



कृषक
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SCIENTISTS



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पारस्परिक क्रिया
INTERACTION



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A Knowledge Sharing Approach

केन्द्रीय रोपण फसल अनुसंधान संस्थान
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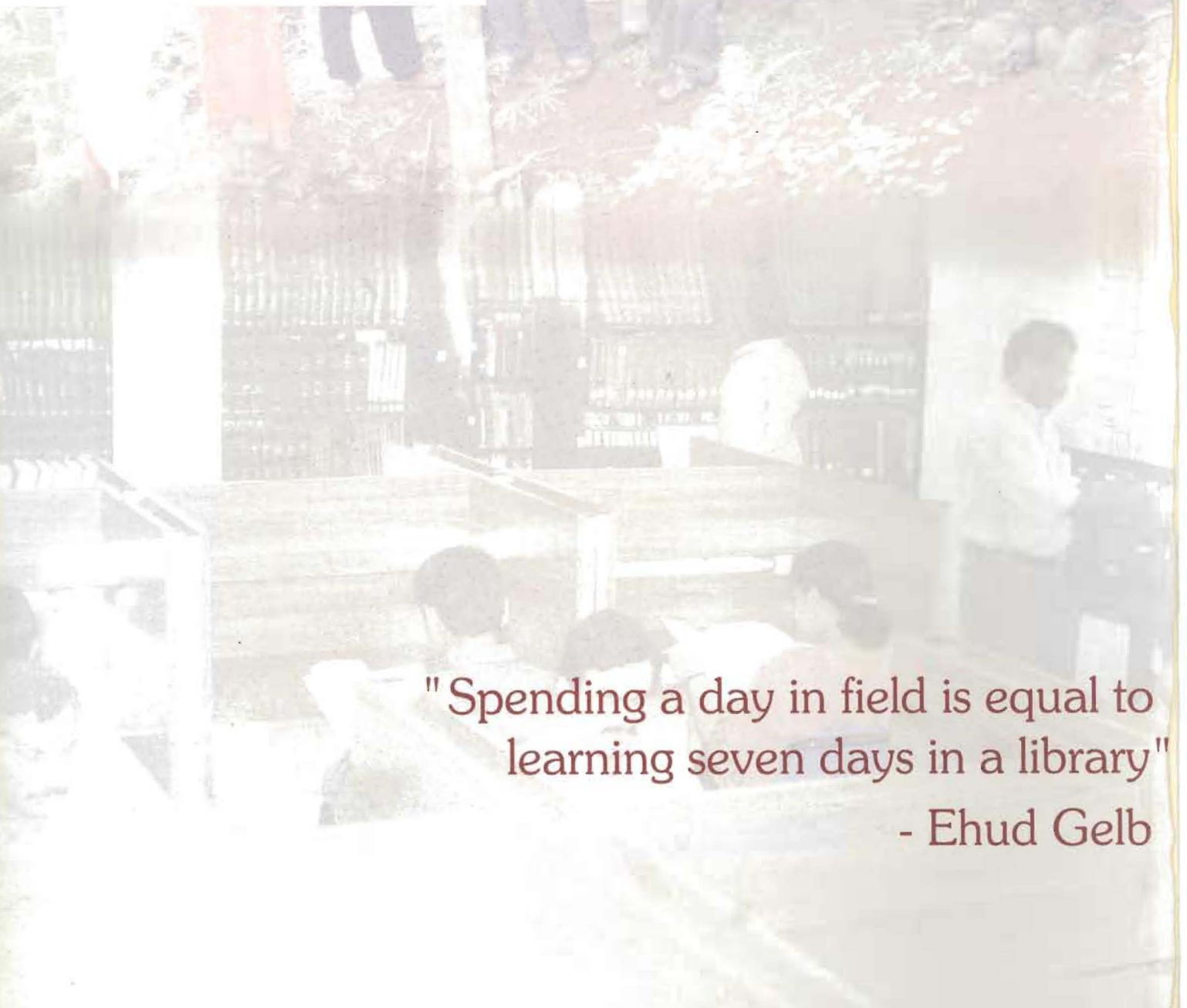
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" Spending a day in field is equal to
learning seven days in a library"

- Ehud Gelb

FARMERS-SCIENTISTS INTERACTION

- A Knowledge Sharing Approach

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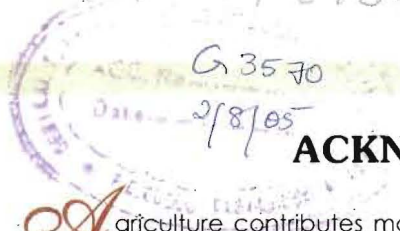
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- A Knowledge Sharing Approach**

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Agriculture contributes maximum percentage in growth rate of G.N.P of the country. Transfer of technology plays a pivotal role for increasing production in agriculture and allied sectors. Availability of appropriate technology to the farmers is understandable, acceptable and applicable form with minimum distortions, distractions and constraints would strengthen the technology adoption process. In this context, we hope that the present endeavour of connectivity approach to bring together the farmers and scientists to interact freely and frankly for exchanging their experiences, traditional and modern technologies in farming may suit the noble cause of confidence building among the farming community.

We would like to place on record the valuable guidance, encouragement, suggestions and cooperation received from each and every one, right from the commencement to the present publication. It is our proud privilege to have Foreword from Dr.Mangala Rai, Director General (ICAR) and Secretary (DARE), New Delhi for which we extend our deep sense of gratitude. We are immensely grateful and thankful to Dr.G.Kaloo, Deputy Director General (Horticulture & Crop Sciences), ICAR, New Delhi for his kind message as well as his kind help received from time-to-time. Our sincere and heartfelt regards to Dr.P.Das, Deputy Director General (Agricultural Extension), ICAR, New Delhi for his valuable guidance and inspiration. We are indeed highly grateful to the respondent farmers and their family members for their constant association, unforgettable cooperation and active involvement for materializing this effort in the present form. We feel elated to express our heartfelt thanks to all scientists of the Institute for their total involvement, appropriate suggestions, active cooperation and proper coordination in carrying out the field visit programme smoothly. We would like to appreciate the Faculty of KVK for organizing the field visits effectively. We sincerely acknowledge and thank the timely help and services rendered by the staff of Computer Section of Social Sciences Division, Vehicle Unit, PMT Cell, Photography Unit and Works Section. We thank Karavali Colour Cartons, Mangalore for bringing out this publication in a short span of time.

Editors

Front cover

- A general view of palms in a village and a farmer in farming operations
- A general view of research infrastructure and a scientist doing research
- A general view of interaction between farmers and scientists

Back cover

- Steps involved in caring the uncared



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डा. मंगला राय
सचिव
कृषि अनुसंधान और शिक्षा विभाग एवं
महानिदेशक
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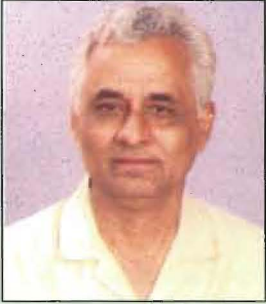
*T*he agricultural scenario in the country has made tremendous progress on account of technologies generated by our agricultural R&D institutions and their successful transfer to farmers' fields.

The farming communities in India are knowledgeable in traditional practices of cultivation and / or equally keen to learn the modern techniques and adopt the technologies developed by the scientific community. Organizing training programmes for the benefit of extension officials and farmers are also a regular activity in the ICAR Institutes.

The farming communities are confronted with many problems such as recurring drought, cyclone, pests and diseases, in one or the other part of India. This calls for urgent attention of all the Institutes to prioritize the programmes. The foremost concern of the Council is to establish a healthy rapport between the Institutes and farmers. The strengthening of extension activities in the past years through Krishi Vigyan Kendra (KVK), Institution Village Linkage Programme (IVLP) and Agricultural Technology Information Centres (ATIC) have definitely improved the situation, but still the personal touch with more concern linked with commitment for the genuine problems of the farmers is required. CPCRI initiated recently a 'Farmer Scientists' Interaction Programme' eulogizing the 'Farm and Home' concept of extension approach. There was a systematic attempt in the whole programme with active participation of every scientist, which is most gratifying. The documentation of the visits by the scientists to farmers' fields with details is revealing to the extent that farmers in Kasaragod District are reaping the benefit of the Institute's technologies. The perception of the farmers on the programme indicates that they now look forward to such a friendly and helpful attitude of 'caring, 'reaching' and 'teaching' by the scientific community of CPCRI. The scientists in turn also 'learning' about the hitherto unknown traditional knowledge of cultivation is a remarkable achievement of the programme. The future action plan for validation of indigenous technical knowledge gained from the farmers adds value to the publication. This has helped to establish much needed strong linkage between the Institute and the local farmers which should be sustained with more innovative programmes. I wish the scientists all the best in their endeavour focused on the farming community.

I appreciate the efforts of the Director, CPCRI and his team for organizing the programme. I am sure that the publication would serve as a model for other Institutes to follow in bringing close linkage between the Farmers and Scientists.


(MANGALA RAI)



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India is an agrarian country and about 70 per cent of people depend on agriculture for their livelihood. Agriculture has always got priority in the Five Year Plans of our country. Agricultural production targets are high to meet the increasing demands of ever growing population of the country. To achieve this, we have to use natural resources effectively by integrating modern technologies as well as indigenous knowledge/traditional practices followed by the farmers from time immemorial. In the present era of technological advancement, dissemination of appropriate technologies to the end users, tailoring to their needs and requirements is a great challenge. The benefits of these technologies are derived only when they reach the farmers in an effective way. In this direction, the interaction between farmers and scientists is much meaningful.

The Indian Council of Agricultural Research is formulating and implementing need based out reach programmes by way of involving farmers and scientists for developing and disseminating location specific technologies from time to time. These efforts brought several revolutions like green, white, yellow and blue revolutions in the country. It is heartening to note that the Central Plantation Crops Research Institute, Kasaragod has further attempted different kinds of knowledge sharing approaches like interface programme involving sister concerns as well as farmers, farmers-scientists interaction programme etc to reach the un-reached farm families with information on recent trends in agricultural scenario.

In fact, the farmers-scientists interaction programme develops an intimate relationship between the farm families and scientific community which in turn results in gaining competence and confidence in the adoption of farmer friendly technologies. The information generated during such interactive field visits, compiled in the form of this publication entitled 'Farmers-Scientists Interaction Programme- A Knowledge Sharing Approach' will be encouraging and much useful to the institutions, researchers, extension functionaries, farmers, administrators etc. I wish all the best for future endeavors of CPCRI in this direction for the better cause of overall development of our farming sector.


(G.KALLOO)



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डा. वी. राजगोपाल
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India is recognized worldwide essentially as an agriculture-based Nation. Farming community over the years have acquired wealth of indigenous knowledge on agricultural practices. With the advent of modern techniques in agriculture and related sector, the country had witnessed several revolutions, the much acclaimed being the green revolution. In the sectors such as fertilizers and irrigation there were considerable improvement, while the crops and varieties showed remarkable breakthrough. Agricultural research in the country for the last five decades exhibited phenomenal growth, which resulted in evolving high yielding varieties, developing production technologies and several management practices. The increase in food production from 52 million tones in 1950s to over 200 million tones in 2002 bears testimony to the contribution of research efforts in enhancing the farmers confidence in early years (1950-60s) in farming as a livelihood.

However, the agriculture production constraints started emerging glaringly from 1960s the foremost being frequent droughts or cyclone in some or other parts of the country. The outbreak of diseases and insect pests further confounded the problem, resulting in heavy toll on production levels. Farmers were driven to untold miseries. Scientific Research in the Agricultural Institutes and Universities under the Indian Council of Agricultural Research (ICAR) was strengthened to mitigate the problem to some extent, but still the farmers in some areas did not get the benefit of research. The scientists were busy in developing the technologies in the limited institute farms with some degree of success, but the transfer of the same to farmers field was either slow or nil. This was found to be due to weak extension agencies to take the benefits of laboratory results to the farmers land. The situation did improve with various extension-oriented schemes by the Central and State Governments during the past one decade.

In this context, the recent critical analysis by the Extension Scientists of CPCRI showed that although several technologies are developed, they are not fully adopted by the farmers due to lack of awareness. Training programmes to educate the farmers at the Institute showed positive trends, but still met with only partial success in

addressing all the problems. Further insight into the problem clearly revealed that the scientists kept themselves busy in their own laboratories/farms, seldom caring to visit the farmers to understand the ground realities. Even occasional visits by scientists did not prove to be successful, since whatever findings they have made are not always matching to farmers' needs. The impact analysis data also indicated that some farmers are poor in their knowledge of technologies, but they have their own indigenous methods which the scientists did not know. Then, the question arose as to how to bring about positive changes in the mindset of both the scientists and farmers? Hence, a novel approach was introduced in the Institute on Farmers-Scientists Interaction Programme (FSIP) during early 2002, with a mandate for all the scientists, irrespective of their disciplines, to visit the farmer's plots frequently. This amounted to 15 to 35 percentage of the man days allotted to each scientist for farmer oriented programmes of the Institute.

The main objectives of the FSIP are : (i) to care the uncared (ii) to reach the unreached (iii) to teach the untaught and (iv) to learn the unlearnt. This comprehensive and holistic approach has the inherent capacity for the flow of knowledge between the scientists and farmers, with mutual benefits i.e the latter understanding the modern technologies, while the scientists learning from farmers their rich field experience with wisdom. Thus, a wonderful partnership emerged with a promise to achieve success, a concretized approach to address various issues at the grass root level.

With the above objectives, the Institute had launched the programme in the main as well as all the Regional Stations and Research Centres of CPCRI in which the Director, Head of Divisions and all the Scientists participated. This educational tour proved to be highly beneficial for scientists to perceive the situations and come out with the tangible solutions to the problems faced by the farmers. The latter in turn responded positively with a sense of appreciation that researchers in the Institute are at their door steps to make sincere efforts to understand and alleviate the problems. This helped to a great extent in dispelling the apprehensions in the minds of the farmers about the scientific community and paved the way for mutual faith and respect. This is to be considered as the discernible Confidence Building Initiative (CBI), well conceived and meticulously nurtured by the Institute.

This publication is a humble beginning in documenting the findings of the 'Farmer -Scientist Interaction Programme'. The success of the venture lies in the number of villages/Panchayats/blocks/farmers covered with wide ranging aspects, the efforts of the Scientists who won the much needed confidence of the farmers on this unique programme. The shift in the paradigm is that scientists should visit farmers' field as frequently as possible, not waiting for the latter to travel to the Institute always.

Should we be interested in the improvement of the Indian agriculture with farmers' interest uppermost in mind, then the present programme may serve as a model, which perhaps need to be implemented in every Institute with improvement wherever needed. We hope this publication would serve the researches, farmers and more so, the policy planners in carefully designing an appropriate National Work Plan, on extension service to farmers.


(V. RAJAGOPAL)

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सा रां श

अनुसंधान संस्थान समय - समय पर जरूरतों के आधार पर विभिन्न प्रौद्योगिकियों का विकास करते रहे हैं। इन प्रौद्योगिकियों का पूरा लाभ तभी उठाया जा सकता है जब ये सही मायनों में किसानों तक पहुँचाई जायें। इसके लिये भारतीय कृषि अनुसंधान परिषद् ने देश भर में उसके विभिन्न अनुसंधान संस्थानों, राज्य कृषि विश्वविद्यालयों और गैर सरकारी संस्थाओं के जरिए आवश्यकता आधारित बाह्य - पहुँच कार्यक्रम बनाये हैं और उनका कार्यान्वयन किया है।

इस संदर्भ में, केन्द्रीय रोपण फसल अनुसंधान संस्थान में किये गये अध्ययन से पता चला कि जबकि कई प्रौद्योगिकियों का संस्थान द्वारा विकास किया गया है, लेकिन जानकारी की कमी की वजह से किसानों ने इन्हें पूरी तरह नहीं अपनाया है। संस्थान में किसानों को शिक्षित करने के लिये आयोजित किये जा रहे प्रशिक्षण कार्यक्रम सफल रहे हैं, लेकिन सभी समस्याओं का समाधान करने में आंशिक सफलता ही हाथ लगी है। गहराई तक जाने पर यह भी पता चला कि वैज्ञानिक अपनी प्रयोगशालाओं / फार्म में ही व्यस्त रहते हैं और किसानों की परिस्थितियों को समझने के लिये उनके प्रक्षेत्र का दौरा बहुत कम करते हैं। वैज्ञानिकों का कभी - कभी किसानों के पास जाना भी ज्यादा मददगार नहीं साबित हुआ क्योंकि उनके निष्कर्ष हमेशा किसानों की जरूरतों से मेल नहीं खाते थे। प्रभाव विश्लेषण आंकड़ों से पता चला कि कुछ किसान प्रौद्योगिकियों के बारे में जानकारी नहीं रखते हैं लेकिन उनके पास अपने ही देशी तरीके हैं जिनके बारे में वैज्ञानिक नहीं जानते थे। इस दरार को भरने के लिये संस्थान में वर्ष २००२ के शुरू में ही कृषक - वैज्ञानिक पारस्परिक क्रिया कार्यक्रम का प्रारंभ किया गया जिसमें वैज्ञानिकों, चाहे किसी भी विषय के हों, का किसानों के प्रक्षेत्र का दौरा करना अनिवार्य हो गया। इससे वैज्ञानिकों और किसानों के बीच ज्ञान की धारा बही और दोनों को ही फायदा हुआ। किसानों ने आधुनिक प्रौद्योगिकियों के बारे में जाना जबकि वैज्ञानिकों ने किसानों के प्रक्षेत्र अनुभव का लाभ उठाया। इससे सफलता का आश्वासन दिलाती एक भागीदारी उभरी जिससे निचली संतह पर विभिन्न मुद्दों को संबोधित किया जा सके।

इन सिद्धान्तों के साथ कार्यक्रम का कार्यान्वयन किया गया :

- बिना चिन्ता किये हुआओं के बारे में चिन्ता करना
- बिना - पहुँचे हुआओं तक पहुँचना
- अशिक्षितों को शिक्षा देना
- बिना सीखे हुआओं को सिखाना

संस्थान के मुख्यालय कासरगोड में वर्ष २००२ में इस कार्यक्रम का प्रारंभ किया गया और वर्ष २००३ में इसको प्रादेशिक केन्द्र, कायंगुलम (केरल), विट्टल (कर्नाटक) और मिनीकॉय (लक्षद्वीप), और अनुसंधान केन्द्र, मोहितनगर (पश्चिम बंगाल) और काहिकुची (असम), में भी कार्यान्वित किया गया जिसमें निदेशक, प्रभाग के प्रमुखों और सभी वैज्ञानिकों ने भाग लिया। संस्थान मुख्यालय में चार चरणों में कुल १६ परिदर्शनों का आयोजन किया गया जिसमें कासरगोड़ जिले की २२ ग्राम पंचायतों के ३२ गाँवों से चुनिंदा ४३ सफल फार्म / खेत / उद्यमों का दौरा किया गया। जब किसानों का नक्शा बनाया गया तो पाया गया कि बहुसंख्यक किसान (४६%) मध्य आयु वर्ग के थे, ३७% किसान बूढ़े और युवा १४% थे। शैक्षणिक स्थिति में,

बहुसंख्यक किसानों (४७%) ने उच्च विद्यालय शिक्षा प्राप्त की थी, २३% किसान स्नातक, १६% पूर्वस्नातक, ५% स्नातकोत्तर थे और ६% ने प्राथमिक शिक्षा ग्रहण की थी। ६०% किसानों के परिवार केन्द्रित और ४०% के संयुक्त परिवार थे। ५१% किसानों के परिवारों में ५-८ सदस्य थे, ३३% परिवारों में चार से कम सदस्य थे और १६% परिवारों में ६ से अधिक सदस्य थे। टीम के प्रेक्षण के आधार पर, ४६% किसानों की सामाजिक - आर्थिक स्थिति ऊँची, ४६% की माध्यम और ५% की निचली थी। बहुसंख्यक किसानों की ज्ञान और प्रौद्योगिकी अपनाने की दर क्रमशः ५४% और ६०% पाई गई। यह भी पाया गया कि करीब ७० - ७२% किसानों ने प्रौद्योगिकियों जैसे नारियल की उच्च उपज वाली प्रजातियाँ और संकर किस्में, सुपारी की उच्च उपज प्रदत्त प्रजातियाँ, फसल प्रबंधन रीतियाँ जैसे कीट एवं रोग प्रबंधन, वर्मीकम्पोस्ट उत्पादन, छिलके गाड़कर अलवाल प्रबंधन, रिसाव से सिंचाई, नारियल चिप्स, जिनका विकासन केन्द्रीय रोपण फसल अनुसंधान संस्थान में किया गया है, और अन्य प्रौद्योगिकियों जैसे धान की उच्च उपज प्रदत्त प्रजातियाँ, काली मिर्च, तरकारी, कन्द फसलें, खाद्य प्रसंस्करण, मौसमी फलों के परिरक्षण के तरीके, मधुमक्खी पालन, डेरी, जल संरक्षण उपाय, जिन्हें राज्य कृषि विश्वविद्यालयों या अन्य संस्थानों में विकसित किया गया और के.रो.फ.अ.सं. के कृषि विज्ञान केन्द्र द्वारा लोकप्रिय बनाया गया, को सफलतापूर्वक अपनाया है।

पारस्परिक प्रक्षेत्र दौरों में हर फार्म / खेत की ताकतों और कमजोरियों का निर्धारण किया गया और तदनुसार, किसानों की कृषि परिस्थितियों और कृषि प्रणाली / पद्धति में सुधार की गुंजाइश को देखते हुए प्रत्येक किसान को उचित सुझाव दिये गये।

इन प्रक्षेत्र दौरों से दो उद्देश्यों की पूर्ति हुई - पहला यह कि नारियल में एरियोफिड कीट, काला भृंग, तना स्रवण रोग, सूखा आदि का प्रबंधन, सुपारी में फलों का गिरना, पुष्पगुच्छ की मृत्यु, तर्कु कीट द्वारा नुकसान, काली मिर्च का शीघ्र मुरझाना और धीमे से मुरझाना रोग, वनीला में फलियों का पीला पड़ना, पौधे के अग्र भाग का सड़ना, करेले की फल मक्खी, चौलाई के पत्तों पर धब्बे, भिण्डी के रोग, मृदा एवं जल संरक्षण उपाय, खेतों में उत्पन्न कूड़े - करकट से वर्मीकम्पोस्ट

उत्पादन पर किसानों को मार्गदर्शन मिला। दूसरा यह कि किसानों के देशी और पारंपरिक कृषि तरीकों जैसे जली हुई मृदा और राख के मिश्रण का सुपारी में फल फटने और गिरने के लिये प्रयोग, जंगली सूअरों द्वारा नुकसान रोकने के लिये चारदीवारी पर पतली धागे जैसी जी.आई. तार का बाँधना, सुपारी ताड़ पर चढ़ने के यंत्र का डिजाइन, प्रभावी पोषण प्रबंधन के लिये विभिन्न कार्बनिक खादों का प्रयोग, विभिन्न फसलों के कीटों और रोगों के प्रबंधन के लिये गौमूत्र का प्रयोग, सुरंगा और कट्टा जैसे पारंपरिक जल भण्डारण ढांचे, स्थानीय तौर पर तैयार सुपारी ड्रायर, विभिन्न फसलों की बेहतर वृद्धि और कीटों और रोगों में कमी लाने के लिये पंचकाव्य बनाना और प्रयोग, इत्यादि से वैज्ञानिकों का परिचय हुआ।

वैज्ञानिकों की टीम द्वारा दी गई रिपोर्ट के आधार पर प्रक्षेत्र दौरों के दौरान एकत्र सूचना का संकलन और प्रलेखन किया गया। प्रक्षेत्र दौरों के बाद किसानों को वैज्ञानिक टीम द्वारा दिये गये सुझावों की जानकारी दी गई। कुछ किसानों ने सुझावों पर की गई कार्रवाई पर तुरन्त जवाब भेजे। संस्थान की अनुसंधान सलाहकार समिति द्वारा पारस्परिक प्रक्षेत्र दौरों की प्रगति की समीक्षा की गई। के.रो.फ.अ.स. के मुख्य कैम्पस में किसानों और वैज्ञानिकों के बीच संवाद का भी आयोजन किया गया। किसानों और वैज्ञानिकों के अनुभवों के रूप में कृषक - वैज्ञानिक पारस्परिक क्रिया कार्यक्रम पर प्रतिक्रिया प्राप्त की गई।

किसानों ने इस ज्ञान बाँटने के दृष्टिकोण की सराहना की कि संस्थान से वैज्ञानिक उनके पास आकर उनकी समस्याओं को समझने और उनका हल निकालने का प्रयास कर रहे हैं। वैज्ञानिकों का भी किसानों की असल परिस्थितियों, उनकी जरूरतों एवं उनके पारंपरिक ज्ञान से परिचय हुआ जिससे अनुसंधान कार्यक्रमों और भविष्य कार्यनीति की योजना और कार्यान्वयन में मदद मिलेगी। इससे किसानों के दिमाग में घर की हुई भ्रांतियों का विनाश हुआ और वैज्ञानिकों और किसानों के बीच पारस्परिक निष्ठा और आदर का माहौल बना। टीम अनुसंधान के जरिये समस्या सुलझाने के लिये इस अवधारणा का विस्तार किया जा सकता है जिसके लिये एक आदर्श कार्रवाई कार्यक्रम की भविष्य योजना का प्रारूप तैयार किया गया है।

The research institutions are developing various need based technologies from time to time. The benefits of these technologies will be derived only when they reach the farmers in a meaningful way. This is taking place through the formulation and implementation of need based out-reach programmes by the ICAR through its various research Institutes, SAUs and NGOs in the country. However, it was estimated from different sources that only 30 per cent of available technologies are being adopted by the farmers.

In this context, the studies conducted at CPCRI revealed that though several technologies were developed, they were not fully adopted by the farmers due to lack of awareness. Training programmes to educate the farmers at the Institute showed positive trends, but still met with only partial success in addressing all the problems. Further insight into the problem clearly revealed that the scientists kept themselves busy in their own laboratories/farms, seldom caring to visit the farmers to understand the ground realities. Even occasional visits by scientists did not prove to be successful, since whatever findings they have made were not always matching to farmers' needs. The impact analysis data also indicated that some farmers are poor in their knowledge of technologies, but they have their own indigenous methods which the scientists did not know. To bridge this gap, Farmers-Scientists Interaction Programme (FSIP) was initiated in the Institute during early 2002, with a mandate for all the scientists, irrespective of their disciplines, to visit the farmer's plots frequently. This comprehensive and holistic approach has the inherent capacity for the flow of knowledge between the scientists and farmers, with mutual benefits i.e the latter understanding the modern technologies, while the scientists learning from farmers their rich field experience with traditional wisdom. Thus, a wonderful partnership emerged with a promise to achieve success, a concretized approach to address various issues at the grass root level. The programme was implemented with the following principles :

- **caring the uncared**
- **reaching the unreached**
- **teaching the untaught**
- **learning the unlearned**

The Institute had launched the programme at the Headquarters in Kasaragod in the year 2002 and subsequently extended to its Regional Stations at Kayangulam (Kerala) and Vittal (Karnataka) in the year 2003 and Regional Station at Minicoy (Lakshadweep) and Research Centres at Mohitnagar (West Bengal) and Kahikuchi (Assam) in which the Director, Head of Divisions and all the Scientists participated.

A total of 19 field visits were organised in four phases at the Headquarters covering 43 successful farms/enterprises belonging to 32 villages under 22 gram panchayats of Kasaragod district. The profile of the farmers indicate that majority of farmers (49 %) belong to the middle age group followed by old (37 %) and the young (14%). The educational status showed that majority of farmers (47%) had high school education followed by graduates (23%), undergraduates (16%), primary (9%) and post graduates (5%). Farm families showed the trend of nuclear family (60%) and joint family (40%). The data on family size indicated that 5-8 members are present in 51 % of farm families followed by less than four members

in 33% of farm families and more than nine members in 16% of farm families. The categorisation of farm families based on land holding revealed that six belonged to homestead/entrepreneurs, seven marginal, 10 small, 11 medium and nine large. Based on the observations by the team, the socio-economic status of 49% of farmers is high followed by medium (46%) and low (5%). Further, the knowledge and technology adoption level indicated that majority of farmers are of medium level (54% and 60 %, respectively) followed by high (46 % and 40%, respectively). Among the visited farmers, around 70-72 % of them successfully adopted the technologies viz., high yielding varieties and hybrids of coconut, high yielding varieties of arecanut, crop management practices like pest and disease management practices, vermicomposting, basin management with husk burial, drip irrigation etc, value addition technology in coconut like coconut chips etc developed by the CPCRI and technologies viz. high yielding varieties of paddy, pepper, vegetables, tuber crops; food processing methods, seasonal fruit preservation methods, bee keeping, dairy, water conservation methods etc developed by sister institutes/SAUs which were popularised through various activities of KVK of CPCRI.

Interactive field visits assessed the strengths and weaknesses of each farm visited and accordingly suitable suggestions were recommended to the individual farmers taking in to consideration the prevailing farming situation and scope for improvement of the farming system/cropping pattern as a whole.

The visits achieved twin objectives, the first being farm guidance extended to the farmers wherever required especially on management practices of eriophyid mite, rhinoceros beetle, stem bleeding, drought problem etc in coconut, button shedding, inflorescence die back, spindle bug damage etc in arecanut, foot rot, slow wilt in pepper, shoot tip rot, bean yellowing disease in vanilla, leaf roller in paddy, leaf spot in amaranthus, fruit fly in bitter gourd, mosaic disease in bhendi, soil and water conservation methods, effective recycling of farm waste through

vermicomposting etc., the second objective was that scientists were exposed to various traditional farming practices followed by the farmers like use of burnt soil – ash mixture against nut splitting and button shedding in arecanut, fixing thread like thin GI wire across the boundary to prevent wild boar damage, design and fabrication of arecanut climbing device, combinations of organic manures for effective nutrient management, cow's urine against pests and diseases of different crops, spreading arecanut husk as supportive substratum for upland paddy cultivation, traditional water harvesting structures such as suranga, katta etc, locally designed permanent arecanut dryer, agri-chopper, gunny bag stand etc, preparation and usage of panchagavya for better growth and reduction of pests and diseases incidence in various crops.

The information collected during the field visits were compiled and documented based on the reports by the scientists team. Some of the farmers promptly sent replies about the action being taken on the suggestions made. The progress of the interactive field visits was reviewed by the Research Advisory Committee of the Institute. A dialogue between farmers and scientists was also organised at CPCRI main campus. The feed-back on FSIP was obtained both from the farmers and scientists in the form of their perceptions.

The farmers responded positively to this knowledge sharing approach with a sense of appreciation that researchers from Institute are coming to their door steps to make sincere efforts to understand, analyse and alleviate their problems. At the same time scientists also perceived the existing farming situations, felt needs of farmers as well as traditional wisdom for planning and implementation of future research programmes and strategies. This helped to a great extent in dispelling the apprehensions in the minds of the farmers and paved the way for mutual faith, respect and confidence building. Hence, the same concept may be extended towards a problem solving approach through team research for which a model action programme has been planned for the future.

Section - I

Introduction

Agriculture is the back-bone of Indian economy. Around 70 per cent of India's population lives in rural areas and their prime occupation is farming. Transfer of useful and relevant agricultural technologies are very important for effective farming and production. In the present era of technological advancements, the dissemination of appropriate technologies to the end users suiting to their prevailing agro-ecological situations is posing a great challenge to the extension system. Each and every agricultural organization/agency in India is generating enough of technically sound, culturally compatible, ecologically sustainable, economically viable and practically feasible technologies from time to time. Only we have to find out the effective methods and means to bridge the gap between technology availability and technology adoption. Hence, extension methods become very crucial to convince the farmers about the technology acceptance and retention in their farm.

The extension services are offered by various institutions in the country. The number of institutions are being increased over the years and their extension activities varies based on their nature and mandate. The agricultural extension service was extended under the guidance of State Department of Agriculture and State Agricultural Universities as agriculture is state subject. The same services were also rendered by some Non-Governmental Organizations effectively in their vicinity. The Indian Council of Agricultural Research is involved systematically in extension service through launching of 'National Demonstrations Programme' in 1964. Since then, involvement of ICAR has increased considerably with the initiation and implementation of innovative and viable first line transfer of technology projects viz., Farmers' Training Centres, Krishi Vigyan Kendras, Operational Research Projects, Lab-to-Land Project, Institute Village Linkage Programme and Agricultural Technology Information Centre from time to time to cater to the needs of farming community in the country.

1.1 Extension system of ICAR

This system basically plays an institutional extension role, a catalytic role, a supportive or complementary role to accelerate the process of transfer of technology. It serves as a window through which the extension agencies and the farmers can gaze at the latest agricultural technologies. The specific objectives are :

- to organize front-line demonstrations by scientists to show the maximum production potentialities of the latest agricultural technologies to the farmers and extension functionaries with a view to reducing the time lag between technology generation and its adoption,
- to involve a large number of scientists in field work for getting first hand feed-back of farming problems so as to re-orient research, education and training programmes by the scientists,
- to test and verify the technologies in actual field conditions under different socioeconomic conditions of the farmers and to identify the constraints,
- to organize extension programmes in selected areas around ICAR and SAUs institutes to serve as extension laboratories for field trials, field training and teaching programmes,

- to develop appropriate extension approaches and methodologies for field extension work,
- to provide training and communication support to the state department of agriculture and non-government organizations, and
- to serve the farming community by increasing production and productivity by generating employment and income, and by educating them on scientific lines.

1.2 TOT projects of ICAR

There are seven first line transfer of technology projects so far evolved by ICAR. These projects are being implemented through ICAR institutes, SAUs and selected NGOs all over the country. The objectives of these projects are as follows:

1.2.1 National Demonstrations Programme (NDP) :

This is aimed at demonstrating the genetic production potential of the major food crops in the field conditions, develop the farmers into local leaders to serve as agents of change in their areas and provide opportunity to the scientists to demonstrate the validity and relevance of their experimental findings in the farmer's fields.

1.2.2 Farmers' Training Centre (FTC) : Launched during 1966-67 with the main objectives of providing specialised training to cater to the needs of all types of farm families, imparting systematic knowledge on selected topics to the farmers/farm women and convenors of discussion groups through talks and discussions supplemented by audio-visual aids and field visits, and imparting on-the-spot training to the farmers through production - cum - demonstration camps organized by the peripatetic team at the sites of national and secondary demonstrations.

1.2.3 Krishi Vigyan Kendra (KVK) : The first KVK was established in 1974. The broad objectives of KVKs are to organize short term and long term vocational training courses in agriculture and allied vocations for the farmers and rural youth with emphasis on learning by doing for effecting increased production on farms and for generating self

employment, to organize training programmes to update the extension personnel with the recent advances in agricultural research on regular basis, to organize frontline demonstrations on various crops to generate production data and to obtain feedback information, and to conduct on-farm testing for identifying technologies in terms of location specific and sustainable land use systems.

1.2.4 Operational Research Project (ORP) : This project was implemented in 1975. The main objectives are to introduce technologies on area basis and evolve appropriate cropping patterns, to educate and train the farmers on the adoption of technologies and to identify constraints and farming problems and evoke community participation.

1.2.5 Lab-to-land Programme (LLP) : It was initiated in 1979. The main objectives are to extend and promote new technologies among the small and marginal farmers and agricultural labourers, and to test the relevance of the technologies in farmers socio-economic conditions.

1.2.6 Institution Village Linkage Programme (IVLP) : It was launched during 1996-97. This programme was mainly developed to introduce technological interventions with emphasis on stability and sustainability along with productivity of small farm production systems, to introduce and intergrate the appropriate technologies for maintaining productivity, profitability and environmental securities, to provide community action for developing and sharing of natural resources, to monitor socioeconomic impact of the technological interventions for different farm production systems, and to identify extrapolation domains for new technology/technology modules based on environmental characterization at meso and mega levels.

1.2.7 Agricultural Technology Information Centre (ATIC) : Launched during 1998, ATIC is a single window support system developed for providing diagnostic services for soil and water testing for plant and livestock; supplying research products such as seeds and other planting materials,

poultry strains, livestock breeds, fish seed, processed products etc emerging from the institution for testing and adaptation by various clientele; providing information through published literature and communication materials as well as audio-visual aids; providing an opportunity to the Institutes/SAUs to generate some resource through the sale of their technologies; and providing mechanism for feed-back from the users to the Institute.

1.3 The need

The research institutions are developing various need based technologies from time to time. The benefits of these technologies will be derived only when they reach the farmers in a meaningful way. Of course, this is taking place through the formulation and implementation of need based out-reach programmes by various institutions in the country. However, a review of the extend of adoption studies indicate that only 30 per cent of available technologies are being adopted by the

farmers. Therefore the situation poses the following questions in various scientific fora held in the country :

- ❖ Are the farmers aware of all the available agro-technologies ?
- ❖ Are the farmers adopting them ?
- ❖ Are the farmers retaining them ?
- ❖ *Are the farmers visiting the Institutes ?*
- ❖ *Are the scientists aware of the farmers' problems ?*
- ❖ *Are the scientists visiting the farmers' plots ?*
- ❖ *Are the scientists getting feed-back from the farmers ?*
- ❖ *Are there interaction between them to understand each other (Problems/Solutions)?*
- ❖ ----- if not, what next ?

Section - II

Orientation about interactive field visits

*I*nteractive field visits are essential where the objective is to develop farming community, and the goal is to change mindset of the farmers... there is no substitute for informal and face-to-face discussion. Particularly, visit to farms -

- is the most useful individual contact method for extending information so that it will be understood and used
- starts with a discussion of the farmer's situation, his problems, his hopes etc in friendly manner and cordial atmosphere
- questions and answers move freely in both directions for exchanging ideas, views, knowledge, skill and experiences
- is a joint exploration that proceeds from 'what is' to 'what might be'

2.1 Philosophy : The philosophy behind field visit lies in maintaining relationship between 'scientists' and 'farmers' i.e developers and users of technologies, respectively. The basis for this is action and reaction of the participants. They start with each participant's feelings towards the other by giving and receiving.

- scientist gives respect, which encourages the farmer to develop self-respect and reciprocate,
- scientist gives information, which helps the farmer to develop a feeling of technology security,
- scientist gives help, which stimulates the farmer to develop capabilities,
- scientist gives advice, which directs the farmer to adopt suitable technologies and
- scientist gives reward, which motivates the farmer to develop values

2.2 Purpose : The field visit by scientists is a direct contact by the scientists with the farmer and his family members at his home and in his farm for the following purposes:

- to get acquainted with and gain confidence of the farmer,
- to discuss farm related problems,
- to find out problems of which farmer is not aware of,
- to teach skills on modern farming,
- to collect information on technologies and analyse,
- to offer solution to problems/suggest modification, and
- to learn the age old practices of farmers.

2.3 Advantages : The advantages of field visits are as follows:

- face-to-face conversation explores the situation analysis,
- farmers get the benefit of correct solution/answer to their specific problems,
- enlarges the existing transfer of technology programme for extending technical information among individual farmers,
- scientists gain first-hand knowledge of rural farm situations,
- develop goodwill by lessening the barrier between scientists and farmers,
- scientists develop confidence when their recommendations are adopted by the farmers, and
- generates good feed-back (+ve or -ve) on technology performance under different field conditions.
- cementing the much required bondage between farmers and scientists.

2.4 Outcome : The expected out come of the field visits are as follows :

Visits assist in developing programmes

- Sharing of ideas, knowledge and experience between farmers and scientists results in formulating situation demand research programmes as per the desires, problems and abilities of the farmers.

Visits help in carrying out programmes

- Makes route to implement participatory research programmes effectively for technology assessment and refinement in real farm situation.

Thus, a clear road map for the progress of farming community through the interaction is laid out.

Section - III

Scientists interactive field visits

The Central Plantation Crops Research Institute is continuously generating and disseminating technologies on various aspects of its mandate crops – coconut, arecanut and cocoa as well as cropping and farming systems through formulation and implementation of various multi-disciplinary, inter-disciplinary and disciplinary research programmes through its well established divisions viz. Crop Improvement; Crop Production; Crop Protection; Physiology-Biochemistry and Post-harvest Technology; and Social Sciences. The availability of technologies is not only important but its understandability, acceptability and adoptability by the farming community is also very essential for increasing production and productivity. However, apart from effective communication of various technologies to the farmers, the expressions of farmer's interest and need are important to the scientists. Therefore, we should give special attention to the farmers for creating purposeful learning situation. For this, a meaningful and transparent face-to-face approach must be developed between the farmers and scientists.

Keeping this in view and as a part of further strengthening the transfer of technology activities of CPCRI, face-to-face programme between farmers and scientists by way of interactive field visits were planned and organized to the successful farmers/ entrepreneurs farms/units who have adopted technologies either developed or disseminated by CPCRI/KVK by a team of scientists consisting of different disciplines under the leadership of the Director with an aim to exchange experiences/knowledge/views and ideas between farmers and scientists as well as to get feed-back from the farmers.

3.1 Mission with a vision

Educating farmers about new knowledge to understand, accept and adopt as well as to work with them and for them is a gigantic task. For effective technology dissemination and successful adoption, a holistic approach with the following principles, as visualized by the Director, is being followed in the interactive field visits organized by the Institute:

- ❖ caring the uncared
- ❖ reaching the unreached
- ❖ teaching the untaught
- ❖ learning the unlearnt

Diagrammatically these principles are presented in Fig.1

3.2 Motto

Scientists from all disciplines have to visit the fields of successful farmers/entrepreneurs with the interventions of CPCRI/KVK, covering all categories, in each and every grama panchayat of Kasaragod district in a phased manner. Each scientist may opt for any three (minimum) visits scheduled in each phase.

3.3 Methodology

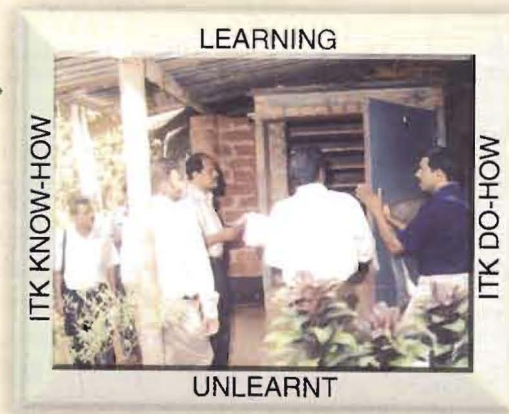
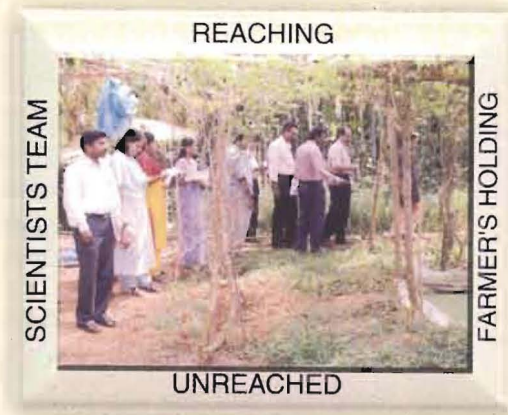
The visits were confined to Kasaragod district in Kerala. Prior to the implementation of interactive field visits, basic information about the district in general and panchayats in particular were collected through secondary data.

Fig. 1 : Caring the uncared

Learning the unlearned

Teaching the untaught

Reaching the unreached



3.3.1 About Kasaragod district

3.3.1.1 General information : Kasaragod district is located in northern part of Kerala with a total geographical area of 1,96,133 ha. There are four blocks, 39 gram panchayats and 75 revenue villages. Block wise details are presented in Table.1 As per the census report 2001, the total population is 12.04 lakhs (male- 5.88 lakhs and female- 6.16 lakhs) with 74.80 % and 64.90 % literacy, respectively.

Table.1 : Block wise panchayats and villages

Sl. No.	Name of the block	Number of gram panchayats	Number of villages
1.	Manjeswar	11	24
2.	Kasaragod	9	17
3.	Kanhangad	9	17
4.	Nileswar	10	17
	Total	39	75

3.3.1.2 Farming situation : Agriculture forms the mainstay of the population of the district. The soil in three natural divisions generally fall under three types. In the highland region it is laterite. In the midland, the soil is a red ferruginous loam of lateritic origin with an admixture of clay and sand. The coastal strip is sandy. Diversity of crops and heterogeneity in cultivation are the characteristic features of agriculture here. The eastern tract comprises of forests and hilly areas. The forests comprise of a variety of timber with teak and other plantations. The hilly areas are mostly cleared and put to private cultivation; the important crops being rubber, cashew and ginger. In the skeletal plateau areas, cashew trees are cultivated, while in some patches, arecanut, pepper and cocoa are grown. In the coastal tract paddy, coconut, arecanut, cashew, tobacco, vegetables and tapioca are cultivated. The important crops raised and their extent of area and production in the district are presented in Table.2.

Table .2 : Area and production under major crops in Kasaragod district (2002)

Crop	Area (ha)	Production (t)
Coconut	56,183	364 (m.nuts)
Rubber	22,248	23,732
Cashew	19,962	10,530
Arecanut	12,738	25,032
Paddy	8,386	15,996
Pepper	7,051	1,568
Vegetables	3,126	14,306
Tapioca	1,250	25,479
Banana	792	8,778
Pulses	389	302
Ginger	129	495
Sweet potato	78	1,423
Tobacco	44	245

3.3.2 About CPCRI

CPCRI is a premier Institute established in 1970 under the Indian Council of Agricultural Research (ICAR) with head quarters at Kasaragod (Kerala) to conduct research on coconut, arecanut and cocoa. Until 1985 the Institute also had spices and cashew and oil palm till 1999. The Institute has established three regional stations at Kayangulam (Kerala), Vittal (Karnataka), Minicoy (Lakshadweep) and four research centres at Kannara (Kerala), Kahikuchi (Assam), Mohitnagar (West Bengal) and Kidu (Karnataka) to cater to the needs of location specific problems. Adaptive research programmes of the Institute are strengthened by the establishment of All India Coordinated Research Project on Palms (AICRP) in 1972, with the head quarters at CPCRI, through its 16 centres located in nine states.

There are 11 mega projects and 39 externally funded projects operating in the institute through five divisions with 70 scientists during the year 2002-2003.

Out of this, 37 scientists are working at CPCRI headquarters, Kasaragod. Therefore, all these scientists served as resource personnel for the interactive field visits. A list of scientists discipline wise is presented in Annexure - I.

3.3.3 Selection of gram panchayats and successful farms/enterprises

3.3.3.1 Panchayats : A total of 22 gram panchayats were selected for the interactive visits viz. Chengala, East Eleri, Puthige, Kumbla, Manjeswar, Meenja, Kumbadaje, Enmakaje, Madhur, Karadka, Pullur-Periye, Kallar, Karindalam, Badiadka, Chemnad, Bedadka, Pallikkere, Belal, Mangalpady, Madikai, Kodom-belur and Mogral Puttur. Location of these gram panchayats are depicted in Fig. 2.

3.3.3.2 Farms/enterprises : Based on the feed-back information received by KVK/CPCRI from the Krishibhawans, gram panchayats, survey studies etc

in Kasaragod district, a list of successful farmers/entrepreneurs among ex-trainees as well as contact farmers was prepared. From this, a total of 43 target farmers/ entrepreneurs were selected randomly for interactive field visits. List of farmers/entrepreneurs contacted by field visits are presented in Annexure-II.

3.3.4 Visit schedule

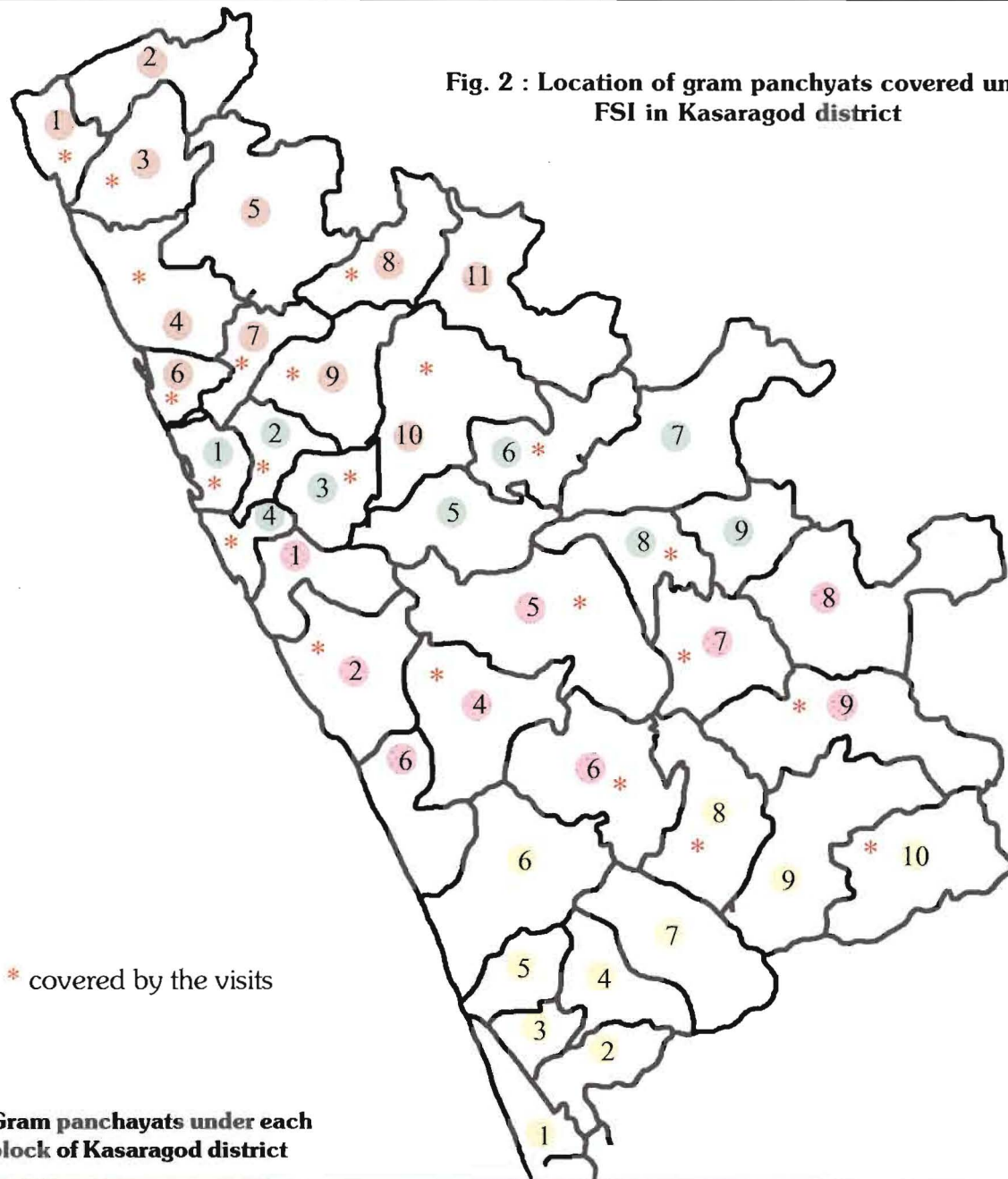
Visits were planned for covering all the 39 gram panchayats in Kasaragod district. Visit schedules were prepared in advance by issuing a circular to the scientists (Annexure-III). Faculty of KVK (Annexure-IV) coordinated the field visits. Visits were conducted in four phases during 2002 - 2004. A total of 19 field visits were organized covering 43 successful farms/enterprises belonging to 32 villages under 22 gram panchayats. Each visit consisted of a group of five to eight scientists representing different disciplines/specializations. The visit schedules in four phases are presented in Tables.3, 4, 5 and 6. Further, the visits at a glance is presented in Table .7.

Table.3 : Visit schedule in phase - I

Visit	Date	Successful technology/ enterprise	No. of villages/ panchayats	No. of fields (farmers)
1	19.07.2002	IVLP interventions (rice varieties, rabbit rearing, pepper as mixed crop, coconut hybrids, vermicomposting , plant protection in arecanut)	3/1	6
2	23.07.2002	Vermicomposting units from coconut wastes, vanilla cultivation, coconut and arecanut homesteads and food products units	2/2	3
3	27.07.2002	Integrated farming, vegetable intercropping in coconut, drip irrigation in arecanut, organic farming and vermicomposting unit	3/2	3
4	03.08.2002	Vermicomposting unit, vanilla cultivation, masala powder unit and nursery unit	3/3*	3
Total			11/7	15

* One panchayat already covered during visit 3 (Puthige)

Fig. 2 : Location of gram panchyats covered under FSI in Kasaragod district



Gram panchayats under each block of Kasaragod district

Manjeswar block	Kasaragod block	Kanhangad block	Nileswar block
1. Manjeswar	1. Mogral Puttur	1. Uduma	1. Valiaparamba
2. Vorkady	2. Madhur	2. Pallikkere	2. Thikkaripur
3. Meenja	3. Chengala	3. Ajanoor	3. Padne
4. Mangalpadi	4. Chemnad	4. Pullur-Periya	4. Pilicode
5. Paivalike	5. Muliyar	5. Kodom-Belur	5. Cheruvathur
6. Kumble	6. Karadka	6. Madikai	6. Nileswar
7. Puthige	7. Delampadi	7. Kallar	7. Chemeni
8. Enmakaje	8. Bedadka	8. Panathady	8. Kinanoor-Karindalam
9. Badiadka	9. Kuttikol	9. Balal	9. West -Eleri
10. Kumbadaje			10. East-Eleri
11. Bellur			

Table. 4 : Visit schedule in phase - II

Visit	Date	Successful technology/ enterprise	No. of villages/ panchayats	No. of fields (farmers)
5	17.01.2003	Integrated farming, arecanut and coconut varieties, vermicomposting, water harvesting	1/1	1
6	21.01.2003	Soil conservation and water harvesting structures, integrated farming, arecanut gardens	1/1	5
7	28.01.2003	Integrated farming system and post harvest technology	1/1	1
8	04.02.2003	Jasmine cultivation, arecanut and coconut gardens, vermicomposting unit and coconut homestead	2/2*	2
9	14.02.2003	Bee keeping, cashew apple juice, arecanut garden and vegetable cultivation	1/1	1
Total			6/5	10

* One panchayat already covered during visit 3 and 4 (Puthige)

Table. 5 : Visit schedule in phase - III

Visit	Date	Successful technology/ enterprise	No. of villages/ panchayats	No. of fields (farmers)
10	09.05.2003	Well managed coconut garden, vegetable cultivation	2/1	2
11	15.05.2003	Vermicomposting unit, vanilla cultivation and coconut homestead	1/1	3
13	20.05.2003	Tunnel development for water harvesting and storage and private forest management	2/1	2
13	27.05.2003	Integrated intercropping and farming, coconut and arecanut gardens, paddy and vanilla cultivation, home scale fruit preservation and vegetable cultivation	1/1*	1
14	03.06.2003	Drip irrigation in coconut garden, coconut chips unit and pump sets repair unit	3/3	3
15	10.06.2003	Plant protection in coconut garden and intercropping	1/1*	1
Total			10/6	12

* Two panchayats already covered under visits 3 and 14 (Badiadka and Chernad)

Table. 6 : Visit schedule in phase - IV

Visit	Date	Successful technology/ enterprise	No. of villages/ panchayats	No. of fields (farmers)
16	20.02.2004	Arecanut and coconut gardens. Pepper, vanilla and banana as intercrops	1/1	1
17	25.02.2004	Coconut, arecanut, banana cultivation	2/1	2
18	03.03.2004	Mixed farming	1/1	1
19	10.03.2004	Arecanut and coconut cultivation Vegetable cultivation	2*/2*	2
Total			5/4	6

* One village and one panchayat covered during phase-II (Madhur village and panchayat)

Table . 7 : Visits at a glance

Visit schedule	No. of visits	No. of farms/ enterprises covered	Number of villages covered	Number of panchayats covered
Phase - I	4	15	11	7
Phase - II	5	10	6	5
Phase - III	6	12	10	6
Phase- IV	4	6	5	4
Total	19	43	32	22

3.3.5 Conduct of visits

The proposed visit schedules to the target farms/enterprises in phases were finalized in consultation with the Director. These schedules were circulated among scientists to give their option for each visit proposed. Accordingly scientist teams were prepared for each visit. The scientists and farmers concerned were intimated about the details of the visit in advance. A proforma was prepared for collecting desired information which includes farmer's overall profile and farm inventory. After completion of each visit, field visit reports as per proforma obtained from the scientists were compiled for necessary documentation.

3.3.6 Post visit action

A direct correspondence with the farmer was established through a letter (Annexure - V) listing the 'strengths, weaknesses and suggestions', inviting the feed-back. The reply received from the farmers was filed for future action (monitoring the progress) during subsequent visits. A sample reply received from a farmer is given in Annexure-VI.

Section - IV

**Profile
of
farmers
visited**

The farmer/entrepreneur was introduced to the team of scientists by the convener of the field visit programme. The team walked all around the farm to understand the farming situation as well as farming activities in detail and informal face-to-face discussions were held with farmer, his family members and fellow farmers. Discussion was mainly focused on identifying plausible reasons for preferences for technology adoption, retention, discontinuation and non-adoption. Necessary information regarding farmer's characteristics, farm inventory and farmer's perception were recorded. The team assessed the strengths, weaknesses and opportunities of the farm/enterprise. Accordingly relevant and viable technological interventions were suggested for better utilization of existing resources. The characteristics of these farmers based on their age, education, family type, family size and land holding is presented in Table.8. The highlights of interactions farm/enterprise wise are presented in succeeding pages.

Table.8 : Classification of target farmers based on their age, education, family type, family size and land holding.

Sl. No	Characteristics and category	Farmers	
		Frequency	Percentage
A. Age			
1.	Young (< 35 years)	6	13.95
2.	Middle (36-50 years)	21	48.84
3.	Old (> 50 years)	16	37.21
B. Education			
1.	Primary	4	9.30
2.	High School	20	46.51
3.	Under graduate (PUC)	7	16.28
4.	Graduate	10	23.26
5.	Post Graduate	2	4.65
C. Family type			
1.	Nuclear	26	60.47
2.	Joint	17	39.54
D. Family size			
1.	Small (<4 members)	14	32.56
2.	Medium (5-8 members)	22	51.16
3.	Large (>9 members)	7	16.28
E. Land holding			
1.	Homestead/ Entrepreneurs	6	13.95
2.	Marginal	7	16.28
3.	Small	10	23.26
4.	Medium	11	25.58
5.	Large	9	20.93

1

19 July, 2002

Scientists/Officers Team

S. Arulraj
R. Dhanapal
C. V. Sairam
V. Krishna Kumar
B. T. Rayudu
C. Palaniswamy
Ajay Kumar Upadyay
S. Naresh Kumar
R. Manimekalai
M. K. Rajesh
M. S. Rajeev
Bindu Chandran
K. Shyama Prasad

VISIT REPORT

Shri K.C.Gangadharan Nair is a beneficiary of IVLP. He planted 30 rooted cuttings of pepper vines of three varieties each - Karimunda (KS 27), Panniyur-2 and Panniyur-5 provided by IVLP in his existing arecanut garden with spacing of 2.7 X 2.7 metre in June, 2000. At present the plants are in pre-bearing stage. Observations on vine length and inter-nodal distance indicated that the growth of Karimunda is better followed by Panniyur-5 and Panniyur-2. Mulching soil around the plants is advised. The farmer maintains buffaloes in a shed where lot of bedding material is seen spread out. He is removing this material every 45 days interval and uses for composting. Later, he is applying this compost for all crops existing in his farm. He also maintains four rabbits with the support of IVLP, which are six months old and the growth is good.

Profile of the farmer

Age : 45 years
Education : High school
Type of family : Nuclear
Family size : Five members
Information sources : Mass media like radio, TV, news papers, neighbours, CPCRI, Krishi bhavan etc.
Social participation : Member in Cooperative Society, Haritha Karshaka Club.
HRD : Attended training on Post Harvest Technology at CPCRI, Kasaragod
Socio-economic status : Medium
Knowledge level : Medium
Adoption level : Medium

Farm inventory

Total land holding : 1.5 acres
Soil type : Lateritic and sandy
Topography : Undulated
Source of water : Pond
Type of farming : Irrigated mixed cropping
Source of labour : Family as well as hired
Main crops : Arecanut, coconut and paddy
Subsidiary crops : Pepper and vegetables
Subsidiary enterprises : Rabbitary and poultry



Strengths

- Mixed cropping
- Organic farming
- Promoting subsidiary enterprises

Weaknesses

- Hired labour
- Lack of irrigation facilities
- Close spacing

Suggestions

- Homestead farming may be strengthened through crop diversity
- Proven technologies for soil and water conservation may be followed for better water use efficiency

2

19 July, 2002

Scientists/Officers Team

- S. Arulraj
- R. Dhanapal
- C. V. Sairam
- V. Krishna Kumar
- B. T. Rayudu
- C. Palaniswamy
- Ajay Kumar Upadhyay
- S. Naresh Kumar
- R. Manimekalai
- M. K. Rajesh
- M. S. Rajeev
- Bindu Chandran
- K. Shyama Prasad

VISIT REPORT

Shri K.Narayanan Nair is a beneficiary of IVLP. He introduced Newzealand white breed of rabbit under homestead conditions with the support of IVLP. Four rabbits (one male and three females) of one and a half months age as technology intervention were provided to him in March, 2002. These rabbits are maintained in cages made of wooden planks. Green grass and kitchen waste, particularly tomatoes, carrots and cabbage leaves were used as feed materials for rearing these rabbits. The growth of these rabbits is good at present. He grows coconut, arecant and banana in the homestead and has switched over to application of organics a decade back. Needed leaf manure is procured locally. Facility of irrigation is available for his farm. A Jersey cow is maintained by him to meet the requirement of milk and cow dung.

Profile of the farmer

- Age : 43 years
- Education : Primary
- Type of family : Nuclear
- Family size : Five members
- Information sources : Mass media, scientists and extension personnel
- Social participation : Member of Service Cooperative Bank and Haritha Karshaka Club
- HRD : Nil
- Socio-economic status : Medium
- Knowledge level : Medium
- Adoption level : Medium

Farm inventory

- Total land holding : Homestead
- Soil type : Lateritic
- Topography : Plain
- Source of water : Open well
- Type of farming : Rainfed and irrigated
- Source of labour : Family as well as hired
- Main crops : Arecanut and coconut
- Subsidiary crops : Pepper
- Subsidiary enterprises : Poultry, dairy and rabbitary



Strengths

- Hard work
- Family labour
- Willingness to adopt technologies
- Promoting subsidiary enterprises
- Good source for FYM/Compost
- Adoption of mixed cropping
- Better management practices

Weaknesses

- Inadequate market facilities
- Marginal land holding
- Labour shortage
- Imbalanced nutrient application

Suggestions

- Proper integrated nutrient management practices may be adopted
- Vermicomposting of farm waste may be initiated

3

19 July, 2002

Scientists/Officers Team

- S. Arulraj
- R. Dhanapal
- C. V. Sairam
- V. Krishna Kumar
- B. T. Rayudu
- C. Palaniswamy
- Ajay Kumar Upadyay
- S. Naresh Kumar
- R. Manimekalai
- M. K. Rajesh
- M. S. Rajeev
- Bindu Chandran
- K. Shyama Prasad

VISIT REPORT

Shri P.M. Aravindan is a beneficiary of IVLP. He introduced new high yielding rice varieties viz., Aishwarya, Kanchana, Uma and Athira along with local variety Kayama through IVLP in June, 2002. The germination percentage as well as growth parameters of all these high yielding varieties were on par with each other. However, the incidence of insect pest (leaf roller) was noticed more in Uma and Athira varieties. He also planted five coconut seedlings each of Philippines Ordinary, Lakshadweep Ordinary and West Coast Tall (local) in June, 2000. Present growth parameters like number of leaves, girth at collar, height and survival percentage of Philippines Ordinary are better followed by Lakshadweep Ordinary and West Coast Tall. Further, he planted Sree Roopa variety of Yam (40 tubers) in May, 2002 and the growth is good. Local cowpea is also seen grown in the plot where cashew is the main crop.

Profile of the farmer

- Age : 27 years
- Education : Technical education
- Type of family : Nuclear
- Family size : Four members
- Information sources : News paper, TV, friends and relatives
- Social Participation : Participation in farmers club
- HRD : Attends training programmes, workshops group meetings etc.
- Socio-economic status : Medium
- Knowledge level : Medium
- Adoption level : Medium

Farm inventory

- Total land holding : 1.65 acres
- Soil type : Lateritic
- Topography : Plain
- Source of water : Well
- Type of farming : Rainfed
- Source of labour : Hired
- Main crops : Coconut, arecanut and paddy
- Subsidiary crops : Yam and cashew
- Subsidiary enterprises : Dairy



Strengths

- Crop diversity
- Adoption of recommended technologies
- Good source of FYM/Compost

Weaknesses

- Rainfed cultivation
- Low soil fertility
- Labour shortage
- Pests and diseases in paddy

Suggestions

- Rainfed crops suited to the locality may be explored
- Proper integrated nutrient management practices may be carried out
- Coconut basins may be mulched with farm waste
- Suitable resistant rice varieties may be cultivated

4

19 July, 2002

Scientists/Officers Team

S. Arulraj
R. Dhanapal
C. V. Sairam
V. Krishna Kumar
B. T. Rayudu
C. Palaniswamy
Ajay Kumar Upadyay
S. Naresh Kumar
R. Manimekalai
M. K. Rajesh
M. S. Rajeev
Bindu Chandran
K. Shyama Prasad

VISIT REPORT

Shri Viswanathan is a beneficiary of IVLP. He has taken up hybrid coconut plantation under irrigated conditions during 2000. He planted seven seedlings each of WCT X COD and LO X COD along with local variety WCT in an area filled with laterite soil in a quarry. The expected average yield of these hybrids is around 125 nuts/palm/year as compared to 100 nuts/palm/year of WCT. The growth of plants is good. At present the growth parameters of WCT X COD is the best followed by WCT and LO X COD. The seedlings are in pre-bearing stage. Since the area is having very low organic matter content, application of vermicompost, which he is making @ 10 kg/palm is advised. He also adopted pepper as mixed crop in his existing coconut garden. Performance of pepper plants is found to be satisfactory. The growth and yield of palms in the main field is average. Basins were seen opened and application of green leaf manure noticed.

Profile of the farmer

Age : 45 years
Education : High school
Type of family : Joint
Family size : 10 members
Information sources : Farm journals, radio.
Social participation : Member in credit society and farm club.
HRD : Attends training programmes, farmers meetings, workshops etc.

Socio-economic status : High
Knowledge level : High
Adoption level : High

Farm inventory

Total land holding : 3.5 acres
Soil type : Hard lateritic
Topography : Plain
Source of water : Open and bore wells
Type of farming : Irrigated
Source of labour : Hired as well as family
Main crops : Coconut and arecanut
Subsidiary crops : Banana and Pepper
Subsidiary enterprises : Vermicompost unit and dairy



Strengths

- Proper spacing in both coconut and arecanut gardens
- Good source of water for irrigation
- Hybrid coconut varieties
- Hard working
- Willing to adopt new technologies
- Efficient conversion of farm waste into vermicomposting

Weaknesses

- Low organic matter content as well poor texture of soil
- Imbalanced nutrient application
- Non-availability of labour

Suggestions

- Proper integrated nutrient management practices may be carried out
- More organic manure may be applied to the basins of coconut and arecanut
- Water harvesting and soil conservation measures may be followed

5

19 July, 2002

Scientists/Officers Team

- S. Arulraj
- R. Dhanapal
- C. V. Sairam
- V. Krishna Kumar
- B. T. Rayudu
- C. Palaniswamy
- Ajay Kumar Upadyay
- S. Naresh Kumar
- R. Manimekalai
- M. K. Rajesh
- M. S. Rajeev
- Bindu Chandran
- K. Shyama Prasad

VISIT REPORT

Shri M. K. Krishnan Nair is a beneficiary of IVLP. He introduced cover crops for the management of coconut basins. Seeds of *Mimosa* and *Calapagonium* supplied through IVLP were sown in May 2002 in coconut basins. The growth is not found to be adequate. He has taken up cultivation of fodder grasses viz. Congo Signal and Hybrid Napier and the growth of these grasses is satisfactory. He further adopted vermicomposting for effective utilisation of farm waste especially coconut leaves. This unit is working well without any problems for earth worm population. He is applying vermicompost to all the crops existing in his farm. Therefore, his farm level requirement is high. Putting plants of *Clerodendron* against larvae of rhinoceros beetle was recommended. The farmer grows pepper, ginger and turmeric in addition to other crops in a systematic manner in homestead approach.

Profile of the farmer

- Age : 65 years
- Education : High school
- Type of family : Nuclear
- Family size : Five members
- Information sources : Radio, TV, news papers, Kerala Karshakan farm journal
- Social participation : Nil
- HRD : Participates in agricultural seminars, training programmes, group meetings, social functions etc.
- Socio-economic status : High
- Knowledge level : High
- Adoption level : High

Farm inventory

- Total land holding : 0.85 acre
- Soil type : Lateritic
- Topography : Plain
- Source of water : Open and bore wells
- Type of farming : Irrigated
- Source of labour : Hired
- Main crop : Coconut
- Subsidiary crops : Banana, Pepper, ginger, turmeric and fodder
- Subsidiary enterprises : Vermicomposting unit, dairy and poultry



Strengths

- Multiple cropping pattern
- Integrated farming system
- Effective organic recycling

Weaknesses

- High crop density per unit area
- Labour shortage
- Cultivation of local varieties

Suggestions

- Based on the performance of the crops, crop thinning may be followed
- High yielding varieties may be used especially in case of ginger, turmeric, banana etc

6

19 July, 2002

Scientists/Officers Team

S. Arulraj
R. Dhanapal
C. V. Sairam
V. Krishna Kumar
B. T. Rayudu
C. Palaniswamy
Ajay Kumar Upadyay
S. Naresh Kumar
R. Manimekalai
M. K. Rajesh
M. S. Rajeev
Bindu Chandran
K. Shyama Prasad

VISIT REPORT

Shri K. E. Mohammed is a beneficiary of IVLP. He adopted polythene covering of arecanut bunches to prevent mahali disease compared with spraying of 1% Bordeaux mixture 2-3 times in a year in his arecanut garden. The team observed that the percentage disease incidence was nil and also no immature nut drop in polythene covered palms. Nut drop was noticed in palms treated with Bordeaux Mixture. Hired labour from Vittal was used for covering the arecanut bunches with polythene bags. The farmer mentioned that this practice requires skilled labour and hence very costly. He paid Rs.24/ palm as labour charge for this operation. The technology though is effective, adoption by other farmers is very low due to its high cost.

Profile of the farmer

Age : 60 years
Education : High school
Type of family : Nuclear
Family size : Five members
Information sources : Radio, TV and friends
Social participation : Nil
HRD : Nil
Socio-economic status : Medium
Knowledge level : Medium
Adoption level : Medium

Farm inventory

Total land holding : 0.8 acre
Soil type : Lateritic
Topography : Plain
Source of water : Open and bore wells
Type of farming : Irrigated
Source of labour : Hired
Main crop : Arecanut
Subsidiary crops : Pepper and coconut
Subsidiary enterprises : Nil



Strengths

- Perennial water source
- Adequate spacing in arecanut garden
- Positive attitude towards adoption of new technologies

Weaknesses

- Labour shortage
- Non-utilisation of farm biomass

Suggestions

- Remunerative intercrops may be taken up in arecanut garden
- Vermicomposting technology may be followed for utilising farm biomass
- Enterprises like dairy, bee keeping etc may be adopted for additional income

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23 July, 2002

Scientists/Officers Team

K. V. Kasturi Bai
K. Madhavan
V. Krishna Kumar
B. T. Rayudu
Alka Gupta
Murali Gopal
K. Manikandan
Neelofar Illias Kutty
K. Shyama Prasad.

VISIT REPORT

Shri Joseph Mathew was trained at KVK on different methods of composting in 2001. He adopted vermicomposting technology in toto which was developed by CPCRI. He obtained 100 earth worms as seed from CPCRI. Later he constructed two cement tanks with an area of 6 m X 1.5 m X .9 m with a total cost of Rs 6000/- . Out of these tanks, he prepared 1500 kg vermicompost in a year. He also started vermiculture and sold more than 15000 worms @ 50 paise per worm to the fellow farmers. In this process with in a year he already generated more than the establishment cost of the unit apart from the vermicompost. Vermicompost was applied not only to the basins of the palms but also vegetables and banana. The main and component crops were grown at proper spacing along the slopy terrain in step cultivation. He is maintaining mixed farming with dairy and fishery unit.

Profile of the farmer

Age : 45 years
Education : High school
Type of family : Nuclear
Family size : Six members
Information sources : Neighbours, extension officers, scientists, local leaders and mass media.
Social participation : Member in credit society and farm club.
HRD : Participation in kisan melas, training programmes, seminars, group meetings, exhibitions etc.
Socio-economic status : Medium
Knowledge level : Medium
Adoption level : Medium

Farm inventory

Total land holding : 6 acres
Soil type : Hilly laterite soil
Topography : Sloppy
Source of water : Hill stream (Perennial)
Type of farming : Irrigated and rainfed
Source of labour : Family as well as hired
Main crops : Rubber, coconut and arecanut
Subsidiary crops : Pepper, banana, vegetables and fodder
Subsidiary enterprises : Cattle rearing, fishery and vermicompost unit



Strengths

- Perennial irrigation source
- Adequate spacing in both coconut and arecanut gardens
- Integrated farming
- Family labour
- Effective organic recycling
- Willingness to adopt new technologies

Weaknesses

- Inadequate inter crops
- Soil erosion and depletion of nutrients from surface soil
- Imbalanced nutrients in the soil
- Nut splitting and inflorescence die-back in arecanut

Suggestions

- More inter crops may be introduced
- Opening catch pits, contour bunding etc across the slope may be taken up
- Recommended fertilisers and plant protection measures may be followed
- Mulching with coconut husk, coconut leaves etc may be followed in coconut basins

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23 July, 2002

Scientists/Officers Team

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- Neelofar Illias Kutty
- K. Shyama Prasad

VISIT REPORT

Shri Augustine Vembana has started vermicomposting using arecanut and coconut leaf waste by adopting CPCRI technology. He prepares vermicompost to meet the full requirement of his farm. He is harvesting satisfactory yield from coconut trees. He has initiated vanilla cultivation by planting 200 vines in his existing coconut garden using *Glyricidia* as support. Pepper plants were also seen trailed on *Glyricidia*. He is also maintaining Italian bee (*Apis mellifera*) hives in his existing rubber plantation. He is preparing a honey based refreshive herbal drink without any artificial colours and chemical preservatives. A few cardomom plants were also seen in his farm.

Profile of the farmer

- Age : 48 years
- Education : High school
- Type of family : Nuclear
- Family size : Four members
- Information sources : Friends, mass media, extension officials, scientists etc.
- Social participation : Member of Cooperative society and Jai Kisan Farmers Group
- HRD : Participation in training programmes and agricultural seminars
- Socio-economic status : Medium
- Knowledge level : Medium
- Adoption level : Medium

Farm inventory

- Total land holding : 4 acres
- Soil type : Hilly laterite soil
- Topography : Sloppy
- Source of water : River and open well
- Type of farming : Irrigated and rainfed
- Source of labour : Family as well as hired
- Main crops : Coconut, arecanut and rubber
- Subsidiary crops : Banana and vanilla
- Subsidiary enterprises : Dairy and bee keeping



Strengths

- Rich perennial water resources
- Proper spacing in both coconut and arecanut gardens
- Rich organic wastes
- Adoption of vermicomposting

Weaknesses

- Improper soil and water conservation methods
- Improper basin management in coconut
- High labour cost

Suggestions

- Contour cultivation with pineapple may be taken up
- Cover crops like *Mimosa* and *Calpagonium* may be grown in coconut basins
- Recommended package of practices may be followed for vanilla

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23 July, 2002

Scientists/Officers Team

- K. V. Kasturi Bai
- K. Madhavan
- V. Krishna Kumar
- B. T. Rayudu
- Alka Gupta
- Murali Gopal
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- Neelofar Illias Kutty
- K. Shyama Prasad

VISIT REPORT

Smt Mary Thomas, an extrainee of CPCRI KVK, started a small scale unit on fruit jam, squash and pickle at Belal panchayath. She was financed by North Malabar Grameen Bank under Khadi Village Industries Board through its Margin Money Scheme. At present the unit is furnished with juice extractor, sealing machine, weighing machine, steel vessels, gas stove and cylinder, knives, corer and packing materials. She prepares pineapple jam, pineapple squash, mixed fruit jam, lemon and mango pickles. Around 300Kg of jam, 500 bottles (750ml) of squash and 300 kg of pickles are prepared/month. She is getting a net profit of Rs.1500/- per month after remitting the monthly instalments. The above products are being marketed under the brand name LEENA'S FOOD PRODUCTS locally through Khadi showroom, Bakery and her own teashop.

Profile of the farmer

- Age : 40 years
- Education : High school
- Type of family : Nuclear
- Family size : Four members
- Information sources : Farm journals, mass media, extension officials, scientists, voluntary organisations and banks
- Social Participation : Member of women self help group
- HRD : Participation in training programmes and exhibitions
- Socio-economic status : Low
- Knowledge level : Medium
- Adoption level : Medium

Farm inventory

- Total land holding : Homestead
- Soil type : Lateritic
- Topography : Sloppy
- Source of water : Open well
- Type of farming : Rainfed
- Source of labour : Family
- Main crops : Coconut, rubber and arecanut
- Subsidiary crops : Pineapple, vegetables and pepper
- Subsidiary enterprises : Food processing and preservation unit bag making unit and tea shop



Strengths

- Well managed homestead farming
- Value addition in fruits and vegetables
- Promoting community based women activities
- Willing to take risk
- Quality packing of products

Weaknesses

- Shortage of resources
- Low market price for value added products

Suggestions

- Fruit and vegetable products may be sold through cooperative societies

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27 July, 2002

Scientists/Officers Team

- V. Rajagopal
- Anitha Karun
- B. T. Rayudu
- S. Naresh Kumar
- K. Devakumar
- R. Manimekalai
- M. K. Rajesh
- S. Leena
- B. Narayanaswamy
- K. Shyama Prasad

VISIT REPORT

Shri Radha Krishna Kandige is practicing organic farming since 10 years. He is manuring arecanut garden with cow dung slurry through hose pipes by gravitational method. He diverted waste water from kitchen and cow shed to the garden. He constructed two semi-permanent check dams across the stream flowing through his garden. Further, he adopted drip irrigation in arecanut based cropping system. He designed and fabricated a jeep trailer with arecanut stem for conveyance of farm produce. He planted lemon grass across the steep slope. He established a vermi-composting unit using coconut leaves and other farm wastes. He is also multiplying earth worms and sells to the neighbouring farmers. Maintains a dairy unit with five milching cows (HF and Jersey). He has taken up agro-forestry by planting teak. Roof water harvesting structure adopted by him inspires neighbouring farmers.

Profile of the farmer

- Age : 45 years
- Education : Graduate
- Type of family : Nuclear
- Family size : Four members
- Information sources : Mass media, scientists, extension officers, friends, relatives and NGOs
- Social participation : Member of Kisan Sena, Adike Patrike and CAMPCO
- HRD : Participation in training programmes, kisan melas, seminars, workshops, exhibitions and group meetings.
- Socio-economic status : High
- Knowledge level : High
- Adoption level : High

Farm inventory

- Total land holding : 10 acres
- Soil type : Lateritic
- Topography : Plain and sloppy
- Source of water : Open well, bore well and hill stream
- Type of farming : Irrigated and rainfed
- Source of labour : Hired
- Main crops : Arecanut, coconut, cashew and cocoa
- Subsidiary crops : Pepper, banana, vanilla, vegetables, cardamom, medicinal plants, yam etc
- Subsidiary enterprises : Dairy and vermicomposting unit



Strengths

- Organic farming
- Adoption of eco-friendly technologies
- Adequate water harvesting techniques
- Effective recycling of farm waste
- Innovative and willingness to adopt new technologies
- Modern irrigation practices

Weaknesses

- Price fluctuation.
- Labour shortage.
- Wild boar menace.
- Inflorescence die-back and nutfall in arecanut.

Suggestions

- Vanilla may be taken up as an intercrop in existing gardens
- Adequate shade may be provided for vanilla plants trailed on *Glyricidia*
- Recommended control measures may be adopted for the management of inflorescence die-back in arecanut
- Cultivation of medicinal plants may be strengthened by adding more species

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27 July, 2002

Scientists/Officers Team

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B. Narayanaswamy
K. Shyama Prasad

VISIT REPORT

Shri. Berly Joseph, a very enthusiastic and young farmer started vegetable cultivation with technical guidance from KVK. He cultivates vegetable crops like cowpea, bitter gourd, cucumber, ladies finger, chilli, tomato and amaranthus after kharif paddy. Tubers like yam, colacasia, sweet potato and coleus in coconut garden, banana and pineapple in arecanut garden are grown as inter crops. Spice crops like ginger and turmeric are also grown in his farm. He gets maximum returns with minimum cost of cultivation by following sustainable and ecofriendly methods like applying organic fertilisers, herbal pesticides etc. Since he is producing vegetables purely on organic base, his farm produces especially vegetables fetching local demand and remunerative price. The growth performance of rice variety-Jyothi in his field is good. He is getting good coconut as well as arecanut yields. His farm with crop diversity inspired the team.

Profile of the farmer

Age : 31 years
Education : Graduate
Type of family : Joint
Family size : Six members
Information sources : Agriculture department officials, KVK, local leaders, relatives and friends
Social Participation : Member of Farm Information Exchange Club and Cooperative Society
HRD : Participating in workshops, study tours, group meetings, kisan melas, exhibitions, training programmes etc.
Socio-economic status : Medium
Knowledge level : High
Adoption level : High

Farm inventory

Total land holding : 9.0 acres
Soil type : Lateritic
Topography : Undulated and plain
Source of water : Open and bore wells
Type of farming : Irrigated and rainfed
Source of labour : Family as well as hired
Main crops : Arecanut, coconut, rubber and paddy
Subsidiary crops : Pepper, banana, vegetables, coffee and pineapple.
Subsidiary enterprises : Dairy and poultry



Strengths

- Integrated nutrient management
- Integrated farming
- Family labour
- Perennial irrigation source
- Willingness to adopt new technologies
- Good demand for farm products especially vegetables
- Crop intensity and diversity

Weaknesses

- No effective recycling of farm wastes
- Inadequate transport facility for local market

Suggestions

- Vanilla may be introduced as an intercrop in both coconut as well as arecanut gardens
- Vermicomposting may be started with available facilities
- Value addition in vegetables and fruits may be explored

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27 July, 2002

Scientists/Officers Team

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B. Narayanaswamy
K. Shyama Prasad

VISIT REPORT

Shri Venkatramana Bhat-a successful farmer has taken up arecanut cultivation on totally a waste land with hard lateritic condition. He has adopted all water and soil conservation methods in a scientific and systematic manner. The climbing device for arecanut palms developed by him inspired fellow farmers as it makes spraying and harvesting operations easy. He has grown different types of crops in the homestead. He adopted mixed farming with dairy unit. He applies cow dung slurry to the crops directly to ensure better growth and yield performance. He is cultivating *Coccinia indica* which gives good yield and income through out the year. He started selling tender coconuts in the local market. He maintains coconut, arecanut and pepper nursery in a scientific manner and sells these seedlings to the various government agencies. The efforts made by him to convert hard lateritic area in to fertile cultivable land is note worthy.

Profile of the farmer

Age : 46 years
Education : Under graduate
Type of family : Nuclear
Family size: : Four members
Information sources : Mass media, extension personnel, scientists, relatives, friends and voluntary organisations
Social Participation : Member of All India Areca Growers Association and Kisan Sena
HRD : Participation in seminars, group meetings, exhibitions, workshops etc.
Socio-economic status : High
Knowledge level : High
Adoption level : High

Farm inventory

Total land holding : 12 acres
Soil type : Hard lateritic
Topography : Plain and sloppy
Source of water : Open and bore wells
Type of farming : Irrigated and rainfed
Source of labour : Hired
Main crops : Arecanut, coconut and cashew
Subsidiary crops : Pepper, banana, pineapple, fodder grass, fruit crops, vegetables etc.
Subsidiary enterprises : Dairy and bee keeping



Strengths

- Viable and sustainable mixed cropping system
- Integrated nutrient management
- Proper soil and water conservation methods
- Waste land converted to cultivable land with human effort
- Venturesome nature
- Promoting tendernut water as health drink

Weaknesses

- Price fluctuation
- Laborious cultivation practices
- High cost of cultivation due to more labour

Suggestions

- Value addition in coconut may be explored
- Recommended practices against rhinoceros beetle may be followed
- Plate making of areca leaf sheath may be explored

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03 August, 2002

Scientists/Officers Team

P. M. Kumaran
K. Muralidharan
V. Krishna Kumar
B. T. Rayudu
C. Palanniswamy
A. K. Upadyaya
Alka Gupta
Murali Gopal
K. Devakumar
M. K. Rajesh
N. Ravikumar
S. Leena
Saritha Hegde
Neelofar Illias Kutty
K. Shyama Prasad

VISIT REPORT

Shri Shyama Prasad is a dynamic and progressive young farmer. Coconut and arecanut are grown on slopy tracts with coconut on one tract and arecanut on the other. Pepper is trailed on the coconut and arecanut trunks. The nutrient supply to the palms are partially through inorganic source and with organic source such as on-farm litter, cattle manure, vermicompost etc. He adopted bubbler irrigation system. He introduced vanilla as an inter crop in both coconut and arecanut gardens by planting 4500 vanilla cuttings. He had allowed vanilla to grow on arecanut trunks with the aim of producing more planting materials. He maintains well functioning dairy unit with sufficient fodder production. He adopted vermicomposting technology. He introduced fish culture in an existing pond. He installed biogas unit for fuel purpose. He utilises his arecanut drying yard for vegetable cultivation during off season.

Profile of the farmer

Age : 40 years
Education : Graduate
Type of family : Nuclear
Family size : Four members
Information sources : Extension officials, mass media, journals, scientists and voluntary organisations
Social participation : -
HRD : Participation in training programmes, agricultural seminars etc
Socio-economic status : High
Knowledge level : High
Adoption level : High

Farm inventory

Total land holding : 10 acres
Soil type : Lateritic
Topography : Sloppy and undulated
Source of water : Bore well, pond and suranga
Type of farming : Irrigated
Source of labour : Hired
Main crops : Coconut and arecanut
Subsidiary crops : Vanilla, banana, pepper, mango, fodder crops and vegetables.
Subsidiary enterprises : Dairy, vermicomposting unit and fish culture



Strengths

- Viable and sustainable mixed cropping and farming system
- Willingness to introduce new intercrops
- Modern irrigation practices
- Traditional water harvesting structures
- Recycling of farm waste
- Resource farmer for training programmes of KVK on vanilla

Weaknesses

- Shortage of skilled labour
- High cost of labour
- Price fall in arecanut

Suggestions

- Cultivation of medicinal plants may be introduced
- Vermicomposting may be expanded to utilise fully the organic waste
- Vermiwash may be prepared and applied to vanilla
- Establishment of vanilla processing unit through Spices Board may be explored

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03 August, 2002

Scientists/Officers Team

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M. K. Rajesh
N. Ravikumar
S. Leena
Saritha Hegde
Neelofar Illias Kutty
K. Shyama Prasad

VISIT REPORT

Shri Jamalludin has established a masala powder unit as an enterprise after getting trained at KVK, CPCRI. He has acquired necessary infrastrure with the initial investment of Rs 16 lakhs including building cost. He produces chilli powder, coriander powder, turmeric powder, pepper powder, and various blends of spices for specific uses. These products are being sold in local market in the brand name of Master foods. The raw materials were obtained from within and out side Kasaragod district. He is procuring chilly from Andhra Pradesh, Karnataka and Tamil Nadu for adding required flavour, colour and quality to the products. The products have attractive packaging and quality with good consumer acceptance. The unit runs for six days with three women and two men labourers. With the keen interest and hard work of Shri Jamalludin, this unit is sustaining its function inspite of high competition in the market.

Profile of the farmer

Age : 58 years
Education : Under graduate
Type of family : Nuclear
Family size : Three members
Information sources : Mass media, journals, extension officials and scientists
Social participation : Nil
HRD : Attending training programmes, agricultural seminars and exhibitions
Socio-economic status : Medium
Knowledge level : Medium
Adoption level : Medium

Farm inventory

Total land holding : Homestead
Soil type : Lateritic
Topography : Undulated
Source of water : Open well
Type of farming : Irrigated
Source of labour : Hired
Main crops : Coconut and cashew
Subsidiary crops : Banana and tuber crops
Subsidiary enterprises : Masala powder unit



Strengths

- Location in industrial estate area
- Providing employment to local people through the unit
- Local demand for the products
- Attractive and hygienic packing

Weaknesses

- Non-availability of certain ingredients locally
- High cost of procuring certain ingredients from far places

Suggestions

- More variety of masala powders according to the local demand may be introduced
- Possibility of recruiting unemployed youth

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03 August, 2002

Scientists/Officers Team

- P. M. Kumaran
- K. Muralidharan
- V. Krishna Kumar
- B. T. Rayudu
- C. Palanniswamy
- A. K. Upadyaya
- Alka Gupta
- Murali Gopal
- K. Devakumar
- M. K. Rajesh
- N. Ravikumar
- S. Leena
- Saritha Hegde
- Neelofar Illias Kutty
- K. Shyama Prasad

VISIT REPORT

Shri Viji Varghese has got training at KVK, CPCRI on nursery raising and management. After this, he started nursery unit under the guidance of KVK faculty. He is selling flowers, ornamental plants, seedlings, cuttings, grafts etc. He is also selling biofertilisers, bioinoculants of company brands. Recently, he aquired expertise in garden management, lawn making and other in door decoration activities. All these activities are carried out through the unit Syndrella Nursery. Since this unit is situated on the side of the high way road from Mangalore to Kasaragod, he could not only sell the plants but also get frequent orders.

Profile of the farmer

- Age : 28 years
- Education : High school
- Type of family : Nuclear
- Family size : Four members
- Information sources : Friends, mass media and extension officers
- Social participation : Nil
- HRD : Attending training programmes, seminars and exhibitions
- Socio-economic status : Low
- Knowledge level : Medium
- Adoption level : Medium

Farm inventory

- Total land holding : Leased land
- Soil type : Lateritic
- Topography : Plain
- Source of water : Open well
- Type of farming : Nil
- Source of labour : Family as well as hired
- Main crops : Nil
- Subsidiary crops : Nil
- Subsidiary enterprises : Nursery unit



Strengths

- Location of nursery unit on the side of National High Way No. 17
- Good water facility
- Family labour

Weaknesses

- Procuring of some planting materials from other nurseries located far away
- High cost of transportation

Suggestions

- All planting materials may be raised in the unit as per demand
- A scion bank may be established

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17 January, 2003

Scientists/Officers Team

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S. J. D.Bosco
Anitha Karun
B. T. Rayudu
Murali Gopal
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K. Devakumar
Elain Apsara
M. K. Rajesh
N. Ravikumar
Manoj P. Samuel
K. Shyama Prasad

VISIT REPORT

Dr. D. C. Chowta cultivates high yielding varieties of arecanut- Mangala, Sreemangala, Sumangala, Mohitnagar released by CPCRI and Hirehalli Dwarf, Sreevardhan, Saygon, Kasaragod local and Borivali. He introduced viable intercrops like banana, cocoa and vanilla. He has planted tendernut coconut variety - Chowghat Orange Dwarf recommended by CPCRI. He has compartmentalized his farm into organically cultivated half and chemically cultivated half. He had initiated biodynamic farming using cow-horn, and application of brown sea-weed extract rich in amino acids apart from vermicomposting unit. Water source to this farm is mainly from Uppala river. Sprinklers and dripper network has laid around the plantations for efficient and economic use of the water resources. The farm is maintained with ecological agriculture concept, which can be a place for tourist attraction.

Profile of the farmer

Age : 60 years
Education : Doctorate
Type of family : Joint
Family size : 18 members
Information sources : Mass media, journals, governmental organisations, non-governmental organisations, fellow farmers etc.
Social participation : Member in various cooperative institutions, NGOs and nominee in research institutions.
HRD : Participation in seminars, conferences, workshops etc conducted by both Government and voluntary organisations.
Socio-economic status : High
Knowledge level : High
Adoption level : High

Farm inventory

Total land holding : 40 acres under joint family system.
Soil type : Lateritic
Topography : Sloppy terrain of valley
Source of water : Lift irrigation from uppala river
Type of farming : Irrigated as well as rainfed
Source of labour : Permanent
Main crops : Arecanut and coconut
Subsidiary crops : Banana, pepper, vanilla, cocoa and cashew
Subsidiary enterprises : Dairy, vermicomposting unit and bee keeping



Strengths

- Integrated farming
- Modern irrigation practices
- Adequate water harvesting techniques
- Proper recycling of farm waste into nutrient rich vermicompost
- Efficient and economic use of water resources
- Adoption of new technology
- Permanent labour
- Availability of infrastructure facilities
- Strong joint family farming system

Weaknesses

- Product diversification yet to start
- Insufficient organic fertilisers/manures
- Insufficient planting materials

Suggestions

- Area under coconut for tendernut purpose may be expanded
- Installation of fertigation system may be adopted for better fertiliser use efficiency
- Vermicomposting may be taken up in large scale to meet the nutrient requirement of the farm
- Plate making from areca leaf sheath may be started at the earliest and possible training need from CPCRI KVK may be explored

17

21 January, 2003

Scientists/Officers Team

Rohini Iyer
Alka Gupta
Murali Gopal
V. Arunachalam
K. Samsudeen
Elain Apshara
M. K. Rajesh
N. Ravikumar
Jayabose
Manoj P Samuel
K. Manikandan
K. Shyama Prasad

VISIT REPORT

Shri Pathadka Ganapathi Bhat is a very progressive farmer, mainly growing arecanut. He is ex-president of CAMPCO. Shri Bhat has constructed a 'Katta' (Checkdam) . He harvests the water mainly using sand bags and granite stones as base. The reservoir of the checkdam has holding capacity of 40 lakhs litres of water. The height of the checkdam is 5 m and length is 22 m approximately. He is irrigating his garden using the water collected in the reservoir. His checkdam is a model for other farmers in the vicinity.

Profile of the farmer

Age : 60 years
Education : Graduate
Type of family : Joint
Family size : 10 members
Information sources : Print media, friends, TV, radio, extension personnel and local leaders
Social participation : Ex-Vice President of CAMPCO Ltd and membebr of many organisations
HRD : Attending seminars, conferences, meetings etc.
Socio-economic status : High
Knowledge level : High
Adoption level : High

Farm inventory

Total land holding : 10 acres
Soil type : Loamy and lateritic
Topography : Moderately sloppy
Source of water : Open and bore wells
Type of farming : Irrigated and rainfed
Source of labour : Hired
Main crop : Arecanut
Subsidiary crops : Banana and pepper
Subsidiary enterprises : Dairy



Strengths

- Scientifically designed farm
- Adoption of recommended package of practices of crops in the farm
- Good contact with both extension as well as other agencies/organisations

Weaknesses

- Price fall in arecanut
- Traditional check dams

Suggestions

- Crop diversification may be followed
- Avenues to construct check dams with modern technologies may be explored

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21 January, 2003

Scientists/Officers Team

- Rohini Iyer
- Alka Gupta
- Murali Gopal
- V. Arunachalam
- K. Samsudeen
- Elain Apshara
- M. K. Rajesh
- N. Ravikumar
- Jayabose
- Manoj P Samuel
- K. Manikandan
- K. Shyama Prasad

VISIT REPORT

Shri Chandrasekhara Yethadka is a progressive farmer as well as a free-lance journalist. He is a well known water conservationist and currently office bearer of Jalakoota, NGO and FIEC, Yethadka. He has been mobilising the people towards the community water management schemes by constructing Kattas across the Yethadka river. Kattas are temporary checkdams and there are more than 12 Kattas in Yethadka village. Shri Chandrasekhara constructed a Katta across the river stream passing through his field. The cost of construction was about Rs.20,000. He is irrigating his arecanut garden with the water from this reservoir. Under his guidance, many farmer groups are adopting water and soil conservation methods.

Profile of the farmer

- Age : 40 years
- Education : Graduate
- Type of family : Joint
- Family size : Eight members
- Information sources : Print media, TV, radio, seminars and conferences
- Social Participation : Member of various farm organisations
- HRD : Attending various training programmes, workshops, meetings etc related to agriculture and water management
- Socio-economic status : High
- Knowledge level : High
- Adoption level : Medium

Farm inventory

- Total land holding : 6 acres
- Soil type : Lateritic and loamy
- Topography : Moderately sloppy
- Source of water : Open well and pond
- Type of farming : Irrigated as well as rainfed
- Source of labour : Hired
- Main crops : Arecanut, Coconut
- Subsidiary crops : Banana and pepper
- Subsidiary enterprises : Nil



Strengths

- Community level water management through rejuvenation of traditional water harvesting systems such as suranga and katta
- Strong public contacts and support

Weaknesses

- Depends more on traditional practices

Suggestions

- Traditional knowledge may be blended with modern technologies for better farming

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21 January, 2003

Scientists/Officers Team

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N. Ravikumar
Jayabose
Manoj P Samuel
K. Manikandan
K. Shyama Prasad

VISIT REPORT

Shri Sudarsanan is a progressive farmer in Yethadka with vast experience in mixed farming system. He is maintaining a well managed arecanut garden and well organised dairy unit. The unit consists of 10 milching cows mainly of breeds -HF and Jersy. The milk is marketed by the farmer himself through direct marketing system @ Rs. 14 per litre. Milking the animals by using milking machine, use of cowdung for biogas and recycling of slurry are the other activities of the unit.

Profile of the farmer

Age : 43 years
Education : Graduate
Type of family : Joint
Family size : 11 members
Information sources : Mass media, friends, farmers, extension officials and scientists
Social participation : Member of farmers organisations
HRD : Attending farmers group meetings and agricultural seminars
Socio-economic status : High
Knowledge level : Medium
Adoption level : Medium

Farm inventory

Total land holding : 8 acres
Soil type : Lateritic and river loamy
Topography : Plain
Source of water : River
Type of farming : Irrigated and rainfed
Source of labour : Hired
Main crops : Arecanut and cocoa
Subsidiary crop : Pepper
Subsidiary enterprise : Dairy



Strengths

- Traditional community based water management through the construction of katta
- Well maintained dairy unit

Weaknesses

- Water scarcity during summer
- Mahali disease in arecanut
- Price fluctation in main crops
- Inadequate facilities for marketing milk

Suggestions

- Traditional water harvesting structures may be rejuvenated by blending with modern proven technologies for water storage even during summer
- Recommended plant protection technologies may be followed timely against mahali
- Diversification and value addition may be initiated
- Avenues for marketing milk as well as milk products may be explored through Cooperative Society

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21 January, 2003

Scientists/Officers Team

- Rohini Iyer
- Alka Gupta
- Murali Gopal
- V. Arunachalam
- K. Samsudeen
- Elain Apsara
- M. K. Rajesh
- N. Ravikumar
- Jayabose
- Manoj P Samuel
- K. Manikandan
- K. Shyama Prasad

VISIT REPORT

Shri Y.K.Gopalakrishna Bhat is a progressive farmer with five acres of arecanut plantation and two acres of cashew plantation. He has adopted mainly organic farming and incidence of pests and diseases are comparatively less in his plantation. The major sources of water for irrigation are borewell and suranga (tunnel). It is unique perennial water tapping structure which is dug horizontally in the hillocks. Water from the suranga is collected in a pond/reservoir/down stream through hose pipes by gravity flow. He utilises this collected water for irrigating his entire plantation.

Profile of the farmer

- Age : 43 years
- Education : High school
- Type of family : Joint
- Family size : Eight members
- Information sources : Print and visual media, friends
- Social participation : Member of FIEC
- HRD : Attending seminars and conferences
- Socio-economic status : High
- Knowledge level : Medium
- Adoption level : Medium

Farm inventory

- Total land holding : 7 acres
- Soil type : Lateritic and loam
- Topography : Moderately sloppy
- Source of water : Open and bore wells
- Type of farming : Irrigated
- Source of labour : Hired
- Main crops : Arecanut and coconut
- Subsidiary crops : Banana and cashew
- Subsidiary enterprises : Dairy



Strengths

- Traditional water harvesting systems (suranga)
- Constant contacts with officials of agriculture department and research organisations
- Community water management

Weaknesses

- Arecanut dependent cropping system/element of risk
- Inertia to adopt chemical fertilisers/pesticides/herbicides etc

Suggestions

- Rejuvenation of traditional water harvesting systems and its effective use
- Adoption of farmer friendly technologies

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21 January, 2003

Scientists/Officers Team

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K. Samsudeen
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Jayabose
Manoj P Samuel
K. Manikandan
K. Shyama Prasad

Profile of the farmer

Age : 51 years
Education : High school
Type of family : Joint
Family size : Seven members
Information sources : Mass media, friends and relatives
Social participation : Member of Farm Information Exchange Club
HRD : Participation in training programmes and seminars
Socio-economic status : Medium
Knowledge level : Medium
Adoption level : Medium

Farm inventory

Total land holding : 3 acres
Soil type : Lateritic
Topography : Undulated
Source of water : Open and bore wells
Type of farming : Irrigated and rainfed
Source of labour : Family
Main crop : Arecanut
Subsidiary crops : Medicinal plants
Subsidiary enterprises : SSI Unit on Coffe powder and cocum squash

VISIT REPORT

Shri K.Ramachandra has been associating with the KVK for the last eight years. Apart from maintaining his three acre arecanut garden, he runs a Small Scale Industry (SSI) unit attached to his house. The major products are chicory mixed coffee powder under the brand name of Sakthi and cocum syrups. He is also growing different types of medicinal plants in his garden and has developed a unique method for controlling wilt disease of pepper.



Strengths

- Medicinal plants cultivation
- Promoting entrepreneurial activities
- Traditional knowledge blended with modern technologies

Weaknesses

- Depends on traditional practices
- Price fluctuation
- Less marketing avenues for the small scale products

Suggestions

- Crop diversification and value addition may be initiated
- Avenues may be explored for better marketing at local as well as at district level
- Medicinal plants cultivation may be strengthened

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28 January, 2003

Scientists/Officers Team

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K. Devakumar
M. K. Rajesh
S. Leena
Saritha Hegde
K. Shyama Prasad

VISIT REPORT

Shri Gopala Krishan Sharma owns a well managed sustainable and viable mixed farming unit with diversified crops such as coconut, arecanut, pepper, banana, cashew, vanilla, fruit crops, vegetables and fodder grass. He maintains several other enterprises like dairy, bee keeping and fish culture. He is practicing organic farming since 1986. Composting of all the agricultural wastes generated in the farm is done by mixing with biogas slurry. He maintains 25 cows, 10 among them are milching. He uses milking machine to save labour cost, time as well as to maintain proper hygiene. He adopted suitable water harvesting as well as soil conservation measures. A check dam is also constructed to direct the water flow to the arecanut garden from a natural rivulet. He designed and fabricated farm devices like arecanut dryer, agrichopper, arecanut spreading implement, gunny bag stand etc which are noteworthy to popularise.

Profile of the farmer

Age : 43 years
Education : Under graduate
Type of family : Joint
Family size : 11 members
Information sources : Mass media, farm journals, friends, relatives, extension personnel, scientists and local leaders
Social participation : Director of APCOS, Vice President of VV Club, Member in Cooperative Society, CAMPCO and FIEC
HRD : Participation in training programmes, seminars, exhibitions, meetings and workshops
Socio-economic status : High
Knowledge level : High
Adoption level : Medium

Farm inventory

Total land holding : 14 acres
Soil type : Lateritic
Topography : Sloppy
Source of water : Bore well and pond
Type of farming : Irrigated
Source of labour : Hired labour
Main crops : Coconut, arecanut and cashew
Subsidiary crops : Pepper, banana, vanilla, fruit crops, fodder, vegetables, flower crops etc
Subsidiary enterprises : Dairy, bee keeping and fish culture



Strengths

- Organic farming since 1986
- Sustainable and viable cropping pattern
- Effective recycling of organic waste
- Design and fabrication of farm machinery and implements
- Ecofriendly methods of plant protection

Weaknesses

- No efficient arecanut dehusker
- Slow wilt in pepper
- No proper spacing
- Labour shortage

Suggestions

- Vermicomposting may be started with available infrastructure
- The efficiency of arecanut dryer may be enhanced by providing the chimney on the top
- Recommended plant protection measures may be followed especially for pepper crop against slow wilt

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04 February, 2003

Scientists/Officers Team

K. Vijaya Kumar
S. J. D. Bosco
Anitha Karun
B. T. Rayudu
K. Samsudeen
V. Arunachalam
Elian Apshara
Jayabose
V. Niral
M. K. Rajesh
C. V. Sairam
S. Leena
Saritha Hegde
K. Shyama Prasad

VISIT REPORT

Smt Sharada Bhat is an active member of Kasaragod District Panchayat. She cultivates Jasmine with the species *Jasminum sambac* (Malligai) and *Jasminum grandiflorum* in an area of 10 cents. She earns an additional income of Rs.1000/month. She is doing loose flower trade as well as marketing of tied flowers called atti. Besides, she makes good income out of the sales of rooted cuttings during the planting season in June. Apart from this Crossandra plants also seen in her garden which are yielding with rich coloured flowers. The main occupation of her family is arecanut based farming comprising cocoa, pineapple, banana, pepper and nutmeg. Besides, she grows vegetable crops such as bhendi, chillies, amaranthus, moringa etc. With her leadership, she inspires the women folk to emerge as not only good home makers but also as good entrepreneurs/farmers.

Profile of the farmer

Age : 45 years
Education : Graduate
Type of family : Nuclear
Family size : Two members
Information sources : Mass media, extension officials, local leaders, farm journals, relatives, friends and scientists
Social participation : Member of District Panchayat, Active member of Women Self Help Groups
HRD : Participating in training programmes, seminars, workshops, kisan melas, farmers meetings, exhibitions, social and political meetings
Socio-economic status : Medium
Knowledge level : Medium
Adoption level : Medium

Farm inventory

Total land holding : 2 acres
Soil type : Lateritic
Topography : Plain
Source of water : Open well
Type of farming : Irrigated
Source of labour : Hired
Main crop : Arecanut
Subsidiary crops : Banana, vegetables, pineapple, jasmine and crossandra
Subsidiary enterprises : Dairy



Strengths

- Integrated farming
- Introduction of jasmine cultivation
- Perennial water source
- Postive attitude towards adoption of technologies
- Possess good local leadership
- Active member of women self help groups

Weaknesses

- Labour scarcity
- High labour wages
- Always busy with social work

Suggestions

- Cultivation of vegetables may be intensified as they have good marketing potential locally
- Floriculture activities may be expanded in more area as it gives more remuneration
- Pineapple may be planted in boundaries to prevent stray cattle menace

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04 February, 2003

Scientists/Officers Team

- K. Vijaya Kumar
- S.J.D.Bosco
- Anitha Karun
- B. T. Rayudu
- K. Samsudeen
- V. Arunachalam
- Elian Apsara
- Jayabose
- V. Niral
- M. K. Rajesh
- C. V. Sairam
- S. Leena
- Saritha Hegde
- K. Shyama Prasad

VISIT REPORT

Smt Lakshmi Bhat is a beneficiary of KVK, carrying out profitable farm activities. She has constructed a vermicomposting unit to prepare vermicompost, vermiwash and earth worms for sales. She is raising nearly 10,000 poly bag seedlings of different forest species on pay back scheme under the Social Forestry Department. Coconut, arecanut, banana, pepper, sapota, vanilla, jack, jasmine, crossandra, some medicinal plants and vegetables are being grown by her in existing homestead. She is harvesting rain water from the roof by making a pit near the well to raise water table and also for irrigation. She prepares different home made products using modern methods blended with traditional methods for income generation. Being former panchayat president and an active member of Havyak Mahila Parishad, she encourages and inspires the women folk to promote group activities for self employment as well as income generation.

Profile of the farmer

- Age : 48 years
- Education : High school
- Type of family : Nuclear
- Family size : Four members
- Information sources : Relatives, local leaders, friends, extension officials and scientists
- Social participation : Former Panchayat President, active member of women self help group, member in Havyak Mahila Parishad
- HRD : Participation in training programmes, exhibitions, seminars, workshops, mahila mandal meetings, farmers group discussions, social and political meetings etc. and acting as a resource person for women folk
- Socio-economic status : Medium
- Knowledge level : High
- Adoption level : Medium

Farm inventory

- Total land holding : Homestead
- Soil type : Lateritic
- Topography : Plain
- Source of water : Open well
- Type of farming : Homestead, irrigated
- Source of labour : Family
- Main crops : Pepper, coconut and arecanut
- Subsidiary crops : Jasmine, crossandra and vegetables
- Subsidiary enterprises : Vermicomposting unit, dairy, home scale food processing and nursery raising



Strengths

- Maximum returns from unit area
- Well maintained homestead farming
- Possess local leadership
- Promoting womens' group activities.
- Positive attitude
- Roof water harvesting

Weaknesses

- Inadequate resources
- Non-remunerative prices for home made products

Suggestions

- Proper drainage facility may be provided in vermicomposting unit
- Utilisation of women welfare schemes available from time to time at panchayat level may be explored

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14 February, 2003

Scientists/Officers Team

K. Vijaya Kumar
M. Gunasekharan
T. Vidhan Singh
C. V. Sairam
B. T. Rayudu
C. Palaniswamy
K. Samsudeen
V. Arunachalam
Jayabose
Elia Apsara
N. Ravikumar
S. Leena
Neelofar Illias Kutty
K. Shyama Prasad

VISIT REPORT

Shri M.K.Harisha, an extrainee of KVK, has chosen bee keeping as subsidiary enterprise. At present he maintains 30 bee colonies and sells around 300 kg of honey and 20-25 bee colonies per year. Recently, he started a small scale machinery unit to make bee hives. He prepares cashew apple and cocum squash for additional income. These products are being marketed under the brand name 'Madhura Products'. He is maintaining an integrated farming system which comprises of coconut, arecanut, pepper, banana, cashew, vegetables, poultry, dairy etc. He adopted water harvesting structures and collects rain water into a big pond and directs water to the arecanut as well as other crops by gravitational force through systematically dug channels in the entire farm. He manures vegetables purely with compost prepared by him through farm litter and other farm waste. His activities are inspiring the youth of that area.

Profile of the farmer

Age : 30 years
Education : Under graduate
Type of family : Joint
Family size : Seven members
Information sources : Mass media, relatives, friends, extension personnel, KVK and Krishi bhavans
Social participation : Member in Kera Vikasana Samithi and Farm Club, serves as resource person for training on bee keeping.
HRD : participation in training programmes, agricultural seminars, workshops, exhibitions and kisan melas
Socio-economic status : Medium
Knowledge level : Medium
Adoption level : Medium

Farm inventory

Total land holding : 2 acres
Soil type : Lateritic
Topography : Sloppy
Source of water : Open well and pond
Type of farming : Irrigated
Source of labour : Family as well as hired
Main crops : Arecanut and pepper
Subsidiary crops : Coconut, cashew, banana, vegetables, cardamom and fruit crops
Subsidiary enterprises : Bee keeping, dairy, poultry and fruit preservation



Strengths

- Well managed arecanut based cropping system
- Perennial water resources
- Integration of suitable subsidiary enterprises
- Value addition in seasonal fruits
- Suitable land for vegetable cultivation

Weaknesses

- Inadequate conveyance
- Susceptibility of bee colonies to the viral diseases
- No effective recycling of organic farm waste
- Labour scarcity

Suggestions

- Vermicomposting may be adopted for effective recycling of farm waste
- Recommended curative measures may be followed to control viral diseases in bee colonies
- Vegetable cultivation may be intensified
- Recommended control measures may be followed against inflorescence dieback of arecanut
- Fodder grass may be introduced

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09 May, 2003

Scientists/Officers Team

- R. Dhanapal
- B. T. Rayudu
- V. Niral
- Elian Apshara
- K. Deva Kumar
- K. Manikandan
- K. Shyama Prasad

VISIT REPORT

Shri E.M.Abdulla is a progressive farmer. He owns a well managed coconut farm. He adopted proper irrigation methods for efficient water use. He applies both organic and inorganic fertilisers for obtaining optimum yields. The coconut palms are well spaced and basins are properly mulched with fallen and dried coconut leaves for moisture conservation. He grows pepper, banana, pineapple, mango, clove, sapota as intercrops which are performing well. He conserves soil as well as water through terracing and contour bunding. He has selected mother palms in his farm and raises coconut seedlings for sales. He is following proper intercultural operations. At present he has procured three acres of ill managed coconut garden and he is confident to make it productive and sustainable in near future. For this suitable suggestions were extended by the scientists team to incorporate in his planning.

Profile of the farmer

- Age : 53 years
- Education : High school
- Type of family : Nuclear
- Family size : Five members
- Information sources : Friends, relatives and extension personnel
- Social participation : Nil
- HRD : Attending training programmes
- Socio-economic status : High
- Knowledge level : Medium
- Adoption level : Medium

Farm inventory

- Total land holding : 15 acres
- Soil type : Lateritic
- Topography : Sloppy
- Source of water : Tube well
- Type of farming : Irrigated
- Source of labour : Hired
- Main crop : Coconut
- Subsidiary crops : Pepper, banana, pineapple, mango, sapota, clove, jack fruit, all spice and vegetables
- Subsidiary enterprises : Nil



Strengths

- Awareness on soil and water conservation methods
- Adequate inter cropping
- Well managed farm

Weaknesses

- Inadequate organic manures
- No effective recycling of farm waste

Suggestions

- Trenches may be opened in between coconut palms and filled with coconut husk for effective soil and water conservation
- Vermicomposting may be started with the available infrastructure facility
- Recently procured ill managed coconut garden may be rejuvenated

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09 May, 2003

Scientists/Officers Team

R. Dhanapal
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K. Shyama Prasad

VISIT REPORT

Shri Thamban Nair is a beneficiary of FLD programme of KVK. He is having paddy based vegetable farming system. He has grown paddy variety Karuna along with locally grown variety-Athira through FLD intervention. The Karuna variety performed better in low land than up land. However, it gave good straw yield even in upland condition. Therefore he prefers this variety. The high yielding cucumber variety-Arunima was introduced by him through FLD. He expressed that this variety is good in yield, taste as well as early bearer. But the fruit size is so big therefore it was not preferred in local market especially small family holders. At present he is growing cow pea (Bhagyalakshmi) and the growth performance is good. The farmer in particular and the farmers of the village in general expressed satisfaction about the implementation of FLD for improving the overall farming situation of the village.

Profile of the farmer

Age : 58 years
Education : High school
Type of family : Nuclear
Family size : Five members
Information sources : Friends, relatives, krishi bhavan and KVK
Social participation : President of Padasekhara Samithi
HRD : Participates in group meetings and seminars
Socio-economic status : Medium
Knowledge level : Medium
Adoption level : Medium

Farm inventory

Total land holding : 5 acres
Soil type : Lateritic
Topography : Medium sloppy
Source of water : Well and canal
Type of farming : Irrigated and rainfed
Source of labour : Family as well as hired
Main crops : Coconut
Subsidiary crops : Paddy, arecanut and vegetables
Subsidiary enterprises : Dairy



Strengths

- Good irrigation sources
- Appropriate cropping pattern
- Adoption of high yielding varieties of cereals and vegetables

Weaknesses

- Non-utilisation of farm waste
- No intercrops in arecanut garden
- Non-systematic plant protection schedule in vegetables

Suggestions

- Farm waste may be recycled through vermicomposting technology
- Banana and pepper may be introduced as intercrops in arecanut garden
- Eco-friendly plant protection methods may be adopted in systematic manner for the vegetables

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15 May, 2003

Scientists/Officers Team

George V. Thomas
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M. Gunasekharan
T. Vidhan Singh
Alka Gupta
K. Samsudeen
V. Arunachalam
Jayabose
Elian Apshara
Manoj P. Samuel
K. Shyama Prasad

VISIT REPORT

Shri K. K. Thomas is regularly practicing vermicomposting after under going training at CPCRI and multiplying nucleus culture of 100 earth worms collected from the Institute. He constructed two vermicomposting tanks of 2.5 X 1.5 X 0.75 m dimension, housed inside a thatched shed. He produces about two-three tonnes of vermicompost per year in three batches out of farm residues such as coconut leaves, arecanut leaves, banana leaves, wood chips etc. He is applying vermicompost to all crops in his farm. He has also under taken earth worm multiplication in four deal wood boxes and sells about 5000 earth worms per year. He applies vermiwash to vanilla and vegetable crops. He has well maintained coconut and arecanut gardens with pepper, coffee, vanilla etc as inter crops. He is selling vanilla cuttings. He adopted bee keeping by using coconut shell for rearing small honey bees (*Trigona irridipennis*).

Profile of the farmer

Age : 43 years
Education : Graduate
Type of family : Nuclear
Family size : Five members
Information sources : Friends, mass media and extension officials
Social participation : Member in Kera Vikasana Samithi and Youth Club
HRD : Participation in training programmes and agricultural seminars
Socio-economic status : Medium
Knowledge level : Medium
Adoption level : Medium

Farm inventory

Total land holding : 4 acres
Soil type : Hilly Laterite soil
Topography : Sloppy
Source of water : Open well
Type of farming : Irrigated and rainfed
Source of labour : Family as well as hired
Main crops : Rubber, coconut and arecanut
Subsidiary crops : Coffee, banana, pepper, vanilla, medicinal plants and vegetables
Subsidiary enterprises : Vermicomposting unit



Strengths

- Good irrigation source
- Awareness about soil and water conservation methods
- Adequate inter crops
- Effective recycling of organic wastes

Weaknesses

- More crop density
- Partial adoption of technologies

Suggestions

- Recommended spacing may be followed for inter crops like banana
- Proper plant protection measures may be taken up for pepper plants

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15 May, 2003

Scientists/Officers Team

George V. Thomas
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M. Gunasekharan
T. Vidhan Singh
Alka Gupta
K. Samsudeen
V. Arunachalam
Jayabose
Elian Apshara
Manoj P. Samuel
K. Shyama Prasad

VISIT REPORT

Shri Mathachen is a highly innovative farmer who has under taken vanilla cultivation in his coconut plantation located in an undulating terrain by terracing. He constructed a water tank of 36,000 litre capacity and has installed micro tube and mist irrigation in the entire farm. Husk burial in coconut basins was adopted by the farmer. Vanilla cuttings planted three years ago as inter crop in coconut garden started yielding. He has under taken an innovative venture of mixed cropping of coffee, vanilla, pineapple and cardamom in rubber plantation. Growth performance of all these crops are good. Coffee started yielding. He grows arecanut on the borders of his farm and the performance of these palms is good. He is having traditional water harvesting structure called suranga.

Profile of the farmer

Age : 49 years
Education : Under graduate
Type of family : Nuclear
Family size : Three members
Information sources : Mass media, extension officials, relatives, fellow farmers and private agriculture dealers
Social participation : President of INFAM
HRD : Participation in training programmes, agricultural seminars, exhibitions, kisan melas and group meetings
Socio-economic status : High
Knowledge level : Medium
Adoption level : Medium

Farm inventory

Total land holding : 6 acres
Soil type : Hilly Laterite
Topography : Sloppy
Source of water : Open well and hill stream
Type of farming : Irrigated and rainfed
Source of labour : Hired
Main crops : Rubber and coconut
Subsidiary crops : Coffee, arecanut, pepper, banana and vanilla
Subsidiary enterprises : Nil



Strengths

- Perennial water source
- Adequate spacing
- Innovative intercropping as well as mixed cropping
- Adoption of modern irrigation practices
- Keen and active involvement in farm development

Weaknesses

- Non-availability of biocontrol agents like Pseudomonas and Trichoderma in the local market in time
- Labour scarcity
- No recycling of organic waste available in the farm

Suggestions

- Vermicomposting may be started
- Terracing and contour bunding/ cultivation may be followed in slopy land
- Installation of vanilla beans processing unit may be explored from Spices Board

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15 May, 2003

Scientists/Officers Team

George V. Thomas
D. V. Srinivasa Reddy
M. Gunasekharan
T. Vidhan Singh
Alka Gupta
K. Samsudeen
V. Arunachalam
Jayabose
Elian Apshara
Manoj P. Samuel
K. Shyama Prasad

VISIT REPORT

Shri Goerge has under taken successful vermiculture after undergoing training at CPCRI. He is multiplying *Eudrilus* sps of earth worms supplied by the Institute. He has constructed three vermicomposting tanks of 3 X 2 X 0.75 m dimension and prepares vermicompost through out the year using coconut leaves and other wastes in farm. He is multiplying earth worms by hanging plastic basian method to avoid the problem of ants. He applies vermicompost in all crops in the farm. He cultivates fresh water fish in his existing tank. He raises arecanut and pepper nursery for sales. He has taken up arecanut cultivation with local variety in 1999 and the growth performance of these palms is good. He also started vanilla cultivation as an intercrop in arecanut garden. He adopted bee keeping (Italian bee) in his farm.

Profile of the farmer

Age : 53 years
Education : High school
Type of family : Nuclear
Family size : Six members
Information sources : Friends, mass media and extension officers
Social participation : Member in cooperative society
HRD : Attending training programmes and seminars
Socio-economic status : Medium
Knowledge level : Medium
Adoption level : Medium

Farm inventory

Total land holding : 1.5 acres
Soil type : Hilly lateritic soil
Topography : Sloppy
Source of water : Open and tube wells
Type of farming : Irrigated and rainfed
Source of labour : Family as well as hired labour
Main crops : Coconut and arecanut
Subsidiary crops : Pepper, vanilla and banana
Subsidiary enterprises : Vermicompost unit, bee keeping and fish culture



Strengths	Weaknesses	Suggestions
<ul style="list-style-type: none"> - Rich source of ground water - Crop diversity - Practicing of inter crops - Rich source of organic manures - Integrated cropping sysytem - Additional income through adoption of subsidiary enterprises - Positive attitude towards modern technologies 	<ul style="list-style-type: none"> - Dense planting - Inadequate spacing between main crops as well as intercrops - No proper basin management - No soil and water conservation measures followed 	<ul style="list-style-type: none"> - Recommended practices may be followed for better management of crops in the farm - Terracing and contour bunding/ cultivation may be followed for soil and water conservation in slopy land - Cover crops like <i>Mimosa</i> and <i>Calapagonium</i> may be grown in coconut basins

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20 May, 2003

Scientists/Officers Team

- V. Rajagopal
- K. V. Kasturi Bai
- K. Madhavan
- R. Dhanapal
- Anitha Karun
- M. Gunasekharan
- T. Vidhan Singh
- V. Niral
- Manoj P. Samuel
- K. Shyama Prasad

VISIT REPORT

Shri Kunhiraman, vice president of Kinanoor-Karindalam panchayat has shown the natural water harvesting structure in the village which is called as 'pallam' renovated by him to the scientists team. The area of the pallam is about 50 cents and situated on the top of a lateritic hill lock. He discussed with the team on various aspects of pallam. After construction of the pallam, there is no water scarcity in the village. Even during summer, water is available in this structure. He acquired latest knowledge on water harvesting structures through the training programme conducted by KVK at Kasaragod. Now he is confident to guide the farmers of near by villages on water harvesting methods and techniques.

Profile of the farmer

- Age : 58 years
- Education : High school
- Type of family : Joint family
- Family size : Six members
- Information sources : News papers, TV, Seminars etc.
- Social Participation : Vice President of Gram Panchayat
- HRD : Regularly attending seminars, meetings and conferences.
- Socio-economic status : High
- Knowledge level : High
- Adoption level : High

Farm inventory

- Total land holding : Two acres
- Soil type : Hard lateritic and lateritic
- Topography : Sloping
- Source of water : Suranga
- Type of farming : Rainfed
- Source of labour : Hired
- Main crops : Coconut, cashew
- Subsidiary crops : Banana, vegetables
- Subsidiary enterprises : -



Strengths

- Participatory approaches for community water management
- Locally available water source is developed by increasing the out put through promoting the water recharging in catchment areas
- The water from the tunnel is collected in a reservoir and used for irrigation

Weaknesses

- Huge initial investment
- It can not be recommended for low cost water management programmes
- The emphasis given to recharging at catchment areas is not enough

Suggestions

- Further low cost technologies may be followed
- More importance may be given for recharging interventions at the catchment areas of the tunnel

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20 May, 2003

Scientists/Officers Team

- V. Rajagopal
- K. V. Kasturi Bai
- K. Madhavan
- R. Dhanapal
- Anitha Karun
- M. Gunasekharan
- T. Vidhan Singh
- V. Niral
- Manoj P. Samuel
- K. Shyama Prasad

VISIT REPORT

Shri Abdul Kareem is an environmental activist who has developed a waste land into a private forest park. He is conserving the biodiversity without disturbing natural flora and fauna. With the vast species of plants at this park, it serves as a resource centre for environmentalists, students, and ayurvedic practitioners. There are four wells in the park where water is available through out the year. He supplies water to all neighbours which is a special free service rendered by him. He believes that the water harvested through these wells has got some medicinal property. Therefore, he is calling this water as sweet water. With the wealth of knowledge in the forest, he is waiting for permission to start under graduate courses on ecofriendly relationship. He has banned plastics in that area. He is a self made man who can be proud of his success in converting a waste land into a sustainable forest park.

Profile of the farmer

- Age : 60 years
- Education : High school
- Type of family : Nuclear
- Family size : Five members
- Information sources : Print media, visual media, friends, technocrats and departmental officials
- Social participation : Winner of national level award
- HRD : Attends a number of conferences, seminars and workshops
- Socio-economic status : High
- Knowledge level : High
- Adoption level : High

Farm inventory

- Total land holding : 30 acres
- Soil type : Lateritic
- Topography : Moderately sloppy
- Source of water : Open wells
- Type of farming : Rainfed
- Source of labour : Family
- Main crops : Different forest species
- Subsidiary crops : Nil
- Subsidiary enterprises : Nil



Strengths

- Development of private forest park
- Conversion of hard lateritic land into a sustainable forest which other wise wasted
- Maintenance of biodiversity
- Active involvement in conservation of natural resources

Weaknesses

- Lack of awareness among farming community about his activities
- Inadequate publicity

Suggestions

- Necessary steps may be initiated to recognise this park as a resource centre for PG courses on environmental sciences
- Necessary steps may be initiated to patent sweet water
- Possibility of conducting under graduate courses may be explored

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27 May, 2003

Scientists/Officers Team

V. Rajagopal
H. H. Khan
K. V. Ksturi Bai
K. Vijaya Kumar
R. Dhanapal
D. V. Srinivasa Reddy
C. V. Sairam
B. T. Rayudu
Alka Gupta
S. Naresh Kumar
S. Leena
Saritha Hegde
K. Shyama Prasad

VISIT REPORT

Shri Karyadu Ganapathi Bhat is a traditional agriculturist who believes and inculcates to his generations that agriculture is the mother of all cultures to be adopted as a profession. He follows integrated farming practices with coconut, arecanut, pepper, paddy, pulses, vanilla, vegetables, banana and dairy. He adopted drip irrigation in some parts of the farm. All crops in his farm are performing well. He states nutrient imbalance in the soil can be balanced through the addition of both organics and inorganics. He says bee keeping is his hobby. Mrs Yashoda Bhat, an active member of women self help group, initiated food processing unit in a small scale. She prepares cocum squash, jack fruit products, seasonal fruits pickles etc for sale to mahila co-operative societies. The encouragement and guidance given by this family to the fellow farmers and young generations are noteworthy.

Profile of the farmer

Age : 75 years
Education : Graduate
Type of family : Joint
Family size : 13 members
Information sources : Mass media, extension officers, scientists, relatives and neighbours
Social participation : Member in Fam Information Exchange Club and Cooperative Bank
HRD : Participation in kisan melas, training programmes, seminars, farmers meetings and exhibitions
Socio-economic status : High
Knowledge level : High
Adoption level : Medium

Farm inventory

Total land holding : 40 acres
Soil type : Laterite
Topography : Plain
Source of water : Bore well
Type of farming : Irrigated and rainfed
Source of labour : Permanent and hired labour
Main crops : Arecanut, coconut, paddy and cashew
Subsidiary crops : Vanilla, pepper, banana and vegetables
Subsidiary enterprises : Dairy, vermicomposting, bee keeping and food products



Strengths

- Integrated farming
- Recycling of organic waste
- Intercropping in coconut and arecanut gardens
- Well managed paddy based cropping system
- Good support to farm labour families

Weaknesses

- Water shortage
- Nutrients imbalance in the soil
- Depletion of nutrients from surface soil
- No cover crops

Suggestions

- Recommended fertilisers and plant protection measures may be adopted
- Mulching may be taken up
- Drip points of drip irrigation unit may be kept one metre away from coconut basin
- Soil testing may be taken up
- Drought tolerant palms may be selected as mother palms to raise coconut seedlings

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03 June, 2003

Scientists/Officers Team

V. Rajagopal
K. Madhavan
SJD Bosco
R. Dhanapal
V. Krishna Kumar
B.T. Rayudu
C. Palaniswamy
Murali Gopal
Manoj P. Samuel
K. Manikandan
K. Shyama Prasad

VISIT REPORT

Shri Abdul Khadar Haji is a progressive farmer. He converted waste land into cultivable land and adopted coconut and arecanut based cropping systems with pepper, nutmeg, banana, papaya and pineapple as subsidiary crops. Arecanut based cropping system performs well with all the component crops growing better than coconut based cropping system. He applies only organic manures through FYM prepared in his farm. The main irrigation source is ground water with two wells which are interconnected through tunnel. He adopted drip irrigation system for effective utilisation of water. He also cultivates rice in his farm. In the homestead, he grows moringa, mango and pomegranate. He owns a tractor for carrying out farm operations. He established a coconut oil extractor unit having rotary expeller system for the extraction of oil. His innovativeness in the adoption of farm mechanisation and value addition is noteworthy.

Profile of the farmer

Age : 68 years
Education : Primary
Type of family : Nuclear
Family size : Seven members
Information sources : Friends, developemntal agencies, news papers and TV
Social Participation : Member in credit society and farm club.
HRD : Nil
Socio-economic status : High
Knowledge level : Medium
Adoption level : Medium

Farm inventory

Total land holding : 10 acres
Soil type : Lateritic
Topography : Plain
Source of water : Open well and tube well
Type of farming : Irrigated and rainfed
Source of labour : Hired
Main crops : Coconut and arecanut
Subsidiary crops : Banana, pepper, paddy and vegetables
Subsidiary enterprises : Coconut oil expellar unit and dairy



Strengths

- Adequate spacing in coconut garden
- Farm is leveled adequately
- Good water source through two wells
- Establishment of copra mill
- Own tractor and other farm machinery and implements

Weaknesses

- Poor maintenance of crops
- Inadequate placement of drip irrigation system
- Poor utilisation of water resources
- No coconut basin management
- Organic matter content of the soil is low

Suggestions

- Intercropping/mixed cropping may be taken up with suitable crops like nutmeg, pineapple, banana, pepper, yam etc
- Filter in drip may be replaced
- Vermicomposting unit may be established
- Copra dryer developed by CPCRI may be procured for making quality copra

35

03 June, 2003

Scientists/Officers Team

- V. Rajagopal
- K. Madhavan
- S.J.D. Bosco
- R. Dhanapal
- V. Krishna Kumar
- B.T. Rayudu
- C. Palaniswamy
- Murali Gopal
- Manoj P. Samuel
- K. Manikandan
- K. Shyama Prasad

VISIT REPORT

Shri Bhaskaran is the MD of Karshaka Bandhu Coconut Products, run by non-resident Keralites which manufactures coconut oil, chips and vinegar. Coconut oil extraction is done using sequenced operation system, which involves human labour in conjunction with machineries. The required coconuts are collected directly from the farmers at market rate. Coconut shell is used as fuel for the dryer. Production of the unit is 750 litres of filtered oil per day. The company adopted CPCRI technology in toto for the production of sweet as well as masala coconut chips. About 2-3 packets of 50 gm each are produced from one average sized nut. Vinegar is being prepared from coconut water using *Saccharomyces cerevisiae* for fermentation in a period of 14 days. The recovery of the vinegar is around 10%. The service extended by this product diversification unit to the farming community is praiseworthy.

Profile of the farmer

- Age : 53 years
- Education : Under graduate
- Type of family : Nuclear family
- Family size : Five members
- Information sources : Scientists, friends and research institutes.
- Social Participation : MD in Karshakabandhu Coconut Products
- HRD : Participates in seminars, workshops, conferences etc.
- Socio-economic status : High
- Knowledge level : High
- Adoption level : High

Farm inventory

- Total land holding : Eight acres
- Soil type : Red loamy and lateritic
- Topography : Plain and medium slop
- Source of water : Tube well and open well
- Type of farming : Irrigated and rainfed
- Source of labour : Permanent and hired
- Main crops : Coconut
- Subsidiary crops : Arecanut, banana, pepper
- Subsidiary enterprises : Dairy



Strengths

- Oil mill is located in suitable place.
- Collection and processing of coconuts are systematic
- Created employment to 20 labourers including 9 female
- Infrastructure is adequate and well maintained
- Establishment of integrated activities like chips making, vinegar etc
- Selling of byproducts like coconut oil cake

Weaknesses

- Utilising a part of the coconut water for making vinegar and rest is wasted
- Non-adoption of coconut splitting devices/ implements
- Inadequate hygienic measures

Suggestions

- Full utilisation of coconut water for making various products
- Coconut splitting device developed by CPCRI may be procured
- Adequate hygienic measures may be followed especially in coconut chips making

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03 June, 2003

Scientists/Officers Team

V. Rajagopal
K. Madhavan
SJD Bosco
R. Dhanapal
V. Krishna Kumar
B.T. Rayudu
C. Palaniswamy
Murali Gopal
Manoj P. Samuel
K.Manikandan
K. Shyama Prasad

VISIT REPORT

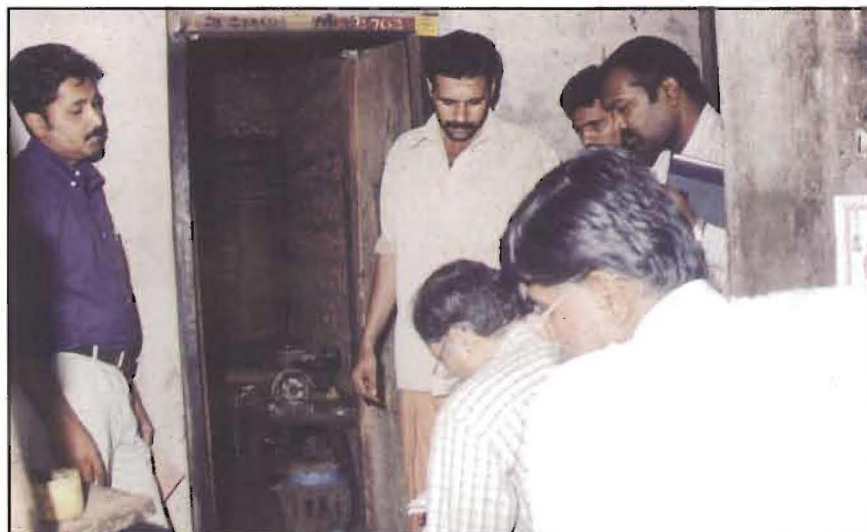
Shri Sasidharan, a school drop out, attended the on-campus training programme on 'Repair and Maintenance of Pump sets' conducted at KVK during 1999-2000. He started a small pump set repair unit at Kunoochi in Pallikkere panchayat during August 2000. In the initial years, he found it difficult to survive solely on the repairing unit and opened a vegetable outlet with this unit. But slowly he has been established as an expert pump mechanic in the locality. Presently he adopted it as a full time profession. On an average he repairs 2-3 pumpsets per day. Apart from repairing pumpsets at this unit, he extends mobile services on the spot for which he gets more remuneration. As he is getting sufficient repair works, he lent the vegetable store to his brother. The self employment opportunity created by him and his family members is appreciable.

Profile of the farmer

Age : 34 years
Education : High school
Type of family : Joint family
Family size : Six members
Information sources : News papers, extension personnel, local leaders
Social Participation : Member of service cooperative bank
HRD : Attends training programmes and seminars
Socio-economic status : Medium
Knowledge level : Medium
Adoption level : High

Farm inventory

Total land holding : Landless
Soil type : Nil
Topography : Nil
Source of water : Nil
Type of farming : Nil
Source of labour : Nil
Main crops : Nil
Subsidiary crops : Nil
Subsidiary enterprises : Pumpset repairing workshop



Strengths

- Adequate repairing tools
- Prompt and timely services
- Adequate knowledge and skills

Weaknesses

- No unit name board
- Inadequate transport facility for mobile services

Suggestions

- Name board may be fixed at workshop
- Two wheeler may be procured for quick and cost effective mobile servicing

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10 June, 2003

Scientists/Officers Team

- R. Dhanapal
- C. V. Sairam
- B. T. Rayudu
- C. Palaniswamy
- N. Ravikumar
- R. Sanal Kumar
- K. Shyama Prasad

VISIT REPORT

Shri Mohmmed Haji is a contact farmer of KVK. On-farm testing trial on management of stem bleeding disease in coconut was conducted during 2000-2002 in his farm. With his active participation and cooperation, the trial was successfully implemented. After this, he follows recommended package of practices of CPCRI for the management of coconut and arecanut gardens. He applies both organic and inorganic fertilisers in integrated manner for better fertiliser use efficiency. The yield performance of both coconut and arecanut palms is good. He maintains milching cows. The fodder requirement is met by the cultivation of fodder grass (CO3). More crops may be introduced as intercrops in the existing spacing of coconut garden. Having gained confidence and acquired skill on management of stem bleeding, he extends the same to the fellow farmers.

Profile of the farmer

- Age : 62 years.
- Education : Primary School
- Type of family : Nuclear
- Family size : Three members
- Information sources : Mass media, Krishi Bhavan, KVK etc.
- Social Participation : Nil
- HRD : Participation in agricultural seminars, group meetings, training programmes.
- Socio-economic status : High
- Knowledge level : High
- Adoption level : High

Farm inventory

- Total land holding : 7.5 acres
- Soil type : Lateritic
- Topography : Plain
- Source of water : Open wells (3)
- Type of farming : Irrigated
- Source of labour : Permanent as well hired
- Main crops : Coconut and arecanut
- Subsidiary crops : Banana, fodder crops
- Subsidiary enterprises : Milching cows



Strengths

- Adequate cultivated land
- Adequate spacing for intercropping in coconut and arecanut gardens
- Adoption of CPCRI technologies
- Better management practices
- Good yield in all crops
- Positive attitude towards acceptance and retention of technologies

Weaknesses

- Lack of crop intensification
- Labour shortage
- Value addition is ignored
- No effective recycling of organic waste

Suggestions

- Inter/mixed cropping may be taken up with vanilla, banana, pineapple and pepper
- Vermicompost unit may be established
- Value addition in coconut may be taken up by making quality copra instead of selling coconuts

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20 February, 2004

Scientists/Officers Team

George V.Thomas
K.Vijaya Kumar
M. Gunasekaran
C. V. Sairam
B.T. Rayudu
C. Palaniswamy
Alka Gupta
Elain Apshara
N. Ravikumar
S. Leena
Rajasekharan

VISIT REPORT

Shri Ashok Kumar Holla is a progressive farmer. He collects information from various sources and then develops his own ideas for formulating packages of operations in his field. To overcome the drastic price fluctuations of arecanut, he has shifted to low cost production technologies as well introduced suitable intercrops in areca garden. Cowdung collected from his dairy unit is used for biogas generation. Slurry is used for his plantations. He is an organic farmer to the extent of 90% and applies small quantity of potash to maintain the yield. He cultivates around 150 hybrid coconut (TXD) palms apart from local WCT. He follows farming activities in scientific way which motivates the fellow farmers. He prepares Panchagavya and is being used for various crops to promote growth, enhance flowering and reduce pest and disease incidences. As a social activist, he promotes group activities of neighbouring farmers in agriculture.

Profile of the farmer

Age : 46 years
Education : Post Graduate
Type of family : Joint
Family size : Seven members
Information sources : Journals, farm radio, research institutes, relatives, friends, fore fathers knowledge
Social participation : CAMPCO Director, President of Karshaka Morcha, Gram Panchayat Member
HRD : Attend farmers meetings and workshops
Socio-economic status : High
Knowledge level : High
Adoption level : High

Farm inventory

Total land holding : 26 acres
Soil type : Lateritic
Topography : Undulated
Source of water : Surangas, open and bore wells
Type of farming : Rainfed and irrigated
Source of labour : Hired as well as permanent
Main crops : Arecanut, coconut, paddy and cashew
Subsidiary crops : Pepper, vanilla, banana, vegetables and fodder crops
Subsidiary enterprises : Dairy, Azolla unit and vanilla nursery unit



Strengths

- Strong Integrated farming approach
- Maximum utilisation of traditional water harvesting structures
- Strong joint family
- Innovativeness
- Receptive to technologies
- Source of inspiration to fellow farmers

Weaknesses

- Low soil fertility
- Poor water retention capacity
- Water shortage in peak summer
- Price fluctuation in arecanut

Suggestions

- Soil analysis may be under taken
- Farm waste may be effectively recycled through vermicomposting technology
- Coconut basins may be mulched with crop sheddings to reduce the frequency of irrigation

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25 February, 2004

Scientists/Officers Team

George V.Thomas
K.V. Kasturi Bai
K. N. Ponnamma
Anitha Karun
A. C. Mathew
Alka Gupta
S. Naresh Kumar
Jayabose
S. Leena
Manoj P. Samuel
Rajasekharan

VISIT REPORT

Shri M.V.Gangadharan is a contact farmer of KVK. Agriculture is the only source of income to sustain his family. He follows modern technologies to improve crop production in his farm. He cultivates crops year round as per the seasons. He grows banana variety Mettupalayam every year in low lying area subjected to water stagnation during rainy season, otherwise that land is not suited to take up any other crop, which ensures economic viability to his farming practices. He follows integrated farming with suitable enterprises like dairy and poultry. He converts farm waste into compost and applies to the crops grown in his field. He always adopts new varieties of vegetables to get higher yields.

Profile of the farmer

Age : 40 years
Education : High school
Type of family : Joint
Family size : Eight members
Information sources : Relatives, friends, research institutes, KVK and Krishi Bhavan
Social participation : Member of farmers club
HRD : Attending seminars, group meetings, training programmes and workshops
Socio-economic status : Medium
Knowledge level : Medium
Adoption level : Medium

Farm inventory

Total land holding : 4.5 acres
Soil type : Lateritic
Topography : Sloppy
Source of water : Open well and near by river
Type of farming : Irrigated
Source of labour : Family labour
Main crops : Coconut , banana and paddy
Subsidiary crops : Vegetables and tuber crops
Subsidiary enterprises : Dairy and poultry.



Strengths

- Ample source of irrigation water by check dam round the year
- Systematic cropping pattern regarding vegetables and banana
- Full-time involvement of family
- High productivity of various crops
- Good market facilities

Weaknesses

- Water stagnation during rainy season due to low lying area
- Inadequate recycling of available biomass
- Unorganised coconut cultivation without following proper spacing
- Crop loss due to pests and diseases

Suggestions

- Old unproductive coconut palms may be replaced
- Excess biomass may be effectively recycled through vermicomposting technology
- Dead coconut palms may be removed and burnt
- Appropriate plant protection methods may be followed

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25 February, 2004

Scientists/Officers Team

George V.Thomas
K.V. Kasturi Bai
K. N. Ponnamma
Anitha Karun
A. C. Mathew
Alka Gupta
S. Naresh Kumar
Jayabose
S. Leena
Manoj P. Samuel
Rajasekharan

VISIT REPORT

Shri Prasannan is a successful large scale vegetable grower. With all his knowledge and experience, he has demonstrated that vegetable cultivation is a profitable enterprise to generate adequate income for a family. He has taken land on lease apart from his own land of 2 acres to extend vegetable cultivation. He is growing a number of high yielding varieties of vegetable crops like bitter gourd, amaranthus, cow pea, ridge gourd, chilli etc. throughout the year. He effectively follows crop rotation in vegetables. He also cultivates arecanut with banana as intercrop. Recently he has introduced vanilla as intercrop in arecanut garden. He is a hard working farmer carrying out most of the farm operations him self with the able support of his family members. He bagged best vegetable cultivator awards and best farm product awards. He can be role model to the young farmers of the neighbouring area.

Profile of the farmer

Age : 43 years
Education : High school
Type of family : Joint
Family size : Seven members
Information sources : Farm Journals, reasearch institutes, Krishi Bhavan and neighbouring farmers
Social participation : Bagged several awards by participating in various farm competitions.
HRD : Attends seminars, farmers meetings, workshops and training programmes
Socio-economic status : Medium
Knowledge level : High
Adoption level : High

Farm inventory

Total land holding : 2 acres owned and 2 acres leased
Soil type : Lateritic
Topography : Sloppy
Source of water : Open well and storage tank
Type of farming : Irrigated
Source of labour : Family
Main crops : Vegetables, paddy and arecanut
Subsidiary crops : Banana and vanilla
Subsidiary enterprises : Dairy



Strengths

- Adequate water source
- Knowledge as well as skills on vegetable cultivation
- Family labour
- Joint family
- Availability of land on lease
- Availability of good transport
- Suitable crop rotation based on the demand

Weaknesses

- A portion of the profit is going as lease amount
- Crop loss due to pests and diseases
- Non-availability of quality seeds of vegetables

Suggestions

- Eco-friendly management of pests and diseases in vegetables may be followed
- Recycling of organic wastes may be taken up by vermicomposting technology
- Cultivation of pest resistant varieties of vegetables may be explored
- Quality seeds may be procured from research organisations

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3 March, 2004

Scientists/Officers Team

- K. Madhavan
- Anitha Karun
- V. Krishna Kumar
- T. Vidhan Singh
- M. Gunasekharan
- A.C.Mathew
- Alka Gupta
- S.Naresh Kumar
- Jayabose
- K. Deva Kumar
- S.Leena
- K. Manikandan
- Rajasekharan

VISIT REPORT

Shri A. M. Subramanyan Nair is a progressive farmer of Kasaragod district. He is recipient of the prestigious Karshaka Shree Award 2000. He is very enterprising farmer who has started with 35 cents of farming and grown to own 20 acres at present. He cultivates rubber, coconut, arecanut, banana, vanilla, vegetables, paddy etc. He gets water from natural springs, surangams and open wells. He uses pressurised irrigation system for irrigating crops. His farm is a role model for agriculture as successful enterprise to the farmers of Kasaragod district.

Profile of the farmer

- Age : 54 years
- Education : High school
- Type of family : Nuclear
- Family size : Four members
- Information sources : Research institutes, journals, radio, relatives and friends
- Social participation : Karshaka Shree award winner 2000
- HRD : Attends workshops, farmers meetings, seminars, serve as resource person for training and other activities of agricultural college
- Socio-economic status : High
- Knowledge level : High
- Adoption level : High

Farm inventory

- Total land holding : 20 acres
- Soil type : Lateritic
- Topography : Sloppy
- Source of water : Open and bore wells and suranga
- Type of farming : Irrigated and rainfed
- Source of labour : Family and hired
- Main crops : Coconut, arecanut, rubber and paddy
- Subsidiary crops : Pepper, banana, vanilla and vegetables
- Subsidiary enterprises : Dairy



Strengths

- Perennial water source.
- High knowledge and skill in farm operations
- Consolidated land
- Permanent labour
- Has the personal conviction to innovate and implement new ideas on farming

Weaknesses

- Drastic price fluctuation in arecanut
- Poor transport and market facilities
- High labour wages
- Topography, cropping pattern and soil condition prevents use of mechanical ploughing

Suggestions

- Cage wheel instead of ordinary tyres may be used in tillers for paddy field mechanisation
- Vanilla nursery unit may be established
- Vermicompost technology may be adopted for effective recycling of farm wastes

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10 March, 2004

Scientists/Officers Team

Rohini Iyer
K. V. Kasturi Bai
K. N. Ponnamma
K. Vijaya Kumar
C.V. Sairam
V. Krishna Kumar
B. T. Rayudu
C. Palaniswamy
V. Niral
Shamina Azeez
K. Samsudeen
N. Ravi Kumar
S. Leena
Rajasekharan

VISIT REPORT

Smt.Mamatha Mohan Das is a house wife and takes care of farming activities. A well managed arecanut garden with around 1000 palms recieved attention of fellow farmers. The arecanut varieties -Mangala and Mohitnagar are six year old and started yielding. Well maintained countour bunds were seen in coconut garden. Coconut basins were properly mulched with farm waste. Apart from these crops, she also cultivates around 40 mango trees, vegetables like bhendi, chilli, cowpea, brinjal, cucumber, bitter gourd and ridge gourd. She follows appropriate and eco-friendly crop management practices for obtaining sustainable yield. She attends training programmes for updating her knowledge from time to time.

Profile of the farmer

Age : 40 years
Education : Graduate
Type of family : Nuclear
Family size : Four members
Information sources : Journals, research institutes, KVK, Krishi Bhavan and friends
Social participation : Nil
HRD : Attends training programmes, seminars and farmers group meetings
Socio-economic status : High
Knowledge level : Medium
Adoption level : Medium

Farm inventory

Total land holding : 4 acres
Soil type : Lateritic
Topography : Undulated
Source of water : Open and bore wells and suranga
Type of farming : Irrigated
Source of labour : Permanent
Main crops : Arecanut and coconut
Subsidiary crops : Pepper, banana, mango and vegetables
Subsidiary enterprises : Dairy



Strengths

- Perennial source of water
- Permanent labour
- Access to market
- High yielding varieties of arecanut
- Crop diversity
- Receptive to modern technologies/ advises

Weaknesses

- Price fluctuation in arecanut
- Inadequate recycling of farm waste

Suggestions

- Vanilla may be introduced as intercrop in arecanut
- Biomass may be recycled through vermicomposting technology
- Suitable subsidiary enterprises like bee keeping may be initiated

43

10 March, 2004

Scientists/Officers Team

Rohini Iyer
K. V. Kasturi Bai
K. N. Ponnamma
K. Vijaya Kumar
C.V. Sairam
V. Krishna Kumar
B. T. Rayudu
C. Palaniswamy
V. Niral
Shamina Azeez
K. Samsudeen
N. Ravi Kumar
S. Leena
Rajasekharan

VISIT REPORT

Shri Sadanandan is a progressive young farmer. He cultivates vegetables like brinjal, chilli, bitter gourd, cow pea, bhendi, little gourd, amaranthus, cucumber, ridge gourd etc on large scale. He sustains a family size of 10 members through farm income. He maintains a dairy unit and integrate this unit with his farming. He recycles farm waste as well waste collected from the dairy unit. He adds organics to the vegetables and produces healthy and quality vegetables. Apart from this he cultivates arecanut, coconut, banana and pepper. He bagged best vegetable cultivator award and best farmer award of Mogral Puttur Gram Panchayat. His enthusiasm towards farming and enterprising nature is praise worthy.

Profile of the farmer

Age : 35 years
Education : Primary
Type of family : Joint
Family size : 10 members
Information sources : Farm journals, relatives, research institutes and krishi bhavans
Social participation : Member, padasekhara samithi
HRD : Attending seminars, farmers group meetings
Socio-economic status : Medium
Knowledge level : Medium
Adoption level : Medium

Farm inventory

Total land holding : 7 acres
Soil type : Latertic
Topography : Sloppy
Source of water : Bore well and open well
Type of farming : Irrigated and rainfed
Source of labour : Family as well as hired labour
Main crops : Arecanut, coconut and vegetables
Subsidiary crops : Banana and pepper
Subsidiary enterprises : Dairy



Strengths

- Crop diversity
- Positive attitude towards farming
- Generates his own quality seed materials
- Family labour
- Access to market
- Own transportation

Weaknesses

- Price fall in arecanut
- Crop loss due to pests and diseases in vegetables

Suggestions

- Biopesticides may be used especially for vegetables
- Proper disposal of infested plant parts may be carried out
- Vanilla may be introduced as an intercrop in arecanut garden

Section - V

Technologies
adopted
by
the
farmers

During the field visits and interactions with the farmers, Scientists Team observed various technologies adopted by the farmers in their fields. Some of these technologies are developed by the CPCRI and others by the different Research Institutes. Details of technologies adopted by 43 farmers with whom the Scientists Team interacted are presented below:

5.1 CPCRI technologies adopted by the farmer

Sl. No.	Name of the farmer	Name of the technology(ies)
1	P.M.Aravindan	Coconut varieties like Laccadive Ordinary and Philippines Ordinary.
2	Viswanathan	Coconut hybrids like Chandra Sankara (COD X WCT) and Chandra Laksha (LO X COD)
3	M.K.Krishnan Nair	Management of coconut basins by cover crops - <i>Mimosa invisa</i> and <i>Calapagonium mucunoides</i>
		Vermicomposting (<i>Eudrilus sps.</i>) using coconut leaves
4	K.E.Mohamad	Polythene covering of arecanut bunches against mahali disease.
5	Joseph Mathew	Vermicomposting and vermi culture using coconut leaves.
6	Augustine Vembana	Vermicomposting using arecanut and coconut leaf waste.
7	Radha Krishna Khandige	Drip irrigation
		Vermicomposting using coconut and arecanut wastes.
8	Berly Joseph	Arecanut varieties like Mangala, Sreemangala, Sumangala, and Mohitnagar.
		Arecanut varieties Mohitnagar and Mangala. Coconut dwarf variety COD
9	G. Venkatramana Bhat	Integrated management of coconut rhinoceros beetle.
		Arecanut varieties Mohitnagar and Mangala.
10	Y. Shyama Prasad	Vermicomposting by using coconut leaves.
11	D.Chandrasekhar Chowta	Coconut hybrids like Chandra Sankara, Chandra Laksha, and Kera Sankara.
		Coconut varieties like COD and CGD
		Arecanut varieties like Mangala, Sumangala, Sree mangala, Mohitnagar.
		Vermicomposting using coconut, arecanut leaves.

Sl. No.	Name of the farmer	Name of the technology(ies)
12	Pathadka Ganapathi Bhat	Arecanut varieties like Mohitnagar, Mangala and Sree mangala.
13	Chandrasekhara Yethadka	Arecanut variety Mangala
14	Sudarsanan	Arecanut variety Mangala
15	Y.K.Gopalakrishna Bhat	Arecanut varieties like Mohitnagar and Mangala
16	K.Ramachandra	Arecanut variety Mangala
17	Gopala Krishna Sharma	Arecanut varieties like Mohitnagar and Mangala.
18	Sharada Bhat	Vermicomposting using arecanut leaf waste.
19	Lakshmi Bhat	Vermicomposting and vermiculture
20	M.K.Harisha	Arecanut varieties like Mohitnagar and Mangala.
21	E.M.Abdulla	Coconut basin management with mulching of various coconut wastes
22	K.K.Thomas	Vermicomposting and vermi-wash.
23	Mathachen	Husk burial in coconut basins.
24	K.M.George	Vermicomposting
25	Karyadu Ganapathi Bhat	Mulching of arecanut husk in the basins of coconut.
26	Abdul Khadar Haji	Drip irrigation
		Recommended package of practices of coconut
27	Bhaskaran	Coconut chips
28	Mohammed Haji	Recommended technology against coconut stem bleeding disease. Recommended package of practices of coconut
29	Ashok Kumar Holla	Drip irrigation
		Hybrid coconut (T X D).
30	Mamatha Mohan Das	Arecanut varieties like Mangala and Mohitnagar.

5.2 Adoption of the technologies developed by Sister Institutes/SAUs

Sl. No.	Name of the farmer	Name of the technology(ies)
1	K.C.Gangadharan Nair	High yielding pepper (Panniyur 2 and 5)
2	K.Narayanan Nair	Newzealand white breed variety of Rabbits in homesteads
3	P.M.Aravindan	High yielding rice varieties - Aiswarya, Kanchana, Uma and Athira.
		Sri roopa variety of yam.
4	Viswanathan	High yielding pepper (Panniyur 2 and 5)
5	M.K.Krishnan Nair	Fodder crops (Hybrid Napier and Congo Signal).
6	Augustine Vembana	Bee keeping

Sl. No.	Name of the farmer	Name of the technology(ies)
7	Mary Thomas	Processing of seasonal fruits like mango, pine apple, lemon and mango.
8	Radha Krishna Khandige	Bag making unit
		Medicinal plants like lemon grass, patchouli, <i>Aloe vera</i> , amla, anata.
9	Berly Joseph	Paddy (Aiswarya, Kairali, Athira, Jaya) - vegetables like cow pea (Sarika, Malika, Vijayanthi), bitter gourd (Preethi and Priyanka), cucumber (Soubhagya and Arunima), bhendi (local), chilli (Jwalasakhi), tomato (Sakthi), amaranthus (Arun) cropping system.
10	Y. Shyama Prasad	Medicinal plants like lemon grass, patchouli, <i>Aloe vera</i> , amla, anata.
11	Jamaluddin	Masala powder unit
12	Viji Varghese	Nursery unit
13	D.Chandrasekhar Chowta	High yielding variety of paddy-Jyoti
		Hirehalli dwarf, Sree Vardhan, Saygon and Borivali.
14	Pathadka Ganapathi Bhat	Check dam
15	Chandrasekhara Yethadka	Check dam
16	Sudarsanan	Dairy unit
17	K. Ramachandra	Areanut product diversification - beverage, kernel powder for medicinal purposes.
		Cocum squash
		Coffee powder unit
18	Sharada Bhat	Jasmine cultivation
19	Lakshmi Bhat	Pepper hybrid-Panniyur-1
20	M. K. Harisha	Bee keeping, cocum squash unit
21	Thamban Nair	High yielding varieties of Paddy - Karuna and Athira
		High yielding variety of cowpea - Bhagya-lakshmi.
22	K. M. George	Bee keeping
23	Kunhiraman	Check dam
24	Karyadu Ganapathi Bhat	High yielding varieties of paddy and vegetables.
25	Abdul Khadar Haji	Coconut oil extractor unit having rotary expeller system.
26	Bhaskaran	Vinegar from coconut water
27	M. V. Gangadharan	High yielding varieties of paddy and banana variety Mettupalayam.
28	Prasannan	High yielding varieties of paddy and vegetables.
29	A. M. Subramanyan Nair	High yielding varieties of paddy and vegetables.
30	Mamatha Mohan Das	High yielding varieties of vegetables.
31	Sadanandan	High yielding varieties of paddy and vegetables.

Section - VI

On-farm guidance by scientists

During the visits, farmers expressed various problems faced by them in their respective farms. These problems were discussed on the spot by the team of scientists thoroughly. Suitable and viable technology options were suggested with relevance to the specific situations faced by the farmers. The list of these suggestions are documented below:

1. Shri P.M.Aravindan expressed the problem of folding leaves and then turning into white patches in his paddy field in particular and other farmers in the village in general.

The team identified the problem as leaf roller (*Cnaphalocrocis medinalis*) damage. The damage to the plant is caused by the larvae of the insect scraping the green matter of the leaves. The caterpillar of the insect folds, rolls and often web together near by leaves and feed on the chlorophyll content leading to white patches on the leaves. Therefore, the farmers were advised to spray Carbaryl/Ekalux @ 0.1% concentration after opening the leaf folds with throne twig. Where ever the damage is in the initial stage, restrict spraying to infested patches only.

2. Shri Viswanathan expressed the problem of eriophyid mite in his coconut palms.

The team explained that the eriophyid mite (*Aceria guerreronis*) has reached the stage of epidemic in recent times affecting the production and productivity of coconut in many districts of Kerala. The eriophyid mite develop on the upper portion of the developing nut that is covered by perianth. The feeding sites that grow downward from the perianth appear as longitudinal patches, then they develop to triangular yellow patches, turn brown, develop longitudinal tissues and finally appear as warts. As a result, kernel size reduces and husk loses its quality. Root feeding of neemazol @ 7.5 ml in 7.5 ml water or spraying of eco-friendly pesticides like neem formulations containing 0.1 % azadiractin @ 6 ml/litre of water and wettable sulphur @ 5 gm/litre of water on bunches of two to seven months old keeps the mites in check. However, spraying of Neem oil-garlic mixture at 2% concentration is found to be effective and can be easily adopted by the farmers. To prepare one litre spray solution, dissolve 5 gm washing soap in 500 ml water, add 20 ml neem oil to this solution and mix it well until emulsification. In another 500 ml of water mix wellground 20 g garlic cloves and add this to the soap-neem oil mixture by sieving through a cloth). Since spraying method is not feasible and non-economical on a large scale, it was suggested to give spray holiday and allow palms to control the mite by nature it self.

Shri Joseph Mathew, Shri K.Venkatramana Bhat, Shri M.V.Gangadharan and Smt.Mamatha Mohan Das also expressed similar problems and they were explained and suggested the above management practices.

3. Shri Joseph Mathew expressed button shedding as the major problem in his arecanut garden.

Button shedding will occur due to several factors. It was observed that most of the palms were affected by inflorescence die back, a fungal disease characterized by yellowing and drying of rachis from the tip of the inflorescence towards the base. The causal organism is *Colletotrichium gloeosporioides*. To control this fungus, Mancozeb (Dithane M-45) @ 3 g per litre or Zineb (Dithane Z-78) @ 4 g per litre can be sprayed at the time of opening of female flowers (buttons). Removal and destruction of fully affected inflorescences by burning was also suggested to prevent the spread and severity of the disease. Apart from this, nutrient imbalance was also observed. Since potassium deficiency will also cause button shedding, it was suggested that soil analysis may be taken up through the facilities available at soil testing lab, Department of Agriculture at Karandakkad, Kasaragod or CPCRI, Kasaragod. Till such time, the recommended dose of nutrients – 100 g N (220 g Urea), 40 g P₂O₅ (200 g Rock phosphate) and 140 g K₂O (230 g Muriate of potash) per palm per year in two split doses of 1/3 during April-May and 2/3 during September- October may be applied. He has already applied vermicompost to his arecanut palms.

4. Shri Augustine Vernbana expressed that

(a) drying of copra for value addition in coconut especially during rainy season causes more spoilage.

Though the farmers were aware of the dryers, they are not adopting because of cost factor as well as non-awareness about the availability of low cost dryers at subsidized rates. Therefore, they were appraised of the small holders copra dryer developed by CPCRI. It is an indirect type of copra dryer of 400 nuts per batch capacity using agricultural waste as fuel. It requires only 3 sqm space and could be carried by 2-3 persons. The drying time required for batch is 36 hours spread over four days. Kerala Agro Industries Corporation is manufacturing this dryer in large scale with the cost

around Rs 8,000/-. This dryer is available with 25% subsidy through Coconut Development Board. Hence, the farmers were suggested to purchase this dryer on community basis for making it cost effective.

Shri Abdul Khadar Haji also expressed similar problem for which the above technology was suggested.

(b) suggestion for suitable looping method of vanilla vines.

Looping of vanilla vines is not only important to enhance proper flowering but also it helps in easy hand pollination as well as better terrestrial root establishment. This practice has to be done when the plant reaches to a height of 150-175 cm, the after growth has to be trailed downward so as to reach ground level and again coiled up like a loose loop. Suitably trimmed branches of the shade tree can be utilized for trailing the vine. By folding the top most leaf of the coiled vine backwards so as to expose the axillary bud to sun light, new shoot can be initiated from that axil for enhancing more shoots and flowering. Therefore, the entire method was demonstrated on the spot. Further, the farmer was advised to prune off annually the yielded senile portion of the vines to reduce the excess biomass.

5. Smt Mary Thomas expressed marketing of the prepared fruit products as the major problem.

For effective marketing of any type of products, proper packing as well as appropriate labeling with a list of ingredients used are very essential. Therefore she was suggested to do so. Further, she was also advised to avail the facility of marketing her products through Cooperative Societies at Kasaragod.

6. Shri Radha Krishna Khandige expressed inflorescence die back as the major cause for nut fall in his arecanut garden.

He was advised to adopt recommended control measures (as suggested in item number 1) against inflorescence die back. Further based on the farmer's interest, an experiment on management of

inflorescence die back through chemicals was conducted in an area of 0.4 ha under OFT programme of KVK of CPCRI during 2002 – 2003. The different treatments of the experiment include (i) spraying the bunches with Mancozeb (Dithane M-45) @ 3 g per litre of water twice at 25 days interval, (ii) spraying the bunches with Zineb (Dithane Z-78) @ 4 g per litre of water twice at 25 days interval (iii) spraying the bunches with Ovis (Natural Citronellal fungicide) @ 2 g per litre of water twice at 25 days interval and (iv) control (without any spray). Results indicated that fruit set was more in palms sprayed with Zineb - Dithane Z-78 (80 %) followed by natural citronellal fungicide-Ovis (75 %) and Mancozeb - Dithane M 45 (60 %).

7. Shri Berly Joseph observed that arecanut palms aged six years showing necrotic lesions on newly developed leaves.

The Scientist team identified this as spindle bug (*Carvalhoia arecae*) damage. Adult bugs and nymphs inhabit the inner leaf axils and suck sap from the tender leaflets and emerging spindle. As a result, linear lesions will develop on spindle leaves which turn necrotic at later stages. It was suggested to place perforated phorate sachets @ 2g in the inner most two leaf axils during April for the management of spindle bug. As new leaves emerge, the sachets should be shifted to the new leaf axils so that the efficacy of the insecticide will retain for eight months. The fumigating and repelling fumes of the insecticide slowly released through the sachets kill or ward off the bugs.

8. Shri K.Venkatramana Bhat expressed that rhinoceros beetle damage is more in his coconut garden.

Adult rhinoceros beetle causes damage to unopened fronds and spathes. The attacked frond when fully opened shows characteristic triangular cuts. Infestation on spathe often destroys the inflorescence and thus prevents the production of nuts. As he discontinued the management practices, he was advised to practice leaf axil filling with naphthalene balls @ 12 g (approximately 3 balls) in the upper most

two to three leaf axils and covering with fine sand at 45 days interval during peak period of infestation (May - September). Besides this, he was suggested to adopt phyto-sanitation measures and chemical treatment of breeding sites with Carbaryl @ 0.01 % as well as incorporation of *Clerodendron infortunatum* plants.

9. Shri Shyama Prasad expressed rotting of growing tip region of vanilla vines and snail damage as problems in his field.

This was identified as shoot tip rot disease caused by the fungus *Fusarium oxysporum*. The visible symptoms of the disease starts as rotting in the form of brown patches on the petiole and lower portions of the youngest leaf which is just unfolding. Due to its funnel shape it can hold rain water or dew making congenial condition for rotting. Within a few days the rotting extends to the affected leaves and the shoot tip becomes soft and changes to brown colour and later falls off. He was suggested to spray with 0.2% Carbendazim (Bavistin). He was also advised that soil application of Trichoderma @ 0.5 kg per plant at the root zone and spraying of Pseudomonas (0.2%) on the foliage for arresting further spread of the fungal diseases.

Generally, snails hide in the mulch during day time and come out in the night to feed on vanilla. They feed on the chlorophyll tissues from the base of the vine as well as leaves, shoots, flower buds and immature fruits. He was suggested to keep snail kill - a Metaldehyde bait which is readily available in the market or wheat bran bait with 10% Sevin mixed with mango peels for effective management of snails.

10. Shri Viji Varghese expressed that there is a demand for ornamental plants which are not available in his nursery.

In fact, this nursery unit is located by the side of National High Way 17 nearer to Mangalore. Therefore, many people are visiting his nursery unit and he is getting a lot of requests on ornamental plants also. Hence, the team advised him to procure the required planting material from Indo-American Hybrid Seeds at Bangalore

for propagation. The plants suggested were hybrid vinca, marigold, chrysanthemum, and anthurium.

11. Dr.D.C.Chowta had in depth discussions with the team on product diversification in coconut and arecanut which is the need of the hour.

During the discussions two products - coconut chips and snow ball tender nut developed by CPCRI were suggested to him. Coconut chips are made from fresh kernel of matured coconut which are crispy in nature and ready to eat without frying as snacks. Chips can be prepared by dipping the kernel slices in sugar syrup and then drying . Conversion rate from fresh kernel weight to sweet coconut chips is about 50 %. About 120 - 150 g chips can be obtained from one coconut. It is hygroscopic in nature and hence the chips must be packed in aluminium foil laminated with LDPE pouches having shelf life of six months. Chips with different flavours, medicated chips and spicy chips can also be prepared. After rehydration of chips, it can also be used as fresh kernel. The cost of making one kg chips is Rs. 15.

Snow ball is nothing but a tender kernel with water, scooped out in the form of a ball from eight months old coconut. For scooping out tender kernel, a groove is to be made on the shell by a machine developed at CPCRI. The nutritive tender water from the ball can be consumed by inserting a straw and eat kernel as snack at the same time. Under hygienic conditions with recommended packaging, the shelf life of the snow ball will be around 10 days in refrigerated condition. The cost of preparing one snow ball is one rupee excluding the cost of tender nut. The snow ball machine cost is around Rs. 24,000/-. To ensure self sufficiency in resource input, he was suggested to expand the area under cultivation of COD variety of coconut.

As Dr. Chowta was interested to install plate and cup making machine from areca leaf sheath, the team suggested the technology developed by CFTRI, Mysore. Proper drying of leaf sheath and appropriate storing is to be ensured to prevent spoilage of leaf sheath due to

fungal attack. He was advised to explore the possible training need in this regard among farmers and rural youth through the KVK of CPCRI.

12. Shri Pathadka Ganapathi Bhat, Shri Chandrasekhara Bhat, Shri Sudarsanan and Shri Y.K.Gopalakrishna Bhat expressed

(a) the problem of field crabs damaging the bunds of their water conservation structures.

It was suggested that sand bags, plastic uv sheets, silpaulin sheets, HDPE or other polythene lining may be used to safe guard the check dam against crab attack. Use of wire mesh/gabion mesh as cover below the top layer of clay or mud to prevent crabs boring holes was also suggested.

(b) the problem of siltation in their check dams.

Silting is the deposition of stream born sediment. The sedimentation reduces carrying capacity of the reservoir and also reduces economic life span of the check dam. In fact, pre-constructive measures like site selection, design, construction of silt detention check dams in the upper reaches, installation of vegetative screen, and construction of sluice gate under the check dam have to be taken to minimize these type of problems. At present, the farmers were suggested the following post-constructive measures:

- Erosion control in the catchment area by various soil conservation methods like contour bunding, filter strips, terracing etc.
- Stirring of sediment using a mechanical agitator, there by the deposited sediment is scoured and distributed in the water and then can be flushed through the sluice gates.
- Removal of silt deposits through excavation, and sluicing with hydraulic or mechanical agitator.
- Removal of silt load by dredging. However, it is costly and may not be economical to the small and marginal farmers.

13. Shri Gopala Krishna Sharma expressed

(a) loss of pepper vines due to some disease.

The Scientists team identified the problem as slow wilt disease of pepper. It is a debilitating disease complex caused by feeder root infection by *Radopholus similis* and *Meloidogyne incognita*, two important soil born plant parasitic nematodes. Independent infection of roots by *Phytophthora capsici* and nematodes also might occur. The damage to the root caused by these nematodes combined with *Phytophthora* weakens the root system resulting in varying degrees of root rot and leads to foliar yellowing. Affected vines gradually decline in vigour and productivity. The disease affected vines with degenerating root system exhibit intense foliar yellowing from December onwards coinciding with the depletion of soil moisture. With the onset of South West Monsoon during May -June, some of the affected vines recover and put forth fresh foliage. However, these symptoms reappear in the subsequent season after cessation of the monsoon. Thus the diseased vines gradually loose their vigour and productivity exhibiting typical declining symptoms. Soil application of Phorate @ 30 g per vine twice a year, the first application during May-June with the onset of monsoon and second application during September - October is the recommended control method. However, Shri Sharma is an organic farmer since 20 years. Therefore, we suggested spraying of less toxic Bordeaux Mixture (1%) as prophylactic measure as well as soil application of saw dust/paddy husk/neem leaves/eupatorium leaves as per the availability for the control of fungus and nematodes, respectively.

(b) suggestions for less duration composting methods.

The team discussed the entire process of composting method and the facilities available with the farmer. Accordingly it was suggested to adopt a low cost technology developed at CPCRI for vermicomposting for quick recycling of agro-waste available with the farmer into nutrient rich vermicompost. It can be done in pits, thatched sheds

or cement tanks of any convenient length and breadth, but the depth should be less than one meter, with sufficient drainage facilities. Select suitable site. Choose any one of the vermicomposting methods-basin, pit, tank or heap. Collect withered coconut leaves of 2-3 months old and use them as such or chop them in to pieces. Heap the leaves facing lower side upwards in layers or put the chopped leaves uniformly spreading in basin/pit/tank. Add fresh cow dung @ 100 kg per tonne of leaves in the form of slurry in layers. After three weeks, introduce earthworms of *Eudrillus sps* @ 1000 numbers per tonne of coconut leaves. Mulch with locally available organic wastes like dry grass, straw, banana leaves etc. Provide shade to the worms as they are susceptible to direct sun light. Maintain adequate moisture (40 - 50 %) by sprinkling water whenever necessary. Protect worms from predator birds, rats and ants by suitable methods like wire mesh, ant-wells etc. After 60-70 days, 70 % of the material will be decomposed, then stop watering. From this after two weeks, collect the worms and use them for further vermicomposting. Collect the enriched vermicomposting by sieving the entire decomposed material. Dry this compost under shade, then pack in suitable carry bags and store in proper place. Production cost of vermicompost is less than Rs.2 per kg as compared to market price of Rs7 on an average when it is prepared on own from coconut waste. Earth worms can be obtained as a nucleus culture from CPCRI, Kasaragod.

Shri Ashok Kumar Holla, Shri E.M.Abdulla and Smt.Mamatha Mohan Das also expressed the same problem for which the above technology was suggested.

14. Smt Sarada Bhat expressed that

(a) low flower yield in her jasmine garden.

Team observed that the reduction in flower production is due to improper pruning and fertiliser application. Therefore it was suggested that pruning

should be done at the height of 45 cm from ground level during December to enhance more shoots, flower buds as well as increase in flower size. After pruning, application of 120 g N, 240 g P and 240 g K mixed together in two equal split doses during January and July per plant was advised for healthy growth of the plants.

(b) stray cattle menace in arecanut garden.

To avoid this problem to some extent, it was suggested that pineapple can be grown in the borders as fence crop. This will not only protect the cattle menace but also help to generate an additional income.

15. Smt Lakshmi Bhat expressed that the population of earth worm is getting reduced in her vermiculture unit.

The team observed that this is due to excess moisture as well as lack of proper aeration. Further excess moisture was also observed. Therefore, she was advised to provide proper drainage holes to drain excess water and this water can also be used as vermi-wash.

16. Shri M.K.Harisha expressed

(a) sudden drying of pepper vines in his arecanut-pepper cropping system.

This was identified as *Phytophthora* foot rot (quick wilt) disease of pepper. In soil phase, the fungus infects roots and the infection spreads from roots to collar or the foot of the plant. Collar infection is fatal. The affected plants in early stages of infection show foliar yellowing of different intensities. In advanced stages, the leaves drop off, aerial branches break off at the nodes and finally the vine dies. Whereas in aerial phase, the fungus infects leaves causing dark brown spots or lesions which enlarge rapidly covering major portion of the leaf. The infected leaves drop off and foliar infection leads to varying degrees of defoliation. When infection occurs on branches, the infected portion turns dark brown due to rotting. Branches beyond the point of infection show foliar yellowing, defoliation and wilting. Foliar infection generally occurs during June -

July period coinciding with heavy rainfall. The disease spreads through soil, root and water contact. Therefore, an integrated approach was suggested as given below:

- Removal and burning of dead vines along with root system to check the population build up of these pathogens.
- Provide good drainage especially during rainy season.
- Grow legumes or allow grass cover in plantations during rainy season to reduce soil splash and consequent foliar infection.
- Ensure better light penetration to reduce humidity build up in the plantation.
- Spray vines with 1% BM, drench the basins with 3-5 litres of copper oxy chloride per plant once as pre monsoon treatment and again as a post monsoon period.
- Neem cake @ 1 kg per plant can also be applied as a soil amendment.

(b) the problem of honey bee larvae mortality in the honey comb.

It was identified as viral disease caused by *Thaisac* brood virus. In fact, this virus disease was first reported in Indian bees in 1978 in Kerala with destruction of 90% of colonies. The larvae affected by this virus become sac like. Dead larvae straighten out and lie on their backs with tip of head capsule turned upwards. Six out of 31 colonies maintained by Shri Harisha showed infection. Since it is a virus disease there is no known remedy for its cure. However, the following measures were suggested to prevent the further spread of the disease :

- Burning of heavily infested colonies along with brood combs
- Disinfection of bee-hives prior to hiving of natural colonies
- Disinfection of bee keeping equipments by soaking in 3% formalin solution
- Keep strong and vigorous colonies that escaped infection for establishing new colonies

17. Shri E.M.Abdulla expressed

(a) the problem of soil erosion.

Generally soil erosion will occur in lands with slopy topography. The team observed that the farmer's garden is showing around 15% slope. In fact he is practicing soil and water conservation methods like terracing and contour bunding. However, these practices are inadequate for such a topography. Therefore, the scientist team suggested to make trenches with 4 m X 0.5 m X 0.5 m size in between each row of coconut palm. Fill these trenches with coconut husk and plant two lines of pineapple This practice will help for effective soil and moisture conservation. Further the farmer was advised to grow fodder grass (Co-3) as an inter crop in his coconut garden for dual purpose and cover crops like *Mimosa invisa* and *Calapagonium mucunoides* in basins during rainy season.

(b) the problem of managing a coconut garden which he purchased recently.

The team observed that the garden was very much neglected and ill managed. Therefore it was suggested first to rejuvenate the entire garden by taking under planting with high yielding/hybrid coconut seedlings like Laccadive Ordinary (nut yield-98 nuts/palm/year, copra-176gm, oil content-70%), Philippines Ordinary (nut yield-120 nuts/palm/year, copra-189gm, oil content-66%), West Coast Tall (nut yield-80 nuts/palm/year, copra-176gm, oil content-68%), Chowghat Orange Dwarf (nut yield-63 nuts/palm/year, copra-158gm, oil content-63%), Chandralaksha-LO X COD (nut yield-109 nuts/palm/year, copra-195gm, oil content-65%), Kerasankara - WCT X COD (nut yield-108 nuts/palm/year, copra-157gm, oil content-68%), Chandrasankara- COD X WCT(nut yield-116 nuts/palm/year, copra-215gm, oil content-68%) with proper management.

(c) the problem of supplying organic manure to entire coconut garden.

Existence of a cement tank in the farm was noticed which was not utilized for any purpose. He was

also not using coconut leaves properly. Therefore, the team suggested the farmer to go for vermicomposting utilizing these existing resources.

18. Shri Thamban Nair expressed the problem of getting low yield of paddy variety Karuna in irrigated upland in his farm in particular and in the village in general.

It was observed that the farmers of the village Kodavalam is having paddy-vegetable cropping system in both irrigated up land and low land. In fact the rice variety Karuna is suitable for low land. However, farmers were growing this variety in up land also. Therefore farmers were advised to grow this variety in low land only to get maximum yields.

19. Shri Mathachen Malakkallu expressed browning of immature vanilla beans as a problem in his garden.

It was identified as bean yellowing disease caused by fungus *Fusarium oxysporum*. The disease appears on immature beans of about 5-7 months age. The symptoms appear in the form of development of yellow color at the tip of beans which slowly extends towards the pedicel portions. As this proceeds, splitting of the beans starts at the tip followed by brown coloration of the affected portions. Fully affected beans fall off from the peduncle before reaching maturity. Some times the brown coloration develops into rotting of bean tip, basal portion or even the entire bean. He was suggested that this can be controlled by spraying of a mixture of bavistin and mancozeb at 0.2%.

20. Shri Karyadu Ganapathi Bhat expressed the drought problem in his coconut garden.

The scientists team observed that the crop which is most hit by water shortage is coconut in his farm. It was observed that the coconut palms showing typical drought symptoms like drooping of leaves, shedding of buttons, immature nut fall, bending and breaking of leaves, inflorescences with barren nuts etc. Therefore the team suggested the following practices for conservation of soil moisture to mitigate dry spell effects as well as to improve the soil health :

(i) Mulching with coconut leaves : Team observed lot of fallen dried coconut leaves heaped in the farm. Therefore the farmer was advised to utilise these dried coconut leaves as a mulch in the coconut basin immediately after the cessation of North-East Monsoon and before the top soil dries up for effective moisture conservation.

(ii) Coconut husk burial: It can be done in coconut basins as well as in the inter-space. Dig trenches with 50 cm width and 50 cm depth with convenient length at 3 m away from trunk between rows of palms or in circular trenches taken around the palm at a distance of 2m from the trunk. The husks are to be arranged in layers with concave surface facing upwards and covered with soil which will remain effective for seven years. This practice will help to absorb and retain large quantities of water for use by the coconut palms.

(iii) Coir pith burial : Dig trenches with 50 cm width and 50 cm depth in circular shape around the palm at a distance of 2m from the trunk. Bury coir pith @ 25 kg/palm/year for effective moisture conservation as well as improving soil health. Arecanut husk can also be used since it is available in plenty in his farm.

(iv) Mulching with legume crops : Sow the seeds of *Mimosa invisa*, *Calapagonium mucunoides* in coconut basins at the rate of 50 gm seed per coconut palm during summer showers and incorporate the bio mass generated in the basin after monsoon. This practice not only conserves the moisture but also add nutrients especially N to the soil.

Apart from the above suggestions, farmer was also advised to use available scarce water through drip irrigation already existing in the farm to all palms even at deficit levels during summer for increasing the water use efficiency at field and plant level. Further it was suggested to cut the old leaves to reduce the transpirational water loss especially during summer season.

Shri Ashok Kumar Holla also faced water shortage in peak summer for which the above technologies were suggested.

21. Shri Abdul Khadar Haji expressed

(a) low yield of nuts in his coconut garden.

It was observed that the problem of harvesting less nuts is due to nutrient deficiency. In fact the farmer is applying only cow dung as manure. Therefore, farmer is getting low yield in spite of adoption of recommended spacing (7.5 X 7.5 m) and sufficient irrigation (well planned drip system). Therefore, the farmer was suggested to follow recommended dose of inorganic and organic fertilisers for better yield. The suggested dose is 500 g N, 320 g P_2O_5 and 1200 K_2O per palm per year in four equal split doses avoiding heavy rainfall season and application of 50 kg of organic manure in coconut basins in form of FYM/Cow Dung/Vermicompost/Green Leaves as per availability of materials also advised for optimum concentration of essential plant nutrients for availability to palms.

(b) the problem of getting low yield of arecanut in his farm.

It was observed that this problem is due to inadequate fertiliser application. Therefore, the farmer was advised to apply 100 g N, 40 g P_2O_5 and 140 g K_2O in two split doses along with 25 kg of green leaves per palm per year for better growth and yield.

22. Shri Bhaskaran expressed that the splitting of coconuts in large scale is time consuming and becomes a problem.

The team suggested manually operated coconut splitting device developed by CPCRI for quick nut splitting. The working part of the splitting device is a knife, made of spring steel and is bolted on a multi-slot plate, which is welded on the supporting stand with 25 degree angle which is most suitable angle for splitting the coconut. The height of the splitting platform is 1 m. The cutting platform is inverted 'V' shape. A funnel and rubber tube is connected at the bottom of the splitting platform to collect the nut water through buckets placed on the sides of the splitting platform. Coconut is placed on the nut holder and the operator forces the knife down and return of the knife easily through the spring

connected between the fixed end of the cutting knife and the supporting stand. The impact force split the nut. The nut water will be collected with out waste and this water can be utilised for other purposes like vinegar etc. The average time taken to split 100 nuts is 8 minutes. The total cost of the unit comes to around Rs.1500/-.

23. Shri Mohammed Haji expressed the problem of stem bleeding disease in his coconut garden.

In fact, the scientists team was briefed by him about the severity of stem bleeding in his coconut garden and adoption of technology against this disease advised by CPCRI KVK. He was fully convinced about the effectiveness of the technology for management of this disease. Hence team suggested to continue the same practices for newly disease affecting palms at initial stage itself. The suggested practices is removal of affected tissues, smearing and root feeding with calixin @ 5 % followed by coal tar application for full recovery of palms as well as it is cost effective.

Shri M.V.Gangadharan also expressed the same problem for which the above recommendation was suggested.

24. Shri Ashok Kumar Holla expressed the problem of low fertility level of soil with poor water retention capacity.

Scientists observed that huge biomass was left as such in his garden. Hence, it was suggested that the farmer may effectively recycle available biomass to vermi-compost by following CPCRI technology.

25. Shri M.V.Gangadharan expressed the problem of leaf spot in amaranthus.

He was advised to spray an organic preparation (8 g sodium bicarbonate + 32 g turmeric powder

mixed together and dissolved in 10 litres of water) (or) 3 g Dithane M-45 per one litre of cow dung extract (mixing 200g fresh cow dung in 10 litres of water and allow to settle) for the control of leaf spot in amaranthus. The disease resistant green variety Co1 was suggested to grow along with red variety to reduce disease incidence (Red variety is more preferred locally).

26. Shri Prasannan expressed the problem of fruit fly in bitter gourd.

He was suggested an integrated approach of (i) prompt disposal of infested fruits (ii) need based spraying of Malathion 4 ml with 10 g jaggery or sugar per litre of water (iii) setting banana traps (banana fruit pulp mixed with carbofuran (Furadan) granules)/tulasi traps (crushed tulasi leaves mixed with jaggery) in coconut shells hung from the cross bars of pandals for the control of fruit flies in bitter gourd.

Shri Sadanandan was also extended the above technology for the management of fruit fly in bitter gourd.

27. Shri Subramanyan Nair expressed the problem of operating power tiller in his paddy field.

He was suggested to use cage wheels instead of ordinary tyres of the power tiller to cope with the existing soil conditions of paddy field.

28. Shri Sadanandan expressed mosaic disease in bhendi.

He was advised to not to take seeds from the disease affected plants and procure seeds from reliable sources. Further, suggested to grow mosaic tolerant bhendi varieties like Arka Anamika, Susthira etc.

Section - VII

**Knowledge
flow
from
farmers
to
scientists
(Indigenous
Technical
Knowledge)**

The field visits helped both the farmers and scientists to exchange the ideas and sharing of knowledge. During the various visits, certain indigenous practices followed by the farmers were identified and discussed as detailed below :

Sl.No.	Indigenous practices	Future action
1.	Shri Joseph Mathew is practicing the traditional knowledge for preparing ash-burnt soil mixture. He collects areca leaves, sheaths, bunch waste etc available from his farm and burn them along with small quantity of soil for obtaining ash. This ash-burnt soil mixture is applied @ 1 kg per palm. He believes that this practice reduces the incidence of nut splitting/button shedding in arecanut apart from providing nutrients. The possible scientific rationale may be that this mixture contains potash and it is much essential for fruit setting and kernel formation.	Validation of this indigenous technique against nut splitting/ button shedding in arecanut may be initiated, both in the Institute and other farmers' garden.
2.	Shri Joseph Mathew is adding 50% decomposed vermicompost to the basins of main crops which are already mulched with farm litter. He believes that this will help in-situ vermicomposting for various crops in his entire farm. The scientific rationale behind this technique is that cocoons of earth worms will be available in plenty in the decomposed vermicompost which might facilitate in-situ decomposition of mulched farm litter as 2-3 earth worms emerge from each cocoon.	Validation of this technique may be initiated through the on-farm trials under KVK of CPCRI.
3.	Subsidiary enterprise - bee keeping (Italian bee) performing well in rubber plantation of Shri Augustine Vembana . He is getting on an average 40 kg honey /hive during honey flow season.	This kind of tapping natural resources may be advocated to other farmers who have rubber plantations through extension activities of CPCRI KVK.
4.	Shri Radhakrisna Khandige has been tapping rain water from the house roof. He is utilising this water directly to recharge the existing well. He connected pipes from the roof to the open well. He believes that with this practice the ground water table will be raised to increase water level in the well.	Awareness may be created among the farmers about this technology through extension activities of CPCRI/ KVK.

Sl.No.	Indigenous practices	Future action
5.	<p>Shri Radhakrisna Khandige ties thread like thin GI wires tightly across the boundary where yam is cultivated in his farm against the wild boar damage instead of electrical fencing. He believes that this technique is minimising the damage as the boars get scared once they get trapped between the thin wires which are not visible. This practice is cost effective and safe as compared to electrical fencing.</p>	<p>Awareness may be created through TOT activities about this technology among farmers facing wild boar problem.</p>
6.	<p>Shri K. Venkatramana Bhat has designed and fabricated metal clamps as climbing device for arecanut palms. Clamps will be fixed to the arecanut trunks at distance of 45 cm. The number of clamps may vary according to the age and height of the palms. Around 15 clamps will be required for 25 - 30 year old palms. By this technique of clamps fixed on one palm, around 20 surrounding palms can be sprayed/harvested. A total of 27 palms has to be fixed with the clamps per acre which costs Rs.10,000 to 12,000. The advantages of this technique are labour saving, time saving, cost effective.</p>	<p>This technique may be demonstrated to the arecanut farmers by way of training programmes under CPCRI KVK.</p>
7.	<p>Shri Berly Joseph practices a new combination of organic manures for banana and vegetables. He mixes poultry/goat manure with soaked groundnut oil cake at ratio of 10:1. He heaps this mixture with sufficient moisture content and covers with coconut leaves in shaded areas in his garden. After one week, he spreads the mixture for 24 hours to reduce the heat generated during decomposition process. He stores this mixture and applies to banana and vegetable crops. He believes that this mixture ensures healthy growth of plants and reduces incidence of pests and diseases thereby increasing the yields. The possible scientific rationale may be that if poultry/goat manure is used alone, it generates more heat due to excess nitrogen. When it is mixed with groundnut oil cake, a balanced nutrient combination might be effected.</p>	<p>Validation of this new combination of organic manures may be initiated. Besides, CPCRI/KVK, implementation in neighbouring farmers gardens to be taken up.</p>
8.	<p>Shri Y. Shyama Prasad practices traditional technique of using cow urine against pests and diseases. He dilutes cow urine 10 times with water and sprays on vanilla vines. He believes that this helps not only healthy and vigorous growth of plants but also reduces the incidence of pests and diseases. The possible scientific rationale may be that the nutrients available in cow urine could be easily absorbed and at the same time the micro organisms present might help in reducing pest/disease incidence.</p>	<p>Validation of this technique may be initiated.</p>

Sl.No.	Indigenous practices	Future action
9.	<p>Dr. D. C. Chowta has constructed a water harvesting structure of 21.9 X 9.9 X 2.4 m dimension at the highest point of the farm which is lined with silpaulin sheet at the bottom and sides to prevent water loss through seepage. During rainy season, rain water will be harvested in this structure. Once the harvested water is exhausted, water will be pumped from the near by uppala river during night hours to prevent evaporation loss. The water in the structure will be utilised for irrigation. The scientific rationale for constructing this type of water harvesting structure is due to gravitational force of water down to the field there by saving the energy and labour cost.</p>	<p>Awareness may be created through TOT activities about this technology among farmers.</p>
10.	<p>Dr. D. C. Chowta utilizes arecanut drying yard of 50 cents for upland paddy cultivation during off-season by spreading arecanut husk as supportive substratum. He spreads arecanut husk at height of 5 cm and spread thin layer of compost @ 100 kg vermicompost and 150 kg of organic compost over the husk. He broadcasted the paddy seed (Jyothi variety) on the husk in the month of June (kharif season) and harvested in the month of October with comparable grain yield and good straw. He also practiced the cultivation of pulses using same technique with better returns. He believes that this type of practice will ensure food security with regard to cereals and pulses among arecanut growers.</p>	<p>Awareness may be created through TOT activities about this technology among farmers.</p>
11.	<p>Farmers of Yethadka village are practicing traditional water harvesting technology which are locally called as 'Surangas'. This is one of the age old, traditional practices found very rarely in some of the localities. These tunnels are made in hilly terrain with medium to hard lateritic soils. Digging tunnels in very hilly and sloppy lands to intercept the water table and getting the oozing out water without using any fuel is the main principle of surangam. A small water storage structure will be constructed near the out let of the surangam. Water will be collected from the surangam using split arecanut stem. This water will be used for both domestic as well as irrigation purposes. The tunnel will be made by the skilled labourers.</p>	<p>This unique technology may be popularised where the similar land situation exists.</p>

Sl.No.	Indigenous practices	Future action
12.	<p>Shri Gopala Krishna Sharma has designed and fabricated an arecanut dryer of 125 kg capacity. Arecanut can be uniformly dried in 3-4 days at a single stretch. This agricultural waste based dryer is constructed using bricks and cement with metal racks and door. The chimney is placed on one side of the dryer. Coconut can also be dried in this dryer. The main advantage of this dryer is that the harvest during rainy season can be dried properly without any spoilage. The limitation of this dryer is that it is a permanent structure therefore it is not portable.</p>	<p>Validation of this dryer may be initiated.</p>
13.	<p>Shri Gopala Krishna Sharma has designed an indigenous agricultural implement - Agrichopper to cut big and fibrous palm waste into pieces for composting purpose as well as chopping fodder grass. The design of the angle of the cutting blade avoid drudgery of the operator and also energy required to operate this cutter is very less. Therefore this manually operated chopper can be easily handled by women.</p>	<p>Awareness may be created among farmers about this Agrichopper.</p>
14.	<p>Shri Gopala Krishna Sharma has designed gunny bag stand. This is very simple made with iron rods. There are two rings which are supported by three stands to hold the gunny bag. Hooks are arranged on the top of the the ring to fix the sides of the gunny bag. Once the bag is filled the stand can be lifted out easily. One person can fill the gunny bags and store them with the help of this stand instead of two persons required otherwise, for the same work.</p>	<p>Awareness may be created among farmers about this time and labour saving device.</p>
15.	<p>Shri Abdul Kareem maintains a private forest park where natural biodiversity exists with natural flora and fauna. The water available in nearby wells has some medicinal property because of the natural filtration through the roots of medicinal plants - which he believes and he wants to patent same as 'Sweet Water'.</p>	<p>The possibility may be explored.</p>
16.	<p>Shri Ashok Kumar Holla promotes organic farming practices by popularising the usage of Panchagavya. Fresh cowdung (5kg) is mixed thoroughly with ghee (half kg) and kept for three days. On the sixth day, curd(2kg), milk(2litre), cow's urine(3litres) and one kg jaggery is added to this alongwith required water. This will be kept for 15 days with proper stirring. The extract after filtering can be sprayed to crops at 3% concentration which is considered to be a good growth promoter as well as repels insects and reduces disease incidence.</p>	<p>The technique may be validated.</p>

Section - VIII

**Dialogue
between
farmers
and
scientists**

The progress of the interactive field visits initiated by the Institute was reviewed by the Research Advisory Committee of CPCRI. In this connection, a dialogue between farmers and scientists on the programme was organized on September 15, 2003 at CPCRI under the chairmanship of Dr. K V A Bavappa, former Director and Chairman, Research Advisory Committee of CPCRI. List of farmers who attended the dialogue between farmers and scientists is given in Table. 9. The programme commenced with the welcome address by Dr. S. Arulraj, Head, Division of Social Sciences, who highlighted how the extension methodologies can be better utilized to get acquainted with and gain confidence of the farmers and the importance of modifying the research priorities according to farmer's needs. Dr. V. Rajagopal, Director in his address appraised the field visits as a mission with a vision on a holistic approach of 'caring the un-cared', 'reaching the unreached', 'teaching the untaught', and 'learning the unlearned' for effective technology dissemination and adoption. At the same time, the feed-back obtained from such visits gives an opportunity for the scientists to test whether the technologies are suited to the local specific needs of farmers. Dr. B.T. Rayudu, Senior Scientist presented a detailed report of scientists field visits and explained how these visits helped for two-way learning between scientists and farmers.

The Chief Guest Shri. K. Ganapathi Bhat, a senior progressive farmer from Enmakaje Panchayat in his address welcomed the new approach of outreach programmes initiated by CPCRI in building confidence and competence among farming community.

Farmer representatives shared their experiences on farming activities, lauded the farmer friendly programmes being carried out by CPCRI and also suggested measures for improvement of future course of activities. The queries of farmers on production, protection, processing and marketing aspect were answered. Dr. KVA Bavappa, in his remarks, stressed the need of suggesting a precise package of practices to the farmers by the visiting scientists. The cost-benefit analysis of the technologies adopted by the farmers has to be done based on the feed-back data. He also emphasized the need of popularizing the refined technologies in integrated farming, soil fertility, value addition in coconut, etc. More importance should be given to applied research and scientists should be more vigilant in monitoring the technologies more precisely as well as timely correction of technologies.

Dr.M.V.Santharam, Dr.M.N.Khare and Dr.P.Das, Research Advisory Committee members of CPCRI participated in the programme and expressed their impressions about the extension methodologies adopted by CPCRI. Dr.M.N.Khare in his remarks put light into the traditional wisdom of farmers and emphasized the need of integrating traditional knowledge with modern packages. Dr.Santharam stressed the need of giving more emphasis on agri-marketing and refining extension methodologies. He also emphasized the time management in farming operations.



Dr. K. V. A. Bavappa, Chairman of RAC chairing
the dialogue between farmers and scientists

Table. 9 : List of farmers who attended the dialogue between farmers and scientists

Visit No.	Farmer Name	Village	Panchayat
1.	Shri P. M. Aravindan	Padi	Chengala
2.	Shri M. K. Krishanan Nair	Nekhraje	Chengala
3.	Shri Joseph Mathew	Kunnumkai	East Eleri
4.	Shri Augustine Vembana	Kunnumkai	East Eleri
5.	Shri Radha Krishna Bhat	Neerchal	Badiadka
6.	Shri G.K.Venkataraman Bhat	Kannur	Puthige
7.	Shri Shyama Prasad	Ednad	Kumbla
8.	Shri Jamalluddin	Ananthapuram	Kumbla
9.	Dr. D. Chandrashekar Chowta	Miyapadavu	Meenja
10.	Shri Chandrasekhara Bhat	Yethadka	Kumbadaje
11.	Shri Y. K. Gopala Krishna Bhat	Yethadka	Kumbadaje
12.	Shri Gopala Krishna Sharma	Padre	Enmakaje
13.	Smt. Sharada Bhat	Madhur	Madhur
14.	Shri M.K.Harisha	Kuntar	Karadka
15.	Shri Bhaskaran	Kolathur	Bedadka
16.	Shri Mohmmmed Haji	Melparamba	Chemnad

Section - IX

Impressions of farmers and scientists

The opinion and perception of both farmers and scientists about the interactive visits were collected. Some of their impressions are presented here under.

9.1 Perception of farmers

“The field visits are very essential to give technical knowledge to the farmers for cultivation of crops through modern technologies”.

- M. K. K. Nair

“We would like to have more and close contact with the experts in the field for strengthening the horticultural activity. The KVK of CPCRI is helping in transfer of technologies. Eg. vermicomposting, hybrid coconut varieties, high yielding varieties of arecanut, coconut variety of COD for tender nut purpose etc. The scientists field visit to my farm gave me and family an opportunity to interact with prestigious scientific team consisting of various disciplines and we enjoyed discussing various aspects of new technologies in agriculture as well as allied sectors especially product diversification in plantation crops”.

- D. C. Chowta

“The information and technologies transferred by the CPCRI through its KVK will certainly help in higher production and productivity. The training programmes conducted through KVK are excellent in quality and gives the confidence for independent thinking to carry out certain activities of the farm. Farm visits will help to identify both + ve and - ve aspects of the farmers”

- Gopala Krishna Sharma

”In recent times, agriculture is becoming costly due to labour problem. Therefore it is not economical and remunerative for small and medium farmers. Hence these farmers can stand on their own by creating self employment opportunities by initiation of subsidiary enterprises like bee keeping, mushroom cultivation etc. Thanks are due to CPCRI KVK to motivate me to establish subsidiary enterprise. The field visit helped me to learn scientific aspects of arecanut cultivation and other crops in my farm”.

- Hareesha

“Sharing of information through farmer-scientist interactive visits is commendable. Pooling of farmers from various panchayats including different enterprises provides good interaction and knowledge to the farmers”.

- Gopala Krishna Bhat

“I have benefited by KVK of CPCRI training programmes. I have taken up vanilla cultivation, medicinal plants, fish culture and vermicomposting unit under the technical guidance of KVK. I thank the KVK faculty for their cooperation and services rendered. Field visit of scientists to my farm helped me to share new knowledge on vanilla cultivation”.

- Shyama Prasad

“I have good contact with CPCRI especially KVK. The training programmes I underwent at KVK gave me confidence to establish vermicompost unit. This enabled me to meet the requirement of compost in my farm. Besides this, I am selling earth

worms to my neighbours. I am thankful to KVK staff for providing me all technical guidance and help to improve my farming situation”.

- Joseph Mathew

“Interaction and discussion with the scientists was beneficial to me to get more information. More attention may be given to solve the problems of arecanut growers such as fabrication of efficient de-husking machine, dryers for quick drying of areca, development of value added products particularly medicinal properties of arecanut “.

- Ashok Kumar Holla

“More emphasis should be given to make available quality vegetable seeds in the market to procure in time by the vegetable growers. I am happy to share my experiences with the scientists.

- Prasannan

“I appreciate the role played by the institute and KVK on the confidence building of farmers and towards changing their farming activities for the best. This face-face interaction with the scientist group may be extended to many farmers as it motivates farmers”.

- M. V. Gangadharan

“I feel happy on the visit of scientist team to study the problems faced by me in my field. I thank the Team because such outreach programme will give ample opportunities to the farmers to address their problems with suitable technical suggestions”.

- Subramanyan Nair

“The CPCRI has helped in establishing and managing arecanut garden with technical guidance by the KVK staff right from procurement of seed nuts of high yielding varieties. This face-face interaction is a good approach wherein both farmers and scientists discuss and share their experiences for arriving suitable solutions for the problems faced by the farmers”.

- Mamatha Mohan Das

9.2 Perception of scientists

“During my visit to different farmers gardens under the farmer-scientist interaction programme, I noticed a perceptible and positive change in the attitude of the farmers about the research institutes and scientists. They were happy to discuss their problems frankly -

some times appreciating the technologies developed the institute, but some times unhappy too with criticisms. I closely watched that they were keen to learn about the technologies, thus an urge to interact with researchers was evident during discussions. A team effort made by the institute in understanding the ground realities in the field in analysing the problems of the farmer on the spot, in exchanging the ideas among the interdisciplinary group and with the farmer and in offering possible solutions to the problems were all positive aspects which impressed the farmers. The farmers realised that the scientists are now ‘caring’ them, ‘reaching’ their fields and ‘teaching’ them the technologies. Scientists in turn got the benefit of ‘learning’ the indigenous knowledge from the farmers on age old practices of cultivation. The feed-back received from the farmers and the perception of the scientists on the programme make me feel that the flow of knowledge is the most monitorable and impressive feature of the programme. Scientists, who were hitherto confined to the laboratories and their own farm, got thoroughly exposed to realities of the farming community. I believe in strengthening this effort with dedication and commitment on the part of scientists in gaining not only the confidence of the farmers but respectability in the society. This paradigm shift in scientific research should serve as a model, with service motto, in the institute”.

- V. Rajagopal

“The programme was observed to be highly useful to the scientists in gaining knowledge on the field situation especially with reference to the impact of technologies as observed in farmers fields, constraints faced by the farmers in the adoption of technologies as well as the crucial factors deciding the adoption at field level. It was further observed that cost of adoption of technologies includes high expenditure towards various miscellaneous items of activities like time and efforts, needed for making the inputs available at the field at the required time etc, in addition to the cost of inputs and labour. Many of our technologies could not be adopted continuously by the farmers for want of easy marketing facilities”.

- S. Arulraj

“The farmer - scientist interaction programme provided an opportunity to all the scientists of the Institute, irrespective of their discipline and nature of research programme, to visit the farmers fields and to interact with them to know their problems and their expectations from the scientific community. It is a programme of mutual benefit to farmers and scientists alike. The scientists got an opportunity to understand the farming practices followed by the farmers, the level of acceptability of technologies, their adoption pattern, constraints in the adoption of technologies etc. The farmers, on the other hand, are benefited from the expertise from a team of scientists from diverse disciplines, to assess their performance, to identify the factors limiting the productivity and to get location specific recommendations for improving productivity and economic returns, based on their available resources and socio-economic conditions. The occasion was also utilised by the farmers to clear their doubts. It has the positive impact in improving the morale of farmers and it will definitely promote agricultural productivity of the homestead farms in this area. The interactive programme should not be limited to the successful farmers alone, but need to be extended to the holdings of large majority other farmers where potential exists for further development. Frequent follow up contacts between the scientists and farmers can help to find out the extent of implementation of the suggestions and the benefits derived from this programme”.

- George V. Thomas

“Farmers received the scientist team with interest. They interacted with the scientists freely and were friendly. Now they have the confidence on the scientists and technologies. I feel this type of field visits and interactions with the farmers and family members are very much essential in gaining confidence among the farmers for the adoption of recommended new varieties as well as package of practices”.

- P. M. Kumaran

“The field visits to the farm successful farmers/ entrepreneurs are very much appreciative. I could gain lot of knowledge by the visit. The visit of the Kinnannur-Karindalam Panchayat of Kasaragod District helped me

to understand the natural water harvesting structures like pallam, surangam etc. By the visit of a private forest park maintained by Mr. Abdul Kareem, I could see how he is maintaining bio-diversity without disturbing the natural flora and fauna. The success of Mr. Kareem is the example of the saying ‘tire less efforts and tolerance are the key to success’. I also could meet and interact with the hard working, caring and happy ladies. Mrs. Yashods Bhat, a women entrepreneur is the co-ordinator of the Mahila Parishad. She is giving training to other ladies in the processing of farm produce and the value added products are sold via Co-operative Society at Badiadka. According to her, last year this Mahila Parishad could donate an amount of rupees one lakh to an eye hospital near Kumbala. This has helped the social, moral and economic empowerment of the ladies. More than giving suggestions/expert opinions I could up date my knowledge. This type of field trips and interactions will help in the formulation of need-based projects”.

- K. V. Kasturi Bai

“It is a new experience that we gained from the field trip. It increased the farmer-scientist inter relationship. Farmers were very happy to receive the team of scientists to their field. We able to see the adoptability of the technologies in the farmers field. Both positive and negative points of the technologies were expressed by the farmers were noted. We are able to correct the mistakes made by the farmer while implementing the technologies. At the same time we are also able to find out the problems faced by the farmers while implementing the technologies. During the visit, we were able to suggest or solve the problems faced by the farmers, as the team usually consist of all disciplines. Therefore the farmers are very happy to solve their problems on the spot. We are able to identify the problems which are not possible by the farmers. Hence, it is a very useful programme for the scientist like me”.

- S. J. D. Bosco

“The visits to the farmer’s field are most important exercise as this could help me to learn the exact conditions (field, labour, socioeconomic, marker) under which the farmers are growing the crops, the rationale of the farmer in selecting the types of crops/animals he

is maintaining in his farm, the indigenous technologies he is adopting to improve his farm output, the difficulty he is facing in getting a good economic return, farmer's awareness of the technologies developed by the CPCRI and the extent to which he is adopting and the suggestions made by him regarding the Institute technologies. Further, this exercise will help in giving a more purposeful approach to the research project that will address the farmer's problems and possibly resulting technologies than can solve these problems".

- Murali Gopal

"Even though I have visited many farmer's plots as part of my research/transfer of technology activities at the Indian Cardamom Research Institute, the experiences gained as a member of a multidisciplinary team under the present farmer - scientist interaction programme of the Institute, was very much useful to me in understanding the farmers field problems and practices/technologies followed by them. Some farmers are practicing a few indigenous technologies like use of burnt earth as a remedy for immature nut fall and nut splitting in arecanut, use of surangam for collection of underground water for irrigation etc and these are worth mentioning. Since a multidisciplinary team of scientists is visiting the plot, on the spot analysis of problems and suggestion of remedial measures is possible and most of the farmers were also found to be receptive to our suggestions for improvement of the farm. But for the fact that farmers often face problems in marketing and consequent low returns, I found that most of the farmers are practicing agriculture in a serious manner. However, there is scope in most of the farms I have visited for further increasing the cropping intensity by way of inclusion of more crops either as inter/mixed crops. Necessary recommendations were given wherever needed. Some farmers are growing vanilla as a mixed crop and this being a new crop to them, technical guidance was imparted to them on different aspects of cultivation especially on coiling, pollination etc. It was noticed that there is increased awareness about the ill effect of in judicious use of pesticides and fertilisers and farmers are willing to adopt integrated nutrient/pest/disease management practices. Some farmers were seen to adopt vermicomposting of the

biomass in their farms and use for various crops cultivated. It is suggested that instead of visiting the fields with only one or two problems, it is worthwhile to select plots with a multitude of problems including the possibility of value addition etc".

- V. Krishna Kumar

"The feed-back from farmers on technologies developed and disseminated is required to improve the technologies and fine tune them. In addition to this, feed-back also helps in developing new technologies. The visits by the scientists to farmers fields help in getting first-hand information and deed-back from farmers. These visits also helped to interact with the farmers and learn on-field problems faced by the farmers. In this kind of programmes, selection of field is very important since it is not possible to visit all farmers in a panchayat. Fields of farmers who are facing problems should be given priority in selection".

- K. Samsudeen

"It was indeed a self experience. The experience from the visit has made me to think and identify problems faced by the farming community who are back-bone of our country. I was very glad to discussing with the farmers and their family members to hear their problems and also to offer my own suggestions to improve their condition".

- K. Vijaya Kumar

"The introduced farmers - scientists interaction programme is one of the best methods to provide an opportunity to all disciplinary scientists to interact face to face with the farmers and their family members for better understanding of their agricultural and allied problems. One end, this programme is more helpful for scientists to identify the needs of the farmers and incorporate them in their research programmes. On the other end, farmers could able to express their views freely on the strengths and weaknesses of the technologies adopted by them. Further, they could able to get need based solutions/recommendations on the spot to improve their farms by the scientists team. Even I am an extension scientist, as one of the scientists in the multidisciplinary team this programme has helped me not only to understand the farming situation in Kasaragod district but also in giving spot

recommendations. During my field visits, I observed lively discussions between farmers and scientists. Knowledge flow between scientists and farmers was also noticed. Certain indigenous technology documented out of field visits may be scientifically validated for their wider adaptability in future. In nut shell, the visit programme is very effective to gain confidence and trust among farmers about science and technology as well as scientists of CPCRI”.

- B. T. Rayudu

“The visit to different cultivators’ garden spread across different panchayats under the scientist-farmers interaction programme provides an opportunity to see the actual agricultural practices adopted by the farmers. It also provides the scientists an opportunity to interact with the farmers, observe their local agricultural practices and learn about the indigenous technical knowledge and ascertain the need/expectations of the farmers. The interaction programme also brings to light the lacunae/practical difficulties in adoption of some of the technologies recommended by the research institutes. On the other hand, the farmers are very interactive as it enables them to introduce their farm, clarify their doubts and also provides them to get an opportunity to get a professional view on the status, problems and prospects of their farm. On the whole the visit programme reinforces the concept that crops respond to good management and water and water conservation is the back-bone for a profitable agricultural enterprise, especially in the predominant coconut and arecanut based cropping system of the district”.

- V. Niral

“The farmer-scientist interaction is an innovative programme, which has been initiated in the Institute, and which will go a long way in improving the type of research and giving proper direction to our research efforts. Many a times, we are not aware of the farmers’ needs and end up developing a technology which, though very good, can not be adopted by the farmers because of his own constraints. By more and more interactions with farmers, we will come to know the ground realities and will keep them in mind while pursuing our research. These interaction meetings are taking place in farmers own fields/homestead gardens, so we are face

to face with the real agricultural scenario of a particular type of crop. The farmer also is in turn happy and such meetings will help in farmers reposing their trust and faith in the scientific community. The present programme is even better for solving problems of farmers on individual basis. And we should actively participate in this programme for betterment of our work”.

- Alka Gupta

“During my field visits, I observed that Surangam is a unique indigenous technology farmers relied on to harness ground water in the hilly areas of Kasaragod district. This local practice may be given due emphasis as the district is facing severe water scarcity. The possibilities of this local practice may be explored by the farmers for better water tapping and its effective utilisation towards the betterment of farming”.

- A. C. Mathew

“I have learned many practical points during few of the field visits. Farmers’ problems are different from what we perceive. Their experiences are different from that of researchers like bird damage to rice is severe in isolated blocks and coffee is a good inter crop for coconut. Farmers’ own practices need priorities and attention like knowledge and practices on indigenous water conservation (check dam) structures using local materials need to be researched, refined as well as documented; coconut shell could be used as structure for rearing small honey bee species; arecanut husk is useful as mulch for paddy fields; coconut husk is useful as a rooting media for rooting vanilla cuttings; and many recipes are under utilized nutritious vegetable chekurmanis. Research results are performing well in farmer’s field situations like dairy cattle a good enterprise for coconut ecosystem; and vermicomposting of agricultural waste. The visit also refreshed our knowledge on agricultural practices and helped to know many trees of fruit and other crops commonly grown in homesteads”

- V. Arunachalam

“The farmers - scientists interaction has paved a systematic way for the scientists to understand farmers field level problems. It has also helped the scientists to prioritize their research problems which is a major ex-ante agenda before commencing any research agenda.”

- C. V. Sairam

Farmers - Scientists Interaction
at
CPCRI Regional Stations and Research Centres

Text by

Anitha Kumari and C. P. R. Nair, RS, Kayangulam

S. Kalavathy and D. Balasimha, RS, Vittal

P. M. Jacob, RS, Lakshadweep

A. K. Ray, RC, Kahikuchi

A. K. Sit, RC, Mohitnagar

Section - X

Farmers - Scientists Interaction at CPCRI Regional Stations and Research Centres

The Farmers-Scientists Interaction programme was also taken up by the Regional Stations at Kayangulam (Kerala), Vittal (Karnataka) and Minicoy (Lakshadweep) and Research Centres at Kahikuchi (Assam) and Mohitnagar (West Bengal) as a part of their regular transfer of technology activities. The representative reports of the farmer-scientists interaction programme of the above Stations/Centres are presented here under:

10.1 CPCRI Regional Station, Kayangulam

Consequent to the establishment of CPCRI at Kasaragod, the Central Coconut Research Station, Kayangulam became as one of its Regional Stations in 1970. This Station is located at Krishnapuram village near Kayangulam in Alappuzha district of Kerala, midway between Ernakulam and Thiruvananthapuram, on the national Highway (NH 47) which is five km from the Kayangulam railway station and 46 km south of Alappuzha. During the past five decades of its existence, this Research Station has been engaged in research to solve the problems of diseases and pests of coconut through a multidisciplinary approach. The results achieved have contributed to develop effective management strategies for coconut cultivation. The Krishi Vigyan Kendra for Alappuzha district is functioning in this Station.

10.2 CPCRI Regional Station, Vittal

Consequent to the establishment of CPCRI at Kasaragod, the Central Arecanut Research Station, Vittal became as one of its Regional Stations in 1970. This Station is located in Bantwal Taluk of Dakshina Kannada district of Karnataka, 48 km away from Mangalore on the Mangalore-Vittal-Puttur road. The mandate of this Station is to carry out research to develop appropriate production, protection and processing technologies for arecanut and cocoa.

10.3 CPCRI Regional Station, Minicoy

This Regional Station serves as the ICAR Research Complex for Lakshadweep Region since 1994. This Station undertakes various aspects of applied agricultural research without affecting the fragile agro-ecosystem for the benefit of farmers in different Islands.

10.4 CPCRI Research Centre, Kahikuchi

Consequent to the establishment of CPCRI at Kasaragod, the Regional Station of the Central Arecanut Research Station, Kahikuchi became as one of its Regional Stations in 1970. It is situated three km away from the Gauhati Airport and 22 km from Gauhati city. This centre undertakes research programmes to solve the problems of Arecanut cultivation in Assam and other North-Eastern states.

10.5 CPCRI Research Centre, Mohitnagar

Consequent to the establishment of CPCRI at Kasaragod, the Regional Station of the Central Arecanut Research Station, Mohitnagar became as one of its Regional Stations in 1970. This Centre is situated 10 km from Jalpaiguri railway station in Jalpaiguri-Siliguri road. This centre undertakes research programmes to solve the problems of Arecanut cultivation in West Bengal.

CPCRI RS, KAYANGULAM

1

13 February, 2003

Scientists/Officers Team

- V. Rajagopal
- J. J. Solomon
- P. Anithakumari
- G. Lekha
- Jissy George

VISIT REPORT

Mrs. Leena Rani has taken up mushroom cultivation as well spawn production under the technical support of KVK faculty. She used to attend training programmes organised by KVK and has become a master farmer in mushroom cultivation..

Profile of the farmer

- Age : 38 years
- Education : Graduate
- Type of family : Nuclear
- Family size : Three members
- Information Source : KVK, KrishiBhavan, fellow farmers and mass media
- Social participation : Member, SHG
- HRD : Participation in KVK training / Presently a master trainer
- Socio-economic status : Average
- Knowledge level : Medium
- Adoption : Medium

Farm Inventory

- Total land holding : 1.1 acres
- Soil type : Sandy loam
- Topography : Plain
- Source of water : Well
- Type of farming : Mixed farming, rainfed
- Source of labour : Own as well as hired
- Main crops : Coconut, paddy and banana
- Subsidiary crops : Tuber crops
- Subsidiary enterprises : Mushroom, compost, goat and duck



Strengths

- Entrepreneurship
- Group leader
- Participation in training
- Innovative ideas
- Optimum farming situation with pond, paddy fields, coconut based farming system
- Very good family support

Weaknesses

- Lack of time
- Nuclear family so family support in labour is minimum
- Crowded/shady with lot of trees
- Need more facilities for mushroom shed/spawn production. Lack of space
- Distance from main road

Suggestions

- Create more space for large scale production of mushroom / spawn
- Output for compost units could be enhanced
- Good management may be adopted for better yield
- Mushroom/compost preparation should be done concentrating on coconut bio wastes

CPCRI RS, KAYANGULAM

2

02 May, 2003

Scientists/Officers Team

P. Anithakumari
T. Sivakumar
Jissy George

VISIT REPORT

This self help group for women is carrying out Apiary in a profitable manner. They felt that the regular field visits from KVK, Alappuzha is helping them in carrying out the group activities efficiently. KVK's timely interventions helped the group to clarify the doubts regarding the bee keeping enterprise thus enabling them to solve problems on time. It was felt that the proper off season management of honey bee colonies may be done for further strengthening of the unit.

Profile of the farmer

Age : 38 years
Education : High School
Type of family : Nuclear
Family size : Four members
Information Source : KVK, KrishiBhavan and Horti Corp
Social participation : Medium
HRD : Trainings, seminars and groupactivities
Socio-economic status : Medium
Knowledge level : Medium
Adoption level : Medium

Farm Inventory

Total land holding : 0.51 acres
Soil type : Sandy loam
Topography : Plain
Source of water : Well
Type of farming : Monocropping
Source of labour : Own as well as hired
Main crops : Coconut and rubber
Subsidiary crops : Ginger
Subsidiary enterprises : Apiary



Strengths

- High interest towards bee keeping
- Potential honey flow- honey pasturage in the vicinity
- Full involvement in various farm activities

Weaknesses

- Disease/insect problems in bee keeping
- Long distance to travel for getting the technical know-how
- Lack of good boxes for hives

Suggestions

- Dusting of Sulphur in hives against mites
- Feed the bees with sugar syrup
- Keep antwells.

CPCRI RS, KAYANGULAM

3

02 May, 2003

Scientists/Officers Team

CPR.Nair
P. Anithakumari
T. Sivakumar
Jissy George

VISIT REPORT

Mrs. Rajalakshmi undertakes spawn production with the technical guidance of KVK faculty. She earns an additional income from the sale of mushroom spawn.

Profile of the farmer

Age : 35 years
Education : Under graduate
Type of family : Nuclear
Family size : Four members
Information Source : KrishiBhavan, KVK and Agrl. Magazines
Social participation : Medium
HRD : Training programmes and seminars
Socio-economic status : Medium
Knowledge level : Low
Adoption : Medium

Farm Inventory

Total land holding : 0.2 acres
Soil type : Loamy- sandy loam
Topography : Plain
Source of water : Well
Main crops : Coconut
Subsidiary crops : Tuber crops
Subsidiary enterprises : Mushroom and spawn production



Strengths

- Urge for acquiring additional income
- Educated and youth
- Skill/Knowledge on various enterprises being utilised for income generation
- Serves as a master farmer for mushroom spawn production

Weaknesses

- Contamination of spawn
- Lack of proper space for expansion
- Lack of capital for investment

Suggestions

- Contamination of the spawn may be avoided by taking adequate sanitation and other precautionary measures.
- Proper packaging may be adopted for longer shelf life of spawn.

CPCRI RS, KAYANGULAM

4

17 January, 2003

Scientists/Officers Team

P. Anithakumari
T. Sivakumar
Chithra. K. Pillai
G. Lekha
Jissy George

VISIT REPORT

Mr. Diwakaran pillai has adopted coconut based farming system with appropriate components. He has also taken up cultivation bush jasmine and earns an additional income from his farm. He further introduced azolla cultivation and recyles his farm biomass through vermicomposting. He is educating other farmers of his locality and serves as a model farm.

Profile of the farmer

Age : 62 years
Education : Graduate
Type of family : Nuclear
Family size : Two members
Information Source : KVK, Krishi Bhavan, Fellow farmers and publications
Social participation : High
HRD : Training/Seminars/Grup discusion
Socio-economic status : Medium
Kn owledge level : Medium
Adoption : Medium

Farm Inventory

Total land holding : 0.63 acres
Soil type : Sandy loam
Topography : Plain
Source of water : Well
Type of farming : Rainfed mixed farming
Source of labour : Own as well as hired
Main crops : Coconut and paddy
Subsidiary crops : Vanilla and bush jasmine,
Subsidiary enterprises : Azolla and livestock



Strengths

- Highly positive attitude towards farming
- Enterpreneurian skills
- Family investmet
- High level of social participation
- High level of extension participation

Weaknesses

- Old age prevents him in furthering the farming
- High labour cost
- Economic yield loss in bush jasmine due to mite infestation
- Lack of timely availability of inputs

Suggestions

- Use of yellow trap against white flies
- Spraying neem oil garlic emulsion against mite
- Management practices for vanilla
- Demonstrated setting up of azolla & vermicompost units

CPCRI RS, VITTAL

1

18 January, 2003

Scientists/Officers Team

D. Balasimha
Mariamma Daniel
N. Saraswathy
K. S. Ananda
Ravi Bhat
S. Kalavathi
M. Senthil Amudhan

Profile of the farmer

Knowledge level : Medium
Socio-economic status : High
Adoption level : Medium

Farm inventory

Area : 4 acres
No. of arecanut palms : 1500
Age of palms : 4 years
Type of farming : Irrigated
Method of irrigation : Drip
Varieties cultivated : SK local and Mohitnagar
Intercrops : Cocoa

VISIT REPORT

Shri Amarantha Shetty used to apply chemical fertilisers in his plantation in the initial years. Subsequently he shifted to application of organic manures which includes neem cake and wood ash. Presently he adopts an integrated nutrient management for sustainable production of the crops grown.



Problems diagnosed

- Attack of slug and inflorescence caterpillar
- Incidence of die-back and band disease
- Use of poor quality planting materials
- Poor soil health

Suggestions

- Removal of badly affected inflorescences and forced opening of unopened ones
- Hand picking and killing of slugs
- Application of borax to band affected palms
- Placement of phorate sachets to repel spindle bugs

CPCRI RS, VITTAL

2

10 February, 2003

Scientists/Officers Team

V. Rajagopal
D. Balasimha
N. Saraswathy
K. S. Ananda
S. Kalavathi
C. T. Jose

VISIT REPORT

Shri K. T. Bhat is a progressive farmer. He practices agriculture by adopting modern technologies along with traditional practices. He produces his own planting materials for planting in his farm. He applies recommended doses of fertilisers along with organic manures like castor cake etc. He adopted drip irrigation during summer to mitigate ill effects of drought.

Profile of the farmer

Knowledge level : High
Socio-economic status : High
Adoption level : Medium

Farm inventory

Area : 6 acres
No. of arecanut palms : 5000
Age of palms : 35 years
Type of farming : Irrigated
Method of irrigation : Drip
Varieties cultivated : SK local
Intercrops : Cocoa, pepper and banana



Problems diagnosed

- Incidence koleroga and root grub in arecanut

Suggestions

- Providing an adequate drainage
- Spraying of 1% Bordeaux Mixture to the bunches at least two times at an interval of 45 days
- Collecting and destroying all the infected nuts and other plant parts and covering the bunches with poly bags
- Collecting adult beetles and application of phorate for control of root grub

CPCRI RS, VITTAL

3

19 February, 2003

Scientists/Officers Team

Mariamamma Daniel

K. S. Ananda

S. Kalavathi

Profile of the farmer

Knowledge level : Medium

Socio-economic status : Medium

Adoption level : Medium

Farm inventory

Area : 2.5 acres

No. of arecanut palms : 1000

Age of palms : 15 years

Type of farming : Irrigated

Method of irrigation : Sprinkler

Varieties cultivated : SK local and Mangala

Intercrops : Cocoa and banana

VISIT REPORT

Mrs. Asha Thimmappa Gowda is a progressive arecanut cultivator. She adopted sprinkler irrigation in her plantation. She adopts modern agricultural practices. Mrs. Gowda raises her own planting materials for use in the garden. She adopts an intergrated nutrient management system by incorporating sufficient quantities of FYM along with green leaves.



Problems diagnosed

- Tea mosquito in arecanut
- Improper pruning in cocoa

Suggestions

- Methods of pruning and training of cocoa for maintaining the structure and shape of canopy

CPCRI RS, VITTAL

4

26 June, 2003

Scientists/Officers Team

K. S. Ananda

S. Kalavathi

Profile of the farmer

Knowledge level : High

Socio-economic status : High

Adoption level : High

Farm inventory

Area : 14 acres

No. of arecanut palms : 1500

Age of palms : 40 years

Type of farming : Irrigated

Method of irrigation : Drip

Varieties cultivated : SK local and Mohitnagar

Intercrops : Cocoa

VISIT REPORT

Shri K. G. Roshan is an enterprising farmer who has taken up mixed cropping of cocoa successfully in his arecanut plantation. He systematically adopts all the package of recommended practices in his plantation. He also follows an integrated nutrient management system for different crops. His plantation is well managed and serves as a model farm for the neighbouring farmers.



Problems diagnosed

- Minor incidence of die-back and spindle bug in arecanut
- Minor incidence of pod rot in cocoa

Suggestions

- Spraying Indofil M 45 or Dithane Z 78 @ 3 g/l on opening of female flowers inflorescences. This should be followed by a second spray after 25 days
- Remove the fully affected inflorescences and destroy by burning to prevent the spread of disease
- Spraying of 1% Bordeaux Mixture against pod rot in cocoa

CPCRI RS, MINICOY

1

01 March, 2004

Scientists/Officers Team

P. M. Jacob

H. Moosa

Vasantha Senan

VISIT REPORT

Mr. Hussain Manikfan is a farmer interested in organic cultivation. The team demonstrated the method of vermicomposting technique using coconut waste biomass.

Profile of the farmer

Age : 49 years
Education : High school
Type of family : Nuclear
Family size : Four members
Information Source : Mass media
HRD : Participation in training programmes
Socio-economic status : Medium
Knowledge level : Medium
Adoption : Medium

Farm Inventory

Total land holding : de 0.5 acre
Soil type : Sandy loam
Topography : Plain
Source of water : Well
Type of farming : Rainfed
Source of labour : Family
Main crops : Coconut
Subsidiary crops : Vegetables and banana

CPCRI RS, MINICOY

2

23 March, 2004

Scientists/Officers Team

P. M. Jacob

K.K. Mohammed

VISIT REPORT

Mrs Havva is an enterprising woman farmer in Bada village. She has taken up poultry, duckery, quail rearing as subsidiary enterprises and earns an additional regular income. The team observed over crowding of coconut palms which reduces productivity.

Profile of the farmer

Age : 43 years
Education : High school
Type of family : Joint
Family size : Six members
Information Source : Mass media
HRD : Participation in training programmes
Socio-economic status : High
Knowledge level : Medium
Adoption : Medium

Farm Inventory

Total land holding : 1.25 acres
Soil type : Sandy loam
Topography : Plain
Source of water : Well
Type of farming : Rainfed
Source of labour : Family
Main crops : Coconut
Subsidiary crops : Banana
Subsidiary enterprises : Poultry, duck and quail



CPCRI RC, KAHIKUCHI

1

05 August, 2002

Scientists/Officers Team

A. K. Ray
I. Barman
H. Barman
Ranjana Sarma

VISIT REPORT

Mr. Dipak Sarmah is a young farmer who has taken up agriculture as his profession. He maintains his farm as a homestead by cultivating many crops in a scientific manner. He is also cultivating medicinal plants in his homestead garden.

Profile of the farmer

Age : 32 years
Education : Graduate
Type of family : Joint
Family size : Six members
Information Source : Mass media, friends and scientists
Social participation : Member of SHG
HRD : Participation in training programmes
Socio-economic status : Medium
Knowledge level : Medium
Adoption : Low

Farm Inventory

Total land holding : 2.5 acres
Soil type : Alluvial sandy loam
Topography : Plain
Source of water : Tube well
Type of farming : Rainfed
Source of labour : Own as well as hired
Main crops : Arecanut
Subsidiary crops : Coconut, betelvine, banana, fruit crops and vegetables
Subsidiary enterprises : Nil



Strengths

- Organic farming
- Innovativeness
- Cultivable wasteland

Weaknesses

- Lack of proper utilisation of available biomass
- Low productivity
- Labour shortage

Suggestions

- Black pepper may be introduced as a mixed crop in arecanut garden.
- Vermicomposting may be initiated for recycling waste biomass.
- High yielding arecanut and other crops may be planted in the cultivable waste land.

CPCRI RC, KAHIKUCHI

2

10 October, 2002

Scientists/Officers Team

- A. K. Ray
- I. Barman
- H. Barman
- Ranjana Sarma

VISIT REPORT

Mr. Mahesh Thakuria is a farmer taking up mixed farming in a profitable manner. Cowdung and cow shed litters are used effectively for different crops in his homestead.

Profile of the farmer

- Age : 45 years
- Education : High school
- Type of family : Nuclear
- Family size : Five members
- Information Source : Mass media, friends and scientists
- Social participation : Member of local societies
- HRD : Nil
- Socio-economic status : Medium
- Knowledge level : Low
- Adoption : low

Farm Inventory

- Total land holding : 1 acre
- Soil type : Alluvial sandy loam
- Topography : Plain
- Source of water : Tube well
- Type of farming : Rainfed
- Source of labour : Own as well as hired
- Main crops : Arecanut and betelvine
- Subsidiary crops : Coconut, banana, fruit crops and vegetables
- Subsidiary enterprises : Dairy and goat



Strengths

- Organic farming
- Recycling of farm waste
- Willingness to adopt new technologies

Weaknesses

- Low productivity
- Labour shortage
- Lack of awareness about modern technologies

Suggestions

- Vermicomposting may be initiated for strengthening his organic farming
- He may attend training programmes, kisan melas, exhibitions etc organised by CPCRI RC/Department of Agriculture, SAU etc

CPCRI RC, KAHIKUCHI

3

05 August, 2002

Scientists/Officers Team

- A. K. Ray
- Ravi Bhat
- I. Barman
- A. S. Bora

VISIT REPORT

Mr. Sabin Thakuria is a farmer who very effectively utilises his cultivable land by way of inter/mixed cropping. He has one pair of bullocks and two milch cows. Cow dung and litters of cowshed are being used by him for various crops in the field.

Profile of the farmer

- Age : 66 years
- Education : High school
- Type of family : Nuclear
- Family size : Six members
- Information Source : Mass media
- Social participation : Member in village society
- HRD : Participation in training programmes
- Socio-economic status : Low
- Knowledge level : Low
- Adoption : Lower to medium

Farm Inventory

- Total land holding : 1.25 acres
- Soil type : Lateritic and clay loam
- Topography : Plain
- Source of water : Tube well and open well
- Type of farming : Rainfed
- Source of labour : Own as well as hired
- Main crops : Arecanut and betelvine
- Subsidiary crops : Coconut, banana, ginger, turmeric, fpepper and ruit crops
- Subsidiary enterprises : Dairy



Strengths

- Organic farming
- Willing to adopt modern technologies

Weaknesses

- Lack of awareness
- Low productivity
- Price fluctuation

Suggestions

- Vermicomposting may be initiated for strengthening his organic farming
- High yielding of intercrops like ginger, turmeric etc may be introduced

CPCRI RC, MOHITNAGAR

1

12 October, 2003

Scientists/Officers Team

A.K.Sit
Susant Ray

Profile of the farmer

Age : 30 years
Education : High school
Type of family : Joint
Family size : Six members
Information Sources : ADO & KPS, Rajganj Block, Scientists, CPCRI
Social participation : Nil
HRD : Participation in training programmes
Socio-economic status : Low
Knowledge level : Low
Adoption : Medium

Farm Inventory

Total land holding : 1.5 acres
Soil type : Sandy loam
Topography : Plain
Source of water : River
Type of farming : Monocropping and mixed farming
Source of labour : Family and hired
Main crops : Rice, jute and arecanut
Subsidiary crops : Banana, acid lime and vegetables
Subsidiary enterprises : Poultry and goat

VISIT REPORT

Shri Kader Mohammad is a farmer whose main crop is Jute in pre kharif, rice in kharif and vegetables in winter and summer seasons. He has also adopted arecanut based cropping system by introducing banana, acid lime and vegetables in his plantation. He follows traditional farming.



Strengths

- Traditional knowledge on farming
- Strong family labour
- Organic farming

Weaknesses

- Lack of awareness on modern methods of cultivation
- Lack of capital for investment

Suggestions

- Vermicomposting technology may be adopted for effective recycling of farm waste biomass to strengthen his organic farming
- He may attend training programmes, kisan melas, exhibitions etc organised by CPCRI RC/Department of Agriculture, SAU etc

CPCRI RC, MOHITNAGAR

2

11 December, 2003

Scientists/Officers Team

A.K.Sit

VISIT REPORT

Shri Dilip Kumar Barman is a farmer introduced arecanut based cropping system by integrating banana, acid lime, ginger, turmeric, colocasia and other vegetables in arecanut garden at early stage under the guidance of scientists from CPCRI RS, Mohitnagar. From other field, he is raising jute at pre kharif season, rice at kharif and rabi season and vegetables in rabi and summer seasons from the same land. He has knowledge on intensive cultivation but he used to follow traditional farming.

Profile of the farmer

- Age : 35 years
- Education : Primary
- Type of family : Joint
- Family size : Five members
- Information sources : Extension personnel, scientists, friends and mass media
- Social participation : Nil
- HRD : Participating in training programmes, exhibitions and kisan melas
- Socio-economic status : Medium
- Knowledge level : Low
- Adoption : High

Farm Inventory

- Total land holding : 3.75 acres
- Soil type : Clay loam
- Topography : Plain
- Source of water : Tube well and pond
- Type of farming : Monocropping and mixed farming
- Source of labour : Own as well hired
- Main crops : Rice, jute and arecanut
- Subsidiary crops : Banana, acid lime, ginger, vegetables and beetle leaf
- Subsidiary enterprises : Poultry, duck , fishery, dairy and goat



Strengths

- Traditional farming
- Willing to adopt modern technologies

Weaknesses

- Lack of awareness on modern cultivation practices especially plant protection aspects
- Lack of capital for investment

Suggestions

- Available biomass may be recycled through vermicomposting technology developed by CPCRI

CPCRI RC, MOHITNAGAR

3

24 November, 2003

Scientists/Officers Team

A.K.Sit

Vishwanath Sirkar

VISIT REPORT

Shri Binoy Kumar Saha is a farmer who is adopting vermicomposting and arecanut based cropping system in his farm. He follows agro-management practices like intercultural operations, fertilizer application, plant protection measures etc for increasing productivity and production. He has also integrated poultry birds in his farm which serves as a model for neighbouring farmers. Many of the neighbouring farmers visit his garden and they have been inspired by the farmer. He earns an additional income by dairying.

Profile of the farmer

Age	: 40 years
Education	: High school
Type of family	: Joint
Family size	: Six members
Information source	: Scientists, mass media, extension officials and friends
Social participation	: Ration dealer
HRD	: Participating in training programmes and kisan melas
Socio-economic status	: Medium
Knowledge level	: Low
Adoption	: High

Farm Inventory

Total land holding	: 3 acres
Soil type	: Sandy loam
Topography	: Plain and sloppy
Source of water	: Tube well
Type of farming	: Monocropping and mixed cropping
Source of labour	: Hired
Main crops	: Rice, jute, wheat, pulses, arecanut and mustard
Subsidiary crops	: Banana, acid lime, ginger and vegetables
Subsidiary enterprises	: Poultry and dairy



Strengths

- Willing to adopt modern package of practices
- Organic farming
- Contacts with experts in the field of agriculture and allied sectors

Weaknesses

- Lack of time for farming
- Hired labour

Suggestions

- High yielding varieties of intercrops may be grown for more productivity and production
- Vermicompost technology may be initiated for recycling farm waste

Section - XI

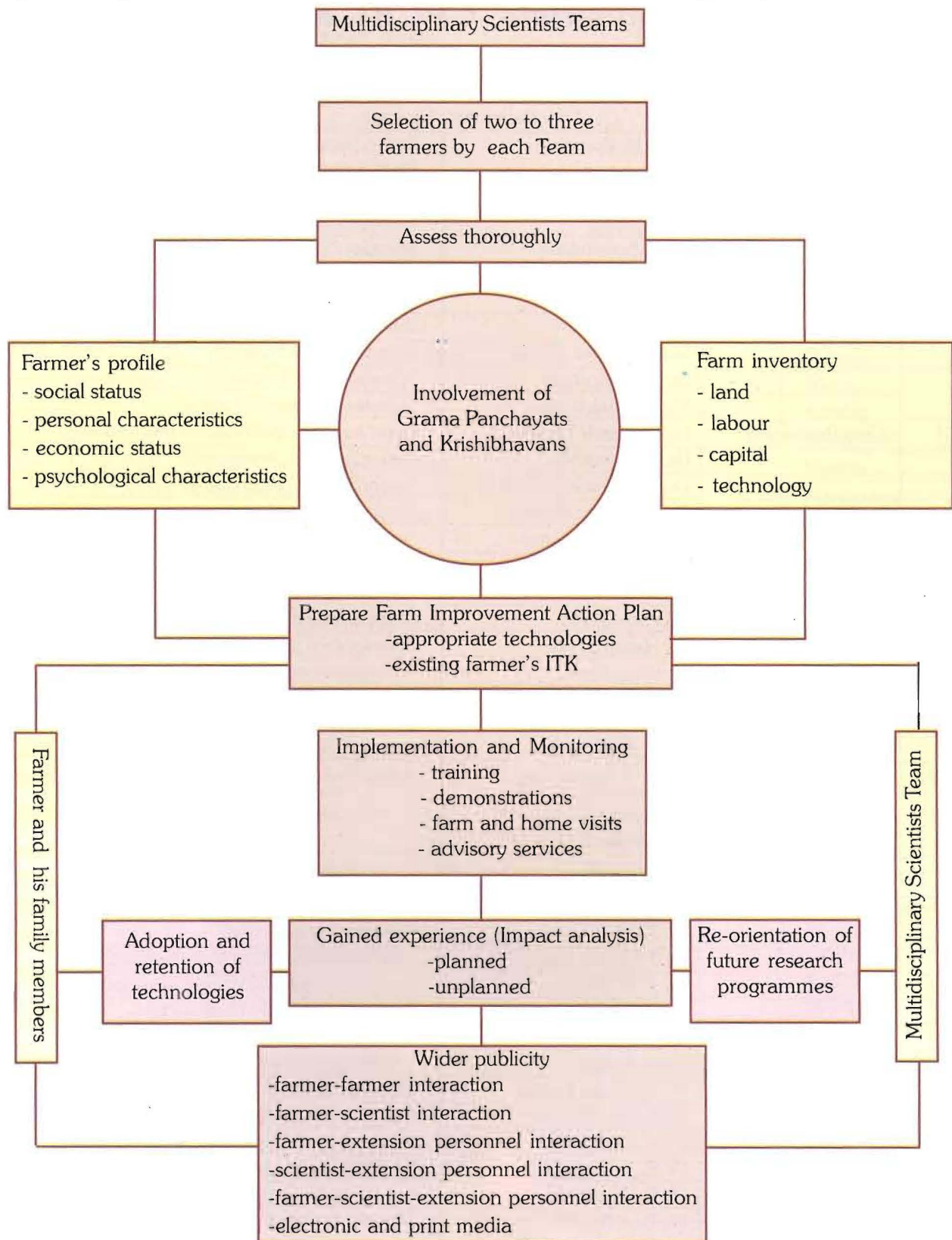
Strategies for strengthening interaction between farmers and scientists

As per the experiences gained during interactive field visits, the coverage of this exercise may be widened to remaining 17 Gram Panchayats in Kasaragod district to share the knowledge between scientists and farmers. Efforts may be made for scientific validation of farmers' practices for proper documentation and their wider adaptability. Further, follow up action may be initiated to obtain the feed-back information from the farmers visited. After completion of all Gram Panchayats, the same concept may be reoriented towards a problem solving approach through Team Research. A model action programme is suggested here.

- 11.1 Multidisciplinary Scientists Teams :** As per the existing scientists strength of the Institute, Multidisciplinary Scientists Team (s) may be constituted as research teams.
- 11.2 Farm families :** Each Team may select two or three farm families of their choice with the help of Grama Panchayats and Krishibhavans. Then, study thoroughly the farmer and his farm features in depth like social, personal, economical and psychological characteristics of farmer and farm inventory - variables like land, labour, capital and technology.
- 11.3 Farm Improvement Action Plan (FIAC) :** Based on the generated data on farmer's profile and his farm inventory, the Team may prepare a FIAC for each selected farm family with the participation of farmer and his family members, Panchayat President and Extension Personnel. While preparing a plan, the appropriate technologies and ITKs practiced by the farmer may be given due consideration. The FIAC may include a few of the major technologies to be tested.
- 11.4 Implementation and Monitoring :** Each team may implement these FIACs through constant monitoring. For effective implementation, farm families may be educated through various means and methods like training, demonstrations, farm and home visits and advisory services.
- 11.5 Impact analysis :** Review may be done to know whether implemented FIAP has brought planned change or not. If not, what are the problems of technology adoption and its practical implementation in the actual field may be studied. Accordingly future research may be reoriented based on the gained experiences. If yes, wider publicity may be given on the results through farmer-farmer interaction, farmer-scientist interaction, farmer-extension personnel interaction, scientist-extension personnel interaction, farmer-scientist-extension personnel interaction and electronic & print media. These interactions may be arranged through field days, study tours, seminars, workshops, group discussions, melas etc.

Flow diagram depicting the above activities is presented in Fig. 4.

Fig. 4: Strategies for farmers and scientists interaction to strengthen technology adoption and refinement.



List of Scientists, CPCRI, Kasaragod

Sl. No.	Name of the division	Name of the scientist	Designation and discipline
Dr.V.Rajagopal, Director			
I	Crop Improvement	Dr. P. M. Kumaran	Acting Head and Principal Scientist (Genetics and Plant Breeding)
		Dr. Anitha Karun	Senior Scientist (Horticulture)
		Dr. V. Niral	Scientist (SS) (Genetics and Plant Breeding)
		Dr. K. Samsudeen	Scientist (SS) (Economic Botany)
		Dr. V. Arunachalam	Scientist (SS) (Horticulture)
		Mr. K. Deva Kumar	Scientist (Biotechnology)
		Mr. M. K. Rajesh	Scientist (Biotechnology)
		Smt. R. Manimekalai	Scientist (Biotechnology)
		Dr. Elain Apshara	Scientist (Horticulture)
		Mr. C. Jaya Bose	Scientist (Economic Botany)
II	Crop Production	Dr. George V Thomas	Head and Principal Scientist (Microbiology)
		Dr. R. Dhanapal	Senior Scientist (Agronomy)
		Dr. D. V. Srinivasa Reddy	Senior Scientist (Agronomy)
		Dr. V. Krishna Kumar	Senior Scientist (Agronomy)
		Dr. C. Palaniswamy	Senior Scientist (Soil Science)
		Dr. A. K. Upadhyay	Senior Scientist (Soil Science)
		Dr. P. Subramanian	Scientist (SS) (Agronomy)
		Dr. Alka Gupta	Scientist (SS) (Microbiology)
		Dr. Murali Gopal	Scientist (SS) (Microbiology)
III	Crop Protection	Dr. Rohini Iyer	Acting Head and Principal Scientist (Plant Pathology)
		Dr. K. N. Ponnamma	Principal Scientist (Entomology)
		Mr. M. Gunasekharan	Senior Scientist (Plant Pathology)
		Dr. K. Subaharan	Scientist (SS) (Entomology)
IV	Physiology, Biochemistry and Post Harvest Technology	Dr. K. V. Kasturi Bai	Acting Head and Principal Scientist (Plant Physiology)
		Mr. K. Madhavan	Principal Scientist (Electronics and Instrumentation)
		Dr. John Don Bosco	Senior Scientist (Agricultural Structure and Processing Engineering)
		Dr. T. Vidhan Singh	Senior Scientist (Farm Machinery and Power)
		Dr. A. C. Mathew	Senior Scientist (Soil Water Conservation Engineering)
		Dr. S. Naresh Kumar	Scientist (SS) (Plant Physiology)
		Dr. Shamina Azeez	Scientist (SS)(Biochemistry)
V	Social Sciences	Dr. S. Arulraj	Head and Principal Scientist (Agricultural Extension)
		Mr. K. Vijaya Kumar	Senior Scientist (Agricultural Statistics)
		Dr. K. Muralidharan	Senior Scientist (Agricultural Statistics)
		Dr. C. V. Sairam	Senior Scientist (Agricultural Economics)
		Dr. B. T. Rayudu	Senior Scientist (Agricultural Extension)
		Dr. C. Thamban	Scientist (SS) (Agricultural Extension)
		Mr. Ravi Kumar	Scientist (Computer Applications)

List of farmers

Sl. No.	Date	Farmer Name	Village	Panchayat
1.	19.07.2002	Shri K. C. Gangadharan Shri K. Narayanan Nair Shri P. M. Aravindan Shri Viswanathan Shri M. K. Krishanan Nair Shri Mohammed Haji	Padi Padi Padi Nekhraje Nekhraje Edneer	Chengala Chengala Chengala Chengala Chengala Chengala
2.	23.07.2002	Shri Joseph Mathew Shri Augustine Vembana Smt. Mary Thomas	Kunnumkai Kunnumkai Vellarikundu	East Eleri East Eleri Belal
3.	27.07.2002	Shri Radha Krishna Bhat Shri Barely Joseph Shri G. K. Venkataraman Bhat	Neerchal Angadimogur Kannur	Badiadka Puthige Puthige
4.	03.08.2002	Shri Shyama Prasad Shri Jamalluddin Shri Viji Varghees	Ednad Ananthapuram Manjeswar	Puthige Kumbla Manjeswar
5.	17.01.2003	Dr.D. Chandrashekar Chowta	Miyapadavu	Meenja
6.	21.01.2003	Shri Pathadka Ganapathi Bhat Shri Chandrasekhara Bhat Shri Sudarsanan Shri Y. K. Gopala Krishna Bhat Shri K. Ramachandra	Yethadka Yethadka Yethadka Yethadka Yethadka	Kumbadaje Kumbadaje Kumbadaje Kumbadaje Kumbadaje
7.	28.01.2003	Shri Gopala Krishna Sharma	Padre	Enmakaje
8.	04.02.2003	Smt. Sharada Bhat Smt. Lakshmi Bhat	Madhur Ednad	Madhur Puthige
9.	14.02.2003	Shri M. K. Harisha	Kuntar	Karadka
10.	09.05.2003	Shri E.M.Abdulla Shri Thamban Nair	Periye Pullur	Pullur-Periye Pullur-Periye
11.	15.05.2003	Shri.K.K.Thomas Shri Mathachen Shri George	Rajapuram Rajapuram Rajapuram	Kallar Kallar Kallar
12.	20.05.2003	Shri. Kunhiraman Shri Abdul Kareem	Kinanoor Nelliyadukkam	Karindalam Karindalam
13.	27.05.2003	Shri Karyadu Ganapathi Bhat	Ukkinadka	Badiadka
14.	03.06.2003	Shri Abdul Khadar Haji Shri Bhaskaran Shri Shashidharan	Thekkil Kolathur Panayal	Chemnad Bedadka Pallikkere
15.	10.06.2003	Shri Mohammed Haji	Kalanad	Chemnad
16.	20.02.2004	Shri Ashok Kumar Holla	Kubanoor	Mangalpady
17.	25.02.2004	Shri M. V. Gangadharan Shri Prasannan	Madikai Bangalam	Madikai Madikai
18.	03.03.2004	Shri A. M. Subramanyan Nair	Kalichanadukam	Kodom-belur
19.	10.03.2004	Smt. Mamatha Mohan Das Shri Sadanandan	Madhur Kudlu	Madhur Mogral Puttur

**CENTRAL PLANTATION CROPS RESEARCH INSTITUTE
KASARAGOD - 671 124, KERALA, INDIA**

FIELD VISIT NO. 13

Date : 27 May, 2003
 Time : 9.30 a.m. to 1.00 p.m.
 Starting point : Main building of CPCRI
 Name of the village : Ukkinadka-Badiadka panchayat
 Field coverage : Coconut, Arecanut based intercropping and mixed farming
 Participating scientists : Dr. V. Rajagopal, Dr. H. H. Khan, Dr. Alka Gupta, Dr. Anitha Karun,
 Dr. Deva Kumar, Dr. R. Dhanapal, Dr. Elain Apshara, Mr. K.Madhavan,
 Dr. Murali Gopal, Dr. S.Naresh Kumar, Dr.V. Niral , Dr. C.V.Sairam,
 Dr. D. V. S. Reddy, Dr. K. Samsudeen, Dr. Vidhan Singh and
 Mr. K. Vijaya Kumar
 Coordinators : Dr. B. T. Rayudu, Smt. S. Leena, Smt. Saritha Hegde and Mr. Shyama Prasad

Scientist-in-charge

Director

Above scientists are requested to assemble at 9.00 a.m.

List of KVK Faculty, CPCRI, Kasaragod

Sl. No.	Name of faculty	Designation and Discipline
1.	Dr.B.T.Rayudu	Scientist-in-charge
2.	Smt. S. Leena	Technical Officer, Entomology
3.	Mr. B. Narayana Swamy	Technical Officer, Agricultural Extension
4.	Smt. Saritha Hegde	Technical Officer, Home Science
5.	Mr. Manoj P. Samuel	Technical Officer, Agricultural Engineering
6.	Mr. R. Sanal Kumar	Technical Officer, Plant Pathology
7.	Mr. K. Manikandan	Technical Officer, Agronomy
8.	Mr. K. Shyama Prasad	Technical Officer, Audio-visual Aids
9.	Smt. Neelofar Illiyas Kutty	Technical Officer, Home Science

Sample reply to a farmer after the visit of his farm

Gram

Phone : 04994 - 232894/5

Telex : 'Research'

232993 (KVK)

Fax : Kasaragod

Email : cpcri@hub1.nic.in

08001 202 PALM IN 91-499-232 322



CENTRAL PLANTATION CROPS RESEARCH INSTITUTE

(Indian Council of Agricultural Research)

KASARAGOD 671 124, KERALA, INDIA



Dr. V. Rajagopal

F No. 8-2/95-K VK

Director

Date : 31.05.2003

Dear Shri Ganapathi Bhat,

Thank you very much for the arrangements made for our field visit on 27.05.2003. We felt happy that you are maintaining the farm fairly well. The organic farming which you are practicing is highly appreciable and is need of the hour. The cultivation of vanilla is an inspiration to the fellow farmers to adopt it as an inter-crop in coconut and arecanut gardens. Cultivation of paddy followed by pulse crop is a good cropping system which you have adopted and continuing. You are really promoting sustainable agriculture by adopting dairy unit. It is noteworthy that you are properly recycling organic farm waste by maintaining vermi-compost unit as per CPCRI technology. Arecanut husk was properly utilized in your farm by mulching it in coconut basins. The other activities like bee keeping, fruit preservation etc are not only enhancing your farm income but also we observed that your family is deriving lot of pleasure with satisfaction. We felt happy that you are promoting around 15 labour families by providing employment opportunities through your farm round the year. Further, we appreciate that you have inculcated among your family members that agriculture is the mother of all cultures to be adopted as a profession to all generations.

However, our scientist team observed the following points to enhance more productivity and production in your farm :

1. **Drip irrigation** : The drip point should be kept one meter away from the coconut trunk because the active feeding roots are located in that zone. Therefore, water will be directly and immediately utilized by the palm thus minimizing the water loss.
2. **Coconut garden** : (a) In your coconut garden, we have observed one coconut plant infested with red palm weevil. It is a serious pest of coconut. Therefore, you may immediately up root that plant and burn it to prevent its spread to other palms. (b) We have observed coconut palms with severe drought. We suggest that coconut basins may be mulched with fallen coconut leaves immediately after North-East Monsoon to minimise moisture stress. (c) We have observed some drought tolerant coconut palms. These palms can be selected as mother palms for collecting seed nuts and raising seedlings.
3. **Soil testing** : As you rightly pointed out, we also observed some imbalance in soil nutrients in your farm. Hence soil testing may be carried out and apply nutrients accordingly.

You may feel free to approach CPCRI for any technical help and guidance for improving your farm and farm related activities.

With regards,

Yours Sincerely,

(V. RAJAGOPAL)

Shri Karyad Ganapathi Bhat,

Ukkinadka, Badiadka,
Kasaragod, Kerala, India.

Sample reply from a farmer

From:

Dr. D. Chandrashekara Chavta.
Chowara Thola
Moenja Village,
Post Miyapadavu,
Via Manjeshwar - 671323

To

The Director
Central Plantation Crops Research Institute
Kasaragod -

Respected Sir,

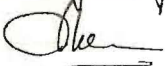
Thank you for the visit organised by you. It was very kind of you to have brought experts from all the faculties and spent lot of time with us discussing - problems of our plantation crops. I thank you for sending a report wherein you have informed us regarding our strong points, weak points and the suggestion. Based on your report we have taken the following measures to fill the gap.

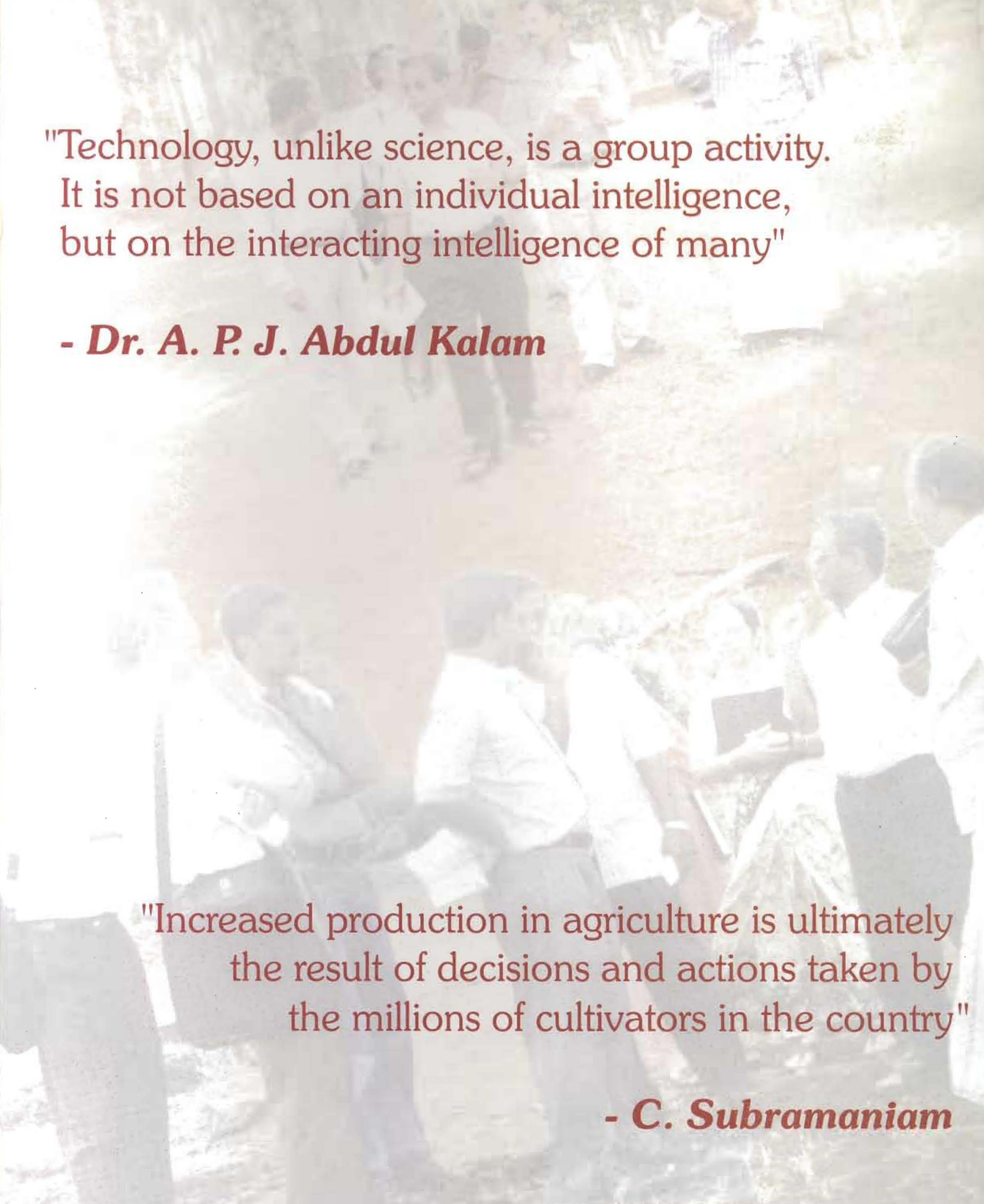
- ① We have already planted 350 Coconut plants. We are going to plant another 400 Nos within 2 months.
- ② Vermicomposting Tanks have been built to enhance the production.
- ③ We have already installed a Areca plate making machine.
- ④ We have installed Gas gas unit - to provide cooling slurry for fertigation.

We will continue to seek your assistance through KVK and the other department Scientists. In the last one year several Scientists have visited our farm and we have taken advice on various other activities connected with plantation crops.

Thanking you

Yours faithfully


(D. C. Chavta)



"Technology, unlike science, is a group activity.
It is not based on an individual intelligence,
but on the interacting intelligence of many"

- Dr. A. P. J. Abdul Kalam

"Increased production in agriculture is ultimately
the result of decisions and actions taken by
the millions of cultivators in the country"

- C. Subramaniam

Caring the uncared

