

Farmer FIRST Programme (2021-22)

During the year 2021-22, Farmer FIRST Programme (FFP) was implemented in three ICAR Institutes (ICAR-NRRI, Cuttack; ICAR-CIFA, Bhubaneswar and ICAR-IIWM, Bhubaneswar) and one State Agricultural University (OUAT, Bhubaneswar). Although the second and third wave of COVID-19 pandemic continued during the period, maximum efforts were given by the team of all 4 project implementing centres under ICAR-ATARI Kolkata to conduct various activities in their adopted villages following all COVID protocols to prevent the spread of infection. The ICAR-ATARI Kolkata organized Zonal Review Workshop to monitor the achievements for the period 2020-21 and Action Plan 2021-22 of FFP centres. Not only that, each centre prepared a substantial numbers of success cases/stories of agricultural farmers in the prescribed proforma of the Council considering doubling farmers' income (DFI) which were ultimately submitted to the responsible ATARI for publication. The details of budgetary allocation and salient achievements of FFP have been given as under.

Details of Farmer FIRST Programme under ICAR-ATARI Kolkata during 2021-22

<i>Sl. No.</i>	<i>Name of the project (Institute/ University)</i>	<i>Name of the PI/ Nodal Scientist of the project</i>	<i>Fund allotted during 2021-22 (Rs. in lakh)</i>	<i>Fund utilized during 2021-22 (Rs. in lakh)</i>
1.	Increasing productivity and sustaining the rice-based production system through Farmer FIRST approach (ICAR-National Rice Research Institute, Cuttack)	Dr. S. K. Mishra Pr. Scientist	18.50	18.66
2.	Promoting improved agriculture and allied sector technologies in Khordha district through Farmer FIRST Project (ICAR-Central Institute Freshwater Aquaculture, Bhubaneswar)	Dr. H. K. De Pr. Scientist	21.00	20.90
3.	Enhancing water and livelihoods security and improving water productivity in tribal dominated paddy fallow rainfed agro-eco system of Odisha (ICAR-Indian Institute of Water Management, Bhubaneswar)	Dr. P. Nanda Pr. Scientist (upto 07.12.2021) Dr. D. Sethi Sr. Scientist (after 08.12.2021)	18.50	12.81
4.	Enhancing Farm Productivity & Profitability with 'Farmer-FIRST' focus in Khordha district of Odisha (OUAT, Bhubaneswar)	Dr. R. K. Paikaray Professor	18.00	18.00
5.	ICAR-Agricultural Technology Application Research Institute (ATARI) Kolkata	Dr. K. S. Das Pr. Scientist-cum-Member-Secretary	7.50	6.68
Total			83.50	77.05

Salient achievements of projects:

ICAR-NRRI, Cuttack

During the year 2021-22, various activities under FFP were conducted in four adopted villages i.e. Laxminarayanpur, Satyabhamapur, Ganeswarpur and Biswanathpur of Block- Salipur, District- Cuttack, Odisha. Under crop-based module, varietal demonstrations of 6 most promising rice varieties e.g. 'Pooja', 'Swarna Sub-1', 'CR Dhan 800', 'Pradhandhan (CR Dhan 409)' with complete package of practices during Kharif 2021 covering over 40 ha area with 10-15 kg seed mini-kits along with partial amount of fertilizers and need-based pesticides; demonstrations on raising mat type rice nursery using rice seedling trays (250 nos.) followed by transplanting

through 8-row power tiller operated rice transplanter; demonstrations of *Trichoderma viridae* as a biofungicide for seed and soil treatment for suppression of various diseases caused by fungal pathogens @10 gms/kg; demonstrations of *Pseudomonas* as a bio-agent for seed and soil treatment for suppression of various diseases caused by fungal infections @10gms/lit; demonstrations on pesticide management in rice through application of pre- and post-emergence; demonstrations of solar based alternate energy light trap (AELT) 24 x 7 for monitoring and mass trapping of major insects invented by ICAR-NRRI scientists; and training of farmers to use android-based trilingual 'RiceXpert' Mobile App (in English, Hindi and Odia) developed by the Institute as a decision support system at all operational levels in rice farming systems were provided to each of the 195 farmers covering 4 villages.



Under Horticulture-based module, demonstrations on vegetables i.e. cucumber (rain special), pumpkin (*Barshati*), bitter gourd (*US 1315*), tomato (*Rohit*), okra (*Radhika*), ridge gourd (*NZ 1001*), French bean (*Yuvika*), pointed gourd saplings (*Swarna Alaukik*), ivy gourd (*A N Kunkhi*), grafted brinjal, spine gourd (*A.N. Shanti*) cultivation were done for 254 farmers including women. Considering demonstrations on fruits, watermelon (*Dolly*), papaya (*Red Lady*), mango grafted (*Dasheri*) and guava goola (*Pant Prabhat*) were undertaken for 17 farmers/ farm women.



Demonstrations were conducted and critical input like mineral mixture for proper metabolic functions of cows, goats and poultry were supplied among 150 livestock farmers under Animal Husbandry-based module in all adopted villages. As a part of enterprise-based module, demonstrations for 100 farm women @ 10-50 beds each on paddy straw mushroom and technical backstopping for ten FFP promoted mushroom entrepreneurs; agro-shade net house construction of eight farmers to control the incidental sun light falling upon the mushroom bed; and demonstrations/ distribution of honey bee boxes for 20 beneficiary farmers along with technical backstopping were provided under Farmer FIRST Programme during the period.



Under capacity building and extension activities, training-cum-demonstration on bee keeping for entrepreneurship development for 22 farmers, NRRI light trap for rice insect pest management for 41 farmers, integrated crop management techniques in *Kharif* rice for 83 farmers, integrated pest management in rice for 81 farmers, 'Nutri-garden' and tree plantation on the occasion of 'International Year of Millets 2023' for 65 farmers and use of improved technologies in Horticultural crops for enhancing farm productivity and profitability for 75 farmers were conducted. Crop cutting experiments and rice field day demonstrations of high yielding rice varieties

during *Kharif* season for 14 farmers were organized. Not only that, field visit and farmers' interaction meet were also organized during the monitoring visits of Dr. V. V. Sadamate, Hon'ble RAC Member with 115 farmers and of FFP Team, ICAR-NAARM, Hyderabad with 89 farmers. The '*Kisan Diwas 2022*' with 58 farmers and '*World Pulses Day 2022*' on the topic '*Pulses to empower youth in achieving sustainable agri-food system*' with 38 farmers were celebrated under this programme.



ICAR-CIFA, Bhubaneswar

The Farmer FIRST project has covered four villages in Khordha district i.e. Anthuari, Purohitpur (Block-Balianta); Siddha Kutila and Brahman Khandi (Block-Balipatna). Those villages were newly selected for FY 2021-22. Under the component '*Scientists-Farmers Interface*', 35 programmes including field days, farmers-scientists interface, capacity building programmes etc. were organised involving 970 beneficiaries. Six modules were demonstrated involving modules on improved technologies of crop, horticulture, IFS, aquaculture and '*Nutri-garden*'. Under horticulture-based module, thermo-insensitive variety of cauliflower var. '*Fujiyama*' and bush type of French bean var. '*Falguni*' were introduced in 1 ha and 1.25 ha, respectively involving 70 farmers. Fish-based integrated farming system module was developed in 2 ha area involving 3 progressive farmers from adopted villages. Under green gram in rice fallow, 20 ha area was demonstrated involving 120 farmers (av. yield was 5.0 q/ha). To aware about nutritional security of the adopted farmers, 10 farmers were provided with a seed kit developed by ICAR-IIHR, Bangalore which consisted of 8 different varieties of vegetables grown in '*Nutri-garden*' for home consumption. Scientific fish farming was demonstrated in 6 ha area covering 6 community ponds and 16 individual ponds.

Institute Advisory Committee meeting and site planning and monitoring group meeting were held on 30th October, 2021. For strengthening '*Bhargabi Fish Farmers Producers Company Limited*', one stop aqua shop was established for catering to the requirements viz. quality fish seed, feed, medicines and other inputs of the member farmers at a single point. That aqua shop would also act as a sales outlet for quality fish being produced by the member.



Technology assemblage

Sl. No.	Components	No. of farmers	Area covered (ha)
1	Scientific fish farming	166	6
2	Fish based integrated farming system	3	2
3	Introduction of cauliflower var. <i>Fujiyama</i>	30	1
4	Introduction of bush type French bean var. ' <i>Falguni</i> '	40	1.25
5	Green gram in rice fallow	120	20
6	Nutri-garden	10	-
	Total	369	30.25

A team from ICAR-NAARM, Hyderabad consisting of Dr. P. Vekatesan; Dr. N. Sivaramane and Mrs. B. Kalyani visited the demonstration sites and monitored the progress of the project in the adopted villages. The team also documented some successful demonstrations like bush type French bean and fish based integrated farming system.



ICAR-IIWM, Bhubaneswar

The project was implemented in Khuntapingu, Malarpada and Jamuda villages in Saharpada block of Keonjhar district, Odisha. The project implemented through NRM, crop, horticulture and livestock-based modules. Under NRM based module, application of polythene mulching in vegetable crops and banana plantation for preventing evaporative water loss and saving irrigation water was demonstrated in fields of 42 farmers in three villages. Under horticulture-based module, sprinkler irrigation was used to supply water in vegetable crops by 14 farmers. Line transplantation was demonstrated in the fields of 30 farmers, of which most of the farmers also practiced traditional transplantation in parts of their fields. A comparison between the two methods was recorded which has been given as under.

<i>Components</i>	<i>Traditional transplantation</i>	<i>Line transplantation</i>
No. of farmers	40	30
Total area under cultivation	110.8 ac	29.8 ac
Total production under cultivation	2156 q	630 q
Production/ ha	48.64 q	52.85 q
Average cost (Rs.) of cultivation/ ha	41270	33150
Average net income (Rs.)/ ha	53092	69379

Vegetable seedlings viz. brinjal var. *Mahy Green* (5000 in nos.), tomato var. *Mahy 701* (3000 in nos.), chilli var. *VNR 305* (5000 in nos.), capsicum var. *NS 292* (2000 in nos.), cabbage var. *Mahy 139* (2000 in nos.) and cauliflower var. *NS 555* (2000 in nos.) were distributed among 200 farmers as critical input for diversification of paddy-fallow agro-ecosystem. Besides, seeds of cowpea var. *Gomti*, ridge gourd var. *Jaipur Long*, amaranthus, okra var. *Julli*, radish var. *Pusa Chetki* and planting materials of yam were also provided as critical input for demonstrating 'Nuti-garden' by women farmers for backyard cultivation. Around 3500 banana saplings were provided to demonstrate banana cultivation under polythene mulching and drip irrigation as a sustainable option for short duration fruit production. Application of pheromone traps, yellow sticky traps and neem based pesticides were demonstrated among the selected farmers. The traps were also installed in the fields of vegetable farmers and the results were recorded. However, income from vegetable cultivation under FFP (2021-22) has been presented below.

<i>Components</i>	<i>Brinjal</i>	<i>Bitter guard</i>	<i>Okra</i>	<i>Tomato</i>	<i>Cabbage</i>
No. of farmers	15	6	5	7	7
Total area (ac) under cultivation	3.33	1.38	0.76	1.15	0.91
Total production (q) under cultivation	274	56	37.1	108.5	86.7
Production/ ha	206.01 q	101.81 q	123.66 q	235.86 q	240.83 q

Average cost (Rs.) of cultivation/ ha	51000	75000	42000	45000	65000
Average net income (Rs.)/ ha	567030	332240	205320	426720	657490

Under livestock based module, 600 *Kadaknath* and 560 *Aseel* poultry chicks of 28 days age were provided to the livestock farmers to demonstrate backyard poultry farming as a source of income and source of nutrition. The mortality rate and growth performance of 2 selected birds are given below. Among those, the performance of *Kadaknath* birds was found to be better than *Aseel* birds.

Sl. No.	Breed	Sex	Body weight at 7 months of age	Range (kg)	Mortality rate (%)
1	Kadaknath	Male (n=53)	Mean=1.618 SD=0.230	1.1 to 2.24	8.83 (53 out of 600)
		Female (n=44)	Mean=1.173 SD=0.223	0.75 to 1.57	
2	Aseel	Male (n=47)	Mean=1.436 SD= 0.245	1.05 to 2.18	15.53 (87 out of 560)
		Female (n=48)	Mean=1.116 SD=0.199	0.73 to 1.515	

Throughout the period under report, the weather bulleting, as per IMD-OUAT, was made available to the farmers in local Odia language. The photos of insect and pest infestation in farmers' fields were shared in the *WhatsApp* group of FFP project and suggestions from experts were timely communicated to the concerned farmers. Three trainings involving 310 farmers were conducted in Khuntapingu, Jamuda and Malarpada village. Ten publications of different activities of Farmer FIRST programme were also published in local newspapers. Success stories of 25 farmers were recorded considering doubling farmers' income and communicated to ICAR-ATARI Kolkata.



OUAT, Bhubaneswar

During the year 2021-22, the Farmer FIRST Programme under OUAT, Bhubaneswar was implemented in Gobindpur, Gopalpur, Brahampura and Brahampurapatna village of Khordha district, Odisha. Under crop-based module, demonstrations were taken up on rice var. *Swarna Sub1* in an area of 50 ha involving 150 households. The variety gave average grain yield of 6.25t/ha, net return of Rs. 42500/- per ha with B:C of 2.75 against 4.24t/ha, net return of Rs. 27000/- per ha with B:C of 2.30 in case of existing variety '*Swarna*' under medium land condition. Demonstrations on rice var. '*Sarala*' were also conducted in an area of 30 ha involving 100 households. The variety gave average grain yield of 4.03 t/ha, net return of Rs. 24250/- per ha with B:C of 1.67 against grain yield of 2.0 t/ha, net return of Rs. 5000/- per ha with B:C of 1.20 in case of local variety '*Mayarkantha*' under low land condition. On the other hand, demonstrations of rice var. '*Lalat*' in 2.5 ha for 12 households were conducted. The variety gave average grain yield of 2.91t/ha, net return of Rs. 23200/- per ha and B:C of 1.66. The YMV resistant green gram var. '*IPM 02-14*' in rice-fallows was introduced and demonstrations were taken up in 20 ha area involving 75 households. The variety gave average grain yield of 0.36 t/ha, net return of Rs. 6400/- per ha with B:C of 1.8.

Under horticulture-based module, a series of demonstrations were conducted during the period to intensify the production of various horticultural crops e.g. hybrid pumpkin, hybrid cucumber, hybrid bitter melon, leafy vegetables (*Amranthus*), hybrid tomato and hybrid papaya. The hybrid pumpkin Tokita hybrid '*Vimal*' was demonstrated in 8 ha involving 50 households. The hybrid pumpkin gave average fruit yield of 32.5t/ha with an

expenditure of Rs. 122250/- and net profit of about Rs. 250000/- per ha. The hybrid cucumber '*Rajmata*' (Arnnapurna hybrid) in 4.2 ha involving 20 households. The average fruit yield was recorded to be 20.7 t per ha with av. net profit of around Rs. 196429/- per ha (Av. expenditure was Rs. 114286/- per ha and av. income was Rs. 310715/- per ha). The hybrid bitter melon var. '*VNR-21*' was demonstrated in 2 ha for 10 households which gave av. net profit of Rs. 97500/- per ha. Demonstrations were taken up on leafy vegetables (Amranthus) in 2.5 ha involving 25 households. The av. net profit was noted as Rs. 69000/- per ha within one month time. As a part of demonstration, hybrid tomato var. '*VNR Samridhi*' was also conducted in 0.4 ha involving 10 households. The hybrid gave av. fruit yield of 21.9t/ha with net profit of Rs. 151667/- (av. expenditure- Rs. 89444/- per ha vs. av. income- Rs. 241111/- per ha). Similarly, demonstration of hybrid papaya '*Red lady*' resulted av. fruit yield of 29.2 t/ha with net profit of Rs. 109600/- per ha. A total area of 2.5 ha was covered which involved 13 households.



As per livestock-based module was concerned, '*Pallishree*' strain was introduced for backyard poultry rearing under FFP activities. A total of 300 chicks aged between 3-4 weeks old were provided to 30 households @ 10 birds per household. The birds were reared for a period of 7 weeks and the mean body weight of the birds was 2kg/bird. The mortality was totally avoided by taking care of birds through feeding and proper health care. Each farmer realised a gross income of Rs. 5330/- and a net profit of Rs. 4430/- from 10 birds. Animal health camp was organized for 65 beneficiaries of adopted villages. The farmers were also trained for introducing crossbred dairy cows to enhance milk production and to manage dairy cows and goats for better health, production and reproduction.



To improve the skill and scientific knowledge of agricultural farmers, a total of 100 farmers were trained for integrated nutrient management on rice-green gram cropping system at their villages, 30 farmers on mushroom spawn production and 50 farmers on value addition and preservation of oyster and paddy straw mushroom at CTMRT, OUAT, Bhubaneswar during the period.

