

**OUT REACH CENTRE: AN INNOVATIVE
INSTITUTIONAL APPROACH FOR
TECHNOLOGY
APPLICATION
IN AGRICULTURE &
ALLIED FIELDS AT
NORTH & MIDDLE
ANDAMAN DISTRICT,
INDIA**



**S.K.Zamir Ahmed
S.Dam Roy**



Supported by
NABARD Port Blair



ICAR-CENTRAL ISLAND AGRICULTURAL RESEARCH INSTITUTE

(An IS/ISO 9001:2008 Certified)

PORT BLAIR-744101

Website: <http://icar-ciari.res.in>



OUT REACH CENTRE: AN INNOVATIVE INSTITUTIONAL APPROACH FOR TECHNOLOGY APPLICATION IN AGRICULTURE & ALLIED FIELDS AT NORTH & MIDDLE ANDAMAN DISTRICT, INDIA

S.K.Zamir Ahmed
S.Dam Roy

Supported by
NABARD Port Blair



ICAR-CENTRAL ISLAND AGRICULTURAL RESEARCH INSTITUTE

(An IS/ISO 9001:2008 Certified)

PORT BLAIR-744101

Website: <http://icar-ciari.res.in>

Citation:

Out Reach Centre: An Innovative Institutional Approach for Technology Application in Agriculture & Allied Fields at North & Middle Andaman District, India (2017) S.K.Zamir Ahmed & S.Dam Roy, CIARI , NABARD, Port Blair, Pp:132

Layout, graphics & design:

Shri Vignesh Prints
Chennai

Type set :

Harish Velayuthan V,
Siba Mahato
Rina Saha
TRG Babu
Amit Srivastava

Photography: K. Ali Akbar

Printed at:

Shri Vignesh Prints
Chennai

ISBN : 978-93-85418-16-7

@ All rights are reserved.No part of this book may be reproduced or transmitted in any form by print, microfilm or any other means without the prior permission of the copyright holder. However, it can be used for scientific purposes and can be quoted with due acknowledgements.

Acknowledgement

I acknowledge our leader, Dr S. Dam Roy, Director, ICAR-CIARI for entrusting the responsibility upon me in coordinating the innovative institutional approach of technology application through Out Reach Centre (ORC) at Diglipur, North & Middle Andaman District. NABARD in special for the grant, to further transfer of technology in agriculture and allied fields to the stakeholders of North and Middle Andaman District as the first initiative with CIARI at field level. ORC has become the centre stage and has also taken the lead role for undertaking technology application, validation, refinement and transfer, involving the researcher, first line extension personnel and the farmers since July 2009.

I would like to express my gratitude to the Chairman & members of Project Monitoring Committee, Heads of Divisions/Section along with the team of Scientists of Natural Resource Management, Horticulture and Forestry, Field Crops Improvement & Protection, Animal Science, Fisheries Science, Social Science, Senior Scientist & Head along with SMSs of KVK, Port Blair, North & Middle Andaman, Banks, Development Departments, NGO's (ACANI, WBVHAI), PRIs for their valuable technical advice and logistics support

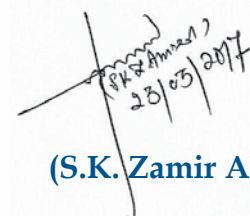
Dr Harsh Kumar Bhanwala, Chairman, NABARD, appreciation of work of ORC is a matter to treasure. I would like to thank him and the team of NABARD headed by Shri G.R. Chinthala, Shri S. Athristavel, Shri G. Tarai and Shri Hemant B Songadkar for facilitating the establishment and activities of Out Reach Centre of ICAR-CIARI at Diglipur with their critical observations and suggestions for the benefit of the stakeholders.

I would like to put on record the untiring support & suggestion in coordinating the activities of ORC by the Directors of Department of Agriculture, Animal Husbandry & Veterinary Services, Fisheries, Rural Development of A & N Administration. The administrative support given by Shri Abhishek Srivastava, Er S. L. Paik, and the scientific by Drs. N. Ravisankar, R. K. Gautam, P. K. Singh, M. Sankaran, A. Kundu, Ajanta Birah, A.Velmurgan, T.P.Swarnam, P.Krishnan, Naresh Kumar, A.K. Singh, K. Shaktivel, Nagesh Ram, T.V.R.S. Sharma, M.S.Kundu, Shrawan Singh, V.Baskaran, R.Kirubasankar, V.Damodaran, V.B. Pandey, V.K. Pandey, K. Abhirami, B.Gangaiah, A.Kundu, N.C.Choudhury, B.K.Nanda, L.B. Singh, of ICAR-CIARI, Shri Ramesh Kumar, Asst. Director, Agriculture & Dr. Shailesh Kumar, Asst. Fisheries Development Officer, A & N Administration is duly acknowledged.

Special thanks are due to Mrs. Rina Saha, , Shri Amit Srivastava, Mrs. V. K. Phathuma, Dibakar Khan, Ali Akbar, M. Subramaniam, Zacharia George & TRG Babu for their logistic support and A.K. Pandey, Harish V., Shiv Kumar, Kaiyum, Siba Mahtao, Dibendu Gain & Saw Markus, the staff of ORC, Diglipur for their dedicated work. Thanks are also due to Head of Office, Administrative Officer, Finance & Account Officer, and the Staff of SPCT Section of the Institute for their timely support.

I would like to thank whole heartily the earlier Directors, Dr. R.C. Srivastava for reposing faith in me in establishing ORC, Dr S.K.Ambast, Dr. D.R.Singh for smooth coordination and my present Director Dr. S. Dam Roy, without whom support this innovative idea would not have bore the fruits. Lastly thanks are also due to Hon'ble QRT, Chairman, Dr. S.L. Mehta and Members, Dr. A.K. Singh Ex DDG, NRM, who made their visit to witness the work and the impact made by the ORC of the Institute at Diglipur, North Andaman.

Dated : 23rd March, 2017


(S.K. Zamir Ahmed)



Executive Summary

In this complex diversified risk prone micro-farming ecosystem, lot of differences exists in the natural resource base, as well as the socio-economic background of people inhabited in far flung areas of the Islands. Therefore, the technologies/ varieties/ and strains developed in agriculture & allied fields at Port Blair, cannot be straight away transferred to the farmers elsewhere. It needs field evaluation and refinement in participatory mode to suit the preference of the farmers /stakeholders and also the local condition, in order to foster adoption for livelihood options.

To accomplish the mission, and in absence of KVK in the North & Middle Andaman District, an innovative approach for reaching the unreached was conceptualized and an Out Reach Centre (ORC) under the Farmers Technology Transfer Fund (FTTF) of NABARD, was operationalised. The basic purpose was to serve Diglipur area, which is agriculturally very important region of this UT, through technology application in agriculture & allied fields, which is 290 km. by road and 180 km by sea, away from the capital city Port Blair of ANI.

To plan and monitor the activities of the ORC, a Project Monitoring Committee (PMC) was constituted on 30th April 2009. Based on the recommendation of the PMC a team from the Institute along with the Coordinator of the ORC visited Diglipur. They interacted with the PRIs and key informants for selection of site, and thereafter a ground floor building with agricultural land surrounding was identified and selected at Kerelapuram Panchayat of Diglipur for establishing ORC. First PMC meeting was conducted on 17th June 2009 at Port Blair, to plan and execute various activities of the ORC. The prime objectives were set and ORC became functional from 15th July 2009. Since, then the sojourn of ORC began, with the doable technological application for doubling the income of the farmers in a sustainable way.

To foster introduction of technologies in agriculture and allied fields coupled with good agriculture practices, significant bottlenecks were identified. Accordingly the interventions to address such as technology assessment, validation, refinement and transfer in agriculture and allied fields, 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 became the bottom line of the ToT programmes. This has given fillip to the farmers and other stakeholders of the area.

It is known that like other parts of the 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 for the area. Even the newspapers were found to reach Diglipur, 12 to 24 hours after its publication at Port Blair, which is the capital city of Andaman and Nicobar Islands. Hence a "Rain Gauge", a low cost equipment to measure rainfall was placed with the technical support of Division of Natural Resource Management (NRM) of CIARI on 24th October, 2009. This could supplement information on the quantum of rainfall received to the officials of line departments as and when required, for enabling them to assess the crop damages in case of inclement weather in the area.

Pekin duck was introduced in July 2010, for the first time in Diglipur, which has become favourite of the small farmers and has spread across different cluster of villages during 2013 to 2016 with 2-3 birds in the backyard of more than 81 farmers involving 466 ducks.

To facilitate value addition in coconut a “Bio-mass fired copra dryer” was 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.

For giving exposure to IT and user friendly techniques to famers in technology application, Kiosk with internet connection was set up at ORC on 25th October 2010, so that the farmers can use the Kiosk and also get access to the internet to acquire scientific know how and do how on new technologies and adopt them in their farm and fields.

During survey it was found that 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 to five times more than purchase price mainly due to lack of any processing unit. ORC intervened on setting a Mini dal mill on 17th April, 2011, as a community asset to the SHG, with the technical support of Division of NRM, which was operationalized on 10th November 2012.

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 Kerelapuram with the support of NRM Division on 10th February 2011, which was the first intervention for Diglipur. After establishment of this setup, the weather could be forecasted and the information was disseminated to the farmers through advisory in print and Rural Knowledge Centre. The farmers could do effective management of the crops both during kharif & rabi season.

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, and with the technical support of Division of Field Crop Improvement and Protection in an area of 0.95 ha initially covering 3 cluster of villages, with nine promising varieties of rice. For the last five years in succession a total of 352.59 Quintals of TLS have been produced till date under the guidance of the plant breeders of the Institute.

PRA followed with field survey was conducted in December 2015, after introduction of the promising nine (9) rice varieties in 2010, through technological application in participatory mode to 373 farmers covering 100.09 ha till 2016. It was found that a total of 4919 farmers have adopted the HYV’s varieties of rice in the total area of 2109.063 ha spread over 35 cluster of villages at North Andaman. Rice variety Gayatri shared 1259.31 ha of area followed by CARI Dhan 5 (284.82 ha), CSR 36(225.61 ha), CARI Dhan 4 (181.06 ha), CARI Dhan 3(79.41 ha), CSR 23 (55.11 ha), Ranjeet (20.68 ha), CARI Dhan 6 (2.26 ha) and CARI Dhan7 (0.56 ha.) respectively. This indicates good horizontal spread of the varieties, through seed replacement of farmer’s varieties with CIARI’s varieties to the tune of 15 percent. There is good potential for increasing the production and also the productivity with the crop varieties adopted by the farmers in the coming years. Based on the demand, the seeds of rice varieties have been provided to farmers, NGOs, KVK, Nimbudera & Department of Agriculture, A & N Administration for its multiplication and distribution to the farmers in all the Districts.

To address to the need and huge demand mainly for fresh water Indian Major Carps (IMC) concept of “Satellite nurseries for IMC “ to support livelihood was established in collaboration with Fisheries

Science Division of CIARI, Dept. of Fisheries, A&N Administration, KVK & ORC and nurseries were set up in June 2012, for providing quality fish seeds and livelihood support. Farmers from Diglipur & Nimbudera cluster of villagers have come forward to follow the concept and have earned good remuneration of Rs. 2 to 2.5 lakhs in span of 4 to 5 months.

Through technological demonstrations in agriculture and allied field jointly by the team of scientists of Division of Field Crop Improvement and Protection & Horticulture and Forestry in the farmers fields at Diglipur under the aegis of ORC of the Institute, sixteen varieties i.e. 4 in Rice (CIARI Dhan 6, 7, 8 & 9, one in Poi (CIARI Poi 1), five in mung (CIARI Mung 1, 2 , 3, 4 &5), two in Urd (CIARI urd 1,2), in mushroom (CIARI Mush 2), two in Amaranthus (CIARI Lal Marsha & Haritha) and CIARI brinjal 2 could be validated and developed in participatory mode during 2013 to 2016. These varieties have been released by Institute Variety Release Committee for the benefit of farmers and other stakeholder's. Over the years the spread of the variety will enhance the production and productivity due to its adoption in A & N Islands.

For conducting effective technology dissemination numerous programmes *viz.*, technological demonstrations in kharif & rabi (593 Nos), capacity building (141 Nos.), kisan gosti (07 Nos.), scientists-farmers interaction (13 Nos.), exposure visit during kisan mela and farm innovators meet (04 Nos.), awareness campaigns (02 Nos.), 3826 field visits by experts and staff, 6533 clientele visited ORC for advisory, information sharing and feedback, 133 telephonic advisory, field days (07) and participation in block melas (02 Nos.) were done.

For facilitating livelihood support, technological interventions *viz.*, Model satellite nursery of fresh water fish, pig, goat farming, Pekin ducks under backyard, SRI of rice, Mini dal mill, HYV of rice, pulses (urd & mung), maize, tuber crops (sweet potato, elephant foot yam), groundnut, oilseeds (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 successfully.

Sixteen farmers clubs were formed to federate them into producer group. Beside, 5400 farmers have been linked with ORC and the database prepared. Till date, 35 clusters of villages have been covered through technological application in agriculture & allied fields.

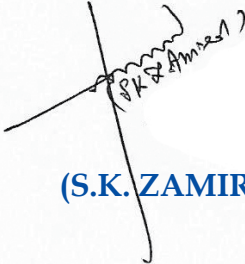
Market survey on perishable goods (rice, pulses, vegetables, fish, chevon and pork), both purchase and sale rate along with export and import of the essential commodities has been recorded since inception and the informatmon is translated during capacity building and other interaction programmes. This has given insight on the potential and prospects of crops, market avenues and opportunities of livelihood for youth and other stakeholders.

Twenty one farmers have been recognized by the peer groups and awarded with "Best Farmer Award" during Island kisan mela and farm innovators meet by CIARI for becoming the role models by adoption of technologies in agriculture and allied fields as a livelihood options. Beside the custodian and the innovative farmers have also been recognized during the period.

The icing on the cake was the falcitation to the Karen Community of the Webey village, of North & Middle Andaman with "Plant Genome Saviour Award" by PPV & FRA, GoI, New Delhi on 21st December, 2016, for conservation of the traditonal rice varieties for more than 125 years, which is first of its kind for the island farming community.

ORC of CIARI supported by NABARD, has acted as a centre stage between the researcher, line departments and front line extension worker and has taken a lead role to cater to the needs of the farmers / stakeholders in the field of agriculture & allied. The group approach adopted in technology application through participatory mode has resulted in perceptible change in the crop/ cropping pattenen, better remuneration per unit area, thus leading to socio-economic upliftment and empowerment, which is a positive transformation in the lives of the target clientle(s).

To sumup, the Out Reach Centre (ORC), of Diglibur an innovative institutional approach for technology applicaion at North & Middle Andaman has played a pivotal role in "FIRST LINE TRANSFER of selected doable technologies for doubling the income of the farmers in sustainable manner.



(S.K. ZAMIR AHMED)

Dr. S. Dam Roy, FNAAS

Director

ICAR-Central Island Agricultural Research Institute

P.O. Box No. 181, Garacharma, Port Blair – 744 101

Andaman & Nicobar Islands. E-mail: directorcaripb@gmail.com



Foreword

In this complex diversified risk prone micro-farming ecosystem, lot of differences exists in the natural resource base, as well as the socio-economic background of people inhabited in far flung areas of the Islands. Agriculture is most important pillar of Island economy and also source of livelihood for large section of population. Geographical isolation and peculiar climatic conditions of Islands signify collaborative efforts from all concerned stakeholders to increase productivity and profitability of agriculture in this region. Over the years, ICAR- CIARI has accepted full-fledged role for region specific research and imparting much needed technological backstopping and training to front line extension officers, farmers and other stakeholders.

For reaching the unreached, ICAR-CIARI, Port Blair established an Out Reach Centre (ORC) with the support of NABARD from July 2009 till March 2007, which has served Diglipur area, being agriculturally very important region of this UT, through technology application in agriculture & allied fields. It has acted as a centre stage between the researcher, line departments and front line extension worker in technology application and dissemination in association with Department of Agriculture, Animal Husbandry & Veterinary Services, Fisheries, Rural Development, Divisions of CIARI, KVK, NGOs and the PRIs during the period. The group approach adopted in technology application through participatory mode has resulted in perceptible change in the crop/ cropping pattern, better remuneration per unit area, thus leading to socio-economic upliftment and empowerment, which is a positive transformation in the lives of the target clientele (s).

Technological interventions for livelihood namely Model satellite nursery for fresh water fish, Pekin duck under backyard, Mini dal mill, HYV of rice, pulses, Seed village concept for production of TLS of rice, and Rodent management in paddy were introduced, adopted and being popularized. Adoption of Institute HYVs of rice has made around 10-15 percent seed replacement in an area, beside it has also facilitated varieties development in rice, mung, urd, mushroom and vegetables. Documentation of market behaviour of perishable commodities is well appreciated.

Out Reach Centre (ORC), an innovative institutional approach for technology application at North & Middle Andaman has played a pivotal role in catering to the needs of the farmers/ stakeholders and in “FIRST LINE TRANSFER” of selected doable technologies for doubling the income of the farmers in sustainable manner.

I strongly feel that the innovative extension approach, adopted by ICAR-CIARI, Port Blair through its Out Reach Centre at Diglipur, has set an example in technology translation for the betterment of the farming community in the Island ecosystem. This book will serve as a good reference material **and also** act as a ready reckner for the extension scientists, development departments and policy makers. I take this opportunity to congratulate Dr. S.K. Zamir Ahmed, Principal Scientist (Agriculture Extension) and his team for the work and bringing out this valuable publication.

(S. DAM ROY)

Dated : 23rd March, 2017



CONTENT

Title	Page No.
Acknowledgement	iii
Executive Summary	v
Foreward	ix
1. Introduction	1
1.1 Status of island agriculture	1
1.2 About Diglipur at North Andaman	5
2. Establishment of out reach centre by CIARI with support of nabard: A rationale	6
2.1 Specific objectives	6
2.2 Organogram	7
2.3 Infrastructure facilities	9
3 . Opinion leaders	10
4. Approach and intervention	11
5. Technology demonstrated and transferred	12
6. Villages covered through technological spplication	13
7. Time line of interventions	14
8. Capacity building of farmers & others stakeholders	16
8.1 Training in agriculture and allied fields: an overview	16
9. Technological application in farmer's field in mode of Kharif & Rabi technological demonstration	24
9.1 Kharif technological demonstrations (KTD)	24
9.2 Rabi technological demonstration	30
9.3 Seed village concept for production of truthfully labelled seed (TLS) of rice	37
9.4 Satellite fish nursery for production of fresh water IMC seeds	38
9.5 Pekin duck under backyard	38
9.6 Dal mill	39
9.7 Automatic weather station	39
9.8 Bio-mass fired copra dryer	40
9.9 Technologiocal demonstration on spices under arecanut	40
9.10 Rodent pest management in paddy	41
9.11 Pest management of okra	42
10. Farmer's club for effective ToT	43

11. Innovation: paddy threshing machine	45
12. ITK practiced by farmers at diglipur for animals	47
13. Extension activities	50
14. Output, outcome and impact of the technological interventions	62
14.1 Output	62
14.2. Out come	63
14.3. Impact of technologies intervened in the farmers field	67
14.4 Success stories	75
15. Service providing activities related to production, distribution of seeds and planting material	91
16. Price analysis of perishable commodities	92
16.1. Price analysis of marine water fishes at north and middle Andaman District	92
16.2 Price analysis of fresh water fishes	94
16.3 Price analysis of chevon & pork	95
16.4 Other itemes	98
16.5 Storage, godown and market yards	98
16.6 Suggestions for improving marketing strategy	98
17. Impressions of Dignitories/Farmers	100
18. Media focus on ORC	108
19. Summary of achievements	109
ORC Tree	120

1. INTRODUCTION

The Andaman and Nicobar group of Islands (ANI) are blessed with one of the unique and diversified ecosystem of the world. Being away from the mainland and with less population pressure, the area is still maintaining almost pollution free virgin environment, harboring pure and rich germplasm resources. It is situated in the southern part of the Bay of Bengal between 92.12° E and 93.57° E longitude and between 6.45° N and 13.41° N latitude with 10° N channel separating Andaman group from Nicobar group of Islands. A&N is a group of 576 islands, islets and rocks covering a geographical area of 8249 km² with a population of 3.80 lakhs.

The ANI shares the same broad agro-ecological region as South East Asian countries. Majority of the 188 named islands are small in size of which thirty six are inhabited. Only four islands namely North, Middle and South Andaman in the Andaman group and Great Nicobar in the Southern group have an area greater than 1000 km². Little Andaman with an area of 731 km² is the next largest island. Amongst the rest, 32 islands exceed 10 km² while 96 are less than 1 km² in an area. The average annual rainfall received is 3100 mm which is spread over May to December. The period between January and April is the driest, when the number of rainy days in each month hardly exceeds three, wherein agricultural crops often suffer severely. The mean temperature ranges from 24.3°-30.5°C, relative humidity (82.5%) and wind speed (5.8 km/h), almost remains same throughout the year.



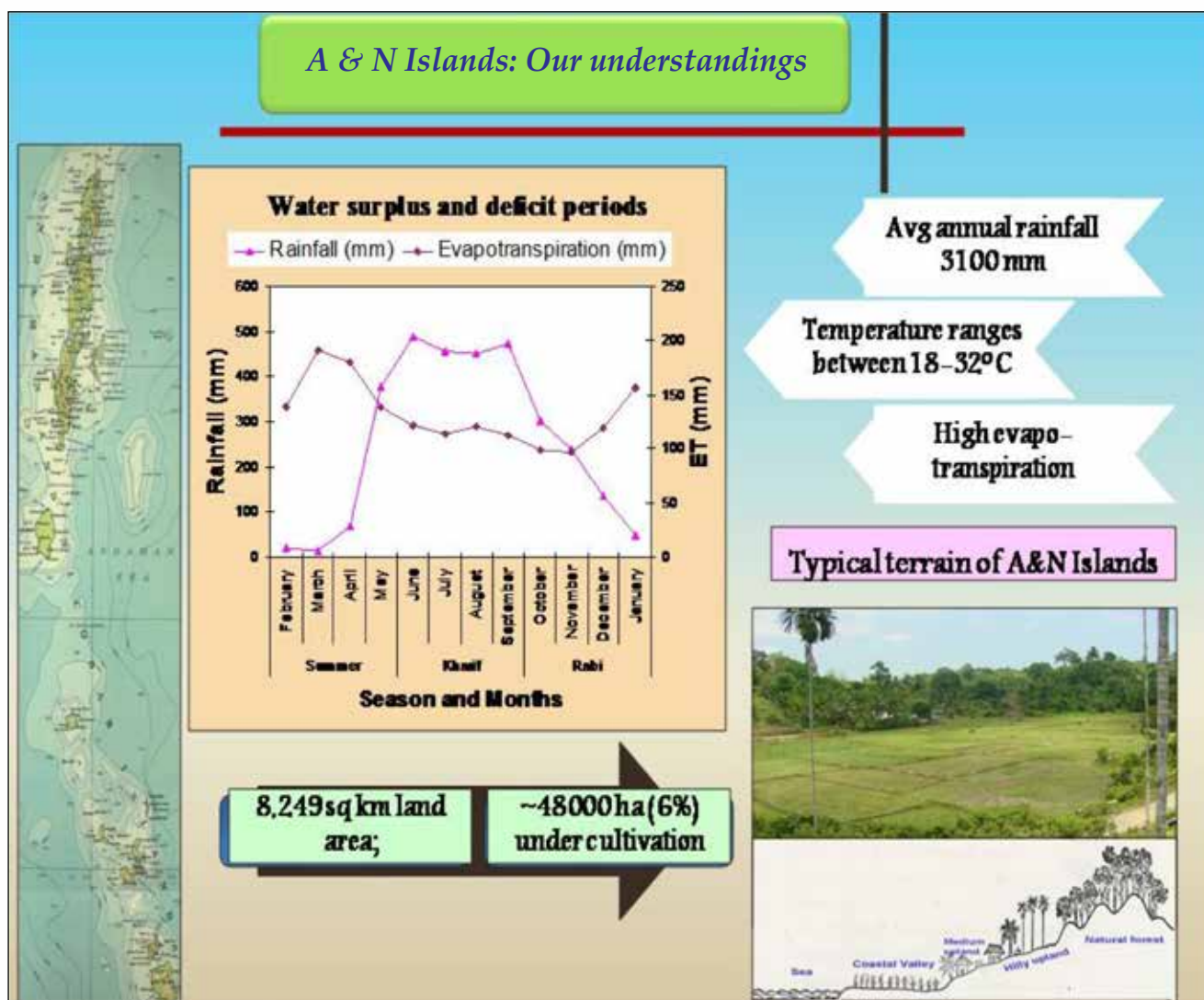
North Bay, the custodian of Light house in the backdrop of Mt Hariet

1.1 Status of island agriculture

Upto the end of IVth Five Year Plan, the major stress was mounted under area expansion of agriculture to achieve self-sufficiency in food grains. However, this programme turned to standstill with the report of McVean in 1976 on 'Land Use in the Andaman and Nicobar Islands,' which emphatically indicated that these islands are essentially forest terrains and not suitable for large scale agricultural settlement or agriculture based enterprises. From Vth Plan onwards, the thrust was diverted from area expansion to intensive agriculture practices and development of plantations on the hilly slopes. Due to this, the horizontal expansion of the agricultural land suffered, while the plantation crops received more importance.

Total agriculture farm families in the islands are 14000, of whom small and marginal farmers have 57% of the land holdings and own only 25% of the total area, while 43% of the land holdings owned by medium and big farmer's accounts for 75% of the area. The average size of the agriculture landholding in the islands is only 1.89 ha. About 50% of the total population is directly dependant on agriculture and allied activities. Though islands receives an annual rainfall of more than 3100 mm spread over more than 7 months in a year, there are no fresh water perennial rivers, which can be used as a source of irrigation during dry spell. The dry spell prohibits growing second crop after paddy as well as it affects the productivity of the plantation crops. The multifaceted problems emanating from biophysical factors, infrastructure, resources, socio-economic condition, culture, tradition and environmental

fragility, represents a typical CDR (Complex diverse risk prone) farming system. Agriculture in the Island is mainly rainfed one, which is done on small holdings, thereby putting limitations on large scale investments for improvement. The contribution of agriculture towards the Island GDP is 17.40 % in which horticulture contribution is dominant, whereas the industries and service sector contributes 6.4 % and 76.2 %, respectively.



The geographical situation and agro climatic conditions of ANI, do not permit complete transplant of agro-technologies, developed elsewhere in the mainland. This necessitates *in situ* development of location specific agricultural technologies to suit Island situations and eco-niche to maximize agricultural production. It also warrants for concerted efforts to develop new agricultural technologies suited to the specific agro-ecological conditions of these islands. Effective transfer of technologies programme is needed to improve sufficiency status in major food items, particularly the perishable commodities and rice. Land utilization pattern and operational holdings as per the Agricultural census 2010-11 in the districts is given in the table 1&2.

Table 1: Land utilization of Districts of ANI

Land area	South Andaman (in ha)	N & M Andaman (in ha)	Nicobar (in ha)
Geographical area	3,10,600.00	3,30,200.00	1,84,100.00
Reporting Area	2,80,442.46	3,18,153.96	1,57,794.50
Forest Area	2,67,294.00	2,95,568.00	1,54,207.00
Not available for cultivation	2,729.48	4,419.05	1,670.61
Other cultivated land excluding fallow land	1,860.98	7,580.05	444.16
Current fallow	342.75	1,818.57	472.98
Fallow lands other than current fallows	1,321.06	1,228.06	731.88
Net area sown	6,894.16	7,538.70	267.87
Area sown more than once	246.85	1,468.30	110.00
Total cropped area	7,141.04	9,007.00	377.87

Table 2 : Number and area of operation holding by size class as per agriculture census

Size class (ha)	2005-06		2010-11	
	No. of holding	Area of holding (ha)	No. of holding	Area of holding (ha)
Marginal (0-1)	4823	2140.64	4626	2021.62
Small (1-2)	2118	3200.94	2415	3463.59
Semi medium (2-4)	2953	7793.21	3137	8242.91
Medium (4-10)	1656	7199.58	1592	6910.76
Large (10-20)	40	1511.40	33	1217.11
Total	11590	21845.77	11803	21855.99

Source: Directorate of Economics & Statistics 2010-11

Productivity trend of major crops in Islands

The productivity trend of the major crops of ANI was worked out from 2005-06 to 2014-15, which showed that the average productivity /ha in coconut was 4615 nuts, in arecanut 1.44 Mt, in paddy 2.85 Mt, in pulses 0.55Mt, in oilseeds 0.58 Mt, in vegetables 7.11 Mt and in fruits it was 8.52 Mt respectively. The productivity trend over the years has been found to be in increasing trends, but at marginal level as reflected in the table 3.

Table 3: Productivity trend of major crops of ANI (2005-06 to 2014-15)

Particulars	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	Average Productivity
	Productivity										
Coconut (Nut)	3749	4153	3727	3776	3904	4364	4816	5713	6028	5923	4615
Arecanut (MT)	1.36	1.44	1.4	1.38	1.25	1.39	1.41	1.42	1.39	2.0	1.44
Paddy (MT)	2.45	2.77	2.98	2.8	3.06	2.85	2.93	2.74	2.83	3.05	2.85
Pulses (MT)	0.65	0.55	0.65	0.54	0.59	0.44	0.52	0.49	0.49	0.53	0.55
Oilseeds (MT)	0.63	0.6	0.82	0.63	0.62	0.55	0.54	0.47	0.51	0.42	0.58
Vegetables (MT)	7.0	7.89	7.8	6.57	7.98	6.08	8.83	6.18	6.46	6.29	7.11
Fruits (MT)	6.67	7.63	7.6	8.3	8.58	9.11	8.84	11.74	8.04	8.68	8.52

Moreover the cumulative annual growth rate in percent (CAGR%) of the major crops based on the area, production and productivity of the Islands for the period from 2005-06 to 2014-15, signifies that the percentage increase in area was 0.46 for coconut followed by arecanut (1.44), fruits (2.50), vegetables (4.36) & pulses (13.14) in positive trend, whereas that of oilseeds (-3.89) and paddy (-1.76) is in decreasing trend. In case of production it was 1.32 for paddy thereafter in vegetables (3.26), fruits (5.24), coconut (5.16), pulses (9.97) & arecanut (11.82) in positive trend, whereas that of oilseeds it was in decreasing trend (-7.91). The productivity trend percentage was positive i.e., in case of fruits (2.64), followed by paddy (3.13), coconut (4.68), arecanut (10.22), whereas decreasing trend was reflected in oilseeds (-3.97) followed by pulses (-3.06) & vegetables (-1.06) respectively in figure 1.

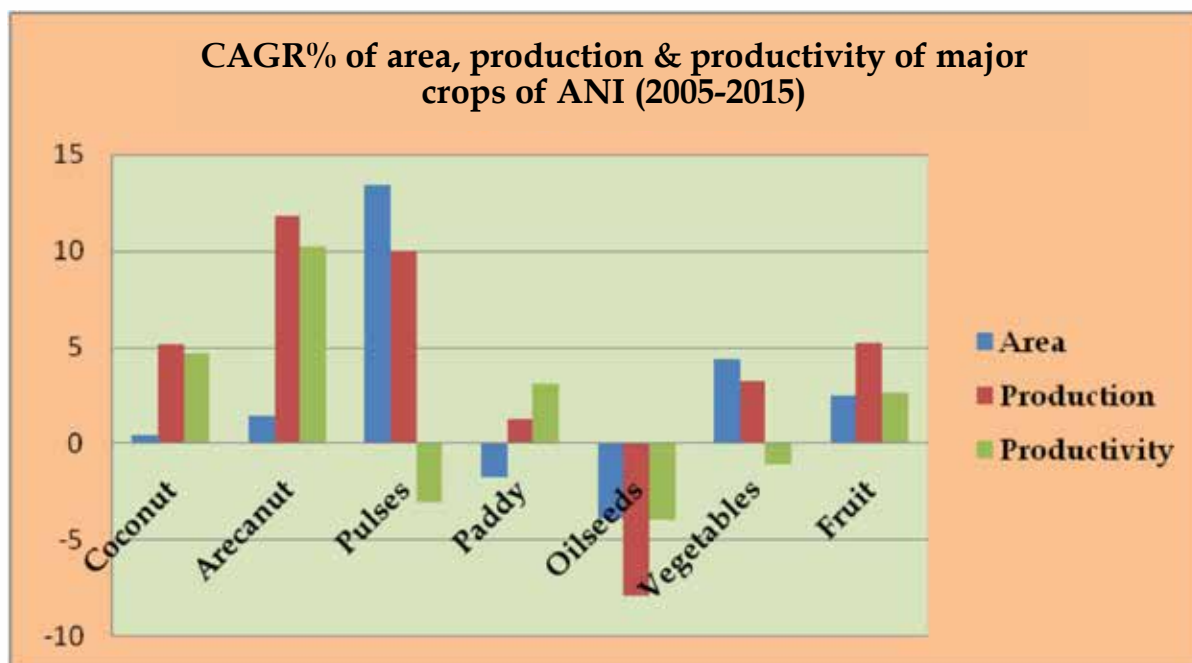


Fig. 1: CAGR % of area, production & productivity of major crops of ANI (2005-2015)

Thus, increasing productivity has long been recognised as the most important source of output growth and income improvement in the Islands of agriculture sector. Agricultural productivity growth in ANI also plays a particularly important role in increasing efficiency in production of the agriculture

products and maintaining National competitiveness in the face of declining terms of trade, increasing climate variability and tightening constraints on natural resource use. Beside, changing community attitudes and values are also emerging as important factors governing farm production systems.

1.2 About Diglipur at North Andaman

Diglipur is one of the three local administrative divisions of the District of North & Middle Andaman, which is a part of the Indian union territory of Andaman and Nicobar Islands. Diglipur is the largest and farthest town of North Andaman's, 290 km from Port Blair. It is located at 13°16'0N 93°0'0E at an altitude of 43 meters and has an area of 238 square kilometers. Diglipur is a division known locally as a tehsil, roughly equivalent to a county in its range of administrative powers. The population according to 2001 Census of India figures to 42,877. Located on North Andaman Island, Diglipur provides a rare experience for eco-friendly tourists. It is famous for its oranges, rice and marine life. It harbours Saddle peak, the highest point (732 m) in the islands, Kalpong, the only river of Andaman which flows from here with the first hydroelectric project. It takes near about a day by road from Port Blair. Main attractions around Diglipur are Ross & Smith Island, Saddle peak, National park, Ramnagar beach, Mud volcanoes, Kalipur and Lamiya bay beaches. Other villages in Diglipur include Aerial bay, D.B.Gram, Diglipur bazaar, Durgapur, Gandhinagar, Ganeshnagar, Hathilevel, Jagnnath Dera, Kalara, Kalighat, Kalipur, Kerlapuram, Khudirampur, Kishorinagar, Lamiyabay, Laxmipur, Madhupur, Milangaram, Nabagram, Pachimsagar, R.K.Gram, Radhanagar, Ramnagar, Sagardweep, Shanti Nagar, Shibpur, Sitanagar, Shyamnagar, Shantinagar, Subashgram, Swarajgram, Beachdera, Coffeadera, Burmachaad, and V.S.Pally, wherein the agriculture production is taken for livelihood.



Experts on first boat convoy from Middle strait to reach Diglipur



A panoramic view of agriculture situation at the backdrop of Saddle peak during rabi at Diglipur (ORC)

2. ESTABLISHMENT OF OUT REACH CENTRE BY CIARI WITH SUPPORT OF NABARD: A RATIONALE

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, therefore, the technologies / varieties/ strains developed at ICAR-Central Island Agricultural Research Institute formerly known as 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, and in absence of KVK in the North & Middle Andaman District, an innovative approach for reaching the unreached was conceptualized and an Out Reach Centre (ORC) under the Farmers Technology Transfer Fund (FTTF) of NABARD, was operationalised from July, 2009 at Diglipur for technology application in agriculture & allied fields at North & Middle Andaman district, which is 290 km away by road and 180 km by sea, from the capital city Port Blair.

2.1 Specific objectives

To shoulder the responsibility of technology assessment and refinement in agriculture and allied fields for integrated development of the villages as a whole, the following objectives were implemented namely;

- Facilitate evaluation of varieties/ breeds/ strains and demonstration of production technology/ rearing technology through technological application & On Farm Trials in the farmers field.
- Evaluation of location specific technologies and refinement at farmers fields to act as a feedback mechanism for further refinement of the technology.
- Facilitate imparting training for the youths and farm women with institutional support.
- To act as facilitator to provide quality planting material and improved livestock/ fish breeds through collaboration with state department or / and progressive farmers.
- Facilitate maintaining demonstration units on scientific lines to provide work experience to the target group and also for dissemination of latest technical know-how & do- how.
- Formation of farmers clubs to federate into producer group.
- Maintaining functional linkages both intra and inter institute for optimizing resources and maximize benefits.

2.2 Organogram

For the successful implementation of the ToT programmes, all the research sections of CIARI were linked alongwith the State development departments like Agriculture, Animal husbandary & Veterinary Services, Fishereis, Rural Development, and NABARD for bringing about all round development and also to reach the unreached in the far- flanged islands of these territory.

To plan and monitor the activities of the ORC, a Project Monitoring Committee (PMC) was constituted on **30th April 2009**. The team from the host Institute visited Diglipur, had discussion on the purpose behind the establishment of an ORC with the PRIs & key informants . Selected a suitable site for training and office building having agricultural land in the periphery at Kerelapuram Panchayat of Diglipur .First PMC meeting was conducted on **17th June 2009** at Port Blair, to plan and execute the activities with set objectives and thus the ORC came into operational from **15th July 2009**.



First PMC meeting of ORC with GM NABARD at CIARI



Dr Harsh Kumar Bhanwala, Chairman NABARD reviews & interact

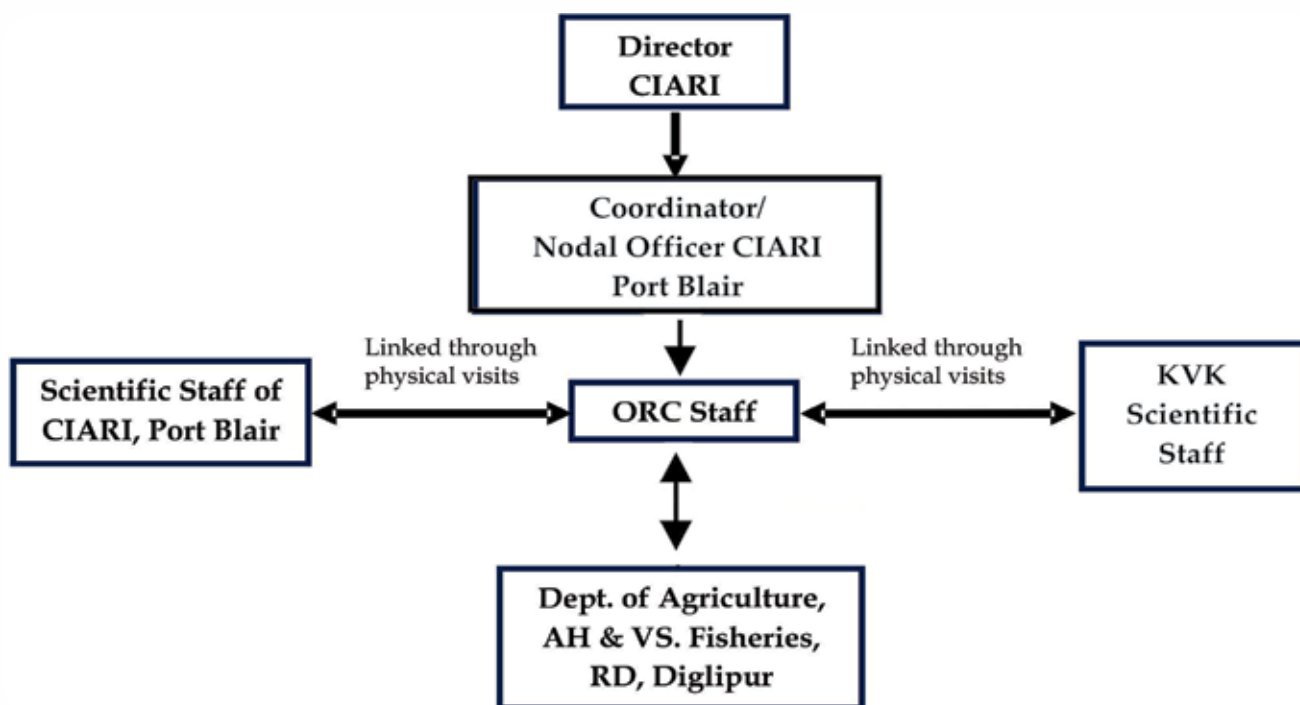


Presentation before the Chairman , NABARD on ORC activities

The sojourn of ORC began since 2009, with identification of bottlenecks and addressing the problems with intervention of suitable technologies in agriculture and allied fields coupled with good agriculture practices for a period of seven long years. ORC has taken its ToT programmes, based on the PRA conducted, in the mode of imparting training for capacity building, technology application in agriculture and allied fields through front line demonstration, evaluation of location specific technologies and its refinement, and maintaining demonstration units on scientific lines. Beside, extension activities were conducted 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.

This was possible with the proactive support of the scientists and staff all the research sections of the host Institute, KVK, Line department, NGOs and PRIs members, which has given fillip to the farmers and other stakeholders of the area.

Organogram of Out Research Centre at Diglipur



Team interacting with PRI at Diglipur



Hon,ble MP, sensitized on ORC activities by GM, NABARD during IKM



GM , NABARD reviews the activities of ORC with PMC members

2.3 Infrastructure facilities

Out Reach Centre got operational from a hired building located at Keralapuram village of Diglipur. The facilities available includes, a training hall with capacity of 50 trainees with audio visual aids, computer with internet connectivity, library with information materials like pamphlets, training manuals, agricultural journals, videos in agriculture and allied fields.

To advocate e-learning lessons, kiosk with internet connection was established in 2010-11, to impart know how & do how in agriculture and allied sectors. Besides the instruction material on micro business module (MBM), vermicompost, PoP of rice, rodent management, trichoderma, brinjal etc., have been uploaded for refernce. Marketing information on perishable items like fish, vegetables, pork, chevon, cereals, training and visits of the experts are also available. Agromet advisory which provides recommendation/ advice to the farmers for effective management of crops / animals/ fish, in view of weather prediction is facilitated by ORC through phone & personal contacts.

Database of the opinion leaders and more than 5400 plus farmers linked with ORC are maintained. ORC in *toto* is also linked by CIARI website, <http://icar-ciari.res.in> for ensuring global linkage and showcasing of the innovative technology application in agriculture and allied fields implemented at Diglipur, North & Middle Andaman District.

Infrastructure facilities at ORC Centre, Diglipur



Manual rain gauge



ORC centre



Kiosk with internet



Mini dal mill



Automatic weather station



Bio mass fired copra drier

3. OPINION LEADERS

At the outset to give impetus to the ToT programmes key informants/ opinion leaders were identified in the year 2009, who were found to be self designated leaders in different fronts at village level. These leaders acted as the ambassadors for dissemination of technologies in far flung areas. Their numbers multiplied with the advancement of the journey of the ORC. Given below are names of initially formed opinion leaders who played an active role in forging the ToT programmes ahead.

Opinion leaders of ORC

S.No.	Name	Village	Age	Contact No.
1	Shri Kamlesh Sana	Khudirampur	31	9474247309
2	Shri M.S.Omprakash	Nimbudera	30	9474230903
3	Shri Khokan Mondal	R.K.Gram	38	9474206132
4	Shri Bikash Gain	R.K.Gram	45	9679505608
5	Shri Bhabhathosh	Ganeshnagar	20	9474296714
6	Shri Joydeb Mallick	Sitanagar	40	9476073472
7	Shri Alok Biswas	Madhupur	38	9434273747
8	Shri Dindayal Mridha	Paschimsagar	35	9476017339



4. APPROACH AND INTERVENTION

An innovative methodology of group approach have been adopted to reach the farmers and other stakeholders ushering better result and transformation in socio- economic status of the farmers, farm family and the village as a whole. The mentioned below are the location specific technology / methodolgy implemented in participatory mode at North Andaman.

- Tecnological demonstration of HYV of rice, pulses, vegetales
- Training for knowledge and skill development (crop production, horticulture, livestock, fisheries, natural resource management, plant protection, post harvest/ processing and others)
- Seed village concept for production of rice seeds
- Model satellite nurseris of fresh water fish
- Mini dal mill for processing of pulses
- Hybrid and high yielding varieties of maize, sunflower, tapioca, sweet potato
- Introduction of best breed of goat, pig, duck, poultry
- Technological demonstration of spices under arecanut
- Formation of farmers clubs
- Exposure visit during Island kisan mela and farmers innovators meet
- Field visit by experts and staff
- Advisory services



5. TECHNOLOGY DEMONSTRATED AND TRANSFERRED

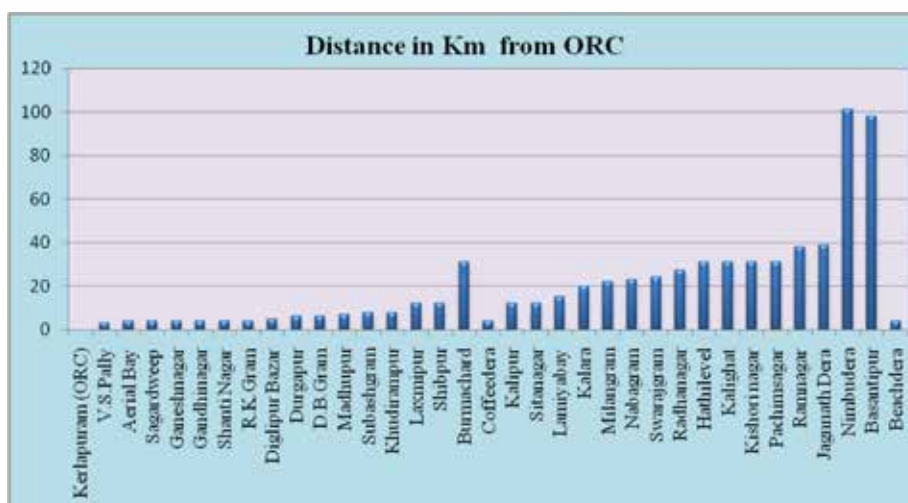
- HYV & hybrid of rice
- HYV of pulses
- SRI on HYV & hybrid rice
- Quality maize and baby corn
- HYV of vegetables , and burma dhaniya
- Goat farming under backyard
- Pig farming under backyard
- Mini dal mill for community
- Satellite nursery for fresh water fish
- Seed village for production of TLS of rice seeds
- Pekin duck under backyard
- Tuber crops like sweet potato, elephant foot yam & tapioca
- HYV of oilseeds (Sunflower)
- Broad bed & furrow system
- Technological demonstration of spices under arecanut
- Integrated pest management in vegetables
- Rodent management in rice
- Aggregate pheromone trap to control rhinoceros beetle in coconut



6. VILLAGES COVERED THROUGH TECHNOLOGICAL APPLICATION

A total of 35 villages have been covered at Diglipur through technology application in agriculture and allied fields over the period which is given below:

S. No	Village Name	Distance from ORC in Km	S. No	Village Name	Distance from ORC in Km
1	Kerlapuram (ORC)	Zero	19	Kalipur	12
2	V.S.Pally	3	20	Sitanagar	12
3	Aerial Bay	4	21	Lamiyabay	15
4	Sagardweep	4	22	Kalara	20
5	Ganeshnagar	4 to Aerial bay Jetty and travel by boat for two hours	23	Milangram	22
6	Gandhinagar	4 to Aerial bay Jetty and travel by boat for one hour	24	Nabagram	23
7	Shanti Nagar	4 to Aerial bay Jetty and travel by boat for one and half hour	25	Swarajgram	24
8	R.K.Gram	4	26	Radhanagar	27
9	Diglipur Bazar	5	27	Hathilevel	31
10	Durgapur	6	28	Kalighat	31
11	D.B.Gram	6	29	Kishori nagar	31
12	Madhupur	7	30	Pachimsagar	31
13	Subashgram	8	31	Ramnagar	38
14	Khudirampur	8	32	Jagnnath Dera	39
15	Laxmipur	12	33	Nimbudera	101
16	Shibpur	12	34	Basantipur	98
17	Burmachard	31 to Hathilevel and by walk for one hour	35	Beachdera	4 to Aerial bay Jetty and travel by boat for half hour
18	Coffeadera	4 to Aerial bay Jetty and travel by boat for four hour	-	-	-



7. TIME LINE OF INTERVENTIONS

Numerous activities were carried out throughout the period in collaborative mode, which has brought radical changes in the village as a whole. Over here we have tried to present below the timeline of the major activities/ interventions taken at Diglipur by the ORC in the cluster of villages since inception which is depicted in table 4.

Table 4 : Time line of interventions

Date	Event(s)
21 st Jan., 09	Proposal for ORC
27 th Mar, 09	ORC sanctioned by NABARD
30 th Apr, 09	Project monitoring committee (PMC) constituted
9 th to 11 th Jun, 09	Site selection team visit to Diglipur
17 th Jun, 09	1 st PMC meeting
15 th July, 09	ORC operationalised
24 th Oct, 09	Introduction of rain gauge
Oct.,09	Rabi technological demonstration
June, 10	Kharif technological demonstration
July,10	Introduced Pekin duck under backyard
12 th Aug., 10	Introduced bio-mass fired copra dryer
25 th Oct., 10	Kiosk for e-learning established
10 th Feb., 11	Automatic weather station operationalised at Keralapuram
17 th April, 11	Mini dal mill installed
July, 11	Seed village concept for production of truthfully labelled seeds of HYV of rice in participatory mode
June, 12	Model satellite nurseries for fresh water fish
10 th Nov., 12	Mini dal mill operationalized
2013	Facilitated varieties development in rice & vegetable (CIARI Dhan 6, 7 & CIARI Poi 1)
2014	Facilitated varieties development in rice, pulse & vegetables (CIARI Dhan 6,7, CIARI mung 1,2,3 & CIARI Lal marsha, Harita)
2014-2015	Formation of Farmers clubs to federate into producer group
2015-2016	<ul style="list-style-type: none"> ★ Technological application of spices under arecanut ★ Facilitated varieties development in pulse, mushroom & vegetable namely CIARI mung 4,5, CIARI urd 1,2, CIARI brinjal 2, CARI Mush 2

Horizontal spread of the technologies in the villages, with collaborators and the mode adopted during 2009 to 2017 is represented through a flowchart in the Fig.2.

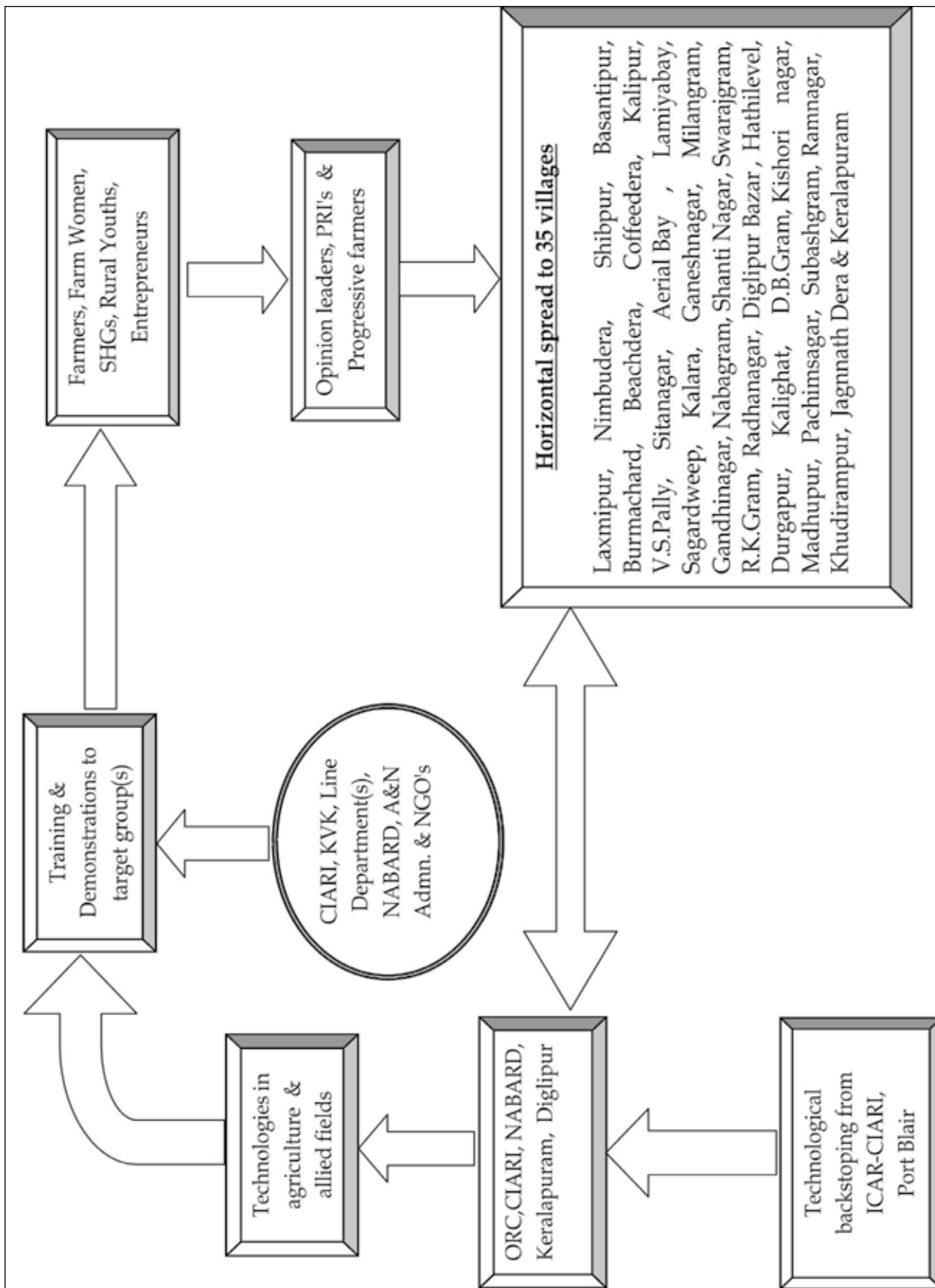


Fig.2. Flowchart depicting horizontal spread of the technologies by ORC at Diglipur, North Andaman (2009 to 2017)

8. CAPACITY BUILDING OF FARMERS & OTHER STAKEHOLDERS

Lot of emphasis has been laid on imparting need based both on and off campus training to the practicing farmers, farm women and youths. Based on the felt needs, 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 conducted with an objective to deliver the know how and do how, to further the development of knowledge, skill and positive change of other attributes of the target clientele(s). Scientists/faculty from ICAR-CIARI, KVK, NABARD, line departments, trainees turned trainer and NGOs 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 selected trainees were administered with a pre and post evaluation proforma to access the knowledge level and thereafter interactive and participatory mode was adopted to impart the know how and do how. 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.

8.1 Training in agriculture and allied fields: an overview

During the period one hundred and forty nine (149), field level training including customized were conducted in agriculture and allied fields, to 6,592 beneficiaries, benefitting 4,749 male & 1,843 female by utilizing 10,715 trainee days. The training programmes imparted were categorized in different enterprises/components *viz* Crop production (44), Horticulture (29), Livestock (11), Fisheries (17), Natural Resource Management (09), Plant Protection (18), Post Harvest / processing (11) and other fields (10) for the farmers / stakeholders representing from 35 cluster of villages *viz*. Aerial Bay, D.B.Gram, Diglipur Bazaar, Durgapur, Gandhinagar, Ganeshnagar, Hathilevel, Jagnnath Dera, Kalara, Kalighat, Kalipur, Kerlapuram, Khudirampur, Kishorinagar, Lamiyabay, Laxmipur, Madhupur, Milangaram, Nabagram, Pachimsagar, R.K.Gram, Radhanagar, Ramnagar, Sagardweep, Shanti Nagar, Shibpur, Sitanagar, Shyamnagar, Shantinagar, Subashgram, Swarajgram, Beachdera, Coffeeder, Burmachaad, and V.S.Pally. Beside Mayabunder, Nimbudera, Basantipur and Baratang were also covered. An overview of training, participation, demographic profile and knowledge level of the trainees is represented in table 5,6 & Fig 3.

Table 5 : Abstract of training programme enterprisewise

Enterprise	Training (Nos.)	Male	Female	Total	Trainee days	Ratio
Crop production	44 (30)	1423	641	2064	2351	2.2:1
Horticulture	29 (20)	670	282	952	1488	2.3:1
Livestock	11 (7)	395	126	521	1246	3.1:1
Fisheries	17 (11)	708	121	829	1017	5.8:1
Natural resource management	09 (6)	248	98	346	901	2.5:1
Plant protection	18 (12)	542	211	753	1427	2.5:1
Post harvest/ processing	11 (7)	154	129	283	294	1.1:1
Others	10 (7)	609	235	844	1090	2.5:1
Total	149	4749	1843	6592	10715	2.5:1
Percentage of participation		73 %	27%			

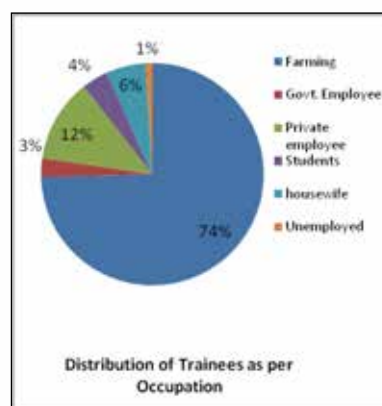
Please note: Figures in parenthesis indicate the percentage

Table 6: Distribution of respondent according to their knowledge level (n=300)

Category	Knowledge level	
	Before training	After training
Low	280 (93.00)	14 (4.00)
Medium	20 (7.00)	215 (72.00)
High	-	71 (24.00)
Total	300 (100)	300 (100)

Figure in parenthesis denotes percentage

The percentage participation of male and female, wherein the ratio of 73:27. Training in the crop production enterprise shared the maximum percentage of 30 followed by horticulture, plant



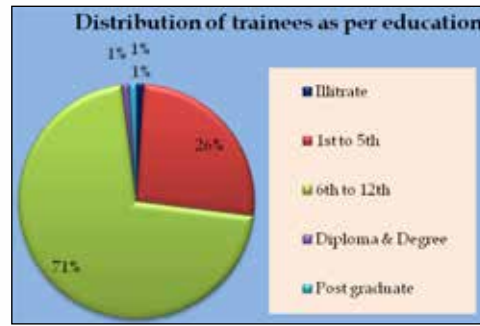


Fig. 3. Demographic profile of trainees

protection, fisheries, post harvesting/processing, natural resource management, livestock and others. Majority of the trainees (>70%) belong to the category of farming with education level of middle to secondary level. Knowledge level of the trainees were found to be in the level of medium (72%) to high (24%) followed by 14% in low category after the impart of training, compared to the level of training before the training programme.

Besides a database of the trainees is also maintained for getting feedback and updating them on the latest know how and do how periodically. The brief report on enterprises/components wise training imparted is presented below:

Crop production enterprise

Fourty four training programs were conducted on the subjects *viz* SRI cultivation, scientific PoP for HYV of rice & pulses , maize & oil seeds, importance of seed rice production, improved farm practices for additional income and quality seed production of agricultural crops etc. A total of 2064 participated including 1423 males and 641 females accounting to 2351 trainee days.



Director gives seeds of CAR1 B1 brinjal (left) and GM, NABARD on right



Distribution of HYV of maize (left) and sensitization on paddy & vegetables on right

Horticulture enterprise

Twenty nine training programs were conducted on the subjects *viz* organic spice cultivation, plantation based cropping system, scientific block cultivation of drumstick, noni & agathi, plant propagation technique for fruit crop, nutrition kitchen gardening, multi-tier cropping system, non traditional vegetable production, pre and post harvest management for mango, scientific protected vegetable cultivation technique, tuber crops, floriculture, and aromatic plants etc. A total of 952 participated of which 670 males and 282 females were accounting to 1488 trainee days.



Imparting high value vegetable technique



Hands on experience on grafting



On campus bouquet making



Demonstration of bamboo machaan

Livestock enterprise

Eleven training programs were conducted on the subjects *viz* pig & goat farming, backyard poultry, quail farming and duck farming etc, wherein a total of 521 farmers participated representing 395 males and 126 females accounting to 1246 trainee days.



Distribution of teressa & boer goat to trainees



Off campus poultry farming imparted



Feedback session by expert



Nicobari fowl distribution

Fishery science enterprise

Seventeen training programs were conducted on the subjects *viz* fish nursery management, integrated fish farming system, cat fish culture & induced breeding, composite fish culture with IMC, carp breeding and nursery pond management, model satellite nurseries and marine ornamental fish farming, fish feed preparation, fish health & diseases etc. A total of 829 participated comprising of 708 males and 121 females accounting to 1017 trainee days.



Knowledge on ornamental fish imparted



Know how given on induced breeding to fishers



Hands on model satellite nurseries



Duck cum fish farming imparted

Natural resource management (NRM) enterprise

Nine training programs were conducted on the subjects *viz* mat nursery & soil sample collection, balance fertilizer application in plantation crops, land and agriculture development, land management of degraded soil for agriculture, livelihood options in agriculture & vermi composting and allied sector for degraded coastal land etc. A total 346 participated comprising of 248 males and 98 females accounting to 901 trainee days.



Hands on vermicompost making



Demonstration on biopesticide



Expert delivers information on land management and soil sampling techniques



Plant protection enterprise

Eighteen training programs were conducted on the subjects *viz* rodent control, protected cultivation of high value vegetables, pest disease & weed management in rice, vegetable & cole crops, rodent pest management in paddy etc wherein, a total of 753 participated including 542 males and 211 females accounting to 1427 trainee days.



Off campus training on pest, disease and weed management in rice



Farmers practice : spraying for pest & disease management



Learning by doing principal followed



Method demonstration on rat trap

Post harvest/ processing enterprise

Eleven training programs were conducted on the subjects *viz* bio-mass fired copra drier, copra drier and dal mill, post harvest technologies in mango, ginger, turmeric & rice etc. A total of 283 participated comprising of 154 males and 129 females accounting to 294 trainee days.



Processing of dal seen by the Director & experts



Trainees of PHT



Interaction session during the training



Exposure to trainees during field visit

Other component

Ten training program were conducted on the subject *viz* training cum exposure in agriculture and allied fields & enterprise development etc wherein, a total of 844 farmers participated including 609 males and 235 females accounting to 1090 trainee days.



Sesitization on plant genetic wealth by experts



GM NABARD sensitizes on producer group



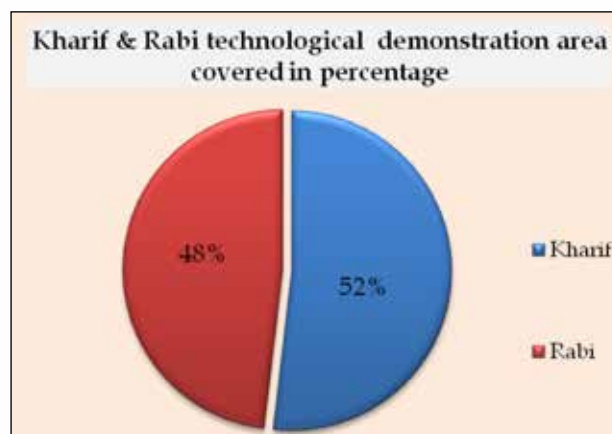
Scientist farmer interaction



Larger audience gets benefitted

9. TECHNOLOGICAL APPLICATION IN FARMER'S FIELD IN MODE OF KHARIF & RABI TECHNOLOGICAL DEMONSTRATION

Kharif technological demonstrations (KTD), using seeds of high yielding varieties and advanced package of practices were demonstrated at the farmer's 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. A total of 373 demonstrations were conducted in kharif season with HYVs of rice and hybrids covering an area of 100.09 ha, whereas 323 in rabi season with crops *viz.* green gram, black gram, cauliflower, chilli, cabbage, groundnut, potato, okra, tomato covering 38.36 ha, respectively. Besides seed village production of rice in participatory mode, goat, pig, pekin duck, model satellite nurseries of fresh water fish, mini dal mill, copra drier, coconut dehusker, sunflower, maize (both HQM & baby corn) tuber crops (elephant foot yam, tapioca, sweet potato), 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 detail of technological applications taken up during the period from 2009 to 2017, both under kharif and rabi is presented in order.



9.1 Kharif technological demonstrations (KTD)

For dissemination and promotion of high yielding rice varieties, KTD were conducted at farmers' fields at North and Middle Andaman. A total of 373 KTD's were conducted with recommended rice varieties *viz.* CARI Dhan 1, CARI Dhan 2, CARI Dhan 3, CARI Dhan 4, CARI Dhan 5, CARI Dhan 6, CARI Dhan 7, Ranjeet, CSR 36, CSR 23 and Gayatri. About 100.09 ha of land was covered under different cluster of villages in rice KTD's during the period (Table 6)

Table 6: KTD's conducted during 2010 -11 to 2016-17

Year	KTD's conducted (Nos.)	Village covered (Nos.)	Area covered (ha)
2010-11	53	10	19.60
2011-12	31	27	4.85
2012-13	53	14	14.70
2013-14	56	17	14.70
2014-15	120	28	31.03
2015-16	35	12	9.93
2016-17	25	10	5.28
Total	373	-	100.09

The year wise KTD conducted is presented below:

During 2010 - 11: A total of 53 KTD in participatory mode i.e. sixteen under System of Rice Intensification (6.30 ha) and 37 under non SRI (13.30 ha) were conducted covering an area of 19.60 ha in ten cluster villages i.e. Khudirampur, V.S. Pally, Subhash Gram, Keralapuram, Sita nagar, R.K. Gram, D.B. Gram, and Madhupur & Laxmipur. The results showed that under SRI, hybrid 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 hybrid VNR 2355 Plus (5.74 t/ha). Under non SRI, Gayatri gave an yield of 4.84 t/ha followed by hybrid 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 Ranjeet followed by Gayatri (27%), VNR 2355 Plus (18%), Varsha (15.45%) and US 312 (13%) over the local check variety Jaya. CARI Dhan 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. (Table 7 & 8)

Table 7: Result of HYV of rice under SRI

Variety	Demonstration (Nos.)	Area (ha)	Yield (t/ha)			Local check		Percentage increase in yield
			Min.	Max.	Mean	Variety	Yield t/ha	
VNR 2355 Plus	06	2.60	3.72	6.63	5.74	Jaya	3.70	55.13
US 312	10	3.70	4.12	7.58	5.86	Jaya	3.86	51.89
Total	16	6.30	-	-	-	-	-	-





Farmers with good crop of recommended varieties of rice under KTD

Table 8 : Result of HYV of rice in non SRI method under KTD

Variety	Demonstration (Nos)	Area (ha)	Yield (t/ha)			Local check		Percentage increase in yield
			Min.	Max.	Mean	Variety	Yield t/ha	
CARI 5	02	0.60	2.50	2.80	2.65	Jaya	2.20	20.45
Gayatri	03	0.60	4.65	5.13	4.84	Jaya	3.80	27.37
Varsha	04	0.60	3.03	4.83	3.81	Jaya	3.30	15.45
Ranjeet	01	0.10	-	3.88	3.88	Jaya	3.00	29.33
VNR 2355 Plus	10	4.20	2.90	5.11	4.24	Jaya	3.60	17.78
US 312	17	7.20	2.42	5.33	3.78	Jaya	3.35	12.83
Total	37	13.30						

During 2011-12

Under Kharif technological demonstration, 31 technological demonstration of rice with 4 HYV's and 2 hybrids was conducted in 14 cluster of villages viz. Khudirampur, Milangram, R.Pally, Kalipur, Hathilevel, Sawrajgram, Ganesh Nagar, Sitanagar, Laxmipur, R.K.Gram, Sitanagar W-2, Subashgram, Shibpur and Kerlapuram covering 4.85 ha. The area covered under different varieties namely VNR 2355 plus was 1.80 ha, US 316 (0.80 ha), Varsha (0.25 ha), Gayatri (0.25 ha), BPT 5204 (0.75 ha) and JGL (0.8 ha) respectively. The detail is given in table.

Performance of HYV of rice in farmer's field

Under Kharif 16 demonstrations with four HYV's of Rice namely Varsha, Gayatri, BPT 5204 and JGL was taken in 2.25 ha in 12 clusters of villages. The results indicated that var. Gayatri performed well and gave an yield of 5.30 t/ha followed by Varsha (4.77 t/ha), BPT 5204(4.14 t/ha) and JGL (2.65 t/ha) respectively. Varsha showed 47.22 % increase in yield followed by, Gayatri (35.90%) and BPT 5204 (33.55%) against the local check Jaya. The details regarding the variety, number of demonstration, area, yield of selected variety, local check and percentage increase in yield is given in the table 9.



Table 9 : Performance of HYV of rice in farmers field

Variety	Demonstration (Nos)	Area (ha)	Yield (t/ha)			Local check		Percentage increase in yield
			Min	Max	Mean	Variety	Yield (t/ha)	
Varsha	03	0.25	4.50	5.00	4.77	Jaya	3.60	19.25
Gayatri	02	0.25	5.20	5.40	5.30	Jaya	3.60	35.90
BPT 5204	04	0.75	4.00	4.45	4.14	Jaya	3.10	33.55
JGL	07	0.80	2.40	3.20	2.65	Jaya	2.50	6.00
Total	16	2.25						

Performance of hybrid variety of rice

Fifteen demonstrations with two hybrid variety of rice namely VNR 2355 Plus and US 316 was taken in 2.60 ha in 12 cluster of villages. The results indicated that var. US 316 performed well and gave an yield of 7.08 t/ha followed by VNR 2355 Plus (6.75 t/ha) respectively. The percentage increase in yield was to the tune of 136.00 % in var. US 316 followed by 104.55% in var. VNR 2355 Plus against the local check Jaya. The details regarding the variety, number of demonstration, area, yield of selected variety, local check and percentage increase in yield is given in the table 10.

Table 10 : Performance of hybrid variety of rice

Variety	Demonstration (Nos)	Area (ha)	Yield (t/ha)			Local check		Percentage increase in yield
			Min	Max	Mean	Variety	Yield (t/ha)	
VNR 2355 Plus	09	1.80	6.90	7.90	6.75	Jaya	3.30	104.55
US 316	06	0.80	6.50	7.60	7.08	Jaya	3.00	136.00
Total	15	2.60						

During 2012 - 13, a total of 53 technological demonstrations with seven HYVs of rice in 14.70 ha in 14 clusters 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 5 (4.87 t/ha), Ranjeet (4.80 t/ha), Gayatri (4.70 t/ha), CARI 4 (4.20 t/ha), CARI 3 (4.10 t/ha) and Savitri (3.50 t/ha) respectively. Here, CSR 36 gave 50% increase in yield followed by CARI 5 (49.85%), Gayatri gave (42.42 %), Savitri (40.00%), CARI 4 (35.48%), Ranjeet (33.33 %) and CARI 3 (13.00%) (table 11)

Table 11: Results of KTD on HYV of rice at farmer's field

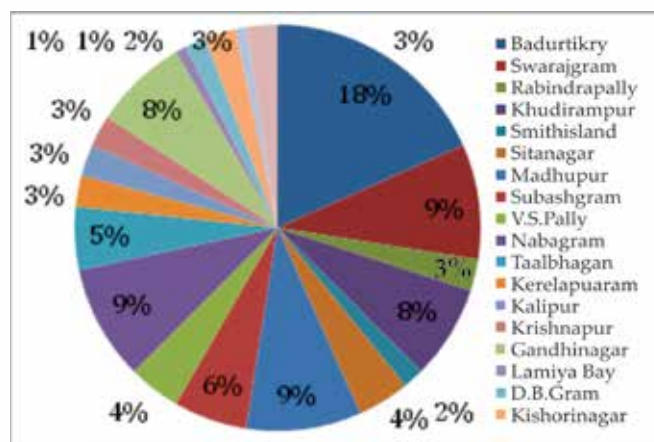
Variety	Demonstration (Nos)	Area (ha)	Yield (t/ha)			Local check		Percentage increase in yield
			Min	Max	Mean	Variety	Yield (t/ha)	
Ranjeet	10	2.67	4.00	6.00	4.80	Jaya	3.60	33.33
CARI 5	20	5.60	4.10	5.5	4.87	Jaya	3.25	49.85
CSR 36	19	5.09	4.25	6.00	5.10	Jaya	3.40	50.00
Gayatri	01	0.40	-	-	4.70	Jaya	3.30	42.42
CARI 3	01	0.19	-	-	4.10	Jaya	3.60	13.89
CARI 4	01	0.47	-	-	4.20	Jaya	3.10	35.48
Savithri	01	0.29	-	-	3.50	Jaya	2.50	40.00
Total	53	14.70						



Technological demonstrations of HYVs of rice at farmers field

During 2013-14, a total of 56 kharif technological demonstrations with seven recommended HYVs of rice were demonstrated in 14.70 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).

During 2014-15, a total of 120 technological applications of HYVs of rice were conducted in twenty eight clusters of villages at Diglipur, North Andaman. The result revealed that CARI Dhan 5, Gayatri & CSR 36 gave an average yield of 4.0 t/ha followed by CARI Dhan 4 (3.77 t/ha.) & CARI Dhan 3 (3.11 t/ha.) against the local check Jaya (2.57 t/ha.) respectively. The percentage increase in yield of CIARI rice varieties over the local check ranged from 38.59 to 63.26 % in farmers field.



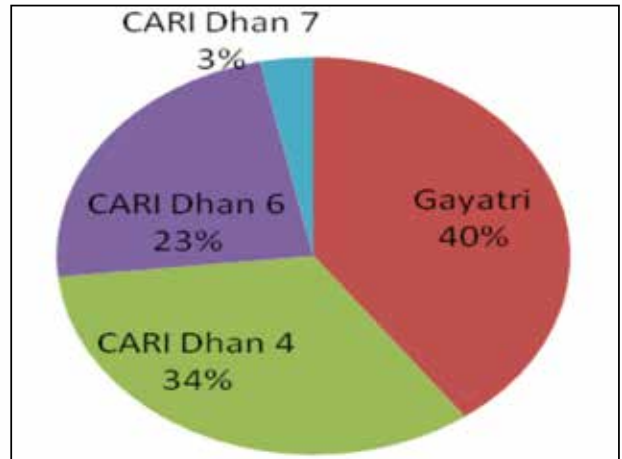


KTD on var. Gayatri (on left) & CARI Dhan 5 (on right)

During 2015-16, a total of 35 demonstrations in 10 clusters of villages, covering 9.93 ha with four HYVs of rice in the farmer's field representing R.K. Gram, Madhupur, Krishnapuri, Subhash gram, Rabindra pally, Swarajgram. D.B. Gram, Badurtikry, Nabagram, and Talbhagan were conducted at Diglipur, North Andaman. The result revealed that variety Gayatri gave an average yield of 3.82t/ha. followed by CARI Dhan 4 (3.61 t/ha.) , CARI Dhan 6 (2.83 t/ha.) and CARI Dhan 7(2.5 t/ha) against the local check Jaya (1.9 t/ha.) respectively. The percentage increase in yield of CIARI rice varieties over the local check ranged from 13.64 to 50.26 % in farmers field.



KTD on CARI Dhan 6 at farmers field



Composition on recommended HYV varieties

During 2016-17, a total of 25 demonstrations in 7 clusters of villages, covering 5.28 ha with six HYVs of rice in the farmer's field representing R.K. Gram, Krishnapuri, Subhash gram, Rabindra pally, Swarajgram, Nabagram, and Talbhagan was conducted at Diglipur, North Andaman. The result revealed that variety Gayatri gave a mean yield of 5.50 t/ha. followed by CARI Dhan 5 (5.10 t/ha.) , CSR 36 (5.00 t/ha.) CARI Dhan 7 (4.50 t/ha.) and CARI Dhan 6 (3.20 t/ha) against the local check Jaya (2.96 t/ha.) & Jaganath (3.15 t/ha) respectively. The percentage increase in yield of CIARI rice varieties over the local check ranged from 18.75 to 49.09 % in farmers field.(Table 12)

Table 12 : Result of kharif technological demonstration with HYV of rice during 2016-17

Variety	No. of KTD	Area (ha.)	Yield t/ha			local check		Percentage increase yield in over local check
			Min	Max	Mean	Variety	Yield t/ha	
Gayatri	5	1.27	4.00	7.00	5.50	Jaya	2.80	49.09
CARI Dhan 4	5	1.14	3.20	5.00	4.10	Jaganath	3.20	21.95
CARI Dhan 5	5	0.94	4.00	6.00	5.10	Jaya	3.00	41.18
CARI Dhan 6	2	0.12	2.40	4.00	3.20	Jaganath	2.60	18.75
CARI Dhan 7	4	0.93	4.00	5.00	4.50	Jaya	2.95	34.44
CSR 36	4	0.88	4.00	6.00	5.00	Jaya	3.10	38.00
Total	25	5.28			4.57		2.94	33.90



Director with team monitors the KTD of HYV of rice at diglipur.

9.2 Rabi technological demonstration

For the rabi season, 423 technological demonstration from the year 2009 till date , were made representing different cluster of villages covering a total area of 38.36 ha.

Year	KTD's conducted (Nos.)	Village covered (Nos.)	Area covered (ha)
2009-10	51	10	5.96
2010-11	63	27	8.45
2011-12	-	-	-
2012-13	14	14	0.08
2013-14	50	17	5.03
2014-15	42	28	4.0
2015-16	25	12	4.44
2016-17	178	15	19.09
Total	423	-	47.05

During 2009-10, 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. (Table 13)



PRI member sows potato seed



GM NABARD interacts with the farmer



Harvest of potato displayed

Table 13: Results of rabi technological demonstration (2009-10)

Crops	Variety	Area of Demonstration (in ha.)	Demonstration (Nos)	Yield (t/ha)			Local check / Yield (t/ha.)		Percentage increase in yield
				Min.	Max.	Mean	Variety	Yield	
Chilli	Flame hot	0.042	02	8.75	11.3	10.0	Fair bomb	8.55	16.96
Cabbage	BC 76	0.150	02	43.75	46.25	45.0	Blue bandies	42.00	7.14
Cauli flower	White Marble	0.105	03	36.25	46.25	40.0	Karuna	32.00	25.00
	Kimaya	0.042	01	39.35	-	39.40	Karuna	36.00	9.44
Okra	US 7136	0.050	02	5.00	6.25	5.6	Arun	4.20	33.32
Tomato	Laxmi NP 5005	0.140	03	12.50	15.63	14.0	Karan	11.00	27.27
Green gram	Jhad Kalai	0.300	03	0.53	0.69	0.59	Local	0.42	40.48
Black gram	Tel Kalai	3.600	09	0.65	1.52	1.1	Jhad Kalai	0.80	37.50
Potato	K. Surya	0.010	01	-	-	8.13	Local	2.00	306.50
	K. Jyoti	0.010	01	-	-	1.88	Local	0.80	135.00
Total		4.45	27	-	-	-	-	-	-

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. Jyoti (1.88 t/ha) against the local check (1.40 t/ha). There was receipt of 224.08 mm of rainfall (4 rainy days) in the month of January 2010 i.e. the harvest period of most of the crop which resulted in yield below its fullest potential.



Expert monitors the crop performance



Cauliflower var. White marble in nursery (in left) and heap of good harvest (on right)

During 2011-12, 14 FLDs were conducted in 6.91 acres (2.79 ha). The result revealed that Black gram (T 9) gave an yield of 0.67 t/ha, Green gram (CO 6) 0.70 t/ha, Sweet potato (SP 2) 11.2 t/ha, groundnut var. ICGS 76 (1.2 t/ha) and Chilli var. Suriya (2.08 t/ha), respectively were better than the local check.



Demonstration of green gram under arecanut



RTD of Sweet potato var. SP 2



Demonstration of sunflower var. CRFSH -1



Harvested sweet potato

During 2012-13, twenty four technological demonstrations with crops such as Tapioca, Elephant foot yam, Sweet potato, HYV of pulses, Brinjal and Sunflower were taken up in farmers field covering 2.0 ha. Besides Pekin duck were demonstrated under backyard in 20 farmers holding. The results showed that Tapioca var. Sriprakash yielded 37.20 to 42.00 t/ha and var. H226 (31.00 to 34.00 t/ha). Elephant foot yam var. Gajendra gave an yield of 1.5 kg to 6.00 kg per plant, Black gram Var. T9 (0.67 t/ha) and Sweet Potato var. CARI SP-2 gave 11.25 t/ha respectively. Pekin duck under backyard performed well and were found to be very promising as livelihood option.



Demonstration of Tapioca var. Suryaprakash and Elephant foot yam var. Gajendra



Pekin duck under backyard- a potential technology

During 2013 -14, thirty nine demonstrations with CARI Brinjal1, 54 with Maize var. HQPM1 covering 5.58 ha. Baby corn var. HM4 in 1.42 ha, on Arecanut (60) & 15 each on clove and pepper was 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 (200 kg) @ Rs. 50 to 100/-.

Maize / Variety	Demonstration (Nos)	Area (ha.)	Village
HQPM-1	54	5.58	19
Baby corn -HM-4	15	1.42	8



Field view of baby corn and high quality maize demonstration

Intervention : KTD on arecanut / clove /black pepper

Crop	Variety	No. of demonstration	Village
Arecanut	Mangla & Samridhi (100 each)	60	13
Clove	10 each	15	10
Black pepper	10 each	14	07



During 2014-15, twenty demonstrations of pulses viz green gram (Var.Samrat) in 2.0 ha and 22 nos. of black gram (Var.UIPU02-43), in 2.0 ha totaling to 4.0 ha with 42 farmers of villages namely R.K.Gram, Subashgram, Sitanagar, Radhanagar, and Kerelapuram were conducted. The result showed that var. Samrat in mung and UIPU02-43 in urd gave an average yield of 0.82 t/ha & 0.95 t/ha respectively against the local check 0.65t/ha.

During 2015-16, a total of twenty five demonstrations were conducted with two each of mung IPM-02-14, VBN 3 and urd IPU-02-43, LBG 645 varieties in the cluster of villages namely R.K.Gram, Ramnagar, Kerelapuram, Rabindrapally, Madhupur, & Kalipur covering 4.31ha. The variety VBN 3 in mung gave 91.56 percent increase in the yield, whereas LBG-645 in urd registered 68.24 percent increase in the yield over the local check respectively. (Table 14)

Table 14: Performance of HYV of pulses vis-a vis local check in farmers field

Demonstration (Nos)	Variety	Yield t/ha	Local check		
			Variety	Yield t/ha	% Yield increase over the check
8	IPM-02-14 (Mung)	0.44	Mung (small)	0.30	45.46%
2	VBN-3(Mung)	0.72	Mung (big)	0.37	91.56%
9	IPU-02-43(Urd)	0.63	Urd (Tel kalai)	0.36	73.90%
6	LBG-645(Urd)	0.92	Urd (Jaat kalai)	0.54	68.24%



View of pulse crop at farmers field till harvest



During 2016-17, a total of 76 demonstration of urd(18) & mung (29)has been conducted in a total of 8.84 ha covering 15 villages with varieties namely , ANU-11-29, LBG 645, IPM-02-45 in urd and in mung CARI mung 1,2, & 3 , VBN3 & ANM-12-02. Beside, 100 demonstrations of CARI Brinjal 1, covering 4.0 ha and 0.3 ha of spices under arecanut has been implemented.(table 15)

Table 15: Rabi technological demonstration of pulses in 2016-17

Sl.No.	Varieties	No. of demo.	Area (ha.)	village
Mung				
1	CARI mung 1	8	1.54	5
2	CARI mung 2	10	1.74	4
3	CARI mung 3	1	0.13	1
4	ANM 12- 02	7	1.24	4
5	IPM 02-14	2	0.45	2
6	VBN 3	1	0.13	1
	(A)	29	5.23	17
Urd				
1	ANU 11- 29	9	1.54	5
2	LBG 642	4	0.83	2
3	IPU-02-42	5	1.24	3
	(B)	18	3.61	10
Total (A+B)		47	8.84	27

CARI Brinjal 1

	Varieties	No. of demo.	Area (ha.)
1	CARI Brinjal 1 @ 10 gm in 0.05ha each	100	4.00



9.3 Seed village concept for production of truthfully labelled seed (TLS) of rice

Rice is the principal cereal crop of Andaman and Nicobar Islands, which is grown on about 8,390 ha of cultivated land with annual production of about 22000 tones. Among major constraints for productivity enhancement, non availability of quality seed of high yielding varieties is prominent. Availability of quality seed and varietal improvements has played a vital role in better utilization of inputs in different agro-climatic conditions of the country. It is estimated that improved varieties with good quality seed contributes to 40 - 60% to the crop production. The direct contribution of quality seed alone to total production has been estimated at around 15-20% depending upon the crops.

Based on the suggestions and to address to the problem 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 FCI & P 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 CIARI *viz.*, Ranjeet, CARI5, CSR23 and CSR36 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 3, 4, 5, CSR 23, CSR 36, Ranjeet and Gayatri involving 10 farmers of four villages covering 4.13 ha in participatory mode was taken and around 9 tons of TLS was produced, which was taken under buy back system and the same was sold to an NGO's for demonstration to their clients at Baratang. Besides the seeds were also 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 initially. Involving breeders, farmers and social scientists, 352.59 quintals of seeds truthfully labelled seeds (TLS) in participatory mode from 2011 to 2016 were produced, covering 14.62 ha by 43 farmers with nine HYVs of paddy namely CSR 23, CARI Dhan 3, CARI Dhan 4, CARI Dhan 5, CARI Dhan 6, CARI Dhan 7 ,CSR 36, Gayatri & Ranjit. Seeds produced were facilitated for purchase through buy back amongst the farmers & NGOs. Beside many other farmers who gained competence in TLS production are earning through its production & sale to the neighbouring farmers.

The seed production programme was well appreciated by the visiting dignitaries and also other stakeholders, wherein the production of good quality seeds were taken up under the guidance of the scientists of the Field crop improvement & protection division and field management by ORC.



9.4 Satellite fish nursery for production of fresh water IMC seeds

Fresh water fishes comprises about 40 % of the fishes consumed, Based on the study it was found that there is a huge demand for fresh water fishes with huge market demand. It was also found that there are around 700 ponds available in Diglipur for fish cultivation. Non availability of good quality fish seeds on time was the major bottleneck faced by the fishers.

To mitigate the problem, satellite fish nursery technique was introduced for the first time in 2012 at Diglipur under the technical guidance of Division of Fisheries in association with Dept. of Fisheries, A&N Administration, KVK and ORC. The prime objective was to raise the nurseries of fresh water fishes of IMC and make available in time to the fishers. The technology was well received by the farmers and as a result a single farmer could earn Rs. 2, 70, 000.00 approximately in a span of 4 to 6 months by adopting the technology at North Andaman. Presently twelve farmers have adopted the technology into practice for livelihood and many more youths have come forward to adopt the same. Department of Fisheries, A&N Administration is promoting the concept across the Island.



9.5 Pekin duck under backyard

To provide livelihood as well as nutritional security to the small farmers, Pekin duck a demand driven technology was introduced in the year 2011, by ORC with three (3) ducklings to a single farmer. Over the time it could spread to 81 farmers with 3-5 ducklings in the backyard, totalling to 466 numbers, spread over 15 villages by 2015.

A farmer could earn Rs16/- by selling an egg, Rs 400-450/- from adult and Rs 50-55/- for duckling, when compared to desi duck which was sold at Rs 200/-, 10/- and 5 to 7/- respectively. The duck would grow to average weight of 2.637 Kg with low level of mortality, when compared to desi i.e. 1.975 kg of weight with high mortality rate. Pekin duck under backyard with a unit size of 03 birds could give a net return of Rs.4, 350 against the desi birds (Rs.1, 140/-) thus giving an additional income of Rs. 3,210/-.



A total of 881 eggs of pekin duck was spread to fifteen cluster of villages by a single farmer, which is a remarkable beginning of a credible technology of the Institute.

9.6 Dal mill

In Andaman the annual production of pulse is 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 fetched higher prices at the locals market.

Feedback was given by ORC in the year 2010, to the scientists & the officials of Development department during the interaction, on export of major chunk of pulses to Chennai for processing from Diglipur (which is the major pulse producing area) . A need was felt to introduce a Mini dal mill to remove the bottleneck. Thus in association with the Division of NRM of the Institute, a Mini dal mill, was introduced among the enterprising SHG, Sagar Self Help Group in association with an NGO, ACANI in the year 2011, which got operationalised in 2012.



Training and hands on demonstration were given to the group by the scientist of the host Institute with an objective to ensure sustainable livelihood support to the members of SHGs. This could benefit the pulse growing farmers, in getting their product processed and sell it at reasonable market price at North Andaman.

9.7 Automatic weather station

After the establishment of ORC, it was reported after the survey conducted about non-existence of any suitable device to measure the rainfall received in the area. Based on the recommendations of ORC, a manual rain gauge was placed at Keralapuram to measure the rainfall received. After a year, Automatic weather station was set up at Diglipur on 10th December 2011, which was first of its kind in North and Middle Andaman district. Below photograph shows the view of the Automatic weather station.



9.8 Bio-mass fired copra dryer

It was introduced to facilitate better recovery of copra, and add value addition in coconut. It was placed in one of the progressive farmer's field at Diglipur during 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 at Diglipur, North Andaman.



9.9 Technological demonstration on spices under arecanut

Demonstration with black pepper under arecanut was done in two cluster of villages namely R.K.Gram & kerelapuram in an area of 0.10 ha each in five farmers holding, with an objective to set a model for the farmers in participatory mode. The plans of action with cost involve and the returns after fifth year in sustainable manner are manifested in the table. This will attract the farmers to go for low volume output crop with high remunerative in the days to come.

Technological demonstration on spice crop @ 0.10 ha of black pepper under arecanut

Area: 0.10 ha = 1000 m²

A.	Cost of Cultivation			Cost in Rs.
1 st year	a)	Cost of rooted Black pepper seedlings	150 nos (3nos each) @ Rs. 5/-	1500.00
	b)	Labour charges for pitting, farm application & planting	5 mandays @ Rs300/-	1500.00
	c)	Cost of FYM	(1/2 truck)	3000.00
	d)	Labour charger for after care & maintenance	5 mandays/ month x 12 months x Rs 300/-	18000.00
	Total			24000.00
2 nd year	a)	Cost of FYM	(1/2 truck)	3000
	b)	Labour charge for after care & maintenance	5 mandays /month x 12 months x Rs.300	18000
	Total			21000
3 rd year	a)	Cost of FYM	(1/2 truck)	3000
	b)	Labour charge for after care & maintenance	5 mandays /month x 12 months x Rs.300	18000
	Total			21000

A. Cost of Cultivation				Cost in Rs.
4 th year	a)	Cost of FYM	(1/2 truck)	3000
	b)	Labour charge for after care & maintenance	5 man/day / month x 12 months x Rs.300	18000
	Total			21000
B. Returns				
5 th Year	1Kg/plant=150 Kg /Unit @ Rs.350			52,500
	Total			52,500



View of trainees with spice crops



Laying demonstration (in left) and laidout demonstration of spice under arecanut (on right)

9.10 Rodent pest management in paddy

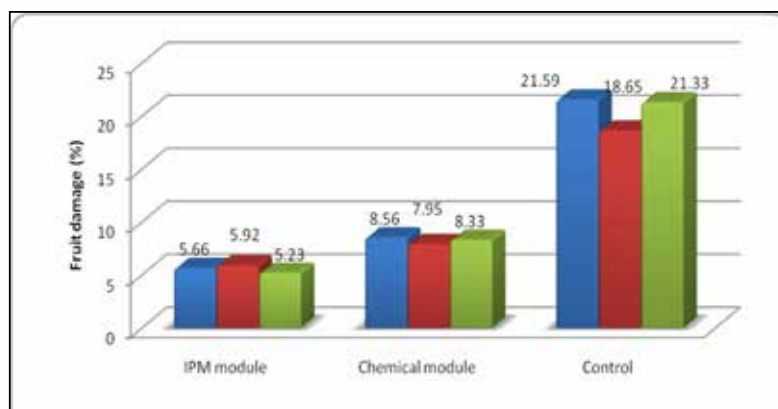
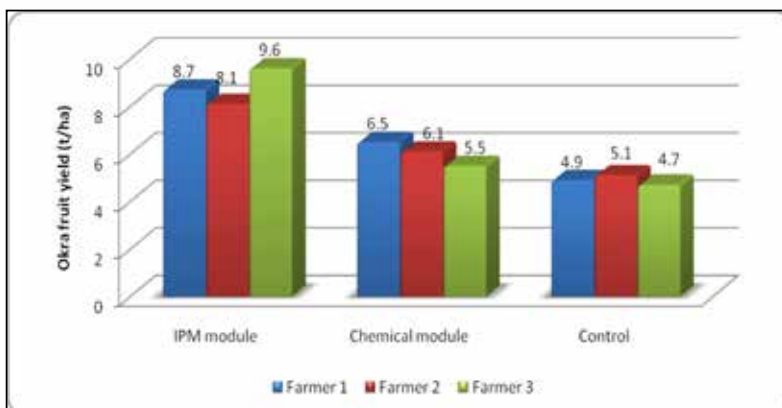
On viewing the problems of rodent infestation in rice field at Subashgram village, a training program on Rodent pest management in paddy was conducted in collaboration with AINP on Rodent Control from 11th to 12th September, 2012 at Diglipur, wherein 35 farmers (27 male and 8 female) participated. The course started with a demonstration on how to set up rat traps in the rice field and household area. The team identified that rats are very important factor for limiting their rice production as 4 specimens of rats were also trapped from the field and shown to the farmers. An individual farmer indicated about 5-10% losses in rice was due to rats. Methods of rodent management including bund trimming and weed free cultivation to minimise rodent menace, employment of indigenous trap and in high infestation, application of rodenticide such as 0.005% Bromodioline bait or 2 % Zinc phosphide bait were recommended. Rodents baits were provided to the farmers for placing in the fields.

9.11 Pest management of okra

On-farm trials on pest management of okra by integration of cultural practices, use of pheromone traps, botanicals and need based application of insecticide were carried out in farmer's field of Diglipur (North Andaman) with the help and collaboration of ORC, Diglipur, in an area of 400m² each. The plant protection measures in okra used by respective farmers were noted and analyzed. The three treatments *viz.*, IPM module, chemical module and untreated control of okra were chosen for on farm trial in farmer's field.

The combination of cultural practices, use of pheromone traps, botanicals and need based application of insecticide continued to perform well in three farmer's field and significantly reduced the pest incidence of okra fruit and shoot borer. It is evident that the IPM module was most effective in suppression of okra fruit and shoot borer as compared to chemical control (farmer's practice) and increased yield than farmers practice and control.

- The adoption of IPM technology in okra resulted in reduction of number of pesticide sprays to only 2 from 5-6 in farmer's fields.
- Economic analysis revealed a much higher yield of 8.1- 9.6t/ha in IPM and 5.5 to 6.5 t/ha in non-IPM fields (Chemical control or Farmer's practice). Though the cost of production was slightly higher in IPM fields, but on account of higher yields in IPM fields higher income was obtained.
- Less pesticide sprays also resulted into a buildup of large numbers of natural enemies especially predatory spiders in IPM fields.



Pest management of okra var. Arka Anamika

10. FARMER'S CLUB FOR EFFECTIVE TOT

Keeping the importance to deliver effective ToT and other market led enterprise ORC of CIARI has formed sixteen farmers clubs. A total of 201 famers have been linked. The account of the clubs has been opened with the A & N Cooperative bank, Diglipur and Chief coordinator and Associate coordinator were appointed. This clubs will empower the farmers to transmit the latest agriculture techniques, orienting them to establish better relationship with banks, adoption of latest post-harvest technology, value addition etc. and enjoy the benefits of collective bargaining power both for procuring inputs and select their produce (Table 16)



GM NABARD visits with external expert and interacts with farmers club members



**Table 16: Farmers club promoted by ORC of CIARI with the support of NABARD (w.e.f. Oct, 2014 to March, 2016)
Status at a Glance**

Sl. No.	Name of Farmers Club	Name of Chief Coordinator	Name of Associate Coordinator	Village	Date of formation	Bank Account Number	Total Members	UICN	Date of approval	Date of deposit	Enterprise advocated
1.	Welfare Farmers Club	Shri. Ranjan Kumar Bain	Shri. Atul Ch. Biswas	Badurtikry	31/10/2014	000734040100006	15	194165	07/04/2015	2000	Dairy farming
2.	Nabajagan Farmers Club	Shri. Laxman Das	Shri. Subrata Das	Kalipur	20/2/2015	000734040100007	10	194166	07/04/2015	800	Agro tourism
3.	Vikash Farmers Club	Smti. Hemangi Muzumder	Shri. Pranab Roy	R.K.Gram	09/09/2015	000734040100008	12	194167	01/12/2015	14400	Food Items (Pickles & Snacks)
4.	Uday Farmers Club	Shri. Debasis Golder	Shri. Swapan Paul	Swarajgram	11/9/2015	000734040100009	10	194168	01/12/2015	11800	Farming
5.	Ujala Farmers Club	Shri. V.G.Rajesh Kumar	Shri. Pradeep Das	kerelapuram	28/09/2015	000734040100010	12	194169	01/12/2015	14200	Mushroom
6.	Active Farmers Club	Shri. Kamal Halder	Shri. Manoh kr. Mondal	Madhupur	26/10/2015	000734004100024	10	194170	01/12/2015	10800	Establish of dal & rice processing mill
7.	Evergreen Farmers Club	Shri. Ajit Kujuur	Shri. Ganesh Majhi	Ramnagar	28/10/2015	000734004100025	21	194171	01/12/2015	2300	Farming
8.	Suryaunday Farmers Club	Shri. Ratan Kumar Dutta	Shri. Utpal Bairagi	Paranghara	02/11/2015	000734040100011	15	194172	01/12/2015	2050	Farming
9.	Roshni Farmers Club	Shri. Mahadev Gain	Shri. Jatish Biswas	Shyamnagar	30/11/2015	000734010100013	16	194178	27/06/2016	16000	Vegetables export from Diglipur to Port Blair. Fresh water fish seed production
10.	Laxmidevi Farmers Club	Smti. Bithika Sana	Smti. Reena Mazumder	Khudirampur	03/12/2015	000734040100014	10	194179	27/06/2016	19000	Poultry farming
11.	Krishna Farmers Club	Shri. Ganapati Majhi	Smti. Shyamali Sarkar	Krishnapuri	27/11/2015	000734040100012	10	194177	27/06/2016	20000	Purchases of rice, pulses & arecanut from farmers and selling at Diglipur and Port Blair market
12.	Milan Farmers Club	Shri. Ashim Mistry	Shri. Shreekrishna Halder	Milangram	18/12/2015	000734040100016	10	194181	27/06/2016	1500	Farming
13.	Udaan Farmers Club	Shri. Sunil Minj	Shri. Pratap Mondal	Radhanagar	18/12/2015	000734040100015	13	194180	27/06/2016	13000	Goat farming
14.	Perfect Vikash Farmers Club	Shri. Kishor Das	Shri. Mithun Sikkher	Durgapur	05/01/2016	000734040100017	14	194182	27/06/2016	2100	Purchasing of goods vehicle through loan, transporting of goods from Diglipur to Port Blair
15.	Vidhya Farmers Club	Shri. Sanjay Halder	Shri. Pranab Das	V.S.Pally	11/2/2016	000734040100018	10	194183	27/06/2016	8000	Pig farming
16.	Star Farmers Club	Shri. Biswajit Das	Shri. Tapan Das	R.K.Gram	28/03/2015	000734040100019	13	194184	27/06/2016	8000	Producing & selling of vegetables at Diglipur market.

11. INNOVATION: PADDY THRESHING MACHINE

Name of farmer	:	Shri. Tapas Biswas
Father's name	:	Shri. Giris Biswas
Age	:	47 yrs
Birth place	:	Kolkata
Address	:	R.K Gram, North Andaman
Total area	:	0.34 ha.
Category	:	OBC
Occupation	:	Farming

Materials used

1. 1 meter wood piece
2. 1 hp Motor
3. 4 inch iron nail (1/2 kg)
4. 1/1 meter (rectangle wood)
5. 1 rubber belt
6. 2 bearing

Advantage

1. It could clean 40kg of paddy per hour.
2. It can be continuously used for 12 hours in a day.

Disadvantage

1. It can't be used without electricity.
2. It can't work without human instruction.

Expenditure Incurred

1. Motor rate : Rs 10,000
2. Wood, iron nail, motor belt, bearing: Rs 5,000

Impression

Paddy threshing machine is an innovative idea of a farmer, who could undertake threshing of harvested paddy even during rainy season with a low cost and farmer friendly design. Extremely happy by fabricating this machine, which has saved both time as well as money. He is ready to share the technique of manufacturing paddy cleaning machine.



CUSTODIAN FARMER : KHOON PHAL

Name	:	Shri Manindra Mistry
Father's name	:	Late Panchanan Mistry
Age	:	79 years old
Address	:	C-81 Deshbandhugram, North Andaman
Staying from	:	1959 (in Andaman Islands)
Total area	:	4.09 ha.
Catogory	:	Settler



Introduction

This farmer was born in East Pakistan. His father came to India as a refugee in 1971 after Indo-Pak war. Indian government gave settlement to his father with 3.99 ha. of land at Deshbandhugram, Diglipur North Andaman. His father along with his family cleaned the forest land and started cultivating rice (C-14-8) and pulses (Black gram & green gram) for their own use only. After some years they started cultivating vegetable and selling them in the local market.

In the present days, he has totally converted hilly area of 4.09 hect. of land for growing crops, made 14 ponds and 6 nurseries of fresh water fishes. He is very innovative and has made the whole farming as a model of agro tourism. He is also receipt of best farmer award from CIARI and also by ICAR at national level.

History behind his search

One day he went to forest for hiking and saw a new kind of red berry eaten by the birds and wild cats. He got fascinated, tasted the berry and found it to be harmless and sweet in taste. He carried some berries back home and gave to his family members to consume. He sowed the seeds of those berry, brought for his family from the forest, in 2009. After 4 months seeds became small plant and slowly grew into a large climber. After two years it flowered and after three month from flowering it beard fruits. The age of the plant is now seven years. The flowering time is between 15 to 16 December and 15 to 16 January respectively.



Advantage

- It contains high level of iron, which is very good for health.
- It is also good for export with self life period of ½ months.

Till date, he has produced 56 kg of fruits with nil expenditure and got a profit of Rs 7000 /- only. He started the sale of fruits for Rs 100 in 2012, in 2013, for Rs 200/kg, thereafter for Rs 250/Kg. Presently, he has 100 plants in his garden. Earlier he sold to Dept of Agriculture, farmers of Diglipur and Rangat for its multiplication @ Rs 150/ plant.

12. ITK PRACTICED BY FARMERS AT DIGLIPUR FOR ANIMALS

Foot disease in cattle

1. Neem leaves are grounded and applied on the infected area and administered orally
2. Arecanut leaves are soaked in water, and applied on infected area of foot diseases for one week
3. One handful of potash, two hands full of salt mixed in 500 ml of water is applied in affected area

Retention of placenta

1. Bamboo leaves are fed to the cattle
2. Crushed coconut three times a day along with cattle feed
3. Mango leaves are fed to the animal
4. One bottle gourd is fed with gur to the animal

To increase body weight and milk yield

1. Jaggery and bottle gourd is boiled and fed to animal for a week
2. Equal amount of tapioca and groundnut leaves are fed to animal
3. Sweet potato are fed daily to the animal along with feed
4. Equal amount of betel and arecanut leaves are fed to animal to increase digestion

Broken horn

1. Tobacco leaves are crushed along with lime and applied on the wound
2. Garlic, neem oil, lime and a spoon of salt is grounded and applied
3. Turmeric powder, lamp carbon and neem oil is mixed and applied as a paste
4. Mustard oil and salt are mixed and applied on the wound with a bandage

Wound

1. Turmeric and neem oil is applied twice daily as a paste
2. One cup of mustard oil and a spoon of salt is boiled and applied on the wound
3. Wound is washed and neem oil and crushed garlic is applied
4. 100 gm naphthalene powder is mixed with equal amount of coconut oil or neem oil and applied on the wound
5. Neem leaves mixed with samaloo root, mango tree bark are crushed, boiled and fed
6. Burnt ash of rice husk is grinded with bottle gourd leaves and applied on infected area

Diarrhea and stomach problem

1. Adhatoda leaves are fed to cattle two times a day for 3 to 4 days
2. Un ripened bhel fruit is crushed and boiled in water and fed to animal two times a day
3. Sapota fruit is fed regularly
4. Handful of bottle gourd leaves are fed three times a day
5. Equal amount of bottle gourd and bamboo leaves are fed to the animal thrice a day
6. Matured tamarind leaves are boiled in water to form a slurry and fed to animal
7. Booty leaves are grounded and applied on the injured muscles
8. Leaves of patthar kuchi is fed to goat to relieve stomach problem
9. Jatropha leaves are crushed and mixed with water and given to cattle and goats to treat constipation
10. Bamboo leaves are fed to the cattle to relieve constipation
11. Two handful of neem leaves are crushed , mixed with water and administered to animals

Tick infection

1. Equal amount of kerosene and coconut oil is mixed and applied on the animal body
2. Tobacco leaves or neem leaves are crushed and applied on the animal body
3. Paste made of ginger, black pepper and alcohol is applied on the animal body

Hump sore

1. 10 bottle gourd leaves and 100 gm salt is grounded and applied on the infected area
2. Paddy straw is burnt, thereafter ash is mixed with neem oil and applied
3. Grease is applied on the infected area
4. Fresh cow dung is applied

Worm infection

1. Human urine is covered with cow dung, stored for 14 days and fed to cattle
2. Turmeric powder, hadjor, jeera and chilli are grinded and the juice is fed to cattle
3. Tald fish is fed to cattle for 10 days
4. Chirata is soaked in water overnight and fed to animal
5. 100 ml of mustard oil is given with feed for 2 days in a month for 4 months
6. Feeding bamboo leaves daily kills ecto parasites

Fractures

1. Hadjor plant is crushed and mixed with white portion of egg and applied on the broken bone

Sore tongue

1. Paddy grains are rubbed on the soared tongue
2. Salt is fed along with sugarcane or bamboo leaves
3. 2 spoon of salt is fed with 100 ml of mustard oil

Cold and fever

1. Smoke is created by burning jute bag and animals are compelled to take the smoke
2. Mustard oil is applied on the horns
3. Chilli powder is mixed in feed for poultry during fever
4. Lime is applied on the horns 2 to 3 times a day until the fever heals

Mastitis

1. Tamarind leaves are boiled and applied in the affected area

Snake bite

1. Booti plant root is crushed and fed
2. 50 gm black pepper is mixed with 1 kg of ghee and fed to animals

Plants

1. Cow dung is mixed with water to make a slurry and sprayed to avoid mites and ants
2. Coconut is grounded and the milk obtained is kept overnight, thereafter diluted 20 times in water and sprayed before flowering
3. Gunny bag or old cloth are dipped in cow dung slurry and placed in shade, attracts earthworm which can then be used for vermicompost production
4. Neem cake is mixed with sand and placed in the base of leaf sheath to control rhinoceros beetle
5. Spraying of papaya leaf extract can control bacterial diseases
6. 1 litre Kerosene is mixed in 50 lit of water and sprayed in paddy field with standing water in the field to control leaf folder and stem borer
7. Outer skin of cucumber is grounded to liquid and spread on the plants affected by red ants
8. Turmeric powder is mixed in water and sprayed to control pests, aphids and hoppers
9. Placing containers and plastic bags in 2 mtr. intervals in the field will scare birds and squirrel
10. Wilt diseases can be controlled by dipping the seedlings in water containing 10 gm of turmeric powder and 10 gm of aseophotoda in 10 liters of water

13. EXTENSION ACTIVITIES

The research findings generated at the Institute's farm and laboratories were translated into practice through well organized Transfer of Technology programmes under the aegis of ORC as the implementing hands at field level. To this end, ORC has undertaken number of interventions on developed technologies in agricultural and allied fields and popularized the same, suitable to the agricultural and socio-economic conditions of the regions following group approach rather than an individual farm family approach. Result demonstrations followed by method demonstrations in the farmer's 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 research farm 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. It also fetched in the first hand information as the feedback from the practicing farmers/ stakeholders, 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 and marked improvement in the land utilization and in annual gross revenue to the farmers. In addition, Kisan melas, scientist farmer interaction, followed by personal and group contacts, have resulted in better utilization of the extension programmes. An over view of extension activities are given in the table 17.

Table 17 : An overview of activities of ORC from July 2009 - March 2017

Activities	After Intervention								Total
	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	
Vocational training	03 (128)	21 (606)	16 (1273)	4 (124)	39 (1719)	32 (1049)	14 (484)	13 (926)	142 (6309)
Customized training	-	6 (283)	-	-	-	-	-	-	6 (283)
Kharif technological demonstration	-	53 (19.6)	31 (4.85)	53 (14.70)	56 (14.70)	120 (31.03)	35 (9.93)	25 (5.28)	373Nos. (100.09 ha)
Rabi technological demonstration	51 (5.96)	63 (8.45)	-	14 (0.08)	50 (5.03)	42 (10.25)	25 (4.44)	178 (12.84)	423Nos. (47.05 ha)
Seed village production concept	-	-	0.95	3.90	2.6	1.8	3.37	2.0	14.62 ha (23 villages)
Seed production for (TLS) paddy (Qt)	-	-	43.02	56.00	66.37	37.60	92.60	57.0	352.59 Qt.
Pekin duck	-	-	4 (23)	12 (103)	15 (61)	29 (201)	11 (78)	-	81 (466 ducks)
Model satellite nursery	-	-	-	03	03	03	04	01	14
Model of black pepper under arecanut	-	-	-	-	-	-	2 (0.2)	3 (0.3)	5 (0.5 ha)

Activities	After Intervention								
	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Arecanut var. Samrudhi demonstration	-	-	3700 (03) 2.64	-	6000 (60) 4.28	-	-	-	9700 nuts (63 farmers) 6.92 ha
Hybrid rice demonstration	-	43 (17.70)	15 (2.60)	-	-	-	03 (0.40)	-	61 (20.7 ha)
Facilitated variety development & released in rice, pulses, mushroom & vegetables	-	-	-	-	2 rice & 1 poi	2 rice, 3 mung & 2 amaranthus	2 rice	1 brinjal, 2 urd & 1 mushroom	16 varieties
Dal mill	-	-	01	-	-	-	-	-	01
Rain gauge	01	-	-	-	-	-	-	-	01
Goat unit	-	03	-	-	-	-	-	-	Teresa goat: 2 Boer goat:1
Pig unit	-	02	-	-	-	-	-	-	02 (1 unit)
Copra drier	-	01	-	-	-	-	-	-	01
Scientist-farmers Interactions	02 (104)	01 (53)	01 (26)	02 (78)	01 (49)	02 (55)	03 (87)	01 (32)	13 (486)
Technological back stopping	02 (78)	04 (122)	03 (96)	04 (134)	05 (170)	03 (181)	04 (147)	-	25 (928)
Telephonic advisory	-	14	3	15	25	36	40	60	193
Farmers visit to ORC	192	690	1313	289	2000	1393	656	925	7458
Field visit by experts & staff	312	415	462	494	711	714	718	851	4677
Exposure visit during Kisan mela and Farmers innovators meet	-	01 (36)	01 (112)	01 (16)	-	-	01 (05)	-	04 (169 nos)
Kisan gosthi	-	-	02	01	02	02	-	-	07 (317)
Soil health card distribution							40		40 (05 villages)
Farmer's club formation	-	-	-	-	-	2	14	-	16 (201 farmers)

Activities	After Intervention								Total
	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	
Technical bulletin	01	06	-	-	-	04	-	-	11
Doordrshan & AIR Radio	-	-	01	02	01	02	02	-	08
Awareness campaign	-	-	01 (32)	-	-	-	02 (51)	-	03 (83 farmers)
Paddy seeds sold in Tonnes	-	-	-	-	517	1553	370	1800	4.23 Tonnes
Field day	-	-	-	-	02 (90)	04 (107)	01 (11)	-	07 Nos. (208 farmers)
Video film	-	-	-	-	2 (62)	03 (152)	-	-	05 Nos. (214 farmers)
Farmers linked with ORC	-	297	300	489	570	1044	1300	1400	5400
Village covered	7	9	13	16	21	32	32	35	35
Award and recognition	-	-	04	5	9	-	18	03	21

Glimpses of the extension activities



Visit of QRT Chairman Dr. S.L.Mehta and members to farmers field

Exposure visit during Island Kisan Mela

Until now 169 farmers from 10 different villages of Diglipur under the aegis of ORC, attended four Kisan Melas at CIARI in 2011-12, 2012-13, 2013-14 & 2014-15 to get exposure on the different avenues in agriculture and allied fields for livelihood. During the period they attended Kisan gosti, Kullah

manch, Farmers quiz and training at KVK. Knowledge through video films on integrated farming system, poultry farming, broad bed and furrow system, goat farming, pig farming and others were also imparted. Many problems regarding pest and disease management raised were suitably answered by the experts. Few farmers also shared their experiences during the session. The farmers also displayed various innovative products/process which were recognized by the judges. Beside four farmers from Middle and North Andaman District also attended the National conference on spices production held at the Institute premises on 27- 28th Feb. 2012.

Exposure visit during Island Kisan Mela



Exposure visit of farmers to Kisan mela



Interaction with innovators



Farmer interacting during khullah munch



Awardee farmer sharing experience



Farmers from ORC with their innovative produce / process





Innovators displays innovations during IKM



Kisan gosti during Khudirampur mela Appraising the august gathering during IKM

Out Reach Centre participate in Vikas mela from 10th - 16th Jan. 2013



Honourable Lt. Governor along with DC visits the stall of ORC

Display of R&D and extension activities in mela



Farmers club members of ORC with exhibits during Vikas mela 2016

Honble Lt.Governor visits and interacts with the farmers

Interaction with scientist and other officials



GM NABARD interacts with Farmers club

Experts interacting with farmers

Diagnostic services and field visit by experts



Horticulture experts monitoring the field along with farmer



Animal expert with the pig



Experts sensitizes on use of PP chemicals

Diagnostic services and field visit by experts



Method demonstration on rat mgt .by expert



Selection of TLS of paddy by breeder



Field visit during kharif & rabi season crop



Feed back on CARI B 1 brinjal



Plant protection expert monitoring the crop



Post harvest of pineapple discussed



PMC member visits potato field

Diagnostic services and field visit by experts



Director visits agro tourism developed by Mistry



Soil sampling techniques demonstrated



Team of scientist on NRM, Forestry & FRM visits farmers plot in Tsunami affected area



Farmers exposed on new technology



Integrated approach by experts



Teaching by doing & learning by doing





Experts from mainland & emeritus scientist from institute visit farmers intervention



Rodent expert sensitizes the farmers Manager NABARD witness the technology output

Soil health card distribution



Selected farmer get SHC

Farmers club promoted for effective ToT



Members of the farmers club promoted by ORC

Field days on proven technologies of rice





Successfull duck farmer with ducklings at Khudirampur



Gayatri rice variety in the background



Quiz master deliberates during IKM



First sucessfull woman farmer on pig rearing with chintu & mintu

Technological exposition and demonstration at Kalipur, North Andaman



Technological exposition and demonstration at Kalipur, North Andaman



Awards & recognition to the successful farmers

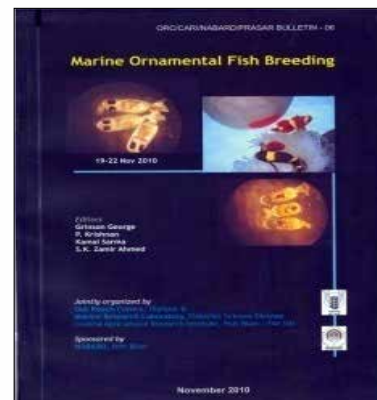
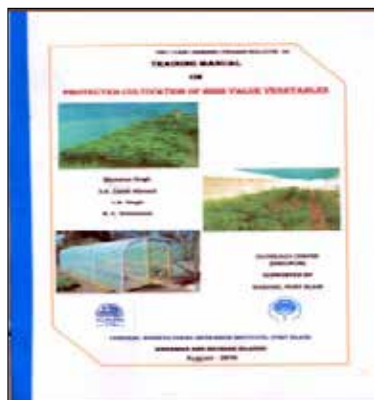
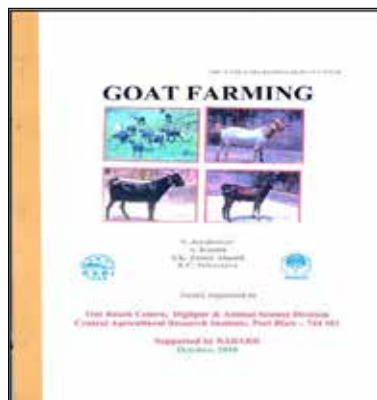
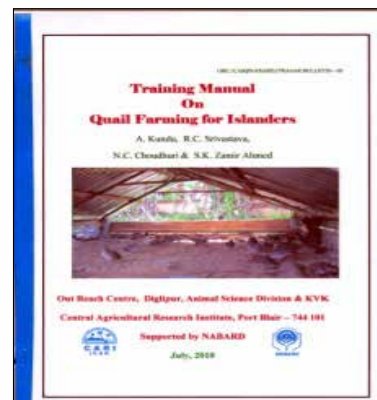
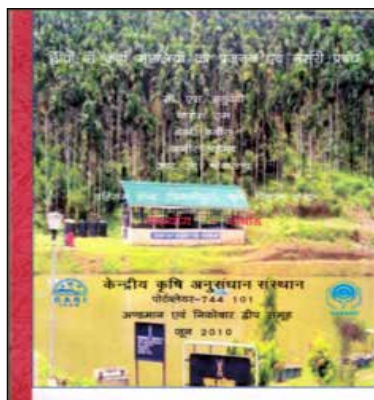


14. OUTPUT, OUTCOME AND IMPACT OF THE TECHNOLOGICAL INTERVENTIONS

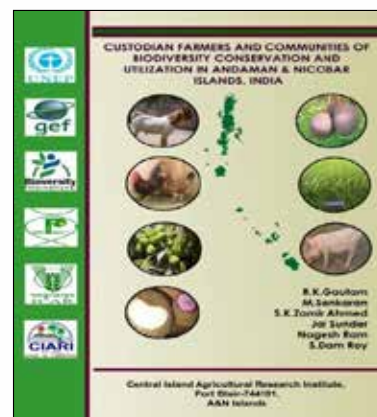
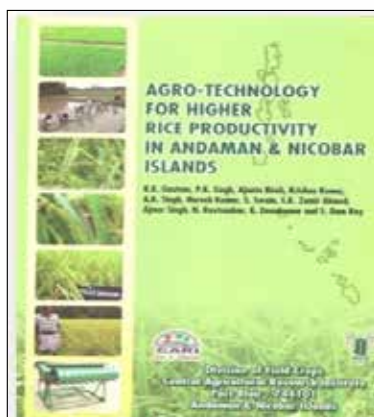
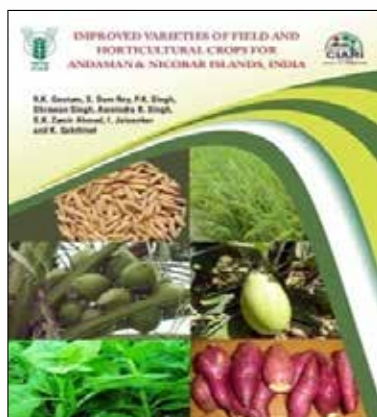
14.1. Output

Training manuals developed

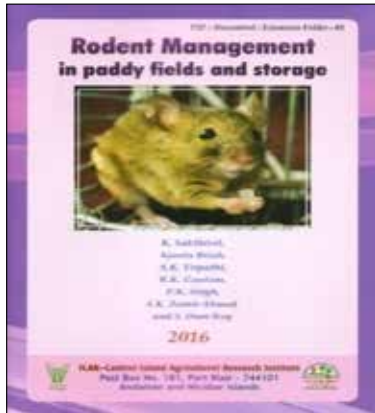
Training manuals in Hindi, Bengali and English were developed and provided to the farmers during training and visit programme for reference purpose on subject such as Vermicompost, goat farming, quail farming, protected cultivation of vegetables, marine ornamental fish and carp fish breeding which acts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



Technical bulletins / folders published



Technical bulletins / folders published



14.2. Out come

Development of varieties facilitated through ORC in rice, urd, mushroom, mung, brinjal & vegetables

Technological demonstrations was conducted in agriculture and allied field jointly by the team of scientists of Division of Field Crop Improvement and Protection & Horticulture and Forestry in the farmers fields at Diglipur under the aegis of ORC for validation of promising varieties. Sixteen varieties i.e. four in rice (CIARI Dhan 6,7,8,9), one in poi (CIARI Poi 1), five in mung (CIARI Mung 1,2,3,4 &5), 2 in Urd (CIARI Urd 1,2) CIARI brinjal 2 (CIARI Mush-2), and in amaranthus (CIARI Lal Marsha & Haritha) were developed, which were released by Institute Variety Release Committee for the benefit of farmers and other stakeholder's .Over the years the spread of the variety will enhance the production and productivity due to its adoption and best performing in A & N Islands. That it is are has follows :

In rice

CARI Dhan 6



It is a medium duration (125 days), long slender grain, high yielding (5 to 5.5 t/ha) rice variety for rainfed low land conditions of Andaman and Nicobar Islands. It is short statured (100 cm) and bears 7-8 effective tillers (panicle bearing) per plant with panicle length of 24 cm. It is resistant to bacterial leaf blight disease which is number one disease of Andaman and Nicobar Islands.

CARI Dhan 7



It is a medium duration (130 days), bacterial leaf blight disease resistant high, high yield (5 to 5.5 t/ha) rice variety suitable for rainfed low land conditions of Andaman and Nicobar Islands. It is short statured (100 cm) and bears 6-7 tillers per plant with panicle length of 25cm. It is resistant for lodging.

CARI Dhan 8



This is a long duration (215 days) high yielding, tall (188 cm) variety with upright leaves. The grains are medium bold type and yellowish and shining with moderate number of tillers, long panicles with low spikelet sterility. It is suitable for low input management conditions and also gives good straw yield for fodder purpose.

CARI Dhan 9



This is a long duration (216 days) high yielding, tall (200 cm) variety with upright leaves. The grains are medium bold type and brown in color with moderate number of tillers, long panicles with low spikelet sterility. It is suitable for low input management conditions.

In pulses

CARI Mung 1



This is medium duration (66-70 Days) variety with synchronous maturity (at 75-80% physiological maturity), high yielding, bold seeded, brown and long pods with more number of seeds per pod, medium statured variety , profuse branches, test weight (>5.42g) and appreciable field resistance to charcoal rot, powdery mildew and MYMV.

CARI Mung 2



This is medium duration (66-70 days) variety with synchronous maturity (at 80% physiological maturity), high yielding, bold seeded, black and long pods with more number of seeds per pod, medium statured variety, profuse branches, test weight (>5.06g) and appreciable field resistance to charcoal rot, powdery mildew and MYMV.

CARI Mung 3



This is medium duration (64-68 days) variety with synchronous maturity (at 80% physiological maturity), high yielding, medium seeded, black and long pods with more number of seeds per pod, medium statured variety, profuse branches , test weight (>4.9g) and appreciable field resistance to charcoal rot, powdery mildew, terminal drought and MYMV. This variety is suited for ricefallow conditions.

In vegetables

CARI-Brinjal-1



It is hgh yielding 25-35 t/ha, bacterial wilt resistant brinjal variety for island conditions. Its plants are medium tall with profuse branching. Fruits are light green and oblong in shape with less seeds. This variety also exhibited drought tolerant ability during water stress situations and suitable for growing in islands conditions during dry season (October to May).

CARI POI 1



The variety has green stem with dark green leaves of ovate to cordate shape, possess high nutritional properties as compared to local cultivars and it has got the yield potential of 45-50 t/ha under A&N conditions.

CIARI Lal Marsha



It has the better growth, yield performance and consumer acceptance than the local materials. Average yield under normal condition is 14-16 t/ha.

CIARI AMA Green



This is suitable for organic as well as commercial cultivation and crop diversification in existing farming system in open and inter-space conditions. It performs better with application of vermicompost at the rate of 3-5 t/ha.

Crop protection technologies developed and disseminated

Talc based bioformulation CIARI Bioconsortia for management of bacterial wilt of solanaceous crops and other soil borne diseases of vegetables





Bacterial wilt is the important major disease of solanaceous crops in Andaman islands. It causes around 20-30% yield losses every year. CIARI Bio-consortia has been developed with the effective native *Bacillus* strains. The application of CIARI Bio-consortia resulted in effective management of bacterial wilt disease in the islands. The technology has being demonstrated and disseminated to island farmers.

14.3. Impact of technologies intervened in the farmers field

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 Pekin 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 18.

Table 18: Income from farmers practice *vis a vis* 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
Pekin duck under backyard /unit of 03 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 of 02 pigs	-	39375.00	39375.00	4739.58	3.25
HYV of rice /ha	18200.00	37400.00	19200.00	1600.00	1.01

CARI Dhan 5 popularized

CARI Dhan 5, a rice variety developed for problem soil was demonstrated and popularised in participatory mode in different cluster of villages at North Andaman. Seeing its performance, huge demand was raised from an NGO working for extending livelihood support to Ranchi farmers at Middle Andaman. Total of 47.0 Q of truthfully labelled seeds of CARI Dhan 5 was produced at Diglipur under seed village concept and the same was provided to the farmers supported by the NGO, WBVHAI (West Bengal Voluntary Health Association of India) for cultivation in the problem soils of 41.99 acres (17 ha) of land at Baratang, Middle Andaman, in 2012 involving 50 farmers of Ranchi community. The yield received was below the potential in the first year but the farmers were happy with the performance and went on with the same variety in the next year also.

Varieties released entered into seed chain

Through technological demonstrations and seed village production programme, HYVs of paddy namely CARI Dhan 3, CARI Dhan 4, CARI Dhan 5, CARI Dhan 6, CARI Dhan 7, CARI Dhan 8, CSR 23, CSR 36 and Ranjeet have been popularized and accepted by the farmers. These varieties have replaced the local varieties and entered into farmer's seed chain in 32 clusters of villages in North & Middle Andaman. Beside a total of 100 quintal seeds of CARI Dhan 5 including CSR 36 were distributed to farmers in salinity areas in Middle Andaman during *Kharif* season 2016.

Seeds of HYV of rice disseminated through sale in the Islands (2011 to 2016)

Variety	Seed sold (Q)	Area covered (ha)
CARI Dhan 4	13.35	48.6
CARI Dhan 5	46.59	168.16
CSR 23	4.05	16.2
CSR 36	52.77	192.12
Total	116.76	425.08

Productivity enhancement

The study carried out during *Kharif* season from the year 2013-14 to 2015-16 (three years) at farmers field in 16 villages of rice dominant district of North and Middle Andaman revealed that the percentage increase in yield due to adoption of HYV of rice of CARI over the local varieties ranged between 13.88 to 49.85% (average 30.4%) during the period of study. The results indicated that the *kharif* technological demonstrations (KTD) gave a good impact on the farming community of this district as they were motivated by the improved rice varieties and agricultural technologies used in the KTD. The results clearly indicate the positive effects of improved rice varieties over the existing rice varieties toward enhancing the yield of rice at Diglipur area, with its positive effect on yield attribute.

The findings also revealed that a gap exists between the actual farmer's yield and realizable yield potential of the varieties. Use of improved variety carry potential to enhance the present level of rice productivity which is not percolating down at desired pace, due to lack of confidence among the farmers. Hence, to exploit the potential of improved rice varieties, production and protection technologies efforts through KTD have to be increased among the farmers. The extension gap was recorded ranging between 0.84 to 1.62 t/ha in improved varieties during the study period. This emphasizes the need to educate the farmers through various means for adoption of improved varieties and agricultural production technologies to reverse the trend.

The trend of technology gap ranged between 0.13 – 1.50 t/ha in improved varieties and reflects farmers cooperation in carrying out such demonstrations with encouraging results in subsequent years. The technology gap observed might be attributing to the dissimilarity in soil fertility status and weather conditions. The technology index showed the feasibility of the evolved technology at the farmer's fields. The lower the value of technology index, the more is the feasibility of technology. The wider gap in technology index ranging between 1.07 to 30.00 (average 15.34%) in improved varieties during the study period in certain region, may be attributed to the difference in soil fertility status, weather conditions and insect-pests attack in the crop.

Increase of 30.04% (average) by improved varieties was reflected which can reduce the technology gap to a considerable extent thus leading to increased productivity in these Islands. Moreover, extension agencies in the district need to provide proper technical support to the farmers through different educational and extension methods to reduce the extension gap for higher rice production in the Andaman and Nicobar Islands and to make the Islands self sufficient in the rice requirement. Favourable benefit cost ratio itself speaks of economic viability of the demonstration and convinced the farmers for adoption of intervention for the livelihood of the Islands farmers. Beside, lower value of technology index denotes higher level of feasibility i.e. variety has performed well in farmers field.

Seed replacement rate

A substantial amount of farm-saved seed is being used by the farmers in the Islands mostly in self-pollinated crops like rice, pulses etc. But the seed replacement rate (SRR) has been increased from 1.7 to 9.6 % in the Islands during 2010-15. The farm-saved seed has been reduced by providing truthfully labelled seed or quality seeds to the farmers at appropriate time.

Variety replacement rate

The new high yielding rice varieties popularized through KTDs, and seed production namely CARI Dhan 3, CARI Dhan 4, CARI Dhan 5, CARI Dhan 6, CARI Dhan 7, CARI Dhan 8, Gayatri, Ranjeet, CSR 23 and CSR 36 covered a sizeable rice area in the islands, which has replaced the old traditional low yielding rice varieties *viz.* C-14-8, Jaya, Lal Sanno and Silver Jaya etc at North Andaman.

Income enhancement

Due to adoption of high yielding varieties of rice the farmers could get substantial increase in the yield to the tune of 35 to 40% on an average against the local cultivars. This led to enhancement of productivity and thus the return per unit area ranged from Rs.10000 -15000/- ha. Besides the seed production of labeled seed by selling at the rate of Rs. 10/kg for the seed purpose brought an additional income of Rs. 26,000/ha against 16,000/ha from the farmers' variety initially.

Horizontal spread and adoption of CIARI rice varieties

Introduction of the promising nine rice varieties was done in 2010, through kharif technological demonstration in participatory mode to 348 farmers covering 94.81 ha till 2016 (Six years). PRA was conducted in Dec, 2016 to assess the adoption and spread of the varieties across the villages. It was found that a total of 4919 farmers have adopted the HYV's varieties of rice in the total area of 2109.06 ha spread over 35 cluster of villages at North Andaman. Rice variety Gayatri shared 1259.31 ha of area followed by CARI 5 (284.82 ha), CSR 36 (225.61 ha), CARI 4 (181.06 ha), CARI 3(79.41 ha) and Ranjeet (20.68 ha) respectively. This indicates good adoption rate and horizontal spread of the varieties, which

is due to seed replacement of farmer's varieties with CIARI's varieties. There is good potential for increasing the production and also the productivity with the varieties adopted by the farmers in the coming years. (Table: 19 Fig: 4)

Table 19: Adoption and horizontal spread of HYV of rice (2013-14 to 2015-16)

Particular	2013-14		2014-15		2015-16		Total	
	No. of farmers	Area (in ha.)	No. of farmers	Area (in ha.)	No. of farmers	Area (in ha.)	No. of Farmers	Area (in ha.)
CSR 23	21	9.99	91	45.12	-	-	115	55.11
Gayatri	410	192.7	1149	520.8	1397	546	2956	1259.31
CARI Dhan 3	9	4.23	120	56.4	51	18.8	180	79.41
CARI Dhan 4	9	4.23	184	86.48	272	90.4	465	181.06
CARI Dhan 5	35	16.45	276	129.7	332	139	643	284.82
Ranjeet	10	4.7	34	15.98	-	-	44	20.68
CSR 36	84	45.12	186	87.42	231	93.1	501	225.61
CARI Dhan 6	-	-	1	0.137	11	2.39	12	2.5265
CARI Dhan 7	-	-	1	0.137	2	0.4	3	0.5365
Total	578	277.4	2042	942.2	2296	889	4919	2109.063

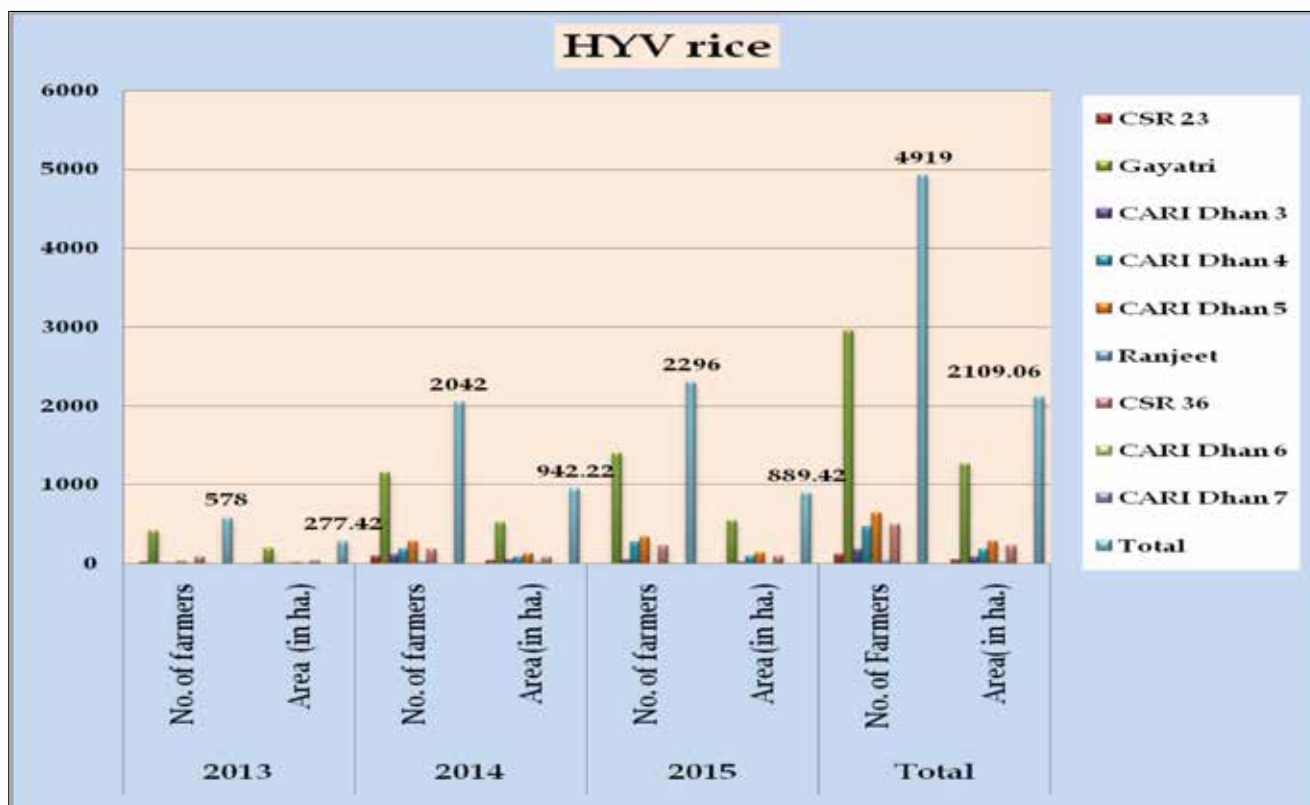


Fig . 4. Horizontal spread of HYV of rice at Diglipur, North Andaman

Seed village concept and dissemination of truthfully labelled seed (TLS) of rice

Rice is the principal cereal crop of Andaman and Nicobar Islands, and the major constraints for productivity enhancement is non availability of quality seed of high yielding varieties. Availability of quality seed and varietal improvements has played a very vital role in better utilization of inputs in different agro-climatic conditions of the country. It is estimated that improved varieties with good quality seed contributes to 40-60% to the crop production. The direct contribution of quality seed alone to total production has been estimated at around 15-20% depending upon the crops.

An innovative technology of “Seed Village Concept” was introduced to provide truthfully labelled seeds (TLS) in participatory mode from 2011-12 to 2015-16 involving breeders, farmers and social scientists. A total of 38 progressive farmers were selected from 13 villages. To maintain the seed purity and quality of the crops in the fields regular visit and monitoring throughout the cropping season was done. Rogueing was done at the time of vegetative, flowering and maturity stages of the crop. A total of 202.11 Q of TLS of rice was produced during the period. The TLS thus produced were purchased from farmers, cleaned, packed and were distributed/sold to the farmers of Andaman and Nicobar Islands for commercial cultivation. (Table 20 & 21)

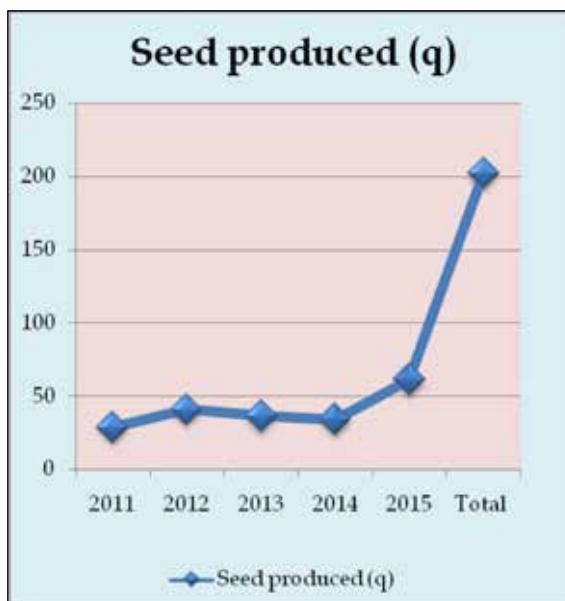


Table 20: Truthfully labelled seed produced under seed village concept in farmers' participatory mode (2011-12 to 2015-16)

Variety	Seed (in Q)					Total (Q)
	2011-12	2012-13	2013-14	2014-15	2015-16	
CARI Dhan 3	-	1.70	6.64	-	-	8.34
CARI Dhan 4	-	1.50	5.06	8.00	14.55	29.11
CARI Dhan 5	11.86	11.32	7.49	5.28	3.12	39.07
CARI Dhan 6	-	-	-	1.00	10.4	11.40
CARI Dhan 7	-	-	-	1.00	10.29	11.29
CARI Dhan 8	-	-	-	-	2.00	2.00
Ranjeet	1.06	5.00	0.28	-	0.20	6.54
CSR 36	10.18	12.5	6.61	8.00	10.77	48.06
CSR 23	5.84	2.00	-	-	-	7.84
Gayatri	-	7.06	10.40	11.0	10.00	38.46
Total	28.94	41.08	36.48	34.28	61.33	202.11

Table 21: Truthfully labelled seed of rice produced (2011-12 to 2015-16)

Years	Villages Covered (Nos)	Farmers Involved (Nos)	Area covered (ha)	Seed produced (Q)
2011-12	4	6	3.0	28.94
2012-13	4	9	3.0	41.08
2013-14	4	5	2.5	36.48
2014-15	5	8	6.0	34.28
2015-16	4	10	10.0	61.33
Total	21	38	24.5	202.11



Chain of production, packaging and storage

Pekin duck under backyard

Pekin duck a demand driven technology for small farmers was introduced in the year 2011, by ORC with three (3) ducklings to a single farmer. Over the time it could spread to 81 farmers with 3-5 ducklings in the backyard totalling to 466 numbers, spread over 15 villages by 2015. The farmer could earn Rs16/- by selling eggs, Rs 400-450/- from adults and Rs 50-55/- for ducklings. When compared to desi duck for Rs 200/, 10/-and 5 to 7/- respectively. The duck would grow to average weight of 2.637 Kg with low level of mortality, when compared to desi i.e. 1.975 kg of weight with high mortality rate. Pekin duck under backyard with a unit size of 03 birds could give a net return of Rs.4, 350 against the desi birds (Rs.1, 140/-) thus giving an additional income of Rs. 3,210/-. A total of 1015 eggs of pekin duck (2013 to 15) was spread to nine clusters of villages by a single farmer, and earn Rs13215/- as an additional income, which is a remarkable beginning of a credible technology given by Division of Animal Science of the Institute.(Fig: 5)

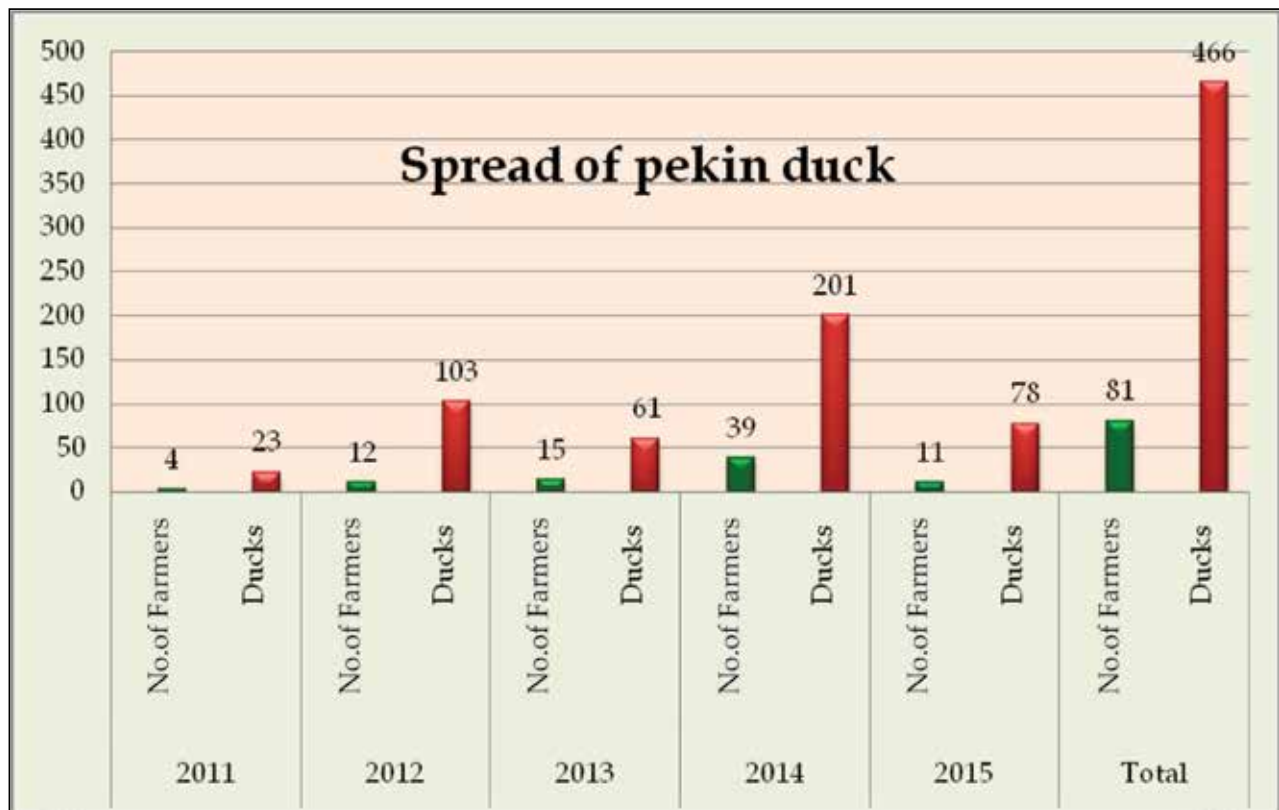


Fig.5. Horizontal spread of pekin duck



**SUCCESSFUL
AMBASSADORS
OF THE
TECHNOLOGIES**



14.4 Success stories

Imparting training in agri-hort-livestock and allied fields followed by result and method demonstrations 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 up scaling. Given below are our ambassadors who have set an example of adoption of the technologies which has been accepted by the peer groups and appreciated by the visiting dignitaries.

Satellite fish Nursery for fresh water fish seed production for the first time in Diglipur

Name	:	Shri 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, duckery and poultry

Shri. 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



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 CIARI, 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 CIARI in association with KVK and ORC and logistic jointly by Dept. of Fisheries and CIARI, 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 areas 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 CIARI 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 by CIARI, 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

Intervention	Returns before intervention (in Rs.)	Returns after intervention (in Rs.)	Profit (in Rs.)
Rice var. US312 (1.0 ha)	5000	7000	2000
Intercropping	-	6,000	6000
BBF (0.2 ha)	-	20,000	20,000
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 by CIARI, at Port Blair. He has been also recognized by the A & N Administration and honoured with Best farmer of the Island in the year 2014.

Livelihood through innovative agriculture

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 CIARI, which he learned with full dedication and to his satisfaction. 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 worms and started to sell them to the neighbouring 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 pursuit 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 colleagues of KVK and CIARI. 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 also learned grafting and layering technique and has put the skill into practice. He now practices grafting 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 additional 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 mainland for a period of one month in October 2012 to Gujrat, Mumbai, Maharashtra 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 awarded with “Best Farmer Award” during Island Kisan Mela 2012 by CARI at Port Blair.



Pekin 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	:	Pekin duck under backyard, paddy

Shri Bhabotosh Das S/o 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 CIARI. He was exposed to Quail farming and rearing of ducks by the scientists, wherein he learned all the managerial practices involved along with the scientific knowhow.

Technological intervention and benefit incurred

After the training program he purchased three pekin ducks (2 male and 01 female) of 03 months old @ Rs 80/ from CIARI, 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 started 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 Pekin duck technology has been transferred in the field by a young farm entrepreneur through the ORC. For venturing into a new enterprise 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 Pekin 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 sold 50 eggs @ Rs.14 to 15/- and duckling @ Rs 20/- and kept 26 eggs in two sets for hatching using country fowl. He could get 26 ducklings which grew well and healthy. He is popularly known as egg man for the Pekin 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 remuneration. The popularity of Pekin duck has got a horizontal spread to 22 farmers with a unit size of 2 to 3 ducks under backyard in the village's *viz.*, Ganesh nagar, Durgapur, Kishorinagar, Keralapuram, Kudirampur, R.K. Gram and Subash gram.





Economics of pekin duck under backyard

Benefits incurred

Pekin duck vs. Desi duck	Desi (3 birds/unit)	Pekin (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
Pekin	2.0	2.637	350 to 400	Low
Local breed	1.6	1.975	200 to 250	High

For propagating the Pekin 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 CIARI at Port Blair.

Menon : Seed bank for pekin duck popularisation

Name	:	Shri E.D. Ravi Menon
Education	:	10 th
Age (in years)	:	68
Village	:	Keralapuram, North Andaman
Land holding	:	2.0 ha.



For popularization of Pekin duck, the constraint was non availability of ducklings or eggs for its propagation. To meet the demand of the eggs, Shri E. D Menon was approached to act as seed bank and through the knowledge and skill gained during training, he took up the challenge. Around 881 eggs of pekin duck to fifteen clusters of villages covering 63 farmers during 2013 & 2014 could be provided by him. He also earned an additional income of Rs. 14096/- . The technology transfer was facilitated by ORC of CIARI, supported by NABARD, which is a remarkable beginning of a credible technology given by Division of Animal Science of the Institute.

Beside being in the proximity to the ORC since 2009, plots with paddy, Pekin ducks, Sweet potato, CARISP 1, Amaranthus (Red & Green), Poi and Pulses was laid with an objective to provide a platform for the scientist to conduct result demonstration and for neighboring farmers to see and adopt the technology.

For his sincere effort in popularizing pekin duck as seed bank which has acted as a platform for technology dissemination and adoption by the peer group, he was awarded during the Island Kisan Mela 2015 with “Best Farmer Award”.

Parimal Das acts as a platform for technology demonstration and exposition

Name	:	Shri.Parimal Das
Education status	:	IV
Age (in years)	:	39
Village	:	Keralapuram, North Andaman
Land holding	:	2.0 ha (Leased)
Practicing	:	Paddy, duckery and poultry under backyard

Shri. Parimal Das, aged 39, resident of Keralapuram village, is a hard working and progressive farmer, who is in constant touch with the ORC of CIARI 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, Pekin ducks, Sweet potato CARI SP2, 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 CSR36 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., CSR36, CARI Dhan 3 and CARI Dhan 5 in the total area of 1.10 ha.



Year	Rice variety	Area (ha)	Production (Q)	Seed sold to CIARI (Q)	Seed sold to other farmers (Q)	Total income from seed sale (Rs.)
2011	CSR 36	0.60	28.00	5.61	10.00	14,920.0
2012	CARI Dhan 3	0.22	10.00	2.00	1.20	3,440.0
	CARI Dhan 5	0.33	16.20	3.00	2.80	8,100.0
	CSR 36	0.50	26.00	16.80	0.00	28,560.0
2013	CSR 36	0.40	20.00	5.00	0.00	8,500.0
2015	CSR 36	0.50	25.80	10.80	0.00	32400.0
Total	-	2.05	25.80	32.41	14.0	95,920.0

Through the seed production program he has also earned an additional remuneration through buy back system. He has produced a total of 100.2 quintal of Truthfully Labelled Seed of 3 high yielding rice varieties viz. **CARI Dhan3, CARI Dhan 5 and CSR 36** and **earned about Rs. 95,920 rupees from the seed alone during 2011-15**. His rice crop productivity has increased from 3.5 t/ha to 4.5 t/ha after adoption of new HYVs.

He is associated with the seed programme and has emerged a seed grower ambassador among the farmers of the area. Similarly 12 other farmers of 5 villages were also involved in Farmers participatory seed production of rice and produced about 15 t of quality seed during 2011-15.

He is technology transmitter of ORC 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 and awarded the “Best Farmer Award” during the Island Kisan Mela 2013.

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 10th 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 was 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 0.6 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 CIARI 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 vermicompost 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 CIARI, at Port Blair in the year 2011

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. came in contact with ORC in the year 2009. He attended training programmes on livestock, Fish, Paddy and cultivation of vegetables with his peer group. In the year 2010, he took up Kharif technological demonstration with hybrid rice variety US 312, wherein he got increased in yield comparatively. He was in steady contact with the ORC and in the year 2011, he took up seed production of HYV of rice var. CARI Dhan 5 in 0.26 ha.in seed village concept mode. 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, he took up seed production of HYV 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 Pekin ducks under backyard.

Income after the intervention

Intervention	Before Intervention (Rs./ha)	After Intervention (Rs./ha)	Additional Income (Rs./ha)
HYV of rice in 2011	3840	8400	4560
HYV of rice in 2012	10800	30600	19800

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 Gandhinagar II, trained in latest technologies in agriculture and allied fields for the first time, which is a land mark in the history of North Andaman facilitated by ORC.

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 CIARI 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, then 10 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.

Rodent control success in paddy field

Particulars	Name of the villages		
	Subash gram I	Subash gram II	Keralapuram
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*

Mr Kamal, a resident farmer of Subash Gram village who adopted the technology informed that **after adopting the technology, he could get 8 bags (1 bag = 40 kg grains) of paddy in one biga (1 biga = 0.13 ha) instead six bags** from last few years which were approximately 80 kg more than the usual yield, when the field was plundered by rodents.

He was cultivating both short and long duration varieties. Interestingly, the long duration crop C14-8 (8 months from Jun-Jul to Jan-Feb) was also protected from rodents though zinc phosphide was applied only in the field, where the short duration variety Jaya was grown. He was quite enthusiastic in disseminating the technology to his neighbours and friends. As a result of CIARI's intervention,

now farmers from other villages have also started using zinc phosphide baiting for control of rodents in rice fields and many are approaching ORC, CIARI, Diglipur enquiring on the availability of quality rodenticide. Few shops have started selling zinc phosphide in 5 and 10 gram sachets.

The farmers 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. The package of practices has also been given to the Agricultural Department, Andaman and Nicobar Administration to organize rodent control campaigns in many other islands to combat the problem of rodents.



CARI Brinjal-1 gains popularity at Diglipur

Name	: Shri Sanjay Das
Village	: Keralapuram, North Andaman
Land holding	: Cultivates on 1.0 ha
Practicing	: Paddy, duckery and poultry

Sanjay Das came in contact with ORC in 2014, during one of the training programme, wherein he could learn about the CARI brinjal 1. Having got impressed during the interaction with the experts, he volunteered to grow the crop by raising the seedling with the seeds received during the training.

Initially he cultivated in 200 sq.m area with 282 seedlings. He was in regular touch with the field staff of ORC and kept them updated on the progress of the crop. After bearing of fruits to marketing stage, he kept on harvesting twice in a week @ 160-170 kg and sold the same @ Rs 40/ in the local market for a period of four months.



Expenditure incurred on labour and crop management was Rs 89,890/-, during the crop period. The gross income was Rs. 2,04,800.00 /- , whereas the net income was Rs. 1,14,920/-. He could spare happily Rs 10,000/- each for the treatment of his mother , wife at Port Blair and also for the education of his childrens. Rs. 80,000/-he deposited in bank.

Next year, he increased the area to 1.0 acre and also sold the seeds to the neighbouring farmers. He became the ambassador of the technology, who got recognized during IKM. Following his footsteps, in the year 2015, other farmers took the crop in Rabindra pally village in a larger area and earned good return. There is good demand of the CARI brinjal 1 , which has horizontally spread to many clusters of village at Diglipur.



Shri Sanjay Das, says that the fruit is having less seeds, less attack of pest & disease and good in taste. He was awarded best farmer award for his determination and hard work to popularize the crop.

Karen community facilitated by ORC

Dr. R.K. Gautam, Dr. P.K. Singh and Dr. S.K. Zamir Ahmed scientifically facilitated, Plant Genome Saviour Community Award of Rs. 10.00 lakh (ten lakh rupees) to Karen community, Middle Andaman by documentation, characterization, publication and registration of six rice varieties *viz.* Khushbuyya, Black Burma, White Burma, Red Burma, Mushley and Nyawin of Karen community residing in Mayabunder, Middle Andaman. The unique features and genetic richness of these traditional rice land races were showcased nationally and globally by our team which got recommended for “Plant Genome Saviour Community (PGSC) Award 2013-14 instituted by Protection of Plant Varieties & Farmers’ Rights Authority (PPVFR), Ministry of Agriculture & Farmers’ Welfare, GoI, New Delhi for Karen community. The award was conferred to Saw Saytha, President, Karen Welfare Association North Andaman by Shri. Radha Mohan Singh, Hon’ble Union Minister of Agriculture and Farmers’ Welfare, Govt. of India on 21st December 2016.



15. Service providing activities related to production, distribution of seeds and planting material

- Under seed village concept through participatory mode in the farmer’s field at Diglipur, a total of 552.59 quintal of Truthfully Labeled Rice (TLS) of rice from the year 2011-12 to 2016-17, were produced. This could meet to the demand of HYVs rice seeds placed by the NGOs and other stakeholders including KVK, Nimbudera in buy back system.
- A total of 8000 seed nuts of arecanut variety Mangla & Samridhi, 2625 seedlings each of black pepper, clove and cinnamon, 150 kg yam (Var., Gajendra), 200 cuttings of sweet potato (Var., SP 1, SP 2), 1350 gm of CARI brinjal 1 seeds, 20 kg of sunflower seeds were made available for demonstration.
- A total of 11.85 quintals of pulses (green and black gram), 2200.0 quintal of high yielding varieties of rice. Beside, seeds of tomato, potato, chilli, capsicum, cauliflower have been provided for demonstration to the farmers of North & Middle Andaman during 2010-11 to 2015-17.
- Five quintals of high quality protein maize (HQPM) and 2 quintals of baby corn (HM4) were provided to the farmers of North and Middle Andaman.
- Bio - consortia, spawn of mushroom, vermicompost, rodenticide, aggregate pheromone trap, lure for shoot & fruit borer in brinjal, pseudomonas, trichoderma etc were also provided at farmers field to address specific problem.

16. Price analysis of perishable commodities

16.1. Price analysis of marine water fishes at north and middle Andaman District

Marine fishes comprises about 60% of the fish consumed. 17 different types of fishes sold namely *Paeneus monodon* (Jinga big), *Metapaeneus sp.* (Jinga small), *Scomberomorus guttatus* (Surmai), *Scylla serrata* (Kekda), *Liza tade* (Farsha) *Plectorhynchus sp.* (Katla), *Sphyrna jello* (Dandus), *Portunus sp.* (Kekda), *Mugil cephalus* (Farsha) *Carangoids sp.* (Kokari), *Nemipterus japonicas* (Rani), *Leiognathus sp.* (Chanda), *Rastrelliger kanagurta* (Bangdi), *Trachurus spp.* (Topi), *Skate and Rays* (Shankar), *Stolephorus sp.* (Maya) and *Sardinella sp.* (Tarni), price behavior were collected from a period from January 2009 to December 2015.

These marine fishes based on the regular availability and consumers price were grouped into three categories namely those which were sold at an average price of more than Rs. 150 i.e. *Paeneus monodon* (Jinga big) and *Metapaeneus sp.* (Jinga small). Group II, with an average price between Rs. 100 to 150 per kg *Scomberomorus guttatus* (Surmai), *Scylla serrata* (Kekda) and *Liza tade* (Farsha) & Group III, which were sold at an average price below Rs.100 per kg *Carangoids sp.* (Kokari), *Nemipterus japonicas* (Rani), *Leiognathus sp.* (Chanda), *Rastrelliger kanagurta* (Bangdi), *Trachurus spp.* (Topi), *Skate and Rays* (Shankar), *Stolephorus sp.* (Maya) and *Sardinella sp.* (Tarni).

The price movement of marine fishes in Group I, comprising of Jinga (big & small) showed that the average consumers price in the year 2009 was Rs.150.04 followed by Rs.144.12, Rs.163.06, Rs.178.53, Rs.195.38, Rs.229.26 & Rs. 195.67 respectively in the succeeding years till 2015. During the span of 84 months spread, the price has over all increased to the tune of 30.41 percent i.e. per year 4% increase in the price was noticed. More over it is also inferred that there is constant increase in average consumers price in the third quarter from Rs. 159.75, followed by 157.32, 177.65, 189.47, 219.24, 250.15 & 307.50 (July, August & September) of every year to the tune of 13 percent.. Thus there is increase in the price to meet the demand of the consumers, which gives higher price to the fishers during the period.

The price movement of marine fishes in Group II, comprising of *Scomberomorus guttatus* (Surmai), *Scylla serrata* (Kekda) and *Liza tade* (Farsha), showed that the average consumers price in the year 2009 was Rs.95.18 followed by Rs.102.56, Rs.108.25, Rs.120.14, Rs.148.17, Rs.191.39 & Rs. 193.30 respectively in the succeeding years till 2015.

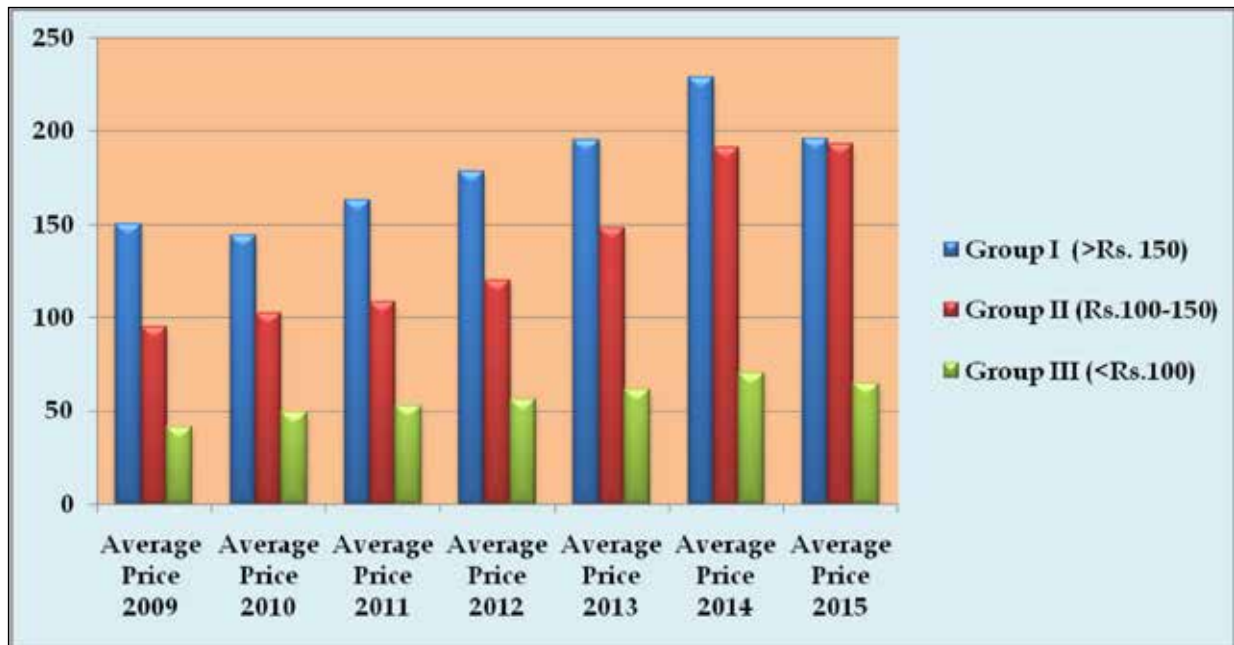
During the span of 84 months, spread over seven years the price has over all increased to the tune of 103 percent i.e. per year 14% increase in the price was noticed. More over it is also inferred that there is constant increase in average consumers price in the third quarter from Rs. 102.48, followed by Rs.109.31, Rs. 116.02, Rs. 133.18, Rs.160.65, Rs.215.72 & Rs.215.35 (July, August & September) of every year to the tune of 15 percent. Thus there is increased in the price to meet the demand of the consumers which gives higher price to the fishers during the period.

The price movement of marine fishes in Group III comprising of *Carangoids sp.* (Kokari), *Nemipterus japonicas* (Rani), *Leiognathus sp.* (Chanda), *Rastrelliger kanagurta* (Bangdi), *Trachurus spp.* (Topi), *Skate and Rays* (Shankar), *Stolephorus sp.* (Maya) and *Sardinella sp.* (Tarni), showed that the average consumers price in the year 2009 was Rs.40.78, followed by Rs. 49.12, Rs. 52.30, Rs. 56.06, Rs. 61.63, Rs. 69.89 & Rs.



64.84 respectively in the succeeding years till 2015. During the span of 84 months spread over seven years, the price has over all increased to the tune of 58 percent i.e. per year 8% increase in the price was noticed. More over it is also inferred that there is constant increase in average consumers price in the third quarter from Rs. 44.51 followed by Rs.53.63, Rs.56.57, Rs.60.74, Rs.67.28, Rs.74.25 & Rs. 70.76 (July, August & September) of every year to the tune of 8 percent.

Average consumer price in percentage ranged from Rs. 171.86 to Rs. 218.36 in Group I, Rs. 105.25 to Rs. 163.16 percentage in Group II and 33.56 to 77.38 percentage in Group III, whereas average farmers price in percentage ranged from Rs. 145.25 to 150.00 in Group I, from Rs. 90.00 to Rs. 153.00 and Rs. 25.00 to Rs.65.00 in Group III.



Market efficiency

The price paid by the consumer and received by the producers in case of marine fishes showed that markets were well established at Diglipur and were quite efficient. The market efficiency in terms of producer's price as that of consumer's price was estimated at 0.82 for Group I, 0.88 for Group II and 0.83 for Group III fishes. Out of this market expenditure, marketing cost ranged from 9.37 to 54.25 percentage in Group I, from 10.16 to 22.54 percentage in Group II and 5.41 to 31.55 percentage in Group III, which again indicates that the market efficiency and fish market in Diglipur is a highly efficient market.

Inequity in farmers' remuneration of marine fishes at Diglipur, North Andaman

Over here the farmers price realizations observed is in the tune of 68.69 to 84.52 percent in case of group I, in group II ,84.92 to 93.77 and in case of group III, 51.90 to 87.54 percent respectively which speaks about favourably good remuneration to the farmers.

16.2 Price analysis of fresh water fishes

During the period of 84 months distributed from 2009 to 2015, eleven different types of fresh water fishes namely *Heteropneustes fossilis* (Singhi), *Clarias batrachus* (Magur), *Catla catla* (Catla) *Puntisus javanicus* (Potti), *Hypophthalmichthys molitrix* (Silver Carp), *Cyprinus carpio* (Common Carp), *Pangasius* (Phangus), *Labio rohita* (Rohu), *Cirrhinus mrigala* (Mrigal), *Ctenopharyngodon idella* (Grass Carp) and *Oreochromis sp.* (Tilapia) were found to be sold at Diglipur fish market of North Andaman.

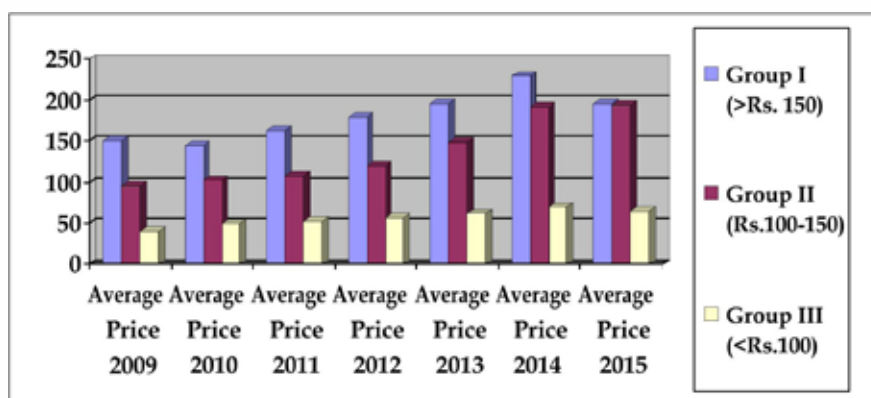
These fresh water fishes based on the regular availability and consumers price were grouped into three categories namely those which were sold at an average price of more than Rs. 150/- *Heteropneustes fossilis* (Singhi) and *Clarias batrachus* (Magur), Group II, with an average price between Rs. 100 to 150 per kg *Catla catla* (Catla) *Puntisus javanicus* (Potti), *Hypophthalmichthys molitrix* (Silver Carp), *Cyprinus carpio* (Common Carp), *Pangasius* (Phangus), *Labio rohita* (Rohu), *Cirrhinus mrigala* (Mrigal) & Group III, which were sold at an average price below Rs.100 per kg *Ctenopharyngodon idella* (Grass Carp) and *Oreochromis sp.* (Tilapia).

The price movement of fresh water fishes in Group I comprising of *Heteropneustes fossilis* (Singhi) and *Clarias batrachus* (Magur) showed that the average consumers price in the year 2009 was Rs.156.91 followed by Rs.167.87, Rs.184.82, Rs.207.27, Rs.228.15, Rs.256.11 & Rs. 255.42 respectively in the succeeding years till 2015. During the span of 84 months spread over seven years the price has over all increased to the tune of 62 percent i.e. per year 8% increase in the price was noticed. More over it is also inferred that there is constant increase in average consumers price in the second quarter from Rs. 172.10 to 177.09, 201.97, 222.86, 241.60, 265.92 & 265.25 (April, May & June) of every year to the tune of 7 percent.

The price movement of fresh water fishes in Group II comprising of *Catla catla* (Catla) *Puntisus javanicus* (Potti), *Hypophthalmichthys molitrix* (Silver Carp), *Cyprinus carpio* (Common Carp), *Pangasius* (Phanges), *Labio rohita* (Rohu) & *Cirrhinus mrigala* (Mrigal)) showed that the average consumers price in the year 2009 was Rs.95.33 followed by Rs.102.82, Rs.114.73, Rs.127.90, Rs.140.45, Rs.162.87 & Rs. 169.39 respectively in the succeeding years till 2015. During the span of 84 months spread over seven years the price has over all increased to the tune of 77 percent i.e. per year 11% increase in the price was noticed. More over it is also inferred that there is constant increase in average consumers price in the second quarter from Rs. 100.72 followed by 109.59, 121.20, 136.00, 148.57, 175.98 & 181.54 (April, May & June) of every year to the tune of 11 percent.

The price movement of fresh water fishes in Group III comprising of *Ctenopharyngodon idella* (Grass Carp) and *Oreochromis sp.* (Telapiya) showed that the average consumers price in the year 2009 was Rs.67.43 ,followed by Rs.72.30, Rs.75.15, Rs.79.53, Rs.86.46, Rs.95.34 & Rs. 93.79 respectively in the succeeding years till 2015. During the span of 84 months spread over seven years the price has over all increased to the tune of 39 percent i.e. per year 5% increase in the price was noticed. More over it is also inferred that there is constant increase in average consumers price in the second quarter from Rs. 69.73 followed by 75.81, 78.03, 84.01, 88.16, 99.80 & 99.13 (April, May & June) of every year to the tune of 6 percent. The reasons

Average consumer price in percentage ranged from Rs. 183.24 to Rs. 232.91 in Group I, Rs. 106.20 to Rs. 138.94 percentage in Group II and 76.77 to 86.08 percentages in Group III. Whereas Average farmers price in percentage ranged from Rs. 150.00 to 180.00 in Group I, from Rs. 90.00 to Rs. 120.00 and Rs. 50.00 to Rs.70.00 in Group III.



Market Efficiency

The price paid by the consumer and received by the producers in case of fresh water fishes showed that markets were well established in Diglipur and the markets were quite efficient. The market efficiency in terms of producers price as that of consumers price was estimated at 0.79 for Group I , 0.76 for Group II and 0.74 for Group III fishes. Out of this market expenditure, marketing cost ranged from 33.24 to 52.91 percentage in Group I, from 16.20 to 48.94 percentage in Group II and 16.08 to 26.77 percentage in Group III, which again indicates that the market efficiency and fish market in Diglipur is a highly efficient market.

16.3 Price analysis of chevon & pork

Share of island livestock in the value of output of island agriculture and allied activities is more than 30% to be market driven, hence, the policy makers may bestow the attention for providing market-end by establishing a regulated market for sustainable trade. The main marketing hub for the animal husbandry sector is the Port Blair market which is the capital and catering to the need of the domestic as well as burgeoning tourist population. The flow of the market channel is from North Andaman to Port Blair, however, due to increase in the tourist inflow and tourism activities in the North Andaman, particularly the Diglipur, there has been a considerable increase in the demand and consumption which is reflected in the market for the chevon and pork sale. The growth rate in the last decade shows that there is a steady increase in the population of goat and pig which is market driven growth.

The analysis of the market trend of the pork and chevon during the last three years (2013-2016) shows that a total of 3148 goats were slaughtered in the market with an average of 1049.33 numbers in a year. The highest numbers of goats were slaughtered in the month of June-July and November -December. The trend of slaughter of pig at Diglipur market was found to be constant throughout the year (average 312.33 pigs per year). The market behavior during the last three years showed that there is a decline in the average number of goat slaughtered, which may be due to the decrease in the population of the goat herd due to high demand and consumption. However, the average price was found to be increase from Rs. 450 to 480 and increase in the profit per goat i.e from Rs. 153.33 /kg to Rs. 175.20 kg. The trend of market for pork sale showed that during the recent year there is increase in pig farming and rearing by the farmers of the region. The average profit per kg of pork sale was

found to be increased from Rs. 51.20 /kg to Rs. 84.54 /kg, similarly, the average profit from per pig was increased from Rs. 3244 to Rs. 4474. The overall market efficiency of pork and chevon was found to be in declining trend i.e from 64 % to 43% and 64% to 57% respectively, which might be due to the unregulated market in the region. However, seeing the potential of the demand and sale of chevon and pork which speaks about the technology.(table 22 & 23).

Table 22 : Year wise market trend of chevon at diglipur market

Particular	2013-14	2014-15	2015-16
No of goat slaughtered (Nos)	370 (30.83)	296 (24.66)	274 (22.83)
Average meat/ month in Kgs	274.67	208.33	186.50
Average cost price/ month	286.67	290.00	290.00
Average selling price / month	450.00	480.00	480.00
Average profit /kg	153.33	176.60	175.20
Average profit /goat	1373.67	1489.78	1437.46

Figure in bracket denotes average chevon per month

Table 23 : Year wise market trend of pork at diglipur market

Particular	2013-14	2014-15	2015-16
No of pig slaughtered	875 (72.91)	1234 (102.83)	1039 (86.58)
Average meat/ month in Kgs	4082.33	5544.10	4691.33
Average cost price/ month	135.83	122.10	122.08
Average selling price / month	206.67	190.00	225.00
Average profit /kg	51.20	51.89	84.54
Average profit /pig	3244.00	2646.80	4474.04

Figure in bracket denotes average pork per month

Open market of fish, chevon, vegetables and pork at diglipur



Open market of fish, chevon, vegetables and pork at diglipur



16.4 Other items

Fruits like grapes, apple, orange, pear, mango are imported from mainland. The profit selling margin was around 4 %. The Local varieties were sold at a relatively low cost. Burma rice (black & white) and Jeera rice were sold @ Rs. 60 to 70 and the other rice varieties like Ponni local, Jaganath, Bhavani, C14-8 and Jaya were sold @ Rs. 11 to 16/-. Pulses (black gram, green gram and Jai bangla) are produced in large quantity (sold @ Rs. 22-40 / kg at diglipur). They are exported from Port Blair to Chennai after harvest, and thereafter processed and brought back to be sold to the target clientele due to absence of any dal mill at higher price.



16.5 Storage, godown and market yards

Availability of cold storage and rural godown facilities plays a critical role in reducing post harvest losses, especially, in the case of horticulture and agricultural produce. A proper storage and marketing infrastructure reduces the possibilities of distress sale and exploitation by the middlemen. Apart from agricultural produce, storage facilities are also required to stock agricultural inputs like seeds, fertilizers and pesticides. Andaman & Nicobar Islands do not have adequate storage and marketing facilities. The Primary Agriculture Credit Societies in the Islands are weak and most of them do not have godowns. The present storage capacities and facilities are inadequate and most of the available units are traditional/or unscientific.

16.6 Suggestions for improving marketing strategy


Agricultural marketing covers the services involved in moving an agricultural product from the farm to the consumer. Numerous interconnected activities are involved in doing this, such as planning production, growing and harvesting, grading, packing, transport, storage, agro- and food processing, distribution, advertising and sale. Some definitions would even include “the acts of buying supplies, renting equipment, (and) paying labour”, arguing that marketing is everything a business does. Such activities cannot take place without the exchange of information and are often heavily dependent on the availability of suitable finance. Marketing systems are dynamic; they are competitive and involve continuous change and improvement. Businesses that have lower costs, are more efficient, and can deliver quality products, are those that prosper. Those that have high costs, fail to adapt to changes in market demand and provide poorer qualities, are often forced out of business. Marketing has to be customer-oriented and has to provide the farmer, transporter, trader, processor, etc. with a profit. This requires those involved in marketing chains to understand buyer requirements, both in terms of product and business conditions

Andaman & Nicobar is a non-market surplus and high productivity area for fishes. The storage capacities all over the islands are also being enhanced on the basis of need. In case of fish, there is lot time involved in export to consumption centers. In order to maintain the shelf life of the fishes, it is suggested to establish a cold storage of capacity 500 MT @ 7500 per MT (approx) at Port Blair. Transportation of fishes from catching point to market is another major issue. The produce suffer huge loss in the range of 25 - 40 %. This spoilage occurs at the time of handling, transportation, marketing and processing resulting in waste. One way for managing this is to utilize the available waste material for the production of value added products; it will not only economize the cost of products but also reduce the pollution level.

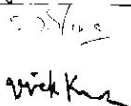

The wastes could be used for production of dry fish, animal feed and other value added products including biomolecules through processing, extraction, hydrolysis or fermentation. Effective linkages of production system with marketing, processing and development of a team of trained Private Extension Service providers, other value added activities would play an active role in increasing the marketing sector in this group of Islands.


In this endeavor, establishment of "Marketing knowledge centre" which can provide the guidance to fishermen folk, act as a middleman between several developmental departments and address the problems related to marketing business and export of fish and other marine products. This would enable diversified activities like organization of producer associations and bringing inter-institutional linkages.


17. IMPRESSIONS OF DIGNITORIES/FARMERS

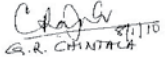
Date	Name & Address	Impressions / Remarks Feed Back	Signature
3/5/2012	Dr. G. L. Maiti Chairman, CART.	Extremely pleased to visit the work done by CART in Diglipur area. Met many farmers. The comments by all farmers make us proud of CART. There was admiration for the work of the scientist. The technology capacity building and transfer has enabled farmers to get higher income. One of the farmers got ICAR Award. Heartiest congratulations to the team led by Dr. Zamir and Director, CART. My best wishes for their continued service for farming community.	

10/11/2012	Dr. S. Sam Roy Director, CART Port Blair Andaman Islands.	Wonderful experience of meeting all the dignitaries who have come from distant places. A great deal of respect & appreciation is shown to them. It is appreciated that the ORC is operating under the coordination of Dr. Zamir Ahmed & the staff of the Centre, along with the scientists of CART, and staff of KVK are carrying out excellent work which are appreciated by the people of Diglipur.	10/11/12
------------	--	---	----------

Sl. No.	Name	Village	Impression	Signature
80-81	Dr. Vivek Kumar	Narain Nagar DIGLIPUR (Ac)	Good thing good. I feel such system is the need of the hour for the betterment of farmers.	
82	Pratap Mondal	Rodhanagar 9474293545		 (Fog Due)

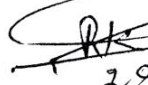
Date	Name & Address	Impression/	Feedback	Signature
9/7/20	Ramesh Kumar Deputy Project Director AMEA- NEM Andaman.	Very Impressive CAR & KVK that is really appreciate institute and of farmers and needed to be Good effort!	programme. The efforts of ORC, the report with the local farmers The extension work of these very annual endeavor to the institution this type of programme are also appreciated in all a level. Excellent work!!	

41. Dr. NAGESH RAM , 9474225222 15.6.2010 to 12. Sh. L. B. Singh , 17.6.2010 43. Sh. N. C. Choudhury 44. Dr. S.K. Zamir Ahmed (Co-ordinator ORC)	Very good repo of the staff of this ORC with the farmers. During this month's trip, we had very good response from the farmers side in participation in the trip, programs 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 for our side to this ORC.
	 17/6/10 (NAGESH RAM) Adm. Head, KVK Put Blui.

Sr. No.	Name and Address with Phone number	Date of visit	Impressions
31	G.R. CHINTALA GM/OIC, NABARD, post Blui Chairman - ORC committee.	08/01/10	<p>This is the first visit of NABARD officials after establishment of ORC by CARs with the FINANCIAL ASSISTANCE of NABARD.</p> <p>Though its almost 6 months, ORC is yet to procure necessary furniture, fixtures, TEACHING AIDS etc, this had to be done on an urgent basis since the farmers of the area are already utilizing the services of ORC for getting CONSULTING referring some informative brochures and getting clarifications on day to day problems being encountered.</p> <p>Few programmes already conducted by ORC had evoked good response from the farmers and this is a good endeavour on the part of NABARD & CARs to start such centre in the northern most part of ANDAMAN.</p> <p>Both the staff working at present are frank, knowledgeable and are enthusiastic to further the cause of ORC.</p> <p>I personally wish as Chairman of ORC committee that this centre makes a significant progress in delivering technology to the farmers.</p> <p> G.R. CHINTALA</p>

54. Mr. R.K. Gautam,
Head Field Crops Division
CARI, Port Blair

ORC, Diglipur is providing yeoman's 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

मुझे बहुत ही आच्छा लॉगा ORC^{CARI} Department से जो जानकारी मिला और मुझे बहुत ही Benefit मिला ORC-CARI का help से. ORC-CARI Department का जो workers हैं, Respected Siva Kumar और Harish (Babu) इन लोगों का जानकारी से मुझे और हमारा village को पूरा पूरा Benefit दया. मैं ORC-CARI Department को अपना जमिन का एक बिचला समस्ता दे रहा हूँ. मुझे cultivation का लॉर-# मैं 100% जानकारी Shiv Kumar और Harish (Babu) से मिला. मैं ORC-CARI आप लोगों को Request करूंगा आगे जाकर जो इंसतारा को जानकारी मुझे और हमारा village को देने रहे.

Thanks
Pradeep Kumar Majumdar
Ganthinagar - II
N/Andaman.



5/06/2013 DR. T.V.R.S. Sharma
Emeritus Scientist
C.A.R.I. PORT. BLAIR. 744105
Ph. 91474245179

Excellent Extension Work in Agriculturally important. This ORC should be up more inputs. I am visiting and conducting small research centre can

is being done by this ORC, at area of Andaman Islands. I am happy that regularly scientist visit extension programmes. A be plant in due course.

J. Prasham
5/06/13

10/09/2013 G. Tarai GM NABARD

I along with my colleagues the ORC is functioning in programme of SHG's for the benefit of visit. Dr. G. me every thing what the farmer who had ORC and the area. I support for the area. I wish success of ORC.

Dr. Srin Prasham visited ORC in a very satisfactory manner. A training was club ~~was~~ organised by him in the HOD of CAR and Dr. Srin Prasham explained the ORC is doing. I had interaction with him and he informed feed back regarding hope the ORC will continue its I am happy with its functioning.

10/09/2013

29/09/2013 DR SAIN DASS
EX-DIRECTOR MAIZE
DMK (ICAR) N. Delhi

The CARI scientist working in this KVK as well as at headquarters in P.B. has good contact with each other. I was very happy to see the interest of farmer and the impression and interest among the farmer and the scientist. The farmer are interested to know and adopt the latest technology.

Regarding the maize adoption, the crop is known to the farmer in this area but they have shown a great interest in this crop. All the farmer who come in this market were ready to adopt the maize in this area and wanted a continuous supply of hybrid seed from proper source. The poultry & pigry is also existing in this area and feed is important for them by growing QPM the feed cost will be reduced according to the farmer.

Sain Dass

Date Name & Address

Feedback & Impressions

Signature

Date 10-12-13
5/06/1 S. Prasanth
Agril. Asst
Dept. of Agriculture
Dighelpur Zone

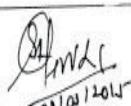
Attended the training programme on SPICES CULTIVATION, organised by CARI, Port-Blair. The training programme with a good gallery of farmer & dolphin zone shows their interest for spices, turmeric, etc. The training includes all topics for Black pepper, Clove, Cinnamon, Bay leaf etc. convey in details about the crops. Package of practices, production & marketing. It will be a part of such training & extension. Thank to CARI.




S. Prasanth

10/09
22-07-14 Dr. V. Baskaran
Sr Scientist
CIARI, Port Blair

Today I have conducted training programme on 'value addition in flower crops'. I feel very happy about the farmer who are extremely interested for making bouquets, by using locally available Heliconias. ORC is doing such a wonderful service to the farming community by disseminating technologies developed by CIARI, Scientist. Here farmers are much interested for cultivation of Gerbera under polyhouse & Tabernaemontana under polythene mulch. In Agilipura hilly area of scope for flower culture.

V. Baskaran

Date	Name & Address	Feed Back	Impression	Signature
03.03.2015	S.V. Mannur AGM NABARD	Today I have visited 30 farmers were present. Farmers was very in the village area	ORC. Had a interaction with farmers. Appreciate during the interaction overall opinion of the farmers about the ORC. The impact of the ORC is very encouraging. Thank you.	 03/03/2015

DATE	NAME & ADDRESS	FEED BACK	IMPRESSION	SIGNATURE
31/8/2014	Gt. Tarai	I visited ORC in Forward Market. Record is maintained on the crop.	In context of quality & workshop etc. I also have seen the records of ORC. The ORC is doing good work.	
31/08/2014	Laxi GEORGE DEECOD - CRIC	It was a wonderful opportunity and a learning experience to know about the good work done by ORC - Diphu, and with the staff of ORC for the future endeavours.		
28/10/2014	Shirshy Thomas Agriculture Officer	A training was organised about the the department. and interested agricultural	on Pond Based Farming System and I came over to explain schemes being implemented by the farmers were very innovative in knowing more about practices	
4.11.2014	Smt Sreedevi Asst Director (Agri)	The training programme on Conservation of A & N Island very timely and are Plant Variety Awareness more frequent Farmers Right scenario. The enthusiastic.	programme on Promotion of farmers' variety of Pulse crop for sustainable agriculture is organized. Farmers of these area not aware of the Protection of and Farmer's Right. Similar programme is to be organized to create awareness on in the changing global farmers participated is very	 4/11/14

DATE	NAME & ADDRESS	FEED BACK & IMPRESSION	SIGNATURE
4-11-2014	U.K. Nayak, CIPMC, Port Blair	Very useful & productive training programme for the farmers.	Nice gathering & Interest of the farmers is excellent.
4-11-14	Shirly Thomas Agriculture Officer Diglipur	A very informative and elaborate training programme. Wish that such programme may be conducted to create awareness and motivate local people.	
4-11-14	S.C. Bairagi APPO, CIPMC, P/O	The programme organised by CIARI is further progress of the farmers for pulses cultivation. Such programme may continuously organised by the Dept. for legitimizing Andaman farmers future progress.	
23/12/2014	G. Tomy GM, NARSARD	Today I visited CRC to review its workings. The CRC has maintained records to our satisfaction. I asked the CRC employees to send some information in tabular form. It is observed that the meeting register contains only purpose of meeting & list of participants. Names of resource persons associated with the training may be noted in the register.	

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 Kerala...

for undertaking income generating activities which is supported by NABARD. Dr. Suresh Kumar AFDO, Diglipur expressed his happiness on the collabora...

Scientist farmer interaction ... Continued from page 1

generating activities which is supported by NABARD. Further he detailed about the forthcoming 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. Suresh 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 groups of fish seed producer of different species namely, Catla, Rohu and Mirgal so that assured fish seed is available when 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,

MORE NATIONAL/LOCAL NEWS

Fish farmers sensitized on satellite nurseries for carp breeding

Port Blair, June 19
A series of four training programmes on freshwater carp breeding and setting up of satellite nurseries' was conducted by CARI in collaboration with Department of Fisheries, Andaman & Nicobar Administration at

stage of carp brooding and fish nursery preparation. As the individual farmers in Andaman do not have sufficient nursery ponds to rear the fish grown up to fry stage, they were oriented on the utility and feasibility of undertaking carp breeding and nursery management

Fisheries have chalked out a programme to monitor the services in the water ponds in the respective areas all production of fry stage (2-5 cm) of fish in participatory mode. The products of the respective areas, who participated in the programme actively, expressed their happiness

The idea of India - Fish Week Training - Andaman & Nicobar Islands Local News 5

CARI's QRT visit Diglipur

PORT BLAIR, MAY 7-1
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 Dr. S. K. Zamir Ahmed, The In-



CARI chief reviews TOT implementation in N&M



located in South, North and the Andaman. Smt. Manjula Mistry, Sr. T. P. Graduate, Smt. K. P. Graduate, Smt. K. P. Graduate of Madhavji Shree shared their experience during the interaction. Under 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

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 Nait, Pradhan, Keralapuram and Mr. Alok Biswas, Progressive Farmer and member, IMC from Shri and Shri Mistry Progressive from also in team and 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 planning material of papaya, 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

The idea of India - Fish Week Training - Andaman & Nicobar Islands A & N Islands 3

Trng on improved farm practices held at Gandhinagar

A & N Islands 3

ZP Adhyaksh appreciates CIARI's outreach activities in N & M

PORT BLAIR, MARCH 28/-/The Out Reach Centre of Central Island Agricultural Research Institute, conducted technological exposition and demonstration of livelihood options in agriculture and allied fields in the field of Mr Laxman Das, Progressive farmer of Kalipur in association with KVK, Nimbudera on March 25 under the plan and guidance of Dr. S. Dam Roy, Director, CIARI, Port Blair. Dr. S.K. Zamir Ahmed, Principal Scientist & Coordinator, informed the farmers on the basic objective of the technological exposition and demonstration, wherein the farmers learned by getting exposed to the knowledge and skill involved in best livelihood



der for cattles. Smti Lathika, I/C Zonal Office of Agriculture, also participated. Speaking on the occasion, Saw Tattoo, Adhyaksha, after inaugurating the meet, appreciated the approach of the CIARI through its Out Reach Centre at Diglipur to reach the farmers through training

carrying forward the development works. Mr Dilip Biswas, Up-Pradhan of Shibpur also spoke with appreciation on the work done by CIARI. He also talked about the problems faced by the farmers in obtaining loan from the bank.

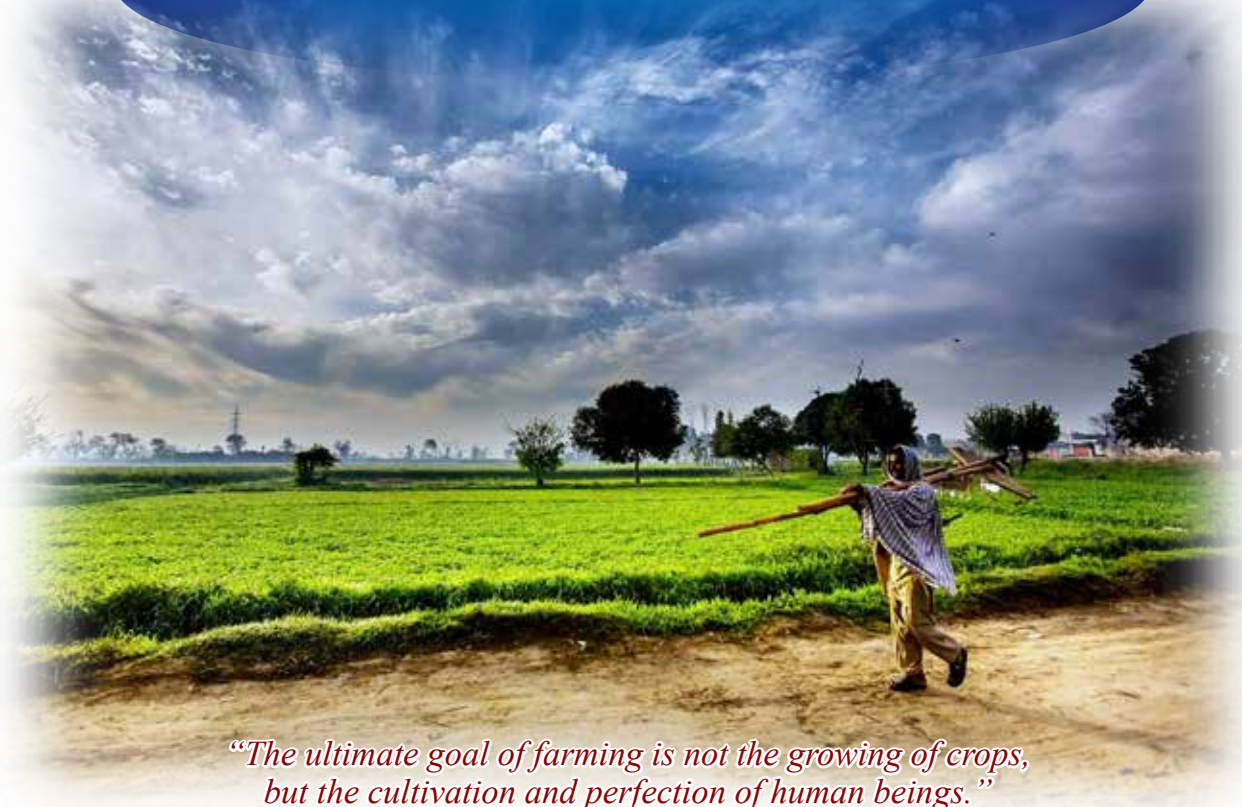
Dr. A.K. Singh, Senior Sci

19. SUMMARY OF ACHIEVEMENTS

- Technological Interventions for livelihood *viz.*, Model satellite nursery of fresh water fish, pig, goat farming, pekin 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.
- 148 training were conducted in agricultural and allied fields, wherein 6276 farmers got trained with overall participation 72% males and 28% females representing 35 clusters of villages in North & Middle Andaman.
- Under Kharif 373 Nos. of technological demonstration with HYV's of rice, covering 100.09 ha in 35 clusters of villages was conducted.
- In Rabi 323 Nos. of technological demonstration with HYV of pulses, vegetables, tuber crops and oil seeds covering 38.36 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. T9 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, 3.90 ha in 2012, 2.6 ha in 2013, 1.8ha in 2014 and 3.37ha in 2015 for production of truthfully labeled seeds of paddy with the guidance of Division of Field Crops Improvement and Protection. Every year an average of 40 quintal seeds of TLS were provided for the stakeholders. A total of 295.59 quintal of seeds have been produced till date.
- Horizontal spread of institute HYVs of rice has been seen in an area of 2109.063 ha. at North Andaman in 35 cluster of village adopted by 4919 farmers since 2010 till Dec.2015. Rice variety Gayatri shared 1259.31 ha of area followed by CARI Dhan 5 (284.82 ha), CSR 36(225.61 ha), CARI Dhan 4 (181.06 ha), CARI Dhan 3(79.41 ha), CSR 23 (55.11 ha), Ranjeet (20.68 ha), CARI Dhan 6 (2.26 ha) and CARI Dhan7 (0.56 ha.) respectively.
- Facilitated varieties development in rice, mung, urd, mushroom and vegetables (sixteen varieties i.e. (Four in Rice, One in Poi (vegetable), five in Mung, two in Urd (pulses), one in Mushroom, One in Brinjal & two in Amaranthus (green and red leafy vegetables), through technological demonstration in agriculture and allied field jointly by the team of scientists of Division of Field Crop Improvement and Protection & Horticulture and Forestry in the farmers fields at Diglipur .These varieties has been released by Institute Variety Release Committee for the benefit of farmers and other stakeholder's.

- Pekin duck introduced in 2010 with three (3) ducklings could reach 81 farmers with 3-5 ducklings in the backyard totaling to 466 numbers, spread over 15 villages.
- Data base of 5400 plus farmers linked with ORC has been made.
- Database on market price of agricultural and allied sectors developed.
- For technology dissemination Kisan gosti (07 Nos.), Scientists-farmers interaction(13 Nos.), Exposure visit during Kisan Mela and Farm Innovators meet (04 Nos.), Awareness campaigns(02 Nos.), 3826 field visits by experts and staff 6533 clientele visits to ORC for advisory, information sharing and feedback, 133 telephonic advisory, Field days (07) and participation in Block Mela (02 Nos.) were done.
- 21 farmers were awarded during Island Kisan Mela and Farm Innovators Meet for adoption of technologies in agriculture and allied field as a livelihood options.
- 35 clusters of villages have been covered through training and demonstration.

“JAI KISAN - JAI VIGYAN”



*“The ultimate goal of farming is not the growing of crops,
but the cultivation and perfection of human beings.”*

Masanobu Fukuoka, *The One-Straw Revolution*

List of training conducted by Out Reach Centre from 2009 till date

Sl. No.	TITLE	DATE	VILLAGE	PARTICIPANTS			TRAINEE DAYS
				M	F	T	
1	Mat nursery & soil sample collection	15 th to 18 th July,09	Kerelapuram	18	07	25	100
2	SRI cultivation	29 th to 31 st July,09	Kerelapuram	48	02	50	150
3	Organic spice cultivation	8 th to 10 th Sept,09	Kerelapuram	45	08	53	159
4	Plantation based cropping system	22 th to 24 th Jan,10	Kerelapuram	20	04	24	72
5	Rodent Control	22 nd & 23 rd March, 10	Kerelapuram	22	03	25	50
6	Pig & goat farming	27 th to 29 th March, 10	Kerelapuram	26	04	30	90
7	Protected cultivation of high value vegetables	27 th to 29 th March, 10	Kerelapuram	23	07	30	90
8	Scientific block cultivation of drumstick, noni & agathi	6 th to 8 th May,10	Kerelapuram	15	05	20	60
9	Pig farming	6 th to 8 th May,10	Kerelapuram	15	08	23	69
10	Fish nursery management	6 th to 8 th May,10	Kerelapuram	10	25	35	105
11	Scientific PoP for HYV of rice	15 th - 17 th June,10	Kerelapuram	22	08	30	90
12	Backyard poultry and duck farming	15 th - 17 th June,10	Kerelapuram	19	11	30	90
13	Integrated fish farming system	15 th - 17 th Jun,10	Kerelapuram	30	0	30	90
14	Plant propagation technique of fruit crop	15 th - 17 th June,10	Kerelapuram	24	06	30	90
15	Pest disease & weed management in rice	12 th - 14 th July,10	Kerelapuram	22	09	31	93
16	Cat fish culture & induced breeding of IMC	12 th - 14 th July,10	Kerelapuram	29	01	30	90
17	Pest, disease management of vegetable & cole crops	27 th to 29 th Dec,10	Kerelapuram	31	0	30	93

Sl. No.	TITLE	DATE	VILLAGE	PARTICIPANTS			TRAINEE DAYS
				M	F	T	
18	PoP for HYV of pulses & oil seeds	27 th to 29 th Dec,10	Kerelapuram	23	07	30	90
19	Balance fertilizer application in plantation crops	01 st - 03 rd Feb, 11	Kerelapuram	21	02	23	69
20	Nutrition kitchen gardening	01 st - 03 rd Feb,11	Kerelapuram	20	01	21	63
21	Multi-tier cropping system	01 st - 03 rd Feb,11	Kerelapuram	19	03	22	66
22	Composite fish culture with IMC	01 st - 03 rd Feb,11	Kerelapuram	18	03	21	63
23	Non traditional vegetable production	01 st - 03 rd Feb,11	Kerelapuram	19	04	23	69
24	Land and agriculture development	05 th - 06 th Feb,11	Kerelapuram	15	15	30	60
25	Land management of degraded soil for agriculture	07 th - 10 th Feb, 11	Kerelapuram	46	04	50	200
26	Bio-mass fired copra drier	21 st - 22 nd Feb,11	Kerelapuram	14	03	17	34
27	Pre and post harvest management for mango	22 nd - 23 rd Feb,11	Kerelapuram	16	04	20	40
28	Copra drier for livelihood	24 th - 26 th Apr,11	Kerelapuram	18	12	30	60
29	Dal mill for livelihood	24 th - 26 th Apr,11	Kerelapuram	20	10	30	60
30	Importance of seed rice cultivation	22 nd - 24 th Jun,11	Kerelapuram	15	03	18	54
31	Scientific PoP for rice cultivation	22 nd - 24 th Jun,11	Kerelapuram	20	03	23	69
32	Carp breeding and nursery pond management	02 nd - 04 th Aug,11	Kerelapuram	21	0	21	63
33	Scientific protected vegetable cultivation technique	08 th - 10 th Nov,11	Kerelapuram	19	0	19	57

Sl. No.	TITLE	DATE	VILLAGE	PARTICIPANTS			TRAINEE DAYS
				M	F	T	
34	Livelihood options in agriculture and allied sector for degraded coastal land	29 th - 31 st Dec,11	Kerelapuram	48	34	82	246
35	Agriculture and allied fields for livelihood	09 th -10 th , Feb12	Kerelapuram	13	03	16	32
36	Fish breeding & pond management	23 rd -24 th April,12	Kerelapuram	12	03	15	30
37	Tuber crops cultivation	1 st -2 nd May, 12	Kerelapuram	38	14	52	104
38	Carp breeding & model for satellite nurseries in Andaman	11 th -15 th June, 12	Kerelapuram	41	-	41	205
39	Rodent, pest management in paddy	12 th -13 th Sept, 12	Kerelapuram	27	08	35	70
40	Improved farm practices for additional Income	12 th Oct.12	Gandhinagar	20	02	22	22
41	Quality seed production of agricultural crops	9 th -11 th Nov, 12	Kerelapuram	27	5	32	96
42	Rodent, pest management in paddy	23 rd Dec, 12	R.K Gram	30	10	40	40
43	Rodent, pest management in paddy	24 th Dec, 12	Milangram	32	02	34	34
44	Rodent, pest management in paddy	25 th Dec.,12	Madhupur	30	25	55	55
45	Protective cultivation of vegetable crops	4 th -5 th Jan .,13	Kerelapuram	14	16	30	60
46	Enterprise development	19 th - 21 st Feb, 13	Kerelapuram	19	4	23	69
47	Maize for livelihood	12 th Nov,13	Kerelapuram	10	05	15	15
48	Maize for livelihood	13 th Nov,13	R.K.Gram	36	14	50	50
49	Maize for livelihood	14 th Nov,13	V.S.Pally	25	13	38	38
50	Quality seed production in agriculture crops	10 th -12 th Sept,13	Kerelapuram	38	20	58	174

Sl. No.	TITLE	DATE	VILLAGE	PARTICIPANTS			TRAINEE DAYS
				M	F	T	
51	Rodent pest management	10 th Sept, 13	Kerelapuram	07	22	29	29
52	Rodent pest management	11 th Sept, 13	Khudhirampur	25	12	37	37
53	Rodent pest management	12 th Sept, 13	R.K.Gram	28	14	42	42
54	Rodent pest management	12 th Sept, 13	Subhas gram	30	15	45	45
55	Poly culture of carp and orchard management	7 th April, 13	Madhupur	19	12	31	31
56	Site selection for orchard	2 nd May, 13	Subashgram	26	13	39	39
57	Planting technique of fruit sapling	25 th May, 13	Kalipur	23	10	33	33
58	Suitable HYV of rice for higher yield	26 th June, 13	Khudirampur	24	15	39	39
59	Improved rice cultivation practices	27 th June, 13	R.K.Gram	19	01	20	20
60	Effective water management in rice cultivation	28 th June, 13	Madhupur	26	20	46	46
61	Technology to improve production in agriculture & allied fields	30 th June, 13	R.K.Gram	16	13	29	29
62	Improved rice cultivation practice	1 st to 2 nd July, 13	R.K.Gram	25	05	30	60
63	Weed, manuring & pest control technique in rice	13 th July, 13	Madhupur	19	12	31	31
64	Demonstration on different method of harvesting in rice	2 nd Aug, 13	Subashgram	35	14	49	49
65	Rodent pest management	10 th Sept, 13	R.K. Gram	07	22	29	29
66	Rodent pest management	11 th Sept, 13	Subashgram	25	12	37	37
67	Quality seed production in agriculture crops	12 th Sept, 13	Keralapuram	38	20	58	174
68	Rodent pest management	12 th Sept, 13	Keralapuram	28	14	42	42
69	Rodent pest management	12 th Sept, 13	Madhupur	30	15	45	45

Sl. No.	TITLE	DATE	VILLAGE	PARTICIPANTS			TRAINEE DAYS
				M	F	T	
70	CARI Brinjal-1 cultivation technique	15 th -16 th Sept, 13	Kerelapuram	25	10	35	70
71	Seed treatment methods for disease & pest control	18 th Sept,13	Kerelapuram	31	16	47	47
72	Cultivation of truthfully labelled seeds of HYV of rice	21 st Sept, 13	Khudirampur	16	07	23	23
73	Sensitization on seed preservation after Harvest	26 th Sept, 13	Swarajgram	20	11	31	31
74	Pest control method for seeds	29 th Sept, 13	Milangram	15	06	21	21
75	Maize for livelihood	12 th Nov,13	Baratang	10	05	15	15
76	Maize for livelihood	13 th Nov,13	Kerelapuram	36	14	50	50
77	Maize for livelihood	14 th Nov,13	Webi	25	13	38	38
78	Maize crop in rice fallow for better return	17 th Nov, 13	Kalipur	18	12	30	30
79	Spice crop cultivation	10 th Dec,13	Kerelapuram	83	33	116	116
80	Spice crop cultivation	11 th Dec, 13	Mayabunder	15	12	27	27
81	Nursery raising technique in arecanut	18 th Dec, 13	Kerelapuram	40	20	60	60
82	Nursery raising technique in clove & black pepper	21 st Dec, 13	Kerelapuram	15	05	20	20
83	PoP of paddy ,vegetables & fruit crops	16 th - 17 th Jan, 14	Kerelapuram	22	-	22	44
84	Pest identification and control in brinjal, tomato,chilli &bitterr gourd	20 th Jan, 14	Madhupur	13	07	20	20
85	Mixed carp farming	21 st to 23 rd Jan, 14	Kishorinagar	54	5	59	177
86	Pond management for carp cultivation	26 th Jan,14	Kerelapuram	36	12	48	48
87	Improved technique of vegetable production in Islands	22 nd Jan, 14	Kerelapuram	7	5	12	12

Sl. No.	TITLE	DATE	VILLAGE	PARTICIPANTS			TRAINEE DAYS
				M	F	T	
88	Exposure on livelihood options	24 th Feb, 14	Kerelapuram	40	13	53	53
89	Rodent and pulses carp management	21 st March, 14	Nabagram	11	6	17	17
90	Rodent management	22 nd March, 14	Khudirampur	15	06	21	21
91	Promotion of nutritious kitchen garden and Value addition	23 rd March, 14	Kerelapuram	27	3	30	30
92	Scientific cultivation of rice	27 th March,14	Kishorinagar	15	5	20	20
93	Scientific cultivation of rice	27 th March,14	Nabagram	13	12	25	25
94	Improved technique of HYV rice production	10 th April,14	Swarajgram	26	12	38	38
95	Improved technique of HYV rice production in Islands	23 rd April,14	Badurtikry	32	18	50	50
96	Management of "Peking Cross under backyard"	14 th May ,14	Kerelapuram	23	10	33	33
97	Livelihood options in horticulture, animal science and fisheries	17 th May,14	Kerelapuram	25	10	35	35
98	HYV of rice seed	22 nd May,14	Kerelapuram	25	15	40	40
99	HYV of rice seed	10 th June ,14	Nabagram	30	15	45	45
100	High quality of rice & nursery management	26 th June, 14	Badurtikry	50	27	77	77
101	High quality of rice & nursery management	26 th June,14	Swarajgram	22	03	25	25
102	High quality of rice & nursery management	27 th June ,14	Nabagram	28	22	50	50
103	High quality of rice & nursery management	27 th June, 14	D.B.Gram	15	06	21	21
104	High quality of rice & nursery management	17 th July,14	Nabagram	9	5	14	14

Sl. No.	TITLE	DATE	VILLAGE	PARTICIPANTS			TRAINEE DAYS
				M	F	T	
105	Value Additions of Flower Crops	22 nd July,14	R.K.Gram	4	28	32	32
106	High quality of rice & Nursery Management	28 th August, 14	Khudirampur	12	5	17	17
107	Commodity Trading	31 st Aug, 14	Kerelapuram	20	7	27	27
108	Pest and diseases control in HYV of rice	11 th Sept., 14	Swarajgram	10	20	30	30
109	Pest and diseases control in HYV of rice	15 th Sept,14	Rabindrapally	13	10	23	23
110	Pest and diseases control in HYV of rice	18 th Sept,14	Madhupur	15	13	28	28
111	Pest and diseases control in HYV of rice	20 th Sept,14	V.S.Pally	07	09	16	16
112	Pest and diseases control in HYV of rice	17 th Oct, 14	Badurtikry	07	10	17	17
113	Pond based farming system	28 th Oct, 14	Kerelapuram	14	02	16	16
114	Inter cropping system n annual & perennial crops	28 th Oct, 14	Kalipur	12	07	19	19
115	Pond based farming system	29 th Oct, 14	Kerelapuram	11	09	20	20
116	Inter cropping system in annual & perennial crops	29 th Oct, 14	Kalipur	12	02	14	14
117	Agriculture for livelihood	30 th Oct, 14	Badurtikry	27	04	31	31
118	Multitechniques for ornamental plants	30 th Oct,14	Kalighat	16	04	20	20
119	Safe use of insecticides in agriculture	02 nd Nov,14	Kerelapuram	28	12	40	40
120	Promotion for conservation of farmer variety of pulses of A& N Islands	04 th Nov,14	Kerelapuram	91	24	115	115
121	Pulses production technology	21 st Dec,14	Kerelapuram	33	07	40	40
122	Farmers participatory varietal selection of aath number dhan	23 rd Dec,14	Subashgram	06	14	20	20

Sl. No.	TITLE	DATE	VILLAGE	PARTICIPANTS			TRAINEE DAYS
				M	F	T	
123	Flower cultivation a viable livelihood	30 th Dec, 14	Kerelapuram	27	4	31	31
124	Dry fish production & techniques	31 st Dec, 14	Durgapur	36	0	36	72
125	Importance of seeds and seed treatment	12 th Feb,15	Kerelapuram	25	15	40	40
126	Floral bouquet making as livelihood	18 th Feb,15	Kerelapuram	0	31	31	31
127	Farmers right	3 rd March ,15	Kerelapuram	23	04	27	27
128	Postharvest processing and value addition in fruits and vegetables	23 rd May,15	Kerelapuram	28	20	48	48
129	HYV of rice and nursery management	11 th June, 15	Kerelapuram	18	03	21	21
130	Participatory method for seed production in field crops	8 th Oct, 15	Kerelapuram	48	14	62	62
131	Cultivation of non traditional vegetables	12 th Oct,15	Kerelapuram	45	18	63	63
132	Cultivation of black pepper , ginger, and turmeric as livelihood option for islands farmers	24 th Dec, 15	Kerelapuram	45	25	70	140
133	Pulse cultivation technique with good agriculture practice	24 th Dec.,15	Kerelapuram	38	13	51	51
134	Farmers producer organisation and PACS as MSC	3 rd Feb.16	Diglipur	180	96	276	276
135	Post harvesting processing & value addition in fruit and vegetable	13 th March, 16	Kerelapuram	22	6	28	28
136	HYVof rice and nursery management	29 th June, 16	Kerelapuram	22	02	24	24
137	Agriculture as livelihood	01 st Nov.,16	Kerelapuram	38	52	90	90

Sl. No.	TITLE	DATE	VILLAGE	PARTICIPANTS			TRAINEE DAYS
				M	F	T	
138	Rodent and pest management in paddy field	2 nd Nov.,16	Kerelapuram	21	11	40	40
139	Safe use of agro- chemical : human health and environment safety	2 nd Nov.,16	Kerelapuram	21	11	40	40
140	Weather based agricultural practice	2 nd Nov.,16	Kerelapuram	19	06	25	25
141	Weather based agricultural practice	03 rd Nov.,16	Kalighat	36	11	47	47
142	Rodent and pest management in paddy field	04 th Nov.,16	Radhanagar	22	21	43	43
143	Poultry and goat farming management practice	30 th Nov.,16	Kerelapuram	31	11	42	42
144	Livestock farming in livelihood support in N & M Andaman	30 th Nov.,16	Madhupur	9	19	28	28
145	Integrated crop management in Field crops in Islands conditions	28 th Dec.,16	Subashgram	17	06	23	69
146	Recent advance in cole crop vegetables cultivation	28 th Dec.,16	Madhupur	21	11	32	64
147	Spice cultivation	31 st Jan., 17	Keralapuram	70	14	84	84
148	HYV of rice, pulses, vegetables and seed production	2 nd Feb.,17	Ramnagar	53	02	55	55

ORC TREE



ORC tree depicting application of doable technologies for doubling the income of the farmers at North Andaman



Dr.S.K. Zamir Ahmed, started his professional career as a Subject Matter Specialist (Agronomy / Extension) in the year 1994 at KVK, Port Blair, and thereafter became Senior Scientist (Agrl. Extn.) in 2007 and Principal Scientist in 2013 ,at ICAR-Central Island Agricultural Research Institute, Port Blair. As in-charge of Priority Setting, Monitoring and Evaluation Cell has contributed to overall management of research projects and as Head, Social Science Section, was involved in various research related to technology assessment, refinement, farming system, technology transfer and impact of climate change on island agriculture.

With his rich experience of more than 25 years of research and extension, he has spearheaded number of technological application covering 323.20 ha of area of crops across the island. He contributed in developing the rehabilitation model and extended technical expertise to A & N Administration for planning policy for restoration of agriculture in the island after the Tsunami and has also facilitated Plant Genome Savior Award for the Karen community of North Andaman. He has more than 32 research papers, beside technical articles, books, and extension bulletins to his credit. His initiative of translating fourteen technologies as Micro business modules brought reputation to the institute.

For his meritorious contribution to further the cause of agriculture ,he has been recognized both with National and State awards *viz.*, Certificate of Excellence - Best Worker Award (1997), Best Krishi Vigyan Kendra for the Biennium (2000-01), Lt. Governor's Commendation Certificate (2005), Certificate of Team work (2006 & 2016), Best Extension Professional Award (2009), Fellow of CHAI (2012), Best Extension Scientist Award (2014), Fakhruddin Ali Ahmed Award (2014) for out standing research in tribal farming system , Fellow of ASA (2015), BGSM All India Best Agricultural Extension Worker Award (2015),Dr. A.K.Bandopadhyay Outstanding Scientist Award (2016), and Fellow of Mobilization (2016) .



Dr. Sibnarayan Dam Roy, Director, ICAR-Central Island Agricultural Research Institute, Port Blair has been bestowed upon the Fellow of the Prestigious National Academy of Agricultural Sciences (FNAAS), New Delhi .The Fellow is in the section of Fisheries Science; specialization in Fishery Resource Management and Aquaculture. Dr. S. Dam Roy joins the select band of 30 Fellows in the section, since the inception of the NAAS (1990).

He is having more than 25 years of research experience in these islands with more than 100 research paper in national & international journals and authored several books. He is recipient of many national awards prominent among them are Fakhruddin Ali Ahmed Award for research in tribal farming system, Hooker award, ICAR outstanding team research, best book written in Hindi, and Lt. Governors commendation certificate. He is also fellow of several professional societies.