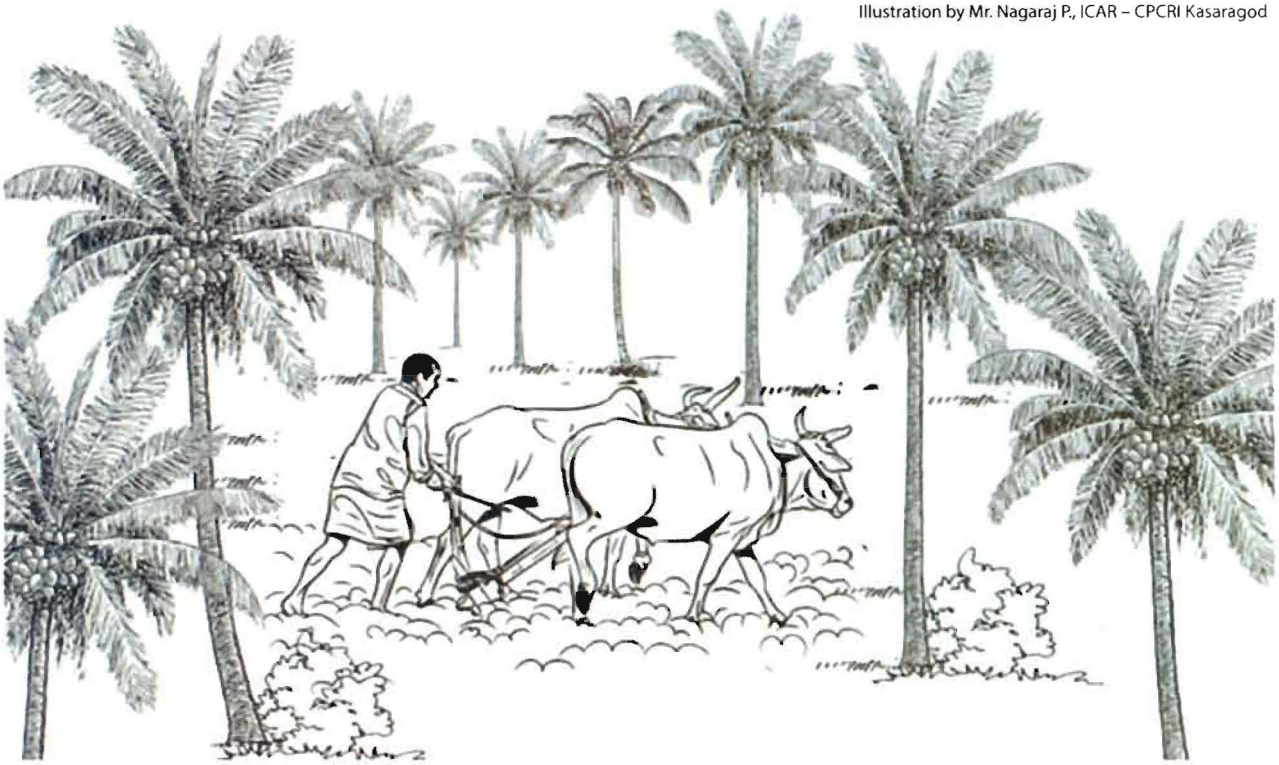
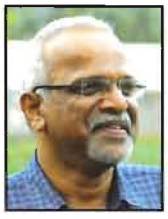


Illustration by Mr. Nagaraj P., ICAR – CPCRI Kasaragod

Reaching the coconut farming community –

A historical peep into the extension systems

Dr. Thamban C.
ICAR-Central Plantation Crops Research Institute, Kasaragod



Coconut, one of the most important of all cultivated palms, provides livelihood security to millions of people across the world. In India it plays a vital role in the agrarian economy of many states and coconut farming is intrinsically woven into the socio-economic and cultural fabric of people's lives.

Kerala, the land of coconut, has been the major coconut producing state which contributed 69% of the total area and 71% of total production of coconut in the country in 1956, the year of formation of the state. As per the latest statistics (2019-20) Kerala continues to be the major coconut producing state with 35% of the total area and 34% of the total production of coconut in the country. However, there is no historical evidence to believe that there was organised coconut cultivation in the state until 17th century. During the period of Dutch rule which started during 17th century and lasted up to mid 18th century period only some systematic efforts for promoting coconut farming started in the state.

The Dutch rulers established model coconut gardens in various parts of erstwhile Cochin and Travancore regions. These model coconut gardens motivated the local farmers to take up coconut cultivation in a systematic way. Subsequently, during 19th and 20th centuries various schemes were implemented by the rulers of Travancore, Cochin and Malabar regions to promote coconut cultivation.

World's first ever organised research on coconut was initiated in India by the British in 1916 by establishing four Coconut Research Stations at Pilicode, Nileswar, Padannakkad and Kasaragod in South Canara district of the erstwhile Madras Presidency. Since then, a substantial number of viable technologies related to crop improvement, production, protection and post harvest processing have been evolved through the systematic research for enhancing coconut productivity and profitability. Efforts to disseminate information about scientific farming techniques among coconut farmers were also initiated in the same period. Since then extension system in coconut sector has been evolving through different approaches, interventions and participation of diverse categories of stakeholders.

In this article an effort has been made to peep into the evolution of coconut extension system in our country. Accordingly, brief description about the extension systems and services in coconut sector during the pre-independence era, Central Coconut Research Stations and their pioneering extension interventions, extension interventions through Indian Central Coconut Committee and the current scenario of coconut extension system in India are included in this article.

Pre-independence era

Rulers of erstwhile Travancore were very keen to implement programmes for the development of agriculture sector and welfare of farmers. A separate Department for Agriculture was established in 1908 in the erstwhile Travancore and establishment of Model Agricultural Farms at Thiruvananthapuram and Kollam to demonstrate systematic crop management practices was a major initiative of the department. Interventions benefitting coconut growers also were given due consideration by the rulers. Travancore Manual narrates an incident of widespread occurrence of disease affecting coconut palms in the nearby localities of Muvattupuzha river in the year 1924 which was brought to the notice of rulers by a member of 'Sreemoolam Praja Sabha', the erstwhile assembly. Immediate action was taken to depute Mr N. Kunjan Pillai, the then Director of Agriculture Department to visit the localities and to suggest remedial measures to manage the coconut disease to benefit coconut growers.

Central Coconut Research Stations and their pioneering extension interventions

In the initial years of their functioning onwards, the coconut experimental stations in four locations established under the erstwhile Madras presidency were making efforts to disseminate information about improved cultivation practices of coconut to enable farmers to realise higher productivity. Mostly the efforts were targeting the local cultivators with whom the experts of CCRSs interacted on scientific aspects of coconut cultivation. The front line extension services rendered by the CCRSs in the initial years mainly focused on providing farm advisory services on improved cultivation practices and supply of coconut seednuts and seedlings to the local farmers. Annual reports of Coconut Research Stations give an account of such extension initiatives. The annual report of the coconut experiment stations for the year 1924-25 had narrated these efforts as ".....The officers stationed at these farms and the district officers are trying to introduce improvements in the cultivation of crops and their services and advice are always at the disposal of the local agriculturists...".

It was reported that every year the demand for farm seedlings was increasing as the farmers considered the Coconut Research Station as a credible source of quality coconut seedlings. Other services such as hiring out bullocks for ploughing coconut gardens were also provided to the coconut farmers.

The annual report for the year 1926-27 had narrated the impact of farm advisory services pertaining to ploughing interspaces of coconut palms as ".....The advantages of ploughing coconut garden have now been realised by coconut growers. The demand for farm pairs was very keen. One of the pairs was hired out for 105 days from Kasaragod alone...." . Technology transfer interventions of coconut experimental stations continued afterwards through the Indian Central Coconut Committee established in 1945.

Extension interventions through Indian Central Coconut Committee

Indian Central Coconut Committee was established in 1945 to implement measures for the development

of Indian coconut industry. It was a turning point in the history of organised efforts for the integrated development of coconut sector in the country which paved way for streamlining development and extension initiatives to benefit coconut growers. The committee was mandated to make available to the public required information about coconut industry, provide advices to farmers on improved cultivation practices and to organise publicity activities for the improvement of coconut industry, coordinating research on coconut and to provide policy inputs to central government on coconut development programmes. Collection of statistics pertaining to data on area, production and productivity of coconut in the coconut producing countries and in different states in the country, price situation of coconut and coconut products prevailing in the major markets, data on export and import of coconut products etc was also facilitated by the committee.

An Agricultural Assistant was appointed in the committee office to disseminate information among farmers on improved cultivation technologies and plant protection in coconut. Another post of Coconut Propaganda Officer was created in 1951; when Coconut Development Officer was appointed in 1956 January this post was abolished.

Publication of Coconut Bulletin in English, Malayalam and Kannada was another major activity aimed at dissemination of scientific information on various aspects of coconut farming to benefit coconut growers and other stakeholders. As a monthly publication, Coconut bulletin carried articles on different aspects of coconut cultivation besides regular items viz., Letters to the editor, recommendations for cultivation practices to be adopted for the month, You ask, We answer, News and Notes, Gleanings from other journals, Weather Review, Market surveys and Market reports.

The name of the Malayalam publication 'Nalikera bulletin' was changed into Indian Nalikera Journal in May 1977 which is being continued to be brought out by Coconut Development Board as a popular monthly journal on coconut.

Indian Coconut Journal was brought out as a quarterly publication since 1947 October which mainly included articles on technologies evolved at coconut research institutions. Subsequently, the journal continued to be published as a monthly publication since the year 1977. Hence, the current year ie 2022 is the 75th year (Platinum Jubilee) year of publication of Indian Coconut Journal as a source of information on various aspects of coconut farming which is highly valued by coconut growers, extension personnel and other stakeholders.

Extension literature on pest and disease management in coconut in Malayalam and Kannada was also brought out to benefit coconut farmers. A book on Coconut Cultivation Practices was published in English, Malayalam, Tamil, Telugu and Kannada which was sold at a nominal rate of 10 anas !!

Indian Central Coconut Committee also took initiative to produce a video film on coconut cultivation in English, Malayalam, Tamil, and Kannada languages to disseminate scientific coconut production technologies to benefit coconut growers.

The committee took over the coconut research station functioning at Kasaragod in 1947 and established Central Coconut Research Station, Kasaragod. Travancore government established an agricultural research lab at Quilon and a field station at Kayangulam in 1937 mainly to conduct studies on coconut plant protection. In 1948 Indian Central Coconut Committee established the Central Coconut Research Station in Kayangulam. This centre was having its origin in the erstwhile research lab and field station in Quilon and Kayangulam.

Govt of India abolished Indian Central Coconut Committee in 1966 and the administrative control of Central Coconut Research Stations functioning at Kasaragod and Kayangulam was taken over by Indian Council of Agricultural Research and the responsibility for implementing programmes for the development of the crop was entrusted to the Directorate of Coconut Development which was later transformed itself into the Coconut Development Board (CDB) through a Parliament Act in 1981.

Subsequently Central Plantation Crops Research Institute was established under ICAR in 1970 by merging the CCRS at Kasaragod and Kayangulam and Central Arecanut Research Station functioning at Vittal and its sub centres located in various parts of the country.

Extension system in coconut sector - Current scenario

Different agencies are involved in the development and dissemination of technologies as part of the broader coconut innovation system. Important organizations conducting research on coconut in India include ICAR-Central Plantation Crops Research Institute (CPCRI) under the Indian Council of Agricultural Research (ICAR) and the State

Agricultural/Horticultural Universities. ICAR-Central Plantation Crops Research Institute (ICAR-CPCRI) is the pioneering research organization in India conducting research on different aspects of coconut cultivation. CPCRI also coordinates research on coconut within the country through the All India Coordinated Research Project (AICRP) on Palms. Currently, 15 centres are conducting research on coconut under AICRP on Palms. State agricultural/ horticultural universities which are in the major coconut-growing regions undertake research programmes related to coconut through their academic programmes and also through AICRP on Palms.

Coconut Development Board (CDB) under the Ministry of Agriculture and Farmers Welfare, Government of India is another agency which is involved in facilitating coconut research in India. CDB has been actively supporting coconut research by funding research projects for developing technologies for processing and product diversification, management of insect pests and disease affected coconut gardens. To promote product diversification and by-product utilization of coconut a Technology Development Centre has been established at Vazhakulam near Ernakulam in Kerala under CDB.

The scheme of uptake pathways for coconut research output in India is depicted in Fig. 1 (Thamban and Jaganathan, 2016).

Various agencies are implementing technology transfer programmes for the sustainable development of coconut sector. Mainstream extension system with Ministry of Agriculture and Farmers' Welfare at the centre and State Agriculture/Horticulture Departments at state level implement technology transfer and developmental schemes for the improvement of coconut sector. Extension programmes relevant to coconut are also implemented through the Agricultural Technology Management Agency (ATMA) initiative supported by Central and State governments. Coconut Development Board (CDB) is another important organisation in the country which organise various development and extension initiatives for the development of coconut sector in India. It is a statutory body established under the Ministry of Agriculture and Farmers Welfare, Government of India for the integrated development of coconut cultivation and industry in the country with a focus on productivity increase and product diversification. Krishi Vigyan Kendras (KVKs) located in districts having coconut as a major crop implement interventions for conducting On Farm Testing (OFTs), Front Line Demonstrations (FLDs) and extension activities pertaining to technologies for enhancing productivity and income from coconut farming. Farmer producer organisations supported by governmental agencies also involve in the implementation of extension and development interventions in coconut sector. Local Self Governments (LSGs) also implement development interventions in coconut through decentralised planning process. Various NGOs and private sector organisations are also involved in organizing technology transfer activities in coconut.

Front-Line Extension Programmes of ICAR-CPCRI

The front-line transfer of technology activities in coconut implemented by ICAR-CPCRI include conventional approaches like training programmes; front-line demonstrations; information communication through mass media, exhibitions; seminars; krishi melas; and group meetings, providing consultancy through field visits and replying postal queries etc and also alternative extension initiatives

in coconut pilot tested through action research projects. The important alternative extension initiatives in coconut which were pilot tested through action research projects at ICAR-CPCRI aiming at improving technology utilisation by farmers included i) Participatory technology transfer approach (PTTA) for coconut root (wilt) disease management ii) Area wide community extension approach (AWCA) for management of coconut pests and diseases iii) Farmer Field Schools (FFS) for technology transfer in coconut iv) Community Based Organisations (CBO) for sustainable income enhancement in coconut sector as validated under the multi-country IFAD project implemented by CPCRI on 'overcoming poverty in coconut-growing communities', CDB funded project to facilitate cluster approach for improving productivity and income from small and marginal coconut based homesteads and under the ICAR sponsored National Agricultural Innovation Project (NAIP) sub-project on 'Value chain in coconut'. The Information and Communication Technology tools (ICT) have been effectively utilized ICAR - CPCRI for technology dissemination in coconut. The Institute has developed an interactive multilingual mobile application customized to farmers of different states, named 'e-kalpa' which was pilot tested and refined with components such as knowledge base, field issue management, synchronized farming, input calculator and crop information. The multilingual App is available in English, Hindi, Malayalam, Kannada and Bengali languages.

Extension initiatives of Coconut Development Board (CDB)

The Coconut Development Board which came into existence in 1981 is a statutory body established by the government of India for the integrated development of coconut cultivation and industry in the country. CDB has been implementing various technology transfer programmes for the development of coconut sector in the country. The Board brings out several publications, including a popular journal in several languages, to promote coconut-based technologies. CDB also participates in exhibitions, seminars, workshops and entrepreneurship development programmes, both in India and abroad, and organizes training programmes for coconut farmers and producers on improved methods of cultivation and latest technologies in coconut processing. Coconut Development Board has been implementing 'Friends of Coconut Trees (FoCT)', an innovative capacity building programme, for rural youth since the year 2011. This initiative aimed at empowerment of rural youth through skill training to support coconut growers for coconut climbing and other crop management practices including harvesting and plant protection. CDB implemented the FoCT initiative to tackle the problem of acute shortage of trained coconut palm climbers for harvesting and plant protection activities which is a major constraint experienced by coconut growers. Organizing the unorganized coconut sector through farmer's collectives is one of the most important activities of Coconut Development Board (CDB). The producer's collectives will have to be strengthened and they need to be facilitated to access forward linkages with regard to technology for enhanced productivity, value addition of feasible products and market tie-ups. The Coconut Farmers Producer Organizations have a three tier structure consisting of Coconut Producers Society (CPS), Coconut Producers Federation (CPF) and Coconut Producers Company (CPC). Formation of FPOs under the CDB scheme has created awareness among coconut growers about the importance of group approach for reducing cost of cultivation and also for enhancing income through better technology adoption giving thrust on value addition through product diversification. CDB is recognized as the National Information and Documentation Centre for coconut in the country, and it has a nationwide information network using modern information technology.

State Agriculture and Horticulture Departments

The agriculture and horticulture departments in the major coconut-growing states in the country implement various development schemes and extension programmes for the benefit of coconut farmers. Many of the states have been implementing separate programmes for the production and distribution of planting materials and fertilizers as well as distribution of plant protection chemicals and biocontrol agents against coconut pests. Financial incentives are also provided in the form of subsidies for irrigation infrastructure. Organizing coconut farmers at grass root level for group management of coconut production activities, conducting farmers training programmes and organizing other extension programmes are the major activities of these departments.

'Keragramam project' is a novel initiative implemented by State Department of Agriculture, Government of Kerala. State Department of

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Agriculture Development and Farmers' Welfare, Government of Kerala has been implementing Keragramam, a project for integrated management of coconut gardens on cluster basis since 2012. The project is implemented in a compact area of 100 ha for a consecutive period of three years in each of selected coconut growing gramapanchayats in the state. Every year the project is extended to new gramapanchayats. Incentives are provided to take up timely adoption of scientific crop management practices , removal of senile unproductive palms and replanting with good quality seedlings. Viable proposals by farmer clusters, SHGs, NGOs and FPOs to start enterprises on coconut processing and value addition also are supported under the project. It is envisaged to facilitate formation of ward level/ panchayat level Kera samithy (coconut society) to organise activities under Keragramam project on a group approach for taking up cultural operations, application of manures and fertilizers and plant protection in coconut gardens. Kera samithy has to be registered under the Charitable Societies Act.

Interventions through LSGs

Besides the above, local self governments like grama panchayats also implement location-specific development/extension interventions for sustainable development of coconut under the technical guidance of the agriculture and horticulture departments through decentralised planning initiatives.

Entrepreneurship development programmes

Besides conducting conventional training programmes to benefit coconut growers on technologies for enhancing productivity and income from coconut farming, different agencies also organise training and capacity building programmes to benefit prospective entrepreneurs in coconut sector. ICAR supported Agri-Business Incubation Centres (ABIC) in research institutes like CPCRI and SAUs provide technology and skill up gradation, inputs supply and market support leading to promotion of viable enterprises and sustainable employment to entrepreneurs on commercialised coconut technologies. Technology Development Centre and Quality Testing Laboratory at Vazhakulam in Ernakulam District of Kerala state under the CDB Institute of Technology (CIT) also offer entrepreneurship development programmes to benefit entrepreneurs in coconut sector.

Mass media for technology transfer

Mass media, both the print and electronic media, have substantially contributed for technology dissemination in coconut by creating awareness among coconut farmers and other stakeholders abount technological innovations. The classic publication entitled 'The Coconut Palm - A monograph' authored by Dr K.P.V. Menon, Dr. K.M. Pandalai published by Indian Central Coconut Committee in 1958 is worth mentioning. 'Kerala Karshakan', the farm magazine brought out by Farm Information Bureau under the State Department of Agriculture, Government of Kerala has been in the forefront of dissminating innovations in coconut since it started publication in the year 1954. There are many other farm publications and newspapers which give adequate coverage for coconut related

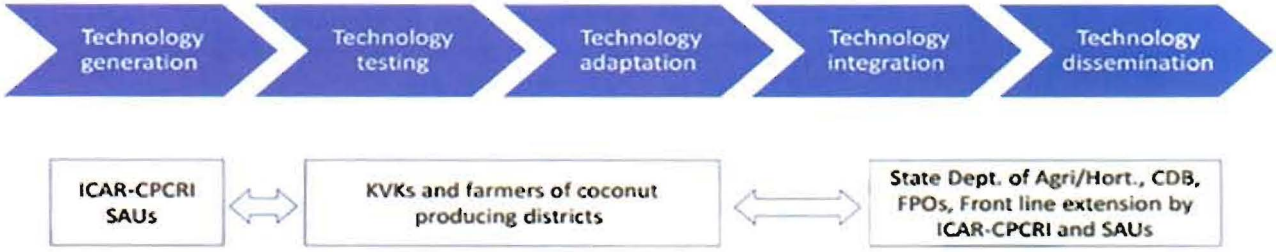

Fig.1. Scheme of uptake pathways for coconut research output

information. Coconut growers and entrepreneurs are hugely benefitted by the radio programmes like 'Farm and Home', other rural development programmes ad various programmes under 'Kisanvani' broadcast by All India Radio. SImilarly, farmers and other stakeholders are also benefitted by programmes telecast by Doordarshan Kendras and other television channels. Of late, social media also supplement the effort for technology dissemination in coconut.

Extension research in coconut

Research pertaining to multi dimensional analysis of technology generation, and transfer and utilization in coconut sector in the country has been carried out by ICAR-CPCRI. Studies on extent of adoption of scientific cultivation practices, constraints in adoption of technologies, action research projects on alternative extension initiatives including participatory technology transfer approaches for management of pests and diseases, area wide community extension approach for management of pests, Farmer Field Schools for technology transfer, Community Based Organisations for sustainable income enhancement in coconut sector, field level scenario of coconut based farming systems, performance analysis of FPOs in coconut value addition sector etc were conducted by the Institute under various national/international projects. Project on Technology Assessment and Refinement through Institution-Village Linkage Programme was implemented by CPCRI which revealed the effectiveness of participatory approach in the performance assessment of various technologies related to intercropping, nutrient management and crop protection in coconut. Some of the innovative extension approaches in coconut, especially participatory group approaches for better technology integration in the small and marginal coconut holdings, which were pilot tested through action research projects at ICAR-CPCRI have been scaled up by coconut development agencies through their schemes to improve technology utilisation for higher productivity and income.

Conclusion

Extension system under the coconut innovation system in India has evolved over the years and currently it is represented by various agencies with diverse set of objectives and types of interventions. The extension system, along with research system, has been able to substantially contribute for the growth of coconut sector in the country benefitting cultivators and other stakeholders, especially those bestowed with poor resource endowments. Presently farmers experience various constraints to make coconut farming a remunerative enterprise. They face problems such as price instability, low productivity due to soil related constraints, yield loss due to invasive and emerging pests and diseases, climate change, lack of skilled labour and high wage rate, low level of value addition, lack of quality planting material etc. To be effective, extension approaches need to empower farmers and other stakeholders to address these challenges. Of course, innovative extension approaches pursued by some of the important stakeholders in the coconut extension system have been able to innovate and streamline their activities to meet the challenges faced by the sector. Effective coordination in the planning and implementation of extension interventions by the different agencies in coconut sector would definitely enhance the effectiveness of interventions and hence would be able to serve the coconut farming community and other stakeholders in a better way. ■

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