

**OFT3: (Plant Patho.) 2023-24****Thematic area: IPM****Problem definition/Name of OFT: Loss of yield in mango due to attack of Red banded caterpillar.**

1.	<b>Title of On farm Trial</b>	<b>Assessment of management practices for Red banded caterpillar in Mango</b>
2.	<b>Problem diagnosed</b>	Insect caterpillars bore in to the immature fruits and feeds inside reaching kernels. Entrance holes are plugged with excreta. Affected fruits rot and fall prematurely.
3.	<b>Details of technologies selected for assessment/refinement (Mention either Assessed or Refined)</b>	<p>Technology option-I: Farmers Practice (FP): Spray with chlorpyrifos when symptoms appear @3ml/litre of water)</p> <p>Technology option-II :</p> <ol style="list-style-type: none"> <li>Swabbing of chlorpyrifos 50% + cypermethrin 5% EC @3 ml/lit. of water on tree trunk would kill the prepupae/ pupae population under the bark and helps in reduction of fruit damage.</li> <li>Spraying of Profenofos 50EC @ 3 ml/lit. of water in the second fortnight of January coinciding with the moth emergence/hatching of eggs of first brood in the gardens where the pest incidence was severe in previous year.</li> </ol> <p>Technology option-III :</p> <p>Technology option I + Spray of neem oil 1500ppm @3ml /litre of water at stage of marble size fruit with again repeating at 15 days interval (2-3 spray)</p>
4.	<b>Source of Technology (ICAR/ AICRP/ SAU/ other, please specify)</b>	NCIPM, NewDelhi
5.	<b>Production system and thematic area</b>	Mango IPM
6.	<b>Performance of the Technology with performance indicators</b>	i) Average no. of damaged fruits/plant ii) Percentage reduction over control iii) Total yield iv) Cost of cultivation (Rs./ha) v) Gross return (Rs./ha) vi) Net return (Rs./ha) vii) B: C ratio
7.	<b>Final recommendation for micro level situation</b>	TO II and TO III may be the best option for manage Red banded caterpillar in Mango
8.	<b>Constraints identified and feedback for research</b>	Spraying in large or big tree is a challenging task
9.	<b>Process of farmers participation and their reaction</b>	Through training and trial demonstration

**Table: Assessment of management practices for Red banded caterpillar in Mango**

Thematic area	Technology options with detailed treatments	Area (ha in crop & Fodder)/ Nos (in livestock)		Average Number of damaged Fruits per plant			Reduction over control (%)	Yield/ plant (kg)	Cost of cultivation (Rs./ha)	Gross return (Rs/ha)	Net return (Rs./ha)	B:C ratio
		Pro posed	Act ual									
				1 DAT	3 DAT	7 DAT						
IPM	TO I (FP)	0.4	0.4	38.33	10.67	9.73	23.20	65.29	48165	124525	76360	2.58
IPM	TO II	0.3	0.3	41.33	7.87	4.53	63.35	98.35	53625	177650	124025	3.31
IPM	TO III	0.3	0.3	35.67	4.67	3.47	67.52	111.67	52990	189839	136849	3.58
	SE m <sup>+</sup> .			0.23	0.28	0.24						

	CD 5%		0.72	0.87	0.75						
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**Result:** The present study concluded that among the insecticides in both the treatment options other than farmers practice were effective to manage the population of red banded caterpillar but spraying of thiacloprid 21.7 SC 0.04 % (@ 2ml/lit) was most effective to manage and also in terms of cost effectiveness and higher B:C ratio.

#### OFT 4 : (Agril. Engg. )Rabi 2022-23

**Thematic area:** Water management

**Problem definition/Name of OFT:** Excess water during irrigation affects the plant growth resulted into decrease in productivity, yield and benefit cost ratio

1.	Title of On farm Trial	Assessment of Cut Off ratio in wheat irrigation
2.	Problem diagnosed	Excess water during irrigation affects the plant growth resulted into decrease in productivity, yield and benefit cost ratio
3.	Details of technologies selected for assessment/refinement (Mention either Assessed or Refined)	FP: 100 % Irrigation TO1: Irrigation at 90% cut off TO2: Irrigation at 80 % cut off
4.	Source of Technology (ICAR/ AICRP/SAU/other, please specify)	DRRPCAU, Pusa
5.	Production system and thematic area	Paddy-Wheat-Green Gram Water management
6.	Performance of the Technology with performance indicators	i. No. of Irrigation. ii. Water applied (cubic metre/ha.) iii. Water Saving (m <sup>3</sup> /ha.) iv. No. of effective tillers v. No. of grains per earhead vi. Sample weight (g) vii. Yield (q/ha.) viii. cost of cultivation(Rs./ha.) ix. Gross return (Rs./ha.) x. Net return (Rs./ha.) xi. B:C ratio
7.	Final recommendation for micro level situation	Awaited for 2nd trial observation
8.	Constraints identified and feedback for research	It is tough to convince farmers to stop irrigation after 80 % and 90% of irrigated length.
9.	Process of farmers participation and their reaction	Through training and trial demonstration

**Table: Assessment of Cut Off ratio in wheat irrigation.**

Thematic area	Technology options with detailed treatments	Area (ha)		No. of Irrigation	Water applied (m <sup>3</sup> /ha)	Water saving (m <sup>3</sup> /ha) %	No. of Effective tillers	No. of grains per earhead	Sample weight (g) 100 grain wt.	Yield (q/ha)	Cost of cultivation (Rs./ha.)	Gross Return (Rs./ha.)	Net Return (Rs./ha.)	B:C ratio
		Proposed	Actual											
Water Management	100 % Irrigation	0.4	0.4	3	2250	-	11.4	35.6	3.8	34.3	35200	70315	35115	1.99
Water Management	Irrigation at	0.3	0.3	3	1768	482 (21.42)	14.3	38.3	4.2	37.8	33600	77490	43890	2.30

ment	90% cut off													
Water Management	Irrigation at 80% cut off	0.3	0.3	3	1596	654 (29.07)	12.8	39.3	3.7	34.2	32850	70110	37260	2.13

**Result:** With strip size of land 5m and discharge rate of 0.9 cusec(25.5 litre per sec.) the technology option -I i.e irrigation at 90 per cent cut off is found the most economical with B:C ratio 2.30 and 21.42 per cent of water saving in comparison to the farmers.

**OFT 5 : (Agril. Engg. )Kharif 2023**

**Thematic area:** Application of small tools/ implements

**Problem definition/Name of OFT:** Growth of weeds in paddy fields during Kharif season resulted into low productivity.

1.	Title of On farm Trial	Assessment different weeding tools in paddy crop.
2.	Problem diagnosed	Growth of weeds in paddy fields during Kharif season resulted into low productivity.
3.	Details of technologies selected for assessment/refinement (Mention either Assessed or Refined)	FP: Manual weeding TO I: Manual inter culturing with a grubber TO II: Inter culturing with a cono weeder.
4.	Source of Technology (ICAR/ AICRP/SAU/other, please specify)	BAU, Ranchi, Jharkhand
5.	Production system and thematic area	Paddy-wheat Application of small tools/ implements
6.	Performance of the Technology with performance indicators	i. Field Capacity ii. Number of effective tillers per hill iii. No of grains per panicles iv. 100 grain weight (g) v. Yield (q/ha) vi. Cost of cultivation (Rs./ha.) vii. Gross Return (Rs./ha.) viii. Net return (Rs./ha.) ix. B:C ratio
7.	Final recommendation for micro level situation	Awaited for 2nd trial observation
8.	Constraints identified and feedback for research	Application of a grubber was not fit for paddy fields due to its only pulling action. It was also tough to operate in standing water condition
9.	Process of farmers participation and their reaction	Through training and trial demonstration

**Table: Performance assessment of weeding tools in paddy crop**

Thematic area	Technology options with detailed treatments	Area (ha)		Field Capacity (m <sup>2</sup> /hr.)	Weeding efficiency (%)	Yield Attributing characters			Yield (q/ha)	Cost of cultivation (Rs./ha.)	Gross Return (Rs./ha.)	Net Return (Rs./ha)	B:C ratio
		Proposed	Actual			No. of eff. tillers /hill	No.of grains /panicles	100 grain wt. (g)					
Application of small tools/ implements	FP	0.4	0.4	44.05	92.36	17	241	2.17	42.6	48563	92996	44433	1.91
	TO-I	0.3	0.3	49.81	86.24	18	242	2.18	43.1	47225	94087	46862	1.99
	TO-II	0.3	0.3	68.32	96.21	23	249	2.18	48.3	42350	105439	63089	2.49
	SE m <sup>+</sup> .			1.46	1.03	1.21	0.28	NS	1.36				
	CD 5%			3.84	2.76	3.28	0.71		3.59				

**Result:** During the trial for mechanically control of weeds in paddy field it was observed that the incorporation of uprooted weeds was only possible by application of a cono weeder due to its push pull action. It was found that with the highest field capacity (68.32 m<sup>2</sup>/ha) for mechanical weeds control and an significant increase in yield by 13.38 percent in comparison to manual weeding, the cono weeder (TO-II) was the most suitable weeding tool for interculturing operation in paddy field. The B:C ratio in the trial was also found the highest (2.49) for the field where a cono weeder was applied as interculturing tool.

#### OFT 06: (Horticulture)

**Thematic area:** Residue Management

**Problem definition/Name of OFT:** Use of imbalance and inadequate chemical fertilizers by farmers has also deteriorate soil health

1.	Title of On farm Trial	Ex situ residue management of potato
2.	Problem diagnosed	Use of imbalance and inadequate chemical fertilizers by farmers has also deteriorate soil health
3.	Details of technologies selected for assessment/refinement (Mention either Assessed or Refined)	FP: Sowing in ridge and furrow method TO <sub>1</sub> : Sowing of potato seed with FYM and paddy straw 15 cm TO <sub>2</sub> : Sowing of potato seed with FYM and water hyacinth
4.	Source of Technology (ICAR/ AICRP/SAU/other, please specify)	DRPCA, Pusa, Bihar
5.	Production system and thematic area	Vegetables- Potato Residue Management
6.	Performance of the Technology with performance indicators	i) Plant height (cm)                      ii) Fruit yield per plant (kg) iii) Avg. no. of fruit/ plant              iv) Avg. Weight of fruit (g) v) Yield/plant (kg)                          vi) Yield q/ha vii) Cost of cultivation                      viii) Gross return ix) Net return                                  x) B: C ratio
7.	Final recommendation for micro level situation	Sowing of potato seed with FYM and paddy straw 15 cm may be the best option for Ex situ residue management of potato.
8.	Constraints identified and feedback for research	Difficult to irrigate and manage plots
9.	Process of farmers participation and their reaction	Through trial, training and method demonstration

**Table:** Effect of ex-situ residue management on yield and economics of potato.

Thematic area	Technology options with detailed treatments	Area (ha)		Plant Height (cm)	Fruit Yield per Plant (Kg)	Avg. no. of Fruit per plant	Avg. wt. of fruit per (g)	Yield (q/ha.)	Cost of cultivation (Rs./ha.)	Gross Return (Rs./ha.)	Net Return (Rs./ha)	B:C ratio
		Proposed	Actual									
Residue Management	Sowing in ridge and furrow method	0.4	0.4	43	0.72	6.0	120	309	147500	309000	161500	2.09
	Sowing of potato seed with FYM and paddy straw 15 cm	0.3	0.3	45	0.90	7.0	130	338	145000	338000	193000	2.33

Sowing of potato seed with FYM and water hyacinth	0.3	0.3	41	0.75	6.5	116	318	146700	318000	171300	2.16
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**Result:** The on farm trial conducted on farmers field during Rabi 2022-23 revealed that Sowing of potato tuber with FYM and paddy straw 15 cm may be the best option for Ex situ residue management of potato as a result of higher tuber yield (309 q/ha) with BC ratio 2.33 in comparison to farmers practice.

#### OFT-07: (Horticulture)

**Thematic area:** IDM

**Problem definition/Name of OFT:** Panama wilt in Banana is a major emerging problem in this area.

1.	Title of On farm Trial	Assessment of bio control agent for management of Panama wilt in Banana
2.	Problem diagnosed	Panama wilt in Banana
3.	Details of technologies selected for assessment/refinement (Mention either Assessed or Refined)	FP: Tissue Culture plant TO <sub>1</sub> : ICAR Fusicont TO <sub>2</sub> : Sabour Trichoderma
4.	Source of Technology (ICAR/ AICRP/SAU/other, please specify)	DRPCA, Pusa, Bihar
5.	Production system and thematic area	Banana IDM
6.	Performance of the Technology with performance indicators	i) Initial plant population iii) Wilting percentage v) T.S.S. ( <sup>0</sup> B) (Rs/ha) Vii) Gross return (Rs/ha) ix) B:C ratio (Rs./ha) ii) First wilt incidence iv) Fruit yield (t/ha) vi) Cost of cultivation viii) Net return (Rs./ha)
7.	Final recommendation for micro level situation	
8.	Constraints identified and feedback for research	Trial continue..
9.	Process of farmers participation and their reaction	Through training and trial demonstration

**Result:** Awaited

#### OFT -08: (Home Sc.) (Rabi 2022-23)

**Thematic area:** Value addition

**Problem definition/Name of OFT:** Lack of proper knowledge regarding the Potato Flakes

1.	Title of On farm Trial	Assessment of preparation methods of Potato Flakes for more self shelf life and enhancement of income
2.	Problem diagnosed	Lack of proper knowledge regarding the Potato Flakes
3.	Details of technologies selected for assessment/refinement (Mention either Assessed or Refined)	Farmers Practices: Local people consume fresh potatoes as such as vegetables. TO <sub>1</sub> : Preparation of Potato Flakes Formulation-Ingredients(Sliced potatoes (3-5 mm) -5kg, Salt-50g, water-7.5 liter, KMS-6.0 g)

		TO <sub>2</sub> : Preparation of Potato Flakes with sour taste. Formulation-Ingredients(Sliced potatoes (3-5 mm) -5kg, Salt-50g, water-7.5 liter, KMS-6.0 g, Glacial Acetic acid-50.0ml)
4.	Source of Technology (ICAR/ AICRP/ SAU/other, please specify)	DRPCA, Pusa Samastipur, Bihar
5.	Production system and thematic area	Value addition
6.	Performance of the Technology with performance indicators	Technological observations 1. TSS(%) 2. Acidity (%) 3. Sensory Analysis i. Taste ii.Colour iii.Flavour iv.Texture v. Overall Acceptability 4. Packaging Material: Glass Jar 500g 5. Self life (0, 15, 30, 45, 60 and 75 days at ambient refrigerated condition)
7.	Final recommendation for micro level situation	<i>Sliced potato-5kg, salt-50gm, water-7.5lit., KMS-6.0gm, Glacial Acetic acid-50.0ml) may be the best option for preparation of Potato Flakes</i>
8.	Constraints identified and feedback for research	Need more awareness for value addition of potato
9.	Process of farmers participation and their reaction	Through training and trial demonstration

**Table: Sensory Evaluation of Different Methods of Potato Flakes**

Thematic Area	Area/ No		Farmer's Practices				Potato flakes (sliced potato-5kg, salt-50gm, water-7.5lit. , KMS-6.0gm)			Potato flakes ( sliced potato-5kg, salt-50gm, water-7.5lit. , KMS-6.0gm, Glacial Acetic acid-50.0ml)		
	Proposed	Actual										
Value Addition	10	10	Parameters	Mean	±SD	Score %	Mean	±SD	Score %	Mean	±SD	Score %
			Taste	5.62	0.84	56.20	6.56	1.07	65.57	6.81	1.06	68.13
			Colour	4.72	0.74	47.23	6.20	0.77	62.00	6.32	1.14	63.17
			Flavour	5.72	0.72	57.23	6.29	0.94	62.87	6.36	0.79	63.57
			Texture	5.57	0.66	55.70	6.07	0.94	60.70	6.40	0.90	64.03
			Overall Acc	6.07	0.69	60.70	6.53	0.75	65.33	6.86	1.02	68.57

**Result:** *Potato flakes ( sliced potato-5kg, salt-50gm, water-7.5lit., KMS-6.0gm, Glacial Acetic acid-50.0ml) should be the best option for preparation of Potato Flakes for more self shelf life and enhancement of income in comparison to T.O 1.*

**OFT -09: (Home Sc.)**

**Thematic area:** Value Addition

**Problem definition/Name of OFT:** Malnutrition is a major challenge among rural population.

1.	Title of On farm Trial	Value Addition in Ragi and their quality evaluation
2.	Problem diagnosed	Malnutrition
3.	Details of technologies selected for assessment/refinement (Mention either Assessed or Refined)	Farmers Practices: Consuming as a chapatti. TO <sub>1</sub> : Ragi Noodles (Refined wheat flour- 70g. Ragi- 30 g, water 30 ml, Salt 2g) TO <sub>2</sub> : Ragi vermicelli (Refined wheat flour- 30g, Whole wheat flour-40 g, Ragi- 30 g, water 30 ml, Salt 2g)
4.	Source of Technology	DRPCA, Pusa Samastipur, Bihar

	(ICAR/AICRP/SAU/other, please specify)	
5.	Production system and thematic area	Homestead Value Addition
6.	Performance of the Technology with performance indicators	Technological observations 2. TSS(%) 3. Acidity (%) 4. Sensory Analysis i. Taste ii. Colour iii.Flavour iv.Texture vi. Overall Acceptability 4. Packaging Material: 5. Self life (0, 15, 30, 45, 60 and 75 days at ambient refrigerated condition)
7.	Final recommendation for micro level situation	<i>Ragi vermicelli (Refined wheat flour- 30g, Whole wheat flour-40 g, Ragi- 30 g, water 30 ml, Salt 2g) hds been found the suitable practice for Value Addition in Ragi</i>
8.	Constraints identified and feedback for research	Lack of tools and knowldge among ryal women to prepare Noodles and vermicelli
9.	Process of farmers participation and their reaction	Through training and trial demonstration

**Table: Sensory Evaluation of value added products of Ragi**

Theme tic Area	Area/ No		Farmer's Practices				Ragi Noodles			Ragi Vermicelli		
	Proposed	Actual	Parameters	Mean	±SD	Score %	Mean	±SD	Score %	Mean	±SD	Score %
Value Addition	10	10	Taste	5.44	0.90	54.40	6.04	0.78	60.40	6.66	1.08	66.63
			Colour	4.49	0.90	44.93	5.67	0.67	56.67	5.86	0.81	58.63
			Flavour	5.42	0.71	54.23	5.79	0.64	57.87	6.02	0.80	60.23
			Texture	5.57	0.66	55.70	5.79	0.68	57.87	5.99	0.74	59.87
			Overall Acceptability	5.92	0.59	59.20	6.33	0.73	63.33	6.54	0.95	65.40

**Result:** The on farm trial conducted in household showed that Ragi vermicelli (Refined wheat flour- 30g, Whole wheat flour-40 g, Ragi- 30 g, water 30 ml, Salt 2g) hds been found the suitable practice for Value Addition in Ragi in term of sensory evaluation and overall acceptability in comparison to Ragi Noodles.

