

**OFT1****TECHNOLOGY ASSESSMENT AND REFINEMENT IN DETAIL****Thematic Area:** Nutrient management**Problem Definition:** Low yield of groundnut due to imbalanced fertilization.**Technology Assessed:** KVK took up on farm trial to assess the nutrient management in groundnut. The trial has just started.**1. Details of On Farm Trial**

<b>Sl No.</b>	<b>Item</b>	
1.	Title of on-farm trials	Assessment of nutrient management practices for increasing yield of groundnut in Howrah district
2.	Problem diagnosed	Low yield of groundnut due to imbalance fertilization
3.	Details of technologies selected for assessment/refinement	<b>Farmers' Practice:</b> Application of lower dose (20:30:30 kg/ha N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O) of fertilizer and without seed inoculation with Rhizobium  <b>Technology Option -2:</b> Application of recommended dose(30:60:80 kg/ha N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O) of fertilizer+ Application of Gypsum @225kg/ha at 30 DAS+ seed inoculation with Rhizobium  <b>Technology Option -3:</b> Application of recommended dose(30:60:80 kg/ha N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O) of fertilizer+ Application of Gypsum based on soil pH + seed inoculation with Rhizobium
4.	Source of technology	BCKV
5.	Production system and Thematic area	Crop Production (Nutrient management)
6.	Performance of the technology with performance indicators	The trial has started in summer-2016
7.	Final recommendation for micro level situation	Yet to come as the triah has just started.
8.	Constraints identified and feedback for research	Farmers are reluctant to test their soil.
9.	Process of farmers participation and their reaction	Farmers participated in collaborative mode and contributed in kinds.

**Table: Performance of the nutrient management technology**

Technology option	No. of trials	Soil fertility status		Yield branches/plant	Yield (q/ha)	Cost of cultivation (Rs./ha)	Gross return (Rs./ha)	Net Return (Rs / ha)	BC Ratio
		Initial(Av.) (N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O kg/ha)	Final (Av.) (N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O kg/ha)						
<b>Farmers' Practice:</b> Application of lower dose (20:30:30 kg/ha N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O) of fertilizer and without seed inoculation with Rhizobium	7	241:32:224	-	The crop is in the field					
<b>Technology Option -2:</b> Application of recommended dose(30:60:80 kg/ha N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O) of fertilizer+ Application of Gypsum @225kg/ha at 30 DAS+ seed inoculation with Rhizobium		241:32:224	-						
<b>Technology Option -3:</b> Application of recommended dose(30:60:80 kg/ha N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O) of fertilizer+ Application of Gypsum based on soil pH + seed inoculation with Rhizobium		241:32:224	-						
SEm±									
CD(P=0.05)									

\* If it is related to disease / Insect management scoring to be given

[0-2% = 1; 2-5% = 2; 5-10% = 3; 10-20% = 4; 20-30% = 5; 30-50% = 6; More than 50% = 6]

\*\* If it is related to nutrient management initial soil fertility and final soil fertility to be given.

B.C Ratio= Gross return/ Gross cost of cultivation

## OFT2

### TECHNOLOGY ASSESSMENT AND REFINEMENT IN DETAIL

**Thematic Area:** Weed management

**Problem Definition:** Lower yield of jute due to weed infestation and manual weeding is costly

**Technology Assessed:** KVK took up on farm trial to assess the weed management in jute. Though hand weeding twice at 20 and 40 Das produced highest fibre yield but the result showed that it was economical to apply Butachlor @1 kg ai/ha within 24-48 hours of sowing + (Quizalofop Ethyl @50 g ai/ha + adjuvant@ 1 ml/l at 15DAE for managing weeds in jute fields.

#### .1. Details of On Farm Trial

SI No.	Item	
1.	Title of on-farm trials	<b>Assessment of different weed management practices on yield of <i>Olitorious</i> jute in medium land condition of Howrah district</b>
2.	Problem diagnosed	Weed affects jute yield badly and manual weeding is costly
3.	Details of technologies selected for assessment/refinement	<b>Farmers Practice:</b> Two hand weeding at 20 and 40 days after sowing <b>Technology option-1:</b> (Quizalofop Ethyl @60 g ai/ha + adjuvant@ 1 ml/l at 15DAE) + one hand weeding at 40 DAS <b>Technology option-2:</b> Butachlor @1 kg ai/ha within 24-48 hours of sowing + (Quizalofop Ethyl @50 g ai/ha + adjuvant@ 1 ml/l at 15DAE
4.	Source of technology	CRIJAF
5.	Production system and Thematic area	Crop Production (Weed Management)
6.	Performance of the technology with performance indicators	Technology option 2 performed well economically than other two options.
7.	Final recommendation for micro level situation	For better weed management of jute at lower cost farmers can use Butachlor @1 kg ai/ha within 24-48 hours of sowing + (Quizalofop Ethyl @50 g ai/ha + adjuvant@ 1 ml/l at 15DAE
8.	Constraints identified and feedback for research	Farmers are reluctant in line sowing of jute seeds.
9.	Process of farmers participation and their reaction	Farmers participated in collaborative mode and contributed in kinds.

Table: Performance of the weed management technology

Technology option	No. of trials	Soil fertility status		Total weed density / m <sup>2</sup>				Total weed biomass (g/m <sup>2</sup> )				Fibre Yield (q/ha)	Cost of cultivation (Rs./ha)	Gross return (Rs./ha)	Net Return (Rs / ha)	B:C ratio
		Initial(Av.) (N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O kg/ha)	Final (Av.) (N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O kg/ha)	15 DAS	25 DAS	35 DAS	45 DAS	15 DAS	25 DAS	35 DAS	45 DAS					
<b>Farmers Practice:</b> Two hand weeding at 20 and 40 days after sowing	7	244:32:225	239:30:219	44.3	14.3	29.7	10.1	18.74	7.1	15.4	6.2	38.22	23600	38220	14620	1.62:1
<b>Technology option-1:</b> (Quizalofop Ethyl @60 g ai/ha + adjuvant@ 1 ml/l at 15DAE) + one hand weeding at 40 DAS		244:32:225	239:30:219	46.8	20.4	30.2	13.5	21.12	12.9	19.1	10.3	35.46	18100	35460	17360	1.95:1
<b>Technology option-2:</b> Butachlor		244:32:225	239:30:219	29.4	18.1	20.8	22.6	12.48	9.1	11.8	13.9	37.50	17100	37500	20400	2.19:1

@1 kg ai/ha within 24-48 hours of sowing + (Quizalofop Ethyl @50 g ai/ha + adjuvant @ 1 ml/l at 15DAE																	
SEm±			1.51	1.12	1.48	1.79	1.82	0.92	1.11	0.84	0.12						
CD(P=0.05)			4.74	3.51	4.64	5.62	5.71	2.88	3.48	2.64	0.38						

B.C Ratio= Gross return/ Gross cost of cultivation

### OFT 3:

1.	Title of On farm Trial	<b>Assessment of performance of Calcium, Zinc and Biofertilizer (Azotobacter) on yield of Tomato</b>
2.	Problem diagnose	Insufficient or no use of calcium and Zn based fertilizers without seed treatment.
3.	Details of technologies selected for assessment/refinement	<b>Farmers' Practice: Improper use of fertilizers Technology Option -1: Foliar spray of ZnSO4 @ 0.5 per cent thrice at 10 days interval from 40 days after planting + CaNO3 Technology Option -2: Foliar spray of ZnSO4 @ 0.5 per cent thrice at 10 days interval from 40 days after planting + CaNO3 @ 0.5%+ Seed treatment with Azotobacter @ 20g/kg seed.</b>
4.	Source of Technology	BCKV
5.	Production system and thematic area	Tomato is cultivated as a irrigated crop in high to medium land situation, Nutrition Management Technology

6.	Performance of the Technology with performance indicators	Performance is satisfactory so far.
7.	Final recommendation for micro level situation	Yet to come
8.	Constraints identified and feedback for research	
9.	Process of farmers participation and their reaction	Farmers participated in collaborative mode.

*Thematic area:* **Nutrition Management Technology**

Problem definition: Insufficient or no use of calcium and Zn based fertilizers without seed treatment.

Technology assessed:

Table:

Technology option	No. of trials	Yield component			-	Yield (q/ha)	Cost of cultivation (Rs./ha)	Gross return (Rs/ha)	Net return (Rs./ha)	BC ratio
		Plant Height (60 DAT,cm)	Blossom End Rot incidence (%)	-						
<b>Farmers' Practice: Improper use of fertilizers particularly Calcium and Zinc without any seed treatment.</b>	7	80	16.0			368.00	76125.00	165600.00	89475.00	2.17
<b>Technology Option -1: Foliar spray of ZnSO<sub>4</sub> @ 0.5 per cent thrice at 10 days interval from 40 days after planting + CaNO<sub>3</sub> @ 0.5%</b>		94	4.0			466.00	87412.00	209700.00	122288.00	2.4
<b>Technology Option -2: Foliar spray of ZnSO<sub>4</sub> @ 0.5 per cent thrice at 10 days interval from 40 days after planting + CaNO<sub>3</sub> @ 0.5% + Seed treatment with Azatobacter @ 20g/kg seed.</b>		96	3.0			477.00	88725.00	226575.00	137850.00	2.55

## OFT 4:

1.	<b>Title</b>	<b>Assessment of performance of pruning, growth regulator and proper fertilization for induction of both main season and off season flowering in Jasmine in Howrah district.</b>
2.	Problem diagnosed	Single pruning without any growth regulator and proper fertilization fetches lesser yield round the year.
3.	Details of technologies selected for assessment/refinement	<p><b>Farmers' Practice:</b> Pruning on 1<sup>st</sup> week of March without application of growth regulator and proper fertilizers.</p> <p><b>Technology Option -1:</b> Pruning on 1<sup>st</sup> week of March followed by application of NAA @ 20ppm at 7 days after pruning and NPK @ 60:120:120 per plant in 4 split doses (10 days interval) from 10 days after pruning.</p> <p><b>Technology Option -2:</b> Pruning on 1<sup>st</sup> week of March and 1<sup>st</sup> week of September followed by application of NAA @ 20ppm at 7 days after pruning and NPK @ 60:120:120 per plant in 4 split doses (10 days interval) from 10 days after pruning.</p>
4.	Source of Technology	T.N.A.U
5.	Production system and thematic area	Jasmine round the year, production and cultural management technology
6.	Performance of the Technology with performance indicators	Performance is satisfactory so far.
7.	Final recommendation for micro level situation	Yet to come
8.	Constraints identified and feedback for research	
9.	Process of farmers participation and their reaction	Farmers participated in collaborative mode.

***Thematic area: Production and cultural management technology***

Problem definition: Single pruning without any growth regulator and proper fertilization fetches lesser yield round the year.

**Technology assessed: The technology could not be demonstrated properly because of heavy flood situation in Howrah district.**

**This year Pruning during March has been completed and compiled data will be presented latter.**

OFT5

1.	Title of On farm Trial	Assessment of integrated nutrient management of brinjal towards development of soil health without hampering yield
2.	Problem diagnosed	Water hyacinth, a rich source of organic matter is wasted and farmers are used to apply indiscriminate use of chemical fertilizer.
3.	Details of technologies selected for assessment/refinement	Farmers practice Technology Option 1: Recommended dose of fertilizer ( 168 gm Urea, 473 gm SSP and 64 gm MOP) Technology Option 2: Integrated Nutrient Management (17 kg Compost+84 gm Urea, 236 gm SSP and 32 gm MOP) Technology Option 3: 34 kgs compost prepared from Water Hyacinth
4.	Source of Technology	
5.	Production system and thematic area	Rainfed crop in medium land situation. Integrated Nutrient management
6.	Performance of the Technology with performance indicators	There is an increase of yield to a tune of 19% in 100% organic manure treated plot over conventional practice
7.	Final recommendation for micro level situation	Farmers may practice Integrated Nutrient Management policy i.e. Technology Option 2 (17 kg Compost prepared from Water Hyacinth+84 gm Urea, 236 gm SSP and 32 gm MOP) to increase the yield and quality of crop
8.	Constraints identified and feedback for research	Convincing farmers about preparation of compost from Water hyacinth
9.	Process of farmers participation and their reaction	Farmers are receptive to the practice



*Thematic area:*

Problem definition:

Technology assessed:

Table:

Technology option	No. of trials	Yield component			Disease/ insect pest incidence (%)	Yield(kgs)	Cost of cultivation(Rs./ha)	Gross return (Rs/ha)	Net return(Rs./ha)	BC ratio
		Plant Height	No. of branches	Number of flowers						
Farmers practice	8	17.6	9	6	Incidence of borer has been controlled by Cartap	875	2967	13125	10158	4.42
Technology Option 1: Recommended dose of fertilizer ( 168 gm Urea, 473 gm SSP and 64 gm MOP)		18	8	4	Incidence of borer has been controlled by Cartap	1775	2962	26625	23663	8.98
Technology Option 2: Integrated Nutrient Management (17 kg Compost+84 gm Urea, 236 gm SSP and 32 gm MOP)		18.2	10	7	Incidence of borer has been controlled by Cartap	1675	2987	25125	22138	8.41
Technology Option 3: 34 kgs compost prepared from Water Hyacinth		17.4	11	9	No incidence	1975	2972	29625	2663	9.96

Results: There is an increase of yield to a tune of 19% in Technology Option 3 (fully treated organic manure from Water Hyacinth as compared normal conventional practice in Technology Option 1

## OFT6

1.	Title of On farm Trial	Efficacy assessment of <i>home-made chick mash</i> as starter for RIR chicks in deep litter brooding
2.	Problem diagnosed	(i) Mal nutrition in broken rice and or crushed wheat feeding only (ii) Increasing trend of the cost of conventional poultry mash
3.	Details of technologies selected for assessment/refinement	Farmers' Practice: Broken rice and or crushed wheat feeding redefined as feed-mix of broken rice (50%), crushed wheat (30%) and commercial broiler mash (20%) Technology Option 1: Feeding with commercial broiler mash (Benpro®) <i>ad lib</i> . Technology Option 2: Feeding with home-made chick starter mash* <i>ad lib</i> . * A fresh mixing of crushed maize-10 kg, broken rice-32.5 kg, wheat bran-15 kg, rice bran-15 kg, deoiled crushed groundnut cake-10kg, deoiled crushed mustard cake – 15 kg, LSP-1.2 kg, DCP-900 g, salt-300 g and TM Mix- 100 g to prepare 100 kg starter layer chick mash containing CP-19.9%, CF-5.4%, ME-2.76 Mcal/kg, C:P- 138.8, Ca-1.2%, Av. P-0.43%, Lys-0.83%, Met-0.4%, Cys-0.29%, Arg-1.5%, Na+KCl-23.7%; and costing –Rs. 12.50/- per kg mash.
4.	Source of Technology	WBUAFS
5.	Production system and thematic area	Brooding under intensive system followed by backyard system; poultry feeding management
6.	Performance of the Technology with performance indicators	Performed almost the worst as evidenced when compared to the redefined farmers' practice and TO1
7.	Final recommendation for micro level situation	Redefined farmers' practice <i>i.e.</i> feed-mix of broken rice (50%), crushed wheat (30%) and commercial chick mash (20%) may be fed for better economy and FCR.
8.	Constraints identified and feedback for research	Farmers can not avail layer chick starter mash from open market and so they buy commercial broiler mash from the meat shop for their layer chicks.
9.	Process of farmers participation and their reaction	Farmers are receptive to the practice

**Thematic area:** Poultry feeding management

Problem definition:(i) Mal nutrition in broken rice and or crushed wheat feeding only  
(ii) Increasing trend of the cost of conventional poultry mash

Technology assessed:

Table:

Technology option	No. of trials	Yield component						Yield: body weight at 8 <sup>th</sup> wk (g /bird)	Cost (feed) of rearing (Rs./bird)	Gross return (Rs/bird)	Net return (Rs./bird)	BC ratio (Least squares means $\pm$ SE)		
		Body weight gain in grams (Least squares means $\pm$ SE)			FCR (Least squares means $\pm$ SE)							0-4 wk	0-6 wk	0-8 wk
		0-4 wk	4-6 wk	6-8 wk	0-4 wk	4-6 wk	6-8 wk							
Redefined FP	10	148.98 $\pm$ 2.85	121.33 $\pm$ 5.33	169.93 $\pm$ 9.33	3.13 $\pm$ 0.09	4.80 $\pm$ 0.21	4.34 $\pm$ 0.46	473.52 $\pm$ 8.23	29.30	71.03	41.73	4.93 $\pm$ 0.05	3.35 $\pm$ 0.03	2.43 $\pm$ 0.03
TO1	10	282.82 $\pm$ 2.82	240.11 $\pm$ 5.27	307.70 $\pm$ 9.23	3.56 $\pm$ 0.09	4.25 $\pm$ 0.20	4.89 $\pm$ 0.46	863.70 $\pm$ 8.14	63.50	129.56	66.06	3.24 $\pm$ 0.05	2.60 $\pm$ 0.03	2.04 $\pm$ 0.03
TO2	10	112.13 $\pm$ 2.86	123.06 $\pm$ 5.35	142.94 $\pm$ 9.38	4.67 $\pm$ 0.09	4.28 $\pm$ 0.21	7.31 $\pm$ 0.47	410.91 $\pm$ 8.28	31.16	61.64	30.48	3.80 $\pm$ 0.05	3.05 $\pm$ 0.03	1.98 $\pm$ 0.04

**Results:** The investigation demonstrated the redefined farmers' practice the most economic throughout the ages studied and that the birds reared under the redefined farmers' practice had almost better FCR as evidenced when compared to others.

**Inference:** Results demonstrated that the farmers' practice *ad lib*feeding with broken rice (50%), crushed wheat (30%) and conventional commercial chick mash (20%)-mix is more economic followed by technology option 2 and 1. Although Technology option 1 *i.e.* the commercial mash fed birds gained more live weights and better FCR at 5-8 weeks of age, but had the poorest BCR along with high feeding cost involvement. Being almost same the FCR at 5-8 weeks indicated most appropriate usage of the low-cost home-made mash at older age rather than the brooding (younger) age, because of poor FCR and under developed beak and stature as observed among most of the birds under technology option 2. Thus the investigation suggests better sequence of feeding with either commercial chick mash only or combined with broken rice and crushed wheat when birds under brooding stage, followed by feeding with home-made mash at appropriate ingredients-mix; and accordingly thrives a thorough investigation.

### On Farm Trial: 7

1.	Title of On farm Trial	<b>Assessment of performance of Farmers' Club developed by different agencies of Howrah district</b>
2.	Problem diagnose	All the farmers club are not working efficiently for dissemination of technology for its better adoption
3.	Details of technologies selected for assessment/refinement	<b>Technology Option - 1:</b> Farmers club developed by Commercial Banks <b>Technology Option - 2:</b> Farmers club developed by NGOs <b>Technology Option - 3:</b> Farmers club developed by KVK
4.	Source of Technology	-
5.	Production system and thematic area	Rural agro-ecological system with urbanized culture
6.	Performance of the Technology with performance indicators	Farmers' Club developed by KVK performing better followed by Farmers' Club developed by NGOs.
7.	Final recommendation for micro level situation	Final recommendation: KVK should develop farmers club for better technology dissemination as well as to develop leadership
8.	Constraints identified and feedback for research	
9.	Process of farmers participation and their reaction	Chief Coordinator, Associate Coordinators and other members of Farmers' Club participated in collecting data for the analysis.

*Thematic area: Group dynamics*

Problem definition: All the farmers club are not working efficiently for dissemination of technology for its better adoption

Technology assessed: Performances of farmers' clubs developed by different agencies.

Table: Performance of IPM on yield of mustard through reducing population of aphid

Technology option	No. of trials	No. of member	No. of meeting conducted	No. of KCC generated	No. of capacity building training conducted	No. of developmental activities carried out	Cost of cultivation (Rs./ha)	Gross return (Rs/ha)	Net return (Rs./ha)	BC ratio
<b>Technology Option - 1:</b> Farmers club	07	12.5	2.5	8	0.8	0.6	-	-	-	-

developed by bank										
<b>Technology Option - 2:</b> Farmers club developed by NGO	15	6	45	6	4	-	-	-	-	
<b>Technology Option - 3:</b> Farmers club developed by KVK	18.5	9.5	58	8	5.4	-	-	-	-	

Results: KVK is conducting on-farm trial to assess the performance of Farmers' Club. It has been observed that FCs developed by KVK performed more bank related activities and developmental work in the village. Their member and meeting frequency are also high.