

TRANSFER OF TECHNOLOGY IN COCONUT

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Even after three decades of planned development, the production level of coconut in our country leaves much to be desired. A considerable gap exists between the yield level of farmers' plot and that of research farms. This so called 'extension gap' can be effectively narrowed down only through transfer of appropriate technology. The basic activities in the task of transfer of technology can be classified broadly into four systems:

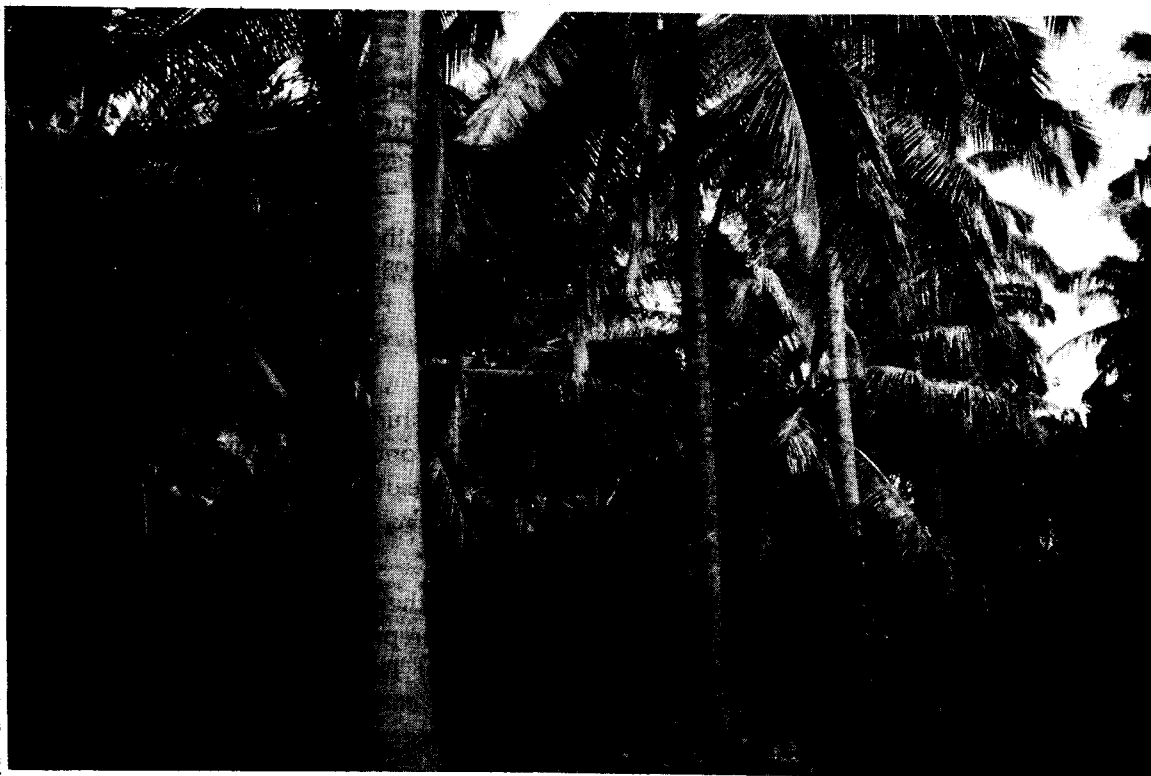
1. Research/Technology Production system to evolve new technology,

2. Extension/Dissemination/Communications system to transfer the technology from research station to farmers' field.

3. Technology utilization system/farmers system which adopts the technology and takes benefits from it, and

4. Support system which support the technology transfer process by providing necessary inputs required for the use of technology and also by providing facilities for processing and marketing of the products.

Information regarding improved technology released by the research system can reach the farmers either through the extension system or direct to farmers through mass media like radio, TV and printed matter. After receiving this information in the first stage of the decision making process, the farmer may either mentally accept the practice or reject it. In case the practice is accepted by the farmers, infrastructure support for timely and adequate supply of input is needed to facilitate actual use of the practices by the farmers. The non-availability of input



Mixed cropping in coconut garden

naturally leads to non-adoption. The use of improved practice for the first time may lead to discontinuance if the result of adoption of the practice is unfavourable. Even if adoption of the practice leads to increased output, discontinuance of the use of improved practice and reversion to the old practice may occur due to lack of processing and marketing facilities for the output or due to unfavourable price policies and market trends leading to profit.

Now let us consider how these four systems operate in respect of coconut.

1. Coconut is grown over an area of 1.47 million hectares and the production is 8160 million nuts. The research activities on coconut is taken care of by the Central Plantation Crops Research Institute (CPCRI) and the State Agricultural Universities which form the research system.
2. The extension system consists of the Coconut Development Board and the Directorate of Extension, Government of India at the National level, and the Agricultural/Horticulture Departments at the state level. Publications of the Research Institute/Agricultural Universities and the Training programmes organized at varying intervals at the Research Institute/Agricultural Universities for the personnel of the Extension system form the only linkage between the Research and Extension systems, which is very weak. Though there exists a certain level of information flow between the research and Extension system at the lower level functionaries, this does not happen at the policy maker's level; mainly because they belong to different organizations.

Although the Extension System consists of functionaries

exclusively for coconut at higher levels, it is looked after by the general extension functionaries at the grass root level making the transfer process difficult.

3. In the case of coconut, the technology utilization system is also quite different compared to tea, coffee, rubber and cardamom. Coconut is a small holders crop and many of the growers pay little attention to the crop. Ninety per cent of the holdings are less than 1 ha and it is difficult for the extension system to handle them effectively. The schemes of the Coconut Development Board are implemented by the State agencies without any direct control which weakens the transfer process.
4. A part of the support system handled by the extension system is the production and supply of quality planting materials. In this front, the achievement so far made are not upto the desired level. Selected material of the local variety has been made available to the technology utilization system in sufficient quantity. But so far no massive effort has been made in the production and supply of the planting materials of the desired hybrid for which the technology was developed some five decades ago. Because of the weak linkage between the different elements (Research, Extension, Technology utilization and support system), the yield per unit area has not increased much over the years and a wide yield gap exists.

1. Research System

The Research System has developed various technologies of production, protection and processing of plantation crops, but much breakthrough has not been achieved in transferring them to the planters in



Biological control of leaf eating caterpillar by releasing parasites

most of the crops. The important technologies that are developed and being transferred to farmers for adoption in coconut are listed below :

1.1 HYBRIDS

Since the superiority of different hybrids have been proved all over the world, a national policy on coconut hybrid seed gardens has been worked out. To meet the great demand for coconut hybrids nine seed gardens have been set up in four States - Kerala, Karnataka, Tamil Nadu and Orissa.

1.2 OPTIMUM POPULATION PER UNIT AREA

In spite of the scientifically proved optimum spacing of 7.5 m x 7.5 m recommended for coconut allowing a population of 175 palms for hectare, there is still a tendency among the farmers to overcrowd their land which in turn tells upon the yield.

1.3 SPLIT APPLICATION OF FERTILIZERS

This is another technology avail-

able to increase production without much additional cost input.

1.4 PROVIDING IRRIGATION

Although more efficient irrigation systems involving the economic use of water, such as drip method and sprinkler method have been developed, they are yet to become a reality among farmers, probably due to the high cost involved. There is now a need to popularize cheaper and economic irrigation systems among our farmers and also to provide financial assistance for the acceptance of the technology.

1.5 COCONUT BASED FARMING SYSTEM

For getting maximum income from the available land, intercropping, mixed cropping and mixed farming systems developed by research efforts are yet to be popularized. The technology envisages the growing of different annual and perennials, and rearing of milch animals in the coconut gardens. This can very well be popularized in root (wilt) affected area by thinning out the unproductive palms from the existing garden so that its total productivity can be increased which will compensate for the loss due to root (wilt) to a large extent. Integrated control measures against insect pest like rhinoceros beetle and black-headed caterpillar with more emphasis on biological control must be popularized amongst farmers for adoption. Spraying Bordeaux mixture against leaf-rot disease also serves as a prophylactic measure against bud-rot. Since the root (wilt) disease has been noticed in the northern part of Kerala, an awareness has to be created among the farmers of these areas to take timely ac-

tion to eradicate the disease affected palms.

2. Extension system

In our country though result demonstration has been identified as one of the best methods of communicating agricultural innovations effectively, it could not be exploited in the case of coconut to the desired level. Since the procedure for such a demonstration for plantation crops is more or less similar to that for annual crops, most of them are stopped abruptly, even before the impact of the technology becomes visually observable. Transfer of ownership of land due to sale or partition, and frequent transfer of extension personnel have further accentuated this problem.

The extension unit available within the research system, besides training extension personnel and generating literature, serves as a link between the research and extension systems. This unit which spearheads transfer of technology is unfortunately weak in the presently available research systems.

Linkage between extension and support systems is also weak. While the former may be popularising a certain technology, the latter may not be able to make available the required inputs to the growers in time resulting in non-adoption of the improved technology.

3. Technology utilization/Farmers System

Most of the coconut holdings are less than one hectare in size, which also gets fragmented in due course because of existing social customs. The small size of the holdings drives the farmer to other vocations for his sustenance thus neglecting the management of his farm.

Since most small and medium farmers live in a cycle of poverty,

they do not have much capital for heavy investments for the better management of their coconut gardens. The rate of immediacy of return of such heavy investments is also very low. Lack of irrigation facilities, lack of timely and adequate input supply and poor contact by extension workers also add to the poor response of the growers towards adoption of improved technologies.

4. Support System

Non-availability of superior planting materials like hybrids and other released coconut varieties besides hampering extensive planting of such materials, helps some traders to exploit the situation by selling spurious planting materials. The farmer realises the mistake only after a few years and thereafter looks upon any new technology with suspicion. Factors like lack of processing and marketing facilities, unfavourable price policies of the Government, non-availability of input when the farmer wants them, and the lack of co-ordination between the different input agencies also dull the enthusiasm of farmers to adopt any new technology.

Till now, meagre amount of input has been invested on research aspects of the constraints involved in the transfer of technology on coconut. Special problems are involved in this crop, which play a significant role in the livelihood of a number of small and marginal farmers as well as in the national economy. Therefore, the scientists should come forward to make an in-depth analysis of various factors involved in the transfer of technology on coconut and formulate suitable strategies to ensure the effective transfer of technology in this crop.