

# FINAL REPORT

National Agricultural Innovation Project (Component 3)

## SUB PROJECT

*“Multi - Enterprise Farming Models  
to Address the Agrarian Crisis of  
Wayanad District of Kerala”*

*Compiled and edited by:*  
Devadas, V. S. and Sunil, K.M.



2014

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FROM..... Dr. V. S. Devadas

*Implemented by:*

*Kerala Agricultural University, Thrissur (Lead Centre)*

*Indian Institute of Spices Research, Calicut*

*Regional Coffee Research Station, Chundale*

*Vegetable and Fruit Promotion Council Keralam*

*Wayanad Social Service Society, Mananthavady*

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**Prof. (Dr) P. Rajendran**  
Vice-chancellor

## Foreword

Wayanad District of Kerala, which comes under the high range zone, is geographically situated on the North-East corner of the State of Kerala adjoining the Coorg area of Karnataka State on the one side and Niligris of Tamil Nadu on the other, is globally reputed for the production of spice crops. Agriculture, -mainly horticulture, is the backbone and mainstay of livelihood income of the people of this backward district. Wayanad also witnessed large scale deforestation of areas once considered as pristine forest land which resulted in climate change, nutrient depletion and soil erosion. Another peculiar feature is the social fabric of the area with a relatively high proportion of ST community who really deserve social support as indicated by Gender Development Index and Human Development Indices of the lowest rank (13<sup>th</sup> and 14<sup>th</sup>) among other Districts .

The District has witnessed one of the worst agrarian crisis ever recorded in the history and its intensity and magnitude led to a series of farmer-suicides in 2005-2007. Reasons are manifold, the chief being the low productivity and drastic fall in prices of the produce.

The NAIP sub project on *Multi enterprise farming models to address the agrarian crisis of Wayanad district of Kerala*, a novel project initiated by KAU on a consortium mode in December 2008 with the financial backing of the World Bank was implemented in nine Grama Panchayths (three Panchayaths each of the Mananthavady, Sulthan Bathery and Vythiri taluks), aiming at viable profitable models that could be replicated. Renovation of paddy cultivation to the tune of 18% increase in productivity and 12% in area; and GI registration of scented paddy varieties could be achieved in the project. Direct interventions have been launched in more than six thousand farm households, besides empowering them with organic certification and bringing them under a common umbrella as members of clusters producing branded organic products. The immediate benefit earned by farmers were 20-30% premium price for farm produce which is a measure of the short term impact whereas the appreciated worthiness of the farm measured by actuarial budgeting is the actual long term impact. Farmer-participatory procurement and marketing of farm produce have realized an additional income of 30-100% for banana, vegetables and tuber crops. A direct comparison of the income levels at prelaunch and post launch done as a part of the project also reveals the impact at the ground level

Besides evolving field level replicable farm models, this project with KAU as Lead Centre, and Wayanad Social Service Society, Regional Coffee Research Station (under Coffee Board), Indian Institute of Spice Research, Vegetable and Fruit Promotion Council Keralam and Waynad District Panchayath as consortium partners has touched at the livelihood of the indebted impoverished farmers and the genuine efforts of the team are laudable. I am convinced that the development models of the sort are the right answer to the problems of the crisis ridden farmer and that the tangible dividends realized is only bound to grow with passage of time.

  
(P. Rajendran)





**Dr. R. Vikraman Nair,**  
Chairman, Consortium Advisory Committee

## Message

*This NAIP on Wayanad was formulated to do our mite to alleviate the misery of the farmers in the agricultural front arising out of a host of adverse factors including change of climate, marketing problems, crop losses and the like. The scientists visualised solutions based on their knowledge and taking into consideration the agricultural situation in Wayanad. These were refined based on discussions with the farmers and a survey of the area. Kerala Agricultural University was the lead centre and the Indian Institute of Spices Research, Coffee Research Station, Chundale, Wayanad Social Service Society, VFPCCK and District Panchayat, Wayanad were the partners.*

*The overall implementation of the scheme was satisfactory one with the role of VFPCCK being rated as one of the best at the national level and that of WSSS being almost as good. All the scientists associated with the programme had put in the very best and had shown exceptional commitment. The roles of Dr.V.K.Raju who conceived and formulated this NAIP. Dr.V.S.Devadas who functioned as the Consortium P.I. for most of the period of implementation, Dr. K.M. Sunil, M/ S T.S. Baburaj and E. B. Abhilash who actually carried out all the field works and Mr. P. Rejeesh who looked after all the office work require to be acknowledged gratefully and complimented.*

*The supply of inputs including planting materials, animals, birds, agricultural implements and agricultural information had its impact in the field. The information the scientists gathered during the implementation of the programme was equally valuable. There were over 20 interventions which were conceived as the most relevant based on theoretical considerations. Experience has shown that the most acceptable were not always the most expected and the most promising were the introductions of the new variety of paddy, Athira, better management of this crop, bitter gourd cultivation, back yard poultry rearing with the new breed Athulya, organic cultivation of spices especially black pepper and multi-layer plantation system combining areca nut, pepper and coffee/ banana. The reasons for the limited success of medicinal plant cultivation, cultivation of cool season vegetables, post-harvest processing and the like are now clearly known and the corrections required to make them more successful are better understood. With this background, the scientists are better equipped to plan for any agricultural development of this backward district of Wayanad.*

*The role of the Consortium Advisory Committee was to oversee the functioning of the NAIP and to provide support in recommending to the National Director the budgetary changes and mid-course corrections. All the members of this CAC including the representatives of organisations, farmers, and scientists were unanimous in providing this support. It was a great opportunity for me to be associated with the implementation of this NAIP and I feel truly proud of being associated with such a group.*

*L. S. S.*  
10.4.2014  
*R. Vikraman Nair*



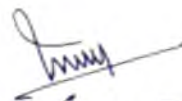


**Associate Director of Research &  
Consortium Principal Investigator**

## Preface

This sub project of NAIP “Multi enterprise farming models to address the agrarian crisis of Wayanad District of Kerala” was implemented in a consortium mode by the Kerala Agricultural University as the Lead Centre through RARS Ambalavayal in association with the Indian Institute of Spices Research, Regional Coffee Research Station, Chundale, Wayanad Social Service Society, Vegetable and Fruit Promotion Council Kerala and District Panchayat, Wayanad as consortium partners from December 2008 to March 2013, in nine panchayaths covering over 6000 beneficiaries. The interventions resulted in identification of economically viable farming models, means to renovate paddy cultivation and organic farming, farmer-participatory marketing of agricultural produces and commercially successful and sustainable activities to empower unemployed women and youths.

We are glad and proud to bring out this final report on successful completion of the project. We thankfully acknowledge the World Bank, ICAR, Kerala Agricultural University, Consortium Partners, implementing team, members, Consortium Advisory Committee and Consortium Monitoring Unit, the NAIP Sustainable Fund Management Committees and the Local Self Governments for their assistance, guidance and services rendered for successful implementation of the Project

  
(V. S. Devadas)

**Associate Director of Research &  
Consortium Principal Investigator**

# Acknowledgement

*We thankfully acknowledge the following organizations and personnel for their valuable assistance, guidance and services rendered during the implementation of the project:*

Funding agency	The World bank
Management of ICAR	Dr. S. Ayyappan, (Director General, ICAR) Dr. H. Mruthyunjaya, Dr. Bengali Baboo, Dr. D. Rama Rao (National Directors of NAIP), Dr. A.P. Srivastava (National Coordinator - Component 3 of NAIP) Of the ICAR,
Consortium Advisory Committee	Dr. R. Vikraman Nair (chairman), Dr. A.P. Srivastava, Dr. K.U.K. Nampoothiri, Dr. Sreenarayanan, Ms. Lt. Col (Retd) Mary Devassy, M/s. Prasanth Ragesh, H.B. Pradeep, K.V. Dominic, V. Purushothaman
Kerala Agricultural University	Dr. KR. Viswambharan, Prof. (Dr.) P.Rajendran (Vice chancellors) Dr. D. Alexander and Dr. T. R. Gopalakrishnan (Directors of Research), Dr. M.K. Sheela and Dr. PV. Balachandran (Directors of Extensions)
Consortium Monitoring Committee	Dr. M.K. Sheela and Dr. P.V. Balachandran (Chairpersons), Dr. D. Alexander, Dr. T.R. Gopalakrishnan, Dr. E.V. Nybe, Dr. L. Rajamony, Dr. Sajan Kurien, Dr. P.C. Alex, Dr. M. S.Raju,
Consortium partners and CCPIs	Dr. K.N. Shiva, Dr. R. Dinesh (IISR, Calicut), Ms. Jahangir Kassim (VFPCK, Kambalkkad), Adv. Fr. John Choorappuzhakkal (WSSS), M. Selvakumar. C.B. Prakasan, (RCRS Chundale), Adv. George Pothen (District Paanchayath)
Associated Institutions	College of Veterinary and Animal Sciences Pookkot; College of Fisheries, Panangad, KVK Wayanad. District Panchayath and Grama panchayths of Wayand; Krishi Bhavans of Wayand
CCPIs and Implementing team	Scientists of KAU and College of Veterinary and Animal Sciences, Pookkot;

# Abbreviations

AH	: Animal husbandry
CAC	: Consortium advisory committee
CMU	: Consortium monitoring unit
CCPI	: Co- consortium principal investigator
CPI	: Consortium principal investigator
DG	: Director General
DP	: District panchayath
GI	: Geographical indication
HYV	: High yielding varieties
ICAR	: Indian Council of Agricultural Research
IISR	: Indian Institute of Spices Research
INM	: Integrated nutrient management
IPM	: Integrated pest management
KAU	: Kerala Agricultural University
KVK	: Krishi Vigyan Kendra
LSG	: Local Self Government
NAARM	: National Academy of Agricultural Research and Management
NAIP	: National Agricultural Innovation Proejct
NGO	: Non-governmental Organisation
NRM	: Natural Resource Management
RARS	: Regional Agricultural Research Station
RCRS	: Regional Coffee Research Station
SHG	: Self help group
ST	: Scheduled Tribes
VFPCK	: Vegetable and Fruit Promotion Council, Keralam
WSSS	: Wayanad Social Service Society





## सारांश

NAIP का "Multi - Enterprise Farming Models to Address the Agrarian Crisis of Wayanad District" का उद्भव या प्रस्ताव रखन का मुख्य कारण राज्य के इस जिले में बढ़ते हुए कृषक आत्महत्या है।

इस परियोजना के पहले तीन तालुकों को लक्ष्य बनाया गया जिनकी कुल जनसंख्या 3,63,441 है। इस परियोजना का सिद्धांश लगभग 5000 किसान कुटुंबों को मिल रहा है।

इस परियोजना का मुख्य उद्देश्य एक सभ्य सुस्थिर ग्रामीण रोजगार योजना बनाना है जो कि आर्थिक रूप से गुणकारी हो, जहाँ कि प्रकृत संपदा के लिए हानिकारक न हो और सामूहिक तौर पर लोगों को पसंद भी आए।

एक Baseline survey के तुरंत यहाँ के किसान परिवारों के सामूहिक और आर्थिक स्थिति का आकलन किया गया, gender development index और Human Development Index के अनुसार Wayanad 12<sup>वाँ</sup> और 13<sup>वाँ</sup> स्थान पर है यहाँ की जनसंख्या का 1/4 वाँ भाग रोजगार के लिए खेती पर आश्रित है। सभ्य लागू रिशत है और Mass Media के नए तरंग से अभिकृत हैं। ग्रोथ काल में भूजल स्तर 1-2 सेंटर नीचे गिरने के कारण पानी को किल्लत लोगों को सताति है।

एक परिवार के हिस्से में औसतन 0.57 हेक्टर भूमि है और इसमें एक चौथाई हिस्सा में प्रचलित सिंचाई मौजूद है। यह की मुख्य फसल काली मिर्च और काँफ़ी है। परंतु बदलते आर्थिक मूल्य और प्रकृत के कारण, इसमें भी प्रचलित परिवर्तन देखने का मिल रहा है। चावल को खेती में काम पाई गयी और यह यहाँ की चञ्चल संपदा के लिए गुणकारी नहीं है।

1. मिट्टी के शास्त्रीय परीक्षण में प्राप्त हुए निष्कर्षों का आधार बनाकर जब शास्त्रीय रीति से चावल को खेती को गयी ता उपज में 20% और कृषि स्थल के विस्तार में 10% की बढ़ातरी पायी गयी
2. Wayanad के 'जोरकशाला' और मधकशाला किस्म के सुगंधित चावल का Geographical Indication Registration भित्ति से प्रारंभिक मूल्य पर 50% की बढ़ातरी मिली।
3. रापण फसल के कृषि स्थल में लागू गए परिवर्तन और उचित शास्त्रीय विधि के अनुरूप लागू गए फसल प्रबंधन के कारण कृषि स्थल की उत्पादकता में वृद्धि देखी गयी
4. 15 कृषक अधीन केंद्रों और एक रीटेल बाजार की स्थापना के कारण किसानों को उनके उपज पर उचित मूल्य मिलने लगा
5. नये कृषि, प्रशासकीय और सुगंध व्यंजनों के मूल्य वृद्धि से किसानों को मुनाफा हुआ और कोटनराकों के प्रयोग में कमी हुई
6. स्त्री और कवयलौ सराफ़ाकरण के लिए स्वयं सहायता संघ का रूपीकरण किया गया।

व्यवसायिक स्तर पर नारियल, रबर और कले को खेती लाभदायक प्रतीत होती है। इसके अलावा शक्कर, फूल और आषधों कृषि भी पैर पसार रही है।

एक गृह का वार्षिक आदाय करीबन 346432/ है ज्यादातर किसान अपनी फसल का मूल्य वृद्धि कृषि स्थल पर ही करते हैं और इसकी बिक्री स्थानीय बाजार में की जाती है नहीं तो फसल कटाई के पहले ही contractor को बच दो जाती है। साधारणता यहाँ पशुपालन और वकरोपालन का प्रचलन है। मुख्य कृषि व्यापक नहीं है।

भारतलव है कि मास मीडिया (Mass Media) की इतनी व्यापकता के बावजूद किसान अपने सह किसानों से ही जानकारी प्राप्त करते हैं।

केवल 8% किसान ही शास्त्रीय कृषि रीति से अभिभूत हैं और इससे भी 63% किसान इस कृषि रीति से उत्साहित हैं। कृषि निवेश के लिए 79% - 96% किसान बाजार पर आश्रित हैं। Hyv किस्म बीजों का उपयोग 37% लोगों तक सीमित है।

तकनीक प्रसार रुजन्सियों के कार्यक्षमता से किसान संतुष्ट नहीं हैं। 62% जोक और भू-संपत्ति पर कर्ज पर चढ़ा है

इस परियोजना की शुरुआत 5 मुख्य उद्देश्यों के साथ किया गया और इसका मुख्य उपलब्धियाँ निम्न हैं :-





# Contents

	Page
Foreword	3
Preface	5
सारांश	8
Executive Summary	11
<b>Part-I: General Information of sub-project</b>	14
<b>Part-II: Technical Details</b>	16
1. Introduction	16
2. Overall Sub-project Objectives	17
3. Sub-project Technical Profile	17
4. Baseline Analysis	18
5. Research Achievements	20
6. Innovations	47
7. Process/Product/Technology Developed	48
8. Patents (Filed/Granted)	48
9. Linkages and Collaborations	48
10. Status on Environmental and Social Safeguard Aspects	49
11. Constraints, if any and Remedial Measures Taken	50
12. Publications	50
13. Media Products Developed/Disseminated	51
14. Meetings/Seminars/Trainings/Kisan Mela, etc. organized	51
15. Participation in Conference/ Meetings/Trainings/ Radio talks, etc.	53
16. Foreign Trainings/Visits	53
17. Performance Indicators	53
18. Employment Generation	54
19. Assets Generated	54
20. Awards and Recognitions	54
21. Steps Undertaken for Post NAIP Sustainability	54
22. Possible Future Line of Work	54
23. Personnel	54
24. Governance, Management, Implementation and Coordination	55
<b>Part-III: Budget and its Utilization</b>	56
<b>Part-IV: Declaration</b>	56



## Executive Summary

NAIP subproject “Multi Enterprise Farming Models to Address the Agrarian Crisis of Wayanad District of Kerala” was approved in the background of severe agrarian crisis in the backward district of Kerala (Wayanad). The project proposes to apply the concept of achieving sustainable rural livelihoods through economically viable, ecologically safe and socially acceptable technologies.

The project area covered three clusters (three Taluks of Wayanad) with a total population of 3, 63,441. The average family size is 3.27 and majority of members have crossed the age of 60. One third of the population fully depends on agriculture for livelihood. All the respondents could read and write and were formally educated. The asset possessions in households, communication facilities and the exposure to mass media were fairly good. During summer months the water table declines to the tune of 1 to 2 meters, often leading to severe water scarcity. The average holding size is 0.57 hectare, and only one fourth of cultivated land was with assured irrigation.

The cropping pattern in Wayanad has been mainly coffee and pepper based system. Owing to economic and environmental changes, it is getting transformed slowly in favour of crops like rubber and coconut. The rice area has shown a decline, eroding the diversity base of traditional, medicinal / scented rice varieties endemic to Wayanad. Commercial banana cultivation is a profitable enterprise in this area. Currently vegetables, medicinal plants and floriculture are also gaining importance in the cropping pattern.

The total annual household income in the project area was estimated at Rs.34643/-; 52% of it being realized from agricultural enterprises. The average household income from subsidiary sources amount to Rs.16534/- in the project area and Rs.13148/- in the control area.

The farmers do not generally adopt value addition practices at farm level. Only 8% of farmers in the project area were exposed to scientific training in agriculture and allied sectors and 63% have expressed their willingness and interest in the programme.

Most often farmers depend on market for all major inputs in crop production (79% - 96%). Only 4% of seed requirements are met from own sources. The HYV coverage among sample households was 37%.



More than 62% of surveyed holdings are indebted and the major dependence was on non-institutional sources. 38% reported prompt repayment and 42% say that there was no diversion of loan amount. Despite high degree of risk in agriculture sector, only 6% have protection under the crop insurance scheme.

Many of the problems in agriculture sector reported by the farmers are related to the supply of quality inputs, crop management and extension support. They requested to make arrangements for quality inputs at affordable rates (63%), and cost effective technologies to address the problems associated with pest / disease / weed menace. Scientific water management programmes and water conservation efforts are demanded by some 42%. Nearly half of the respondents suggest improved extension arrangements.

Considering all the above facts, this project was implemented to enhance the rural livelihood of the Wayanad farmers in a sustainable manner implementing the concept of multilayered farming based on a cluster approach. The selection of the clusters were based on the backwardness of the area, based on per capita agriculture income, sex ratio, percentage of tribal population and literacy rate. The consortium approach in project implementation was followed with Kerala Agricultural University as the lead centre and four consortium partners.

Initially the project was started with five major objectives with more than 25 interventions and later it was restricted to six based on the results of the midterm survey. The significant achievements of the project are as follows:

- Adopting the scientific methods of rice production based on soil test results increased the productivity by 18% and the area by 12%.
- Geographical Indication registration for the popular Wayanadan scented rice varieties Jeerakasala and Gandhakasala was facilitated. It helped farmers to fetch more than 50% premium price.
- Proper space utilization in coffee plantations (annual income of 0.51 lakhs) with introduction of 300 pepper plants, 300 arecanuts, 250 bananas and 12 poultry birds per hectare along with scientific crop management practices could improve farm income by 2.18 lakhs.
- Establishment of 17 farmer owned procurement and two retails centres involving 729 farmers along with transportation facility helped the farmers to get fair price for their produces (30 to 100%) and provided facilities to market their homestead surplus. The total quantity fruit and vegetables traded during the project period were 20.08 lakh tonnes.
- Organic farming, certification and value addition of spices boosted the farm income (20-33%) and helped to reduce the pesticide load. A total of 1518 farmers were benefited and 906 hectares of land was brought under organic farming.



- Women and tribal empowerment activities through the formation of various Self Help Groups (24 numbers) on nursery management, seed production, post harvest handling of fruits and vegetables and backyard animal/bird rearing helped the women folks to manage their natural, social, economic resources and agricultural development including crop production, livestock production, and post harvest operations. The average income from various activities was in the tune of Rs. 40000 per annum.
- For providing irrigation facility and to improve recharge of the ground water, a roof water harvesting structure was constructed and a check dam was renovated which in turn resulted in the availability of safe drinking water (18 families) and brought an additional 60 acres under paddy cultivation.
- A total of 9 farmer groups named, RARS-NAIP Agricultural Sustainable Committees were formed and a sum of Rs. 20.01 lakhs was collected for post project sustainability.
- The activities of Governmental Institutions like KAU, IISR, RCRS and VFPCCK enhanced the confidence of the farming community and helped to fetch fare market price for their produces. Krishi Bhavans under State Agricultural Department, Animal Health Department, and Fisheries Department were also involved in the scheme.





## Part I : General Information of Sub-Project

1. Title of the Sub-project: Multi Enterprise Farming Models to Address the Agrarian Crisis of Wayanad District of Kerala
2. Sub-project Code: NAIP (SRIS-C) III/42/2006-KAU
3. Component: 3
4. Date of sanction of sub-project: Dec 2008
5. Date of completion: March 2014
6. Extension if granted, from : June 2013 to March 2014
7. Total sanctioned amount for the sub-project: 623.936 lakhs
8. Total Expenditure of the sub-project: Rs. 577.196 lakhs
9. Consortium Leader:

Vice Chancellor,  
Kerala Agricultural University  
KAU (PO), Thrissur- Kerala- 680 656  
Phone: 0487- 2438001, E mail : vc@kau.in

### 10. List of Consortium Partners:

	Name of CPI/ CCPI with designation	Name of organization and Address, Phone & Fax, Email	Duration (From-To)
CPI	Dr. V. S. Devadas, Associate Director of Research, RARS, Ambalavayal, Wayanad	RARS, Ambalavayal, Wayanad Kerala Agricultural University, Kerala 673593 Ph. 04936 - 260421, 260561, Fax: 04936 - 260421, naipwayanad@gmail.com.	Dec 2008 - March 2014
CCPI1	Mr. Jahangir Khasim, Manager, Project Area, Wayanad	Vegetable and Fruit Promotion Council -Keralam, (VFPCK), Building No-G.525, Ground Floor, Kaniapatta Panchayath, Kambalakkad P.O, Kalpetta, Wayanad-673 121 Ph. 04936 - 286012, 094472 26275, Fax: 0484 - 2427570 vfpc@asianetindia.com	Dec 2008 - March 2014



CCPI 2	Dr. K. N. Shiva Senior Scientist (Horticulture), Indian Institute of Spices Research Dr. Dineesh	Indian Institute of Spices Research, PB No:1701, Marikunnu - P. O, Kozhikode 673012, Kerala. Ph: 0495 - 2731410 Fax: 0495 - 2731187	Dec 2008 -May 2010 May 2010 -March 2014
CCPI 3	Mr. Prakasan, P Deputy Director (Research), Regional Coffee Research Station	Regional Coffee Research Station, Chundale, 673 123, Wayanad District, Kerala. Ph: 04936 - 202256 rcrschundale@yahoo.com	May 2010 - March 2014
CCPI 4	Adv. Fr. John Joseph Choorapuzhayil, Director, Wayanad Social Service Society.	Wayanad Social Service Society, P.B.No.16, Mananthavady, Wayanad, Kerala -670 645 Phone 04935 240314 Fax. 04935 242388 wsss@sify.com	Dec 2008 - March 2014

**11. Statement of budget released and utilization partner-wise  
(Rs in Lakh):**

	CPI/ CCPI Name, designation & address)	Total Budget Sanctioned	Fund Released (up to Closing Date)	Fund Utilized (up to Closing Date)
CPI	Dr. V. S. Devadas, Associate Director of Research, KAU	498.142	447.796	471.826
CCPI 1	Mr. Jahangir Khasim, Manager, Project Area, VFPC	33.288	31.607	31.856
CCPI 2	Dr. K. N. Shiva Senior Scientist (Horticulture), IISR	12.156	14.186	12.156
CCPI 3	Mr. P. Prakasan, Deputy Director (Research), RCRS	27.372	10.350	20.159
CCPI 4	Adv. Fr. John Joseph Choorapuzhayil, Director. WSSS	38.784	26.750	26.750
CCPI 5	Adv George Pothan Standing Committee Chairman, District Panchayat	14.195	14.449	14.449
Total		623.937	553.511	577.196

CPI-Consortia Principal Investigator; CCPI-Consortia Co-Principal Investigator



## Part-II : Technical Details

### 1. Introduction

Wayanad district which lies in the north eastern part of Kerala State is one among the most underdeveloped regions in India. The district lies between northern latitude 11° 27' and 15° 58' and east longitude 75° 47' and 70° 27'. This is the only district of Kerala, categorized as backward by the Planning Commission of India. The social fabric of the district is distinctly different from the rest of Kerala, with the highest proportion of tribes, low sex ratio and environmentally most fragile ecosystem (the highest proportion of geographical area under forests/high gradient). The district has a purely agricultural dependant economy with no industry to boast of. The total geographical area and population of Wayanad district are 2, 12,560 ha and 8, 16,558 respectively, which account for 5.48 per cent and 2.31 per cent of Kerala (2011 census). Tribes form 17.4 per cent of the total population of the district.

The district is endowed with rich forest cover (37 %) to suit the designed national standards. The Gross Cropped Area is 97.82% of the geographical area, mainly dominated by the cash crops. The major plantation crops tea, coffee, pepper and arecanut together constitute 38% of the cropped area. Coffee, with a total area of 67,429 ha, is grown as mono crop in the homesteads of more than 80% of small and marginal farmers of Wayanad district. In Wayanad district black pepper is grown in 42, 287 ha which forms 71% of total area under spice crops in the district. Moreover, out of the total estimated 1, 55, 855 holdings in the district of Wayanad, 83% belong to either small or marginal farmers. Mono-enterprise agriculture is prevalent among most of these homesteads and the inherent instability of this mono-enterprise system has upset the livelihood security of the farmers leading to serious agrarian crisis in Wayanad since 1998. The falling agricultural income of households is reflected in rising indebtedness and poor performance of rural institutions. The farmer suicide rates also reflect the serious state of affairs. According to official statistics from 1999 April to June 2006, 379 farmers have committed suicide in Wayanad. The actual number would be, by all means, much higher than this.

Main reasons for the taking up of this project are as follows:

- Low productivity of commercial crops of the district arising from senility of plantations, use of local varieties, incidence of pest and diseases, natural calamities, changes in climate, etc.

- Area under paddy has decreased drastically from 30,000 ha to 4000 ha during the last three decades. The productivity has also come down. There is severe drop in ground water storage.
- Indiscriminative use of large quantities of pesticides and chemical inputs has degraded the soil and ecosystem.
- Unpredicted, frequent fluctuations and low price of farm produce have adversely affected the economy of farmers.

## 2. Overall Sub-project Objectives

This project was proposed to enhance the rural livelihood of the Wayanad farmers in a sustainable manner implementing the concept of multilayered farming based on a cluster approach. The project was implemented in three clusters in the district. The selection of the cluster was purposive, based on the backwardness of the area, which is decided based on per capita agriculture income, sex ratio, percentage of tribal population and literacy rate. The most backward clusters were selected for the project.

The specific objectives of the project are:

- i. Productivity enhancement through optimal use of resources and technologies including organic farming.
- ii. Women and tribal empowerment through agri based self employment programmes.
- iii. Developing a viable system for procurement and marketing of agricultural produce with or without value addition.
- iv. Conservation and management of soil and water resources to mitigate drought and other natural calamities.
- v. Capacity building for human resources development.

## 3. Sub-Project Technical Profile

Major activities carried out by the consortium partners were as follows:

### *Kerala Agricultural University*

- Interventions for promotion of paddy.
- Arranging production of planting material and other inputs for productivity and profitability enhancement.
- Soil and water conservation.
- Popularization of farm mechanization.
- Capacity building programmes for farmers, unemployed youth, women, tribes, SHG members and project staff.
- Post harvest technology and value addition of fruits, spices and vegetables



### *Vegetable and Fruit Promotion Council – Keralam*

- Developing a viable system for procurement and marketing of the marketable surplus of fruits and vegetables from small holdings at remunerative price

### *Wayanad District Panchayat*

- Overall coordination of the three tier LSGs' in the cluster area.
- Popularizing agricultural produce/ products of microenterprises with or without value addition.

### *Indian Institute of Spices Research (ICAR)*

- Profitability enhancement using IISR varieties of black pepper and production and supply of nuclear planting materials of black pepper and ginger (IISR Variety- Varada).
- Popularization of remunerative mixed farming models involving ginger.

### *Regional Coffee Research Station (Coffee Board)*

- Soil analysis and soil health improvement for productivity and profitability enhancement through scientific management of coffee.
- Capacity building programmes in coffee production and value addition.

### *Wayanad Social Service Society, Wayanad*

- Certification, production and procurement of organic spices, coffee and other farm produce to ensure higher returns and profitability.
- Promotion of medicinal and aromatic plants cultivation in an organic mode under buy back scheme.

## **4. Baseline Analysis**

The baseline survey was conducted to gather the benchmark information on the social and economical aspects of the farm families in the project area based on the information gathered from a sample of 362 farmers and comparison of 54 farmers from the control area.

The Gender Development Index and Human Development Index for Wayanad are occupying the 12<sup>th</sup> and 13<sup>th</sup> position among 14 districts in Kerala. The average family size is 3.27 and majority of members have crossed the age of 60. One third of the population fully depends on agriculture for livelihood. All the respondents could read and write and people are formally educated. The asset possessions in households, communication facilities and the exposure to mass media are fairly good. During summer months the water table declines to the tune of 1 - 2 meters, often leading to severe water scarcity. The average holding size is 0.57 hectare, and only one fourth of cultivated land is with assured irrigation.

The cropping pattern in Wayanad has been mainly coffee and pepper based. Owing to economic and environmental changes, it is getting

transformed slowly in favour of crops like rubber and coconut. The rice area has shown a decline, eroding the diversity base of traditional, medicinal/ scented rice varieties endemic to Wayanad. Commercial banana cultivation is a profitable enterprise in this area. Currently vegetables, medicinal plants and floriculture are also gaining importance in the cropping pattern.

The total annual household income in the project area is estimated at Rs.34643/-; 52% of it being realized from agricultural enterprises. The average household income from subsidiary sources amount to Rs.16534/- in the project area and Rs.13148/- in the control area.

The farmers do not generally adopt value addition practices at farm level and sell their produce in nearby markets or through pre harvest contractors. But pepper and coffee are stored and retained at home mainly by large farmers (26%), for future sale when prices are better. Livestock rearing is confined to 52% of respondents. Generally, dairy (cow), goat and poultry are practiced. The dairy enterprise is not found remunerative, if all costs (Cost C) are taken in to consideration. The net income at paid out cost level (cost A1) is only Rs.3370/- per animal per annum. In goat farming it is Rs.3445/-. However, owing to house hold nutritional advantages and resource cycling prospects farmers maintain these enterprises. Poultry farming is of backyard rearing in nature and is managed by women folks. Fisheries enterprise is not yet a popular activity and there is no scope for marine fisheries.

Though mass media is a major source of general information most of the farm level decisions are based on the advice by fellow farmers. Only 8% of farmers in the project area are exposed to scientific training in agriculture and allied sectors and 63% have expressed their willingness and interest in the programme. 19% of the farmers have expressed their interest in fishery enterprise.

Most often farmers depend on market for all major inputs in crop production (79% - 96%). Only 4% of seed requirements are met from own sources. The HYV coverage among sample households is reported as low (37%). Poor extension machinery, non-availability and absence of collective action are reported as the major reasons for this.

Generally, the respondents are not satisfied with the functioning of extension agencies both in agriculture and livestock sector (54%). Need based (31 - 56%) or rare visit are the common practice of these agencies and regular visits are reported by only 7 - 17% in both livestock / agriculture sector.

More than 62% of surveyed holdings are indebted and the major dependence is on non-institutional sources. Prompt repayment is reported as 38% and 42% say that there is no diversion of loan amount. Despite high degree of risk in agriculture sector, only 6% have protection under the crop insurance scheme.

Many of the problems in agriculture sector reported by the farmers are related to the supply of quality inputs, crop management and extension

support. Farmers requested to make arrangements for quality inputs at affordable rates (63%), and cost effective technologies to address the problems associated with pest / disease / weed menace. Scientific water management programmes and water conservation efforts are demanded by 42%. Nearly half of the respondents suggest improved extension arrangements.

## 5. Research Achievements

Interventions undertaken under various objectives of the Project, and their impacts as revealed in the final evaluation are presented below:

### I. Productivity and profitability enhancement through optimal use of resources and technologies including organic farming.

#### i) Restoring paddy cultivation

In addition to improving the productivity and income from paddy, the project envisaged restoring the paddy cultivation to enhance the ground water recharging and improve agro-ecological situations. It was also necessary to expand rain water harvesting mechanisms and to adopt water saving agro-techniques and irrigation. Rice is the most important food crop of Wayanad district. Wayanad once had about 30,000 hectares of area under paddy cultivation. The name Wayanad itself came from "Wayal Nadu" which means "the land of paddy fields." Today, rice is cultivated only in 12,000 hectares. The remaining area is occupied by banana or arecanut or other non-farm activities. This conversion has resulted in many ecological and social problems and is the major reason for falling of groundwater level, which gradually led to drought situation in Wayanad. More over farmers gave up rice cultivation because of its low profitability due to high labour costs as well as low level of productivity. Uninterrupted rainfall during a part of monsoon months, unavailability of labour, a larger presence of local varieties in the field, and low fertilizer use efficiency, high pest and disease infestation were the important constraints to improved yields. Systematic efforts for reviving paddy were taken up as a part of this project. The major interventions were:

- Popularizing soil test based Integrated Nutrient Management
- Cultivation of vegetables, pulses and oil seeds in paddy fallows
- Screening of varieties for disease and pest resistance/tolerance and also to grain shedding
- Introduction of bio-control measures in disease and pest management to reduce the harmful effects of pesticide and cost of cultivation.
- Mechanization of farm operations
- Restoration of area under paddy cultivation

Soils of this region are normally acidic in reaction (pH of the paddy soils) and contain high amounts of Fe and Al oxides and hydroxides. Fixation





of applied P by the oxides and hydroxides is a common problem that hinders uptake of P by crops. Through NAIP, awareness was created about the specific soil problems and measures to overcome the same. Regular soil testing and scientific timing and nutrient management were introduced. Liming materials and fertilizers were supplied through NAIP.

Programmes for identification of a suitable variety under Wayanad conditions were also carried out. Among the different High Yielding Varieties tried, under NAIP, "Athira" performed well in the Wayanad conditions. The variety was found more resistant to pests and diseases, particularly to blast which is widespread and severe. The non-grain shedding nature of the variety provided protection against the vagaries of untimely rainfall more often during the harvesting time.

Another stumbling block in paddy cultivation is scarcity of labour. The farmers hesitate and often abandon cultivation primarily because of lack of timely availability of farm workers. The output of work is also lower and inefficient and hence cost of operation becomes exorbitant, leaving farming enterprises at loss. To solve the problem of high labour cost and shortage of labour, a well-trained group of agricultural labourers in farm machineries were formed. The trained labourers are then brought under a self help group called as "RARS - NAIP Kisan Haritha Sangham". Training in the operation and servicing of various agricultural machineries especially used in paddy cultivation was provided to the member at Agricultural Research Station, Mannuthy, Thrissur. The group is provided with important machineries and equipment from NAIP.



Fig : 1 Mechanized Transplanting



Fig : 2. Popularization of bio-control agents



Fig : 3. RARS - NAIP Kisan Haritha Sangham



Fig : 4 Cultivation pulses in summer fallows



Continuous cultivation of rice for longer periods with low system productivity, and often with poor crop management practices, results in loss of soil fertility due to emergence of multiple nutrient deficiencies. In such cases, growing of crops like vegetables, pulses and oilseeds in rice fallow is an alternative approach for realizing higher productivity and profitability. Though a large range of warm and cool season vegetables and pulses were tried, the preference and profitability was more for bitter gourd. From the study it was concluded that vegetables particularly bitter gourd was found to be the best option for fallow land cultivation (Table No.1).

No.	Panchayath	Area (ha.)	Production (kg)	Productivity	Cost of Cultivation	Income	Profit
	2013	2013	2013	2013	2013	2013	
1	Ambalavayal	0.05	950	19000	80000	176700	96700
2	Meenangadi	0.20	4500	22500	80000	209250	129250
3	Nenmeni	0.06	1300	21666	80000	201500	121500
4	Kaniyampetta	0.80	18000	22500	80000	209250	129250
5	Kottathara	0	0	0	0	0	0
6	Muttill	0.04	1200	30000	100000	279000	179000
7	Thodernadu	0.16	6000	37500	100000	348750	248750
8	Thavinjal	0.02	550	27500	100000	255750	155750
9	Vellamunda	0.04	1000	25000	100000	232500	132500
	<b>Average</b>	<b>1.4</b>	<b>33500</b>	<b>25809</b>	<b>90000</b>	<b>239087</b>	<b>149087</b>

Utilization of bio-control agents like *Trichogramma*, *Trichoderma*, *Pseudomonas*, etc., is a key component of rice IPM and can be a promising alternative to ecologically disruptive chemical control measures. They also helped to reduce the cost of cultivation and the harmful effects of pesticides and chemicals.



Fig: 5. Cultivation of bitter gourd in paddy fallows

The analysis of final survey results showed that soil-test based fertilizer application along with blast resistant, non-shedding variety "Athira (PTB 52)" provided 16 % increase in productivity in paddy in the project area (Table No.2). The increase in productivity (3.1 tons to 3.6 tons per hectare) helped to protect and restore the paddy cultivation which was declining steadily over the time all over the state.

Table No.2.

## Comparative Evaluation of Rice Production in the Project Area

No.	Panchayath	Area (ha.)		Productivity(t/ha)		Change in productivity(%)	Profit (Rs.)		Change in Profit
		2008	2013	2008	2013	2013-2008	2008	2013	2013-2008
1	Ambalavayal	3.9	3.9	2.6	2.9	0.4	15531.8	20993.8	5462
2	Meenangadi	2.7	2.8	4.0	4.6	0.6	37261.7	46755.3	9493.5
3	Nenmeni	18.8	18.8	3.9	4.1	0.2	33812.2	41271.7	7459.5
	<i>Cluster Mean</i>					<b>0.4</b>			<b>7471.6</b>
4	Kaniyampetta	12.3	12.0	4.2	4.7	0.5	38023.7	48640.1	10616.4
5	Kottathara	3.2	3.4	3.3	4.1	0.8	26319.1	40228.7	13909.6
6	Muttill	7.4	7.5	3.3	4.3	1.0	25979.1	43350.9	17371.8
	<i>Cluster Mean</i>					<b>0.7</b>			<b>13965.9</b>
7	Thodernadu	9.4	9.6	2.2	2.5	0.3	12874.7	13364.2	489.5
8	Thavinjal	5.2	5.2	2.7	3.1	0.4	19975.0	23260.0	3285
9	Vellamunda	3.2	3.2	2.2	2.7	0.5	12705.8	17299.2	4593.5
	<i>Cluster Mean</i>					<b>0.4</b>			<b>2789.3</b>
<b>Over all mean</b>		<b>66.1</b>	<b>66.4</b>	<b>3.1</b>	<b>3.6</b>	<b>0.5</b>	<b>24720.3</b>	<b>32796.0</b>	<b>8075.6</b>

## i) Augmentation of livestock based production systems

In an integrated farming system, livestock and crops are grown within a coordinated framework. The waste products of one component serve as a resource for the other. Result of scientific feeding practices in dairy implemented through the project is presented below.

Scientific feeding practices were popularized in milch cows and also in calves. About 20 tons of feeds was supplied to farmers under the project

Table No.3. Effect of scientific feeding practices in cows

No.	Panchayath	No of cows	Milk Yield (liter/annum)		Rate (Rs)	Income		Change in Profit (Rs)
			Conventional (2008)	Scientific (2013)		Conventional (2008)	Scientific (2013)	
1	Ambalavayal	1	1260	1620	23	28980	37260	8280
2	Meenangadi	1	1404	1548	22	30888	34056	3168
3	Nenmeni	1	1080	1440	23	24840	33120	8280
4	Kaniyampetta	1	720	1134	23	16560	26082	9522
5	Kottathara	1	1296	1602	22	28512	35244	6732
6	Muttill	1	1080	1494	24	25920	35856	9936
7	Thodernadu	1	1260	1674	23	28980	38502	9522
8	Thavinjal	1	1278	1638	22.5	28755	36855	8100
9	Vellamunda	1	1044	1350	23	24012	31050	7038
	<b>Average</b>		<b>1158.0</b>	<b>1500.0</b>	<b>22.8</b>	<b>26383.0</b>	<b>34225.0</b>	<b>7842.0</b>

area. The scientific feeding practices improved the health of animals and increased milk yield by 1.9 litres per day and reproductive parameters came to normal limit (Table No.3).

#### **Sustainable model for paddy-based system:**

Rice production combined with rearing of milch animals (crops + dairy) is the prevailing farming system in Wayanad. Based on the prevailing market rates of different inputs and outputs during the year 2011 – 13, the net return under rice-rice cropping system estimated to be Rs.32796/- per hectare. To meet essential annual requirements of food, fodder and overall improvement in livelihood, and at the same time, securing agricultural sustainability and environmental safety as well, an integrated farming model was developed for rice based cropping system.

The model developed for one hectare area comprises of rice in the first crop season (Nancha: June-July to December-January) and vegetables in the second crop season (Puncha: December-January to March-April) with 2 dairy animals. The details of the recommended IFS are as follows (Table No.4):

**Table No.4. Integrated rice based farming model  
(Area – One hectare)**

No.	Crops	Area/ number	Additional Income (Rs/year)
1	Rice (Existing)	1 ha	32796.0
2	Bitter gourd (Introduced)	1 ha	149087.0
3	Scientific feeding in cow (Introduced)	2 No.s	15684.0
	<b>Total</b>		<b>1,97, 567.0</b>

#### **ii) Rejuvenation of existing homesteads and plantations**

The district of Wayanad is characterized by homestead farming at subsistence level and small holder plantations. Agricultural production and productivity have come down drastically over the years due to various reasons. The major focus of the NAIP was to increase production and productivity of the traditional crops of Wayanad through farming system approach involving livestock and fisheries. The plantation economy of the area is adversely affected by the twin forces of trade liberalization and climate change. Programmes for revitalizing this important sector, through institutional and technological interventions were implemented. To improve nutritional security and increase the income from unit land holding various fruits, spices, tubers etc were introduced in the existing coffee based cropping system. The comparative performances of different species are as follows (Table No.5)

From the Table No. it is revealed that crops like arecanut, banana and pepper are highly profitable under Wayanad conditions.







Fig: 6. Rejuvenation of existing homesteads

**Table No.5. Comparative Performances of Different Crops Introduced in the Multi layered (Home stead) Farming System**

No.	Crop	Productivity kg/ha	Cost of Cultivation Rs.	Income Rs.	Profit Rs.
1	Arecanut	1813	45000	206682	161682
2	Banana	16763	122000	268208	146208
3	Colocasia	4125	45000	49500	4500
4	Elephant foot yam	33818	144000	202908	58908
5	Ginger	3104	120000	161408	41408
6	Tapioca	12354	48000	98832	50832
7	Coconut	1383 nuts/ha	36000	11064	-24936
8	Pepper	325	38000	146250	108250
9	Cardamom	38.5	15000	34650	19650
10	Coffee	945	25000	101115	76115

### iii) Establishment of different models of multilayered and mixed farming systems

Based on the result of activities of the National Agricultural Innovation Project in the farmers' field of nine selected Panchayaths, it was possible to identify the profitable models suitable for Wayanad condition for the improvement of livelihood support of the farming community. The major cropping system prevailing in Wayanad is coffee and pepper based. The new model suggests incorporation of new crops in such a manner to effectively utilize the space in the existing system. The economics of the system is worked out based on the profit from all the crops that can be

scientifically incorporated in to an area of one hectare. The models were developed during 2008-10 period and validated in 2011-13. In addition to this; farmer can obtain 40% additional income by shifting in to organic farming practices.

Banana and poultry were introduced in to the existing coffee + pepper based cropping system. A hectare plantation/holding can accommodate 1000 coffee and 300 pepper plants which together provide a net income of Rs. 1,58,950/year. By introducing 250 banana into the gaps of the existing coffee + pepper system, the farmer can earn an additional income of Rs. 14,621/-. Introducing a backyard poultry unit (12 birds) in to the system fetches an additional income of Rs. 7,056/year- and provide nutritional security to the household/family members. The overall income from this integrated system come to Rs. 1,80,626.8/- (Table No.6).

**Table No.6. Integrated Coffee-Pepper based farming model**

No.	Crops	No. of plants/birds	Income (Rs.)
1	Coffee + Pepper (Existing)	1000 + 300	1, 58, 950
2	Banana (Introduced)	250	14, 620.8
3	Poultry (Introduced)	12	7, 056
	<b>Total annual income of (1+2+3)</b>		<b>1, 80, 626.8</b>

In the homesteads where mono-cropping of coffee was practiced, components like pepper on arecanut, banana, and backyard poultry were introduced. This resource rich system is more economical compared to the monocrop-coffee-model. The net income from the integrated farmers the system is Rs. 2, 17, 812.8/- per annum (Table No.7).

**Table No.7. Integrated Coffee based farming model**

No.	Crops	No. of plants/birds	Income (Rs.)
1	Coffee (Existing)	1000	50, 700
2	Banana (Introduced)	250	14,621
3	Arecanut (Introduced)	300	37, 186
4	Pepper (Introduced)	300	1, 08, 250
5	Poultry (Introduced)	12	7, 056
	<b>Total annual income of five components</b>		<b>2, 17, 813</b>

The integrated farming models offered the highest return as compared to the existing system. The average net income generated from one hectare coffee mono-crop is in the tune of Rs. 76,115/- per annum. If pepper is added to the system the income from the same land will shoot up to Rs. 1, 58,950/-. Adding banana and backyard poultry will boost up the



Fig: 7. Integrated farming systems

annual income to Rs. 1, 80,626.8/-. The farmer can realize an addition income of Rs. 37,186/- if the pepper is trailed on arecanut. Other added advantages of the system are: (i) it provides work throughout year and (ii) Facilitate efficient utilization of land, labour, equipment and other resources. This is a sustainable system, which reduces risk and gives some assured income even if one crop fails in productivity or in market.

#### v. Popularization of Organic Farming and Certification

Popularization of organic production methods and certification for crops of Wayanad for better income and healthier environment is one of the interventions implemented by the partner, Wayanad Social Service Society (WSSS). This was mainly focused in Mananthavady Block of Wayanad district and 1518 farms were brought under organic farming through NAIP. The details are given below (Table No.8):-

As part of NAIP, WSSS organized awareness programs and mobilized 1518 farmers from 36 villages to get their farm certified under organic certification program by M/s Lacon International. The farmers were selected from Thavinjal, Thondernadu and Vellamunda Grama Panchayaths. All the selected farmers are practicing organic farming in a

Table No.8. Coverage of Organic farming

No	Name of Organic Village	Panchayath	Area (ha.)	Total Farmers			
				Organic	IC 02	IC 01	Total
1	Alattil	Thavinjal	7.60	11		01	12
2	Boys Town	Thavinjal	16.30	12	01		13
3	Kanniyamoola	Thavinjal	09.58	10		17	27
4	Kattimoola	Thavinjal	77.81			103	103
5	Makkimala	Thavinjal	07.16			17	17
6	Maniyamkala	Thavinjal	10.38			12	12
7	Muthirery	Thavinjal	57.74			106	106



No	Name of Organic Village	Panchayath	Area (ha.)	Total Farmers			
				Organic	IC 02	IC 01	Total
8	Ozhakody	Thavinjal	23.37			29	29
9	Periya	Thavinjal	14.70			31	31
10	Pookode	Thavinjal	8.80	14			14
11	Poroor	Thavinjal	10.24			14	14
12	Sivagirikunnu	Thavinjal	06.94			18	18
13	Vimalanagar	Thavinjal	71.70			105	105
14	Thindummel	Thavinjal	10.96			35	35
15	Valadu	Thavinjal	17.36	01	08	22	31
16	Varayal	Thavinjal	17.68			29	29
17	Yevanarkulam	Thavinjal	80.48		10	124	134
18	Churuli	Thondernadu	25.23	26			26
19	Kanjirangadu	Thondernadu	05.50			12	12
20	Kunjome	Thondernadu	27.11		33	49	82
21	Makkiyadu	Thondernadu	18.11			30	30
22	Maradi	Thondernadu	06.09		12		12
23	Perincherimala	Thondernadu	12.99		27		27
24	Puthussery	Thondernadu	56.57	12		103	115
25	Thondernadu	Thondernadu	62.36		23	68	91
26	Vanjode	Thondernadu	64.83			89	89
27	Cherukara	Vellamunda	14.41	17	03	02	22
28	Karakkamala	Vellamunda	03.03	07			07
29	Kommayadu	Vellamunda	15.08	17			17
30	Mallisserikunnu	Vellamunda	02.15			05	05
31	Mangalassery	Vellamunda	36.51	50		12	62
32	Mothakkara	Vellamunda	27.92			53	53
33	Narokkadavu	Vellamunda	29.28			45	45
34	Ozhukkanmoola	Vellamunda	32.04			56	56
35	Pulinchal	Vellamunda	08.65			19	19
36	Vellamunda	Vellamunda	9.54			18	18
	<b>Total</b>		<b>906.18</b>	<b>177</b>	<b>117</b>	<b>1224</b>	<b>1518</b>





Fig: 8. Promotion organic farming and certification

systematic way. Under the project 177 farmers won organic certification. Another 117 farmers completed their second year conversion (ICO2) and they need only three more months for promoting to certified organic farmer. 1224 farmers are also in transition/conversion stage. Through this activity, (ICO1) area of 906.18 ha has been transformed to certified organic cultivation.

## 2. Women and tribal empowerment through agriculture based self employment programmes

### 2.1. Cultivation, primary processing and marketing of medicinal plants

Medicinal plants collected from nearby forest areas are the main source of income for the tribal families residing near forest area. Continuous harvesting could result in a decline of the medicinal plant resources. In order to address this situation, Eight hectares of forest area under two *Vana Samrakshana Samithies* namely *Panchatheertham* and *Papanasini* were planted with 75 species of medicinal plants commonly used by the tribal healers, which will reduce the dependency on forest and thereby decrease the degradation of forest in coming years. A medicinal plant nursery was also established for the tribal women. A total of 9112 plants were planted with involvement of 94 tribal families.

### 2.2. Establishment of backyard poultry and goat units for livelihood security of women

Crop and livestock activities were integral part of the households in Wayanad, which existed throughout their historical evolution. Along with crop production, poultry, goat, and cattle rearing have been performed by



Fig: 9. Medicinal plant garden in the forest area



households living around forest settlements. Animal husbandry activities form an important source of income and employment for the households, and contribute to the improvement of the productivity of soil resources. Further, it provides healthy and balanced nutrition for the population.

The analysis of the profitability of different livestock activities implemented through the project, i.e., backyard poultry, goat rearing and piggery units are presented in tables 9 to 12.



Fig: 10. Backyard poultry-distribution and rearing

Backyard poultry requiring hardly any infrastructure set-up and is a potent tool for upliftment of the poor. Besides income generation, rural backyard poultry provides nutrition supplementation in the form of valuable animal protein and empowers women. This intervention was implemented in 1050 households in the project area. Each unit consisted of six birds (five females and one male) the details of the economic efficiency of the various livestock production systems implemented through NAIP in the nine panchayats of Wayanad district, have been evaluated using data from farmers/Self Help Groups (SHGs). Production factors, income from farming and other sources, productivity, production costs, profitability levels, and the tendencies and expectations of the producers were examined in the evaluation. Production costs were measured by taking the actual inputs used and the prices paid by the producers. High yielding breeds of birds (Athulya) developed by Kerala Agricultural University were popularized among the farmers through the scheme and the results are presented in Table No.9.

The average annual household income from a unit of backyard poultry six birds (5 female and 1 male) was in the tune of Rs. 3528/- per annum. Rather than an income generating activity it also helps to improve the nutritional status of the house holds. Wide acceptance, vast coverage, low cost and easy for implementation are the another notable features of this component.

Piggery is another livestock intervention implemented by NAIP. The beneficiaries were provided with a pair of breeding stocks and the income generated by this activity was presented in Table No.10.

Goat rearing in SHG mode is a newly introduced intervention under NAIP Wayanad. 18 numbers of women groups were provided with 10 goats each (9 female and 1 male) and the economics of this activity is depicted in Table No.11.



**Table No.9. Average Annual Income from Backyard Poultry Rearing**

No	Name of Panchayath	Eggs/ production of unit	Income from eggs (Rs.)	Income from manure (Rs).	Total income (Rs.)	Maintenance cost (Rs.)	Profit (Rs)
1	Ambalavayal	896	3584	300	3884	150	3734
2	Meenangadi	886	3544	250	3794	200	3594
3	Nenemeni	912	3648	350	3998	250	3748
4	Kaniambetta	784	3136	275	3411	150	3261
5	Kottathara	932	3728	300	4028	100	3928
6	Muttill	852	3408	250	3658	150	3508
7	Thavinjal	726	2904	250	3154	90	3064
8	Thondernad	864	3456	275	3731	150	3581
9	Vellamunda	816	3264	300	3564	230	3334
	<b>Average</b>	<b>852</b>	<b>3408</b>	<b>283</b>	<b>3691</b>	<b>163</b>	<b>3528</b>



**Fig: 11. Piggery-Breeding stock distribution and piglets produced**

**Table No.10. Average Annual Income from Piggery**

No	Name and address of farmer	Piglets produced	Income from sale of piglets	Income from manure	Total income	Prod. cost	Profit
1	Vaghese, Puthukudissery.	8 (5)	25000	11682	36682	14602	22080
2	Bhaskaran, Thottamkolly.	18 (13)	65000	26284	91284	32854	58430
3	Sreedaran, Mandamkolly.	17 (12)	60000	24824	84824	31029	53795
4	Sivan, Pakkunnel.	14 (10)	50000	20444	70444	25554	44890
	<b>Average</b>	<b>12 (8)</b>	<b>50000</b>	<b>20809</b>	<b>70809</b>	<b>26010</b>	<b>44799</b>

(Values in the parenthesis shows the piglets survived)

**Table No.11. Average Annual Income from Goat Rearing by SHGs**

No	Name of the SHG	No. of Kids produced	Income from kids sale(Rs)	Income from Milk (Rs)	Income from Manure (Rs)	Prod. Cost (Rs)	Total income (Rs)	Profit (Rs)
1	Sneha	16	50000	3240	7018	29210	60258	31048
2	Anaswara	12	36000	2160	5266	21910	43426	21516
3	Pratheeksha	8	24000	1440	3514	14610	28954	14344
4	Prathibha	14	45500	2520	6142	25560	54162	28602
5	Soumya	9	28125	1440	3952	16435	33517	17082
6	Haritha	15	41250	2520	6580	27385	50350	22965
7	Gramashree -131	18	45000	3240	7894	32860	56134	23274
8	Gramashree -277	10	30000	1800	4390	18260	36190	17930
	<b>Average</b>	<b>13</b>	<b>37484</b>	<b>2295</b>	<b>5595</b>	<b>23279</b>	<b>45374</b>	<b>22095</b>

Rearing of goat is promoted as an income generating activity for landless and poor people especially women and tribes. This intervention is very unique in its implementation. The beneficiaries who received a goat (6 months old) from the project must agree to donate the first kid (after attaining 6 months old) born from their goat to the NAIP sustainability fund committee. The committee distributes it to other beneficiaries and those recipients will do the same. The rest of the offspring can be retained by the beneficiary. So far 270 such units were started in the project area. The details of the activity are furnished in Table No.12.



**Fig: 12. Community goat rearing by self help groups**

Out of these three interventions piggery is found to be the most profitable enterprise with a total annual average profit of Rs. 44,799/- per house hold. The profit of goat rearing in the first year of implementation was in the tune of Rs. 22,095/- when it is implemented in a SHG model of 10 goats/unit. The net profit from backyard poultry units (five female and one male) was Rs. 3,528/-. Even though the piggery was considered as the most remunerative activity, its acceptability is highly influenced by the





**Table No.12. Average Annual Income from Household Goat Rearing**

No	Panchayath	No. of goat/unit	Cage and Maintenance cost(Rs.)	No. of Kids produced	Income from Milk (Rs.)	Income from kid's sale (Rs.)	Total Income (Rs.)	Profit (Rs.)
1	Ambalavayal	1	6840	4	1025	14400	15425	8585
2	Meenangadi	1	3710	2	943	7000	7943	4233
3	Nenmeni	1	5920	2	988	7600	8588	2668
4	Kaniyampetta	1	4840	2	1050	6400	7450	2610
5	Kottathara	1	3664	1	875	3000	3875	211
6	Muttill	1	4680	3	864	9300	10164	5484
7	Thodernadu	1	5620	4	962	12000	12962	7342
8	Thavinjal	1	3860	2	888	7400	8288	4428
9	Vellamunda	1	3750	1	966	3400	4366	616
	<b>Average</b>		<b>4764.9</b>	<b>2.3</b>	<b>951.2</b>	<b>7833.3</b>	<b>8784.6</b>	<b>4019.7</b>

religious and social back ground of the farmers. The availability of cheap source of feed like hotel waste, wastes from chicken and vegetable shops is the backbone of success. Considering the initial investment and acceptance among the farming community backyard, poultry was found to be as the most effective intervention. This also helped to improve the nutritional status of the house holds. Group approach in goat rearing is found highly suitable in the tribal hamlets where as it had only limited acceptance and success among the other SHGs due to internal conflicts.

### 2.3. Nursery and Vegetable Production through Women SHGs

The project proposes to apply the concept of achieving sustainable rural livelihoods through eco-friendly technologies that suit the socio economic and agronomic settings. The NAIP's experience has shown that nursery and vegetable seed production with the technical assistance of Regional Agricultural Research Station was highly profitable and sustainable. The SHG consists of 20 women members of the age group of



*Fig: 13. Goat distribution to the landless po*





Fig: 14. Nursery and vegetable seed production by SHGs

30 to 50 years. A total of 5 SHGs were established. The total annual turnover this activity was 24.14 lakhs per year which provided total profit Rs. 7.24 lakhs to the unit and an additional average annual income of Rs. 36, 210/- per household from nursery and vegetable seed production (Table No.13). So this model was found to be highly effective in generate positive impact on the rural economy through empowering women and enhancing the rural income of those participant households.

**Table No.13. Economics of Nursery Management and Vegetable Seed Production**

(a) Planting materials

No	Item	Quantity produced (Nos)	Quantity survived (Nos)	Unit cost(Rs)	Total income(Rs)	Profit of SHGs(Rs)
1	Mangosteen	25000	20000	60	1200000	360000
2	Silver oak	5000	4000	5	20000	6000
3	Guava	5000	4000	10	40000	12000
4	Coconut	7000	6100	50	305000	91500
5	Curry leaf	500	400	10	4000	1200
6	Mangograft	1000	800	45	36000	10800
7	Mahagony	2000	1600	7	11200	3360
8	Teak	2000	1600	7	11200	3360
9	Clove	500	400	15	6000	1800
10	Nutmeg	500	400	20	8000	2400
11	Rose poly bag	1000	1000	70	70000	21000
12	Pepper	5000	4500	6	27000	8100
13	Arecanut	50000	4500	10	45000	13500
14	Coffee	45000	40000	5	200000	60000
	<b>Total</b>				<b>1983400</b>	<b>595020</b>

**(b)Vegetable Seeds**

No	Item	Quantity produced (kg)	Unit cost/kg	Total income (Rs.)	Profit of SHGs (Rs)
15	Ladies finger	2	1000	2000	600
16	Chilli	2	2800	5600	1680
17	Pea	160	1500	240000	72000
18	Snake gourd	100	1800	180000	54000
19	Brinjal	1	1500	1500	450
20	Ash gourd	1	1500	1500	450
<b>Total</b>				<b>430600</b>	<b>129180</b>
<b>Grand Total</b>				<b>2414000</b>	<b>724200</b>

**3. Developing a viable system for procurement and marketing of agricultural produce with or without value addition****3.1. Procurement, transportation and marketing of agri-produce from house holds**

Managing the small holdings as a viable production system is a challenge to the farmers, researchers and planners. In this juncture, boosting the morale of small holdings of farmers through transfer of scientific technologies for market driven production programme is inevitable. The project envisaged in developing a system for procurement of marketable surplus in small holdings and marketing them in a profitable manner either in raw or processed form. The nodal agencies/partners for implementing this intervention were Vegetable and Fruit Promotion Council, Keralam (VFPCCK) and Wayanad Social Service Society (WSSS).

Vegetable and fruit farmers are typically disincentives to find marketing solutions for their produce for the following reasons:

- Lack the bargaining power to earn good prices for their produce in the market
- Payment and pricing policies are controlled by the trader, leaving farmers at their mercy
- Substantial time is involved in conducting marketing activities and organizing logistics to existing markets
- Lacking transport and storage facilities, they face high levels of post-harvest loss or wastage

To overcome these issues and bring marketing processes closer to the production centre so that farmers gain greater price realization of their products, VFPCCK has implemented a unique group marketing structure



centered on the societies. Through this structure, farmers have taken control of the marketing process and fully participated in it. In effect, instead of farmers having to travel to the traders, traders must now travel to the farmers. As part of NAIP, 17 farmers owned procurement and market units were established under VFPCCK which handled 20.08 lakh tones of agricultural produce with a value of about Rs 4.2 Crores. The details are provided in Table No.14.

**Table No.14. Quantity of fruits and Vegetables Procured by Farmer Owned Markets**

No	Name of the market	Total Quantity (t)	Total Value (Rs.)
1	Ambalavayal	78716	1954220
2	Thavinjal	70253	1078336.25
3	Thavinjal	76748	1123078
4	Muttill	294407	6642736
5	Poothadi	479621.7	8566028.43
6	Nenmeni	202326.5	4569568
7	Vellamunda	79503	1734184
8	Vellamunda	108293	2344344
9	Sulthan Bathery	105644	2241866
10	Cheeral	482712	11207358
11	Kottathara	6700	47300
12	Peria	23552	381553
	<b>Total</b>	<b>2008476.27</b>	<b>41890571.68</b>

This intervention helped the small farmers to market their surplus items produced in the homesteads. This novel approach for procurement and profitable marketing of agricultural produces from small holdings, therefore, solved the bottlenecks of marketing the produces of small homesteads. The increased market access and fair price provided by the farmer owned markets improved the income from fruits and vegetable cultivation in the project area. It also reduced the transportation cost to the market (Table No.15)

### **3.3. Promotion of Organic Farming and Marketing of Organic Products**

The activities / interventions on organic farming, procurement and marketing of organic products were implemented by the partners Wayanad Social Service Society. Organic spices (pepper, ginger, turmeric) and coffee produced by the farmers were procured by WSSS and processed and marketed by WSSS as value added organic products under a trade name "WAYANAD CLASSICS". The launching of NAIP Products was inaugurated by Sri. P. Mohanan, Honorable Minister for Agriculture in a public function presided over by Kumari Jayalakshmi, Honorable Minister for Tribal Development and Youth Affairs. Processing/value addition of the products was conducted at the Spice processing unit of WSSS at





Fig: 15. VFPCK- Procurement, transportation and marketing of agri-produce

**Table. No.15.**  
**Improvement in market access and farm commodity price**

No	Crop	Market price (Rs)		Distance to market (km)		Transportation cost (Rs.)	
		2008	2013	2008	2013	2008	2013
1	Banana	12	19.5	8	1	160	60
2	Elephant foot yam	8	12	6	1	120	60
3	Colocasia	6	12	5	2	100	120
4	Ginger	20	26	4	2	80	120
5	Cowpea	9	14	12	1.5	240	90
6	Cucumber	4	9	10	1.5	200	90
7	Pumpkin	5	10	8	1.5	160	90

Dwarakha. Sorting, drying, steam sterilization, cool grinding, cracking, slicing, hulling, powdering, packing, etc were carried out for the produces. The finished products resulting from the above were:

- Organic garbled and steam sterilized black pepper (in bulk and in consumer packs)
- Organic garbled and steam sterilized white pepper (bulk)
- Organic black / white pepper powder (bulk and in consumer pack)
- Organic steam sterilized ginger and turmeric powder (bulk and in consumer pack)
- Organic steam sterilized cracked black and white pepper (bulk and in consumer pack)
- Organic dehydrated green pepper (bulk and in consumer pack)
- Organic green pepper in brine (bulk and in consumer pack)
- Organic freeze dried green pepper
- Organic sliced ginger and turmeric (bulk and in consumer pack)

- Tea cut cracked ginger
- Organic coffee beans and powder (bulk)

The spices from Wayanad are unique in their in quality and have an edge in the national and international markets. This produced a large number of national as well as international buyers. The prominent buyers among them are: JFK International Cochin, Nature Land Jaipur, Vimala Spices Hyderabad, Kandige Organic Bangalore, Green Fista Delhi, Cochin Spices Cochin, NKG Jayanthi Hassan, Sumindar India organic Mumbai, Elements Kozhikode, Eternal Health & Organic foods Lacknow, Dani Foods Ltd, London, Eco-land Germany, etc. The inference here is that the market linkages and outlets on hand are intact to take care of the processed organic products in increased volumes.



Fig: 16. WSSS- Launching of organically certified Products - "Wayanad Classics"

WSSS has made successful interventions in procuring certified organic produces from the farmers who are involved in the NAIP. Eighty five tonnes of organic ginger, 62 tonnes of organic pepper and 74 tones of organic coffee were processed and exported, providing 20-33% premium price to the farmers.

### 3.2. GI registration for specialty rice (Jeerakasala, Gandhakasala) of Wayanad

'Jeerakasala' and 'Gandhakasala' are the traditional scented, specialty paddy varieties of Wayanad. Though these varieties were famous, and had special markets, concerted efforts for popularizing the same were lacking. As a result of NAIP interventions, GI registration was taken for Jeerakasala (GI. No. 186 Dt. 04/10/2010) and Gandhakasala (GI. No. 187 Dt. 04/10/2010) in association with " Wayanad Nellulpadaka Sahakarana Sangham".



Fig: 17. GI registration logos for speciality rice





Geographical indications for the Wayanad Scented Rice Varieties Jeerakasala and Gandhakasala (GIs) helped increased revenues of local rice growers and satisfied the needs of more conscious and demanding customers. It also helped to protect names of these famous rice varieties of Wayanad from misuse and imitation. The GI registrations provided wide publicity about their unique quality and resulted in remarkable increase in demand and price. During the project period the price (paddy) of these speciality rice varieties rose from Rs. 13 to Rs. 32 per kilogram (Table No.16). The average increase in profit from the one hectare is to the tune of Rs. 21, 705/-per season.

**Table.No.16. Comparative Advantage of GI Registration**

No.	Panchayath	Area (ha.)		Production (kg)		Change in productivity 2013-2008	Profit(Rs.)		Change in Profit(Rs) 2013-2008
		2008	2013	2008	2013		2008	2013	
1	Ambalavayal	0.3	0.3	0.6	0.6	0.2	6700	35200	28500
2	Meenangadi	0.2	0.2	0.4	0.4	0.0	5400	21600	16200
3	Nenmeni	1.0	0.8	1.6	1.5	0.3	2800	28800	26000
4	Kaniyampetta	1.5	1.8	2.7	4.1	0.5	5400	37600	32200
5	Kottathara	0.3	0.6	0.6	1.1	0.0	6700	27800	21100
6	Muttill	0.7	0.7	1.3	1.5	0.4	5400	36400	31000
7	Thodernadu	0.4	0.6	0.7	1.1	0.0	6050	25600	19550
8	Thavinjal	0.5	0.6	1.0	1.1	-0.1	8000	28800	20800
9	Vellamunda	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Average</b>		<b>4.9</b>	<b>5.6</b>	<b>8.8</b>	<b>11.6</b>	<b>0.1</b>	<b>5161</b>	<b>26866</b>	<b>21705</b>

### 3.3. Strengthening value addition units of spice, fruits, rice herbal and medicinal produce

One of the major reasons for lower income in agriculture is the lack of value addition at the production site. Much of the produce is sold raw which fetches low prices due to high perishability of the commodity particularly fruits and vegetables. This can be avoided by creating value addition facilities and marketing the value added products at a higher price. Value addition as a rural enterprise has potential to generate more local jobs and better income. Taking this in to consideration Regional Agricultural Research Station, Kerala Agricultural University, Ambalavayal, Wayanad, had set up a Post Harvest Technology unit as envisaged by National Agricultural Innovation Project (NAIP) for the use of farm women.

A group of unemployed women were provided training on post harvest processing and were allowed to undertake value addition in the PHT unit as a self help group (SHG). The SHG produced a value added products like pickles, jams, squashes and other traditional items worth Rs. 1,24,172/-. The net profit from the processing was about Rs. 37,251/- per member. Value addition units supported with a marketing channel provided a sustainable livelihood support at village level for unemployed women (Table 17).



Table No. 17. Details value addition by the women SHG per annum

Sl No	Item produced	Quantity Produced (kg/ltr)	Selling Price(Rs.)	Total Income (Rs.)	Profit to SHGs (30%) (Rs.)
1	Ivygourd Pickle	60.6	100	6060	1818
2	Amla Pickle	22.6	100	2260	678
3	Grape squash	199.5	80	15960	4788
4	Orange RTS	2.6	50	130	39
5	Pine Apple RTS	9.4	50	470	141
6	Mixed Fruit Jam	58.85	200	11770	3531
7	Mango Pickle	34.1	100	3410	1023
8	Sharkkara upperry	2.6	150	390	117
9	Coconut Oil	35	100	3500	1050
10	Jack Chips	8.8	150	1320	396
11	Bitter gourd dry	155	10	1550	465
12	Jack fruit Jam	4.75	200	950	285
13	Chakka varatti	2.4	250	600	180
14	Mixed Veg.Pickle	15.6	100	1560	468
15	Tomatto Pickle	10.8	100	1080	324
16	Mango in brine	25	5	125	37.5
17	Vaduku	673	10	6730	2019
18	Mulaku kondattam	143	10	1430	429
19	Garlic Pickle	26.4	150	3960	1188
20	Yam Pickle	17.1	120	2052	615.6
21	Mangosteen Jam	65.6	250	16400	4920
22	Jeerakasala Rice	72.5	55	3987.5	1196.25
23	Jeerakasala Rice powder	17	35	595	178.5
24	Gandakasala Rice	32	70	2240	672
25	Oil cake	14	15	210	63
26	Orange Squash	49	100	4900	1470
27	Cardamom	1.45	520	754	226.2
28	Lemon Pickle	13.8	100	1380	414
29	Amla syrup	124.25	132	16401	4920.3
30	Grape syrup	20	200	4000	1200
31	Pine apple piece	190	3	570	171
32	Pine apple Squash	45.5	50	2275	682.5
33	Pine apple Jam	10.4	200	2080	624
35	Sambar Powder	3.3	230	759	227.7
36	Lemon Squash	19.5	100	1950	585
37	Achappam	10	15	150	45
38	Sip up	12	2	24	7.2
39	Amla in brine	109	1	109	32.7
40	Chilly Pickle	0.8	100	80	24
	<b>Total</b>			<b>124171.5</b>	<b>37251.45</b>



Fig: 18. Value addition of fruits, vegetables and spices

#### 4. Conservation and management of soil and water resources to mitigate drought and other natural calamities

Wayanad district encompasses maximum forest area (78787 ha.) compared to other districts in the State. However, there have been a lot of attempts for encroachments and deforestation, resulting in eco degradation and climate change. Due to the inherent undulating topographic peculiarities, most of the water received through rain flows out of the district in a matter of few days. This is attributed as one of the major reasons for increasing the severity of droughts of the district year after year. In this back ground, programmes were taken up for agro ecosystem restoration in a sustainable manner. Simultaneously efforts were also made to augment ground water recharge and soil conservation. The following activities were taken up.

##### 4.1. Renovation of public ponds and strengthening of water harvesting and storage structures

In order to provide safe drinking water facility new roof water harvesting structure was constructed at Nenmeni Panchayath which benefited 18 families. This water harvesting structure reduced the water collection time and water scarcity of the locality. It also resulted in increased water level of the used about 1.5 meters during summer months. The details are depicted in Table No.18.

For providing irrigation facility and to improve recharge of the ground water, a check dam was renovated in CC area of Meenangadi Panchayath which brought an additional 60 acres under paddy cultivation in summer season.

##### 4.2. Waste management programmes for biogas and organic manure production

Demonstration and popularization waste management units and technologies for biogas and organic manure production were also carried out during the project period. Around 2000 numbers of small vermi wash/ compost units were established for household waste management and to meet the requirement of kitchen gardens.

11	Pig rearing at VFPCCK, Hall Kambalakkad (through scientist of CoVAS ,Pookot)	25.03.2009	50
12	Goat rearing at RARS, Ambalavayal (through scientists of CoVAS ,Pookot)	26.03.2009	50
<b>2009-2010 : 28 Nos</b>			
1	Farm Mechanisation (Phase I) at RARS Farm Paddy field	06/08/2009	56
2	Farm Mechanisation (Phase II, Planting) Batch 1at RARS Farm Paddy field	25/08/2009	22
3	Farm Mechanisation (Phase II, Planting) Batch 2 at RARS Farm Paddy field	26/08/2009	11
4	Pisiculture at RARS Training hall	16/09/2009	25
5	Pisiculture at RARS Training hall	17/09/2009	36
6	Pisiculture at Krishi Bhavan, Vellamunda	18/09/2009	15
7	Tribal empowerment at Thirunelli, (Forest IB)	20/09/2009	38
8	Paddy,vegetables,spices,fodder, water conservation, plant protection at RARS, Ambalavayal	24/09/2009	47
9	Paddy,vegetables,spices,fodder, water conservation, plant protection at VFPCCK Hall, Kamblakkad	24/09/2009	43
10	Paddy,vegetables,spices,fodder, water conservation, plant protection at Krishi Bhavan, Vellamunda	24/09/2009	43
11	Paddy,vegetables,spices,fodder, water conservation, plant protection at RARS, Ambalavayal	25/09/2009	47
12	Paddy,vegetables,spices,fodder, water conservation, plant protection at VFPCCK Hall, Kamblakkad	25/09/2009	43
13	Paddy,vegetables,spices,fodder, water conservation, plant protection at Krishi Bhavan, Vellamunda	25/09/2009	43
14	Paddy,vegetables,spices,fodder, water conservation, plant protection at RARS, Ambalavayal	26/09/2009	47
15	Paddy,vegetables,spices,fodder, water conservation, plant protection at VFPCCK Hall, Kamblakkad	26/09/2009	43
16	Paddy,vegetables,spices,fodder, water conservation, plant protection at Krishi Bhavan, Vellamunda	26/09/2009	43
17	Vegetable & Fruit Processing at RARS, Ambalavayal	30/09/2009	30
18	Veg & Fruit Processing at RARS, Ambalavayal	01/10/2009	17
19	Spices Processing at RARS, Ambalavayal	15/12/2009	17
20	Spices Processing at RARS, Ambalavayal	16/12/2009	17
21	Water Management training of ARS, Chalakkudy at RARS, Ambalavayal	16/12/2009	19



22	Protected cultivation at RARS, Ambalavayal	24/02/2010	56
23	Training on Tuber cultivation at Pannippad	07/03/2010	22
24	Scaling up of water productivity with funding of AICRP Water management of ARS Chalakkudy at RARS, Ambalavayal	04/01/2010 to 09/01/2010	60
25	Paddy seed production under RKVY - Paddy at Padinjarathara	25/02/2010	26
26	Paddy seed production under RKVY - Paddy at Kuruva	21/03/2010	26
27	Fodder Cultivation under RKVY Fodder Scheme at RARS Ambalavayal	24/03/2010	70
28	Fodder Cultivation under RKVY Fodder Scheme at RARS Ambalavayal	29/03/2010	25
<b>2010-2011: 20 Nos</b>			
1	Vegetable seed production at RARS, Ambalavayal	28/05/2010	24
2	Nursery practices at RARS, Ambalavayal	28/05/2010	20
3	Lime application in Paddy at Meenangadi	28/07/2010	33
4	Lime application in Paddy at Nenmeni	03/08/2010	40
5	Lime application in Paddy at Kaniyampatta	04/08/2010	37
6	Lime application in Paddy at Muttill	04/08/2010	23
7	Paddy cultivation at Vellamunda	18/03/2010	9
8	PRA Techniques at Thirunnelli	23/11/2010	40
9	PRA Techniques at Pannippad	26/12/2010	55
10	Vegetable & fruit production at RARS, Ambalavayal	31/12/2010	9
11	Vegetable & fruit production at RARS, Ambalavayal	01/01/2011	9
12	Spice processing at RARS, Ambalavayal	01/02/2011	16
13	Organic farming on Pepper, Paddy at Meenangadi	10/02/2011	62
14	Organic farming on Pepper, Paddy at Vellamunda	17/02/2011	67
15	Organic farming on Pepper, Paddy at Tavinjal	20/02/2011	72
16	Banana fibre production at BRS Kannara	16/02/2011 to 18/02/2011	3
17	Spices at Muttill	12/03/2011	60
18	Spices at Kaniyampatta	18/03/2011	83
19	Pepper, Ginger (IISR) at Kottatheca	19/03/2011	82
20	Pepper, Ginger (IISR) at Mananthavady	26/05/2011	47
<b>2011-2012: 6 Nos</b>			
1	Poultry management at Ambalavayal	31/05/2011	29
2	Vegetable cultivation at Ambalavayal	20/01/2012	27
3	Bee keeping at Thirunelly	24/03/2012	28
4	Vegetable & fruit processing at Ambalavayal	07/03/2013	10
5	Vegetable & fruit processing at Ambalavayal	08/03/2013	9
6	Total farm mechanization at Ambalavayal	11/01/2013 to 30/01/2013	15

**Table 20 Training attended by Associated Scientists**

<b>Name of the Scientist &amp; his/her Institute</b>	<b>Name, place and duration of the seminar/symposium/</b>
Dr. V.S.Devadas, KAU Mr. K.N. Shiva, IISR Mr. Jahangir Khasim, VFPCCK Mr. M. Selva Kumar, RCRS	Training Programme on Procurement and Financial Management, National Institute of Animal Nutrition and Physiology, Bangalore, 15-16 January 2009
Dr. V.S.DevadasKAU	29-31 January 2009International conference on business development programme. Training on Business incubation, Chennai
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Dr. Augustine AntonyKAU	February 2009 at New DelhiNational Seminar on Protection of Plant Varieties and Farmers Rights
Dr. C.R.ElsyKAU	March 2009, Naarm, Hyderabad Training on IPR issues
Dr. Renuka NairKAU	18 - 21 <sup>st</sup> , March 2009, CIFT, KochiHACCP Concepts
Dr. V.S.DevadasKAU	NAIP-MDP on "Policy and prioritisation, Monitoring and Evaluation support to consortia based research projects". 5-9 October 2009
Dr. V.S.DevadasKAU	Cornell University of Agriculture/ Sadguru management - "Seed Industry Programme" training at Hyderabad, 17-20 January 2011



*Fig: 20. Training programmes....*





Fig: 18. Value addition of fruits, vegetables and spices

#### 4. Conservation and management of soil and water resources to mitigate drought and other natural calamities

Wayanad district encompasses maximum forest area (78787 ha.) compared to other districts in the State. However, there have been a lot of attempts for encroachments and deforestation, resulting in eco degradation and climate change. Due to the inherent undulating topographic peculiarities, most of the water received through rain flows out of the district in a matter of few days. This is attributed as one of the major reasons for increasing the severity of droughts of the district year after year. In this back ground, programmes were taken up for agro ecosystem restoration in a sustainable manner. Simultaneously efforts were also made to augment ground water recharge and soil conservation. The following activities were taken up.

##### 4.1. Renovation of public ponds and strengthening of water harvesting and storage structures

In order to provide safe drinking water facility new roof water harvesting structure was constructed at Nenmeni Panchayath which benefited 18 families. This water harvesting structure reduced the water collection time and water scarcity of the locality. It also resulted in increased water level of the used about 1.5 meters during summer months. The details are depicted in Table No.18.

For providing irrigation facility and to improve recharge of the ground water, a check dam was renovated in CC area of Meenangadi Panchayath which brought an additional 60 acres under paddy cultivation in summer season.

##### 4.2. Waste management programmes for biogas and organic manure production

Demonstration and popularization waste management units and technologies for biogas and organic manure production were also carried out during the project period. Around 2000 numbers of small vermi wash/compost units were established for household waste management and to meet the requirement of kitchen gardens.



**Table No. 18. Difference in time taken of water collection for household purpose**

No.	Time taken to collect water (minutes)	Time taken to collect water (minutes) Now
	Jan-May 2008	Jan-May 2013
Family 1	120	40
Family 2	150	75
Family 3	120	30
Family 4	120	30
Family 5	90	30
Family 6	120	30
Family 7	120	40
Family 8	120	30
Family 9	120	30
Family 10	120	30



*Fig: 19. Roof water harvesting and renovated check dam*

As an activity of WSSS, 20 vermi composting units having a dimension of 3 meters length, 1 meter width and 0.80 meter height were constructed in home steads. With the aim of large scale production of manures required for organic farming three Varanasi compost units were established for the use of three farmer-groups. The farmer groups associated with this units are- Sahruda Self help Group -Boys Town, Gramajyothi Farm Club-Kommayad and Udaya Swasrayasangam -Mangalassery.

Similarly 20 biogas plants were constructed by using Ferro cement technology to promote organic farming and to reduce fuel scarcity.

## **5. Capacity building for human resources development**

### **5.1. Training Programmes**

Seventeen per cent of population of Wayanad are tribes. Even though several development programmes have been implemented over more than



60 years after independence, the condition of tribes is still very pathetic. Many do not take up farming and remain far away from the technological regime of modern scientific agriculture. Hence a sustainable development package for tribes of Wayanad based on a livelihood security is inevitable.

In this background this project conducted various skill development and empowerment and capacity building programmes to farmers, women and youth about profitable and sustainable methods for raising traditional and emerging crops of Wayanad as well as other agri related entrepreneur development programmes. The details of the training programmes are as flows (Table No.19 & 20).

**Table No. 19. Details of the training programmes conducted**

Sl No.	Name of Trainings	Period/ duration	No. of trainees
<b>2008-09 : 12 Nos</b>			
1	Improved package of practices for Paddy cultivation at Amabalavayal, Mananthavadi, Kambalakkad	11 -13 March 2009	77
2	Improved package of practices for Pepper cultivation at Amabalavayal, Mananthavadi, Kambalakkad	11-13 March 2009	77
3	Organic waste recycling techniques at Amabalavayal, Mananthavadi, Kambalakkad	11-13 March 2009	77
4	Rain water Harvesting at Amabalavayal, Mananthavadi, Kambalakkad	11- 13 March 2009 (NAIP)	77
5	Micro irrigation at Amabalavayal, Mananthavadi, Kambalakkad	11- 13 March 2009 (NAIP)	77
6	Farm mechanization at Amabalavayal, Mananthavadi, Kambalakkad	11 March 2009 (NAIP)	77
7	Vegetable Cultivation at Amabalavayal, Mananthavadi, Kambalakkad	11-13 March 2009 (NAIP)	77
8	Processing of fruits & vegetables at Amabalavayal, Mananthavadi, Kambalakkad	11-13 March 2009	77
9	Animal health camp at Nadavayal ( through scientist of CoVAS ,Pookot)	23.03.2009	105
10	Rabbit rearing at WSS Mananthavady (through scientist of CoVAS ,Pookot)	24.03.2009	50



11	Pig rearing at VFPCCK, Hall Kambalakkad (through scientist of CoVAS ,Pookot)	25.03.2009	50
12	Goat rearing at RARS, Ambalavayal (through scientists of CoVAS ,Pookot)	26.03.2009	50
<b>2009-2010 : 28 Nos</b>			
1	Farm Mechanisation (Phase I) at RARS Farm Paddy field	06/08/2009	56
2	Farm Mechanisation (Phase II, Planting) Batch 1 at RARS Farm Paddy field	25/08/2009	22
3	Farm Mechanisation (Phase II, Planting) Batch 2 at RARS Farm Paddy field	26/08/2009	11
4	Pisiculture at RARS Training hall	16/09/2009	25
5	Pisiculture at RARS Training hall	17/09/2009	36
6	Pisiculture at Krishi Bhavan, Vellamunda	18/09/2009	15
7	Tribal empowerment at Thirunelli, (Forest IB)	20/09/2009	38
8	Paddy,vegetables,spices,fodder, water conservation, plant protection at RARS, Ambalavayal	24/09/2009	47
9	Paddy,vegetables,spices,fodder, water conservation, plant protection at VFPCCK Hall, Kamblakkad	24/09/2009	43
10	Paddy,vegetables,spices,fodder, water conservation, plant protection at Krishi Bhavan, Vellamunda	24/09/2009	43
11	Paddy,vegetables,spices,fodder, water conservation, plant protection at RARS, Ambalavayal	25/09/2009	47
12	Paddy,vegetables,spices,fodder, water conservation, plant protection at VFPCCK Hall, Kamblakkad	25/09/2009	43
13	Paddy,vegetables,spices,fodder, water conservation, plant protection at Krishi Bhavan, Vellamunda	25/09/2009	43
14	Paddy,vegetables,spices,fodder, water conservation, plant protection at RARS, Ambalavayal	26/09/2009	47
15	Paddy,vegetables,spices,fodder, water conservation, plant protection at VFPCCK Hall, Kamblakkad	26/09/2009	43
16	Paddy,vegetables,spices,fodder, water conservation, plant protection at Krishi Bhavan, Vellamunda	26/09/2009	43
17	Vegetable & Fruit Processing at RARS, Ambalavayal	30/09/2009	30
18	Veg & Fruit Processing at RARS, Ambalavayal	01/10/2009	17
19	Spices Processing at RARS, Ambalavayal	15/12/2009	17
20	Spices Processing at RARS, Ambalavayal	16/12/2009	17
21	Water Management training of ARS, Chalakkudy at RARS, Ambalavayal	16/12/2009	19





22	Protected cultivation at RARS, Ambalavayal	24/02/2010	56
23	Training on Tuber cultivation at Pannippad	07/03/2010	22
24	Scaling up of water productivity with funding of AICRP Water management of ARS Chalakkudy at RARS, Ambalavayal	04/01/2010 to 09/01/2010	60
25	Paddy seed production under RKVY - Paddy at Padinjarathara	25/02/2010	26
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27	Fodder Cultivation under RKVY Fodder Scheme at RARS Ambalavayal	24/03/2010	70
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13	Organic farming on Pepper, Paddy at Meenangadi	10/02/2011	62
14	Organic farming on Pepper, Paddy at Vellamunda	17/02/2011	67
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17	Spices at Muttill	12/03/2011	60
18	Spices at Kaniyampatta	18/03/2011	83
19	Pepper, Ginger (IISR) at Kottatheca	19/03/2011	82
20	Pepper, Ginger (IISR) at Mananthavady	26/05/2011	47
<b>2011-2012: 6 Nos</b>			
1	Poultry management at Ambalavayal	31/05/2011	29
2	Vegetable cultivation at Ambalavayal	20/01/2012	27
3	Bee keeping at Thirunelly	24/03/2012	28
4	Vegetable & fruit processing at Ambalavayal	07/03/2013	10
5	Vegetable & fruit processing at Ambalavayal	08/03/2013	9
6	Total farm mechanization at Ambalavayal	11/01/2013 to 30/01/2013	15

**Table 20 Training attended by Associated Scientists**

<b>Name of the Scientist &amp; his/her Institute</b>	<b>Name, place and duration of the seminar/symposium/</b>
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Dr. V.S.DevadasKAU	NAIP-MDP on "Policy and prioritisation, Monitoring and Evaluation support to consortia based research projects". 5-9 October 2009
Dr. V.S.DevadasKAU	Cornell University of Agriculture/ Sadguru management - "Seed Industry Programme" training at Hyderabad, 17-20 January 2011



*Fig: 20. Training programmes....*



## 5.2. Stipendiary Trainings

Intensive practical trainings on selected aspects were imparted to selected unemployed women/youth at a nominal stipend. On successful completion of program, they were guided to form SHG and continue the activities independently, which provided additional income to the participating members. The details are tabled below (Table No.21):

**Table 21 Details of Stipendiary trainings conducted**

Sl No.	Name of Training	Period/ duration	No. of trainees
<b>2009-10</b>			
1	Nursery management at RARS Ambalavayal (3.5 Months 2009-10 and 2 months 2010-11)	Batch: 1-15.12.2009 to 28.05.2010 -	45
<b>2010-11</b>			
1	Ornamental Fisheries at College of Fisheries, Panangad	24-29 January 2011	25
2	Farm Mechanization (15 days) at ARS Mannuthy	22.03.2011 to 06.04.2011	20
<b>2012-13</b>			
1	Stipendiary Training on Total Agricultural Mechanization (20 days)	11-30 January 2013	15
2	Vegetable seed production	1-4-2013 to 31-8-2013	26
3	Vegetable seed production	2-8-2013 to 31-10-2013	26

## 6. Innovations

- Soil test based comprehensive nutrient management in rice was found useful.
- Fallow land cultivation of vegetables, pulses and oil seeds fetch an additional income from the paddy area
- IPM in paddy: Paddy variety Athira found more resistant to pest and diseases under Wayanad conditions. Pheromone traps and trichograma cards are giving encouraging results and helped to reduce harmful effects of pesticide and cost of cultivation.
- Nutritional Garden in the homesteads- increased nutritional security of households
- Cultivation of cool season vegetables was found highly promising.
- Poultry (both in back yard and cage method), goat and pig rearing were highly potential enterprises to increase farm income.
- Small vermi compost units are highly suitable for both urban and rural homestead waste management.



- Processing of fruits and spices, nursery management and vegetable seed production are highly promising income generating activity for rural women.
- Rural farmer owned collection centres for procurement and marketing of farm produces are highly useful in fetching fair and reasonable prices.
- Comprehensive crop and disease management practices developed as a part of NAIP was found effective and offered a new ray of hope in bring back the past glory of pepper in Wayanad.

#### **7. Process/Product/Technology Developed**

- Soil test based integrated nutrient management in rice based cropping system
- Comprehensive nutrient-disease management in black pepper
- Integrated Farming system models for both upland and low lands under Wayanad conditions
- Farmer owned procurement and marketing of fruits and vegetables
- Organic spice brand "Wayanad Classic"

#### **8. Patents (Filed/Granted)**

Geographical Indication registration for the Wayanadan Scented Rice Varieties Jeerakasala and Gandhakasala was completed in association with Wayanad Nellulpadaka Sahakarana Sangham.

"WAYANAD JEERAKASALA RICE" falling in class 30 in respect of rice, Dt. 23.09.2009 GI. No. 186 Dt. 04/10/2010 (certificate No. 137)

"WAYANAD GANDHAKASALA RICE" falling in class 30 in respect of rice, Dt. 23.09.2009 GI. No. 187 Dt. 04/10/2010 (certificate No. 138)

Wayanad Jeerakasala Rice is a popular traditional aromatic rice cultivar of Wayanad District. This scented, non-basmati rice is famous for its characteristic fragrance and aroma. Grains are of medium size and shape (slightly elongated), with golden yellow colour and partial short awns. Wayanad Jeerakasala rice differs from Basmati rice due to growth habit, areas of original cultivation, physico-chemical properties of grains and grain shape. The pleasant flavour and aroma of Wayanad Jeerakasala rice fetches a premium price in the market.

Wayanad Gandhakasala Rice is the most popular traditional aromatic rice cultivar of Wayanad District. This scented rice is famous for its characteristic fragrance and aroma. The grains are aromatic, short bold, awn less with a lemma and palea (hull) colour of straw. Grains have golden yellow colour.

#### **9. Linkages and Collaborations**

Partnership with private input agencies, Non-Governmental Organizations and various Government agencies have come in a single

platform in the project area due to the activity of NAIP. In collaboration with NAIP-Agricultural Sustainable Committees were formed in each Panchayaths through which, an effective and participatory input supply system was established. Now even the Private input dealers are well informed about the quality, dosage and use of various chemical and fertilizers. The farm mechanization facilities are being provided to farmers through "Haritha Karshika Yanthratkarana Sangham" an SHG under NAIP scheme to reduce the shortage of labour during the peak period of farm operations. Timely interventions by various Governmental Institutions like KAU, IISR, RCRS and VFPCCK enhanced the confidence of the farming community and helped to fetch fare market price for their produces. WSSS (an NGO) and District Panchayath gave more emphasis on value addition and post harvest handling of Spices and fruits respectively which provide more returns to the farmers of the district. Krihi Bhavans under State Agricultural Department, Animal Health Department, Fisheries Department were also involved in the scheme. The project was implemented in a participatory approach. For each Panchayath a core committee was formed for the effective selection of beneficiaries and stage by stage implementation of the project. The activities of each cluster are being carried out under the supervision of scientist in charge of the cluster concerned. Teams of scientists were also formed and assigned with specific discipline for the implementation of the project.

A core committee was formed in each Panchayath for the effective selection of beneficiaries and implementation of the project

Chairman - Panchayath Ward member;

Convener : CPI of NAIP

Members - Agricultural Officer, Secretary and Presidents of Padasekhara Samithi & Pepper Samithi, ADS of Kudumbasrees and selected progressive farmers.

#### **10. Status on Environmental and Social Safeguard Aspects**

In the past five years, the project area witnessed an increased agricultural productivity, improved soil quality and ensured the safety of food which in turn enhanced the nutritional quality of food in an economically and environmentally sustainable way. Moreover, the comprehensive approach integrating all the spheres of agriculture and allied activities including post-harvest storage and processing which reduced losses and added value to the products, distribution and marketing infrastructure to link to markets and capacity-building helped all the sectors to improve their livelihood security in a sustainable way.

For reducing the impact of hazardous pesticides and conservation of beneficial organisms, bio control agents like Pseudomonas, Trichoderma, Beauvaria, Verticillium, Trichocards etc are introduced in the project area. For controlling stem borer attack in rice, Pheromone traps were introduced. To maintain soil health, soil ameliorants like lime, farm yard manure,



vermicompost etc. are introduced and supplied free of cost. Pulses and oil seeds were also introduced in the project area to enhance the productivity of the soil. In order to reduce the menace of household waste, portable vermicompost units were introduced. In order to provide accessibility to healthy and poison free food, organic farming practices and home nutritional gardens were promoted. For attaining nutritional security backyard poultry, goat rearing, etc. were also promoted.

The restoration of paddy area brought back the ecological functions of paddy fields especially in water conservation. The Renovation of existing ponds, check dams and rain water harvesting structures helped in conservation and sustainable use of ground water, ground water recharging and relief from drought incidence.

### **11. Constraints, if any and Remedial Measures Taken**

The major constrains during the implementation of the project are

- Selection of location for implementation
- Selection of right beneficiaries
- Distribution of inputs

Local self governments were entrusted for selection of locality to implementation of the project. Ward level committees were formed in every Panchayat for the effective selection of beneficiaries and implementation of the project. The committee also monitored the distribution of input and collection of sustainability fund.

### **12. Publications**

#### **Books**

- Way to success - NAIP Success Stories
- Social status of Wayanad
- Climate and Crops of Wayanad District
- Characteristics of Traditional Rice Varieties of Wayanad.

#### **Booklets**

1. Goat Rearing
2. Animal born diseases
3. Rabbit rearing
4. Pig rearing
5. Spices processing and diversification of products
6. Production of Organic Black pepper
7. Production of Organic Ginger
8. Post harvest handling of Black pepper
9. Post harvest handling of Ginger
10. Value-added products from Black pepper



11. Value-added products from Ginger
12. Calendar of operations for Black pepper
13. Calendar of operations for Ginger Leaflets

#### Leaflets

1. Diet pattern in cow
2. Goat rearing for extra income
3. Rearing of Rabbits for meat
4. Nutrition pattern of calves
5. Bird flu
6. Cholera disease in ducks
7. Parasitic diseases
8. Swine flu
9. Generate income by rearing pigs
10. Diseases in animals and their control measures
11. Brussels disease
12. Leptospirosis

#### 13. Media Products Developed/Disseminated

- Video - 1 No. NAIP Success stories

#### 14. Meetings/Seminars/Trainings/Kisan Mela, etc. organized

**Table 22. List of Meetings organized**

<b>a. State Level Review meetings</b>		
<i>Date</i>	<i>Topic/Purpose</i>	<i>Location</i>
19-12-2008	1 <sup>st</sup> Consortium Advisory Committee Meeting	RARS- Ambalavayal
23/05/2009	Consortium Monitoring Unit Meeting	DoE ,Mannuthy
27-6-2009	Associated scientist review meeting	KAU - HQs Vellanikkara
14-7-2009	Partnners- review meeting	RARS, Ambalavayal
23/07/2009	2 <sup>nd</sup> Consortium Advisory Committee Meeting	ATIC Mannuthy
23/01/2010	3 <sup>rd</sup> CAC Meeting	ATIC Mannuthy
28-1-2010	Consortium Monitoring Unit Meeting	ATIC, Mannuthy
17/02/2010	4 <sup>th</sup> Consortium Advisory Committee Meeting	KAU - HQ Vellanikkara
13-9-2010	Consortium Monitoring Unit Meeting	DoE, Mannuthy
27-9-2010	5 <sup>th</sup> Consortium Advisory Committee Meeting	Ambalavayal



29-12-2010	Consortium Advisory Committee Field visit Meeting	Ambalavayal
24.07.11	CMU-Review	
29-07-2011	CMU Meeting	RARS Ambalavayal
15-09-2011	6 <sup>th</sup> CAC Meeting	ATIC Mannuthuy
12-07-2012	Associated scientist meeting	Vellanikkara
21-07-2012	7 <sup>th</sup> CAC Meeting	SAMETI Trivandrum
30-05-2013	CMU Meeting	RARS Ambalavayal
11-07-2013	8 <sup>th</sup> CAC Meeting	RARS Ambalavayal

#### **b. Cluster level meetings**

<i>Date</i>	<i>Topic/Purpose</i>	<i>Location</i>
23-01-2009	NAIP Cluster/ Block level meetings for Mananthavady block (Vellamunda and Thondarnad)	Mananthavady
24-01-2009	NAIP Cluster/ Block level meeting for Sulthan Bathery and Vythiri blocks	RARS,Ambalavayal
29-01-2009	NAIP Cluster/ Block level meeting for Tavinjal-Mananthavady block	Tavinjal
2-02-09	NAIP- Ward level farmers meeting	Vellamunda
3-02-09	NAIP- Ward level farmers meeting	Thondernadu
4-2-2009	NAIP Cluster/ Block level meeting	Tavinjal
5-02-09	NAIP- Ward level farmers meeting	Thomattuchal
23-06-2009	NAIP- Ward level farmers meeting FN- Mananthavady; AN-Nenmeni	Ambalavayal and Nenmeni
24-06-2009	NAIP- Ward level farmers meeting AN- Thondarnad; FN- Vellamunda	Thondarnad and Vellamunda
14-07-2009	NAIP Partners meeting	Ambalavayal
28-07-2009	Base line survey meeting KVK	Ambalavayal
29-07-2009	NAIP- Ward level farmers meeting	Niravilpuzha
17-8-2009	NAIP- planting material distribution- panchayat level inauguration meeting Ambalavayal	Thomattuchal

26-10-2009	NAIP- Ward level farmers meeting	Vellamunda
28-11-2009	NAIP- Ward level farmers meeting	Thomattuchal-Ambalavayal
8-12-2009	NAIP- Ward level farmers meeting	Malavayal, Nenmeni panchayat
19-12-2009	NAIP- Ward level farmers meeting	Beenachi, Meenangadi panchayat
23-12-2009	NAIP- Ward level farmers meeting	Kaniyampatta panchayat
22-6-2012	NAIP Partners meeting	Ambalavayal
25-9-2013	NAIP- M&E meeting and field visit by Dr.Kahita M&E expert	Ambalavayal & Cluster areas
31.07.2013	NAIP-SRF Selection Interview at Central Library	Vellanikkara

#### **Kisan Melas**

- Conducted Jack Festival at Kelpetta in collaboration with Uravu, Wayanad
- Agri food festival at Thrissur.
- Brinjal festival at Mararikkulam, Alappuzha.
- Veterinary & AH mela at District AH office, Sulthan Bathery

#### **15. Participation in Conference/ Meetings/Trainings/Radio talks, etc.**

##### **Radio Talks**

- Scope of Horticultural Crops in Wayanad
- Lime Application in Soil for Different Crops

##### **Trainings**

- NAIP M& E Training at NAARM, Hyderabad on 5 - 9 October 2009

#### **16. Foreign Trainings/Visits : Nil**

#### **17. Performance Indicators**

- Bring up back the ecological functions of paddy fields especially in water conservation and retention.
- Conservation and sustainable use of ground water, improved ground water recharging, relief from drought incidence.
- Sustaining the productivity, improvement in the beneficial micro flora and fauna in the soil. Improvement in natural enemies/ predator population, reduced pest resurgence, reduced soil and water pollution
- Improvement in the health, nutritional and livelihood security of tribes, conservation of biodiversity. Reduction in health care expenditure





- Diversification of farm activities and scientific live stock production increased farm revenue
- Increased income through fare/profitable sale of agricultural produce without intermediaries. Empowering rural poor in value addition of agricultural produce and marketing.

### 18. Employment generation :

Its is estimated that over 1,11,000 man days of employment were created exclusively through the NAIP ie, about 49000 through SHGS and over 62000 at farum level activities, during the project period.

### 19. Assets Generated

Assets generated as a part of the project are mentioned below:

**KAU:** Lap top, Video camera, Digital camera, Colour Laser Printer, Photocopier,

LCD Projection System, Processing equipment set, Cono weeders, Knapsack sprayer, Paddy reaper, Thresher, Winnowing, Oxygen Cylinder, Pulverizer for feed unit, UV viewing chamber, Generator, Weighing machine, Cabinet drier, Grinding mill, Grading equipment, Packing and sealing machine, GPS

**VFPCK:** Electronic platform balance, Electronic weighing balances

**IISR:** Computer and accessories

**WSSS:** Computer with accessories, Sprayers

### 20. Awards and Recognitions:

Dr. V. S. Devadas Consortium P.I. was honored as “Fellow of Consortium of Horticulture Associations of India” for the achievements in the field of Horticulture and NAIP, in May 2012.

### 21. Steps Undertaken for Post NAIP Sustainability

For effective implementation of the scheme and fulfilling the aims and objectives in a sustainable way and extending the activities of the scheme even after completion of the project, “RARS - NAIP Agricultural Sustainable Committees” were formed and registered as per Societies Registration Act in all the nine Panchayaths under NAIP. The details of sustainability fund collected are shown below (Table No.23)

### 22. Future Line of Work

- Various Government agencies, commodity boards and Private Institutions should work in a consortium mode for the common goodness of the farm community.
- More emphasis to be given to the upliftment of farm women.
- Tribal empowerment schemes to become successful should be altered by linking the activities with cultural heritage of the group. A detailed study is required in this regard.

### 23. Personnel

A number of persons have been associated with implementation of this Project, apart from the Consortium Co-PIs and contractual staff of the

**Table No.23. Details of Sustainability Fund Collected**

No.	Panchayath	Amount Rs.
1	Ambalavayal	188634
2	Nenmeni	265129
3	Meenangadi	148213
4	Kaniyampetta	476793
5	Kottathara	190632
6	Muttill	365736
7	Thavinjal	125716
8	Thondarnad	120275
9	Vellamunda	119883
	<b>Total</b>	<b>20,01,011</b>

partners. The co-operation, contributions and services rendered during different periods by Dr. V.K. Raju, Dr. K.M. Sunil, Dr. AK.Sreelatha, Dr. A. Radhamma Pillai, Dr. Lyla Mathew, Dr. MC.Naryanankutty, Dr. P. Rajendran, Dr. P. Indiaradevi, Dr. CR.Elsy, Dr. U. Jaikumaran, Dr. K.P. Visalakshi, Dr. D. Dhalin, Dr. KB Sheela, Dr. PB Pushpalatha, Dr. P. Suseela, Dr. Babu Mathew, Dr V.S. Sujatha, Dr M.R. Shylaja, Dr. N.V. Satheesan, M/s. K. Vasudevan, K.V.Valsan, T.T. Jacob, C.T. Jacob, Shri P.R. Ragesh, N. Raveendran, Abdul Salam, Shaibudeen, (from KAU), Dr. K. Anilkumar, Dr. John Martin, Dr. C.N. Dinesh, Dr. Chintu Ravishankar, Dr. Renuka Nayar, C. Jayakumar, Dr. K. Pramod, Dr. Senthil (Veterinary College, Pookkot) and Mr. PA Jose (WSSS) are thankfully acknowledged.

#### **24. Governance, Management, Implementation and Coordination**

The scheme was managed and monitored by RPC , National Director and National Coordinator at ICAR level; by Consortium Advisory Committee (at State level) and by Consortium Monitoring Unit at University level. The project was implimented by the lead centre, KAU in close association with the consortium partners.

#### **Consortium Advisory Committee**

Dr. R. Vikraman Nair, Director of Research (Retd.) & Chairman, CAC, KAU, Keezhathil Veedu, GRA 169, Gowreeshapattom, Trivandrum - 695004

Dr. A.P. Srivastava Room No. 515, Krishi Anusandhan Bhawan - II Pusa Campus, New Delhi - 110 012

Dr.V.V.Sreenarayanan ,(Former Dean Faculty of Agrl Engg., TNAU, Coimbatore), N. G. Mahalingam College of Engineering, Pollachi, Tamil Nadu

Dr. K.U.K.Namboodiri, MSSRF, Bijupatnayak, Medicinal Plants Guarden & Research Center, Phulabad, Jaipur (RS) - 764002, Koraput, Orisa

Sri M S Prasanth Rajesh, Secretary,Wayanad Coffee Growers Association, Kalpetta, Rajmahal, Parakkal, Muttill P.O.Wayanad - 673 122

Mrs Mary Devasia, Lt Col (Retd)Elappupara, Kammana, Arattuthara P.O., Mananthavady - 670 645Wayanad Dist. Ph : 04935 242820

Mr Dominic K. V, Kunnathkuzhy Kammano P. O. Mananthavady Ph. 04936 242025

Ms. V. Purushothaman, Varipra House, Vaduvanchal P.O. Wayanad Dt.

Mr.H.B. Pradeep, Hill View, Ellumanna P.O.wayanad Dt, (President, Edavaka Panchayath)

### Consortium Monitoring Unit

Dr. M.K. Sheela, P. V. BALACHANDRAN  
(Chairperson, CMU) & Directors of Extension,  
KAU, Mannuthy P.O, Trichur -

Dr D. Alexander/ T. R. Gopalakrishnan, Directors of  
Research, KAU Thrissur

Dr. KV Athaman, Dr. P. C. ALEX  
Associate Directors of Research (V & AS),  
Directorate of Research- KAU Vellanikkara,

Dr. E V. Nybe  
Professor and Head,, Department of Plantation Crops and Spices  
College of Horticulture, KAU, Vellanikkara, Trichur,

Dr. M. S. Raju  
Professor (Fisheries Economics) College of Fisheries,  
KAU, Panangad - 682 506 Ernakulam Dt.

Dr. L. Rajamony/ SAJAN KURIEN  
Associate Director of Research (Planning.), KAU , Vellanikkara,  
Trichur, Utilisation of funds was 92.51% over the budget allocations.

### Part-III: Budget and its Utilization

Partners	Total Budget Sanctioned	Fund Released(up to Closing Date)	Fund Utilized(up to Closing Date)
KAU (Lead Centre)	498.142	447.169	471.826
VFPCCK Kambalakkad (Consortium partner)	33.288	31.607	31.856
IISR, Calicut (Consortium partner)	38.784	26.750	26.750
RCRS, Chundale (Consortium partner)	27.372	19.350	20.159
WSSS, Manathavady (Consortium partner)	12.156	14.186	12.156
District Panchayath , Kalpetta (Consortium partner)	14.195	14.449	14.449
<b>Total</b>	<b>623.937</b>	<b>553.511</b>	<b>577.1963</b>

### Part-IV: Declaration

We hereby declare that the facts mentioned in the report are based on information available from various documents, surveys and other contacts, and are true to the best of our knowledge and belief.