A Journey of Out Reach Centre of CIARI for Technology Application at North & Middle Andaman

Central Agricultural Research Institute
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Citation : A Journey of Out Reach Centre of CIARI for Technology Application at North & Middle Andaman (2014)

Year of publication : 2014

Published by : Director,
Central Island Agricultural Research Institute,
Port Blair, Andaman & Nicobar Islands - 744101, India

Printed at : Capital Business Service & Consultancy
B-51, Sahid Nagar, Bhubaneswar
E-mail : capital.a1press@gmail.com

ACKNOWLEDGEMENT

I acknowledge Director, CIARI for giving me the responsibility of establishing & coordinating the function of Out Reach Centre at Diglipur, North & Middle Andaman District, which has taken the role of center stage for technology assessment, refinement and transfer.

Further, I would like to express my gratitude to all Heads of Divisions/Section and the team of Scientists of Natural Resource Management, Horticulture and Forestry, Field Crops, Animal Science, Fisheries Science, Social Science, Programme Coordinator & SMSs of KVK, Port Blair, Banks, Development departments, NGO's (ACANI, WBVHAI), PRI and Project Monitoring Committee Members for their technical and logistics support and NABARD for the Grant in furthering transfer of technology in agriculture and allied fields to the stakeholders of North and Middle Andaman District.

I would like to put in record the untiring support & suggestion in conducting and coordinating the activities of ORC by Dr.P.Krishnan, Dr.N.Ravisankar, Er. S.L.Paik, Shri Abhishek Srivastava, Dr.R.K.Gautam, Dr.P.K.Singh, Dr. P. Krishnan, Dr.M.Sankaran, Dr.Jai Sunder, Dr.Ajanta Birah, Dr. A.Velmurgan, Dr Naresh Kumar, Dr.A.K.Singh, Shri Shaktivel, Dr.Nagesh Ram, Dr.T.V.R.S.Sharma, Dr.M.S.Kundu, Dr.Shrawan Singh, Dr.V.Damodaran, Shri L.B.Singh, Shri Ramesh Kumar, Asstt. Director, Agriculture & Dr. Shailesh Kumar, Asstt. Fisheries Development Officer.

I would like to thank the team of NABARD headed by Shri. G.R.Chinthala, Shri S. Athirstavel and Shri. G. Tarai for

facilitating the establishement of Out Reach Centre of CARI at Diglipur and for their coordination and support.

Special thanks to Shri Amit Srivastava, Mrs. Rina Saha & Mrs. Phathuma of PME Cell, Shri Dibakar Khan, Shri Ali Akbar & Dr. Zacharia George of KVK, Nicobar for logistic support and Shri A.K. Pandey, Shri Harish V., Shri Shiv Kumar, Shri Kayum, Shri Shiba Mahtao, the staff of ORC, Diglipur for their dedicated work. Thanks are also due to Chief Administrative officer, Finance & Account Officer & Staff of SPCT Section of CARI for their timely support.

(Authors)

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There is a lot of difference in natural resource base as well as socio-economic background of people in different Islands, therefore, the technologies/ varieties/strains developed at Port Blair, cannot be straight way transferred to the farmers and needs evaluation and refinement to suit local condition. To achieve this, an Out Reach Centre (ORC) was established by Central Agricultural Research Institute (CARI) with the support of NABARD, Port Blair at Diglipur of North and Middle Andaman District which is 290 km. by road and 180 km by sea away from Port Blair, to basically serve Diglipur area, which is agriculturally very important region of UT. Hence ORC an extension arm of CARI for North & Middle Andaman district was sanctioned by NABARD on 27th March, 2009.

To plan and monitor the activities of the ORC a Project Monitoring Committee was constituted on 30th April 2009, thereafter a group of Scientists from the host Institute visited Diglipur for site selection, and a ground floor building was identified and selected at Keralapuram Panchayat of Diglipur for ORC, with agricultural land surrounding it. First Project Monitoring Committee Meeting was conducted on 17th June 2009, to plan and execute various activities of the ORC. The prime objectives were set and ORC came into operational from 15th July 2009, since then the journey of ORC began to take up technology transfer, assessment and refinement in agriculture and allied fields by conducting capacity building programmes, technological demonstrations, exposure visits, scientists-farmers-interaction, field visits and field days with the support of the Scientists and staff of the host Institute, KVK, Line Department, NGOs and PRI members.

On the way to foster good agriculture practices, significant bottlenecks were identified and the interventions to address the problems were done during the period of five years since inception of ORC of CARI, which has given fillip to the farmers and other stakeholders of the area. It is known that like other parts of A& N Islands , North and Middle Andaman region of the UT also receives rainfall, which is distributed very unevenly , leading to poor crop management and loss of crop. No such system was available in the area to provide information on the rainfall received and also to forecast weather. Even the newspaper reached about 12 to 24 hours after its publication at Port Blair, the capital city of Andaman and Nicobar Islands. Hence a "Rain Gauge" was placed with the support from Division of Natural Resource Management (NRM) of CARI on 24th October, 2009, which could supplement information on the quantum of rainfall received to the farmers, officials of line departments as and when required, so as to enable them to assess the crop damage due to the heavy downpour.

Peking cross duck was introduced in July 2010 for the first time in Diglipur, which has become favourite of the farmers and has spread across the different cluster of villages in a span of two years with 2-3 birds in the backyard of more than 35 farmers. To facilitate value addition in coconut a "Bio-mass Fired Copra dryer" was proposed, constructed, tested in the host Institute by the team of Scientist of NRM and was placed in one of the progressive farmer's field at Diglipur on 12th August, 2010, with an aim to produce quality copra in both less time, labour and disseminate the information on the technology to the peer groups. On 25th October, 2010, Kiosk with internet connection was set up at ORC, so that the farmers can use the Kiosk and internet to acquire knowledge and get to know on new technologies and adopt them in their farm and field. Cultivation of pulse crop is done in large scale at Diglipur and surrounding

areas, which after harvest is sent to mainland for processing and then brought back again and sold in the market, at four times more the prize of purchase due to lack of any processing unit.

A need for a Metrological Information System was felt and a Automatic Weather Station (AWS) was set up in Diglipur, near to the ORC office-cum-training building at Keralapuram with the support of NRM Division on 10th February, 2011. After establishment of this setup, the weather could be forecasted and the information were disseminated to the farmers through advisory in print and Rural Knowledge Centre.

ORC intervened with the feedback on setting up a mini dal mill on 17th April, 2011, among the SHGs for providing livelihood support in Diglipur with the technical support of Division of NRM, which was operationalized on 10th November, 2012. A survey on rice varieties grown at Diglipur revealed that the farmers grow varieties, which were of mixed type leading to poor yield in the field.

To address to the problem and with an objective to provide truthfully labelled seeds the concept of seed village in participatory mode was introduced in July, 2011. As per this , Seed village production of HYV of rice through" seed village concept" was carried out for the first time at Diglipur under the aegis of ORC with the support of Division of Field crops in an area of 0.95 ha covering 3 cluster of villages, with 5 promising varieties of rice viz. CSR-36 , CSR-23, CARI-05, Ranjeet and Gayatri. A total of 3 tons of truthfully labelled seed was produced and taken in buyback system. In this year the seed production could facilitate seed replacement in 17.0 ha. of land in the cluster of villages in and around Diglipur. Beside it could also meet to the demand of HYVs rice seeds placed by the NGOs and other stakeholders including KVK, Nimbudera.

To address to the need and huge demand mainly for fresh water Indian Major Carps (IMC) concept of Satellite Nurseries for livelihood was established in collaboration with Fisheries Science Division of CARI, Dept. of Fisheries, A&N Admn., KVK & ORC and nurseries were set up in the June 2012. Market survey on perishable goods (rice, pulses, vegetables, fish, mutton and pork) is recorded since inception and the information is translated during capacity building and other interaction programmes. Till date data base of 1900 farmers linked with ORC have been made.

To sum up, for conducting technology dissemination, Kisan gosti (04 Nos.), Scientists-farmers interaction (05 Nos.), Exposure visit during Kisan Mela and Farm Innovators meet (04 Nos.), Awareness campaigns (02 Nos.), 1784 field visits by experts and staff, 1548 clientele visits to ORC for advisory, information sharing and feedback, 39 telephonic advisory, Field days (02) and participation in Block Mela (02 Nos.) were done and for the technological Interventions for livelihood viz., Model Satellite Nursery of fresh water fish, pig, goat farming, Peking cross ducks under backyard, SRI of rice, Mini dal Mill, HYV of rice, pulses, tuber crops (sweet potato, elephant foot yam), ground nut, oil seeds (Sunflower), brinjal, cauliflower, cabbage, seed village concept of production of rice, Pheromone traps for rhinoceros beetle control, rodent and pest management in paddy were introduced. Till date, 32 cluster of villages have been covered through trainings and demonstrations and 18 farmers have been recognized by the peer groups and awarded with "Best Farmer Award" during Island Kisan Mela and Farm Innovators Meet by CARI for acting as a role model for adoption of technologies in agriculture and allied fields as a livelihood options.

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A Journey of Out Reach Centre of CIARI for Technology Application at North & Middle Andaman

1.0 INTRODUCTION

For technology dissemination to other islands of the Union Territory, transport is the major bottlenecks which hinder the efforts to evaluate the technologies in different socio - economic conditions and disseminate the technologies through different means. There is a lot of difference in natural resource base as well as socio-economic background of people in different islands , therefore, the technologies / varieties/ strains developed at Central Agricultural research Institute, South Andaman cannot be straight way transferred to farmers from elsewhere and needs evaluation and refinement to suit local condition. To achieve this, an innovative approach for reaching the unreached, an Out Reach Centre (ORC) Under the Farmers Technology Transfer Fund (FTTF) of NABARD, was established from July, 2009 at Diglipur of North & Middle Andaman district, which is 290 km. by road and 180 km by sea, away from the capital city Port Blair. ORC has taken its ToT programmes in the mode of capacity building, technology application through front line demonstration, evaluation of location specific technologies and its refinement, maintaining demonstration units on scientific lines, conducting extension activities like field days, advisory services, exposure visits, providing feedback, maintaining functional linkages both intra and inter institute

for optimizing resources and maximize benefits for ensuring holistic development and socio economic upliftment of the villagers and the cluster of villages as a whole. ORC has played a pivotal role in "FIRST LINE TRANSFER OF TECHNOLOGIES". It acts as a centre stage between the researcher, line departments and front line extension worker to cater to the needs in agricultural and allied fields of the stake holders.

2.0 TIME LINE OF INTERVENTIONS

Date	Event
21st Jan., 09	Proposal for ORC
27th Mar, 09	ORC sanctioned by NABARD
30th Apr, 09	Constitution of Project Monitoring committee (PMC)
9th - 11th Jun, 09	Site Selection Team Visit to Diglipur
17th Jun, 09	1st PMC Meeting
15th July, 09	ORC in Operation
24th Oct, 09	Introduction of Rain Gauge
Oct.,09	Rabi Technological Demonstration
June, 10	Kharif Technological Demonstration
July,10	Peking Cross Duck
12th Aug., 10	Bio-Mass fired Copra dryer
25th Oct., 10	Kiosk
10th Feb., 11	Automatic Weather Station
17th April, 11	Mini Dal Mill installed
July, 11	Seed village concept of HYV of Rice
June, 12	Model Satellite Nurseries of fish
10th Nov., 12	Mini Dal Mill Operationalized

3.0 CAPACITY BUILDING FOR STAKEHOLDERS

Lot of emphasis has been laid on need-based training to the practicing farmers, farm-women and youth. Based on the felt needs and followed by feed back of the stakeholders training programmes of 3 to 4 days in interactive mode (both theory and practical) in the ratio of

60: 40 were imparted with an objective to deliver the knowhow and do how, furthering the development of knowledge, skill and positive change of other attributes of the target clientele. Scientists/faculty from CARI, KVK, NABARD and line departments were involved as resource personnel with pre and post evaluation as the main mandate of the program.

While imparting training, the principles of 'Teaching by Doing' and 'Learning by Doing' have been followed thoroughly. The practical training programmes envisaged acquiring of high quality skill after appropriate training. Necessary support and guidance have been provided to the farmer while applying skill in related enterprises. Supportive literature supplied after the completion of the training programmes helped in the reinforcement of the technology taught. These training programmes enabled the farmers, to adopt new technologies successfully which, in turn, have resulted in giving them high productivity in agriculture and allied fields. The adoption of improved technologies in different areas has led to the diversification of the enterprises, thereby offering greater self-employment opportunities and higher income for farm families.

During the period fifty two (52) field level training including customized in the field of Crop production (07), Horticulture (12), Livestock (05), Fisheries (09), Natural Resource Management (NRM) (06), Plant protection (08), Post Harvest/ processing (03) and other fields(02) for the stakeholders were conducted in agricultural and allied fields wherein a total of 1576 farmers got trained representing from 32 cluster of villages viz. Aerial Bay, Basantipur, D.B.Gram, Diglipur Bazaar, Durgapur, Gandhinagar, Ganeshnagar, Hatilevel, Jagnnath Dera, Kalara, Kalighat, Kalipur, Kerlapuram, Khudirampur, Kishorinagar, Lamiyabay, Laxmipur, Madhupur, Milangaram, Nabagram, Nimbudera, Pachimsagar, R.K.Gram, Radhanagar, Ramnagar, Sagardweep, Shanti Nagar, Shibpur, Sitanagar, Subashgram, Swarajgram and V.S.Pally. Beside Mayabunder, Nimbudera, Basantipur and Baratang were also

Table 1. Abstract of Training programmes (July 2009 - March 2013)

Enterprise	Training (Nos.)	Male	Female	Total	Trainee Days	Ratio
Crop Production	7	175	30	205	571	5.75:1
Horticulture	12	274	65	339	940	5.30:1
Livestock	5	114	29	143	489	3.93:1
Fisheries	9	220	33	253	886	6.66:1
NRM	6	174	66	240	795	2.64:1
Plant Protection	8	216	64	280	522	5.11:1
Post Harvest/ Processing	3	52	25	77	154	2.08:1
Others	2	32	07	39	102	4.57:1
Total	52	1257	319	1576	4459	4:1

covered. Abstract of training and participation of the stakeholders is presented in (Table 1 and Plate 1 to 6)

The overall participation of trainees was in the tune of 80% males and 20% females i.e., with a ratio of 4:1. This has lead to acceptance/ adoption of the technologies in agriculture and allied fields for increase in production, productivity and thereby fetching better returns over the existing practices/crops. Besides a database of the trainees is also maintained for getting feedback and updating them on the latest knowhow and do how.

Glimpses of Capacity building programme conducted for stakeholders

Plate 1.Hands on during training on Model satellite nurseries in fish

Plate 2. Learning by doing-making of vermicompost

Plate 3. Method of selection of Goat Breed by expert

Plate 4.Learning by doing-placing rat trap and cakes in rat infested fields

Plate 5.Hands on grafting by trainees

Plate 6. Expert gets feedback

4.0 TECHNOLOGICAL APPLICATION IN FARMERS FIELD IN FRONT LINE DEMONSTRATION MODE

Front line demonstrations (FLD) using seeds of high yielding varieties and advanced package of practices were demonstrated at the farmers field to popularize cultivation of high yielding varieties of field crops, plantation crops, backyard poultry, fish culture and others with the overall participation of the farmers. The total demonstrations conducted were 114 in Rabi season with crops viz. Green gram, Black gram, Cauliflower, Chilli, Cabbage, Groundnut, Tuber crops (Elephant foot yam, Tapioca, Sweet potato), Poi, Burma Dhaniya, Potato, Okra, Tomato covering 12.99 ha, whereas 137 demonstrations were conducted in Kharif season with HYVs of rice and Hybrids covering an area of 39.15 ha. Besides Seed village concept of production of HYV of rice in participatory mode, Goat, Pig, Peking cross duck, Model satellite nurseries of fresh water fish, Mini Dhal Mill, Copra drier, Coconut dehusker, Pheromone

traps for control of rhinoceros beetle and Rodent management were the other interventions carried out in farmers field. Regular monitoring of pest, disease, growth and yield attributes along with diagnostic and agro advisory services were also provided by the experts.

The details of technological demonstration taken up during the period both under Rabi and Kharif is presented below.

RABI TECHNOLOGICAL DEMONSTRATION (RTD)

During 2009, twenty seven technological demonstrations in participatory mode with seven crops namely Green Gram var. K851 (03), Black Gram var. Tel Kalai local (09),Cauliflower var. White Marble (03) & Kimaya (01), Cabbage var. BC76 (02), Chilli var. Flame Hot (02), Tomato var. Lakshmi NP 5005 (03), Okra var. US-7136 (02) and Potato var. Kufri Jyothi (01) & Kufri Surya (01) were taken up in eight villages covering a total area of 4.45 ha.

The result in the farmers field showed that Chilli var. Flame Hot gave a mean yield of 10.0 t/ha against the local check var. Fair Bomb (8.55 t/ha), Cabbage var. BC 76 (45.0 t/ha) against check var. Blue Bandies (42.00 t/ha), Cauliflower var. White Marble (40.0 t/ha) and var. Kimaya (39.40 t/ha) against the local check var. karuna (34.0 t/ha), Okra var. US-7136 (5.6 t/ha) against check var. Arun 4.2 t/ha, Tomato var. Lakshmi NP 5005 (14.0 t/ha) against check var. Karan (11.0 t/ha), Green gram var. K851(0.59 t/ha) against the local check (0.42 t /ha), Black gram var. Tel Kalai local (1.1t/ha) against the check Jhad Kalai (0.8 t/ha) and Potato var. K. Surya (8.13 t/ha) and K. Jyothi (1.88 t/ha) against the local check (1.40 t/ha) (Plate 7 - 17).

Please Note: There was receipt of 224.08 mm of rainfall (4 rainy days)in the month of January 2010 i.e. during the harvest period of the crop which resulted in yield below its fullest potential.

Plate 7, 8. Low cost Poly nursery introduced for Cole crops

Plate 9.Cabbage crop var. BC-76 in farmers field

Plate 10. Harvested Cauliflower var. White Marble

Plate 11 - 13. Technological demonstration of Potato at farmers field

During 2011, fourteen technological demonstrations in farmers showed that Sweet potato var. SP-2 gave an yield of 11.2 t/ha, Chilli var. Surya (2.08 t/ha), Black Gram var. T-9 (0.67 t/ha), Green Gram var. CO-6(0.70 t/ha), Groundnut var. ICGS 76 (1.2 t/ha) which was better than the local check.

During 2012, twenty four technological demonstrations in farmers field was taken up with crops such as Tapioca var. Sri prakash (8.15 t/ha) and H 226 (7.26 t/ha), Elephant foot Yam var. Gajendra (75 t/ha) and Black gram Var. T-9 (0.67 t/ha) respectively.

During 2013, 39 demonstrations with CARI Brinjal-1, 54 with Maize var. HQPM-1 covering 5.58 ha., Baby Corn var. HM-4 in 1.42 ha, on Arecanut (60) & 15 each on clove and pepper were conducted. The harvested brinjal (4950 kg) from 0.02 ha was sold @ Rs 15 to 50/-, Maize HQPM (1050 kg) @Rs 25 to 60/- and Baby corn (200kg) @Rs 50 to 100/-.

Plate 14.Green Gram under arecanut

Plate 15. Sweet Potato var. SP-2

Plate:16 Tapioca var. Sri prakash

Plate 17.Maize crop in farmers field

KHARIF TECHNOLOGICAL DEMONSTRATION(KTD)

During 2010, a total of fifty three demonstrations in participatory mode i.e. sixteen under SRI (6.30 ha)and thirty seven under non SRI (13.30 ha) were conducted covering an area of 19.60 ha and ten cluster of villages i.e. Khudirampur, V.S. Pally, Subhash Gram, Keralapuram, Sita Nagar, R.K. Gram, D.B. Gram, and Madhupur & Laxmipur. The result showed that under SRI, var. US 312 gave mean yield of 5.86 t/ha. against local check Jaya (3.86 t/ha) showing 52 percent increase in yield followed by var. VNR-2355 plus (5.74 t/ha), whereas under non SRI, var. Gayatri gave the yield of 4.84 t/ha followed by var.VNR 2355 Plus (4.24 t/ha), Ranjeet (3.88 t/ha), Varsha (3.81 t/ha) and US-312 (3.78 t/ha) respectively. Here, the percentage increase in yield was 29% in var. Ranjeet followed by Gayatri (27%), VNR 2355 Plus (18%), Varsha (15.45%) and US312 (13%) over the local check var. Jaya respectively. CARI-5 (in problem soil)gave a mean yield of 2.65 t/ha compared to local check (2.20 t/ha) resulting in 20.45% increase in yield.

During 2011, a total of 31 technological demonstration i.e.,16 with HYVs of rice in 2.25 ha and 15 under Hybrid rice in 2.60 ha with 6 varieties in 27 cluster of villages was taken in participatory mode covering a total of 4.85 ha. The results of HYVs indicated that var. Gayatri gave mean yield of 5.30 t/ha against local check var. Jaya (3.60 t/ha) followed by Varsha (4.77 t/ha), BPT-5204 (4.14 t/ha) and JGL (2.65 t/ha) respectively. Here, Gayatri gave 35.90% increase in yield, followed by BPT-5204 (33.55%), Varsha (19.25 %) and JGL (6 %). The results of hybrid variety of rice indicated that var. US-316 gave a mean yield of 7.08 t/ha against the local check Jaya (3.30 t/ha) followed by VNR-2355 Plus (6.75 t/ha). The percentage increase in yield was 136.00 % in var. US 316 and 104.55% in var. VNR-2355 Plus.

During 2012, a total of 53 technological demonstration of HYVs of rice in 14.68 ha with 7 varieties in 14 cluster of villages was taken in participatory mode. The results indicated that var. CSR -36

gave mean yield of 5.10 t/ha against local check var. Jaya (3.40 t/ha) followed by CARI- 05 (4.87 t/ha), Ranjeet (4.80 t/ha), Gayatri (4.70 t/ha), CARI -4 (4.20 t/ha), CARI-03 (4.10 t/ha) and Savitri (3.50 t/ha) respectively. Here, CSR- 36 gave 50% increase in yield followed by CARI-05 (49.85%), Gayatri gave (42.42 %), Savitri (40.00%), CARI-04 (35.48%), Ranjeet (33.33 %) and CARI 03 (13.00%) respectively.

During 2013, a total of 54 Kharif technological demonstrations with seven recommended HYVs of rice were demonstrated in 12.28 ha , in 17 clusters of villages at Diglipur, North Andaman. Among all rice varieties , CARI Dhan 4 performed well and gave a mean yield of 6.72 t/ha, with 81.16%, increase in yield against the local check Jaya (3.70t/ha), followed by Ranjeet (6.29t/ha), CARI 3(6.25 t/ha), CSR36 , Gayatri (6.06t/ha) ,CARI Dhan 5 (5.9t/ha) and CSR23 (5.20 t/ha).

Plate 18.Farmers family with healthy seedlings

Plate 19. Transplanting of Seedling monitored by expert

Plate 20.Mature crop of CARI-5

Plate 21.Farmers heaps good harvest of crop

5.0 EXTENSION ACTIVITIES

The ToT programmes, since its inception, have taken up a group approach rather than an individual farm family approach. Result demonstrations followed by method demonstrations in the farmers field were carried out with a view to convincingly educate the farmers regarding the feasibility of increasing the yield per unit area of the land, to its maximum potential. Field days were organized to familiarize the innovative technologies, followed by method demonstration to show how to use them . Farmers were also taken to the host institute to see the models developed and participate in the interaction with the scientist. This helped in monitoring the impact of various modern technologies disseminated and bringing about the motivational change. Finally, it fetched in the first hand information as the feedback from the practicing farmers, so as to enable the scientists to take up immediate and effective follow up in improvement. Consequently, there has been a visible change in the varietal pattern of sequential crops at farmers fields, improvement in the land utilization and in annual gross revenue to the farmers. In addition to the field days, Kisan mela, exhibitions, wide publicity managed through all feasible media, Scientist farmer interactions followed by personal and group contacts, have resulted in better utilization of the extension programmes. The details of the activities is presented in Table 2 and Plates 22 to 35.

Table 2 Extension activities of ORC (From July 2009 to March 2014)

Activities	No.	Beneficiaries (Nos.)
Vocational Training	46	1401
Customised Training	06	175
Kharif Technological Demonstration (No/ha)	137 Nos. (39.15 ha)	
Rabi Technological Demonstration (No/ha)	119 Nos. (12.99 ha)	

Seed Village production of HYV of rice	0.95 ha in 2011, 3.33 ha in 2012 & 2.0 ha in 2013	
Model Satellite Nursery of Fish	05 Nurseries	
Kisan Gosti	04	217
Technological backstopping	02	75
Scientists-farmers interaction	05	257
Exposure visit during Island Kisan Mela at CARI	04	163 farmers representing Diglipur, Mayabunder, Nimbudera & Baratang
Kudhiram Bose and Vikas Mela at Diglipur	Participated in Kudhiram Bose Mela on 14th Dec. 2012 and Vikas Mela from 10th- 16th Jan 2013 to showcase the ToT activities	
Field visit of experts/ staff	1784 visits were undertaken for selection of farmers for technological demonstrations, training, exposure visit, monitoring the crop & feed back	
Farmer visit to ORC	1548 clientele visited for discussion on crop & training, reading technical books for updating information and interacting with experts	
Telephonic Advisory (6th Feb 10 onwards)	39 advisories on pest, disease, management of crop, livestock, fish were given by experts of the host institute.	
Village covered	32 cluster of villages at Diglipur including Mayabunder, Nimbudera , Basanthipur have been benefitted through training & demonstration programme.	
Visit of Experts & Others to ORC	105 (Scientists of host Institute, PMC member, Pradhan & Line Development Department)	
Doordarshan and AIR	One Programme each	
Awareness Campaign (02)	Importance & Management of Plant genetic wealth of A&N Islands, Potential fishing zone, wherein 114 male & 23 female totalling to 147participated.	

Farmer Club	Farmer club members regularly attending for taking up income generation activities
PMC meeting	Seven meetings have been conducted from time to time to review the activities carried out by ORC
Field Day	Two field days one each on "Mini Dal Mill and Seed production of HYV of rice var. Ranjeet" was conducted on 10th Nov. 2012.
Recognition to Farmers	A total of eleven farmers for adopting technologies in agriculture and allied field, have been awarded/recognized during Island Kisan Mela and Farm Innovators meet 2011-2013.

GLIMPSES OF EXTENSION ACTIVITIES

Plate 22. Farmers on exposure visit during Kisan Mela 2010

Plate 23. Innovative produce displayed during Farm Innovator Meet 2011

Plate 24.Distribution of Improved breed of goat to stakeholders

Plate 25.Farmerinteracting during National Seminar with experts


Plate 26, 27. Scientist farmers interaction on Institutional Innovation in extension for inclusive growth


28, 29. Mini Dal Mill introduced and Operationalised by SHG


Plate : 30, 31. Scientist farmers Interaction during the training on "Quality seed production of Agricultural crops" and Pulse seed distribution


Plate 32, 33. Duck var. Peking cross duck getting popularized (left), Field day on Seed production of HYV var. Ranjeet at Subash Gram village (right)


Plate 34, 35.BBF fields of Shri. Alok Biswas at Madupur (left) and Model Satellite nursery of fish at V.S.Pally (right)

5.1 Impact of Technological Interventions at North Andaman

HYV of Rice of CARI

Plate 36. Harvested HYV of rice

A total of 181 FLDs on rice conducted in 51.43 ha. of areas from 2009 to 2013 has given farmers convincing attitude which has led to replacement of farmers variety with institute varieties at Diglipur., in North & Middle Andaman. Beside the seed village production of TLS in participatory mode from 2011 onwards could also reinforce the confidence level of the individual farmers, who could see for themselves the performance of the varieties, select them and finally adopt for higher yield. In 2003, a total of 12.28 ha. area has been replaced by 52 farmers with seven HYVs of paddy namely CSR 23, CARI Dhan 3,4,5, CSR36, Gayatri & Ranjit recommended by CIARI. This has led to increase of yield to tune of 31.25% against the famers variety Jaya. The economic return by selling the variety at the rate of Rs. 10/kg for the seed purpose will bring an additional income of Rs. 26000/ha. against 16000/ha. from the farmers variety. In nutshell an additional income of Rs. 1,22,800/- is derived by cultivating HYVs of CARI against the farmers variety from an area of 12.28 ha.

Peking cross duck under backyard

Plate 37. Eggs of Peking Cross Duck 2

Introduced in June 2010 with three ducklings in Ganesh Nagar village has spread across 10 villages and adopted by 34 farmers. Against the desi duck, which is sold at the rate of Rs. 6/ egg , Rs.10-15/duckling and Rs. 200/ adult duck, the peking cross is sold at the rate of Rs. 16/ egg, Rs.50/duckling and Rs. 400/ adult duck . Added advantage is low level of mortality and gains good weight comparatively. Mr. E.D.Menon and Mr. Bikas Gayen both progressive farmers of Kerelapuram & R.K.Gram who after seeing the potential of the technology have become the seed bank for providing peking cross duck eggs or ducklings to the farmers , with the institutional support of ORC.

Satellite Nursery for Fresh Water Fish

Technical support on the concept of satellite nursery from FSD of CARI in association with KVK and ORC and logistics jointly by

Plate 38: Satellite Nursery at Diglipur

Department of Fisheries and CARI motivated Mr. Sajib Kumar to start the venture in 2012 . He started selling first installment of fish seeds at the price ranging from Rs. 1.00 to 8.00 of various sizes. He earned an additional income of Rs. 70,000/-. On knowing about the availability of the quality fish seeds by the peer group from Kalipur to Keralapuram, 20-25 farmers placed their demand of fish seeds i.e., around 40,000 seeds which he sold at the rate of Rs. 5.00 per seed. Finally, an additional income of Rs. 2,00,000/- was earned by him.

Within a span of 6 months, he earned Rs. 2,70,000/- as additional income by adopting satellite nursery technique for production of fresh water fishes. Simultaneously another group of four farmers by practicing the technology could earn Rs. 70,000/head as a profit in the span of three months. Subsequently, Mr.Laxman Das from Kalipur in 2013 was able to sell three lakhs seed at the rate of Rs.1-3/seed of catla, rohu and mrigal and earned net profit of Rs.200000/- in a span of four months. Presently, six farmers are practicing the venture as livelihood option and many more youth have come forward to adopt the technology.

Among the technologies intervened in the farmers field , an assessment was carried out to see the feasibility of the selected interventions.It was found that ,among all induced fish breeding of fish could give maximum additional income of Rs. 1.25 lakhs/ ha followed by earth worm production/unit (Rs.60,000/-), Yorkshire pig rearing/unit of 2 (Rs. 39,375/-), Broad bed and furrow/0.20 ha. (Rs. 29,000/-), High yielding varieties of rice of CARI/ ha (Rs. 19,200/-) and Peking cross duck (Rs. 2860/-) under backyard/unit of three birds respectively. All these technologies have been accepted by the farmers as a livelihood support , and is gaining momentum for its horizontal spread to both the neighbouring and the far flung farmers of the North & Middle Andaman . The detail of the additional income derived is presented below in the table 2.

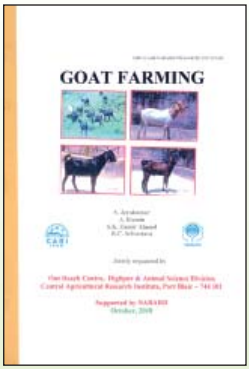
Table :2 Income from Farmers Practice Vs Improved practice

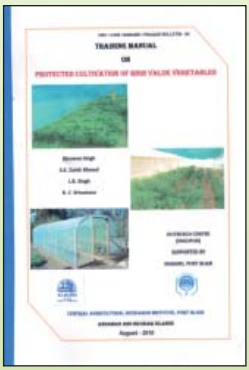
Technology	Net Income (in Rs.)		Additional income over farmers practice	Rs. per month	Return per Rs. invested
	Farmers practice	Improved practice			
Broad Bed & Furrow / 0.20 ha	1500.00	30500.00	29000.00	3875.0	2.90
Peking cross duck under Backyard /unit of03 birds	940.00	3800.00	2860.00	366.66	7.33
Earthworm /unit	-	60,000.00	60,000.00	8,000.00	2.46
Induced Breeding of fish /ha	-	1,25,000.00	1,25,000.00	10,416.00	6.0
Yorkshire pigs/unit of02 pigs	-	39375.00	39375.00	4739.58	3.25
HYV of Rice /ha	18200.00	37400.00	19200.00	1600.00	1.01

TRAINING MANUALS DEVELOPED

Training Manuals in Hindi, Bengali and English were developed and provided to the farmers during training and visit programme for reference purpose on subject such as Vermicompost, goat farming, quail farming, protected cultivation of vegetables, marine ornamental fish and carp fish breeding which acts as a ready reckoner.

In addition to technology application and capacity building, market information on sale and purchase price of the perishable commodities like fish, vegetables, fruits, cereals, meat and pulses is collected from two un-regulated markets through interview method and personal observation with the help of key informants from Subhash Gram and Aerial Bay at weekly intervals on the product available and sold to the commoners are disseminated during training, visit and interaction to the stakeholders.





6.0 SUCCESS STORIES

Imparting training in agri-hort-livestock and allied fields followed by result and method demonstration led to increase in knowledge and skill development of the stakeholders. The technical folders provided during the programmes acted as a reference material followed by continuous motivation led to reinforcement of the technology learnt leading to adoption for upscaling. Given below are our ambassadors who have set an example of adoption of the technologies which has been accepted by the peer group and appreciated by the visiting dignitaries.

SUCCESS STORIES

SATELLITE FISH NURSERY FOR FRESH WATER FISH SEED PRODUCTION FOR THE FIRST TIME IN DIGLIPUR

Name	:	Sajib Kumar
Education status	:	Graduate
Age (in years)	:	34
Village	:	V.S. Pally, North Andaman
Land holding	:	1.0 ha
Practicing	:	Government servant, Induced breeding, Cattle and Duckery and poultry

Sajib Kumar, aged 34 resident of V.S. Pally Diglipur, is a graduate and works as a conductor in Transport Department. He has got flair for fish rearing of fresh water fishes i.e., Catla, Rohu, Mrigal (CRM) in his pond of size 60 X 40 m and selling it directly to the market, thereby earning Rs. 20,000 - 25,000 annually as an additional income. He was not happy the way his fish rearing business was progressing since there were problems in getting quality fish seeds from the mainland parties, who supplied inferior and weed fishes in the name of CRM. To overcome this problem he wanted to learn the technique of induced breeding and produce seeds with an objective to remove the mainland parties and provide quality seeds to other fishers.

Technological intervention and benefit incurred:

In the year 2012 he was identified as an enterprising farmer by Dept. of Fisheries and thus by joining hands with CARI, FSD, KVK and ORC Diglipur an attempt was made to raise nursery of fresh water fish in his pond. Technical support on the concept of satellite nursery from FSD of CARI in association with KVK and ORC and logistic jointly by Dept. of Fisheries and CARI, gave him motivation to start the venture. A program on "Carp Breeding and Model for Satellite Nurseries in

Andaman" during 11- 14th June 2012" was conducted at ORC, Diglipur, wherein he participated to learn the knowledge and skill involved in breeding. After gaining confidence he constructed five satellite nurseries of size 10 X 10 and 1.5 m deep wherein the concept of Satellite fish nursery at farmers field was introduced in Diglipur for the first time. During the breeding season and building up of Satellite fish nursery the nature took its own test by flooding and destroying his fish nurseries along with fishes on account of heavy downpour on 17th and 28th June 2012. The maximum area at Diglipur were flooded destroying the field crops and the ponds constructed. At first instant he wanted to back out due to heavy loss incurred but the constant moral support of Scientists and Staff of CARI and Dept. of Fisheries was the only tool to make his dream fulfill and in this process he continued his effort to take up the breeding once again in which he succeeded. He devoted 5 hours of his time per day in breeding fishes during the breeding season, apart from this he employed 4 full time and 10 part time employees (whenever necessary) to assist him in carrying out the fish breeding, management and selling of the fishes in time.

He started selling his first installment of fish seeds at the price ranging from Rs. 1.00 to 8.00 of various sizes and could earn an additional income of Rs. 70,000/-. On knowing about the availability of the quality fish seeds by the peer group from Kalipur to Keralapuram (20 - 25 farmers) placed their demand of fish seeds i.e., around 40,000 seeds which he could sell at the rate of Rs. 5.00/seed. Finally an additional income of Rs. 2,00,000 was earned by him. Thus within a span of 6 months he could earn Rs. 2,70,000 as additional income by adopting satellite nursery technique for production of fresh water fishes.

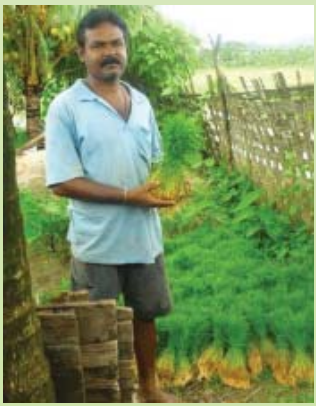
For his innovativeness to take up Satellite Nursery of fresh water fish for the first time in the area he was recognized and awarded the "Best Farmer Award "during the Kisan Mela 2013 conducted by CARI, at Port Blair.

ALOK BISWAS- A ROLE MODEL OF DIVERSIFIED FARMING

Name	:	Alok Biswas,
Education status	:	XII
Age (in years)	:	41
Village	:	Madhupur, North Andaman
Land holding	:	2.0 ha
Practicing	:	Paddy, Induced breeding, cattle& backyard poultry

Shri Alok Biswas, S/o Shri Ambrish Biswas, age 41 years with education XII pass has got 1.0 ha. each of paddy and hilly land. He is a progressive farmer with good leadership skill for which the ORC selected and designated him as the Opinion leader of Madupur Panchayat.

Technological intervention and benefit incurred:



He came in contact with ORC in September, 2009, wherein he had showed his interest to cultivate hybrid rice and improve his existing field with need based technological intervention. In September, 2010 he was selected for taking up demonstration of paddy under System of Rice Intensification (SRI) with hybrid variety US 312 in an area of 1.0 ha. By following the scientific methods ,he raised paddy seedling and planted 14 days old seedling in the main field. With proper management he could get an yield of 6.16 ton, beside an additional yield of 1.12 ton from the ratoon of the same crop. He was very happy to achieve the success of increasing yield by the ratoon crop of paddy. He also wanted to develop his existing arecanut garden

with intercropping of fruits and spices for which proper layout was made and the crops like pineapple, tree spices, sapota, banana and coconut were introduced in one hectare of land.

With the joint support of KVK for garden development & induced breeding and NAIP for Broad Bed Furrow System in 2012, he has started getting returns ranging between Rs. 15,000 to 20,000 /-from an investment of Rs. 5,000/- by cultivating crops like cucumber, okra, brinjal on the beds and expects more returns from the crop to be harvested very shortly. By practicing ,induced breeding of fresh water fishes , he has produced and sold fish seeds @ Rs. 3.00 in the early stages (fry) to the fishers and fully grown at Rs. 150.00/ kg in the local market .Thus he could earn Rs. 2.50 lakhs in a year with investment of Rs. 50,000/- only. He has also added 30 Nicobari fowls, the eggs of which are sold @ Rs.6.00/- and few are hatched for multiplication. The best part of his farming is that he advocates use of only composting and farmyard manure for his crops and does not allow use of inorganic fertilizer.

Benefits incurred

S.No	Intervention	Returns Before Intervention (in Rs.)	Returns after Intervention (in Rs.)	Profit (in Rs.)
1.	Rice var. US312 (1.0 ha)	5000	7000	2000
2.	Intercropping	-	6,000	6000
3.	BBF (0.2 ha)	-	20,000	20,000
4.	Induced breeding (0.4 ha)	1,00,000	2,50,000	1,50,000
	Total Returns	**1,05,000**	**2,83,000**	**1,78,000**

For his innovativeness to take up SRI for the first time in the area he was recognized and awarded the "Best Farmer Award "during the Kisan Mela 2011 conducted by CARI, at Port Blair. His earnest effort to upscale his field with innovative ideas and intervention to improve his earning and become a model for the fellow farmers ,, he has been also recognized by the Deparment of Agriculture and honoured with Best farmer of the Island in the year 2014.

LIVELIHOOD THROUGH INNOVATIVE AGRICULLTURE PRACTICES

Name : Shyampada Roy
Education status : VIII
Age (in years) : 50
Village : Nimbudera, North Andaman
Land holding : 0.4 ha
Practicing : Paddy, Grafting, Induced breeding, vermiculture

Shri Shyampada Roy, S/o late K. C Roy, age 50 years with education 8th standard, of Nimbudera village, came in contact with ORC through a customized training in the month of July 2010. He was exposed to making of Vermicompost and rearing of earthworms by the Scientists of CARI, which he learned with full dedication and to his satisifation. During the training program he collected 3 worms and managed to carry it to his residence with a motive to multiply the same and start on his own a income generating activity. After attending the training he was in constant touch with the Scientists and staff, who motivated him to rear the earthworms, the progress of which was always reported by him with lot of joy and energy during any hours of the day. After a period of six months, he could rear quite a good number of vorms and started to sell them to the neighboring farmers.

Technological intervention and benefit incurred:

After gaining confidence on worms rearing and on seeing the demand of the worms he took loan of Rs. 11,000/- from Dept. of Agriculture under RKVY and built 2 pits of size 7 X 15 feet and 6 X 20 feet respectively. He used thatched bamboos on the sides, aluminium sheet as roof and black polythene sheets as the base material. The cost involved for setting up of the unit was Rs. 20,000/-, and for adding cow dung, hay, dried leaves and other materials as bed material for the earthworms, an expenditure of Rs. 52,000/- was incurred in a year. After the multiplication of stock ,he sold them to the farmers of the neighboring areas,and also to the farmers of Diglipur. Approximately he could sell 300 Kg. worms @ Rs.400/ Kg in a year. Presently he is able to sell around 15 to 20 Kg. of earthworms per month and earn an additional income of Rs. 15,000 - 20,000 approximately.

In persuit of learning more on other enterprises for livelihood, he underwent induced breeding training on fresh water fish conducted by ORC and KVK in 2011, wherein he practically learned the breeding aspects.To translate his skill into income generating activity he formed a group of 3 farmers i.e.2 farmers from Kalipur (Shri. Lakan Das and Shri. Barun), and Shri. Karthick Mistry, from R.K Gram. Under his leadership and initiation to do something challenging, for the first time he took up induced breeding in the month of June 2012 in the pond of Shri Lakan Das of Kalipur and could produce and rear nearly 4,50,000 fish seeds. The happiness of success in production of fish seeds was repeatedly shared by him to our team of Scientific collegues of KVK and CARI. The group could sell fish seeds of Catla, Rohu @ Rs. 3/-fingerling of one inch stage, Rs. 5/- fingerling of two inch stage and Rs. 10/fingerling of larger size. For taking up fish breeding and rearing they spent Rs. 30,000/- and could get a net return or Rs. 3,50,000/-,thus through sale of the fish seed each members could get an income of Rs. 70,000/- in a short span of six months. Now they have planned to take up breeding program in a

big way so that the local needs for the fish seeds are met and reasonable income is derived.

Through the joint effort with KVK he has learned grafting and layering technique and presently has put the skill into practice. He now practices grafing in bush pepper, nutmeg, sapota, cashew and jackfruit. He uses poon and sea mova (local name) for grafting which grows in brackish water and can withstand salinity, a very innovative technique introduced by Shri Shyampada Roy. He is selling grafted seedlings of Bush pepper (Rs.130/ plant), nutmeg (Rs.130/ plant), tejpatti (Rs.40/ plant), pome (Rs.50/ plant), layered lemon seedlings (Rs.130/ plant), black pepper cuttings (Rs. 3/ plant) and alovera (Rs.30/ plant) respectively. In the degraded area lying ideal for a long time, he has gone for vegetable production mostly cucurbits in the cement bags added with farmyard manure and compost which is placed on the slanted bamboo's over which pandal is made to support the crop. Crops like bottle gourd, cucumber, bittergourd, kokrel have been planted which could fetch him an income of Rs. 5,000/- from the area which was lying unutilized. Shri Shyampada is very creative, has quest for more, possess enterprising quality has teaching attitude and is liked and respected by his peer group. The Department of Agriculture has selected him for an exposure visit to mainlandfor a period of one month in October 2012 to Gujrat, Mumbai, Maharastra and Chennai as a reward for his enterprising quality.

For translating his knowledge and skill learned during the training program into a lucrative enterprise he was awardedwith Best Farmer Award during the Island Kisan Mela 2012 by CARI at Port Blair.

PEKING CROSS DUCK - A POTENTIAL LIVELIHOOD UNDER BACKYARD

Name : Bhabotosh Das

Education status : XII

Age (in years) : 21

Village : Ganesh Nagar, North Andaman

Land holding : 1.0 ha

Practicing : Peking cross under backyard, Paddy

Shri Bhabotosh Das S/0 Shri Mentu Lall Das, age 21 years with education of XII standard , of Ganesh Nagar village, came for a customized training in the month of July 2010, conducted by ORC at CARI. He was exposed to Quail farming and rearing of ducks by the Scientists of CARI, wherein he learned all the managemental practices involved along with the scientific knowhow.

Technological intervention and benefit incurred:

After the training program he purchased three peking cross ducks (2 male and 01 female) of 03 months old @ Rs 80/ from CARI, Port Blair. After three months they started laying eggs. Initially 17 eggs was laid and after a clutch period, they laid 20 more eggs. Egg laying started again at the same rate after a gap of 17 days. During the last six months, he sold 45 eggs to five farmers of villages viz., R. K Gram, (2), Subhash Gram (2) and Laxmi Nagar (1) and there was pressing demand for more of such eggs. To his existing stock he added 06 more ducks which stated laying eggs and met to the demand of the neighboring farmers. For feeding the ducks, he used to give wheat and rice soaked in water along with husk in the ratio of 2:1:2 and kept them in the pond meant for fish rearing . He disposed the birds when they stopped laying eggs. To manage the rearing of ducks in his backyard, he devoted only half an hour extra time in morning, day time and evening only. This is the first time in

North Andaman that Peking cross duck technology has been transferred in the field by a young farm entrepreneur through the ORC of CARI. For venturing into a new enterprise and just based on his courage and innovativeness, he could expand a novel technology to 04 different villages.

Seeing the potential and demand of the eggs of Peking cross duck, Shri E.D. Ravi Menon of Keralapuram took up rearing with two female ducks only. ORC intervened and exchanged one female duck of his with a male from Shri Gautham Biswas of Durgapur village in order to get true to type eggs. In the beginning he has sold 50 eggs @ Rs.14 to 15/- and duckling @ Rs 20/- and kept 26 eggs in two sets for hatching using country fowl for propagation. He could get 26 ducklings which are growing good and are healthy. He is popularly known as egg man for the Peking cross duck, as he is getting the eggs laid and also hatched for selling it to the farmers on first come first serve basis in the form of eggs @ Rs.14 to 15 /- for ducklings @ Rs . 20/- and earning good renumeration. The popularity of Peking cross duck has got a horizontal spread to 22 farmers with a unit size of 2 to 3 ducks under backyard in the villages viz., Ganesh nagar, Durgapur, Kishorinagar, Keralapuram, Kudirampur, R.K. Gram and Subash gram.

Economics of Peking Cross Duck under backyard

Benefits incurred

Peking Cross Duck vs. Desi duck	Desi (3 birds/unit)	Peking Cross (3 birds/unit) 2-Female & 1 - Male
Yield	80 - 100 eggs	100 - 120 eggs
Cost of ducklings(Rs.) Cost of feed (Rs.)	30/- @ 10/- 430.00	60/- @ 20/- 540.00
Gross Return (in Rs.)	1,400.00	4,400.00
Net Return (in Rs.)	940.00	3,800.00
Additional Income over farmers practice (in Rs.)	**Rs.2860.00**	

Gate price : Desi : Rs. 5/ egg and Rs. 200/ duck , Improved : Rs. 16/ egg and Rs. 400/ duck

Duck Breed	Weight at maturity(6-7 months)(kg)	Weight at 12^{th} month(Kg)	Meat price/ bird (in Rs.)	Mortality rate
Peking cross	2.0	2.637	350 to 400	Low
Local breed	1.6	1.975	200 to 250	High

For propagating the Peking cross duck technology in and around Diglipur cluster of villages, Mr. Bhabotosh Das was honoured during the Island Kisan Mela 2011,with Best Farmer Award by CARI at Port Blair.

PARIMAL DAS ACTS AS A PLATFORM FOR TECHNOLOGY DEMONSTRATION AND EXPOSITION

Name : Parimal Das

Education status : IV

Age (in years) : 38

Village : Keralapuram, North Andaman

Land holding : 2.0 ha (Leased)

Practicing : Paddy, Duckery and poultry under backyard

Shri. Parimal Das, aged 38, resident of Keralapuram village, is a hard working and progressive farmer, who is in constant touch with the ORC of CARI since 2009. He has undergone training programmes on poultry, Paddy and vegetable cultivation, in the year 2010.

Technological intervention and benefit incurred:

Being in the proximity of the ORC a technological demonstration plot with paddy, Peking cross ducks, Sweet potation CARI SP-2, Burma Dhaniya and Poi Bhajji was laid with an objective to provide a platform for the neighboring farmers to see the field performance and adopt the technology. During the year 2011, ORC introduced the seed village concept of production of truthfully labeled seeds of HYV of paddy under the guidance of Division of Field crops of the host institute wherein he took up Seed production of CSR-36 in 0.10 ha and obtained an yield of 6.73 quintal of truthfully labeled seeds. In the year 2012, once again he took up seed production of three HYV's of rice viz., CSR. 36, CARI -03 and CARI-05 in the total area of 1.10 ha. Through the seed production program he has also earned an additional remuneration through buy back system. He has acted as a technology transmitter of our institute to the peer group. The visiting members of ICAR, development departments and NABARD have appreciated his efforts in demonstrating the technology at one location so that the visiting farmers can see and adopt the technology.

For his sincere effort in demonstration of multiple technologies in one location which has acted as a platform for technology dissemination and adoption by the peer group he was recognized awarded during the Island Kisan Mela 2013, the Best Farmer Award.

AGRI ENTERPRISE FOR LIVELIHOOD SAYS KAMLESH SANA

Name : Kamlesh Sana

Education status : X pass

Age (in years) : 31

Village : Khudirampur, North Andaman

Land holding : 1.0 ha.

Practicing : Vermicompost making and Paddy cultivation

Shri Kamlesh Sana, S/o Shri N.K. Sana, age 31 years with education X pass of Khudirampur village came in contact with ORC in the month of September 2009.He is the member of the youth club and has got very good leadership quality. On seeing his involvement in conduct of activities of ORC viz., training, technological backstopping and demonstration, he has been designated as Opinion Leader of the ORC for the Khudirampur village, wherein he could sensitize the youth, farm women on the benefits of farming and made them participate in the capacity building programme conducted by ORC enabling them to adopt scientific farming in their villages.

Technological intervention and benefit incurred :

He is practicing farming in ½ ha. of land with crops like pulses, vegetables and hybrid rice with the technical know how and do how imparted during the training programme. He attended training on vermi-composting at CARI conducted by ORC from 24th to 27th May, 2010, wherein he showed keen interest in establishing vermicompost unit by September, 2010. But due to some reason he could not complete the task in the stipulated time and continued his pursuance to establish the unit. Finally he succeeded to make the vermicompost unit of dimension (length 3.7m, width 1.5m and height 90 cm.) in the month of January, 2011. Later he added two Boar and one Terresa goat in his farm assets. For his venture for taking initiative of making and selling vermicompost to neighbouring farmers, he was able to earn additional income to support the family day to day

need. On seeing the demand raised by the department of agriculture, he also motivated his peer group to take up the enterprise of making and selling vermiocompost for livelihood support.

For his commitment and leadership quality he was recognized amongst his peer farmers group and awarded with "Best Farmer Award" during Island Kisan Mela conducted by CARI ,at Port Blair in the year 2011.

SEED VILLAGE CONCEPT INTRODUCED FOR PRODUCTION OF HYV OF RICE

Based on the suggestions made by the Project Monitoring Committee Seed village concept was introduced by ORC for the first time for production of truthfully labeled seeds (TLS) of HYV of rice under the plan and guidance of Division of Field crops of the host institute in the year 2011. Six farmers representing R.K Gram, Kudirampur and Keralapuram cluster of villages were selected and promising varieties of CARI viz., Ranjeet, CARI-05, CSR -23 and CSR - 36 were taken up for production of TLS of HYV of paddy in participatory mode. A total of 3 tons of TLS were produced in 0.95 ha and taken in buyback system. During the year 2012, under the same concept with 7 varieties CARI-03, 04, 05, CSR -23,36, Ranjeet and Gayatri involving 10 farmers of four villages covering 4.13 ha in participatory mode. Around 09 tons of TLS was produced, which was taken under buy back system and the same is being sold to an NGO's for demonstration to their clients at Baratang. Besides the seeds were sold to 45 farmers in different cluster of villages for undertaking demonstration, which let to replacement of existing paddy varieties with high yielding varieties of rice of the institute in 17 ha. of land.

The seed production programme was well appreciated by the visiting dignitaries and also other stake holders wherein the production of good quality seeds were taken up under the supervision of the scientists of the Field crop division and field management by ORC.



DAL MILL FOR LIVELIHOOD SUPPORT FOR SAGAR SELF HELP GROUP

In Andaman the annual production of pulse of 1154 tons (2008-09). Apart from a small quantity of pulses used for local consumption using indigenous processing methods, more than 85% of the pulses are transported to the mainland for processing. The price available to the farmers at the farm gate is quite low, whereas the same pulses after processing fetch higher prices at the locals market. Based on the feedback of the Out Reach Centre of the Institute on the availability of pulses and its export to mainland in absence of Dal mill in the year 2009, an attempt was made in association with the Division of NRM, to introduce a mini Dal Mill among the enterprising SHG group in association with an NGO , ACANI. It was purchased in the year 2010, and transported to ORC for handing over to Sagar SHG'S group on 17th April, 2011. Training and demonstration was given to the group by the scientist of the host Institute. Repeated persuasion of making it operationalised due to lack of proper three phase connection took time. Finally, it got operationalised on 9th November, by Dr .S. Dam Roy, Director, CARI, with an objective to ensure sustainable livelihood support to the members of the

groups and benefit the pulse growing farmers in getting their product processed and sell it at reasonable market price.

HYV OF RICE FOR LIVELIHOOD AND ADDITIONAL INCOME

Name : Bikas Mazumdar
Education status : Graduate
Age (in years) : 40
Village : Kudirampur, North Andaman
Land holding : 2.0 ha
Practicing : Paddy, Duckery and poultry under backyard

Shri Bikas Mazumdar, aged 40, son of Shri Viren Mazumdar having land holding 2.0 ha. resident of Kudirampur village, is a Graduate and progressive farmer, he came in contact with ORC-CARI in the year 2009, and attended various training programmes viz., livestock, Fish, Paddy cultivation and cultivation of vegetables, In the year 2010, he took up FLD demonstration with hybrid rice variety US 312, wherein he got increased in yield comparatively. He was in steady contact with the staff of ORC and CARI and in the year 2011 he took up seed production of HYV of rice var. CARI dhan - 5 in 0.26 ha., where he obtained an yield of 1400 kg i.e., (5.2 tons/ ha.) which was purchased by buy back system by Division of Field crops @12/kg. He earned an additional income of Rs. 5450/ during the year. During Kharif 2012 season he took up seed production of HYV

S.No	Intervention	Before Intervention (Rs.)	After Intervention (Rs.)	Additional Income (Rs.)
1.	HYV of rice in 2011 (0.26 ha)	3840	8400	4560
2.	HYV of rice in 2012 (0.20 ha)	10800	30600	19800

rice variety Gayatri in 1.5 bigha i.e., 0.2 ha., where he has got an yield of 1800 kg (9.0 tons/ha), beside he has also started rearing Peking cross ducks.

He has good entrepreneur and leadership skills. He took up Seed production of rice for the first time in his village. Through his initiation, he could get the farmers of remote areas at Gandhinagar II trained in latest technologies in agriculture and allied fields conducted by ORC for the first time.

For his sincere effort in taking up Seed production of HYV of rice he was awarded "Best Farmer Award" during the Island Kisan Mela 2013 by CARI at Port Blair.

SUCCESS OF RODENT MANAGEMENT TRAINING IN PADDY JOINTLY BY ALL INDIA NETWORK PROJECT FOR RODENT (AINPR) AND ORC AT DIGLIPUR

Based on the feedback on the rodent menace in paddy crop reported by ORC, the AINPR training and field demonstrations were carried out in farmer's field of North Andaman by the scientists along with team of ORC to control the rodent damage in rice crops. The trials were laid in paddy field in Subash Gram I, II and Keralapuram villages of North Andaman. On first day all the burrows on the bunds of rice field were closed. Next day the reopened burrows (live burrows) were identified and counted and the pre-baiting was done without zinc phosphide for two days, then10 g poison bait packet @ 1 packet per burrow was placed on the third day. Poison bait was prepared by the mixing of 20 g of Zinc phosphide, 20 g of oil and 960 g of broken rice. Next day observation was recorded for the baits consumed by the rats and dead rat specimens were also counted and 5 days after treatment residual live burrows were examined. After one week, re-opened burrows were observed and same procedure was repeated and success of rodent control was evaluated.

Table. Rodent Control Success in Paddy field

Particulars	Name of the Villages		
	Subash Gram I	Subash Gram II	Keralapram
Treated area (ha) with Zinc phosphide (2%)	2	1.5	0.8
No of live burrows/ ha before treatment	35	27	16
No of live burrows/ ha after treatment	4	5	3
Percent Rodent Control Success	88.57	81.48	81.25

The data in table revealed that baiting with zinc phosphide was effective in controlling of rodents in paddy field. The rodent damage was dramatically decreased after the poison baiting in all the villages. In Keralapuram village the rodent population was brought down from 16 to 3 live burrows whereas in Subash gram I and II village live burrows were brought down from 35 to 4 and 27 to 5 respectively. Rodent control success obtained was about 81% in Keralapuram, 88.57% in Subash Gram I and 81.48 % in Subash Gram II. In Keralapuram, 8 dead rats were seen after zinc phosphide treatment in the paddy fields, whereas in Subash Gram

1 & 2 it was 11 and 9 respectively. Most of the specimens were Bandicota *bengalensis*

The farmers have expressed their happiness on the immediate measures taken by the expert team both from initial stage of the crop to the harvest which has enabled them to build up confidence and pass on the technologies to the neighboring farmers in the coming season.

7.0 INNOVATIONS DISPALYED AND AWARDED

Innovations were displayed during Farm Innovators Meet on 10th Feb.2011 by the farmers from Diglipur and were awarded which is mentioned as below:

Shri Shuklal Das from Subash gram awarded for hybrid variety of Brinjal

Shri Nirmal Mazumdar from Subash gram awarded for unique Mustard plant

8.0 IMPRESSIONS

IMPRESSIONS OF DIGNITORIES

Dr. S.L.METHA, QRT,CHAIRMAN

Date	Name & Address	Impressions / Suggestions Good Work	Signature
3/5/2012	Dr S.L. Mehta Chairman, QRT.	Extremely pleased to visit the work done by CARI in Digli-ur area. Met many farmers. The Comments by all farmers: make us proud of CARI scientists There was admiration for the work of the scientist The technology capacity building and transfer has enabled farmers to get higher income. One of the farmer got ICAR Award lead by Dr Zamir for their Heartiest congratulations to the team and Director CARI. My best wishes continued service for farming Community	3/5/2012

DR. S.DAM ROY, DIRECTOR, CARI

10/11/2012 Dr. S. Dam Roy Director, CARI Port Blair A & N Islands-	Wonderful experience of meeting all the farmers who have come from distant place of Diglipur & Rangat. It is a great deal of zeal & vigour. It is apparent that the ORC Diglipur Centre under the Co-ordination of Dr. Zamir Ahmed & the staff of the Centre, along with the Scientists of CARI and staff of KVK are rendering their excellent work which are appreciated by the people of Diglipur 10/11/12

DR. VIVEK KUMAR, AC DIGLIPUR

S.No.	Name	Village	Impression	Signature
80	Shilina	Naam Nagar	Good	S. Shilina
81	DR. VIVEK KUMAR	DIGLIPUR (AC)	Doing good. I feel such system is the need of the hour for the betterment of farmers.	Vivek Kumar
82	Pratap Mondal	Radhanagar 9474293545		[signature]

SHRI. RAMESH KUMAR, DEPUTY DIRECTOR, ATM

Date	Name & Address	Impression/ Feedback	Signature
17/6/10	Ramesh Kumar Deputy Project Director ATMA- North Andaman.	Very impressive programme. The efforts of ORC, CARI & KVK and the support will the local farmers is really appreciable. The advisory work of these institute are very much encouraging to the islanders of farmers are this type of programme are also needed to be appreciated in all island. Good effort! Excellent work!!	[signature] 17/6/10

DR. NAGESH RAM, PC, KVK, SOUTH ANDAMAN

41. Dr. NAGESH RAM, 9474225222
42. Sh. L. B. Singh,
43. Sh. N. C. Choudhuri
44. Dr. S.K. Zamir Ahmed (Co-ordinator ORC)

15.6.2010 to 17.6.2010

Very good repo of the staffs of this ORC with the farmers. During this months training, we had very good response from the farmers side in participation in the trng. program and all farmers too appreciated the works and helps rendered by Mr. Ajay Pandey & Mr. Shiva being carried out in the farmers fields.

We hope that we can achieve our aim to reach maximum farmers of this place. All the best from our side to this ORC.

[signature] 17/6/10
(NAGESH RAM)
Adm. Head, KVK
Port Blair.

SHRI. G.R. CHINTALA, GM, NABARD

Sl. No.	Name and Address with Phone number	Date of visit	Impressions
31.	G.R. CHINTALA GM/DIC, NABARD, Post Blair Chairman - ORC committee.	08/01/10	This is the first visit of NABARD officials after establishment of ORC by CARI with the financial ASSISTANCE of NABARD. Though its almost 6 months, ORC is yet to procure necessary furnitures, fixtures, TEACHING AIDS etc; This had to be done on an urgent basis since the farmers of the area are already utilising the services of ORC for getting CONSULTATION referring some information booklets and getting clarifications on day to day problems being encountered. few Programmes already conducted by ORC had evoked good response from the farmers and this is a good endeavour on the part of NABARD & CARI to start Satellite Centre in the Northern most part of A&N I. Both the staff working at present are friendly, knowledgeable and also enthusiastic to facilitate the cause of ORC. I personally wish as Chairman of ORC Committee that this Centre makes a significant progress in delivering technology to the farmers. 8/1/10 G.R. CHINTALA

DR.R.K.GAUTHAM, HOD, FIELD CROPS DIVISION OF CARI

Sl. No.	Name and Address with Phone number	Date of visit	Impressions
54.	Dr. R.K. Gautam, Head Field Crops Division CARI, Port Blair		ORC, Diglipur is providing yeomanis service to the farming community of North Andaman through effective and efficient dissemination of recommended technologies. Well done and All the Best 28/12/10

IMPRESSIONS OF FARMERS

SHRI. PRADEEP KUMAR MAZUMDAR OF GANDHINAGAR II

12-10-12

मुझे बहुत ही अच्छा लगा ORC(CARI) Deparment से जो जानकारी मिला और मुझे बहुत ही Benefit मिला ORC-Cari का help से. ORC-Cari Deparment का जो workers है। Respected Siva Kumar और Harish-(Babu) इन 2 लोगो का जानकारी से मुझे और हमारा Valleger को पुरा पुरा Benefit हुवा। मैं ORC-Cari Deparment को आपना जीवन का एक हिस्सा समझता हूँ। मुझे Cultivation का बारे में 100% जानकारी Shiv Kumar और Harish (Babu) से मिला। मैं ORC-Cari आप लोगो को Request करुंगा आगे भी ईसतारा की जानकारी मुझे और हमारा Valleger को देते रहे।

Thanks

Pradeep Kumar Majumder
Gandhinagar - II
N/Andaman.

SHRI. KAMALESH SANA, KUDIRAMPUR

17-05-2012

আমি শ্রী কমলেশ সানা, গ্রাম কুদিরামপুর
আমাদের এখানে O.R.C Office আসাতে
আমাদের অনেক উপকার হয়, কারণ আগে
আমাদের এখানে আমরা যে কৃষকেরা
মাছ চাষ বা অন্য চাষে আমাদের
অনেক ক্ষতির সম্মুখীন হত কারণ
আমরা জানতাম না কোনো পদ্ধতি কি
কি ভাবে চাষ করলে আমাদের বেশি উৎপাদন
হবে। তাই ORC আমাদের অনেক ট্রেনিং
দেয়, কিছু ট্রেনিং কোন পদ্ধতিতে চাষ
করলে আমাদের ফসল ভাল হবে সেই ট্রেনিং
ট্রেনিং দিয়ে আমাদের অনেক উপকৃত করেছেন
যেমন মাছ পালন, হাঁস, মুরগী প্রতিপালন এবং সেই
ট্রেনিং দিয়ে কি ভাবে করলে ভাল হবে তা।
সেই বিষয়ের সম্পূর্ণ সহযোগিতা করেছেন তাই আমি
O.R.C কে ধন্যবাদ জানাই যে ভবিষ্যতে আমাদের
দিকে যেন লক্ষ রেখে আমাদের সুবিধা দেয়।

Kamalesh Sana

SHRI. BIKASH GAIN, R.K.GRAM

O.R.C (CARI)

আমি শ্রী বিকাশ গায়েন. পিতা শ্রী কিরণ চন্দ্র গায়েন গ্রাম - রা.কে. গ্রাম ডিগলীপুর। আমি শ্রী বিকাশ গায়েন ডিগলীপুরেরই এক জন চাষী। O.R.C স্থাপন হয়েছে ডিগলীপুরে 2007 সালের শেষের দিকে।

তখনই থেকেই এক জন বীজ দিতেন [illegible]। রান্নার ঘরে আমার সবজীর ক্ষেত, আমার সবজীর ক্ষেত দেখে, O.R.C বীজ [illegible] আমার ক্ষেত এসে আমার সঙ্গে পরিচয় করলে তখন থেকেই আমি O.R.C এর সঙ্গে অঙ্গাঙ্গিক ভাবে জড়িত। আমি শুরু থেকেই O.R.C এর নিকট হইতে বিভিন্ন রকমের সুযোগ সুবিধা পেয়েছি।

যেমন - বিভিন্ন রকমের বীজ জোড়, বেগুন, ধান, ফুলকপি, কোলাটি ঝাম ইত্যাদি। O.R.C এর বাবুরা 2007 থেকে 2012 অবধি বছরের আমার বাড়িতে এসেছেন এবং কি-কি পদ্ধতিতে চাষ করলে চাষীরা লাভ করতে পারে সেই সব বিষয়ে জানকারি দিয়েছেন এবং তাহাতে আমি বিশেষ ভাবে উপকার পেয়েছি, [illegible] থেকে অবধি আমার বাড়ীতে বহু scienctist এসেছেন তাছাড়া শ্রী [illegible] রায়, শ্রী এল-বি-সিং, [illegible] শ্রী নাগেশ স্বর স্যার আরো অনেক বাবুরা। এদের পদ্ধতিতে আমি CARI 5 Nos এবং Ranjit ধান চাষ করে, CARI থেকে পুরস্কার পেয়েছি,

তার প্রমাণ ও আমার কাছে আছে। এটা পেয়েছি 2012তে। তাছাড়া বেগুন চাষ করেও পুরস্কার পেয়েছি 2010 সালে।

সুতরাং O.R.C ডিগলীপুর আমার কাছে থেকে আমি শ্রী বিকাশ গায়েন বিশেষ [illegible] ভাবে লাভবান হয়েছি।

বিকাশ গায়েন
Bikash
18/5/2012

9.0 MEDIA FOCUS ON ORC

Scientist-farmers interaction on institutional innovation held

Diglipur, Sept. 20

The Out Reach Centre(ORC) of CARI established with the support of NABARD at Diglipur has conducted a Scientist-Farmers Interaction on Institutional Innovation in association with KVK, Fisheries Science Division and Department of Fisheries on Sept. 17 at Keralapuram ... for undertaking income generating activities which is supported by NABARD. Dr. Sailesh Kumar AFDO, Diglipur expressed his happiness on the collaborati...

Scientist farmer interaction ... *Continued from page 1*

generating activities which is supported by NABARD. Further he detailed about the forth coming training and demonstration programmes i.e., on Pulses and Maize which will be conducted by the team of experts of KVK, CARI in association with the ORC.

Dr. Sailesh Kumar AFDO, Diglipur expressed his happiness on the collaborative efforts for making Model Satellite nurseries to address to the demand of the fish seeds of fresh water for the farmers. He also urged the farmer that there is big scope for Income generation through fish breeding programme. He requested the farmers to form individual gr... of fish seed producer ... species namely ...atla, R... and Mirgal so ... fish seed is avai... needed. It was felt that training on fish seed rearing, control of harmful insects and awareness programme to sensitize the stakeholders on indiscriminate fishing should be conducted.

Dr. Kiruba Sankar, Scientist, Fisheries Science Division, CARI, assured for full support from the division for sustainable production of fish seed through Model Satellite nurseries. He also informed that this year, through this programme seeds has been produced in different cluster of villages located in South, North and ...ddle Andaman.

... Mistry, ... Shri. Saj... Ku... ...eralapuram a... Shr... shared ... experien... during the interaction. U...er the plan and guidance of Dr. S. Dam Roy, Director CARI, was appreciated by the farmers. The team also visited Satellite nursery of fish at V.S. Pally, Seed production of rice at Subashgram, Keralapuram and other interventions undertaken in the field.

Altogether 53 farmers representing different village clusters participated in the meet which was coordinated by Dr. S. K. Zamir Ahmed of CARI.

MORE NATIONAL/LOCAL NEWS

Fish farmers sensitized on satellite nurseries for carp breeding

CARI's QRT visit Diglipur

PORT BLAIR, MAY 7/--/ The Quinquennial Review Team (QRT) of CARI under the Chairmanship of Dr. S.L. Mehta along with Dr. Baldeo Singh, Dr. S.K. Pandey and Dr. Narayan Rishi as members visited Diglipur on 2nd May, 2012 along with Dr. D.R.Singh, Director CARI and his team of scientist comprising of ...

... of technologies and bridging the gap between the farmers and Scientists. He assured for all cooperation from his team of scientist in transferring need based technologies. Shri Madhu Sudan Nair, Pradhan, Keralapuram and Mr. Alok Biswas, Progressive Farmer and member, IMC from ... and Shri ... Mistry, Progressive ... from ... also in... ...d for a permanent ... CARI at Diglipur ... they assured for ... necessary support. ... Mehta, Chairman ... exhorted the farm... cooperatives for ... and selling their ... directly to the ... which will earn them good remuneration and self esteem. He cited his own experience wherein the farmers of Rajasthan are earning good value for their farm products by directly selling to the market through cooperative societies. Dr. S.K. Pandey and Dr. Baldeo Singh members of the QRT spoke about the value addition in horticulture crops and empowerment of women in agriculture for better livelihood. They also distributed good planting material of tapioca, sweet potato, elephant foot yam, HYV of rice to the selected farmers. Beside, coconut dehusker both paddle and hand operated were also given to the farmers with a view to enhance the efficiency and reduce

Local News 5

CARI chief reviews TOT implementation in N&M

A & N Islands 3

Trng on improved farm practices held at Gandhinagar

ORC in Media

10.0 SUMMARY OF ACHIEVEMENTS

- Technological Interventions for livelihood viz., Model Satellite Nursery of fresh water fish, Pig, goat farming, Peking cross ducks under backyard, SRI of rice, Mini Dal Mill, HYV of rice, pulses, tuber crops, oil seeds, Seed village concept of production of rice, Pheromone traps for rhinoceros beetle, Rodent and pest management in paddy were introduced.
- 77 training were conducted in agricultural and allied fields, wherein 2411 farmers got trained with overall participation 80% males and 20% females representing 32 cluster of villages in North & Middle Andaman.
- Under Kharif 191 Nos. of technological Demonstration with HYV's of rice, covering 51.43 ha in 32 cluster of villages was conducted.

- In Rabi 158 Nos. of technological Demonstration with HYV of pulses, vegetables, tuber crops and oil seeds covering 19.99 ha were done.
- Under SRI rice variety US312 yielded 5.86 t/ha, whereas in Non-SRI Gayatri (5.30 t/ha), CSR-36 (4.60 t/ha) and CARI-05 (2.65 t/ha in problem soil).
- In Black gram var. T-9 yielded 0.67 t/ha, and Tel Kalai (1.1 t/ha), Green Gram var. CO-6 (0.70 t/ha), and Jhad Kalai (0.59 t/ha), Sweet potato (SP-2) (11.25 t/ha),Chilli var. Suriya (2.08 t/ha) and Flame hot (10.0 t/ha), Cauliflower var. White Marble (40.0 t/ha), Cabbage var. BC 76 (45.0 t/ha), Okra var. US-7136 (5.6 t/ha), Tomato *var*. Laxmi (14.0 t/ha), Potato var. Kufri Surya (8.13 t/ha), Ground nut *var*. ICGS 76 (1.2t/ha), Tapioca var.H 226 (34.30t/ha.) & Sri prakash (42.0t/ha), Elephant Foot Yam, var. Gajendra (1.50 -6 kg/plant) respectively.
- Seed village concept was introduced in 0.95 ha in 2011, in 2012 in 4.13 ha, 2.0 ha in 2013 and 2.60 ha in 2014 for production of truthfully labeled seeds of paddy with the guidance of Division of Field Crops. Every year 40 quintal seeds of TLS were provided to the stakeholders.
- Data base of 2300 farmers linked with ORC has been made.
- Database on Market price of agricultural and allied sectors developed.
- For technology dissemination Kisan gosti (04 Nos.), Scientists-farmers interaction(05 Nos.), Exposure visit during Kisan Mela and Farm Innovators meet (04 Nos.), Awareness campaigns(02 Nos.), 2184 field visits by experts and staff, 1948 clientele visits to ORC for advisory, information sharing and feedback, 69 telephonic advisory, Field days (05) and participation in Block Mela (02 Nos.) were done.

- 18 farmers were awarded during Kisan Mela and Farm Innovators Meet for adoption of technologies in agriculture and allied field as a livelihood options.
- 32 cluster of villages have been covered through training and demonstration

Horizontal spread of Institute HYV of rice has been seen in an area of 17.0 ha. at North Andaman.