Quality Planting Material Production for sustainable Development of Coconut Sector - Strategies and linkages

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Enhancing productivity through cultivation of improved varieties including hybrids is one of the major strategies suggested to make coconut farming more remunerative. In India, research on crop improvement in coconut conducted mainly by the Central Plantation Crops Research Institute (CPCRI) and State Agricultural/ Horticultural Universities through better utilization of genetic resources has resulted in releasing a substantial number of improved varieties having high yield potential and other desirable traits such as resistance to biotic and abiotic stress and suitability for tendernut purpose. In India, so far 27 improved varieties of coconut suitable for different agro-climatic zones have been released through application of mass selection by these research institutions, which include 17 tall and 10 dwarf varieties. Besides, 19 hybrids including eight Dwarf x Tall and 11 Tall x Dwarf hybrid varieties are also have been released for cultivation in different regions. The released hybrid varieties of coconut have yield potential of 2.79 to 6.28 tons of copra per ha per year in comparison to 2 tons of copra yield realized by the tall cultivars which are predominant varieties cultivated by coconut farmers.

Cultivation of high yielding improved varieties is one of the important means to enhance productivity of coconut to make it a remunerative crop. Though a large number of improved varieties and hybrids have been released by different research institutes, level of adoption of these varieties by coconut farmers is far from satisfactory. Lack of availability of quality seedlings continues to be a major problem faced by farmers in adopting the improved varieties. Coconut is a long duration crop with a long juvenile period spanning 7 to 10 years and a long productive period of above fifty years. Hence, use of quality planting materials is very important in realizing

Table 1. Hybrid varieties of coconut released in India

Hybrid Variety	Source population of parents	Nut yield (ha^{-1} $year^{-1}$)	Copra yield (t ha^{-1} $year^{-1}$)	States for which released
Chandra Sankara	COD x WCT	20532	4.27	Kerala , Karnataka, Tamil Nadu
Kera Sankara	WCT x COD	19116	3.78	Kerala , Karnataka,Maharashtra , Andra Pradesh
Chandra Laksha	LCT x COD	19293	3.76	Kerala , Karnataka
Kalpa Samrudhi	MYD x WCT	20744	4.35	Kerala, Assam
Kalpa Sankara	CGD x WCT	14868	3.20	Root (wilt) disease prevalent tracts
Kalpa Sreshta	MYDxT T			Kerala , Karnataka
Laksha Ganga	LCT x GBGD	19116	3.73	Kerala
Ananda Ganga	ADOT x GBGD	16815	3.63	Kerala
Kera Ganga	WCT x GBGD	17700	3.56	Kerala
Kera Sree	WCT x MYD	23364	5.05	Kerala

high productivity. There is high demand for seedlings of the released improved varieties and hybrids from growers. Of late, growers are showing keen interest in cultivating dwarf varieties of coconut also mainly to overcome the problem experienced due to lack of availability of skilled palm climbers and high wage rate.

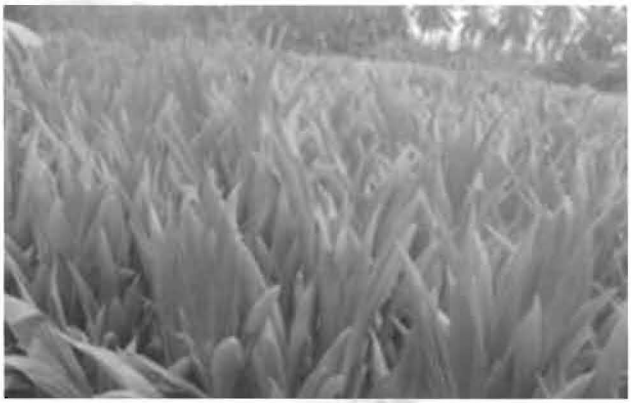
For a sustainable growth of coconut sector it is recommended to have tall, dwarf and hybrid varieties cultivated in the ratio of 60:20:20. However, the field level scenario indicates a different story; tall cultivars constitute more than 90 per cent of coconut palm population. While the national average productivity of coconut is 7215 kg copra per ha, in Kerala (which accounts for 36 per cent of coconut production in the country) the productivity is much less, ie only 5188 kg copra per ha. Predominance of senile and unproductive genetically inferior local tall palm population is a major constraint in improving productivity of coconut in major coconut growing tracts like Kerala. Massive programmes for replacing old and unhealthy palms are necessary to increase productivity and make coconut cultivation profitable. Replacing old palms will require enormous quantity of seedlings.

Demand for coconut seedlings and present status of supply

As per the 2011-12 statistics, Coconut is cultivated in 20.7 million ha in India. The average annual requirement of coconut seedlings is estimated at 15 million. However, production and supply of coconut seedlings by the public sector research and developmental agencies including CPCRI, State Agri/Horticulture Departments and Coconut Development Board is only 5.5 million seedlings per year. In Kerala on an average 28-30 lakh coconut seedlings are required annually. But as per the official statistics of coconut seedling supply for the year 2014 State Department of Agriculture, the major agency involved in coconut seedling distribution in the state, could supply only about 6.5 lakh seedlings which include about 6 lakh WCT, 9000 dwarf and about 40000 hybrid seedlings, revealing a huge gap between demand and supply. Unscrupulous elements have been hugely benefitted by the situation who supplies inferior/ spurious planting materials to farmers thus adversely affecting sustainable growth of coconut sector.

Strategies for augmenting planting material production

Both long term and short term strategies are required to overcome the challenges in production and distribution of quality coconut seedlings to meet the demand from coconut growers.



Long term strategies

The important long term strategy to meet the growing demand for coconut seedlings is to establish new seed gardens in suitable locations in different coconut growing tracts. Besides, rejuvenation of existing seed gardens and replanting with planting material of newly released varieties for different agro-ecological zones also needs much attention. Many of the coconut nurseries under the State Department of Agriculture/Horticulture do not have sufficient number of mother palms to produce seedlings of coconut varieties recommended to the respective regions. For example, Kerala state, the major coconut producer in the country has nine coconut nurseries and one seed garden complex for production and distribution of coconut seedlings in the state. A total of 3430 mother palms only are available in these nurseries of which 2905 mother palms are of WCT variety. The situation calls for urgent steps to restructure the existing coconut nurseries by establishing mother palms of released varieties using breeder seed or foundation seed as a long term strategy. Rapid multiplication of coconut using tissue culture technique is the most viable strategy for ensuring supply of quality seedlings of improved varieties. Hence, it is needless to emphasize the relevance and significance of evolving tissue culture protocol for rapid multiplication of coconut for which research has to be strengthened.

Short term strategies

Utilisation of superior genetic resources of coconut available in farmers' gardens is the most important short term strategy to meet the demand for coconut seedlings. However, it has to be ensured that utmost care is taken to locate and identify the superior mother palms of locally adapted coconut varieties in farmer's garden. Criteria fixed for identification of mother palms have to be scrupulously followed. Pressure to achieve the physical target should in no way dilute the scientific procedures to be followed in selecting mother palms. Public sector agencies

including CDB and State Agri/Horticulture Departments are having programmes for procuring seednuts from farmers' gardens. Recently in Kerala, State Department of Agriculture has implemented 'Kerasamrudhi' scheme which envisaged identifying mother palms of dwarf coconut varieties in farmers' garden and collecting seednuts. During this season about 2.8 lakh seednuts have been procured so far through this scheme.

Inventory with GPS based photo tags of available mother palms in farmer's garden can be prepared by all agencies involved in coconut planting material production. To achieve this, a network project needs to be prepared for effective implementation involving coconut research and development agencies in the country. Evaluation of mother palm resources of coconut in existing seed gardens to mark the superior mother palms also needs attention so as to enhance the efficiency of quality seedling production in these nurseries.

Quality control in coconut planting material production

Ensuring a viable quality control mechanism in coconut planting material production is critical in promoting sustainable growth of coconut sector. Unfortunately such a mechanism is yet to be evolved in our country. Since there is a huge gap between the demand and supply of quality coconut seedlings coconut growers many a times are exploited by agencies who sell inferior seedlings. Nursery accreditation should be made mandatory to ensure quality control in coconut planting material production and distribution. A committee needs to be constituted for each state involving members from CPCRI, SAUs, CDB and State Departments to prepare norms for accreditation. A separate committee needs to be constituted for disease-prevalent areas.

Mother palms in the seed gardens should be certified by the agency involved in developing the variety. Seed nuts should be collected only from the certified mother palms. All certified mother palms should be registered with CDB. Mother palm certification and registration should be made mandatory for nursery accreditation. There is a need to develop seedling standards, by the research agency which develop the varieties, for selecting 6, 9, 12 month old seedlings for distribution to farmers. Committee for nursery accreditation will have the responsibility for seedling certification and they also should ensure that only labeled seedlings are distributed from accredited nurseries. Training programmes for department personnel's/ Farmer Organizations/ Private Nurseries/ NGOs should be organized by research institutes/KVKs and certificate of attending such training will be made mandatory for applying for nursery accreditation.

Directorate of Plant Quarantine and storage to be requested to develop guidelines and monitor movement of coconut seedlings and enforce quarantine related rules. Only 12 months old coconut seedlings should be distributed to farmers for planting. Agencies distributing 6, 9 month old seedlings may do so after the seedling standards for such seedlings are developed.

Planting material production for the root (wilt) disease prevalent tracts

To augment seedling production in the root (wilt disease prevalent tract, selection and identification of disease-free mother palms in 'disease hotspots' should be given more emphasis rather than large scale procurement of seed nuts from other areas. For achieving this, a farmer participatory decentralized approach is to be followed with technical support from research institutions like CPCRI.

Location and trait specific varietal development

Research on coconut crop improvement needs to focus on location and trait specific varietal development. Simultaneous assessment of varieties under different levels of management with farmer participation for developing location specific varieties needs to be taken up by research institutes. Thrust should be given for developing varieties for rainfed areas, for low level of external input use, for tender nut purpose and production of neera. It is also necessary that guidelines are formulated for developing and releasing coconut varieties.

Multiplication of breeder stock/ foundation stock

CPCRI and State Agri/Horticulture Universities (through All India Coordinated Research on Palms Centres) need to focus on multiplication of breeder stock of released varieties. Foundation seed material should be supplied to seed gardens/ nurseries under Public / Private sector for strengthening the programme for quality seedling production and distribution.

Decentralized farmer participatory seedling production

Farmer participatory seedling production initiatives are to be promoted to meet the planting material requirement utilizing the locally available resources/mother palms. Decentralized approach for enhancing production of seedlings of improved varieties should be promoted by establishing more number of nucleus seed gardens. Such seed gardens may be encouraged in marginal and small farmer holdings. Identification of superior mother palms

There are some local initiatives worthy of emulation for decentralized farmer participatory seedling production. One such example is from a village in north Kerala. Under a unique scheme implemented by Madikkai gramapanchayat in Kasaragod District of Kerala state decentralized farmer participatory approach was successfully employed for the production of quality coconut seedlings with technical support from CPCRI. Under the scheme, members of five selected women self help groups from the panchayat were trained at CPCRI on nursery techniques of coconut including mother palm selection, seed nut collection, sowing and management of seedlings in nursery. Mother palms were identified in coconut farmers' gardens within the panchayat and 8,000 seed nuts were collected and sown in eight decentralized nurseries. About 5000 quality seedlings were raised in these nurseries managed by self help groups. Periodical monitoring for the proper management of nurseries was done by monitoring team consisting of scientists from CPCRI, extension personnel from the local Krishibhavan, people's representatives and Women SHG representatives was constituted to ensure production of quality seedlings. Training for members of self help group, field visit by scientists and other technical support for implementing the scheme were provided as part of extension activities of CPCRI. Funds for implementing the programme was mobilized from the decentralized plan of the panchayat for the year 2011-12 and the scheme was linked to NREGS for providing the labour component required for nursery management. The coconut seedlings raised under the scheme were distributed to the farmers on June 5th, World Environment Day at Madikkai. Sustenance of such local initiatives needs continuous support from coconut research and development agencies apart from the involvement of local self governments.

Under the COGENT/IPGRI sponsored project on "Developing coconut based income generating technologies in poor rural communities" implemented earlier during 2002-04 by Central Plantation Crops Research Institute (CPCRI) in Pallikkara village in Kasaragod District, Kerala State and Ariyankuppam village in Pondichery, farmer participatory methods were employed to analyse the coconut genetic diversity in farmers' gardens, to select mother palms from the identified elite local ecotypes and to raise decentralized community nurseries for production and distribution of quality coconut seedlings. Altogether 12 diverse coconut types, six in Pallikkara and six in Ariyankuppam coconut communities were identified and their significant characteristics were documented. The project activities revealed that genetic diversity occurs in farmers' coconut gardens in the selected communities which could be effectively used for sustainable development of coconut.

with farmer participation and its validation by seedling progeny testing as well as molecular markers assumes much significance. Such initiatives will empower local farming community for mother plam selection, controlled pollination for seednut production, community mangement of nursery and seedling selection. This can set in a movement that will result in the establishment highly productive palms leading higher productivity in coconut. Coconut Producers' Societies (CPS), the grass root level collective of coconut growers facilitated by Coconut Development Board, and trained youths under the Friends of Coconut Trees (FoCT) programme can play a significant role in the decentralised production and distribution of quality hybrid coconut seedlings. The process can be technically supported by research organisations such as CPCRI.

Seedling pricing committee

State based Pricing Committee may be constituted with officials from CPCRI, Universities, CDB and Department of Agriculture/ Horticulture, for arriving at a uniform pricing of coconut seedlings of Talls, Dwarfs, D X T, T X D and Poly bag seedlings.

National workshop on planting material production in coconut

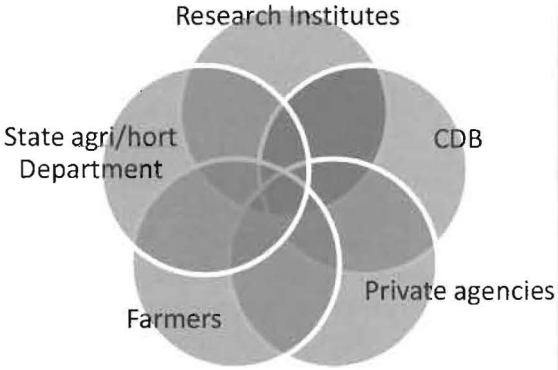
A 'National Workshop On Planting Material Production In Coconut -Issues And Strategies' was conducted at Central Plantation Crops Research Institute, Kasaragod on February 10th 2015. The main objective of

the workshop was to bring together all the stakeholders including research institutions, development agencies, NGOs, farmer organisations, and private entrepreneurs involved in production and distribution of coconut seedlings for evolving strategies for enhancing availability of quality coconut seedlings to meet the growing demand. The workshop assessed that there is a huge gap between the availability and demand for coconut seedlings in the country. About 80 delegates from different states representing agricultural universities, department of agriculture/horticulture, CDB, private entrepreneurs, farmers and NGOs participated in the workshop apart from members of Research Advisory Committee of CPCRI and scientists of CPCRI. Important strategies, including the ones discussed above, were delineated in the worksho to meet the demand for quality coconut seedlings Workshop also highlighted the need to foster stron functional linkages among various stakeholders to regulat the coconut planting material production and distributio

Strengthening functional linkage

Strong functional linkages among CPCRI, Universities CDB, State Department of Agriculture/Horticulture

Fig. Strengthening Linkage among all stake holders



Farmers Organizations, NGOs and private sector agencie are essential for effectively streamlining and regulatin the planting material production in coconut in the countr

From the Archives

Neera has been in the limelight from the good old times itself. We have been reading a lot about Gandhiji's interest in Neera and its value-added products for a long time. In many of the manuscripts and pamphlets we have seen such inscriptions on Neera. The Hindu republished an item on 1 st May 2015,which was published on 1st May 1965: a news on a government order regarding Neera being served in schools. The health benefits of neera were also mentioned.

FROM THE ARCHIVES

The Hindu.

(dated May 1, 1965)

Wilson moves for cease-fire

The Prime Minister informed the Lok Sabha [on April 30] that the British Prime Minister, Mr. Harold Wilson, had taken the initiative to bring about a cease-fire in the present conflict between India and Pakistan in the Kutch area. Mr. Wilson had addressed messages to the Prime Minister, and also to President Ayub Khan of Pakistan. Mr. [Lal Bahadur] Shastri said that while these discussions were taking place, it would not be in public interest to spell out the details of the British proposals. At the same time, the Prime Minister assured the House that the Government would not accept anything which was not consistent with what he had told parliament a couple of days ago. The Deputy Minister, Mr. Y.B. Chavan, told the House that he would make a statement on the military situation in Kutch after certain conclusions had been reached. He said it would be improper for him to give any operational details as it might jeopardise the life of our own soldiers. There was a hue and cry from the Opposition that the Government's attitude was unhelpful and that it was unwilling to take them into confidence.

'Neera' with meals for children

It is proposed to give a cup of "neera" along with midday meals to school children from the next academic year in Madras State. Giving this information to Pressmen [in Vellore] on April 29, Mr. V. Padmanabhan, Secretary, Khadi and Village Industries Board, said that in a couple of schools in Madras City and the Junior Approved School in Ranipet in North Arcot district selected for the experiment, it had been proved that the weight of pupils who had taken "neera" had increased. It had also been discovered by competent medical practitioners after prolonged research that the regular habit of taking "neera" had cured some of the eye diseases.

Increase in national income

The national income of India at constant (1948-49) prices was Rs. ,910 crores in 1960-61 and Rs. ,330 crores in 1962-63 as compared to Rs. 12,730 crores in 1960-61, the last year of the Second Five-Year Plan, says an official Press release. The corresponding per capita income at 1948-49 prices worked out to Rs. 299.8, Rs. 285.4 and Rs. 293.2 respectively. At current prices, however, the national income was considerably higher at Rs. 17,200 crores in 1962-63 and Rs. 15,400 crores in 1962-63. The corresponding per capita income at current prices was Rs. 370.7 and Rs. 329.4 respectively. This is revealed by the latest estimates prepared by the Central Statistical Organisation.