

OFT-1 (PP)

1.	Title of On farm Trial	Assessment of performance of different chemicals against late blight of potato
2.	Problem diagnosed	Severe incidence of late blight of potato causes very low yield per unit area in Ranchi district
3.	Details of technologies selected for assessment/refinement (Mention either Assessed or Refined)	<p>Farmers' practice: - spray of mancozeb @2.5gm/lit of water.</p> <p>Technology option 1: Spray of Copper Oxychloride @3.0gm/lit of water starting from 30 DAP alternating with Metalaxyl-Mancozeb @2.5 gm/lit. of water at 10 days interval. (Recommended)</p> <p>Technology option 2: Soil application Trichoderma Spp. @ 5.0 kg/ha. ,Seed treatment with Trichoderma Spp. @ 5.0gm/kg. of seed and spray of Propineb 70% @2.5 gm/lit. of water starting from 30 DAP alternating with Iprovalicarb + Propineb 6675 WP (5.5% +61.25% w/w)@2.5 gm/lit of water at 10 days interval</p>
4.	Source of Technology (ICAR/ AICRP/SAU/other,	BAU Ranchi
5.	Production system and thematic area	Vegetable Based Production System, Disease Management
6.	Performance of the Technology with performance indicators	<p>Good</p> <p>Performance Indicators Disease severity (%), Yield (q/ha), Gross return (Rs/ha) Net Return (Rs/ha), B : C Ratio</p>
7.	Final recommendation for micro level situation	<p>Result indicated that no. of tuber, average tuber weight and yield under TO-II were significantly superior to all the rest technology options except severity incidence percent which was very less. In terms of economics parameters the maximum value of gross return, net return and BC ratio was obtained in TO-II.</p> <p>Soil application Trichoderma Spp. @ 5.0 kg/ha. ,Seed treatment with Trichoderma Spp. @ 5.0gm/kg. of seed and spray of Propineb 70% @2.5 gm/lit. of water starting from 30 DAP alternating with Iprovalicarb + Propineb 6675 WP (5.5% +61.25% w/w)@2.5 gm/lit of water at 10 days interval</p>
8.	Constraints identified and feedback for research	Not identified
9.	Process of farmers participation and their reaction	<p>PRA</p> <p>They are happy with performance of OFT and interested for FLD</p>

Thematic area:

Disease Management

Problem definition:

Severe incidence of late blight of potato causes very low yield per unit area in Ranchi district

Technology assessed:

Technology option 1:

Spray of Copper Oxychloride @3.0gm/lit of water starting from 30 DAP alternating with Metalaxyl-Mancozeb @2.5 gm/lit. of water at 10 days interval. (Recommended)

Technology option 2:

Soil application Trichoderma Spp. @ 5.0 kg/ha. ,Seed treatment with Trichoderma Spp. @ 5.0gm/kg. of seed and spray of Propineb 70% @2.5 gm/lit. of water starting from 30 DAP alternating with Iprovalicarb + Propineb 6675 WP (5.5% +61.25% w/w)@2.5 gm/lit of water at 10 days interval

Table:

Technology option	No. of trials	Yield component			Disease/ insect pest incidence (%)	Yield (q/ha)	Cost of cultivation (Rs./ha)	Gross return (Rs/ha)	Net return (Rs./ha)	BC ratio
		No. of effective tillers/hill	No. of spikelet per panicle	Test wt. (100 grain wt.)						
<i>FP</i>	10				32.50	162.10	50257.50	162100.00	114842.50	2.28
<i>TO1</i>	10				24.01	180.59	51257.50	180590.00	129333.00	2.52
<i>TO2</i>	10				18.05	198.12	52000.00	198120.00	146120.00	2.81



OFT-2 (PP)

1.	Title of On farm Trial	Assessment of the performance of biological control of Lac insect predators in Ber plant of KUSUMI LAC
2.	Problem diagnosed	a) Yield Loss due to lac insect predators b) Lac quality deteriorate of brood lac
3.	Details of technologies selected for assessment/refinement (Mention either Assessed or Refined)	Farmers' practice: Fipronil 5% SC-1ml / lit and Dichorvos 76% 0.5 ml/lit of watertwo time spray 30 and 60days after inoculation of brood lac Technology option 1: Ethofenprox 10% - 2ml/ liter (Recommended)of waterThree time spray 30,60 and 90 days after inoculation of brood lac Technology option 2: <i>Bacillus thuringiensis var. kurstaki</i> 1gm/lit of water at 30 days and <i>Beauveria bassiana</i> at 2ml/lit of water two sprays at 60 and 90 days after inoculation of brood lac
4.	Source of Technology (ICAR/ AICRP/SAU/other, please specify)	IINRG, Ranchi
5.	Production system and thematic area	Vegetable Based Production System, Disease Management
6.	Performance of the Technology with performance indicators	Good Performance Indicators Disease severity (%), Yield (q/ha), Gross return (Rs/ha) Net Return (Rs/ha), B : C Ratio
7.	Final recommendation for micro level situation	Application of <i>Bacillus thuringiensis var. kurstaki</i> 1gm/lit of water at 30 days and <i>Beauveria bassiana</i> at 2ml/lit of water two sprays at 60 and 90 days after inoculation of brood lac registered the highest yield per tree.

8.	Constraints identified and feedback for research	Not identified
9.	Process of farmers participation and their reaction	PRA They are happy with performance of OFT and interested for FLD

Thematic area:

Disease Management

Problem definition:

Yield and quality Loss of brood lac due to lac insect predators

Technology assessed:

Technology option 1: Ethofenprox 10% - 2ml/ liter (Recommended) of water Three time spray 30,60 and 90 days after inoculation of brood lac

Technology option 2: *Bacillus thuringiensis var. kurstaki* 1gm/lit of water at 30 days and *Beauveria bassiana* at 2ml/lit of water two sprays at 60 and 90 days after inoculation of brood lac

Table:

Technology option	No. of trials	Yield component			Disease/ insect pest incidence (%)	Yield (q/ha)	Cost of cultivation (Rs./ha)	Gross return (Rs/ha)	Net return (Rs./ha)	BC ratio
		No. of effective tillers/hill	No. of spikelet per panicle	Test wt. (100 grain wt.)						
FP	10				33.51	11.57	640	4697.60	4057.60	6.34
TO1	10				12.07	20.20	690	7341.00	6651.00	9.64
TO2	10				11.00	21.50	730	7738.00	7008.00	9.6



OFT-3 (AH)

1.	Title of On farm Trial\	To assess the effect of Mineral Lick Block in goats reared under free range grazing system.
2.	Problem diagnosed	Mineral deficiency
3.	Details of technologies selected for assessment/refinement (Mention either Assessed or Refined)	1. Farmer's Practices :Grazing without any mineral supplementation 2. TO1 : Use of mineral mixture @ 5-10 g/day/ animal 3. TO2 : Use of mineral lick block (one block per 10 animals)
4.	Source of Technology (ICAR/ AICRP/SAU/other, please specify)	Division of Animal Nutrition, IVRI, Izzatnagar
5.	Production system and thematic area	Open grazing system and Nutrition Management
6.	Performance of the Technology with performance indicators	Details on table 1.
7.	Final recommendation for micro level situation	On the basis of findings of the trails it may be suggested that supplementation of Mineral Lick Block is more effective and easier to feed than mineral mixture powder in goats.
8.	Constraints identified and feedback for research	Higher rate of Mineral Lick Blocks.Required Government support to decrease the rate of Mineral Lick Blocks.
9.	Process of farmers participation and their reaction	Eighteen progressive farmers were selected for trails with flock size 15-20 and grouped randomly. Farmers were more satisfied with the response of Mineral Lick

		Blocks than Mineral Mixture Powder.
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Thematic area:

Nutrition Management

Problem definition:

Mineral deficiency

Technology assessed:

TO1 : Use of mineral mixture @ 5-10 g/day/ animal

TO2 : Use of mineral lick block (one block per 10 animals)

Table:

Tech.options	Initial Body weight(Kg.)	Fortnightly body wt. gain(Average) of experimental animals (Kg.)			Av. Wt. gain during experimental period (90 days)	Av. Wt. gain/day	Onset of heat after kidding (Average). (Days)	Conception rate (Natural service)
		30 days	60 days	90 days				
F.P	11.70	12.65	14.00	15.40	3.70kg	41.11 gm	115.60	76.35%
TO1	10.65	12.70	14.25	15.30	4.60kg	51.66 gm	82.42	83.24%
TO2	10.40	12.00	13.86	15.85	5.45kg	60.55gm	78.23	88.52%

OFT-4 (Agronomy)

1.	Title of On farm Trial	Assessment of performance of intercropping of pigeon pea with lady's finger under rainfed condition of Ranchi District.
2.	Problem diagnosed	Low profitability from pigeon pea farming.
3.	Details of technologies selected for assessment/refinement (Mention either Assessed or Refined)	FP:-Sole crop of pigeon pea TO-1:-Pigeon pea +Lady's finger 1:1 Ratio TO-2:-Pigeon pea + Lady's finger 1:2
4.	Source of Technology (ICAR/ AICRP/SAU/other, please specify)	BAU Ranchi
5.	Production system and thematic area	Integrated crop management and Crop Diversification

6.	Performance of the Technology with performance indicators	Yield qt/ha,% Increase in yield over PF, plant population Net return Rs./Ha,% Increase in Grass return PF, B:C ratio,
7.	Final recommendation for micro level situation	Results: Technology option T1,(Pigeon pea + okra 1:1) Is better than T2(Pigeon pea + Okra 1:2)and FP(Sole crop of pigeon pea) Due to B:C ratio is high 3:16:1 and Net Return 85318 Rs/Ha is also high inter cropping with pigeon pea and okra (1;1) was more profitable highest net return.
8.	Constraints identified and feedback for research	No constraints found
9.	Process of farmers participation and their reaction	PRA

Thematic area: Crop Diversification
Problem definition: Low profitability from pigeon pea farming
Technology assessed: TO-1:-Pigeon pea +Lady's finger 1:1 Ratio
TO-2:-Pigeon pea + Lady's finger 1:2

Table:

Technology option	No. of trials	Yield component			Disease/ insect pest incidence (%)	Yield (q/ha)		Cost of cultivation (Rs./ha)	Gross return (Rs/ha)	Net return (Rs./ha)	BC ratio
		No. of effective tillers/hill	No. of Cob/Plant	Test wt. (100 grain wt.)		Pigeon pea	Okra				
FP:-Sole crop of pigeon pea	15	1	2	10.5 gm	15%	8.75	-	26183	49652	23469	1.87:1
TO-1:-Pigeon pea +Lady's finger 1:1 Ratio	15	1	2	10.5 gm	10%	12.25	35.00	38500	122018	83518	3.16:1
TO-2:-Pigeon pea +	15	1	2	10.5 gm	12%	11.00	40.0	43200	122425	79225	2.83:1

Lady's finger 1:2							0				
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Results: Technology option T1,(Pigeon pea + okra 1:1) Is better than T2(Pigeon pea + Okra 1:2)and FP(Sole crop of pigeon pea) Due to B:Cratio is high 3:16:1 and Net Return 85318 Rs/Ha is also high inter cropping with pigeon pea and okra (1;1) was more profitable highest net return.

OFT-5 (Ag. Eng.)

1.	Title of On farm Trial	Assessment of different mulching material on yield of Tomato.
2.	Problem diagnosed	I. Water scarcity for irrigation II. Productivity very low. III. Labour cost more.
3.	Details of technologies selected for assessment/refinement (Mention either Assessed or Refined)	F.P. – Tomato planting on Raised Bed without mulching. To I - Tomato planting on Raised Bed with Paddy straw mulching. To II - Tomato planting on Raised Bed with Jute made Fiber mulching (300 gsm Jute Non woven)
4.	Source of Technology (ICAR/ AICRP/SAU/other, please specify)	NIRJAFT, KOLKATA
5.	Production system and thematic area	Vegetable based Crop Production/Soil & Water Management
6.	Performance of the Technology with performance indicators	Raised Bed with Jute made Mulching in Tomato (To-II) gave the best result in terms of water saving (37.5%). Also there was no need of Intercultural operation and significant increase in yield was recorded
7.	Final recommendation for micro level situation	Jute made mulching is recommended at Micro Level satiation as there is saving of water, Soil erosion is minimised, labour cost is reduced, and overall yield and soil health is improved. Jute made mulching material is eco friendly creating no soil pollution.
8.	Constraints identified and feedback for research	Availability of material and need of low cost Bio-degradable material for mulching is research issue for this area.
9.	Process of farmers participation and their reaction	Total of 7 (Seven) farmers were selected from village Gurgurjari, Mandar Block of Ranchi district. The farmers were happy to see its performance.

Thematic area:

Water Management

Problem definition:

Water scarcity for irrigation, Productivity very low. Labour cost more.

Technology assessed:

To I :Tomato planting on Raised Bed with Paddy straw mulching.

To II -Tomato planting on Raised Bed with Jute made Fiber mulching (300 gsm Jute Non woven)

Table:

Technology option	No. of trials	Yield component			Disease/ insect pest incidence (%)	Yield (q/ha)	Cost of cultivation (Rs./ha)	Gross return (Rs/ha)	Net return (Rs./ha)	BC ratio
		No. of effective tillers/hill	No. of spikelet per panicle	Test wt. (100 grain wt.)						
FP	07				10	41.25	58750.00	206250.00	147500.00	2.51:1
To I	07				8	55.00	61450.00	275000.00	213550.00	3.48:1
To II	07				6	68.75	75650.00	343750.00	268100.00	3.54:1

OFT-6 (GPB)

1.	Title of On farm Trial	Assessment of seed priming method for vigor enhancement in onion variety Bheema Dark Red.
2.	Problem diagnosed	Poor crop stand establishment due to abiotic stresses such as drought, high temperature and adverse soil properties.
3.	Details of technologies selected for assessment/refinement (Mention either Assessed or Refined)	To improve vigor of onion seed different priming treatments like hydro priming, nutri-priming will be assessed. In hydro-priming seed soaks in equal volume of water for 6 hrs and shade dry. In Nutripriming seeds soak in nutrient solution of 0.5 % of ZnSo ₄ and Beej Sanjeevani for 10 hrs and shade dry.
4.	Source of Technology (ICAR/ AICRP/SAU/other, please specify)	<i>Dept. of Seed science and Technology, Horticultural College and Research Institute, Tamil Nadu Agricultural University, Coimbatore, Tamil Nadu, India.</i>
5.	Production system and thematic area	Vegetable Production & Seed Quality Enhancement
6.	Performance of the Technology with performance indicators	Seed priming with 0.5 % ZnSo ₄ improved seed germination by 92 % and vigor index by 1490, increased shoot and root length. Primed seed emerged more rapidly in a synchronized way.

7.	Final recommendation for micro level situation	Seed priming with 0.5 % ZnSo4 for 10 hour (Nutripriming) and shade dried is recommended in Rabi season crop where soil moisture is deficit. Primed seed showed the early emergence of radicle and good plant stand in moisture stress condition. Nutri priming with Beej Sanjeevani is also recommended for organic farmers because it has given good result too.
8.	Constraints identified and feedback for research	No any constraints identified during assessment of priming technique as it is a simple, low cost, low risk and useful technology for farmers.
9.	Process of farmers participation and their reaction	Onion seed variety Bheema Dark Red was distributed among 10 farmers of village Lawagarha, Burmu. Farmers were trained to do seed priming before growing nursery. The farmers were happy to see the priming effect on onion seedlings. They felt that seed priming with 0.5 % ZnSo4 works effectively during moisture stress condition as it has established good crop stand after transplanting.

Thematic area: Seed quality Improvement

Problem definition: Poor crop stand establishment is the major abiotic constraint during Rabi cultivation of Onion.

Technology assessed: Seed priming of onion seed with 0.5 % ZnSo4 for 10 hour (Nutripriming) and shade dried improved seed germination and increased yield.

Table:

Technology option	No. of trials	Germination %	Shoot length	Root Length	Vigor Index	Yield (q/ha)	Cost of cultivation (Rs./ha)	Gross return (Rs/ha)	Net return (Rs./ha)	BC ratio
FP: Seeds soaking in equal volume of water for 6 hour (Hydropriming) and shade dried to original moisture content.	10	86	8.1	7.0	1299	120	74100.00	180000.00	105900.00	1.43
T1: Seed priming with 0.5 % ZnSo4 for 10 hour (Nutripriming) and shade dried.		92	8.9	7.3	1490	156	74100.00	234000.00	159900.00	2.16
T2: Seed priming with Beej sanjeevani		89	8.6	7.2	1406	144	74100.00	216000.00	141900.00	1.91

(1 litre in 750ml of water) for 10 hour and shade dried.

Result: Assessment of priming treatments for onion seeds, to improve seed vigour revealed that the seeds primed with 0.5 % ZnSo₄ for 10 hrs was found to enhance germination (92%) and Vigour Index (1490) than the other treatments.



Training & Method Demonstration on Seed Priming



OFT Field at Lawagarha



Onion var. Bheema Dark Red

OFT-7 (GPB)

1.	Title of On farm Trial	Effect of seed treatment with different botanicals on seed quality during storage of green gram under ambient condition of storage.
2.	Problem diagnosed	Severe infestation of pulse beetle (<i>C. chinensis</i>) during storage of green gram.
3.	Details of technologies selected for assessment/refinement (Mention either Assessed or Refined)	FP: Seed storage with Sindwar/Karanj/Neem leaves T1: Seed treatment with Neem oil @ 10ml/kg seed (Recommended) T2: Seed treatment with Karanj oil @ 10ml/kg seed T3: Seed treatment with Neem + Karanj oil (1:1) @ 10ml/kg seed

4.	Source of Technology (ICAR/AICRP/SAU/other, please specify)	<i>Dept. of Seed Science and Technology, University of Agricultural Sciences, Dharwad</i>
5.	Production system and thematic area	Pulses Production & Storage Pest Management,
6.	Performance of the Technology with performance indicators	Seed treatment with Neem + Karanj oil showed higher seed germination, seedling length, seedling vigor index which was at par with Neem oil seed treatment and followed by Karanj oil.
7.	Final recommendation for micro level situation	The botanicals namely Karanj Oil and Neem + Karanj oil is the substitute of Neem oil seed treatment for storage of green gram seeds, as they are on par with the insecticides in maintaining high quality of the seed throughout storage period. Seed treatment with Karanj oil is low cost technology and easily available at village level as Karanj tree is abundant in the forest of the district. Apart from this the botanicals are safe to the human beings and animals and it can be recommended to the farmers for routine seed treatment.
8.	Constraints identified and feedback for research	There is a need to study efficacy of seed treatments with other botanicals which are locally available on seed storability of green gram.
9.	Process of farmers participation and their reaction	Neem oil and Karanj oil were distributed among 10 farmers of village Sewadih, Mandar and Barwatoli Angara. Farmers were trained to do seed treatment before storage of green gram. Farmers have treated seed with all the botanicals and stored for next season sowing. They have gained experience that after six months, green gram seed treated with different botanical was safe and free from insects and quality was also remain same. They felt that seed which was stored with sindwar leaves is not very effective in storage.

Thematic area: Storage Pest Management

Problem definition: Pulse beetle (*C. chinensis*) seriously damage pulses during storage. To control storage insect pests, several synthetic pesticides are used during storage, but they show adverse effects on environment and persist for longer period in form of residues and entered in the food chain after utilization of grains by the human being which causes serious health hazards.

Technology assessed: Seed treatment with different botanicals namely Neem oil, Karanj Oil, Neem+Karanj oil and Sindwar leaves were assessed. Result showed that all the botanicals except sindwar leaves were effective in case of green gram. Though Neem + Karanj oil seed treatments gave best result but Karanj oil seed treatment gave at par result in terms of quality parameters hence, Karanj oil use in

seed treatment is more preferable for farmers of Ranchi district as it is low cost and based on local resources. This method of seed treatment protects the pulse grain from insects and does not cause health hazards.

Table:

Technology option	No. of trials	Pulse beetle infestation %		Germination %		Seedling Length		Seedling Vigor Index		Cost of Technology Used (for storage of 2.5 qtl seed)
		3 month	6 month	3 month	6 month	3 month	6 month	3 month	6 month	
FP: Seed storage with Sindwar leaves	10	9.75	26.25	84.5	71.5	27.07	20.49	2287	1465	-
T1: Seed treatment with Neem oil @ 10ml/kg seed (Recommended)		4.25	13.50	92.5	92.0	27.65	21.46	2558	1974	1750.00
T2: Seed treatment with Karanj oil @ 10ml/kg seed		4.75	13.75	92.0	90.0	27.48	21.18	2528	1906	300.00
T3: Seed treatment with Neem + Karanj oil (1:1) @ 10ml/kg seed		3.75	13.25	93.0	92.0	27.92	21.81	2597	2006	1025.00

Results: The seed treatment with Neem + Karanj oil recorded significantly higher seed germination, seedling length, seedling vigor index which was at par with Neem oil seed treatment and followed by Karanj oil. The low insect infestation at the end of six month of storage was observed in T3 Neem + Karanj oil (13.25%) followed by T1 Neem oil (13.5 %) and T2 Karanj Oil (13.75%) over farmers practice. Result also showed that seed treatment with karanj oil is low cost technology and easily available at village level as Karanj tree is abundant in the forest of the district.



Training & Method Demonstration on Seed Treatment with different Botanicals under OFT programme 2018-19