
2				
3				
4				
<b>TOTAL (B)</b>		<b>498000.00</b>	<b>498000.00</b>	<b>498000.00</b>
<b>C. REVOLVING FUND</b>		<b>0</b>	<b>0</b>	<b>0</b>
<b>GRAND TOTAL (A+B+C)</b>		<b>19781000.00</b>	<b>19481000.00</b>	<b>18901594.76</b>

### 7.6. Status of revolving fund (Rs. in lakh) for last three years

Year	Opening balance as on 1 <sup>st</sup> April	Income during the year	Expenditure during the year	Net balance in hand as on 1 <sup>st</sup> April of each year (Kind + cash)
2014-15	24.72208	78.32079	55.10503	54.37398
2015-16	54.37398	170.70322	83.02449	162.97449
2016-17	162.97449	167.32879	114.0300357	216.2732

7.6.(i) Number of SHGs formed by KVKs (ii) association of KVKs with SHGs formed by other organizations indicating the area of SHG activities.

Under the IWMP Project 12 nos. of SHGs are formed on Food Processing, Candel making, ornamental bird rearing etc.

### 7.7 Details of marketing channels created for the SHGs

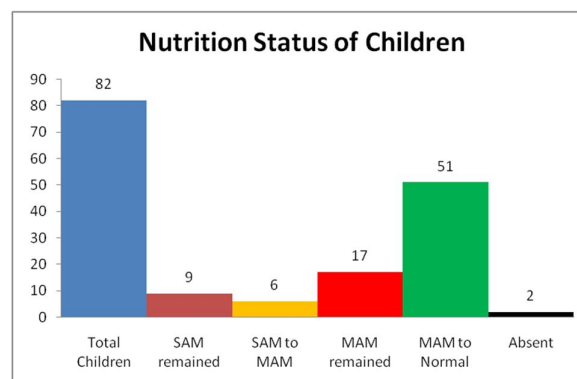
- i) Marketing of pekin duck, Vanraja poultry, Black Bengal goat meat etc are being marketed through Livestock Development Corporation, GOWB.
- ii) Cotton marketing through Cotton Corporation of India, GOI, (U/T)
- iii) Moong (Green Gram) marketing through Zilla Parishad and District Administration , GOWB

### 7.8 Special programme on Food and Nutrition:

#### Nutrition Camp

The continuous fifteen(15) days long Nutrition Camp was organized in the five villages of Baishata GP and four villages of Belegurganagar GP under Joynagar II Block ) with the 82 identified Severe Acute Malnourished Children (SAM) without complication merging two or three ICDS centers in one camp. The activities of Nutrition camp thus includes:

- Demonstration of different low cost nutrient rich supplementary food (like chirwa polau, Vegetable egg pancake, Bread with milk and banana, *Lauki Payasam*, Parched Rice with curd, mango etc.) for SAM children with the active participation of mothers of SAM children.
- Proper hand washing of mother and child with spot feeding of supplementary food .
- Regular MASCOT preparation to maintain the attendance of the mother of the malnourished children.
- As the camp was taken place in the ICDS center so Nutrition Counselor keep monitoring to enrich the diet of ICDS (*Kichdi*) with more green and yellow



vegetables and also encouraged the mothers to contribute some of their produced vegetables to the cooked food at ICDS.

- Awareness on health, nutrition, immunization, ORS therapy, family planning, nutrition garden, balanced diet was done continuously by the Nutrition counselor .



## **SPECIAL NUTRITION CAMP**

Identified SAM children (217) with medical complication, before coming to fifteen (15) days Nutrition Camp in the ICDS centers, Special Nutrition Camp were organized .

- SAM children were weighed and the appetite test was first done as the complications in malnutrition lead to loss of appetite. Appetite test helps in identifying SAM children with medical complications who will need hospitalization. Children who have good appetite can get in the fifteen (15) days Nutrition Camp. But the children who fail in appetite test need the consultation of doctor in the special camp.
- Check up of those SAM children with complication was done by the BMOH of Block hospital & MBBS doctors. Medicines were distributed as required by the block hospital .
- Nutritional counseling was done on the timing of food, frequency and consistency of meal, amount of each meal and composition of food according to individual dietary need of the children and maintenance of hygiene practices.



### **Strengthening of Village Health and Nutrition day( VHND):**

The VHND is to be organized once every month (preferably on Wednesdays, and for those villages that have been left out, on any other day of the same month) at the AWC in the village. This will ensure uniformity in organizing the VHND. The AWC is identified as the hub for service provision in the RCH-II, NHM, and also as a platform for inter-sectoral convergence. VHND is also to be seen as a platform for interfacing between the community and the health system.

On the appointed day, ASHAs, AWWs, and other will mobilize the villagers, especially women and children, to assemble at the nearest AWC. The ANM and other health personnel should be present on time; otherwise the villagers will be reluctant to attend the following monthly VHND. On the VHND, the villagers can interact freely with the health personnel and obtain basic services and information. They can also learn about the preventive and promotive aspects of health care, which will encourage them to seek health care at proper facilities. Since the VHND will be held at a site very close to their habitation, the villagers will not have to spend money or time on travel. Health services will be provided at their doorstep. The VHSC comprising the ASHA, the AWW, the ANM, and the PRI representatives, if fully involved in organizing the event, can bring about dramatic changes in the way that people perceive health and health care practices.

The following topics are to be discussed in the VHND as per the guide line. These topics are discussed by the scientist of KVK and few other initiatives are taken by the KVK to promote good nutritional practices among the mother for better child care.

- Diseases due to nutritional deficiencies can be prevented by giving information and counseling on:
  - Healthy food habits.
  - Hygienic and correct cooking practices.

- Checking for anaemia, especially in adolescent girls and pregnant women; checking, advising, and referring.
- Weighing of infants and children.
- Importance of iron supplements, vitamins, and micronutrients
- Food that can be grown locally.
- Focus on adolescent pregnant women and infants aged 6 months to 2 years.



### **Drama competition for child cabinet on Nutrition**

22 Awareness programme on health and nutrition has been conducted in the 17 the primary Schools to improve the health and nutritional status of school going children with child cabinet , MATA committee. A drama competition on the topic of ROGO MUKTI - importance of WASH for improvement of health and nutritional status, Susama Khadyavas (Improving nutrient rich MDM preparation have been organized in school to create more awareness and development of skill regarding food and nutrition security.



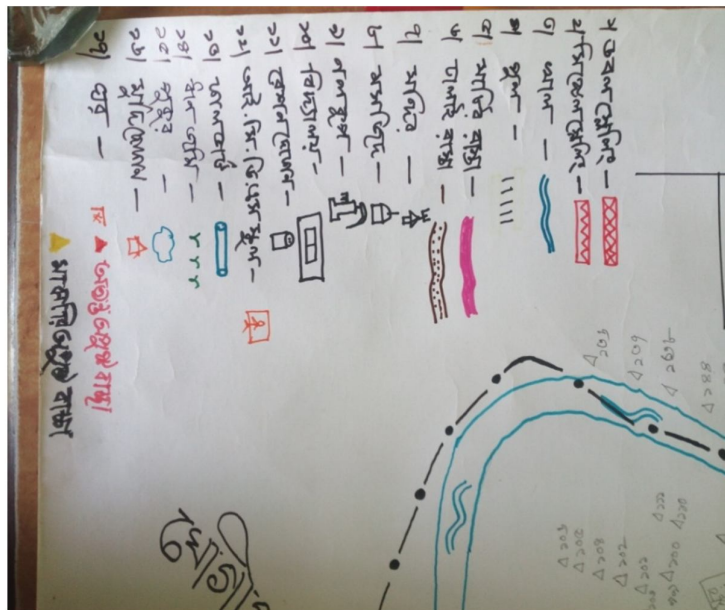
**Cooking competition on preparation of low cost weaning food from locally available foods :**

Delayed and improper preparation of weaning food is a major cause of malnutrition among the children in south 24 pgs. Awareness camp and method demonstration on preparation of weaning food have been organized by the KVK to promote good child care practice. In a view to create more awareness on the topic among non adopted village a competition on preparation of low cost weaning food from locally available foods has been organized on 5 th February in the Krishi mela 2017.

### Nutrition Sensitive Microplanning

Micro-planning is essentially a spatial development planning which tends to utilise all kinds of available resources – natural, human and others to the fullest extent. It attempts to distribute the fruits of development among regions and social groups within the region, which can minimise the socio-economic imbalances and improve the living conditions of the masses.

Micro planning has been implemented by KVK to identify the different issues regarding the overall development of any particular villages with a special emphasis on food and nutrition security. 10 micro plan have been developed in Baishhata and Beledurganar GP of Joynagar II by participation of the community people from all socio economic group and plans are shared with the BDO and panchayet samity to execute the work for the identified area by the convergence of government project. The house of malnourished children are identified and marked in the social map to prioritize the family for execution of livelihood based programme and to ensure better access to PDS.



## 7.9 Joint activity carried out with line departments and ATMA

Name of activity	Season	With line department	With ATMA	Both
Shade Net house structure	Rainy, 2016-17	Deptt. of FPI & Hort., GOWB	-	-
Large Scale Cotton Demonstration	Rabi-Summer 2016-17	Deptt. of Agril, GOWB	-	-
AICRP on Sunflower	Kharif & Rabi -summer	DOR, Hyderabad	-	-
Bengal Goat Conservation	Throughout the year	RKVY	-	-
Activities coup up with Climate Resilient	Throughout the year	NICRA, New Delhi	-	-
IWMP	2011-17	Deptt. Of Agril, GOWB	-	-
Conducting FOCT training programme	2016-17	Coconut Development Board, (Ministry of Agriculture, GOI), BJ-108, Sector-II, Salt Lke, Kolkata-700 091	-	-
Expousre vist of farmer of ATMA	2016-17		ATMA	
Diploma in Agricultural Extension Service for Impute Dealers (DEASI)	2016-17	- National Institute for Agricultural Extension Management (MANAGE) Hyderabad	ATMA	
On-farm mass production of microbial pesticides	2016-17	Department of Agriculture, GoWB and RKVY	-	
AICRP on Honeybees and Pollinators	2016-17	Division of Entomology, IARI, New Delhi	-	
NICRA	2016-17	CRIDA, Hyderabad	-	

**8. Initiative taken towards organic farming by the KVK (area brought under organic farming, crops cultivated through organic means and other relevant information) –N.A.**

**9. Other information**

9.1. Prevalent diseases in Livestock/Crops

Name of the disease	Crop/animal	Date of outbreak	Number of death/ % crop loss	Number of animals vaccinated
Goat pox	goat	-	32%	12435
Epizootic ulcerative syndrome	Fish	No outbreak but stray incidence of fish showing signs of ulcer during winter months	-	
Drooping barbel followed by body ulcer	Asian catfish	Breeding & post breeding season (May – September)	85% crop loss	

9.2 Nehru Yuva Kendra (NYK) Training - N.A.

Title of the training programme	Period		No. of the participant		Amount of Fund Received (Rs)
	From	To	M	F	



### 9.3. PPV & FR Sensitization training Programme: NA

Date of organizing the programme	Resource Person	No. of participants	Registration (crop wise)	
			Name of crop	No. of registration
18.03.2017	<ol style="list-style-type: none"> <li>1. Dr. N.J.Maitra, Senior Scientist &amp; Head, RAKVK, Nimpith</li> <li>2. Jayanta Ikat, Director, FPI, Govt. of west Bengal</li> <li>3. Smt. Antima Halder Assistant Director of Agriculture (Admn.), Govt. of W. B.</li> <li>4. Mr. S.S.Lakshman, Jr. Breeder, RAKVK-AICRP on Sunflower</li> <li>5. Dr. C. K. Mondal, SMS (Hort.), RAKVK,Nimpith</li> </ol>	115 nos.	Paddy, Brinjal, Bitter Gourd, Chilli, Pumpkin, Greengram, Snake gourd, Ridge gourd	30

### **KVK, Nimpith organized one-day training cum awareness programme on PPV&FRA and “Farmers’ Variety Registration Programme” on 18.03.2017**

More than 110 farmers gathered in the above said Programme” under **PPV&FRA on 18.03.2017**, organized by Ramkrishna Ashram Krishi Vigyan Kendra, Nimpith, West Bengal with the financial support from Plant Protection Varieties and Farmers' Rights Authority, DAC, Ministry of Agriculture, New Delhi.

The programme was inaugurated by Dr. N.J. Maitra, Senoir Scientist & Head, Ramkrishna Ashram Krishi Vigyan Kendra, Nimpith, where he briefed about the Act and its relevance in present days agricultural scenario.

The other honorable guest like Jayanta Ikat, Director, FPI, Govt. of west Bengal, Mrs. Antima Halder, Assit. DA, Jaynagar Block-II were also present in this awareness programme. Dr. N. J. Maitra, described the overall process of registration and the role of the farmers in a simple way.

He emphasized on awareness building among the Indian farmers so as to protect the farmers’ right in respect of their contributions made at any time in conserving, improving and making available plant genetic resources for the development of new plant varieties.

The farmers from South 24 Parganas as well as from North 24 Parganas district of West Bengal brought around 72 traditional land races of rice, 02 land races of bitter gourd, 02 land races of pumpkin, 02 land races of brinjal , 02 land races of chilli & 01 land races of for sending the seed to the PPV&FR authority to register in the National Register for Plant Varieties. Such farmer’s varieties were unique for their morphological characters (size, shape, texture and colour of grain in case of rice), tolerance to water logging (rice), soil salinity (rice), lodging as well as aroma(rice),



size, shape, texture and colour and test in case of chilli and green gram etc. The programme created a huge vibration among the farmers and they also requested the KVK to organize such programmes for registration of other crop varieties also.



#### 9.4.a SMS PORTAL

Date of start of functioning of SMS portal

No. of messages	No. of calls	No. of farmers covered	Types of messages (No.)					
			Crop	Livestock	Weather	Marketing	Awareness	Other
39		22401	15	10	3	0	9	2

#### N.B.

1. Through Toll free Help line number expert conducted – 75
2. Voice Message sends TO FARMERS through Ashram KVK- 15130
3. Dial out Conference – 2

#### 4. Thematic Base Awareness Programme – 7

##### 9.4.b Information in uploading KVK Portal by KVKs during 2016-17

<i>Sr. No.</i>	<i>Name of item/ events/ component</i>	<i>Uploading status (Yes/No)</i>	<i>No. uploaded</i>	<i>Remarks, if any</i>
1	KVK Profile			
2	Employee details	yes	16	
3	Post	yes	8	One Vacant SMS(AG)
4	Finance	yes	9	
5	Soil Health Card	yes	12(End of month timely updated)	1812 no. of Soil Health Card Collected , analyzed and issued
6	Appliance	yes	3	Tata Sumo, Tractor etc.
7	Crops	yes	18	KVK Crops(Kharif, Rabi, Zaid)
8	Resources	yes	5(Quarterly)	No. of Cattle, Buffalo, Sheep and Goat, No. of Poultry Farms, No. of Horticulture Farms, Horticulture Farm area (ha), Others
9	Fish	yes	3	Major Carp Rohu, Katla, Nain, Ponds
10	Past events	yes	81	
11	Future/ upcoming events	yes	47	
12	Facilities available at KVKs	yes	29	
13	Package and practices			
14	Crop	yes	4	
15	Livestock	yes	3	
16	Fishery	yes	1	
17	Horticulture	yes	3	
18	CFLD on Pulses			
19	2016-17	yes	105,210	Lentil and Greengram
20	2015-16	yes	23,110	Field pea, Greengram
21	CFLD Oilseeds			
22	2016-17	yes	75,127	Sesame, Rapeseed and Mustard
23	2015-16	yes	175	Sesame

##### 9.5 Observation of Swacha Bharat Programme

Date of Observation	Activities undertaken
16.10.16.	Awareness Camp on Health and Hygiene at Gopalnagar village, Joynagar-II Block of South 24- Parganas district.
17.10.16.	Awareness on Swachhata at Nmpith Primary School in presence PRI members from KholakhaliTaranagar Village of South 24-Parganas(Sundarbans.)

Contd....

18.10.16	Children are taking oath on Swachhata at Nimpith Primary School of South 24-Pargans district.
18.10.16	Short Drama Competition on cleanliness and Swachhata at Taranagar FP School of South 24 Parganas district.
19.10.16	Participatory monitoring of healthy practices towards maintenance of health security at Kaikali Island of Sundarbans.
20.10.16	Demonstration on proper hand washes for school children before mid-day meal at Beledurganagar School of South 24-Parganas district.
21.10.16.	Awareness camp on cleanliness and hygiene at Kishorimohanpur Village of South 24- Parganas district.
21.10.16.	Awareness camp on cleanliness and hygiene at Kishorimohanpur Village of South 24-Parganas(Sundarbans).
22.10.16.	Yoga Camp at Kaikhali Village of South 24 Parganas of South 24- Parganas district.
22.10.16.	Awareness on Swachhta at Kaikhali Primary School of South 24 Parganas and children are practicing cleanliness and hygiene during midday meal
23.10.16.	An Exposure visit to a commercially viable vermin composting unit of a progressive farmer at Kamalpur village of South 24 Parganas.
24.10.16.	An off campus hand holding training at household has been organized at Sahajadapur village of South 24 Parganas district on preparation of vermin by utilizing house hold waste and farm waste.
25.10.16.	A drawing competition has been organized by Nimpith KVK on the topic "Swachha Village"
26.10.16.	A quiz competition has been organized by Nimpith KVK on Cleanliness and Hygiene for the adolescent boys and girls at Nimpith.
27.10.16	Workshop on importance on Swachhata on "food and nutrition" at Nimpith KVK
28.10.16	Different models on cleanliness maintenance of house, kitchen and toilets displayed and demonstrated to the visitors on 28.10.16
29.10.16	A rally on Swachhta has been organized by the Nimpith KVK on 29 <sup>th</sup> October at Kaikhali village
30.10.16	Awareness generation camp on proper disposal of biodegradable and non-bio degradable materials has been organized at the Kishorimohanpur village of South 24 Parganas district.

31.10.16	Different programmes have been organized by the Nimpith KVK to celebrate the last day of Swachhata Pakwara on different villages on 31 <sup>st</sup> October.
31.10.16	A plantation activity has been done on Kaikhali Island Village to have clean and Green environment.
31.10.16	An Awareness camp of Swachhata and Hygiene has been conducted with the mothers at Taranagar Village.
31.10.16	Demonstration camp has been conducted at Taranagar village on WASH (Water, Sanitation and Hygiene) giving emphasis on prevention of diarrhoea and preparation of ORS to control diarrhea.
31.10.16	Proper Hand wash demonstration has been conducted at ICDS centers of Beledurganagar village to grow healthy habit among children to achieve health security.

#### 9.6 Observation of National Science day

Date of Observation	Activities undertaken
28 <sup>th</sup> February, 2017	<ul style="list-style-type: none"> <li>• Seminar with 56 farmers on “Science and technology for specially Abled persons”</li> <li>• Display of agricultural technologies at KVK resource centre and demonstration unit</li> </ul>

#### 9.7. Programme with Seema Suraksha Bal (BSF) - NA

Title of Programme	Date	No. of participants

#### 9.8. Agriculture Knowledge in rural school:

Name and address of school	Date of visit to school	Areas covered	Teaching aids used
Bahishata Jamiruddin F.P School Vill- Baishata Block – Joynagar II	27.04.16	Preparation and management of nutrition garden in school campus and backyard to attain nutrition security	Visual aids- Flash card on food groups , picture card, food value chart, books, pamphlets Audio visual aids- Flim, PPT, Drama

Amir Ali Halder Local sanstha F.P School Vill- Baishata Block – Joynagar II	18.05.16	Maintenance of Nutritional status by using local less familiar foods	Visual aids- Flash card on food groups , picture card, food value chart,books,Pamphlets Audio visual aids- Flim, PPT, Drama
Taltala Gopalnagar F.P. School Vill-Jouthia Block – Joynagar II	27.05.16	Use of locally available herbs to prevent diseases	Visual aids- Flash card on health and hygiene &food groups , picture card, food value chart, books ,Pamphlets Audio visual aids- Flim, PPT
Patnighata Girls High School Vill- Ranaghata Block- Joynagar II	17.08.2017	Use of locally available herbs to prevent diseases	Visual aids- Flash card on food groups , picture card on symptoms of disease , food value chart Audio visual aids- Flim, PPT
Ramkrishna Ashram Type High School Vill- Nimpith Block – Joynagar II	5.09.17	Maintenance of Nutritional status by using local less familiar foods	Visual aids- Flash card on health and hygiene &food groups , picture card, food value chart, books ,Pamphlets Audio visual aids- Flim, PPT
Taranagar F. P. School Vill- Taranagar Block- Joynagar II	17.11.2016	Use of locally available herbs to prevent diseases	Visual aids- Flash card on food groups , picture card on symptoms of disease , food value chart Audio visual aids- Flim, PPT
Taranagar S.S.K. School Vill- Taranagar Block- Joynagar II	24.11.2016	Maintenance of Nutritional status by using local less familiar foods	Visual aids- Flash card on health and hygiene &food groups , picture card, food value chart, books ,Pamphlets Audio visual aids- Flim, PPT

Bele Durganagar Iswan F.P. School Vill - Bele Durganagar, Block – Joynagar II	15.12.2016	Preparation and management of nutrition garden in school campus and backyard to attain nutrition security	Visual aids- Flash card on food groups , picture card, food value chart, books,pamphlets Audio visual aids- Flim, PPT
Patnighata Girls High School Vill- Ranaghata Block- Joynagar II	17.08.2017	Cultivation of oyster Mushroom for nutrition security	Visual aids- Flash card on food groups , picture card, food value chart, books,pamphlets Audio visual aids- PPT
Kholakhali F.P. School Vill-Jogigora Block – Joynagar II	17.01.2017	Use of locally available herbs to prevent diseases	Visual aids- Flash card on health and hygiene & food groups , picture card, food value chart, books ,Pamphlets Audio visual aids- PPT
Pachim Tetulberia F.P School	9.02.2017	Preparation and management of nutrition garden in school campus and backyard to attain nutrition security	Visual aids- Flash card on food groups , picture card, food value chart, books,pamphlets Audio visual aids- Flim, PPT, Drama

9.9. Details of Kharif and Rabi Sammelan (Information should be provided in two separate tables – one for Kharif and another for Rabi Sammelan)

#### Kharif Sammelan

Name of the state	Name of district/K VK	Date on which conducted	Number of participants		Name of public representative	Details of Technology Demonstrated and other programmes organized
			Farmers	Others		
West Bengal	Ramkrishna Ashram Krishi Vigyan Kendra, Nimpith, South 24 Parganas	26.07.2016	140 number of farmers	56 Input Dealers	<b>Shri Purnendu Basu</b> Hon'ble MIC, Department of Agriculture, Government of West Bengal	1. Cultivation of short duration paddy variety 2. Managment of horticultural crops durig deficit rainfall

## Rabi Sammelan

Name of the state	Name of district/ KVK	Date on which conducted	Number of participants		Name of public representative	Details of Technology Demonstrated and other programmes organized
			Farmers	Others		
West Bengal	Ramkrishna Ashram Krishi Vigyan Kendra, Nimpith, South 24 Parganas	23.12.2016	126	64 Input Dealers	<b>Shri Chandra Nath Singha</b> Hon'ble MIC, Department of Fishery, Government of West Bengal -	1.SRI cultivation of paddy 2.Moong cultivation in rice fallow 3.Cotton cultivation in moisture stressed saline condition 4. Application of Tricoderma viridi for vegetables seedling treatment 5. Seed production of magur at village level

## 9.10. Details of Pradhan Mantri Fasal Bima Yojana programme organized

Name of the state	Name of district/KVK	Date on which conducted	Number of participants		Name of public representative	Details of awareness created and other programmes organized
			Farmers	Others		
West Bengal	Ramkrishna Ashram Krishi Vigyan Kendra, Nimpith, South 24 Parganas	02.04.2016	708 nos. of farmers	1. Dr. S. K. Mondal, Principal Scientist, ICAR-ATARI, Kolkata 2.Dr.Udai Sankar Aich, Additional Director (Evaluatoin), Deptt. of Agril., GoWB 3. Mr. Ashis Sarkar, DDA (FC), Deptt. of Agril., GoWB 4. Mr. Anshuman Nayak, IFFCO-TOKIO, Kolkata 5. Mr. Kashinath Mondal, IFFCO-TOKIO, Kolkata	-	1. 3009 numbers of Soil Health Card have been distributed 2.Arrangement of technology display stall 3.Distribution of leaflets & booklets 4.Video show on Pradhan Mantri Fasal Bima Yojana



## 9.11. Contingent crop planning

Name of the state	Name of district/ KVK	Thematic area	Number of programmes organized	Number of Farmers contacted	A brief about contingent plan executed by the KVK
West Bengal	Ramkrishna Ashram Krishi Vigyan Kendra, Nimpith, South 24 Parganas	Contingency Planning in Agriculture for heavy precipitation during the month of November	5	112	<ol style="list-style-type: none"> <li>1. Vegetable cultivation in land embankment</li> <li>2. Application of Tricoderama Viridi in vegetable seedling to prevent root rot.</li> </ol>

## 9.12. Report on Citizens' Client Charter (attending the requests seeking guidance on agricultural technology and technology products)

Sl. No.	Services/ Transaction	Process	Service Standard	No. of such services attended by KVKs and ATICs during the year	No. of such services pending with KVK/ATIC beyond 30 days
1.	Guidance on Agricultural technology and technology products	Personal contact by the Service Sectors with the responsible person of KVK/ATIC	1 to 30 days	<b>5827</b>	<b>Nil</b>

## 9.13. Community Radio Station: NA

Date of establishment:

Amount of fund received year wise:

Source of fund:

Achievements:

Sr. no	Community Radio Stations (CRS)	No of programmes in the year	Total broadcast hrs in a month	Please specify details of the broadcasts
A.	Agricultural broadcasts <ul style="list-style-type: none"> <li>• Talks/interviews/discussions with experts, PG students/ and farmers on Agricultural technologies</li> <li>• Agroclimatic conditions, weather and marketing advisory</li> <li>• Phone-in programme of interface with experts</li> <li>• Phone-in programme with interface of progressive/innovative farmers</li> <li>• Success stories of progressive farmers</li> <li>• Success stories in FLD/OFT/ Trainings /Extension activities</li> <li>• Women in agriculture programme</li> <li>• Discussions on current issues in agriculture and allied sectors.</li> <li>• KVK happenings</li> <li>• Agricultural University professors.</li> <li>• Any other(please specify)</li> </ul>			
B.	Community development broadcasts Please specify the programmes like rural development, educational, health, environment, public service broadcasts, sports etc.			

## 9.14. No. of Progressive/Innovative/Lead farmer identified (category wise)

Lead Farmers : 47no.

Innovative : 5 no.

Progressive : 262no.

**Total : 314 No.**

## 9.15. HRD programmes organized by the KVK

Training programme/ Seminar/ Symposia/ Workshop etc. attended	Duration	Name of the participants	Designation	Organizer of the training Programme
MDP Programme for newly recruited Programme Coordinators of KVKs (Phase –II of 4 <sup>th</sup> MDP)	11.05.16 – 20.05.16	Dr. B. R. Kamboj Ph. D (Agronomy)	PC, KVK Damla, Yamunanagar	Dr. Manasi Chakraborty, SMS (Home Science), Dr. Chandan Kumar Mondal, SMS (Horticulture), Mr. Prabir Garain, SMS (Plant Protection)
		Dr. Debasish Borah Ph.D. (Agronomy)	PC, KVK, Udalguri	
		Dr. Suresh Kulkarni	PC, KVK, Sagroli Tq. Biloli Dist. Nanded	
		Dr. R.S. Negi Ph.D. (Horticulture)	PC, KVK – Satna, Madhya Pradesh	
		Dr. Puneet Kumar Rathore Ph.D. (Horticulture)	PC, KVK, Shivpuri, Piparsama Road, Shivpuri	
FET training for 104 FOCARS	9 – 29 August, 2016	S.S. Asha Devi	ARS	Dr. C. K. Mondal and Mr. P. K. Garain
		R. Gowthami	ARS	
		Achal Lama	ARS	
		Manish Debnath	ARS	
		Manoj Kumar	ARS	
		Abhijit Sarkar	ARS	
		Konsam Sarika	ARS	
5 <sup>th</sup> MDP for Newly Recruited Programme Coordinators (Senior Scientist & Head) of KVK phase-II	02.01.17 – 11.01.17	Dr. Pankaj Kr. Saraswat	PC, KVK Tamenglon, Manipur	Dr. Manasi Chakraborty, SMS (Home Science), Dr. Chandan Kumar Mondal, SMS (Horticulture), Mr. Prabir Garain, SMS (Plant Protection)
		Dr. Y. Rama Krishna	PC, KVK Ukhrul, Manipur	
		Dr. Deepak Singh	PC, KVK Chandel, Manipur	
		Dr. Sujit K.Nath	Sr. Scientist & Head, KVK, Keonjhar, Odisha	
		Dr.(Mrs.) Beenita Satapathy	Sr. Scientist & Head, KVK, Angul, Odisha	

## 9.16. Revenue generation:

SL. No.	Name of Head	Income(Rs.)	Sponsoring agency
1.	Contingencies & outsourcing of contractual services		
2.			
3.		5,88,000	NFSM, CDM
5.		32,40,000	MVC, North & South 24 Parganas, Dept. of ARD, GoWB
6.		3,12,000	IWMP (6& 7), Dept. of Agriculture, GoWB
7.		5,76,000	NICRA (ICAR)
8.		1,68,000	NICRA (IARI)
9.		1,20,000	AICRP Honey bees
10.		2,45,400	ARYA
11.		60,000	Oilseed & Pulse
12.		23,00,00	Landshaping South
13.		1,56,000	Onfarm mass production on microbial pesticide

## 9.17. Resource Generation:

SL.No.	Name of the programme	Purpose of the programme	Sources of fund	Amount (Rs. lakhs)	Infrastructure created
1	Renovation of training hall and furniture	To accommodate trainees comfortably	RKVY, Dept. of Agriculture, GoWB		Renovated training hall, chair, tables

## 9.18. Performance of Automatic Weather Station in KVK

Date of establishment	Source of funding i.e. IMD/ICAR/Others (pl. specify)	Present status of functioning
January, 2007	IMD	Working condition

## 10. Details of TSP Project

### Achievement under TSP Project

Name of the village adopted under TSP	Block	Population of the village			ST Population of the village			Percentage of ST population to total population
		M	F	T	M	F	T	
Kantamari	Kultali	2340	2080	4420	523	463	986	22.30
Sankijahan	Kultali	3293	3027	6320	95	100	195	3.08
Dakshin Durgapur	Kultali	2515	2312	4827	143	142	285	5.90
Paschim Jata	Mathurapur-II	2681	2426	5107	156	158	314	6.15

### Training Imparted:

Title of the training	Date	Male	female	Total
Training on Use of cono weeder	21.11.2016	26	15	41
Training on use of organic manure, bio agents in boro paddy cultivation	6 <sup>th</sup> to 9 <sup>th</sup> December, 2016	37	-	37
Training on Production of vermicompost in household level	06.12.2016	11	9	20
Training on production of Amorphophallus with better variety(Kabur)	05.01.2017	27	3	30
Training on fruit cultivation (mango) with var. Amrapali	15.03.2017	72	48	120

Programmes	Physical achievements 2016-17
Asset creation (Number; Sprayer, ridge maker, pump set, weeder etc.)	40 nos
On-farm trials (Number)	
Frontline demonstrations (Number)	
Farmers training (in lakh)	0.16 lakh
Extension personnel training (in lakh)	
Participants in extension activities (in lakh)	
Seed production (in tonnes)	
Planting material production (in lakh)	
Livestock strains and fingerlings production (in lakh)	
Soil, water, plant, manures samples testing (in lakh)	100 nos.
Provision of mobile agro – advisory to farmers (in lakh)	
Others (Swachha Bharat Abhiyaan, Agriculture knowledge in rural school, Planting material distribution, Vaccination camp etc.)	2nos
Specify,if any other (Demonstration of boro paddy with var.WGL20471)	37nos
Specify,if any other (Demonstration of Amorphophallus with var.Kabur in an area of 0.53ha))	20nos
Specify,if any other (Demonstration of planting materials (fruits), 2 plants/unit)	120nos

Fund received under TSP in 2016 – 3.0 Lakh

**TSP programme under AICRP, Sunflower**

Name of the village adopted under TSP	Block	Population of the village			ST Population of the village			Percentage of ST population to total population
		M	F	T	M	F	T	
Vill-Jamuadihi,	Raghunathpur-I, Dist- Purulia, West Bengal.	57	49	106	57	49	106	100%
Rangamati	Raghunathpur-I,	77	71	148	77	71	148	100%
Charanbandh	Raghunathpur-I,	67	62	129	67	62	129	100%
Lalpur,	Raghunathpur-I,	49	44	83	49	44	83	100%
Bandanga	Raghunathpur-I,	59	55	114	59	55	114	100%
Pratappur	Raghunathpur-I,	69	65	134	69	65	134	100%
Chandpara,	Binpur-II, Subdivision- Jhargram, Dist- Pachim Medinipur.	71	67	138	84	77	161	85.7%
Raghunathpur,		58	53	111	47	43	90	81.08%
Pindra		64	57	121	73	68	141	85.8 %

## Physical achievements under TSP during 2016-17

Programmes	Physical achievements 2016-17
Asset creation (Number; Sprayer, ridge maker, pump set, weeder etc.)	
On-farm trials (Number)	
Frontline demonstrations (Number)	120 acre
Farmers training (in lakh)	0.5 lakh
Extension personnel training (in lakh)	-
Participants in extension activities (in lakh)	683
Seed production (in tonnes)	-
Planting material production (in lakh)	-
Livestock strains and fingerlings production (in lakh)	-
Soil, water, plant, manures samples testing (in lakh)	-
Provision of mobile agro – advisory to farmers (in lakh)	-
Others (Swachha Bharat Abhiyaan, Agriculture knowledge in rural school, Planting material distribution, Vaccination camp etc.)	-

Title of the training	Date	Male	female	Total
1.Training on Use of cono weeder	21.11.2016	26	15	41
2. Training on use of organic manure, bio agents in boro paddy cultivation	6 <sup>th</sup> to 9 <sup>th</sup> December, 2016	37	-	37
3.Training on Production of vermicompost in household level	06.12.2016	11	9	20
4.Training on production of Amorphophallus with better variety(Kabur)	05.01.2017	27	3	30
5.Training on fruit cultivation (mango) with var. Amrapali	15.03.2017	72	48	120

Asset created under TSP:

Distribution of farm implement	Number	Fund received under TSP, 2015-16 (Rs. in lakh)
Cono weeder	20	3.0
Vermicompost pit	40	

**Asset creation (Number; Sprayer, ridge maker, pump set, weeder etc.)**

**List of Implements to be given in 2015-16 under TSP**

**Implements to be given to individual farmers:**

Name of implement	cost/ one	Quantity	Total cost	Name of the village, district and state where TSP is implemented
a. Sprayer	Rs.995/-	90	<b>Rs. 89,550.00</b>	Vill-Jamuadihi, Rangamati, Charanbandh, Lalpur, Bandanga, & Pratappur, <b>Dist- Purulia, West Bengal.</b>  Vill- Raghunathpur, Chandpara, Pindra, Binpur-II block, Subdivision-Jhargram, <b>Dist-Pachim Medinipur, West Bengal.</b>
b. Irrigation Delivery pipe	Rs.1750-	90	<b>Rs. 1,57,500.00</b>	Vill-Jamuadihi, Rangamati, Charanbandh, Lalpur, Bandanga, & Pratappur, <b>Dist- Purulia, West Bengal.</b>  VIII- Raghunathpur, Chandpara, Pindra, Binpur-II block, Subdivision-Jhargram, <b>Dist-Pachim Medinipur, West Bengal.</b>

Contd...					
c. Spade	Rs.175/-	100	<b>Rs. 17,500.00</b>	Vill-Jamuadihi, Rangamati, Charanbandh, Lalpur, Bandanga, & Pratappur, <b>Dist- Purulia, West Bengal.</b>	
				Vill- Raghunathpur, Chandpara, Pindra, Binpur-II block, Subdivision- Jhargram, <b>Dist-Pachim Medinipur, West Bengal.</b>	
<b>Total cost</b>			<b>Rs. 2,64,550.00</b>		

**Implements to be given for utilizing by group/community of farmers:**

Name of implement	cost/ one	Total cost	Number of farmers to be benefited with one implement	Name of the village sarpanch / Village Head / Panchayat head or Farmer with detail address	Name of village , district and state to which the beneficiary belong
1. Diesel Pump set:: 2 nos.	Rs.17,400/-	Rs.34,800/-	<b>40-45</b>	Vill- Raghunathpur, Dist-Pachim Medinipur, W.B.	Vill- Raghunathpur, Block-Binpur-II, Dist-Pachim Medinipur, West Bengal
2. Diesel Pump set:: 1 nos.	Rs.17400/-	Rs. 17,400/-	<b>20-25</b>	Vill-Pindra, Dist-Pachim Medinipur, West Bengal	Vill-Pindra, Block-Binpur-II, Dist-Pachim Medinipur, West Bengal
3. Diesel Pump set:: 1nos.	Rs.17400/-	Rs. 17,400/-	<b>25-30</b>	Vill-Chandpara, Dist-Pachim Medinipur, W.B.	Vill-Chandpara, Block-Binpur-II, Dist-Pachim Medinipur, West Bengal
4. Paddle driven Sunflower thresher- <b>10 piece</b>	Rs.4275/-	Rs.42,750/-	<b>50-60</b>	Vill- Raghunathpur, Dist-Pachim Medinipur, W.B.	Vill- Raghunathpur, Block-Binpur-II, Dist-Pachim Medinipur, West Bengal
5. Paddle driven Sunflower thresher- <b>5 piece</b>	Rs. 4275/-	<b>Rs.21,375/-</b>	<b>30-35</b>	Vill-Pindra, Dist-Pachim Medinipur, West Bengal	Vill-Pindra, Block-Binpur-II, Dist-Pachim Medinipur, West Bengal
6. Paddle driven Sunflower thresher- <b>5 piece</b>	Rs.4275/-	<b>Rs.21,375/-</b>	<b>35-40</b>	Vill-Chandpara, Dist-Pachim Medinipur, W.B.	Vill-Chandpara, Block-Binpur-II, Dist-Pachim Medinipur, West Bengal
7. Diesel Pump set:: 1 nos.	Rs.17400/-	Rs. 17400/-	<b>20-22</b>	Rangamati 1.No. SHG & Rangamati 3 No. SHG	Vill- Rangamati, Raghunathpur Subdivision, Dist-Purulia, West Bengal
8. Diesel Pump set:: 1 nos.	Rs.17400/-	Rs. 17400/-	<b>10-12</b>	Jamuadihi 2 No. SHG	Vill- Jamuadihi, Raghunathpur Subdivision, Dist-Purulia, West Bengal



9.	Diesel Pump set:: 1 nos.	Rs.17400/-	Rs.17400/-	20-22	Asha Puran SHG & Disa Puran SHG	Vill- Pratappur, Raghunathpur Subdivision, Dist-Purulia, West Bengal
10.	Paddle driven Sunflower thresher-2 piece	Rs.4275/-	Rs,8550/-	20-22	Asha Puran SHG & Disa Puran SHG,W.B.	Vill- Pratappur, Raghunathpur Subdivision, Dist-Purulia, West Bengal
11.	Paddle driven Sunflower thresher-2 piece	Rs.4275/-	Rs,8550/-	24-30	Rangamati 1.No. SHG & Rangamati 3 No. SHG.	Vill- Rangamati, Raghunathpur Subdivision, Dist-Purulia, West Bengal
12.	Paddle driven Sunflower thresher-2 piece	Rs.4275/-	Rs,8550/-	10-12	Jamuadihi 2 No. SHG	Vill- Jamuadihi, Raghunathpur Subdivision, Dist-Purulia, West Bengal
13.	Paddle driven Sunflower thresher-2 piece	Rs. 4275/-	Rs,8550/-	10-12	Lalpur Ma Tara SHG,	Vill- Lalpur, Raghunathpur Subdivision, Dist-Purulia, West Bengal
14.	Paddle driven Sunflower thresher-1 piece	Rs.4275/-	Rs. 4275/-	10-12	Bandanga Champager SHG	Vill- Champager, Raghunathpur Subdivision, Dist-Purulia, West Bengal
15.	Paddle driven Sunflower thresher-1 piece	Rs.4275/-	Rs.4275/-	10-12	Charan Bandh Jaher Ayao SHG	Vill- Charanbandh, Raghunathpur Subdivision, Dist-Purulia, West Bengal
16.						
<b>Total cost</b>		<b>Rs.2,41,500.00</b>				

Fund received under TSP in 2016-17: **10.61** lacs only.

**Input supplied: Sunflower Seed (KBSH-53 & KBSH-41)**, bio inoculants (*Trichoderma viride* & *Pseudomonas fluorescens*(600g/acre) and bio fertilizers (Azatobactor & PSB-600g/acre), Chemical fertilizer N<sub>2</sub>: P<sub>2</sub>O<sub>5</sub>: K<sub>2</sub>O(80:400 kg/hactare):Plant protection chemicals (IPM based): Prubandamide (Fame) -60ml/acre and Boron(micronutrient)-100g/acre.

**Implements supplied:** Spade, Knap sack Sprayer, irrigation Delivery pipe:

**Implements supplied in Group: Irrigation Pump-Set, Manual Sunflower thresher.**

**Five nos. of Extension training** were organized for the tribal farmers, **First one** before sowing the crop and rest four at crop grown stage.

## ECONOMICS OF TRIBAL SUBPLAN PROGRAMME (TSP) SUNFLOWER- 2015-16

CROP	SEED (Rs.)	LAND PREPARATION (Rs)	Organic manure/ FYM (Rs)	FERTILIZERS (Rs)	LABOUR(Rs)	WATER MANAGEMET(Rs)	Bio- Pesticides
SUNFLOWER (TSP)	540.00	1920.00	1200.00	1460.00 (N: P <sub>2</sub> O <sub>5</sub> : K <sub>2</sub> O : 80:40 : 40 kg/ha)	9120.00 (48 NOS @190.0)	2250.00	180.00
MUSTARD (FP)	420.00	1440.00	1200.00	1175.00 (N: P <sub>2</sub> O <sub>5</sub> : K <sub>2</sub> O : 60:30 :30 kg/ha )	6840.00 (36NOS. @190.0)	1500.00	-- (F.P)

Pesticides	Oil Extraction Charge(Rs)	Avg. Yield(Kg/acre)	Avg. Oil Yield(Kg/acre)	Total cost of Cultivation/acre (RS)	Gross Return /acre (RS)	Net Return /acre (RS)	Additional Income	B:C Ratio
1080.00	2250.00	750 kg	300kg (40%)	20,000.00	35,100.00 (300kg oil @Rs.90+ @450kg oilcake Rs.18)	15,100.00	10,029	1.76
750.00	1080.00	360kg	126kg (35%)	Rs:14,405.00	19,476.00(126kg@Rs. 110+ @234kg oilcake Rs.24)	5,071.00	--	1.35

Crop 2015-16	Technology Demonstrated	Hybrid	No. of Farmers/ demo.	Area (ha)	Demo. Yield (kg/ha)	Yield of local Check (kg/ha)	Variety used in local check	Increase in yield (%)	Yield (q/ha)	
									Potential (kg/ha)	District average (kg/ha)
Sunflower	Hybrid with Full package of practices.	KBSH-41 KBSH-53	120	48ha	1875	900	B-9,NC-1, Sanjukta	108%	2500	1267 & 1192

Year	Mean seed yield (Kg/ha)		Yield gap (kg/ha)	Cost of cultivation		Gross Return		Net return		Additional Net return (Rs/ha)	Benefit: cost ratio	
	IP	FP		IP	FP	IP	FP	IP	FP		IP	FP
2015-16	1875	900	975	50,000	36012	87750	48690	37750	12678	25,072	1.76	1.35



### Details of the Activities Undertaken

- Organising **Farmers Training** programme before sowing the crop and different **critical crop growth stages**.
- Organising the **Farmers Field Day** at critical **Crop Growth stage**.
- **Invitation of different resource persons** in the **Farmers Field Day** and other **Farmers Meetings** from the **KVK, line department** , both **State and Central Government** .
- **Developed marketing channels** for assured selling of the produce.

### **Details of Implement given: (Please See Annexure-II)**

#### **Impact of the TSP Programme:**

1. The farmers were grown **paddy *kharrif* and mustard in *rabi* season** in their field **before TSP** implementation.
2. The **Annual income (Gross return)** of the farmers before starting of TSP was **Rs. 42,000.00/acre**.
3. The **Annual income (Gross return)** of the farmers **after implementation of TSP** is **Rs. 52,030.00/acre**.
4. The **Net return** of the farmers/year before starting of TSP was **Rs.10, 200.00/acre** (approx).
5. The **Net return** of the farmers/year **after implementation of TSP** is **Rs.20, 230.00/acre** (approx) i.e. **Rs.20, 230.00/acre**.
6. The additional net return of the farmers **after implementation of TSP** is **Rs.10,030.00/acre** (approx) i.e. is **Rs.25,075.00/ha**.
7. **The farmers were highly benefited through the implements supplied under TSP programme specially by getting Dassel drawn pump set, irrigation delivery pipe, Submersible bore well, Sprayer, Manual Sunflower thresher.** For irrigation purpose the quality **pump-set from Honda company** along with the **delivery pipes** was supplied to the tribal farmer (In-group) under TSP programme which helped the farmers to irrigate the crop at the critical crop growing stages. As the purchasing power of the farmer was very poor, the

pump-set provided to them acted as a boon for irrigating not only Sunflower but also other crops.

8. Most of the tribal farmers of the tribal villages cultivating the sunflower in the current year (2015-16) in rabi season where sunflower was implemented through TSP in the year either 2013-14 or 2014-15 through IOR-ICAR via AICRP, Nimpith centre.



### 11. PROGRESS REPORT OF NICRA KVK (Technology Demonstration component) 2016-17 (Applicable for KVKs identified under NICRA)

#### Natural Resource Management

Name of intervention undertaken	Numbers under taken	No of units	Area (ha)	No of farmers covered / benefitted	Remarks
Landshaping and rain water harvesting structure		4	1.07	4	Excavation of ponds Reshaping of low lands into medium to upland situation and thus enabling to grow short duration HYV paddy during Kharif and growing vegetables on the embankments along with pisciculture in the pond.
Soil test based nutrient application	-	30	7	30	
Study of water harvesting, recharging and water budgeting		1	1	3	Establishment of Water level indicator in pond, Piezometers in the pond adjacent fields, Pan evaporator, etc., is ongoing

#### Crop Management

Name of intervention undertaken	Area (ha)	No of farmers covered / benefitted	Remarks
Demonstration on floating seed bed of paddy	0.26	5	Helped to withstand intensive precipitation in short time span
Demonstration on staggered seed bed of paddy	0.67	5	Helped to mitigate crop loss in paddy during early days of transplanting
Fruits sapling distribution to the farmers	-	100	Increase in area under tree plantation and addressing the problem of nutritional security
Nutrient management	4	25	Soil test based fertilizer recommendation

## Livestock and fisheries

Name of intervention undertaken	Number of animal covered	Number of units	Area (ha)	No of farmers covered / benefitted	Remarks
De-worming of animals	No of animals- 722	2	-	157	
Animal health check-up	No of animals - 722	2	-	157	
Mineral Mixture Supplementation	No of animals - 722	2	-	157	

## Institutional interventions

Name of intervention undertaken	No of units	Area (ha)	No of farmers covered / benefitted	Remarks
Custom hiring for timely operations	1	-	Entire village	The farmers of the NICRA village benefited from the CHC by hiring Paddy thresher, Power tiller, sprayer and conoweeder, Pumpset.

## Capacity building

Thematic area	No. of Courses	No. of beneficiaries		
		Males	Females	Total
Natural resource management	1	21	10	31
Crop management	4	93	42	135
Pest and disease management	7	170	97	267
Fodder and feed management	2	42	21	63
Climate resilience	1	26	8	34

## Extension activities

Thematic area	No. of activities	No. of beneficiaries		
		Males	Females	Total
Agro advisory services	19	152	63	215
Field Day	2	42	16	58
Diagnostic visit	32	160	72	232

Detailed report should be provided in the circulated Performa

## 12. Information on NFDB Funded Capacity building programme during 2016-17

Sl. No.	Name of capacity building training programme	Duration (days)	Date of programme	Fund (Rs.) sanctioned by NFDB, Hyderabad	No. of Farmers trained	Remarks, if any
1	Small scale seed production and larval rearing of Asian catfish – magur and singhi	5	08.08.2016-12.08.2016	57250.00	30	
2	Carp fry and fingerling production in freshwater ponds	5	23.08.2016-27.08.2016	57250.00	30	
Total		10		114500.00	60	

13. National Initiative on Fodder Technology Demonstration (NIFTD)  
(Applicable for KVKs identified under NIFTD)

Name of the fodder crop	Date of sowing	Area (ha)	No. of farmers involved	Demonstration Yield (q/ha)			Check Yield			% increase
				H	L	A	H	L	A	
N.A.										

## Economic of Demonstration

Name of the fodder crop	Demonstration Cost/Rs/ha			Check Cost (Rs/ha)		
	Gross cost	Gross return	BC ratio	Gross cost	Gross return	BC ratio
N.A.						

## 14. Awards/Recognition received by the KVK

Sl. No.	Name of the Award	Year	Conferring Authority	Amount	Purpose
	Pandit Dindyal Uppadhaya Rashtriya Krishi Vigyan Protshahan Puraskar (National)	2016-17	ICAR, New Delhi	25,00,000.00	Dedicated towards enhancement of productivity, profitability and income of farmers

## Award received by Farmers from the KVK district

Sl. No.	Name of the Award	Name of the Farmer	Year	Conferring Authority	Amount	Purpose
1	Krishak Ratna from Joynagar-II Block	Nurmohammad Sipai	2016	Department of Agriculture, Govt. of west Bengal		Progressive farmer of the Block
2	Plant Genome Saviour Community Award 2013-14	Sukdeb Nath Secretary, Sagar Krishnanagar Swami Vivekananda Youth Cultural Society, West Bengal	2016	Protection of Plant Varieties and farmers' Right Authority, Ministry of Agriculture and farmers welfare, Govt. of India	Rs. 10 lakh	Conservation of local cultivars and land races of Paddy

15. Any significant achievement of the KVK with facts and figures as well as quality photograph

## 1. Implementation of Land Shaping and Rain Water Harvesting Technology including Land Embankment Cultivation for Augmentation of Agricultural Production

Project on "Implementation of Land Shaping and Rain Water Harvesting Technology including Land Embankment Cultivation for Augmentation of Agricultural Production" for South 24 Parganas districts of West Bengal funded by Department of Agriculture Govt. of West Bengal through RKVY Scheme (2015-16 & 2016-17) has been implemented by RAKVK, Nimpith. Under this project 401 number of Landshaping and 75 numbers of Ail Bandh Cultivation has been demonsatrated.



16. List of 5000 farmers with mobile number and Aadhar card number (only soft copy to be enclosed)

17. Number of commodity based organizations/ farmers' cooperative society formed during last one year (Details of the group/society may be indicated)- N.A.

18. Any other programme organized by KVK not covered above

**18.1. Project on “On-farm mass production of microbial pesticides”**

<b>Project Title</b>	<b>On-farm mass production of microbial pesticides</b>
<b>Financial Assistance</b>	<b>Department of Agriculture, Govt. of west Bengal</b> Through <b>Rashtriya Krishi Vikas Yojana (RKVY)</b>
<b>Project duration</b>	<b>Two Years (2015-16 to 2016-17)</b>
<b>Project Budget</b>	<b>Two years – Rs. 56.39 lakh</b> 1 <sup>st</sup> year (2015-16) – Rs. 25.60 lakh 2 <sup>nd</sup> year (2016-17) – Rs. 30.79 lakh
<b>Principal Investigator (PI) of the Project</b>	<b>Mr. P. K. Garain</b> SMS (Plant Protection), RAKVK, Nimpith

**Project Objective:**

- To supply region specific local strains of microbial pesticides to farmers
- To support farm families for producing microbial pesticides for their own consumption.

**Project Activities:**

- Selection of local *Trichoderma* strains: Different fungal species were isolated from the rhizosphere of different field situation of this South 24 Parganas, following standard laboratory protocol. *Trichoderma harzianum* was identified after consultation with veteran Mycologists from Bidhan Chandra Krishi Viswavidyalaya, Mohanpur. The fungal cultures are maintained at the Biocontrol Laboratory of KVK, Nimpith. Soil borne pathogens like *Fusarium*, *Rhizoctonia*, *Sclerotium* and *Sclerotinia*, were also isolated. The local strain of *Trichoderma harzianum* was screened against the pathogens by dual culture test. The best performing strains were selected for mass multiplication.
- Beneficiary Selection and demonstration training: 200 beneficiaries were selected through advertisement and given 4-day long residential training.

<b>Year</b>	<b>Training</b>	<b>Date</b>	<b>Trainee</b>
2016-17	Demonstration Training	6-9 Sep 2016	72
		14-17 Sep 2016	60
		21-24 Sep 2016	41
		28 Sep – 1 Oct 2016	27
	Refresher Training	5 Jan 2017	200

- Distribution of inputs (Training Kit): Training kits were distributed to all the trained candidates
- Monitoring and quality checking: Each trainee were visited to monitor the production process. The quality of the *Trichoderma* was assessed time to time.
- Refresher Training: All the trainees were called for a one-day refresher training after three months to discuss various issues related to *Trichoderma* production.
- Publication: A book and a short documentary is in the process of publication depicting the project implementation and success stories of the project.



### Project Outcome:

From 20 kg grains, 10 kg bio-pesticides are prepared. From 60 quintal grains (300 beneficiary x 20 kg), 30 quintal bio-pesticides were prepared per cycle. In four cycles in a year, around 120 quintal bio-pesticide were prepared on-farm. At a nominal cost of Rs. 100/- per kg, there were an annual turnover of Rs. 12 lakh during 2016-17.

- Farmers now don't depend upon pesticide shops mercy for timely supply of quality *Trichoderma*.
- Some of the beneficiaries are acting as master trainer and thus disseminating the technology manifolds in the district
- Farmers became enthusiastic in adoption of low cost on-farm mass production of other available bio-control agents like – Entomopathogenic fungi (*Metarhizium anisopliae*)

### The way forward:

Considering the paucity and timely un-availability of quality bio-control agents in the markets of remote areas in Sundarbans, this project will certainly bring smile to the farmers who are already aware of the malady of chemical farming. And hope this small effort help to take a little step towards sustainability of soil health and production of Green Food in collaboration with the Department of Agriculture, GoWB.



## 18.2. All India Coordinated Research Project on Honey Bees & Pollinators Voluntary Centre, RAKVK, NIMPITH

<b>Title of the Project</b>	<b>All India Coordinated Research Project on Honey Bees &amp; Pollinators</b>
<b>Financial Assistance</b>	Division of Entomology, IARI, New Delhi
<b>Project duration</b>	2015-16 – Continuing
<b>Project Budget</b>	2016-17: Rs.
<b>Principal Investigator (PI) of the Project</b>	Mr. P. K. Garain SMS (Plant Protection) RAKVK, Nimpith

Ramkrishna Ashram Krishi Vigyan Kendra is implementing the AICRP on Honey Bees and Pollinators as a Voluntary Centre.

### A. Present scenario of beekeeping in West Bengal:

West Bengal is one of the five major honey producing states in this country. But as like other states, the overall honey production is much less, in spite of having plenty of scopes. Presently, west Bengal produces approximately 5000 tonnes of honey. 20% of it is consumed in the domestic market. The rest is exported to different countries like America, Germany, Belgium, England, Canada, Morocco, Saudi Arabia and UAE.

Lying between 21° 25' 24" and 27°13' 15" north latitudes and 85°48' 20" and 89°53' 04" east longitudes, the State experiences a tropical and humid climate except in the northern hilly region which is close to the Himalayans. The average rainfall is about 1750 mm with considerable variation among the districts ranging between 1234 mm in Birbhum to 4136 mm in Jalpaiguri. The temperature in the mainland normally varies between 24°C to 40°C during summer and 7°C to 26°C during the winter. With nearly 72 per cent of the population living in the rural areas, agriculture is the predominant occupation in the State. Cropping pattern in the State is dominated by food crops which account for about 78 per cent of the area under principal crops.

The fertile lands of West Bengal also has a good plantation of Mango, Litchi, Guava, Oranges, Black Berry, Jackfruit, Ber, Drumstick, Neem, Eucalyptus, Akashmoni (*Acacia auriculiformis*) as well as of Mustard, Sesame, Coriander, Black Cumin, etc. The barren wastelands are always full of different weeds blooming throughout the year. All these plants provide good source of nectar and pollen through most part of the year.

Added to this is the presence of mangroves forests of Sundarbans. Sundarban is the major source of wild honey of this state. The wild honey collectors of Sundarbans are called "Mouli". These professionals collect honey for generations, risking their lives to the royal Bengal tigers in the jungle and crocodiles in the river. They are mostly from the Kultali, Basanti, Gosaba, Canning and Joynagar Blocks of South 24 Parganas district. Every year, around 200 quintal wild honey is collected from Sundarbans forest.

The other districts known for good source of honey and beekeeping are North 24 Parganas, Nadia, Murshidabad, Maldah, North Dinajpur, East Midnapore and Bankura. There are around 15000 beekeepers in the State. Maximum of them are from North and South 24 Parganas. 2000 beekeepers are from North 24 Parganas only. *Apis mellifera* is mostly used for commercial beekeeping in West Bengal.

Earlier there were district wise training centres under "Bharatiya Khadi and Gramodyog Commission" and "All India Beekeepers Association". But presently those centres are not functional. Now, Lok Siksha Parishad of Ramakrishna Moth and Mission provides training on beekeeping. Following organizations are presently engaged in hands-on-training on beekeeping as well as supplying of beekeeping materials/ingredients:

- West Bengal Beekeepers Association, North 24 Parganas
- 24 Parganas Beekeepers Cooperative Society, Sasan, South 24 Pargana
- Midnapore Beekeepers Cooperative Society, Midnapore
- Hooghly Beekeepers Cooperative Society, Hooghly
- Darjeeling Beekeepers Cooperative Society, Darjeeling
- Malda Beekeeping and honey processing cluster industrial cooperative society Ltd., Old Maldah

West Bengal Forest Development Corporation Ltd. is responsible for collection, processing and marketing of the wild honey collected from Sundarban and other forests. They market it under the trade name of Mouban honey.

### ***Migratory Beekeeping in West Bengal:***

The beekeepers of West Bengal are using *Apis cerana* since long back, as like the other states. The practice is still followed in many areas of the district. However, since 1990-91, the beekeepers of 24 Parganas started using *Apis mellifera* for commercial beekeeping. Presently, *Apis mellifera* is the predominant and most preferred species for commercial beekeeping in the State. Around 1000 tonnes of honey is harvested from mellifera beekeeping.

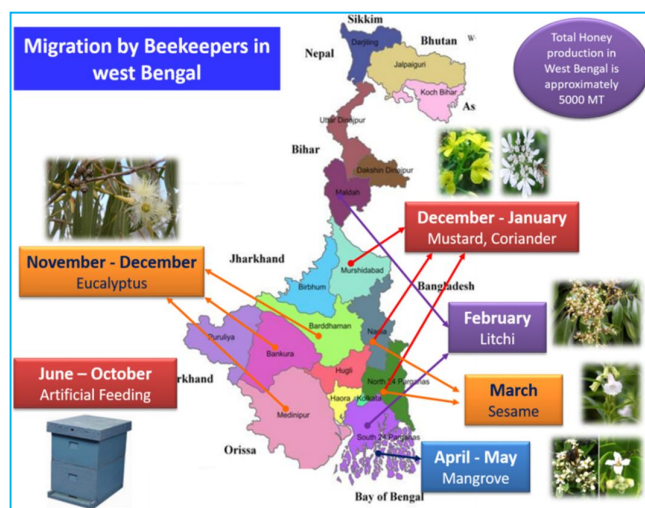
Depending upon seasonal availability of nectar and pollen producing plants, the honey production varies in this state. Except August, September and October, different types of honey are collected in different season. The honey flow season starts with the Eucalyptus and Ber bloom. After that the beekeepers depend upon Mustard, Coriander, Black Cumin and drumstick. After this the beekeepers travel to Maldah, Murshidabad and South 24 Parganas to catch up with Litchi flowering. After litchi, Sesame provides good source of nectar.

At the same time some beekeepers move to the Sundarbans (Fringe Area of the forest) with their hives. But to set the bee hives in the fringe area, the beekeepers have to take a Transit Pass from the Forest department against paying a commission of Rs. 1 per kg of honey production. Around 200 MT honey is harvested here.

### ***Honey flow season in West Bengal***

Season	Nectar plant	Pollen Plant
November – December	Eucalyptus, Silk Cotton, Ber	Akashmoni ( <i>Acacia sp.</i> ), Bitter gourd, Coconut
December to January	Mustard	Mustard
January to March	Coriander, Black Cumin, Lathyrus, Drumstick	Coriander, Black Cumin, Lathyrus,
February to March	Litchi, Mangrove (Khalisa)	Sunflower
March to April	Mangrove (Goran, Keora, Tora), Sesame, Neem	Chilli, Sesame, Date palm, Mangrove (Goran, Keora, Tora),
April to May	Mangrove (Baen, Gewa, Kakra), Black berry	Mangrove (Sundari, Baen, Gewa, Kakra)

The production of honey per hive depends upon weather and source of nectar flower. As for example, in Murshidabad and Nadia districts, 15 kg honey per hive is obtained in 40 days period from Lathyrus and Coriander flowers. In the same period 8-10 kg of honey is obtained per hive in Maldah district, from Litchi orchard. From Maize, 3-5 kg honey per hive is harvested in Maldah in just 25 days. 7-10 kg of honey is obtained in 50-60 days from Sesame field. From Mustard, 20 kg honey per hive is harvested in 50 days. However, highest production in shortest time is obtained from eucalyptus (12-15 kg per hive in 30 days).

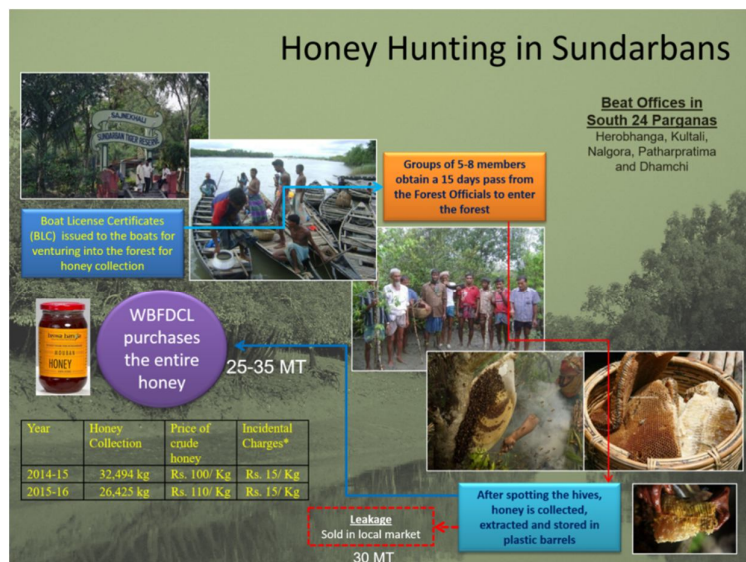


### ***The Honey Collectors of Sundarban- Mouli:***

They are the local community dependent upon the forest – a mix of schedule caste and schedule tribes. Collection of honey from the forest is an important livelihood option for them, during end of March to middle of May.

The Sundarbans forest is divided into three regions – the core area (National Park), the buffer zone and the fringe/transitional area. The core forest area is strictly prohibited for entry. The fringe area is the inhabited area where there is little scope of wild honey collection. The Buffer zone of Sundarbans is mainly exploited for harvesting of wild honey. This zone is full with wild bee (*Apis dorsata*) hives.

There is a systematic procedure for venturing into the Sundarbans for honey collection. The flowering season starts at end of March and continues upto middle of May. During this time, specific Boat License Certificate (BLC) is issued for the honey collection season to move inside the buffer areas of the forest (Herobhanga, Kultali, Nalgora, Patharpratima and Dhamchi in South 24 Parganas). So all the boats engaged in honey collection are registered with the forest department for any particular season. Then small groups of 5-8 members are issued a special Permit of 15 days for single trip of honey collection inside the forest. On expiry of the Permit, they have to move out of the forest and collect fresh permit before going inside for honey collection, again. The BLC and Permits are issued by the Beat Officers. After collection of honey, they assemble at the Beat Office and sale the honey to the forest department, against the price fixed earlier by the West Bengal Forest Development Corporation (WBFDC). On an average 2.5 q of crude honey is collected by one team per trip. Generally three trips are completed by a team during one honey season in Sundarbans.



All the honey collectors are covered under accidental insurance (Janata Policy) before proceeding to the forest. The insurance charge is borne by the forest department (WBFDC).

The crude honey, thus collected by the forest department is processed and marketed by WBFDA under the brand name – “Mouban” Honey.

Though official collection figure is in the range of 25 to 35 MT per annum, information gathered from unconfirmed sources reveal that about 100 MT of honey is collected in a season.

### **Marketing of Honey in West Bengal**

Around 5000 tonnes of honey is produced and/or collected in West Bengal. Only a small quantum of the entire produce is consumed at the domestic level. Majority of the produce enters export supply chain. WBFDC processes the natural collected honey at their processing unit located at Salt Lake, Kolkata. They sale the filtered honey under the brand name “Mauban” through their own retail outlets and stalls in different fairs. It is reported that WBFDC sells about 50 to 60 MT of Honey every year. Large industrial houses like Dabur, Baidyanath, Zandu and others play a dominant role in the Honey market of the state. Majority of the market demand is presently being met by the large industrial houses like Dabur, Baidyanath, etc. and a large portion of this market is presently catered by the local producers who either sell their products to the large houses or sell directly through their own distribution networks.

Much of the forest honey is sold to the pharmaceutical, confectionery and food industries, where it is processed and used in different formulations. Apiary honey is usually processed at the producers’ level. This consists mainly of heating the honey and filtering. A few beekeepers or honey producers co-operative societies have better processing facilities that involve killing of honey fermenting yeasts.

***Major Processing Units:***

WBFDC processes honey at their honey filtration unit located at Salt Lake. Moreover, there are 3 apiary honey producing and filtration units commercially operated two of which are located at Baruipur, South 24-Parganas and one at Barasat, North 24-Parganas. At Narendrapur, South 24-Parganas, in their fruit processing unit, Ramakrishna Mission also operates a small honey processing unit of around 25 TPA produced by the bee-keeper trainees. Though Dabur and Baidyanath also sell processed apiary honey, it is learnt that such honey filtration units are located outside the state. However, a good quantity of raw apiary honey is procured by them from the bee-keepers in West Bengal scattered in South Bengal and North Bengal.

***Problems associated with Commercial Beekeeping***

- Due to malpractices by a section of beekeepers and middlemen, the price of honey is decreasing day by day. The wholesale price of crude Apiary honey reduced from Rs. 100 per Kg in 2014-15 to Rs. 50 per Kg in 2015-16.
- Cost of artificial feeding (sugar solution) during the off season (July to October) is also increasing year after year.
- Infestation of wax moth during off season when the colony strength is very weak. This leads to significant loss of empty combs.
- Traffic checking often delays the transportation of bee boxes. This often results in loss of colony as the boxes need to be set early in the morning in the new destination.
- Lack of scientific knowledge on pest and diseases of honey bees and their management. There is no arrangement for disease surveillance. Honey is often stored in undesirable and inappropriate containers which deteriorate the quality
- Indiscriminate use of pesticides in agriculture
- Climatic aberrations resulting in reduction in production of nectar in plant. This incident had a very negative effect in honey production during 2015-16.
- Lack of Institutional credit support for the beekeepers. Most of the beekeepers have to take loans with high interest rate from mediators which reduce their profit margin away.
- Farmers are also unaware of role of pollinators in productivity of various cross pollinated crops. Especially in South 24 Parganas, lack of pollination in cucurbitaceous vegetables (Cucumber, Bitter Gourd, Ridge Gourd, Pumpkin, etc) results in fruit drop and impaired fruit development.
- Lack of infrastructure for producing genetically superior queen bees for supply to beekeepers and lack of technical knowledge for efficient management of bee colonies for higher honey yield

***Problems associated with Forest Honey***

- The Moulis follow an age old traditional method of honey collection from the rock bee hives. The process involves spotting a hive and smoking it to remove the bees. The flames often kill a considerable population of the bees along with the queen bee. This leads to destruction of the whole colony sometimes.
- After separating the honey bearing portion (ripe and unripe) along with some brood chambers, the same is squeezed by hands to extract the honey, till its last drop. This results in admixing of wax particles, pollens, body juice of the larva and broods, dirt, ash, leaves, etc., into the honey. This lowers the quality and storability of the honey.
- The honey collectors inside the Sundarbans have to always remain alert from any tiger attack. Hence they don't want to pay much attention to scientific collection of honey. They don't bother about the loss of bee colony during the cruel hunting episode.

## B. Extent of possibilities of growth

There is plenty of scope of increasing the production of honey and other bee products in the State. There is no dearth of source of honey in nature. However, there is shortage of required beekeepers as well as lack of initiative. As for example, 500 kg of honey can be harvested from one hectare of Litchi orchard. West Bengal has 3700 ha of Litchi orchard. So there is a potentiality of harvesting 1850 tonne of honey from Litchi orchard itself. But actual collection is much less. **So it is possible to at least double the total State production by simply increasing the number of bee hives or beekeepers.**

In the same way there is much less awareness among the farmers regarding the importance of bee pollination in agriculture. So there is less encouragement for the migratory beekeepers as they find it difficult to convince the farmers to use their crop fields for beekeeping.

## C. Economic aspects of honey to farmers

### *Wild honey collection:*

The honey collectors take this as a part time profession. The honey hunters of Sundarbans (Mouli) get an assured market for their collection through the intervention of West Bengal Forest Development Corporation limited. Each Mouli earns Rs. 8000/- to Rs.12000/- during a span of 30-45 days. But they have to risk their lives in the hands of Tigers and Dacoits.

### *Commercial beekeeping:*

The below mentioned economics is calculated based on 100 hives of *Apis mellifera* in case of migratory beekeeping:

#### **Expenditure:**

a. Fixed Cost		
i. 100 box (9 frame) with bee colony		= Rs. 75,000.00
ii. Accessories		= Rs. 10,000.00
<b>Sub total</b>		<b>= Rs. 85,000.00</b>
b. Recurring Cost		
i. Feeding, medicine, packaging		= Rs. 1,25,000.00
ii. Labour		= Rs. 96,000.00
iii. Transportation and others		= Rs. 40,000.00
<b>Sub total</b>		<b>= Rs. 2,61,000.00</b>
c. Depreciation (@ 10% per annum)		= Rs. 8,500.00
<b>Total</b>		<b>= Rs. 3,54,500.00</b>

#### **Income:**

a. Sale of honey (5000 kg @ Rs. 100)		= Rs. 5,00,000.00
b. Sale of bee wax		= Rs. 50,000.00
<b>Total</b>		<b>= Rs. 5,50,000.00</b>

Net Profit in 1<sup>st</sup> year = (Rs. 550000 – Rs. 354500) = **Rs. 1,95,500.00**

Net Profit in 2<sup>nd</sup> year = (Rs. 550000 – Rs. 269500) = **Rs. 2,80,500.00**

However the price of apiary honey is very much fluctuating. It varies from Rs. 50 to Rs. 100 per kg. The beekeepers have to depend upon the middlemen, who exploits them showing the qualitative issues of the honey.

### *Value chain analysis*

Tiny producers sell their 99% of production to three intermediaries. Intermediaries sell the purchased honey as well as their own product to the agents of the state and national level buyers. These agents sell the raw honey to the units who process the honey and bring to the market with a brand name. A portion of this final product also go the abroad.

Cost of production for 100 hives = recurring expenditure + depreciation

$$= \text{Rs. } 261000 + \text{Rs. } 8500$$

$$= \text{Rs. } 269500$$

Cost of production for one hive	= Rs. 2695
Average production per hive in one season (end of November to May)	= 50 kg
The cost of production of raw honey per bee hive	= Rs. 54/-

However, the price of the finally bottled honey stands to Rs. 300/- to Rs. 400/- per Kg and in abroad the price tagged is Rs. 700/- to Rs. 800/- per Kg.



It is revealed from the above chain that a large amount of value is added to the last end of this chain. The result of this addition do not make any Impact of the economic status of the root level producers. The following points which can be deduced from the Value chain analysis:

- The tiny or small producers do not have any control over the market.
- The large producers do not have any activities and interest regarding processing of the raw honey and do not have any idea about the National and International market of honey and other products which can be derived from the Bee hives.
- Producers do not have any idea about the quality parameter or quality control over their product.

#### **D. Process and procedures for benefit to farmers to increase their income**

##### ***Benefit through increased crop production:***

Honeybees as well as other Pollinators play a direct role in increasing productivity of certain crops like Mustard, Coriander, Black Cumin, Sesame, Guava, Oranges, Cucurbits, etc. But awareness among the cultivators is very less.

- Awareness camps
- Field demonstration (on yield improvement through enhanced pollination)

##### ***Benefit through increased honey production:***

Skill development and strengthening of existing beekeepers is very important for increasing the productivity of honey.

- Training on scientific colony management
- Development of quality nucleus stock for *A. mellifera* and *A. cerana*
- Queen rearing and colony multiplication
- Management of pest and diseases in Bees
- Safe and judicious application of pesticides on crop plants

##### ***Better price of honey through ensuring its quality:***

It is important for the beekeepers to get a remunerative price for their products. Quality of honey determines the price. Off late in West Bengal, there is a sharp decline of honey price (upto Rs. 50/- per kg) due to unethical adulteration practices.

- Awareness on extraction of sealed honey from super chambers only and storing of honey in clean and food grade containers

- b. Provision of quality testing at the point of sale.
- c. Well equipped laboratories for monitoring of any possible adulteration
- d. Direct linking of beekeepers to the existing cooperatives or formation of more numbers of cooperatives

***Diversification of apiary products:***

Instead of looking for honey only, efforts should be taken up for marketing other apiary products, like propolis, bee venom, queen rearing & supply, etc.

***Institutional credit:***

Beekeepers are exploited mostly by the middlemen at the expense of private money lending. They are bound to accept any price for the honey fixed by these private money lenders. Credit facilities from banks will give them liberty to bargain the honey price apart from cheaper interest.

**E. SWOT analysis**

<p><b>Strength</b></p> <ul style="list-style-type: none"> <li>• Favourable agro climate and abundance of natural resources for diversified agriculture production</li> <li>• The large number of Rural Youths (unemployed)</li> <li>• Increase in number of shopping malls in and around the cities and gradual changing in food preference among the middle section.</li> <li>• Mangrove forest of Sundarbans</li> </ul>	<p><b>Opportunity</b></p> <ul style="list-style-type: none"> <li>• Scope for increasing oilseeds and pulses area through recent programmes launched (NMOOP &amp; ISOPOM)</li> <li>• Scope of utilizing the rural youths, if trained and linked with institutional credit facility, would readily accept beekeeping as a livelihood option</li> <li>• Recent change in food habits and health consciousness among the consumers</li> <li>• Scope of unifloral processed honey</li> <li>• Royal Jelly, propolish, pollen &amp; has tremendous demand in Export market</li> <li>• Medicinal use of honey still continues and the demand will not abate in future</li> <li>• Popularisation of herbal and ayurvedic product increases the demand of honey.</li> </ul>
<p><b>Weakness</b></p> <ul style="list-style-type: none"> <li>• Predominance of rice based mono-cropping and or with potato /jute in sequence and less preference for crop rotation and diversification</li> <li>• level of awareness among farmers on the significance of pollinators</li> <li>• Predominance of middle-men in procurement of honey</li> <li>• Inadequate bank financing in the beekeeping sector</li> <li>• Inadequate facilities for proper training to the beekeepers</li> <li>• Unhealthy competition among the fellow bee-keepers</li> <li>• Poor product image in respect of high moisture content</li> <li>• Mixing of multi floral honey.</li> <li>• Practice of adulteration with sugar solution.</li> <li>• Safety of the wild honey hunters of Sundarbans (Mouli) from tiger attack</li> </ul>	<p><b>Threat</b></p> <ul style="list-style-type: none"> <li>• Occurrence of natural calamities like floods, cyclones, drought and consequent production, transport and storage losses</li> <li>• Excessive use of chemical pesticides</li> <li>• Changes in socio-economic conditions, with younger generation from farming community preferring urban employment in place of agriculture</li> <li>• Global warming has direct impact on the Mangrove coverage</li> <li>• Cost of artificial feeding (sugar solution) is also increasing (Rs. 1200/- per beehive)</li> </ul>

**F. Future road map**



- a. Convergence of different Schemes of Department of Agriculture, Department of Horticulture, Department of Forest and Social forestry and other line departments or Government programmes like, NFSM, ISOPOM, RKVY, SGSY, etc.
- b. Convergence between beekeepers, farmers, public extension agents and local administration.
- c. Strengthening of beekeepers' associations, cooperatives and societies.
- d. Linkage between beekeepers, manufacturers of bee equipment and buyers or exporters of honey and its products.
- e. Integration of beekeeping as an essential part of integrated farming system
- f. Installation of honey testing laboratories in each KVKs of the potential Districts.
- g. Special Pass for the migratory beekeepers for easy movement or transportation of their apiary.
- h. Nucleus stock of bees and queen rearing in a centralized manner
- i. Development of centre of excellence at State level
- j. Preparation of floral map of the state and neighbouring state



Dr. R. K. Thakur, Project Coordinator, AICRP (HB & P) visiting the apiary and AICRP centre at KVK, Nimpith



Prof. (Dr.) P. K. Chakrabarty, ADG, Plant Protection, ICAR, New delhi, visiting the apiary and AICRP centre at KVK, Nimpith

## All India Coordinated Research Project on Sunflower, RAKVK, NIMPITH

### List of major research programmes undertaken by the center:

#### PLANT BREEDING

➤ Management of Genetic Resources

➤ **Table : G1.Performance of Sunflower Germplasms Evaluated at Nimpith-2015-16**



Name of the Germplasm	Days to 50% Flowering	Days to maturity	Pl. Ht. (cm)	Head dia.(cm)	Seed yield(g/pl)	100 seed wt.(g)	Seed Filling %	Kernel wt(g)	Husk Wt(g)	Hull content (%)	Vol .Wt. (g/100cc)
GMU-2-2	63	95	82.8	12.1	18	9.34	78	5.85	3.49	37.37	38.2
GMU-301	66	98	163.8	13.5	12.5	3.22	60	1.94	1.28	39.75	36.8
GMU-312	68	100	135.6	15.5	15	4.55	71	3.02	1.53	33.63	39.0
GMU-321	69	101	88.6	14.5	22	7.72	68	5.45	2.27	29.40	41.5
GMU-347	70	102	112.9	12.9	20	3.97	75	2.88	1.09	27.5	46.3
GMU-349	72	102	112.6	10.5	14	5.03	75	3.59	1.44	28.6	41.6
GMU-351	72	106	147.0	18.5	<b>24</b>	3.66	15	2.51	1.15	31.42	23.4
GMU-359	64	96	121.2	12.6	13	8.69	90	6.49	2.20	25.3	43.2
GMU-376	75	107	109.6	13.8	28	5.6	64	3.36	1.41	29.6	44.6
GMU-389	73	107	140.2	14.5	24	7.32	60	4.37	2.75	37.53	38.5
GMU-400	67	101	93.0	10.5	22	8.46	95	4.70	3.76	44.4	42.0
GMU-420	62	95	121.0	12.6	12	5.64	45	4.31	1.33	24.6	42.2
GMU-423	71	104	106.4	9.1	17	5.38	87	2.98	2.49	45.52	35.8
GMU-431	63	97	105.0	13.6	10	7.97	79	5.24	2.73	34.3	46.1
GMU-442	71	102	112.2	14.8	16	6.07	70	3.47	2.60	42.83	35.3
GMU-454	62	93	76.1	7.4	12	7.07	82	4.69	2.38	33.6	40.3
GMU-488	70	102	103.7	10.5	15	6.6	85	4.83	1.77	26.82	40.4
GMU-539	64	98	112.7	14.5	16	7.90	60	5.19	2.80	35.0	38.2

GMU-559	65	98	125.6	13.5	12	7.85	70	5.41	2.44	31.1	41.1
GMU-566	67	99	134.6	13.6	13	5.49	62	3.80	1.69	30.78	42.5
GMU-592	63	95	87.9	9.5	11	4.24	85	2.50	1.74	41.03	38.6
GMU-1023	67	100	129.6	12.9	12	2.49	68	1.60	0.89	35.74	34.7
GMU-1034	70	103	82.8	16.4	20	4.6	78	3.12	1.48	32.18	42.0



Name of the Germplasm	Days to 50% Flowering	Days to maturity	Pl. Ht.(cm)	Head dia.(cm)	Seed yield(g/pl)	100 seed wt.(g)	Seed Filling %	Kernel wt(g)	Husk Wt(g)	Hull content (%)	Vol. Wt. (g/100cc)
GMU1147	66	99	125.1	11.9	15	7.05	33	4.73	2.32	32.9	40.2
GMU-1119	66	99	128.9	14.5	16	5.31	80	3.14	2.27	42.83	41.2
GMU-1147-4-2	72	105	140.1	15.35	30	6.36	79	3.84	2.52	40.1	42.6
GMU-1099	68	101	135.6	14.7	14	3.61	96	2.50	1.10	30.6	42.4
<b>Mean</b>	67.90	98.92	113.82	13.45	16.70	6.42	75.0	4.16	2.25	35.1	41.37
<b>Range</b>	61-75	93-107	76.1-163.8	7.1-21.5	6.2-40	3.61-10.16	25-96	1.28-6.58	0.89-4.43	25.1-60.2	23.4-51.5

➤ **Table:G-1A**

Name of the Germplasm	Days to 50% flowering	Days to maturity	Pl. Ht.(cm)	Head dia.(cm)	Seed yield(g/pl)	100 seed wt.(g)	Seed Filling %	Kernel wt(g)	Husk Wt(g)	Hull cont. (%)	Vol. Wt. (g/100cc)
AKSFI-7	62	94	124.6	15.2	25	7.26	68	3.42	3.84	52.90	41.1
AKSFI-52-1	65	97	110.6	13.6	35	6.75	85	4.52	2.23	33.04	39.2
AKSFI-52-4	67	100	129.8	14.3	21	6.66	73	4.05	2.61	39.19	44.5
AKSFI-58-3	64	96	125.0	14.6	22	6.46	67	4.75	1.71	26.47	48.6
AKSFI-71	73	105	170.6	18.6	32	5.57	81	3.37	2.21	39.60	40.6
AKSFI-186	69	102	106.8	16.6	21	9.15	66	6.42	2.73	29.84	38.1
AKSFI-190	66	98	141.6	15.2	24	5.78	65	3.94	1.84	31.84	41.0
AKSFI-197	66	98	102.1	15.3	25	4.79	80	2.94	1.85	38.62	38.1
<b>Mean</b>	<b>66.5</b>	<b>98.75</b>	<b>126.38</b>	<b>15.42</b>	<b>25.62</b>	<b>6.55</b>	<b>73.1</b>	<b>4.18</b>	<b>2.37</b>	<b>36.44</b>	<b>41.4</b>
<b>Range</b>	<b>62-73</b>	<b>94-105</b>	<b>102.0-129.8</b>	<b>14.6-18.6</b>	<b>10-50</b>	<b>4.8-9.1</b>	<b>66-94</b>	<b>2.92-6.42</b>	<b>1.71-3.84</b>	<b>26.5-52.90</b>	<b>38.1-48.6</b>

➤ **Table: G-1B**

Name of the Germplasm	Days to 50% flowering	Days to maturity	Pl. Ht.(cm)	Head dia.(cm)	Seed yield(g/pl)	100 seed wt.(g)	Seed Filling %	Kernel wt(g)	Husk Wt(g)	Hull content (%)	Vol. Wt. (g/100cc)
ID-5022	71	102	88.0	15.39	22.0	7.62	83	5.07	2.55	33.47	48.4
ID-63	70	102	110	16.6	20.0	3.75	67	2.50	1.25	33.34	43.1
ID-4036	71	103	130.5	16.35	22.0	8.53	52	5.51	3.02	35.41	44.1
ID-60	70	103	102.0	16.2	20.0	4.89	73	3.51	1.38	28.23	42.8
<b>Mean</b>	<b>70.5</b>	<b>102.5</b>	<b>107.62</b>	<b>16.135</b>	<b>21.00</b>	<b>6.19</b>	<b>68.7</b>	<b>4.147</b>	<b>2.05</b>	<b>32.61</b>	<b>44.6</b>

➤ **Table: G-1C**

Name of the Germplasm	Days to 50% Flowering	Days to maturity	Pl. Ht.(cm)	Head dia.(cm)	Seed yield(g/pl)	100 seed wt.(g)	Seed Filling %	Kernel wt(g)	Husk Wt(g)	Hull content (%)	Vol. Wt. (g/100cc)
GP R-1-1	66	98	97.4	9.3	16.0	4.52	78	2.95	1.55	34.45	40.1
GP-5082	69	101	132.7	16.5	21.0	4.75	82	3.45	1.30	27.37	43.0
GP-113	70	100	73.9	11.2	10.0	5.45	51	3.94	1.51	27.70	33.6
GP-39	74	105	92.7	12.6	14.0	5.38	56	3.61	1.77	32.90	38.2
GP-450	60	92	91.5	11.3	14.0	6.90	57	4.50	2.40	34.78	42.8
GP-475	74	105	122.8	11.5	22.0	7.84	72	5.55	2.29	29.21	39.8
GP-1019	72	103	126	12.6	10.0	4.52	53	2.92	1.60	35.40	36.4
GNPL-109	70	101	99.6	14.6	35.0	5.26	80	3.64	1.62	30.79	44.1
<b>Mean</b>	<b>69.37</b>	<b>100.62</b>	<b>104.5</b>	<b>12.45</b>	<b>17.75</b>	<b>5.57</b>	<b>66.12</b>	<b>3.82</b>	<b>1.75</b>	<b>69.37</b>	<b>100.62</b>
<b>Range</b>	<b>66-74</b>	<b>92-105</b>	<b>73.9-132.7</b>	<b>9.3-12.6</b>	<b>10.0-35.0</b>	<b>4.5-7.84</b>	<b>51-82</b>	<b>2.92-3.94</b>	<b>1.55-2.40</b>	<b>27.37-34.78</b>	<b>33.6-44.1</b>

➤ **Table: G-2A Performance of the Inbred lines of Sunflower (Sowing at Middle of January:2016)**

Name of the Germplasm	Days to 50% flowering	Days to maturity	Pl. Ht.(cm)	Head dia.(cm)	Seed yield(g/pl)	100 seed wt.(g)	Seed Filling %	Kernel wt(g)	Husk Wt(g)	Hull content (%)	Vol. Wt. (g/100cc)
<b>GMU-301</b>	68	102	156.0	17.3	20	3.99	51	2.85	1.56	35.37	44.0
<b>GMU-342</b>	65	96	148.0	14.8	18	5.66	60	3.24	2.33	41.83	41.8
<b>GMU-444</b>	68	101	102.9	14.5	31	5.39	76	3.36	1.82	35.14	42.0
<b>GMU-1034</b>	68	100	139.0	12.1	23	5.37	78	3.11	2.07	39.96	41.2
<b>DRSF-108</b>	68	100	156.4	13.2	32	7.61	82	5.22	2.40	31.50	43.0
<b>DRSF-113</b>	67	98	146.1	17.2	28.0	7.43	85	4.82	2.91	37.64	44.5

➤ **Table:G-2B**

Name of the Germplasm	Days to 50% flowering	Days to maturity	Pl. Ht.(cm)	Head dia.(cm)	Seed yield(g/pl)	100 seed wt.(g)	Seed Filling %	Kernel wt(g)	Husk Wt(g)	Hull content (%)	Vol. Wt. (g/100cc)
<b>IB-06</b>	68	100	145.2	15.6	19.0	5.41	69	2.75	1.80	39.57	45.1
<b>IB-07</b>	71	103	144.0	11.0	24.0	3.39	76	2.72	1.24	31.32	43.3
<b>IB-09</b>	66	98	145.0	15.9	20.0	3.90	70	2.22	1.85	45.46	45.0
<b>IB-61</b>	68	100	108.1	13.9	30.0	4.17	89	2.81	1.26	30.96	38.2
<b>IB-62</b>	62	93	152.8	13.4	14.0	3.47	60	2.72	1.31	32.51	41.2
<b>Mean</b>	67.1	98.8	139.02	13.96	21.4	4.068	72.8	2.644	1.492	35.96	42.56
<b>Range</b>	<b>62-71</b>	<b>93-103</b>	<b>102-157.8</b>	<b>11.0-17.3</b>	<b>14-30</b>	<b>3.39-5.4</b>	<b>41-90</b>	<b>2.22-5.22</b>	<b>0.96-2.40</b>	<b>27.1-48.95</b>	<b>33.8-45.5</b>

- 
- During *rabi* 2015-16, five IB accessions of sunflower were received from **Indian Institute of Oilseed Research, Hyderabad**. Good variation were observed among all the seven accessions in respect to seed yield per plant and other yield attributing traits. Out of five lines, only two accessions, IB 61(30g/plant) and IB-07 (24g/plant) exhibited more than 24 g seed yield per plant and days to harvestable maturity varies from 93 to 103 days. Only in two accessions , IB-06 and IB-61 observed 1000 seed weight more than 4.0 g .
- During *rabi* 2015-16, this centre has evaluated a total of 13 CMS lines with their corresponding maintainers, 20 R lines, 33 GMUs lines,7 ID lines,6 population,10 GP/GNPL lines and 8 AKSFI lines and 5 exotic collections for seed yield/plant (g) and other yield attributing parameters. The very good genetic variations in respect to seed yield and other yield contributing traits is exhibited among the lines.

➤ **Table:G-2C**

Germplasm	Total Collection
CMS Lines	13
Restorer Lines	20
Population	6
<b>Inbred Lines</b>	<b>60</b>
1.GMU Lines	33
2.GP/GNPL Lines	10
3. ID Lines	07
4. AKSFI lines	08
5. Exotic lines	05

- **Sunflower Breeding lines (CMS-A & B and Restorer lines):**
- During *rabi-summer* 2015-16 about **136 new single experimental hybrids** were being developed utilizing 12 CMS lines (CMS-2A,CMS-10A,CMS-234A,CMS-343A,CMS-17A,DSF-2A,CMS-16A, CMS-249A, Pet-2-7-1A, Pet-89-1A,CMS-150A,CMS-107A,CMS-108A,CMS-115A,CMS-302A,CMS-207A,CMS-850A,CMS-851A,CMS-852A, CMS-853A ) and 17 Restorer lines for further testing during next year **2016-17**.Similarly the promising hybrids advanced from single cross hybrid trial to station hybrid trial were also multiplied and evaluated for different yield attributing traits for the next year(2016-17) in *rabi-summer season*.

- Ten CMS lines along with their respective maintainer (B) lines were advanced by paired row crossing as well as by **sib mating (in case of B lines only) during rabi-summer,2015-16**.  
Twenty restorer lines were maintained by selfing as well as by sib mating.

➤ **Table: G-2D**

<b>CMS lines: (16)</b>	CMS-17A,234A,343A, 207A,302A, 821A, 852A,853A, 207A,335A,249A,DSMS-16A,DSF-CMS-2A,CMS-10A,CMS-150A&CMS-335A.
<b>R Lines(20)</b>	R-35,R-83,R-101,R-102,R-103,R-104, R-105,R-107,R-272,R-273,NDLR-6D-1, RHA-6D-1,RHA-1-1, AK-345,LOC-6143,CSFI-5294,NW-31,R-12-96,R-341.

➤ **Table: G-3. Performance of the Inbred lines of Sunflower at Nimpith-2015-2016.**

Sl. No.	Name of the Germplasm/ R line	Pl. Ht. (cm)	Head Dia. (cm)	Days to Maturity	Seed yield/pl (g)	Hull cont. (%)	Grain Filling %	100 Seed Wt(g)
1.	LOC-6143	125	12.6	90	<b>16.0</b>	29.9	85	6.30
2.	R-101	108	10.3	93	<b>13.2</b>	25.9	85	4.36
3.	R-102	113	9.5	99	<b>17.0</b>	32.4	77	6.99
4.	R-103	102	9.7	91	<b>14.2</b>	28.7	89	6.99
5.	R-104	112	11.2	102	<b>14.0</b>	29.8	98	4.29
6.	R-105	102	10.6	102	<b>14.5</b>	28.2	97	6.56
7.	R-107	117	11.5	98	<b>12.0</b>	25.5	98	3.82
8.	NW-31	121	12.3	96	<b>16.5</b>	27.6	78	5.95
9.	35-R	126	12.7	92	<b>20.1</b>	29.7	82	5.5
10.	83-R	89	10.3	97	<b>18.2</b>	39.8	98	4.84
11.	RHA 1-1	107	10.2	102	<b>17.5</b>	33.3	85	5.1
12.	272 R	116	10.1	92	<b>21.0</b>	29.3	77	6.37
13.	273 R	109	11.2	101	<b>18.6</b>	24.9	78	5.59
14.	CSFI-5294	135	12.9	92	<b>21.0</b>	32.8	84	4.13
15.	AK-345	130	12.5	100	<b>12.3</b>	22.5	94	6.09
16.	NDLR -6D - 1	125	12.3	93	<b>16.2</b>	30.2	95	7.49
17.	DOR-12-96	108	11.2	95	<b>16.2</b>	34.8	88	3.96
18.	DOR-R3	92	9.2	97	<b>15.4</b>	33.8	92	4.2
19.	J-6	107	10.3	94	<b>17.5</b>	24.9	92	6.83
20.	RHA-95C-1	124	9.5	98	<b>14.6</b>	33.3	95	3.91
21.	RHA-138-2	85	9.1	85	<b>15.0</b>	32.0	96	4.12
	<b>Mean</b>	<b>63.1</b>	<b>100.4</b>	<b>9.5</b>	<b>93.1</b>	<b>85.5</b>	<b>15.6</b>	<b>42.3</b>
	<b>Range</b>	<b>59-66</b>	<b>87-130</b>	<b>8.5-12.1</b>	<b>89-96</b>	<b>82-90</b>	<b>12.4-17.0</b>	<b>38-50</b>

- **During Rabi-summer 2015-16, 20 new germplasm** lines were received from Indian Institute of oilseed Research, Hyderabad and these lines were evaluated and maintained by sib mating. These lines exhibited a wide range of variability for different yield attributing traits such as days to 50% flowering, days to maturity, plant height(cm),100-seed weight(g) and seed yield per plant(g).List of selected promising genotypes for different agronomic traits are given in **Table G-1A**.
- All these newly received lines showed less than 30 g seed yield /plant except very few lines namely GMU-389(32g),GMU-1174-4-2(30g),GMU1034(30g),GNPL-10(35g),AKSFI-52-1(35g)

and AKSFI-71(32g). The lines comes to 50% flowering in 58-78 days. Details of promising lines for some agronomic traits are given in **Table:G-1A**.

- **These lines will be further evaluated in *rabi-summer* in 2016-17 in breeding programme.**
- **Table:G-4. Evaluation of new inbred lines received from DOR for Yield and it's attributing traits(Nimpith,2015-16).**
- **During *rabi* 2015-16, thirty seven exotic accessions and other inbred lines were evaluated at Nimpith in *rabi-summer* season. Good variation were observed among all the thirty five accessions in respect to seed yield per plant and other yield attributing traits. Out of thirty five lines, only few accessions exhibited more than **15 g seed yield per plant**. Days to harvestable maturity varies from **81 to 105 days**. Only **ten accessions show 1000 seed weight more than 5.0 g**. Most of the exotic accessions are multi-headed and they are utilized in breeding purpose for searching of new restorer lines.**
- **Table: G-4. Evaluation of exotic collections and other inbred lines for yield and it's attributing traits received from DOR at Nimpith Centre in the year 2015-16.**

Sl. No.	Name of the Germplasm/ Inbred line	Pl. Ht. (cm)	Head Dia. (cm)	Days to Maturity	Seed yield/pl (g)	Hull cont. (%)	Grain Filling %	100 Seed Wt(g)
1	EC-623025	126	10.7	98	15.2	31.9	76	5.36
2	EC-601951	85	8.1	95	12.6	24.1	78	4.09
3	EC-601921	92	8.8	.98	13.8	30.6	76	3.46
4	EC-623016	118	11.2	96	16.1	26.3	66	6.31
5	EC-601939	106	9.4	102	14.2	35.0	68	2.81
6	EC-601776	86	8.8	93	16.0	31.7	72	3.46
7.	EC-601718	92	9.2	92	18.0	32.5	71	4.45
8.	EC-601826	102	10.1	94	18.6	34.9	62	4.62
9.	EC-512682	88	8.9	90	15.8	26.8	68	3.65
10	EC-623016	117	10.8	86	14.0	36.7	67	4.45
11	EC-623072	96	9.2	90	20.0	32.5	62	6.49
12	EC-601725	95	9.1	87	16.0	32.9	67	4.31
13.	Ec-601901	102	9.7	92	25.0	28.0	60	3.62
14	Ec-623021	98	8.6	89	18.5	34.1	65	4.90
15	Ec-601819	94	9.1	86	15.6	35.4	74	5.34
16	EC-601901	89	8.5	83	15.8	38.3	71	5.09
17	EC-512687	92	8.7	84	17.2	29.9	65	3.16
18	EC-602060	108	10.2	94	17.0	32.5	66	5.64
19	EC-623015	102	9.4	82	17.5	31.4	71	4.95
20	EC-601905	105	10.2	83	20.0	28.1	64	4.42
21	EC-601729	104	10.2	85	17.4	27.3	74	3.66
22	EC-601718	92	9.2	88	18.0	32.2	62	4.38
23	EC-512684	90	8.8	91	26.2	30.8	65	4.50
24	EC-601764	112	10.7	90	15.6	33.4	67	4.26

25	<b>EC-623025</b>	102	10.5	90	<b>15.0</b>	30.9	67	3.50
26	<b>EC-608220</b>	118	11.2	88	<b>18.0</b>	31.7	74	4.18
27	<b>Pesco-64</b>	132	12.8	105	<b>23.5</b>	28.6	64	4.778
28	<b>PESCO-680</b>	124	11.2	102	<b>20.0</b>	28.3	64	5.60
29	<b>CSFI-5133</b>	125	12.4	102	<b>21.6</b>	27.6	58	5.86
30	<b>R-104</b>	111	10.5	85	<b>18.0</b>	27.2	62	4.88
31	<b>RHA-95C-1</b>	123	11.2	95	<b>19.2</b>	26.1	65	3.75
32	<b>R-12-96</b>	110	11.2	92	<b>20.2</b>	36.6	72	3.75
33	<b>RHA-1-1</b>	95	9.2	97	<b>20.0</b>	35.1	62	5.63
34	<b>R-101</b>	106	10.2	82	<b>20.6</b>	36.4	71	7.22
35	<b>RHA-6D-1</b>	102	9.1	81	<b>15.4</b>	27.6	69	3.63
36	<b>PESCO-996</b>	129	12.4	95	<b>25.2</b>	39.3	66	6.35
37	<b>AK-345</b>	127	11.2	98	<b>19.4</b>	41.6	60	3.85
	<b>Range</b>	<b>92-126</b>	<b>8.1-12.8</b>	<b>81-105</b>	<b>12.6-26.2</b>	<b>24.1-36.7</b>	<b>58-78</b>	<b>2.81-6.49</b>
	<b>G. Mean</b>	<b>105.3</b>	<b>10.0</b>	<b>88.7</b>	<b>18.1</b>	<b>31.7</b>	<b>67.3</b>	<b>4.6</b>

#### **Sunflower Breeding: Heterosis Breeding :**

During *rabi-summer* 2014-15 and in **Off-season 2015**, about **one hundred thirty** new **single cross** experimental **sunflower hybrids** were being developed utilizing **15 CMS** lines(CMS-234A,CMS-343A,CMS-17A,DSF-2A,CMS-16A,CMS-249A,CMS-207A,PET-2-7-1A,PET-89-A, CMS-150A,CMS-853A,CMS-850A,CMS-821A and CMS-852A) and 30 Restorer lines for further testing during next year 2016-17. Similarly the promising hybrids advanced from single cross hybrid trial to station hybrid trial were also multiplied and evaluated for different yield attributing traits for the next year (2016-17) in *rabi-summer*. **These hybrids will be evaluated in the for their sterility/fertility reaction behavior on the forthcoming *rabi-summer* season.**

**Evaluation of new single cross sunflower hybrids: A total of one hundred twelve newly synthesized hybrids were evaluated in two Station hybrid trial (station hybrid trial 1&2). In addition to this a total of 27 hybrids were evaluated in multilocation trial in two locations Viz. Nimpith and Radhakantaapur. The performance of these hybrids in different trials conducted during *rabi-summer* season 2015-16 is presented below (Table: 1).**

**Multilocation trial with promising sunflower hybrids (MLT-1) (Advanced evaluation trial of sunflower hybrids (Station Hybrid Trial-1):** A total of 30 sunflower hybrids along with the three national check hybrids, KBSH-44, KBSH-53 and DRSH-1 were evaluated during *rabi* season, 2015-16 at AICRP on Sunflower(ICAR-IIOR), Nimpith centre and Radhakantapur (RAKVK adopted village, Block-Mathurapur, Dist –South-24PGS). The field studies



revealed that the best cross combination for semi-dwarf plant height coupled with good seed yield per plant and high oil content were observed in **P-852 A X RHA-138-2 & P-2-7-1A XRHA-138-2(1760kg/ha) followed by P-89-1A X RHA-1-1(1720kgha), P-2-7-1A X RHA-6D-1(1690kgha) respectively** in comparison with the best national check hybrids KBSH-44, KBSH-53 and DRSH-1 which seed yield were recorded 1706kg/ha, 1686kg/ha and 1572 kg/ha respectively. All the above new sunflower hybrids were matured within 100 days. The disease incidence were less in comparison with the best national check hybrids i.e. KBSH-44, KBSH-53 and DRSH-1. The seed yield of other two sunflower hybrids namely ARM-249A X RHA-1-1 and CMS-343A X RHA-6D-1 also recorded 1720kg/ha and 1852 kg/ha respectively but both of the hybrids were took 100-115 days for maturity. CMS-852 A X RHA-138-2 & P-2-7-1A X RHA-138-2, P-89-1A X RHA-1-1 and P-2-7-1A X RHA-6D-1 will be tested very next year in various location of West Bengal for studying their stability of their performance over the environment.

**Table-1: Multilocation trial with promising Sunflower Hybrids (MLT-1)**

SL. No	Hybrid Combination	Pl.Ht (cm)	HD. Dia. (cm)	Days to 50% flow.	Seed Yield (Kg/ha)	Gr. Filling %	100 S.W. (g)	100 Kernel Wt.(g)	Hull Cont.(%)	Vol. Wt (g/100cc)	Oil %
1	<b>852 AX RHA-138-2</b>	153.5	13.9	70.0	<b>1760</b>	89.5	4.7	3.2	30	39.6	37.6
2	<b>PET-2-7-1A X RHA-138-2</b>	<b>156.5</b>	<b>15.6</b>	<b>70.0</b>	<b>1760</b>	<b>92.0</b>	<b>6.12</b>	<b>4.6</b>	25	<b>40.0</b>	38.2*
3	<b>ARM-249A X RHA-1-1</b>	150.9	11.9	75.5	<b>1721</b>	90.7	6.0	4.0	33	41.5	35.1
4	<b>PET-2-7-1A X RHA-6D-1</b>	<b>137</b>	<b>12.8</b>	<b>70.0</b>	<b>1690</b>	<b>92.0</b>	<b>4.8</b>	<b>3.4</b>	29	<b>39.1</b>	<b>38.6</b>
5	<b>PET-89-1A X RHA-1-1</b>	<b>139</b>	<b>14.3</b>	<b>67.5</b>	<b>1648</b>	91.0	5.4	4.7	31	40.5	37.2
6	343A XRHA-6D-1	193.0	15.0	82.0	<b>1852</b>	91.5	6.0	4.3	28	44.1	36.8
7	<b>302 AX EC-623029</b>	<b>163.8</b>	<b>13.4</b>	<b>70.0</b>	<b>1660</b>	<b>94.0</b>	<b>6.2</b>	<b>4.4</b>	29	<b>41.6</b>	<b>37.8</b>
8	17A X RHA-341	166.7	11.9	72.0	<b>1562</b>	91.3	5.3	3.5	36	40.2	36.5
9	150A XRHA-138-2	149.3	13.2	66.5	<b>1421</b>	92.0	5.0	3.6	28	39.8	38.4
10	PET-89-1A XR-341	150.7	11.5	70.5	<b>1470</b>	92.5	4.4	3.3	30	40.8	37.9
11	PET-2-7-1A XLOC-6143	136.5	12.8	72.0	<b>1465</b>	89.0	6.6	4.6	30	40.1	36.8
12	234 AX	157.	12.2	<b>65.5</b>	<b>1404</b>	<b>88.7</b>	<b>5.1</b>	<b>3.4</b>	33	<b>39.7</b>	<b>38.5</b>

	LOC-6143	0									
13	150A XRHA-1-1	<b>146</b>	<b>13.6</b>	<b>63.0</b>	<b>1412</b>	<b>92.0</b>	<b>4.4</b>	<b>3.5</b>	39	<b>38.1</b>	<b>37.2</b>
14	<b>10A XRHA-1-1</b>	<b>152</b>	<b>12.4</b>	<b>66.5</b>	<b>1512</b>	<b>93.0</b>	<b>5.62</b>	<b>3.9</b>	31	<b>38.5</b>	<b>36.4</b>
15.	234 A x Nw-31	155.5	11.2	62.5	<b>1401</b>	86.7	5.2	3.7	29	41.0	36.8
16.	<b>PET-2-7-1 AX R-630</b>	130.0	11.2	64.0	<b>1430</b>	92.0	5.1	3.4	31	36.5	37.8
17	2A XR-12-96	173.0	14	67.5	<b>1343</b>	92.0	5.0	3.5	30	41.5	35.2
18.	234A XAK-345	163.5	11.2	61.5	<b>1349</b>	90.7	6.4	4.3	33	41.7	37.0
19.	234A x R272	145.8	12.4	62.5	<b>1113</b>	89.0	4.9	3.5	43	38.8	37.8
20.	234A X R-12-96	174.3	12.0	68.5	<b>1206</b>	92.0	5.5	3.8	29	39.2	36.2
21.	234A X R-35	173.8	12.9	65.0	<b>1016</b>	93.0	5.2	3.5	31	40.9	36.2
22.	234AX R-630	156.0	12.0	68.0	<b>1270</b>	91.0	4.4	3.1	32	38.2	37.5
23.	17A X R-104	143.3	10.3	69.5	<b>1144</b>	91.3	5.2	3.3	37	40.0	35.2
24.	17A X RHA-6D-1	170.5	12.5	78.0	<b>1491</b>	90.0	4.9	3.1	37	40.3	35.8
25.	17A X R-272	156.3	12.0	74.5	<b>1263</b>	92.3	5.0	3.2	36	39.0	36.2
26.	2A XR-107	144.5	12.1	64.5	<b>1129</b>	91.7	4.7	3.2	34	40.7	34.1
27.	2A XR-35	144.5	12.2	66.5	<b>1192</b>	90.0	5.2	3.6	31	38.2	36.2
28.	KBSH-53	190.6	14.0	82.5	<b>1686</b>	88.7	4.9	3.3	31	41.2	35.2
29.	DRSH-1	179.3	11.2	78.5	<b>1572</b>	92.3	5.75	3.6	24	40.8	38.6
30.	KBSH-44	180.5	13.4	<b>84.5</b>	<b>1706</b>	<b>89.0</b>	<b>5.36</b>	<b>3.28</b>	40	<b>39.5</b>	<b>31.2</b>
	<b>CD(P=0.05)</b>				<b>122.6</b>						
	<b>CV(%)</b>				<b>9.4</b>						

**Station Hybrid Trial 1: (Preliminary evaluation of new single cross hybrids) :** A total of 50 sunflower hybrids along with the two national check hybrids, KBSH-53 and DRSH-1 were. Positive heterosis were observed in most of the traits except hull content (%).

The field data reveals that the highest seed yielder sunflower hybrids in this trial were, 852 A x RHA—1-1 (2290kg seed yield/ha),343A x R-341(2264kg seed yield /ha), 853A x NW-31(2083kg seed yield/ha),CMS-207A XR-12-96(1925 kg seed yield /ha),CMS-150 X RHA-1-1(seed yield 1886Kg/ha),853A XRHA-1-1(seed yield 1856kg /ha), 853A XEC-512684(1844kg seed yield/ha),

853A XEC-601939(1756kg seed yield/ha) respectively in comparison to the check hybrids KBSH-53 (seed yield 1728 kg/ha),DRSH-1(1622 kg seed yield/ha) and KBSH-41(1544 kg seed yield/ha) respectively. From this trial it also observed that **CMS-853A & CMS-150A** and were observed **good general combiner for seed yield and CMS-234A for early maturity and semi-dwarf plant height**. The above mentioned sunflower hybrids are recommended to be tested in Multilocation trial in various Agro-climatic Zones of West Bengal for identification of the better sunflower hybrids in future.

**Table-2: Station Hybrid Trial 1: (Preliminary evaluation of new single cross hybrids):**

SL. No	Hybrid Combination	Pl.Ht(cm)	Hd. Dia (cm)	Days to 50% Flow.	Seed Yield	Gr. Filling %	100 S. W(g)	Kernel Wt.(g)	Hull Cont. (%)	Vol. Wt (g/100cc)
1**	<b>852AXRHA-1-1</b>	189	16.4	70.5	<b>2290</b>	89.0	5.7	4.0	29.8	42.5
2.	<b>343 A X R-341</b>	193	15.7	76.0	<b>2264</b>	87.5	5.9	4.4	25.4	45.5
3	<b>207A X R-272</b>	182	15.6	73.5	<b>2083</b>	94.0	4.7	6.4	38.3	40.8
4.	853A X EC-601968	145	13.0	70.5	<b>1760</b>	92.5	3.2	2.0	37.5	38.3
5	853 A X RHA-1-1	183	15.3	71.5	<b>1856</b>	87.0	5.28	3.71	29.7	41.0
6	343 AX-601725	216	15.2	78.5	<b>1656</b>	89.0	5.4	3.7	31.5	42.3
7.	343 AX R-107	188	16.4	78.5	<b>1767</b>	89.0	4.7	3.3	30.0	47.0
8	343 AX AK-345	194	15.1	77.5	<b>1742</b>	91.5	4.4	2.4	45.5	44.0
9	150A X RHA-1-1	157	16.4	71.5	<b>1886</b>	91.5	5.4	3.9	27.8	38.0
10.	150A XEC-613011	144	14.0	68.5	<b>1556</b>	89	4.66	3.25	30.5	38.0
11	207AX EC-601725	167	15.7	73.0	<b>1478</b>	93.0	3.18	2.12	33.0	34.0
12	207AX EC-601958	143	16.0	72.0	<b>1528</b>	95.0	3.83	2.40	37.3	34.5
13	150 A xEC-608220	170	16.1	70.0	<b>1600</b>	89.0	4.95	3.63	26.7	40.0
14	853AX R-35	195	13.5	73.5	<b>1689</b>	95.5	4.8	3.2	33.3	39.5
15	150 A XEC-601812	140	11.3	71.0	<b>1656</b>	93.5	5.2	3.6	30.8	41.6
16	150A XEC-601768	154	16.0	70.0	<b>1642</b>	92.5	5.5	4.0	27.3	42.5
17	150A XEC-603011	150	15.2	71.0	<b>1556</b>	96	4.32	2.88	34.0	35.5
18	853AX EC-623028	170	13.2	73.5	<b>1562</b>	90.5	4.7	3.5	25.5	40.0
19	853AXEC-	158	12.8	70.0	<b>1422</b>	90.5	4.3	3.0	27.9	35.0

	601725									
20	853A X R-12-96	154	14.5	71.0	<b>1722</b>	89.0	5.42	3.98	26.4	46.0
21	853AXEC-512682	141	13.5	66.0	<b>1844</b>	95.0	2.10	2.94	40.0	30.5
22	853AX XEC-601939	178	13.5	71.0	<b>1756</b>	91.5	3.565	2.57	26.9	38
23	<b>207A X R-12-96</b>	161	14.9	73.0	<b>1925</b>	85.0	4.1	2.4	41.5	40.0
24	207AX XEC-601768	149	14.5	66.0	<b>1334</b>	90.0	4.06	2.44	39.9	35.5
25	150 A x EC-623021	148	14.7	65.0	<b>1267</b>	93.0	4.02	2.95	26.6	38.0
26	150A X EC-601901	158	14.2	66.0	<b>1384</b>	85.5	5.5	3.6	32.7	41.5
27	150A XEC 623020	124	12.9	64.0	<b>1250</b>	91.5	4.5	3.2	28.9	38.8

SL. No.	Hybrid Combination	Pl.Ht(cm)	Hd. Dia. (cm)	Days to 50% Flow.	Seed Yield (kg/ha)	Gr. Filling %	100 S.W (g)	100 Kern el Wt.(g)	Hull Cont (%)	Vol. Wt. (g100cc)
28	150A X EC-608220	159	15.1	64.0	<b>1390</b>	93.0	4.53	3.04	32.9	39.0
29.	150A X EC-601939	150	14.7	64.0	<b>1361</b>	93.0	5.3	3.8	26.4	39.5
30.	343 AX EC-623028	172	14.1	72.0	<b>1710</b>	95.0	5.3	3.5	34.0	41.3
31	17A X R-35	198	14.0	74.5	<b>1678</b>	94.0	6.14	3.57	40.9	42.0
32	10A XEC-601939	183	14.7	72.5	<b>1517</b>	93.0	5.47	3.60	34.2	40.0
33	853A XEC-601725	173	14.8	73.0	<b>1622</b>	91	4.87	3.64	25.7	45.0
34	343 AXR-101	208	14.5	82.0	<b>1621</b>	91.0	6.0	4.0	31.7	44.8
35	343 AXR-107	171	15.6	80.0	<b>1661</b>	91.0	6.0	4.0	31.7	44.8
35.	234AX R-107	156	13.2	67.0	<b>1475</b>	86.5	5.2	3.2	38.5	43.8
36.	150A X EC613011	148	14.7	67.0	<b>1433</b>	92.0	5.1	2.9	42.4	45.0
37.	234A XRHA-341	159	14.6	67.0	<b>1656</b>	89.0	4.7	3.3	29.8	38.0
38.	<b>234A XEC-601725</b>	167	13.7	64.0	<b>1528</b>	88.0	3.5	2.14	38.9	40.0
39.	234A X LOC-6143	154	13.0	63.0	<b>1367</b>	89.0	2.5	1.38	44.0	42.0
40.	234A X AK-345	169	13.3	62.0	<b>1281</b>	92.0	3.7	2.5	32.4	42.5
41.	234A XEC-601901	188	14.6	68.0	<b>1342</b>	87.5	3.3	2.3	30.3	42.5
42.	234A X EC-623011	180	14.5	68.0	<b>1364</b>	93.0	5.9	3.8	33.9	44.0
43.	234A XEC-601937	172	14.5	70.0	<b>1528</b>	92.0	8.0	5.5	31.3	44.5
44	234A X R-101	173	13.5	64.0	<b>1200</b>	89.0	3.3	2.20	32.7	39.0
45.	234A X R-12-96	177	13.8	68.0	<b>1250</b>	88.0	5.5	3.1	40.0	42.8

46.	17A XR-630	181	14.1	78.0	<b>1792</b>	88.5	5.0	2.8	42.0	44.0
47	17A X R-104	175	13.2	76.0	<b>1678</b>	95	4.8	2.86	40.2	48.0
48	DRSH-1(Ch-1)	<b>180</b>	<b>14.4</b>	80.0	<b>1622</b>	91	5.1	3.14	39.2	45.0
49	KBSH-41(Ch-2)	<b>177</b>	<b>13.0</b>	<b>73.0</b>	<b>1544</b>	<b>89.0</b>	<b>4.7</b>	<b>3.0</b>	31.9	<b>41.5</b>
50	KBSH-53(Ch-3)	<b>192</b>	<b>14.0</b>	84.0	<b>1728</b>	88.7	4.0	2.9	37.5	39.6
	<b>CD(P=0.05)</b>				<b>132.6</b>					
	<b>CV(%)</b>				<b>8.7</b>					

**Station Hybrid Trial 3: (Preliminary evaluation of new single cross hybrids):** A total of 48 sunflower hybrids (developed at Nimpith Centre) along with the two national check hybrids, KBSH-53 and DRSH-1 were evaluated. **Positive heterosis** was observed in most of the traits. The field data reveals that the highest seed yielder sunflower hybrids in this trial were, **P-2-7-1a X EC-623011** (1800kg seed yield/ha), **P-2-7-1A x EC-601968 & 343A X R-101**(1780kg seed yield /ha), **P-89-1A X RHA-1-1** (1760 kg seed yield/ha), **249A X EC-601939** (1760 kg seed yield/ha), **CMS-16A X EC-603011** (1740 kg seed yield /ha), respectively in comparison to the check hybrids **KBSH-53** (seed yield 1756 kg/ha), **DRSH-1**(1687 kg seed yield/ha) and **KBSH-41**(1620 kg seed yield/ha) respectively. Considering the different other yield attributing parameters like **plant height, days to 50% flowering or days to maturity** the above mentioned **sunflower hybrids** were observed the **best performing hybrids** due to their **7-10 days early maturity** and **15-25 cm less plant height at harvest**.

In this experiment /trial it also observed that **Pet-2-7-1A, PET-89-1A & CMS-302A** were observed good general combiner for seed yield and **CMS-16A** for early maturity and semi-dwarf plant height. The above mentioned sunflower hybrids are recommended to be tested in **Multilocation trial** in various **Agro-climatic Zones** of West Bengal for identification of the better sunflower hybrids in future.

**Advanced evaluation trial of sunflower hybrids (Station Hybrid Trial-4):** The trial was carried out during *rabi* season, 2015-16 at AICRP on Sunflower(ICAR-IIOR), Nimpith centre with 26 sunflower hybrids (were created using 7 CMS and 9 restorer lines). **Five parents, CMS-853 A & CMS-852A, EC-601971, EC-623023 and EC-601725** had significant positive *gca* effect for seed yield and some other yield components like head diameter, 100 seed weight and volume weight (g/100cc). Heterosis studies revealed that the best cross combination for semi-dwarf plant height coupled with good seed yield per plant and high oil content were observed in **P-89-1A X EC-601751**(100days maturity and seed yield 2450kg /ha) and **CMS-10A X EC-601725**(100days

maturity and seed yield 2280kg /ha ) respectively. The best specific combinations for seed yield were CMS-852 AX RHA-138-2 (2680 kg/ha,107 days maturity) followed by CMS-853 AX EC-623027 ( seed yield 2672kg/ha and 105 days maturity), CMS-853 AX EC-623023 (2536kg/ha and 105 days maturity) respectively in comparison to the national check hybrids, i.e. KBSH-53 ( seed yield 2212kg/ha and 114 days maturity) and DRSH-1( seed yield 2126kg/ha and 108 days maturity) respectively. It was also observed that the **GCA** was higher for seed yield among the female (CMS) lines in CMS-852A, CMS-853A, PET-89-1A and among the restorers(R)/male lines, EC-601971(mono), EC623023and EC601725respectively.Among the CMS lines for early maturity and semi-dwarfness, the best general combiners were CMS 103A and CMS-10A and the restorer line for the same traits, the best general combiners were EC-601878, EC-601751 and EC-623016 respectively.

- **Positive heterosis** were observed in most of the traits except hull content (%).
- **Two testers viz. EC-601725and Ec-161971**exhibited higher gca effects for most of the traits studied, therefore, these parents can be considered as the good combiners (**table-4**).
- **CMS-852A x RHA-138-2 (seed yield 2680 kg/ha), CMS-853 A x EC-623027 (seed yield 2672kg/ha), CMS-852 A x EC-601971 (seed yield 2583kg/ha), CMS-853 A x EC-623023 (2536kg/ha)** possessed superior **SCA** effects for **seed yield as well as 100 seed weight and volume weight**.
- **CMS-852A, CMS-853A &PET-89-1A and EC-601971(mono), EC623023 & EC601725** were possessed higher **GCA** effects for seed yield.
- For *early maturity and semi-dwarffness*, **CMS 103A and CMS-10A and EC-601878, EC-601751 and EC-623016** were possessed higher **GCA** effects.
- Based on the overall performance of the sunflower hybrids and parents in the AICRP-sunflower, Nimpith centre, it may be concluded that **CMS-852 A x RHA-138-2, CMS-853 A x EC-623027, CMS-852 A x EC-601971 and CMS-853 A x EC-623023** are recommended to be tested in **Multilocation trial** in various Agro-climatic Zones of **West Bengal** for identification of the better sunflower hybrids in future.

**Station Hybrid Trial 5:( Preliminary evaluation of new single cross hybrids (Station Hybrid Trial 5):** A total of 27 sunflower hybrids along with the two national check hybrids, **KBSH-53 and DRSH-1** were evaluated in this trial in a randomized block design with two replications in a plot size of 3.0m x 3.0m. The data collecting from plot size of 2.4 m x 1.8 m. The data pertaining to seed yield and other yield attributing traits for these test hybrids along with the checks are presented in **Table5 & 5A** . Highly significant differences were observed for seed yield and other yield attributing traits among the test hybrids. From the field experiments reveals that the highest **seed**

yielder sunflower hybrids were, **CMS-852A XRHA-138-2 (2860kg/ha)**, **CMS-853AX EC623025-mono (2717kg/ha)**, **853A X EC-601957 mono (2672kg/ha)**, **CMS-853A XEC-623023(145 cm. plant height and 104 days maturity & 2536 kg/ha seed yield)** and **852A X EC-601957 (170 cm. plant height and 105 days maturity & 2514kg/ha seed yield)** in comparison to the check hybrids **KBSH-53(2212 kg/ha seed yield,)** and **DRSH-1(2126kg/ha seed yield)** respectively. **Semi-dwarf with early maturity** sunflower hybrids which are very much required for the coastal saline belts of West Bengal are **PET-2-7-1A X EC601751(145 cm. plant height,98days maturity, 2292 kg/ha)**, **CMS-10 AX EC 601751(154 cm 100days maturity, 2390 kg/ha, 2390kg/ha)** & **PET-89-1A X EC-601751(156 cm. plant height 101days maturity, 2514 kg/ha)** evaluated in this trial in comparison to the best national check hybrids **KBSH-53(192 cm. plant height 115 days maturity 2212 kg /ha seed yield,)** and **DRSH-1(168 cm. plant height 108 days maturity 2116 kg /ha seed yield)** respectively.

**Table: 5A: Best – Sunflower Hybrids(Station hybrid trial-4) at Nimpith-2015-16 (Compiled Mean)**

Sl. No.	Name of the Hybrid	Pl. Ht(cm)	Hd. Dia.(cm)	50% Flow.	Seed Yield(kg/ha)	100 seed wt(g)	Husk Wt.(g)	Gr. Filling %	Vol. Wt (g/cc)
1.	<b>CMS-852A XRHA-138-2</b>	189.0	17.4	77.5	<b>2860</b>	5.0	30.0	90.0	40.0
2.	<b>CMS-853AX EC623025-mono</b>	192.5	16.0	75.5	2717	6.0	30.0	83.5	43.0
3.	<b>853A X EC-601957 mono</b>	194.5	16.4	73.0	2672	6.2	32.3	83.0	42.8
4.	852A X EC-601971	180.0	17.1	76.0	2583	4.6	34.8	83.5	43.2
5.*	<b>CMS-853A XEC-623023</b>	<b>144.0</b>	15.7	74.5	<b>2536</b>	5.0	28.0	82.0	43.7
6.*	<b>852A X EC-601957</b>	<b>170.0</b>	15.8	74.5	<b>2514</b>	4.8	31.3	88.0	41.6
7.	PET-89-1A XEC-601916	191.5	14.7	73.5	2431	4.5	31.1	86.0	45.1
AVG	KBSH-41	<b>158.0</b>	<b>15.2</b>	<b>73.8</b>	<b>2104.7</b>	<b>5.2</b>	<b>32.3</b>	<b>86.5</b>	<b>41.5</b>
AVG	DRSH-1	<b>168.7</b>	<b>15.6</b>	<b>77.0</b>	<b>2126.0</b>	<b>5.8</b>	<b>32.0</b>	<b>85.2</b>	<b>44.2</b>
AVG	KBSH-53	<b>192.5</b>	<b>15.3</b>	<b>84.8</b>	<b>2211.3</b>	<b>4.9</b>	<b>31.1</b>	<b>82.3</b>	<b>43.9</b>
	<b>G. Mean</b>	<b>155.8</b>	<b>15.0</b>	<b>72.4</b>	<b>2067.4</b>	<b>5.2</b>	<b>30.8</b>	<b>85.9</b>	<b>42.8</b>
	<b>C.D.(P=0.05)</b>				<b>142.8</b>				

- **Positive heterosis were observed in most of the traits except hull content (%).**
- Three testers; viz. **CMS-852A, CMS-853A, PET-89-1A** exhibited higher gca effects for most of the traits studied, therefore, these parents can be considered as the good combiners (**table-5**).
- **CMS-852A X RHA-138-2 (2860kg/ha)**, **CMS-853AX EC-623025(mono)** (Seed yield2717kg/ha), **853A X EC-601957( mono)** (Seed yield 2672kg/ha), **CMS-853A X EC-623023(seed yield 2536 kg/ha seed yield)** and **852A X EC-601957** (Seed yield 2514kg/ha seed

yield ) possessed superior SCA effects for seed yield as well as 100 seed weight and volume weight.

- **RHA-138-2, EC601916, EC601971, EC601957 (mono), EC623025(mono), EC623023** were possessed higher **GCA** effects for seed yield. Among the testers, CMS-852A, CMS-853A & PET-89-1A were possessed higher **GCA** effects for seed yield.
- For early maturity and semi-dwarfness, **CMS-150A, CMS-10A, CMS-PET-89-1A** and **EC-601951, EC-601751** were possessed higher **GCA** effects.
- Based on the overall performance of the sunflower hybrids and parents in the AICRP-sunflower, Nimpith centre, it may be concluded **CMS-852A X RHA-138-2; CMS-853A X EC-623025(mono) ; 853A X EC-601957; CMS-853A X EC-623023** and **852A X EC-601957** are require to be tested in Multilocation trial in various Agro-climatic Zones of West Bengal for identification of the better sunflower hybrids in future.

**Table: 5B: Short Duration & Semi Dwarf Plant (100 days Duration and around 150 cm plant height) with good central grain filling and good seed yield.**

Sl. No	Name of the Hybrid	Pl. Ht(cm)	Hd. Dia.(cm)	50% Flow.	Seed Yield(kg/ha)	100 seed wt(g)	Hull cont. (%)	Gr. Filling %	Vol. Wt (g/100cc)
1.	<b>PET-89-1A EC-601751</b>	154.0	16.1	71.0	<b>2514</b>	5.2	30.8	82.5	45.9
2.	<b>PET-2-7-1A X EC601751**</b>	<b>145.5</b>	<b>15.7</b>	<b>68.0</b>	<b>2292</b>	<b>5.5</b>	<b>32.7</b>	<b>87.5</b>	<b>43.5</b>
3.	<b>CMS-10 AX EC 601751</b>	156.5	18.3	70.5	<b>2389</b>	5.2	32.7	83.0	44.6
	<b>KBSH-41</b>	158.0	15.2	73.8	2104	<b>5.2</b>	<b>32.3</b>	<b>86.5</b>	<b>41.5</b>
	<b>LSFH-35</b>	154.0	15.0	71.2	2024	5.8	30.9	87.5	43.9
	<b>DRSH-1</b>	<b>168.7</b>	<b>15.6</b>	<b>77.0</b>	2126	<b>5.8</b>	<b>32.0</b>	<b>85.2</b>	<b>44.2</b>
	<b>KBSH-53</b>	<b>192.5</b>	<b>15.3</b>	<b>84.8</b>	2211	<b>4.9</b>	<b>31.1</b>	<b>82.3</b>	<b>43.9</b>
	<b>G. Mean</b>	<b>155.8</b>	<b>15.0</b>	<b>72.4</b>	<b>2067.4</b>	<b>5.2</b>	<b>30.8</b>	<b>85.9</b>	<b>42.8</b>

**Station Hybrid Trial -6: Study the Performance of best Sunflower hybrids at high saline soil (EC: 3.0-4.0 dS/m at growing stage) - AT NIMPITH (2014-15 & 2015-16).**

A total of 50 hybrids in **2014-15 & 2015-16** along with the three national check hybrids, KBSH-44, KBSH-53 and DRSH-1 were evaluated in this trial in a randomized block design with three replications with 3.0 m x 1.8 m plot size. The seeds of the sunflower hybrids for this trial were collected from AICRP on sunflower, UAS, GKVK, Bangalore. **The area representing the medium to high soil salinity (EC 2.0-3.0dS/m) throughout the sunflower growing season.** The



data pertaining to seed yield and other yield attributing traits for the best promising sunflower test hybrids along with the checks is presented in **Table 6**. Highly significant differences were observed for seed yield and other yield attributing traits among the test hybrids. The field observation reveals that the hybrid **PSCHT-12-36** was the highest seed yielding sunflower hybrid in this trial which recorded the **seed yield of 1410 kg/ha** which was **75.5% higher** than best check hybrid **KBSH-44** and **53.6%** higher than second check hybrid **DRSH-1**. The hybrids Viz. **PSCHT-12-66(1050kg/ha, 30% higher thanKBSH-44),PSCHT-12-19(1040kg/ha,29% higher thanKBSH-44),PSCHT-38 (1010 kg/ha, 25% higher thanKBSH-44) and PSCHT - 12-42 (956kg/ha, 18% higher thanKBSH-44** also significantly out yielded the best check hybrid **KBSH-44 and DRSH-1(2067 kg/ha)** with respect to seed yield. This experiment reveals that the any of the above mentioned sunflower hybrid may fulfill the **desirability and aspiration of the sunflower grower in the coastal saline belts of West Bengal in near feature.**

Among the AICRP-Sunflower, Nimpith centre developed sunflower hybrids, **CMS-10A x R-12-96 (seed yield 1310 kg/ha), CMS-234A xR-35(Seed yield 1228kg/ha) & CMS-234A x R-272(1385kg seed yield/ha)** in comparison to the **DRSH-1(1226 kg seed yield/ha)** and **KBSH-53(seed yield 1296 kg/ha)** respectively(**Table -6B**).

**TABLE 6: Performance of best Sunflower hybrids collected from AICRP-Sunflower, UAS, Bangalore, at high saline soil (EC: 3.0-4.0 dS/m at growing stage)- AT NIMPITH-2014-15 & 2015-16.**

Name of the Hybrid	Days to 50% Flowering	Plant ht(cm)	Hd.dia.(cm)	Seed yield (qt/ha)	% of yield Improvement over KBSH-44
PSCHT-12-18	64	85	11.6	9.44	17.12
<b>PSCHT-12-19</b>	<b>60</b>	<b>108</b>	<b>12.2</b>	<b>10.44</b>	<b>29.53</b>
PSCHT-12-26	61	109	13.0	9.56	18.61
<b>PSCHT-12-36</b>	<b>60</b>	<b>125</b>	<b>12.8</b>	<b>14.11</b>	<b>75.06</b>
PSCHT-12-38	64	112	12.7	10.11	25.43
PSCHT-12-42	58	104.6	12.5	9.56	18.61
<b>PSCHT-12-66</b>	<b>59</b>	<b>104</b>	<b>102</b>	<b>10.50</b>	<b>30.27</b>
<b>PSCHT-12-68</b>	62	116.8	12.7	<b>8.61</b>	<b>6.82</b>
<b>PSCHT-12-76</b>	65	116	11.4	<b>8.89</b>	<b>10.30</b>
<b>SMLHT-KH-12-01</b>	59	87	10.4	<b>7.67</b>	<b>-4.84</b>
SMLHT-KH-12-02	57	85	10.1	<b>7.78</b>	<b>-3.47</b>
<b>SMLHT-KH-12-04</b>	60	104	12.0	<b>9.44</b>	<b>17.12</b>
<b>KBSH-41</b>	60	122	12.7	<b>8.61</b>	<b>6.82</b>
<b>KBSH-44</b>	67	145	13.9	<b>8.06</b>	<b>0.00</b>
<b>KBSH-53</b>	68	147	13.6	<b>7.67</b>	<b>-4.84</b>
<b>DRSH-1</b>	65	130	13.2	<b>8.44</b>	<b>4.71</b>

**TABLE 6A: Performance of best Sunflower hybrids Developed at AICRP-Sunflower, Nimpith, at high saline soil (EC: 3.0-4.0 dS/m at growing stage)- AT NIMPITH-2015-16.**

Sl. No	Name of the Hybrid	Pl. Ht(cm)	Hd. Dia.(cm)	50% Flow.	Seed Yield(kg/ha)	Gr. Filling %	100 seed wt(g)	Kernel wt.(G)	Hull cont (%)	Vol. Wt(g/cc)
1.	CSFH-9036	114.7	13.7	53.7	<b>1118</b>	90.3	7.2	4.6	<b>36.1</b>	<b>45.7</b>
2.	LSFH-171	143.3	13.4	65.0	<b>1437</b>	86.0	5.4	3.5	<b>35.2</b>	<b>43.3</b>
3.	CO2 HYBRID	139.3	14.1	52.3	<b>1270</b>	83.0	5.7	3.8	<b>33.3</b>	<b>44.7</b>
4.	CSFH-12205	127.0	13.7	60.0	<b>1005</b>	91.7	5.4	3.9	<b>27.8</b>	<b>46.3</b>
5.	SVSH-511	119.0	13.7	55.7	<b>940</b>	82.3	6.3	4.2	<b>33.3</b>	<b>41.7</b>
<b>6.</b>	<b>10A X R-12-96</b>	<b>138.0</b>	<b>13.8</b>	<b>61.3</b>	<b>1310</b>	<b>90.7</b>	<b>5.6</b>	<b>3.7</b>	<b>33.9</b>	<b>42.3</b>
7.	16AX RHA-1-1	139.0	13.4	56.5	<b>1069</b>	83.5	5.7	3.7	<b>35.1</b>	<b>42.0</b>
8.	234A XR-104	139.0	13.1	58.7	<b>810</b>	84.7	6.5	4.6	<b>29.2</b>	<b>45.3</b>
9.	234A X NW-31	120.7	12.3	59.7	<b>1016</b>	86.3	5.6	4.0	<b>28.6</b>	<b>43.0</b>
<b>10</b>	<b>234A X R-35</b>	<b>125.3</b>	<b>12.9</b>	<b>56.7</b>	<b>1238</b>	<b>87.3</b>	<b>7.1</b>	<b>4.9</b>	<b>30.0</b>	<b>45.0</b>
11.	P-2-7-1A X LOC-6143	125.5	12.3	55.0	<b>1120</b>	86.5	6.0	4.2	<b>30.0</b>	<b>43.0</b>
<b>12.</b>	<b>234 XR-272</b>	<b>115.5</b>	<b>13.2</b>	<b>59.0</b>	<b>1385</b>	<b>90.0</b>	<b>4.6</b>	<b>2.5</b>	<b>45.7</b>	<b>45.0</b>
13	DRSH-1	158.3	14.0	65.0	<b>1226</b>	90.3	5.4	3.6	<b>33.3</b>	<b>41.7</b>
14	KBSH-53	159.0	14.4	65.7	<b>1298</b>	84.3	4.7	3.3	<b>29.8</b>	<b>38.0</b>
	G. Mean	<b>133.1</b>	<b>13.4</b>	<b>58.9</b>	<b>1160.1</b>	<b>86.9</b>	<b>5.8</b>	<b>3.9</b>	<b>33.0</b>	<b>43.4</b>
	C.D.(P=0.05)				<b>72.8</b>					
	CV(%)				<b>9.4</b>					

**Table:7A: Performance of the sunflower hybrids (collecting from UAS, Bangalore) in Multilocation Trial in various year, at Nimpith from 2012-13 to 2014-15.**

Sl. No.	Name of the Hybrid	Seed yield (kg/ha)			Avg. Seed yield (kg/ha)	Days to 50%Flow			Avg. 50%Flow
		2014-15	2013-14	2012-13		2014-15	2013-14	2012-13	
1	<b>PSCHT-12-38</b>	<b>2480</b>	<b>2256</b>	<b>2044</b>	<b>2260.0</b>	76	75	78	<b>76.3</b>

2	PSCHT-12-42	2130	2233	2389	2250.7	69	71	74	71.7
3	PSCHT-12-26	2153	2156	2330	2216.7	70	70	73	71.0
4	PSCHT-12-29	1740	2111	2044	1964.0	67	68	70	68.3
5	SAHT-12-21	2222	2028	2333	2194.3	74	73	75	74.0
6	PSCHT-12-76	1898	1967	1911	1925.3	73	73	75	73.7
7	PSCHT-12-36	2222	1900	2333	2151.7	68	67	70	68.7
8	SAHT-12-18	2025	1889	2367	2093.7	71	76	78	75.0
9	PSCHT-12-35	1820	1760	2200	1926.7	67	68	72	69.0
10	SAHT-KH-12-09	1866	1975	1940	1927.0	67	68	70	68.3
11	PSCHT-KH-12-66	2016	1740	1890	1898.7	67	66	70	67.7
12	P-KH-12-68	2373	2040	2300	2237.7	72	70	76	73.0
13	SAHT-12-15	1898	1980	2044	1974.0	65	64	75	68.0
14	KBSH-44	2407	2190	2070	2222.3	75	74	82	77.0
15	DRSH-1	2030	1856	1860	1915.3	73	72	78	74.3
	Mean	2096.1	2002.9	2150.5	2083.2	69.8	69.7	74.0	71.2
	C.D (5%)	129.2	87.5	114.7					
	CV(%)	9.7	9.3	9.8					

**Table:7B: Performance of the sunflower hybrids (collecting from UAS, Bangalore) in Multilocation Trial in various year, at Nimpith 2012-13 to 2014-15.**

	Name of the Hybrid	Oil %			Avg. Oil %	Oil yield(Kg/ha)			Avg. Oil yield(Kg/ha)
		2014-15	2013-14	2012-13		2014-15	2013-14	2012-13	
1	PSCHT-12-38**	35.6	36.4	36.2	36.0	882.9	832.5	760.4	825.3
2	PSCHT-12-42*	36.3	36.8	38.7	37.3	773.2	821.7	924.5	839.8
3	PSCHT-12-26*	36.5	37.9	38.6	37.7	785.8	817.1	899.4	834.1
4	PSCHT-12-29	38.4	38.2	37.8	38.1*	668.2	806.4	772.6	749.1
5	SAHT-12-21	35.4	35.2	36.5	35.7	786.6	713.9	851.5	784.0
6	PSCHT-12-76	37.3	37.8	38.6	37.9	708.0	743.5	737.6	729.7
7	PSCHT-12-36*	37.7	36.8	37.6	37.8	825.5	725.9	877.2	812.9

8	SAHT-12-18*	38.4	37.6	39.2	<b>38.4</b>	777.6	710.3	927.9	<b>805.3</b>
9	PSCHT-12-35	37.6	38.2	38.8	<b>38.2</b>	684.3	672.3	853.6	<b>736.7</b>
10	SAHT-KH-12-09	37.5	38.2	38.5	<b>38.1*</b>	699.8	754.5	746.9	<b>733.7</b>
11	PSCHT-KH-12-66	38.9	38.1	38.6	<b>38.5*</b>	812.0	692.9	729.5	<b>744.8</b>
12	P-KH-12-68*	36.6	37.0	37.5	<b>37.0</b>	868.5	754.8	862.5	<b>828.6</b>
13	SAHT-12-15	37.6	37.4	38.0	<b>37.7</b>	713.6	740.5	776.7	<b>743.6</b>
14	KBSH-44	27.9	27.5	29.6	<b>28.3</b>	671.6	602.3	612.7	<b>628.9</b>
15	DRSH-1	38.5	39.2	39.5	<b>39.1</b>	781.6	727.6	734.7	<b>748.0</b>
	<b>Mean</b>	<b>36.6</b>	<b>36.8</b>	<b>37.6</b>	<b>37.0</b>	<b>767.2</b>	<b>736.4</b>	<b>804.5</b>	<b>769.4</b>
	<b>C.D</b>	<b>0.24</b>	<b>0.36</b>	<b>0.41</b>		<b>41.6</b>	<b>34.7</b>	<b>57.2</b>	

**Table: 7F: Best Sunflower Hybrids**

	Avg. seed Yield(kg/ha)	Avg. Oil %	Oil Yield(Kg/ha)			Avg. Oil Yield(Kg/ha)	
			2014-15	2013-14	2012-13		
1	PSCHT-12-42*	2250	37.3	773.2	821.7	924.5	839.8
2	PSCHT-12-26*	2216	37.7	785.8	817.1	899.4	834.1
3	PSCHT-12-36*	2152	37.8	825.5	725.9	877.2	812.9
4	PSCHT-12-29	1964	38.1*	668.2	806.4	772.6	749.1
5	P-KH-12-68*	2238	37.0	868.5	754.8	862.5	828.6
6	PSCHT-12-38**	2260	36.0	882.9	832.5	760.4	825.3
7	SAHT-KH-12-09	1927	38.1*	699.8	754.5	746.9	733.7
8	PSCHT-KH-12-66**	1898	38.5*	812.0	692.9	729.5	744.8

**Multilocation Trial-4:** The sunflower hybrids for this trial were jointly evaluated by AICRP on sunflower, Nimpith and UAS, GKVK, Bangalore from **2012-13 to 2015-16** for evaluating their performance in West Bengal **Agro-climatic** situation for the *rabi-summer* season. A total of **115** sunflower hybrids were collected and evaluated in *rabi* season at Nimpith-**2012-13**. The seeds of the promising sunflower hybrids were again collected from the same centre and evaluated by AICRP-Sunflower, Nimpith centre in 2013-14 and 2014-15 in *rabi-summer* season. (**Multilocation trial, 2012-13; 2013-14 & 2014-15**). The sunflower hybrids were evaluated in this trial in three locations. A total of 24 promising sunflower hybrids including the two check hybrids, KBSH-44 and DRSH-1 were evaluated in this trial in a randomized block design with three replications in a plot size of 3.0 m x 4.5 m. The trial was conducted in three locations Viz. **Nimpith, Baruipur (research farm, Institute of Agriculture Sciences Farm, Calcutta University) and Radhakantapur (KVK-adopted Village)**. The data pertaining to seed yield and other yield attributing traits for these test hybrids along with the checks is presented in **Table 1A, 1B, 1C & 1D**. The field observation reveals that the hybrid **PSCHT-12-38 (2260 kg/ha, 36.0% oil)**, **PSCHT-12-42 (2250 kg/ha, 37.5% oil)** and

**PSCHT-12-26(2217kg/ha,37.7%)** were the highest seed yielder sunflower hybrids in this trial in comparison to best check hybrid **KBSH-44(2222 kg/ha,28.3% oil)** and the second best check hybrid **DRSH-1(1915kg/ha,39.1% oil)**. The hybrids like **PSCHT-12-36(2151 kg/ha, 37.9% oil)**, **PSCHT-12-66 (1898kg/ha, 38.5 % oil)**, **PSCHT-12-15 (1975 kg/ha, 37.5% oil)** and **PSCHT-12-29 (2216kg/ha, 38.1% oil)** and also significantly out yielded the second best national check hybrid **DRSH-1(1915 kg/ha)** with respect to seed yield. Considering the **Oil yield (Kg/ha)**, the hybrid **PSCHT-12-42(840 kg/ha & 37.5% oil)**,**PSCHT-12-38(825Kg/ha & 37.8% oil)**, **PSCHT-12-26(834Kg/ha & 37.7% oil)** , **PSCHT-12-36(812Kg/ha &36.7% oil)** , **SAHT-12-09 (734 Kg/ha & 38.1% oil)**, **PSCHT-12-68(826Kg/ha & 36.7% oil)** and **PSCHT-12-66(744Kg/ha & 38.2% oil)** significantly out yielded the best national check hybrids **KBSH-44(626kg oil/ha & 28.3% oil)** and **DRSH-1(748 kg oil/ha & 39.1% oil)**. Considering the different other yield attributing parameters like **plant height, days to 50% flowering or days to maturity PSCHT-12-42, SAHT-12-09, PSCHT-12-26,PSCHT-12-66, PSCHT-12-76 and PSCHT-12-29** were observed the best performing hybrids due to their **7-10 days early maturity and 30-50 cm less plant height at harvest**. The desirability of the sunflower farmers of South 24 Parganas district of West Bengal is the Sunflower hybrids with **95-100 days maturity, bold black seeded and good seed yielder/ good oil yielder along with 140-150 cm plant height**. The sunflower hybrids like **PSCHT-12-26, PSCHT-12-42, PSCHT-12-66, SAHT-12-09, PSCHT-12-29 or SAHT-KH-12-15** may fulfill their desirability and aspirations of the sunflower grower in near future.

**Identification of promising Sunflower Hybrids (Collecting from AICRP-Sunflower, UAS, BANGALORE) evaluated at AICRP-Sunflower, Nimpith centre during & 2015-16. (Multilocation Trial-5):**

**Table: 8: Sunflower Hybrids at NIMPITH, jointly evaluated by AICRP-Sunflower , Nimpith and UAS, Bangalore, 2015-16.**

SAHT-ENTRIES AT NIMPITH, 2015-16 All Entries are 5 lines (3.0 m x 3.0m) Plot					Trial-1(AICRP - farm, at Nimpith)			
SL. No	Name of the Hybrid	Seed Yield (kg/ha)	Grain filling %	100 Seed Wt(g)	Kernel wt (g)	Husk wt (g)	Vol. Wt. (g/100cc)	Hull Cont (%)
1	SAHT-KH-15-21	2062	91.0	4.9	3.4	1.4	42.0	29.2
2*	SAHT-KH-15-34*	2188	90.0	4.8	3.2	1.4	44.8	30.4
3	SAHT-KH-15-20	2016	90.0	4.8	3.2	1.6	40.5	33.3
4	SAHT-KH-15-10*	2162	89	4.3	2.8	1.4	44.0	33.3

5	SAHT-KH-15-12	<b>2098</b>	90.5	6.5	4.4	1.9	43.5	30.2
6	SAHT-KH-15-09	<b>1886</b>	93.0	3.8	2.6	1.2	39.8	31.6
7	SAHT-KH-15-18	<b>1923</b>	91.5	4.6	3.2	1.3	41.0	28.9
8*	<b>SAHT-KH-15-07*</b>	<b>2070</b>	88.0	6.4	4.2	2.2	46.0	34.4
9	SAHT-KH-15-17	<b>2032</b>	93.0	5.0	3.6	1.4	43.0	28.0
10*	<b>SAHT-KH-15-23*</b>	<b>2060</b>	93.5	4.9	3.5	1.4	44.8	28.6
11	SAHT-KH-15-02	<b>1956</b>	91.5	5.3	3.7	1.6	41.5	30.2
12	SAHT-KH-15-08	<b>1820</b>	88.0	5.3	3.7	1.5	45.3	28.8
13	<b>SAHT-KH-15-26*</b>	<b>2116</b>	91.0	6.2	4.4	1.9	44.9	30.2
14	SAHT-KH-15-29	<b>1862</b>	92.5	5.2	3.6	1.5	40.1	29.4
15	SAHT-KH-15-19	<b>1711</b>	85.0	5.1	3.6	1.3	44.0	26.5
16	SAHT-KH-15-35	<b>1822</b>	85.0	3.7	2.4	1.3	48.4	35.1
17*	<b>SAHT-KH-15-35*</b>	<b>1961</b>	90.0	7.7	5.9	1.7	49.0	22.4
18	<b>SMLHT-KH-15-03*</b>	<b>2012</b>	92.5	6.5	4.6	1.5	47.0	24.6
19	SAHT-KH-15-27	<b>1601</b>	91.0	5.5	3.8	1.6	40.5	29.6
20	SAHT-KH-15-30	<b>1724</b>	91.0	7.0	5.3	1.7	43.0	24.3
21	SAHT-KH-15-05	<b>1544</b>	89.0	7.1	5.4	1.9	46.5	26.0
22	SAHT-KH-15-14	<b>1662</b>	92.0	6.0	4.6	1.4	45.3	23.3
23	SAHT-KH-15-01	<b>1590</b>	91.0	5.9	4.2	1.6	40.3	27.6
24	SAHT-KH-15-15	<b>1644</b>	90.0	6.0	4.4	1.6	41.5	26.7
25	SAHT-KH-15-16	<b>1625</b>	91.0	7.2	5.2	2.1	40.8	28.8
26	<b>SAHT-KH-15-04*</b>	<b>2128</b>	89.5	6.3	4.1	2.2	43.8	34.9
27	SAHT-KH-15-32	<b>1528</b>	89.0	7.2	5.4	1.9	49.3	26.0
28	SAHT-KH-15-01	<b>1271</b>	93.0	6.4	4.5	1.9	43.8	29.7
29*	<b>SAHT-KH-15-24*</b>	<b>2084</b>	79.5	5.5	3.7	1.8	41.3	32.7
30*	<b>SAHT-KH-15-03*</b>	<b>2064</b>	91.0	8.3	5.8	2.5	45.0	30.1
31*	<b>SAHT-KH-15-11*</b>	<b>1980</b>	92.5	5.7	4.3	1.4	44.3	<b>24.6*</b>
32	SAHT-KH-15-25	<b>1722</b>	90.5	5.3	3.7	1.5	43.8	28.8
33	SAHT-KH-15-31	<b>1844</b>	82.0	7.8	5.3	2.4	50.0	31.2
34	SAHT-KH-15-02	<b>1597</b>	92.5	5.3	3.7	1.7	48.5	31.5
35	SAHT-KH-15-28	<b>1521</b>	92.0	4.6	3.0	1.6	45.9	34.8
36	SAHT-KH-15-05	<b>1493</b>	88.0	7.8	5.2	2.6	46.5	33.3

37	SAHT-KH-15-33	<b>1522</b>	94.5	5.5	4.1	1.4	45.5	25.5
38	SAHT-KH-15-22	<b>1424</b>	91.5	5.6	3.6	2.0	44.0	35.7
39	<b>SAHT-KH-15-05</b>	<b>1947</b>	89.0	7.68	4.93	2.75	47.5	35.8
40*	<b>SAHT-KH-15-21*</b>	<b>2108</b>	91.0	4.68	3.26	1.38	46.0	<b>29.7*</b>
41	SAHT-KH-15-10	<b>1894</b>	90.0	5.85	4.25	1.60	42.0	27.4
42	SAHT-KH-15-06	<b>1540</b>	91.5	5.1	3.8	1.4	48.3	26.9
43	KBSH-44	<b>1998</b>	86.5	6.5	4.0	2.4	41.0	37.5
44	KBSH-53	<b>2016</b>	90.0	5.5	3.6	1.9	44.5	34.5
45	DRSH-1	<b>1836</b>	90.0	5.9	4.1	1.7	46.8	29.3
	<b>G. Mean</b>	<b>1876.6</b>	<b>90.0</b>	<b>6.2</b>	<b>4.3</b>	<b>1.8</b>	<b>44.7</b>	<b>29.8</b>
	<b>CD(P=0.05)</b>	<b>145.8</b>						
	<b>CV (%)</b>	<b>9.2</b>						

In the year **2015-16**, a total of **42 promising sunflower hybrids** collected from AICRP-Sunflower, UAS, Bangalore alongwith the two check hybrids, KBSH-44 and DRSH-1 were evaluated in this trial in a randomized block design with three replications in a plot size of 3.0 m x 4.5 m. The sunflower hybrids were evaluated in this trial in two locations, Viz. **Nimpith AICRP Sunflower research farm and Radhakantapur (KVK-adopted Village)**. The data pertaining to seed yield and other yield attributing traits for these test hybrids along with the checks is presented in **Table 8**. On basis of performance of the above sunflower hybrids at Nimpith and other location in West Bengal, **the best performing sunflower hybrids evaluated in this trial in *rabi*-summer season are SAHT-KH-15-34 & SAHT-KH-15-10 (seed yield 2188 & 2162 kg/ha), SAHT-KH-15-07( seed yield 2060kg /ha), SAHT-KH-15-23( seed yield 2070 kg/ha), SAHT-KH-15-26 (seed yield 2116 kg/ha) SAHT-KH-15-04(seed yield 2128 kg/ha), SAHT-KH-15-24 (2084 kg seed yield /ha), SMLHT-KH-13-03 (seed yield 2012 kg/ha), SAHT-KH-15-03,( 2064 kg seed yield /ha), SAHT-KH-15-21(2108 kg seed yield/ha), & SAHT-KH-15-35(seed yield 1960 kg/ha) respectively**. All the above sunflower hybrids were significantly higher seed yielder (kg/ha) in respect to the one national check hybrid **DRSH-1(1780 kg oil/ha) and at par with the other best national check hybrids KBSH-44(1998kg oil/ha) and KBSH-53(seed yield 2116 kg/ha) but shorter plant height and took 5-7 days less time for maturity**. Therefore, these sunflower hybrids may be promoted for multilocation trial for testing their performance in various location in West Bengal.

## Integrated Watershed Management Programme (IWMP)

- **Duration of the project:** 5 years (2011-12 to 2016-17)
- **Co. PI:** Dr. Dipak Kumar Roy

### Objectives of IWMP

- Conservation, development and sustainable management of natural resources
- Enhancement of agricultural productivity and production in sustainable manner
- High water use efficiency
- Livestock, Pisciculture, other household production/ development
- Development/ conservation of waste land
- Reduction in regional disparity between irrigated and rainfed areas
- Creation of sustained employment opportunities for the rural community including the landless

### a) Formation of SHGs & UGs under Sankijahan IWMP-6/2011-12

Village	No. of SHG	No. of beneficiary		No. of Female Group	No. of UG	No. of beneficiary		No. of Female Group
		Male	Female			Male	Female	
Kaikhali	8	52	67	3	5	62	12	-
Gopalganj	12	135	30	1	7	92	13	-
Dakshin Garankati	9	33	103	7	5	71	20	1
Madhusudanpur	6	58	34	2	4	58	1	-
Sankijahan	9	77	64	4	4	46	7	-
Madhabpur	1	10	2	-	4	50	2	-
Katamari	7	28	80	5	4	61	3	-
Deulbari	10	138	27	1	2	25	5	-
Dakshin Durgapur	7	79	26	-	2	31	-	-
<b>Total</b>	<b>69</b>	<b>610</b>	<b>433</b>	<b>23</b>	<b>37</b>	<b>496</b>	<b>63</b>	<b>1</b>

### Formation of SHGs & UGs under Binodpur Maa Sarada IWMP-7/2011-12

Village	No. of SHG	No. of beneficiary		No. of Female Group	No. of UG	No. of beneficiary		No. of Female Group
		Male	Female			Male	Female	
Maipith	6	-	73	6	1	20	-	-
Baikunthapur	15	69	124	5	1	11	-	-
Binodpur	6	-	90	6	7	95	13	-
Kishorimoha-npur	13	58	101	5	1	13	-	-
Bhubaneswari	15	15	183	14	3	39	3	-
Madhya Gurguria	8	102	28	-	4	51	5	-
Purba Gurguria	11	50	86	6	2	26	3	-
Debipur	8	22	79	6	7	92	3	-
Bhubaneswari Char	4	-	40	4	-	-	-	-
<b>Total</b>	<b>86</b>	<b>316</b>	<b>804</b>	<b>52</b>	<b>26</b>	<b>347</b>	<b>27</b>	<b>-</b>



### b) Formation of Watershed Association:

- 4 Nos. of micro watershed have been formed under IWMP-6 namely, Nabipukur Micro Watershed, Piyali Micro Watershed, Thakurani Micro Watershed & Matla Micro Watershed
- 4 Nos. of micro watershed have also been formed under IWMP-7 namely, Sundarban Micro Watershed, Oriyan Nala Micro Watershed, Makri Micro Watershed & Dipanchal Micro Watershed

Project Name	Type of activities	No of activities	
		2015-16	2016-17
IWMP-6	Landshaping	50	12
	Desiltation	132	10
	Ail bundh	-	14
IWMP-7	Landshaping	47	24
	Desiltation	176	36
	Ail bundh	12	19

