

# Farmer participatory study crucial for evolving appropriate R & D policy in coconut sector

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**Drawing lessons from the prevailing situation, farmer's assessment of opportunities for increasing on-farm income and profitability was studied and recorded in Farmer Participatory Studies conducted in ten Panchayats in Kerala representing three regions of the State.**

## Introduction

R & D initiatives in the coconut sector are primarily for the welfare of the farming community. However, in most instances, the farmers do not have the opportunity to express their needs and aspirations or to share their experience with the experts before formulating the R & D strategies. They are left out from this sphere and the programmes and priorities are determined by the experts who may not have the required exposure to the field problems experienced by the farmers. As a consequence many R & D recommendations turn out to be inconsistent with the local conditions and fail to enthuse the farming community.

Drawing lessons from the prevailing situation, farmer's assessment of opportunities for increasing on-farm income and profitability was studied and recorded in Farmer Participatory Studies conducted in ten Panchayats in Kerala representing three regions of the State. The study was held in two phases during the period 1999-2003 with the active participation of over 600 farmers. A study team comprising specialists in agronomy, genetics, agricultural extension and

social sciences interacted with the farmer participants assembled in each study centre using a semi-structured questionnaire. The observations made by the farmer participants were recorded and a brief summary of which is presented below.

## Observations of the Farmer Participants

### *Management of Coconut Holdings*

The general view of the farmer participants was that organic manures when supplemented with inorganic fertilizers can maintain optimum productivity in terms of number of nuts as well as copra output per nut than when either of the inputs was used singly. Depending on the location and access to organic sources of nutrients, the cost of manuring ranges between Rs. 60 and 100 per palm per year which also covers the handling and application charges. Summer irrigation is practised only by less than 10 percent of the farmers. Depending on the method, frequency, and local conditions the expenditure varies from Rs. 20 to 85 per palm per year. The participants recognized the importance of cultural practices such as annual ploughing or digging,

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basin formation around the palms, field bunding and regular surface mulching with organic debris including leaves, husk etc. for soil and water conservation in coconut holdings. Despite this realization, the farmers are not in a position to adopt the practices due to shortage of farm labour and high wage rates.

The preference of the participants was for organic management of coconut holdings. The technologies adopted by those who have been following the system comprise on-farm organic recycling, use of externally procured organic sources of nutrients, proper soil and water management, suppression of weed growth through organic mulching, use of plant-based materials for pest control etc. The importance of maintaining livestock components in coconut holdings was highlighted for effective organic recycling. Those who have been practising the system stated that the productivity of organically managed gardens is comparable to that achieved in the conventionally managed gardens. However, the general opinion of the participants was that though organic management is an acceptable proposition, the inadequate availability of both on-farm and off-farm sources of organic materials and the absence of special demand for organically produced tender nut and mature nut meant for direct edible uses do not encourage the farmers to adopt the same. Also there is no R&D support to the farmers in the form of dissemination of appropriate technologies relevant to different farming situations.

The participants of the study favoured biological control of pests

and diseases in place of chemical control. They strongly felt the need for R & D initiative in this direction to develop appropriate technologies for the farmers to adopt under field conditions. One of the major constraints to the timely adoption of plant protection measures has been stated to be the shortage of labour for regular crown cleaning and application of insecticides and fungicides. Another constraint highlighted was that other than the indigenous methods of pest and disease suppression the farmers are not aware of improved technologies developed, if any, in the research stations. One of the observations made by the participants was that at least five percent palms of tall variety in a garden do not contract major diseases like root wilt and leaf rot in disease affected tracts where such palms are usually surrounded by diseased palms with varying intensities. These palms also show better tolerance to the common pests.

#### ***Productivity and Maintenance Cost***

The general observation of the participants was that the productivity of coconut varies from 4,800 nuts to 11,000 nuts per ha per year depending on planting density, intensity of disease incidence and quality of management. While the density of planting is from 175 to 200 palms per ha in the central and southern regions of the State it is from 100 to 150 in the northern region. The productivity per palm is as low as 30-35 nuts in the areas where root wilt and leaf rot diseases are prevalent and 60-80 nuts in disease free regions. There are also exceptionally high yielding palms with a productivity of 100-150 nuts per palm per year.

According to the study participants the maintenance cost of coconut gardens varies from Rs. 150 to Rs. 180 per palm per year excluding harvesting charges. At the lower productivity levels coconut farming is not considered profitable. Even at the higher productivity level the profit margin is not attractive to the farmers. The reasons for the low productivity and profitability in many places were identified, among other things, to be shortage of farm labour for attending to timely cultural operations, prevalence of debilitating diseases such as root wilt and leaf rot, inadequate attention devoted to farming by those whose major source of income is not coconut, poor integration of livestock components and miscellaneous crops under coconut for generating on-farm source of organic inputs, unattractive price for the produce, fascination of younger generation for off-farm employment etc.

Both harvesting and dehusking of nuts are done manually. The general complaint of the farmer participants of the study was that timely harvesting is becoming a problem due to the shortage of experienced climbers and the reluctance of the younger generation to do the manual work. Mechanical devices both for palm climbing and dehusking of nuts are also not available. As a result of the shortage of labour, harvesting is now restricted to once in six months as against the traditional practice of 8-10 harvests a year. The discussion revealed that fresh coconut is an essential dietary ingredient in all the households with the average daily requirement in a family of 5-6 members varying from 1 to 3 nuts.

At the farm-household level not more than five percent of the farmers produce copra for sale. However, in most of the households copra is made occasionally for getting oil of good quality for dietary and toiletry purposes. The study revealed that the household consumption of coconut oil is within the range of 2-3 kg per month. The farmers sell coconut to the local merchants who in turn make copra and sell the product in the terminal markets. The copra yield of nuts from rainfed gardens under average management varies from 12 to 15 kg per 100 nuts whereas in irrigated gardens the range is 16-18 kg in most areas. The local merchants fix the purchase price of coconut based on the prevailing market prices for copra and oil. However, in some cooperative societies coconut is priced based on the weight of dehusked and dewatered nuts, which is considered more favourable to the farmers. The usual norm in summer months is 34-35 percent of the ruling price of 100 kg of copra to 100 kg of dehusked and dewatered nuts. In rainy season a lower norm of 25-30 percent is the norm. This is because the usual recovery of 10.5-11kg of oil from 100 nuts in summer months goes down to 8-8.5 kg in rainy season. For nuts delivered from well maintained and high yielding gardens 100 nuts will be equated with 10 kg of oil during summer and the pricing will be based on the prevailing oil price. In other months pricing is for a reduced oil recovery by 2-3 percent.

The study participants held the view that the farmers suffer from want of dependable institutional setups in the Panchayats for selling

farm produce. The farmers are also victims of frequent price fluctuations caused mainly through market manipulations by vested interests. Most of the existing cooperative institutions do not procure copra directly from the farmers for further processing. Neither do they have a marketing strategy for minimizing fluctuations in the prices of coconut products. Further, in the absence of product diversification the coconut-based economy of the farmers is inextricably linked with the price behaviour of coconut oil which exhibits unpredictable and violent fluctuations.

Coconut shell does not enjoy demand for commercial scale utilization. It is used mainly as a fuel and rarely as a raw material for handicrafts. The prevailing price varies from Rs. 150 to 250 for 1,000 shells in double cups. Coconut wood enjoys local demand for construction and furniture making, handicrafts etc. For these purposes the demand is for fully matured tall variety palms of over 50 years old and having 10-12 m long straight trunk. Such palms fetch a price of Rs. 1,000-1,500 per tree. The participants of the study are hopeful of the prospects of coconut wood as a substitute for the usual hard wood in many applications. Increasing use of coconut wood will facilitate the replanting of senile and unproductive palms and serve as a good source of income for the farmers. Coconut frond which had good demand in the past for thatching houses and fencing does not enjoy the same level of demand. The prevailing price is Rs. 100-150 for 100 unplaited fronds and upto Rs. 300 for plaited ones.

### *Opportunities for Enhancing Income from Coconut*

The participants of the study identified activities such as intensive integrated farming under coconut, harvesting and sale of tender coconut, toddy tapping and the production of value-added products at the farm-household and community levels for increasing income and employment in the coconut small holder sector. Integration of diverse combinations of seasonal food crops and tree species of economic importance as well as poultry, goat and cattle in coconut holdings has been regarded as the most viable approach for generating multiple sources of food, income and employment for the members of the practising households. In small farm-households banana, root and tuber crops and annual spices have been identified as the most suitable intercrops. While accepting the usefulness of farming system, the participants identified the lack of marketing facilities for the multiple produce that may become available from the system as the most serious constraint to its systematic adoption by the farmers. In addition to this, those farmers whose major source of income is not coconut will not devote attention to the proper management of coconut holdings.

The general view of the farmer participants was that the sale of tender coconut is more profitable than that of ripe nut and that development of marketing by encouraging the setting up of tender coconut stalls will open up employment opportunities for unemployed youth especially



women. They were also of the opinion that harvesting at tender nut stage on a regular basis will stimulate nut production resulting in better productivity. But this is not being practised for practical reasons such as shortage of palm climbers for harvesting at regular intervals and the problems in direct marketing. The experience of those involved in tender coconut marketing is that the preference of consumers is for water from nuts of dwarf variety palms. But the population of such palms is limited in the state.

Toddy tapping is considered more profitable than nut production. The usual tapping period is six months and in some places it is allowed to be continued for one year or more. The prevailing rent offered to the farmers for the trees allowed to be tapped varies from as low as Rs. 50 per palm per month to as high as Rs. 300. The rate per spathe is Rs. 150 for the tapping period. The yield of toddy ranges from 1.5 to five litres per tree per day depending on the condition of the tree. The average yield of toddy per spathe over a period of one month is around 50 litres.

The experience of the farmer participants was that tapping increased the productivity of palms, especially the medium yielding and alternate bearing ones, during the post tapping period. They held the view that toddy tapping and the related processing for jaggery, vinegar etc. when promoted as a cooperative endeavour of tappers and their family members will benefit both the farmers and the tappers. The participants opined that products like jaggery, treacle etc.

enjoy a growing consumer demand especially among the health conscious people of the state.

In all the study centres the participants highlighted the importance of developing coconut-based farming system, promoting women's groups for processing at the farm-household and community levels and establishing display cum sales outlets for various value-added products for creating opportunities for increasing income and employment for women.

#### **Suggestions of the Participatory Study**

1. For evolving pest and disease tolerant coconut types 5-10 percent best palms from the group of high yielding and disease free palms available in different gardens in each Panchayat are to be identified and used as mother palms for raising nurseries. The distribution of seedlings produced in such nurseries is to be restricted within the operational limits of the Panchayat for ensuring the quality of planting material and checking the spread of diseases.
2. Research may evolve short or medium stature coconut types with capacity to produce an average of over 100 nuts per palm per year with copra out-turn per nut of 180-200 g under rainfed and low input management conditions. The nuts of such palms shall have a husk component of less than 45 percent but with kernel content of 30-35 percent of the weight of the whole nut.
3. For promoting farming system models small farmers are to be

organized into viable clusters and techno-economic support extended to them for undertaking common management as well as efficient marketing of the multiple produce obtained from the system. R & D efforts are also required for disseminating appropriate technologies in the selection of crop combinations, water and nutrition management for the system as a whole and integrated pest and disease management relevant to each agro-climatic zone.

4. Farmer's cooperatives are to be strengthened by creating adequate infrastructure facilities for procuring coconut directly from the farmers by weight of dehusked and dewatered nuts and their processing and marketing at different levels. Along with this, processing for the fuller utilization of coconut has to be developed in order to delink the prices of coconut from that of the fluctuating coconut oil prices. Regulatory measures are also to be introduced to minimize fluctuations in the prices of coconut products.
5. The establishment of coconut wood processing units both in the private and public sector has to be promoted. Likewise, rural handicrafts using palm products have to be encouraged by offering training support in design and techno-economic support in establishing production units and creating marketing infrastructure.
6. For promoting organic coconut production training support has to be extended to the farmers in



- organic management of coconut holdings besides providing institutional support for creating demand for organically produced tender coconut, fresh ripe coconut and other edible products. As majority of the coconut farmers are small and marginal financial support has to be extended to them to meet the expenditure involved in the certification process.
7. Farmers are to be encouraged to raise gardens exclusively for producing tender coconut by planting dwarf variety palms. Entrepreneurs and farmer's groups are also to be assisted in the development of marketing infrastructure comprising a network of tender coconut stalls.
  8. Mechanical devices for harvesting and dehusking of coconut are to be developed and popularized. Farmers are to be trained in the handling of such devices. In addition to these, a chopping device for tender coconut and appropriate technology for the profitable utilization of tender coconut husk and shell are also to be evolved and popularized.
  9. Tapping for toddy and its further processing into value-added products such as bottled sweet toddy, jaggery, treacle, vinegar etc. has to be permitted under the aegis of tapper's cooperatives and/or farmer's societies.
  10. Techno-economic support has to be extended to women's groups or their cooperatives to produce value added products from fronds, wet kernel, coconut water etc. at the farm-household and community levels and to organize efficient marketing. These groups are also to be encouraged to engage themselves in on-farm goat rearing, poultry keeping, apiary, pisciculture etc. to widen the sources of income and employment.
  11. The regular and potential consumers of coconut both in Kerala and other states are not familiar with the value-added products of coconut except copra, oil and coir. For promoting product diversification consumer acceptance of the new products has to be promoted both in the traditional and non-traditional coconut consuming states. For making the potential consumers familiar with the diverse coconut products and to create demand it is necessary to establish display-cum-sales outlets in selected centres in all the states.

## **Rural artisan creates decorative marvels using coconut shells in Karnataka**

Although a blacksmith by profession, Rohit Chimullu from Mangalore in Karnataka makes artifacts out of coconut shells, which are in demand in various parts of the country. Chimullu works with iron blocks for sustaining his family, but his passion lies in exploring the limits of his creativity using coconut shells.

"I was motivated on seeing ladles and other odd items made from coconut in the kitchen and gave a try to come out with some innovative products. I take three to four days for making an item. There has been a good demand for the products conceptualised by me, particularly from foreigners," Chimullu said. Using hands and common house tools, Chimullu transforms ordinary coconut shells into statues, masks, water jugs and miniature idols. "He never uses any other thing except coconuts and gum to create these decorative items. His art needs patronage from the society," said Dayasagar, a neighbour. The decorative pieces are in great demand, which is evident from his illustrious list of clientele. His customers range from local villagers to elite city folks, and even foreigners. Chimullu has not received formal schooling, but many of his works reveal complicated principles of ballistic science and engineering.

One of his most acclaimed products is a simple water jug, which works on the simple scientific premise of fluid pressure.

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