Institutional Linkages for Effective Transfer of Technology in Coconut in Kerala – a Framework

Introduction

Coconut, the '*Kalpavriksha*', plays a vital role in the agrarian economy of Kerala. The state has the largest area under coconut cultivation in India. It is also the largest producer of coconuts in the country. However, the productivity level remained low in the state (5895nuts per ha) compared to many other states in India.

Central Plantation Crops Research Institute (CPCRI) has developed viable technologies as well as coconut based different cropping system models for improved productivity of coconut. Integrated plant protection measures against pests of coconut with special emphasis on biological control measures and against diseases of coconut have been evolved and the feasibility were demonstrated in farmers fields. Even though the technologies have great production potential, there is still a wide gap between what is possible and what is realised. Despite all the sincere efforts, the extent of adoption of the available technologies at the cultivators level is at less satisfactory levels. The low level of technology utilisation at farmers fields calls for formulating effective extension strategies suitable to the heterogeneous farming situations in coconut cultivation.

Interface programme in coconut

Interface programme for coconut is an approach for strengthening the transfer of technology efforts for the development of coconut sector in Kerala state. In this approach, the research and extension personnel and farmers are brought in a common platform to streamline activities for the sustainable development of coconut. During 2002-2003, CPCRI has conducted a series of interface programmes in different Districts of Kerala State to convince the farmers and field level workers regarding the utility of the recommended coconut production technologies. Other agencies such as State Department of Agriculture, Coconut Development Board and Kerala Agricultural University were also involved in organising these programmes.

A substantial number of technologies relating to production, protection and processing aspects of coconut have been made available by the research system to improve the production potential of coconut. A number of post harvest technologies are also available for the production of value added products and by-product utilisation. These technologies were compiled in a publication brought out in connection with the interface programme. Thematic sessions relating to crop improvement, crop production, crop protection and post harvest processing technologies were included in these interface programmes, in which scientists from CPCRI and KAU, extension personnel from Department of Agriculture and Commodity Boards, people's representatives and selected farmers participated.

Impact of interface programmes

The results of impact analysis indicated the effectiveness of the interface programmes in enhancing the awareness and knowledge about the technologies for improving coconut productivity and income of farmers (*Table 1*). Similarly, the extension personnel perceived that there was vast scope for planning decentralised schemes based on improved coconut production technologies dealt in the interface programme for implementation under decentralised planning programme (*Table 2*). Schemes related to production of vermicompost using coconut leaves, providing incentives for coconut chips making units through Self Help Groups and training programme on value addition in coconut through product diversification were

Table 1. Perception of extension personnel about the impact of the interface programme

Topic covered	Improvement in awareness		Improvement in knowledge	
	No. of respondents		No. of respondents	
	Very much improved	Improved	Very much improved	Improved
Crop improvement technologies- HYV/hybrids	87	63	88	62
Crop production technologies				
a. Integrated nutrient management	88	62	98	52
b. Organic recycling in coconut garden	125	25	136	14
c. Water management in coconut	96	54	99	51
d. Coconut based cropping/ farming systems	102	48	106	44
Crop protection technologies				
a. Integrated Pest Management in coconut	87	63	90	60
b. Integrated Disease Management in coconut	89	61	88	62
Value addition in coconut through product diversification	114	36	118	32

Table 2. Perception of extension personnel about the scope for implementing decentralised schemes based on technologies dealt in interface programme

Scheme proposed	No. of respondents
Balanced application of fertilizers to coconut palms	15
Basin management of coconut palms with green manuring legumes	12
Production of coir pith compost	14
Production of vermicompost using coconut leaves	35
Soil and water conservation in coconut garden	11
Providing irrigation facility in coconut gardens	15
Development of coconut based homestead farming	6
Popularising inter/mixed cropping in coconut garden	14
Demonstration plot on Integrated Pest Management in coconut	16
Demonstration plot on Integrated Disease Management in coconut	13
Providing incentives for installation of copra dryers	16
Providing incentives for coconut chips making units through SHG's	27
Training programme on value addition in coconut through product diversification	25
Training programme on Integrated Pest and Disease Management in coconut	22

perceived by more number of extension personnel as appropriate for implementing decentralised schemes based on technologies dealt in interface programme.

Institutional linkages for effective transfer of technology in coconut

The experience gained during the district level interface programme and the results of analysis on the impact of interface programmes, revealed that the concept of research-extension-farmer interface is sure to enhance the adoption of technologies ultimately leading to coconut growers' own benefit. Hence, it is imperative that effective linkages among various agencies are established and maintained to sustain the efforts for strengthening transfer of technology efforts for improving coconut sector in Kerala state.

A frame work has been suggested for effective institutional linkages for effective transfer of technology in coconut in Kerala (*Fig. 1*). The suggestions include setting up of a state level implementation committee with representatives of CPCRI, KAU, CDB and State Department of Agriculture, to streamline and monitor district level interface programmes for coconut development. Detailed suggestions on the participants, organisation, methodology and funds for conducting the district level interface programme are also included in the action plan. Besides, suggestions for organising other technology transfer activities for coconut development as a follow up to interface programme such as, diagnostic visit to farmers' plots and campus/off-campus training programmes, front line Demonstrations, on-farm Trials,

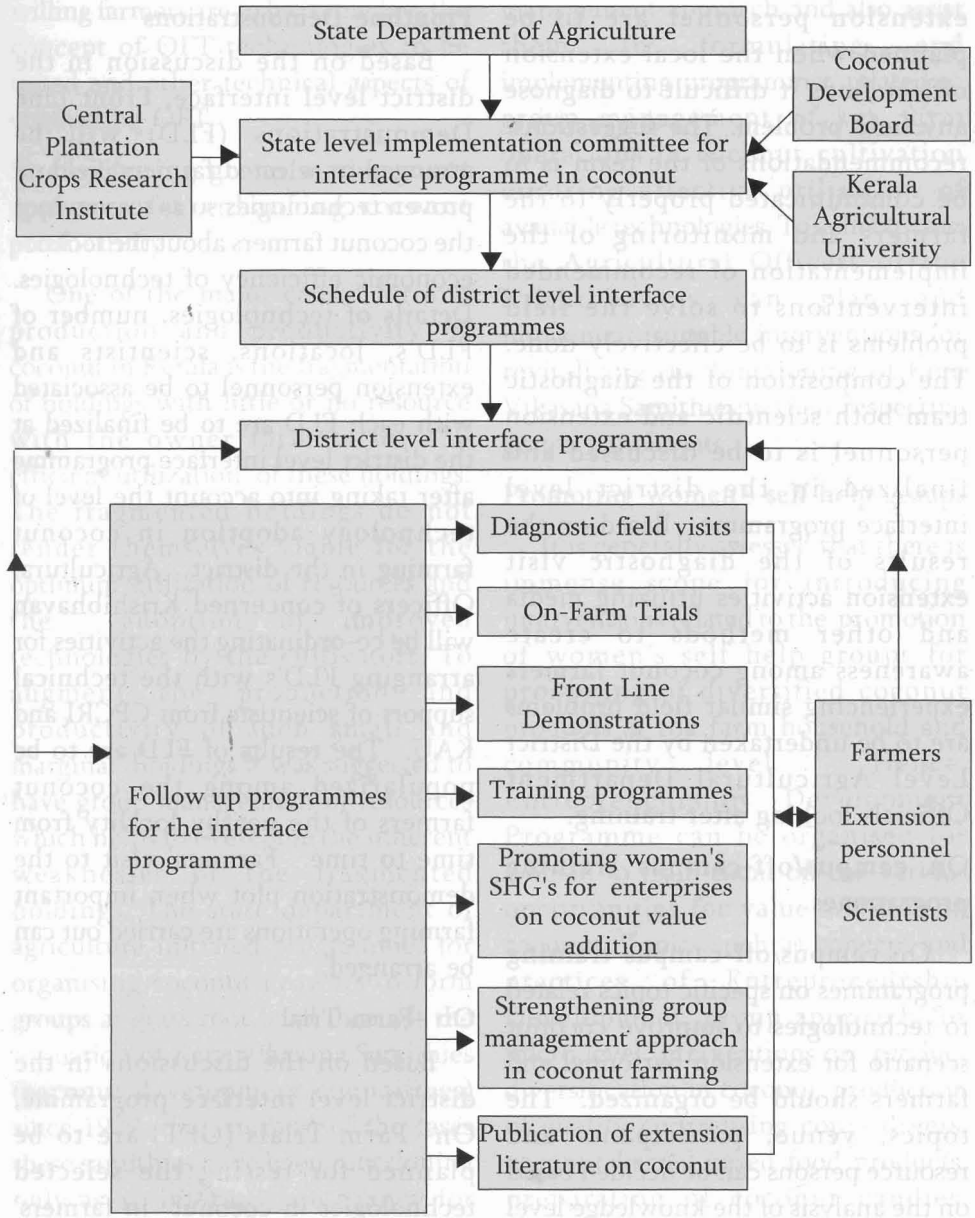

Fig 1. Institutional linkages to strengthen TOT for coconut development in Kerala

strengthening group management approach for enhancing coconut productivity, promoting women's self help groups and publication of extension literature on coconut production technologies are also discussed in detail in the action plan proposed.

State level advisory committee

A state level committee will be monitoring and taking appropriate policy decisions regarding the overall conduct of interface programme. The committee can be constituted as follows:

- Agricultural Production Commissioner- Chairman
- Vice Chancellor (KAU)
- Director, CPCRI
- Chairman, CDB
- Secretary, Dept. of Agriculture
- Director of Extn., Govt. of India
- Director of Extension (KAU)
- Head of Division (Social Sciences), CPCRI
- Director of Agriculture-Member Secretary

District level interface programmes

In all the districts, (except Wayanad and Idukky), where coconut is not a prominent crop, research-extension-farmer interface programmes are to be conducted once in year. Convenient schedule should be prepared by the state level committee in consultation with Principal Agricultural Officers to avoid overlapping of programmes.

Participants

a) Farmers: Selected coconut growers in the district representing different holding categories and also few innovative farmers with proven achievements in coconut cultivation should be invited for attending the district level interface programme.

b) Extension personnel: District level officers and all the Agricultural Officers of the Department of Agriculture and officials from Coconut Development Board

c) Scientists: A team of Scientists from KAU and CPCRI representing different disciplines related to crop improvement, production, protection and post harvest processing of coconut should be involved.

Organisation

Principal Agricultural Officer of the district will be the co-ordinator of Research-Extension-Farmer Interface programmes in coconut at the district level.

Topics

Broadly, crop improvement, crop production, crop protection and post harvest technologies can be included for the district level interface. Specific topics for discussion in the district level interface programme are to be decided taking into account the problems and opportunities for coconut farming in the district.

Methodology

The methodology of district level interface programme should include preliminary evaluation on the knowledge of farmers on technologies to identify gaps in knowledge and extent of utilisation of recommended technologies by them, appraisal lectures on technologies by resource persons, enumeration of general/specific problems confronted by the farmers and panel discussion for interaction among the participants.

Funds

The funds required for organising the interface programme in coconut shall be arranged from among the following agencies.

- Government of Kerala
- Coconut Development Board
- CPCRI
- District Co-operative Banks
- Agricultural input agencies

Technology transfer programme for coconut development as a follow up to interface programme

Diagnostic visit to farmers' plots

Based on the discussions in the District level interface programme, diagnostic visits to selected coconut gardens by a team of scientists and extension personnel are to be planned when the local extension officer finds it difficult to diagnose any field problem. The suggestions/ recommendations of the team is to be communicated properly to the farmers and monitoring of the implementation of recommended interventions to solve the field problems is to be effectively done. The composition of the diagnostic team both scientific and extension personnel is to be discussed and finalized in the district level interface programme. Based on the results of the diagnostic visit extension activities utilizing media and other methods to create awareness among coconut farmers experiencing similar field problems are to be undertaken by the District Level Agricultural Department Officials looking after training.

On campus/off-campus training programmes

On campus/off-campus training programmes on specific topics related to technologies to improve coconut scenario for extension personnel and farmers should be organized. The topics, venue, participants and resource persons can be decided based on the analysis of the knowledge level of farmers on various recommended technologies and extent of adoption as discussed in the district level interface programme. Facilities available in the CPCRI research stations, RARS under KAU, KVK's of CPCRI and KAU can be utilized for organizing on-campus training programmes. Off-campus training programmes can be organized in farmers coconut gardens. Deputy Director (Training) at the District level will be the co-ordinator of such training programmes.

Frontline Demonstrations

Based on the discussion in the district level interface, Front Line Demonstrations (FLD) will be arranged in selected farmers' field on proven technologies so as to convince the coconut farmers about the techno-economic efficiency of technologies. Details of technologies, number of FLD's, locations, scientists and extension personnel to be associated with each FLD are to be finalized at the district level interface programme after taking into account the level of technology adoption in coconut farming in the district. Agricultural Officers of concerned Krishibhavan will be co-ordinating the activities for arranging FLD's with the technical support of scientists from CPCRI and KAU. The results of FLD are to be popularized among the coconut farmers of the nearby locality from time to time. Farmers' visit to the demonstration plot when important farming operations are carried out can be arranged.

On -Farm Trial

Based on the discussions in the district level interface programme, On- Farm Trials (OFT) are to be planned for testing the selected technologies in coconut in farmers' gardens. The results of OFTs will be helpful in recommending technologies appropriate to different coconut growing tracts. Participatory approach has to be employed for planning and implementing OFT. The OFT details such as the proposed interventions/ treatments, replication etc. are to be discussed at the district level interface programme. At the district level, PAO will be co-ordinating the OFT programme. The Agricultural Officer in the selected Krishibhavan and

willing farmers are to be trained on the concept of OFT technologies to be tested and other technical aspects of conducting OFT.

Strengthening group management approach for enhancing coconut productivity

One of the major causes for low production and productivity of coconut in Kerala is the fragmentation of holdings with little or no resource with the owner farmers for the efficient utilization of these holdings. The fragmented holdings do not render themselves viable for the optimum utilization of resources and the adoption of improved technologies by the cultivators. To augment the production and productivity of such small and marginal holdings it was suggested to have group management of resources which helps to overcome the inherent weaknesses of the fragmented holdings. The state department of agriculture initiated programmes for organising coconut growers to form groups at grass root level through the formation of Kera Vikasana Samithies (coconut development committees) since 1989. But, in most of the cases these samithies have been functioning only as an intermediate agency for distributing the incentives provided by government to coconut growers. Hence efforts are required to revitalize these samithies for enabling them to organise location specific programmes to utilize production technologies such as integrated nutrient management, pest and disease management etc on a group basis. As a follow up for the interface programme, the office bearers of the existing Kera Vikasana Samithies in all the panchayats can be trained on the concept of group management approach and also assist them in formulating and implementing programmes related to group management of key farm operations in coconut cultivation ensuring effective utilisation of available technologies. To achieve this, the Agricultural Officers of the Krishibhavans can plan and implement suitable interventions for revitalizing the functioning of Kera Vikasana Samithies in their respective grama panchayats.

Promoting women's self help groups

It is generally assessed that there is immense scope for introducing interventions related to the promotion of women's self help groups for processing of diversified coconut products at the farm household and community level. Hence, Entrepreneurship Development Programme can be organised for women to train them on the various opportunities for value addition in coconut. Topics such as concept and practices of Entrepreneurship Development, group approach for micro level interventions on product diversification in coconut, production of quality copra using copra dryers, coconut kernel based food products, preparation of coconut candies, production of snow ball tender nut, production of coconut chips, Oyster mushroom cultivation on coconut wastes and production of vermicompost using coconut leaves etc can be included in the Entrepreneurship Development Programme. At grama panchayat level, the Agricultural Officer of the Krishibhavan can formulate and implement a schedule of such Entrepreneurship Development Programme on value addition in coconut for enhancing the income of resource-poor coconut farmers and socio-economically disadvantaged rural women. Linkage with other agencies such as Kudumbasree project, Krishi Vigyan Kendra and technical assistance from CPCRI and KAU can make these programmes effective.

Publication of extension literature on coconut production technologies

Efforts are to be made for preparation of extension publications (both print and electronic) related to various aspects of production technologies and value addition opportunities in coconut for distribution among farmers. The items for publication can be decided by the state level committee and agencies such as Farm Information Bureau, CPCRI, KAU and CDB can be involved in this activity.

Conclusion

Lack of adoption of scientific cultivation practices has been stated to be one of the important reasons for the low productivity of coconut in Kerala State. Efforts by CPCRI to bring together researchers, extension personnel and farmers to a common platform through interface programmes have been successful in strengthening the transfer of technology efforts. Effective institutional linkages are to be established and maintained for re-orienting programmes towards farmer centred technology transfer strategies for the sustainable development of coconut sector in Kerala State.

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