

Development efforts in coconut – A journey parallel to the century old research

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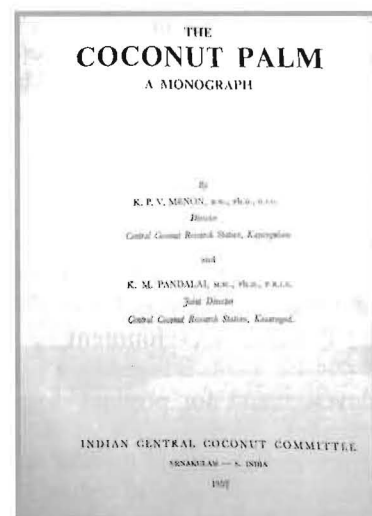
Introduction

When we are celebrating 100 years of coconut research in India, a recap on the development agencies and their yeoman service in bringing coconut sector to the prestigious present status would be ideal. When India attained independence in 1947 the research efforts in coconut had surpassed three decades with minimum support for development. The research efforts on coconut made its beginning in 1916 in four research institutes established under Madras Presidency at Pilicode, Nileswaram (two stations) and Kasaragod. There was no specific agency for coconut development at that time. These stations were shouldered with the mandate of research of various coconut growing soil types in northern Kerala and were under the administrative control of Deputy Director of Agriculture, Thalasseri. In 1931 Dr. J.S. Patel, the renowned oil palm scientist took over the administrative control of these research stations. The first attempt in exploiting the hybrid vigour in coconut was started by Dr. Patel during this period. The first TxD hybrid using Tall palm as female parent and Dwarf as male parent evolved which became a revolutionary breakthrough in crop improvement studies in coconut. Organized development efforts in coconut had its beginning just before India became independent. Now that the crop has emerged as the most beneficial crop to the humanity, having global acceptance, the development

agencies instrumental behind the process and their efforts and impacts are briefly discussed in the article.

Indian Central Coconut Committee (ICCC)

The year 1945 marked another significant milestone in coconut sector. The India Central Coconut Committee (ICCC) came into existence with its headquarters at Ernakulam in Kerala state. ICCC was vested with statutory powers for undertaking systematic development and research in coconut. The main functions of the Committee were to undertake, assist and encourage agricultural, industrial, technological and economic research on coconut; to supply technical advice to growers and to persons engaged in coconut industry; to encourage the adoption of improved methods in coconut cultivation; to improve marketing of coconuts and coconut products in India and abroad and suggest



suitable measures to prevent unfair competitions; to promote and encourage cooperative efforts among the coconut growers and the coconut industries; to fix grade standards of copra and its products; and to collect statistics from growers, dealers, millers and other sources on all relevant matters of coconut industry. It was during the Committee's period the extension activities in coconut were given more thrust. The Committee started 'Coconut Bulletin' in 1947 which later on renamed as Indian Coconut Journal and Indian Naliker Journal, the first ever monthly publication dedicated to coconut in the country. In 1953 its Kannada version also was commenced. The book, 'The Coconut Palm - A Monograph' by Dr. K.P.V. Menon and Dr. K.M. Pandalai still enjoys the status of the best publication ever made on coconut crop.

The Committee implemented several research and development programmes in different coconut growing States. The Committee set up two central coconut research stations one at Kasaragod in the Cannanore District in 1947 to tackle the problems of fundamental research and the other at Kayamkulam in Quilon District in 1948 to investigate the problems connected with pests and diseases. Besides, regional coconut research stations were set up at Kumarakom and Balaramapuram in Kerala, Arsikere in Karnataka; Ambajipet in Andhra Pradesh; Ratnagiri in Maharashtra; Sakhigopal in Orissa and Kahikuchi in Assam with the support of the state governments. At the coconut research station, Kasaragod research on agronomy, botany, cytogenetics and analytical chemistry was intensified by commencing separate divisions for each discipline. The state research laboratory, which was functioning at Quilon, Kerala and Research Station at Kayamkulam, where work on coconut root wilt disease was in progress were also transferred to the Committee. It was during the Committee's period that the germplasm exchange programme was intensified and the collection of indigenous germplasm initiated. Along with adaptive research, technological research on coconut too received attention for the first time during the Committees' period. The Committee designed and popularized improved copra kilns for producing quality copra and promoted studies on processing through CFTRI, Mysore.

The performance of the Committee had reflected in the production front of the period as well. National production which remained at 3332 million in 1950-51 was increased to 5546 million in 1968-69.

Regional Office for Coconut Development

Consequent to the abolition of the Indian Central Coconut Committee, a Regional Office for Coconut Development was formed by the Government of India at the Committee headquarters itself as an interim arrangement to carry out the development activities

which were in operation in different parts of the country. The Regional Office functioned only for one year and the same was abolished in 1967 when the Directorate of Coconut Development came into existence.

Directorate of Coconut Development (DCCD)

The Directorate of Coconut Development came into being under the Ministry of Agriculture, Govt. of India in 1967 with the functional responsibilities of planning and co-ordination of central and state sector programmes on coconut development in the country. For assisting in the planning process, an advisory body viz. Indian Coconut Development Council was also constituted giving representation to varied interests in coconut industry. DCCD monitored many Centrally Sponsored programmes viz., production and distribution of quality seedlings, laying out demonstration plots, adoption of plant protection measures, improvement of marketing facilities including establishment of regulated markets, fixation of grade specifications for coconut oil etc. The programmes implemented by the Directorate during different spells are discussed separately. The research activities kept under the ambit of these organizations till then were shifted to the Indian Council of Agricultural Research (ICAR) through the Central Plantation Crops Research Institute (CPCRI) and the Directorate of Coconut Development (DCCD) was solely vested with the development functions of the crop. The Directorate functioned till the formation of the Coconut Development Board in 1981.

Coconut Development Board

The Board was constituted as a statutory body by an act of Parliament viz. Coconut Development Board Act (1979) for the integrated development of coconut industry. The major functions of the Board inter alia include adopting measures for the development of coconut industry, recommending measures for improving marketing of coconut and coconut products, regulating import and export of coconut and its products, adopting measures for assisting coconut growers to get incentive prices for coconut and its products, providing financial and other assistance for cultivation, processing and marketing aspects of coconut, fixing of grade specification and standard of coconut and its products etc.

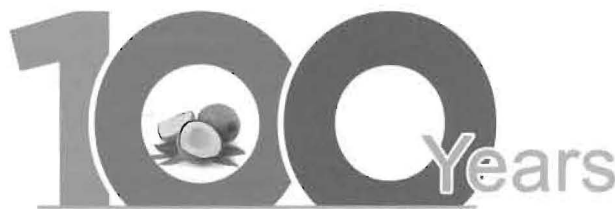
The headquarters of the Board is located on the land measuring 75 cents, acquired by the erstwhile Indian Central Coconut Committee. The Board commenced implementing development programmes from 1982-83 which was the third year of the Sixth Five Year Plan Period. The development programmes on coconut implemented hitherto by the Directorate of Coconut Development were given new direction by the Board by identifying key areas where efforts were to be concentrated. Location specific programmes were formulated with the objective

of creating permanent production potential, stepping up productivity, developing appropriate technologies for product diversification and improved marketing of the crop. Expansion of area under coconut, production and distribution of quality planting material, technology development, surveys, extension and publicity activities etc. were the major programmes implemented during the period. The Board started three Regional Offices at Bangalore, Patna and Chennai in different periods in order to co-ordinate and monitor the development programmes implemented in various states. Six state centres were also started in Andhra Pradesh, Orissa, West Bengal, Assam, Tripura and Andaman & Nicobar Islands. In the course of time Regional office Patna was wound up giving the unit, the status of state centre and State centre Guwahati was elevated to the status of Regional Office. Recently State centre Patna has reinstated as Regional office. Demonstration cum Seed Production Farms for coconuts with the objective of production of hybrid seedlings as well as to demonstrate the scientific cultivation technologies were started in ten states comprised of traditional and non-traditional areas in an area of 340 ha.

The Board had made a beginning on the technology development of coconut by starting a Technology Development Centre for coconut, attached to the headquarters of the Board which was later on shifted to Vazhakulam in Ernakulam district in a leased land of one acre. At present in addition to the above field network, the Board has got one field unit at Trivandrum and a Market Development cum-Information Centre at New Delhi. The programmes implemented by different development agencies in different Plan periods and their impact are discussed at length under Five Year Plan programmes.

Development efforts during various Five Year Plan Periods

Coconut crop was not brought within the purview of the first Five Year Plan which started in 1951-52 and hence there was no separate allotment of funds for coconut development. However, the Indian Central Coconut Committee which came into existence in 1945 was carrying out its normal development functions. Some of the notable achievements during this plan period were the establishment of large number of coconut nurseries in different coconut growing states and establishment of biological control laboratory units for the multiplication of parasites against coconut pests. The publicity and extension activities were also given priority for popularizing the scientific coconut cultivation by introducing plant protection through several publications and other media. The activities during the First Five Year Plan Period could help in increasing the production level from 3282 million nuts (1950-51) to 4224 million nuts



(1955-56) and area from 0.63 million hectares to 0.65 million hectares.

Coconut research and development was brought within the purview of the Second Plan which commenced from 1956-57. Major thrusts were given on the production and distribution of quality seedlings, laying out demonstration plots, adoption of plant protection measures, improvement of marketing facilities including establishment of regulated markets, fixation of grade specifications for coconut oil, etc during this period. The Committee did meritorious service in the field of Agricultural Extension including publicity through its regular and adhoc publications. Sample surveys for the correct estimation of area and yield of coconut and cost of cultivation were taken up in Assam, Kerala, Madras, Mysore, Maharashtra, Andhra Pradesh and in Orissa. Parasite breeding stations for biological control of niphantis were first started during the second plan period. The Committee set up special sub-committee for organizing technological research through the existing technological institutes in the country. Schemes for the solvent extraction of oil from coconut oil cake and preparation of charcoal from coconut shell were sanctioned to be taken up at the Regional Research Laboratory at Hyderabad while preparation of vinegar from coconut neera and processing of de-oiled coconut cake so as to render it suitable for human consumption were sanctioned to be taken up at the Central Food Technological Research Institute, Mysore. The development activities undertaken during the period could bring about beneficial impact on coconut production, which reached the level of 4639 million nuts in 1960-61. The development activities undertaken during the period could bring about beneficial impact on coconut production, which reached the level of 4639 million nuts in 1960-61.

During the Third Plan period commenced in 1961-62, more emphasis was given to production oriented programmes in traditional coconut growing belts. The developmental activities of the second five year plan period were expanded and continued during the Third Plan. In addition, short-term production and productivity improvement measures like application of fertilizers and manures and adoption of irrigation facilities were also

introduced. A steady increase in coconut production was observed during this plan period. By the end of the Plan period the production was reached to 5035 million nuts which was 396 million nuts more than the production level recorded in 1960-61. During the mid Plan Period a study on coconut in India was undertaken under the aegis of the Committee on Natural Resources under the Chairmanship of Dr. M.S.Randhawa, Adviser (Resources) Planning Commission. The objective of the study was to analyse development measures taken till the period in the production of coconut, how far they could succeed and how far they had failed to achieve the set objectives. The outcome of the study posed potential for further expansion of coconut cultivation in Madras, Orissa, Gujarat and the Islands of Andaman, Nicobar, Laccadive and Minicoy. The scope for coconut cultivation along the banks of canals, bunds as well as in saline waste lands in the coastal belts as well as the potential for expanding the nursery programme was indicated in the study. The study also indicated an immediate need for survey of potential areas for coconut cultivation. Other observations which had a bearing on the coconut development in future were, package programme, compulsory grading of coconut oil for edible purpose, study on the demand and supply for the next 20 years and also to exploring the possibility of cultivation of African Oil Palm in suitable areas in the context that palm oil is a good substitute for coconut oil in soap making. Palm oil, however, made deep rooting as a strong substitute of other edible oils at later stage.

The third plan period was followed by plan break for three consecutive financial years ie. 1966-67, 1967-68 and 1968-69. During these years the programmes implemented previously were continued. New schemes viz. TxD seedlings production programme, establishment of Elite Seed Farm in Karnataka and subsidized supply of quality coconut seedlings in Gujarat were additionally sanctioned as Centrally Sponsored Schemes. During this period the production level reached 5546 million nuts and the area 0.99 million hectares.

A large number of short term and long term production programmes were taken up during the fourth Plan Period which began in 1969-70. The objective was to achieve an additional production of 1000 million nuts over a base level production of 5546 million nuts. However, some of the important short-term programmes like Package Scheme could not be taken up from the beginning. Nevertheless, it was in the Fourth Plan that some of the strategic long term production programmes kicked off. Production and distribution of hybrid planting material in the state of Kerala, Karnataka, Tamil Nadu and Andhra Pradesh, establishment of elite seed farm for TxT progenies in Karnataka and subsidized supply of quality planting material in Gujarat were implemented

as Centrally Sponsored Schemes. In the state sector, expansions of area under coconut and nursery programmes were taken up as long term measures. By the end of the fourth plan period the area under coconut increased to 1.102 million ha and production to 5851 million nuts.

During the Fifth Plan Period besides continuing the long term programmes initiated during the Fourth Plan, short-term productivity oriented programmes namely package scheme, laying out demonstration plots, production and distribution of TxD and DxT hybrid combinations, maintenance of elite farms, etc. were continued. In addition, surveys on cost of cultivation, coconut production and processing aspects also were undertaken during this plan period. Plant protection measures were given adequate thrust by adopting comprehensive spraying programmes, multiplication of parasites etc. A rejuvenation programme in the coconut root wilt disease affected plantations in Kerala was also introduced for the first time during the plan period. The production level touched 5662 million nuts

During the Sixth Plan Period which commenced in 1980-81, the development strategy took a new dimension with the formation of Coconut Development Board (CDB) on 12th January, 1981 as per Coconut Development Board Act 1979. Directorate of Coconut Development ceased its functioning with the establishment of the Board which monitored the implementation of the programmes implemented by the state governments till the formation of the Coconut Development Board in 1981. The Directorate of Coconut Development (DCD) ceased to exist with the formation of Coconut Development Board. But the Centrally Sponsored programmes monitored by the Directorate like package scheme, production and distribution of TxD seedlings, laying out demonstration plots, maintenance of elite farms etc. were continued.

The Board was mandated with the responsibility of formulating location specific programmes for the integrated development of coconut cultivation and industry in India. Board commenced implementing development programmes from 1982-83 which was the third year of the Sixth Five Year Plan Period. Coconut development activities were given new dimension with the objective of creating permanent production potential, stepping up productivity, developing appropriate technologies for product diversification and improved marketing of the crop. Expansion of area under coconut, production and distribution of quality planting material, technology development, surveys, extension and publicity activities etc. were the major programmes implemented during the period. The Board started one Regional Office at Bangalore during this period to co-ordinate and monitor the development programmes in Karnataka, Goa and Maharashtra. A Demonstration Cum

Seed Production Farm for coconut was also established at Mandya, Karnataka during this period. A comprehensive survey to assess the intensity of root wilt disease was carried out jointly by CPCRI, Department of Agriculture and Coconut Development Board in 1984 which brought out a production loss of 968 million nuts annually due to root wilt disease.

By the end of the Sixth Plan Period the area under coconut reached at 1.183 million ha and the production 6913 million nuts

The development programmes of the Board received further impetus during 1985-86 with the onset of Seventh Five Year Plan. The technology development which made a beginning in the Sixth Plan Period got widened during the seventh plan period by starting a technology development centre for coconut, attached to the headquarters of the Board which subsequently shifted to Vazhakulam, Ernakulam district in a leased land of one acre. Studies on product diversification giving emphasis on developing new products like coconut cream, bottling of coconut water, coir pith briquetting, timber utilisation, etc. were initiated under sponsored research programmes through the reputed research organisations like RRL, CFTRI, DFRL and MERADO. Since the importance of scientific management practices in coconut was felt essential, establishment of demonstration cum seed production (DSP) farms in different locations both traditional as well as non-traditional belts was taken up as a major activity. DSP farms were initiated during this plan period in Madhya Pradesh, Assam, Tripura and Bihar with the objective of demonstrating scientific coconut cultivation in these non-traditional belts and developing reliable sources of different cultivars and hybrids besides being a source of income to the Coconut Development Board.

Coconut cultivation in Kerala was under the grip of devastating root wilt disease. Cutting and removal of disease affected palms by giving compensation to the farmers along with introduction of improved management practices was a priority area during the Plan period with the objective to improve the productivity of coconut. This was in tune with the research recommendation that eradication of root(wilt) disease advanced palms and replanting with quality seedlings coupled with proper management would improve productivity of coconut.

It was during this period the Board could expand its field network. Second regional office of the Board was established in Patna, Bihar during 1985 to coordinate and monitor the development activities in the north and north eastern regions like Madhya Pradesh, Bihar, Tripura, Assam, Orissa, Manipur, West Bengal and U.T. of Andaman and Nicobar Islands. For close liaison with the state Agri/Hort. Department and direct implementation of some of the developmental activities, State Centres



were also established in the States under the jurisdiction of the Regional Office, Patna. Concerted efforts of these State Centres and Regional Offices could bring about notable improvement in the overall area, production and productivity level in the country and could boost the image of the Coconut Development Board at the national level especially in the north and north eastern states. In 1986 Government of India commenced the fixing of support price to copra, an initiative which is continued even now as a support measure to protect coconut farmers. The area under coconut reached the level of 1.47 million ha and production 9359 million nuts by the end of VII Plan Period.

With the initiation of a computerized coconut information centre at the headquarters, the Information network of Coconut Development Board was expanded with the objective of exchanging up-to-date information on all aspects of coconut industry among the major coconut growing countries in the world under the Integrated Coconut Information Service Programme (ICISP) initiated by the Asian Pacific Coconut Community (APCC).

Another milestone during this period was that an apex body in co-operative sector was registered in 1987 viz. KERAFED. The primary objective of KERAFED was to organize coconut growers by bringing them under the co-operative umbrella and to provide them with supplies and services to augment their income base by increased productivity and value additions. This was proposed to be achieved through an integrated system of production, procurement, storage, processing product diversification and marketing of coconut and coconut products at prices remunerative to producers and acceptable to consumers on a sustained basis. For taking up these activities about 900 Primary Agricultural Credit Societies (PACS) were brought under the purview

of Kerafed. A full-fledged copra processing plant was established by the Kerafed at Karunagapally in Kollam District with the annual processing capacity of 60,000 MT. Coconut oil marketed by Kerafed in consumer pack with the brand name 'Kera' was well accepted by the consumers and could generate considerable domestic and international demand for coconut oil.

The seventh plan period was followed by two plan holidays in 1990-91 and 1991-92. During these periods, programmes implemented during the Plan period were continued. A major policy decision was taken in 1990 declaring coconut as an 'oilseed crop of tree origin' by Govt. of India for giving more thrust for coconut development. But it was a fact that preference received by seasonal oilseeds was not made available to coconut. One State Centre Office of the Board was started in Andhra Pradesh during 1990-91 to implement and monitor developmental activities in close liaison with the State Horticulture Department.

The developmental programmes on coconut received further boost in 1992-93 with the approval of Eight Plan programmes. An enhanced budget outlay from 10 crores allotted in previous Plan to 79.29 crores helped to formulate more viable schemes. Major thrusts was given on the production and distribution of planting material, expansion of area under coconut and technology development as well as productivity improvement programmes like integrated farming in coconut holdings, integrated control of major pests and diseases, etc. Extension and publicity activities were also strengthened during the period. The activities of the DSP Farm Belbari, Tripura was disrupted during the period due to terrorist activity. Two more farms of 20 ha each were started in Kerala during the Plan Period in Ernakulam and Thrissur districts. Another 40 ha was alienated to Coconut Development Board by the Govt. of Andhra Pradesh for starting a farm at Vegiwada.

This period was witnessing serious allegation against coconut oil consumption in the pretext that it causes coronary artery disease (CAD). A study was entrusted to Biochemistry department of Kerala University under the guidance of Dr. T. Rajamohan on 'Effect of consumption of coconut kernel and coconut oil on the serum lipid profile' was concluded in 1995 which brought out positive results in favour of coconut oil. The Board hosted one of the international events of APCC in Kochi in 1995. In 1996 the HQs of Coconut Development Board started functioning in the 10 storied building constructed in its own land measuring 75 cents at the heart of the Cochin city. A second survey on root wilt disease was sponsored by Board through CPCRI and Department of Agriculture in 1996 which revealed reduction in intensity of root wilt disease to 24.05 %.

The Ninth Plan programmes of Board got clearance

in 2001-02, though the first year of the Plan was 1997-98. During the first three years the development programmes implemented during the Eighth Plan were continued. Establishment of two more farms was initiated during this period, one each at Vegivada (Andhra Pradesh), which alienated in previous plan end and Pitapilly (Orissa). The launching of a Technology Mission on Coconut for bridging the gap in the then existed measures, hosting of 37th Cocotech of APCC, rendering financial assistance of Rs.12.225 crores to the Government of Andhra Pradesh for rehabilitation of cyclone affected coconut gardens etc., were milestones. The national production level touched 12252 million nuts by 1999-2000. A study to find out the impact of consumption of coconut oil on Coronary Artery Disease was entrusted to Sree Chitra Tirunal Institute of Medical Sciences and Technology and the study results revealed negative correlation. The achievements of the Coconut Development Board were duly acknowledged by Asian and Pacific Coconut Community by honoring it with 'Tree of life' award.

The coconut plantations in the country confronted a severe setback in 1998. A dreaded pest, coconut mite, eriophyes guerrironis made a rampant spread in the plantations in the country which hit the production front and seriously affected the coir sector. Intervention of research and development agencies in controlling the menace worked out well, despite its prevalence in moderate level in many parts.

The Tenth Plan was initiated in 2002-03. The appointment of Smt. Minnie Mathew, as the first IAS Chairman of the Board gave new impetus to the vision and mission of Board. The programmes of the Board were dovetailed in such a way that coconut farmers also become part and parcel of implementation of Government schemes. The scattered nature of small and marginal farmers was a hindrance in production, processing and marketing front. Farmer participatory coconut clusters were formed and they became the conduits in implementing productivity improvement programmes. This had created overwhelming enthusiasm among the farming community. Technology Mission on coconut made strong footing and several coconut based industries started in various parts of the country by availing back ended credit capital subsidy from the Board. Product development gained momentum and many value added products were added to the series. A well planned multi media campaign highlighting the health benefits of coconut products was carried out in the length and breadth of the country which culminated in boosting the demand for coconut products especially coconut oil and tender coconut water even in non-producing areas.

The coconut festivals in 2005 and 2007 in Kochi

