



# Coconut production in Kerala – trends, challenges and opportunities

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Coconut farming plays a vital role in the agrarian economy of Kerala state besides its unique place in the socio-cultural fabric of the region. It was always considered as the symbol of rural prosperity and for many years Kerala ranked first in both area and production of coconut in the country. However, Kerala, the 'land of coconut' is gradually losing its supremacy in coconut production scenario of the country. Its share in area as well as production of coconut in the country is declining over time and coconut growers are going through a crisis situation as they find it tough to manage the crop on a remunerative basis. Though coconut sector in the state of late confronted by umpteen challenges, there are way outs to combat and conquer the obstacles and steer the sector to a profitable vibrant and sustainable road map. The present article discusses in detail the existing challenges faced by the coconut sector as well as the opportunities and the way forward.

## **Trends of coconut production**

Coconut is the most important cultivated crop in

Kerala covering about 39 % of the net area sown in the state, as per 2013-14 statistics. Among the leading coconut producing states in India, Kerala rank first in area and second in production of coconut. Presently (2013-14), coconut is cultivated in the state in an area of 8.09 lakh ha with annual production of 5921 million nuts. The coconut sector contributes around 15 percent of total agricultural GDP of Kerala, thus inextricably linked to the agricultural economy of the state. It is estimated that there are about 3.5 million holdings and at least 5 million people depend on this crop directly or indirectly for their employment and livelihood. In spite of the vital role of coconut in the economy of the state, per palm productivity of this crop in the state is abysmally low at 42 nuts per tree, which is lower than the national average.

The area under coconut has been shrinking continuously since 2000 due to various factors. It has declined by 13 % from 9.26 lakh ha to 8.09 lakh ha during the period from 2000-01 to 2013-14 with a

negative average compound growth rate (ACGR) of 0.96%. During the same period, area under coconut in the country has increased by 17% (with ACGR of 1.15%). It is to be noted that Kerala's share in the total area under coconut in the country (2013-14) has declined to 38 % from the 62% share contributed in 1950-51.

Eventhough Kerala stands first in area under coconut in the country with 38% share, it is losing its share (from 44 % in 2000-01 to 27% in 2013-14) to other competitive states like Tamil Nadu which stands first in production with 30 % share in national production. Increase in production of coconut in Kerala state over these years is a mere 7% as compared to 71% at All India level. ACGR in coconut production is 3.9% and 0.48% at national and state level, respectively.

Productivity of coconut in Kerala in 2013-14 was 7322 nuts/ha which is 28% lower than the national average (10122 nuts/ha). It is also to be noted that the coconut yield in Kerala during 2000-01 was 86 % of national average which has fallen to 72%. The fact that productivity of coconut in Tamil Nadu (14872 nuts/ha) is almost double than that of Kerala clearly highlights the importance of improving the productivity of the crop in Kerala which is almost stagnant with a low growth rate of 1.4%, lower than half of the national growth rate.

State/All India	Particulars	Area ('000 ha)	Production (million nuts)	Productivity (nuts/ha)
All India	2000-01	1823.9	12678.4	6951
	2013-14	2140.5	21665.2	10122
	Change (%)	17	71	46
	ACGR(%)	1.15	3.90	2.72
Kerala	2000-01	925.8	5536	5980
	2013-14	808.6	5921	7322
	Change (%)	-13	7	22
	ACGR(%)	-0.96	0.48	1.46
	Share in 2000-01 (%)	51	44	86
	Share in All India 2013-14 (%)	38	27	72

### Challenges confronted

Constraints such as high level of market fluctuation/price crash in coconut, changes in the demographic characteristics of coconut growers with a shift towards absentee landlordism, predominance of senile and unproductive palms, predominance of small and marginal holdings, over populated stands of both coconut and

other trees in the homesteads, low level of adoption of crop management practices resulting in low productivity, depletion of natural resources in coconut gardens and soil related constraints, inadequate irrigation facilities, lack of availability of quality planting materials, lack of skilled labour and high wage rate, crop loss due to incidence of various pests and diseases, especially huge loss due to root (wilt) disease, low level of product diversification etc. adversely affects coconut farming in the state. As such coconut has become a neglected crop in the 'land of coconut' without getting adequate care and management.

### Policies and developmental interventions

The trade policies with respect to the edible oils at national level to a great extent affect the coconut oil prices of Kerala. This is slightly tricky wherein Kerala is the only state in our country which predominantly depend on coconut oil for culinary purposes and the elasticity of substitution to other cheaper oils like palm oil is very high in the hotel and confectionery industry as well as the households falling under lower economic strata. Hence liberal import policies adopted at the national level straight away affects the demand-supply equations of the state. Since our country does not produce enough quantity of edible oil to meet the requirements it is our policy to facilitate import of edible oils. Palm oil is the major edible oil being imported to India. During the oil year ended by October 2015 a total of 14.4 MT of edible oil was imported of which the major item (9.5 MT) was palm oil. Palm Oil seems to be the major competing oil for coconut oil in the domestic market.

Policy environment facilitating import of palm oil at reduced tariffs and distribution through public distribution system (PDS) at subsidized prices results in low price of palm oil in the domestic market. Hence, competitiveness of coconut oil compared to palm oil in the domestic market gets adversely affected and the excessive import of palm oil would trigger price crash of coconut. There is a need to re-calibrate the import duty structure and it is essential that within the framework of permissible limits, the tariff rates for the import of palm oil, both crude and refined are enhanced to protect the interests of Indian coconut growers.

The ASEAN-India Free Trade Agreement (AIFTA) is likely to have detrimental impact on Indian coconut sector, especially since ASEAN countries represent the major coconut producing region and are more competitive compared to India in respect of export of coconut products. The agreement is evolving one and the tariff rates fixed are ceiling rates, thus providing adequate flexibility to fix the tariff rates to lower levels. Although coconut and coconut oil are in the exclusion list of AIFTA, there is general commitment under AIFTA to review the exclusion list every year with a view to



improve the market access. Therefore, there always exists a threat in the case of coconut, seeing that, the existing price difference may facilitate the cheap imports in case of coconut is removed from the exclusion list.

Since 2009 Coconut Development Board has been designated as the Export Promotion Council to facilitate the export of coconut products (except coir and coir products). Since then many companies have been registered for exporting coconut products. South East Asian nations are far ahead of India in the export of coconut oil and other products. Support and incentives for the export of coconut products from India should be enhanced further taking into account the limitations of our country in the export front.

Coconut prices in India have been historically integrated with the coconut oil prices. Therefore, indubitably the coconut prices received by the farmers are integrated with the minimum support price (MSP) of copra. In general the coconut farmer prefers to sell fresh coconut when the price of coconut is attractive, as he receives a remunerative sum in his hand immediately and he can get rid of processing and transportation charges. Contrary to this if the copra and oil prices are lucrative; farmer prefers to do at least primary level processing which would augment farm level copra production. Therefore, the MSP for copra fixed at higher levels would certainly influence and act as an incentive for the primary value addition in coconut. The copra procurement system should be in such a fashion that the MSP ensures an incentive for processing to the coconut farmers when compared with that of selling fresh coconut. Other pertinent factors in this context of discussion are lack of effectiveness and efficiency in copra procurement by the agencies and inadequate infrastructural facilities for the storage of copra. It is noteworthy that for the most part of the year copra is

traded below MSP. In order to create an impact in the market and for the benefits of MSP to reach the genuine coconut farmers, adequate quantity of copra should be procured.

The studies on pattern of distribution of annual yield of coconut indicates that the number of nuts harvested varied from harvest to harvest and 60% of the production of a coconut palm is harvested during the peak production period i.e the first six months of the calendar year, and hence a stable price during these periods is of utmost importance for achieving profitability in coconut based farming system. Hence, the copra procurement scheme should be designed keeping view of this important aspect of coconut production in the country.

In Kerala, the coconut procurement system through Krishi Bhavans in association with KERAFED introduced in 2012-13 as a market intervention by state government has been beneficial to the coconut growers. However, to be effective, necessary logistics are to be arranged for procurement of coconuts through all Krishibhavans along with facilities for safe storage of nuts and also for primary processing of nuts into copra. Steps are also necessary to avoid delay in payment of prices to the coconut growers for the nuts procured. In this context it is encouraging to note the decision of state government to enhance the procurement rate from Rs.25 per kg of coconut to Rs. 27 per kg as declared during the last budget presentation.

#### **Need for a comprehensive coconut rejuvenation scheme**

The foremost strategy for improving the coconut production in Kerala should be focused on massive cutting and removal of root (wilt) disease affected coconut palms which are beyond recovery, removal of over aged palms; regulating the palm density and replanting with high yielding planting materials along with adoption of suitable agro-management practices in farmer participatory cluster mode. Major reason for non-adoption of improved varieties of coconut is lack of availability of quality seedlings. 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.

Replacing old palms will require enormous quantity of seedlings. 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, revealing a huge gap between demand and supply.

Since most of the existing seed gardens in Kerala



have been established more than 25 years back, the existing mother palms (especially dwarfs) in such seed gardens are nearing senility. Hence, urgent action should be initiated for replanting such seed gardens with parental lines of new and improved varieties recommended for the respective regions. Further, to increase the capacity for hybrid seedling production, a decentralized production mechanism is to be envisaged by maintaining a centralized pollen storage and supply mechanism.

The important long term strategy to meet the growing demand for coconut seedlings is to establish new seed gardens in suitable locations. Besides, rejuvenation of existing seed gardens and replanting with planting material of newly released varieties for different agro-ecological zones also needs much attention. 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. Identification of superior mother palms with farmer participation and its validation by seedling progeny testing as well as molecular markers assumes much significance.

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. Public sector agencies including Coconut Development Board and State Department of Agriculture 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. 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 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.

#### **Enhancing productivity in existing coconut gardens**

The second strategy for revitalising coconut sector in Kerala needs to revolve around interventions for ensuring adequate care and management of coconut palms in the existing gardens to enhance productivity.

The study funded by Kerala State Planning Board on fertility of soils of Kerala has revealed that soil related constraints viz., very strong soil acidity, extensive deficiency of secondary nutrients calcium and magnesium and wide spread deficiency of micro-nutrient boron are among the important factors for low productivity of coconut in the state. Hence, appropriate interventions are to be formulated and implemented to enable coconut growers to alleviate these constraints through appropriate inputs and crop management practices to enhance productivity of coconut in the state. Simple technology for vermicomposting of coconut leaves as part of on-farm organic matter recycling in coconut gardens is very relevant in the context of growing awareness about organic farming/eco-friendly farming in Kerala.

Rainfed cultivation of coconut is another important reason for low productivity in Kerala. Water scarcity experienced by the palms during summer from December to May months adversely affects coconut production. The problem is more severe in northern Kerala where rainfall distribution is highly skewed. In water scarce areas drip irrigation is to be promoted to irrigate coconut palms to achieve higher water use efficiency. If there is drip



irrigation facility, then the water soluble fertilizers can be applied to coconut palms along with drip irrigation (fertigation) for higher fertilizer use efficiency.

Crop loss due to pests and diseases is a major constraint experienced by coconut growers. Annual loss of 968 million nuts was estimated as the loss due to root (wilt) disease in Kerala. Community/group approaches ensuring active participation of farmers are needed for the effective implementation of integrated pest/disease management in coconut. There are success stories of local self governments effectively implementing decentralized participatory approach for pest/disease management in coconut especially control of bud rot disease, red palm weevil etc. Support of development/research institutions like CDB and CPCRI can be made available by the LSGs for the effective implementation of such schemes. Crop surveillance and timely forecast of disease incidence should be carried out by the research and development agencies in endemic areas.

**Popularizing coconut based multiple cropping/integrated farming**

Systematic coconut based cropping/farming system as a strategy to make coconut farming economically viable in small holdings needs to be highlighted. This strategy is highly relevant since presently coconut growers in Kerala are more exposed to economic risks and uncertainties owing to the high degree of price fluctuations. In spite of the obvious benefits of coconut based farming system over the traditional monoculture, the extent of adoption of the recommended cropping/farming systems is not at a satisfactory level. However, there are cases of farmers who are highly successful in field implementation of multiple cropping/integrated farming in coconut. Similarly, some grama panchayats also have successfully implemented interventions related to coconut based farming system under the peoples' campaign for decentralized planning programme. The potential for strengthening food and nutritional security through the adoption of appropriate coconut based intercropping/mixed farming also need to be effectively utilized.

**Value addition through product diversification**

Traditionally the post harvest processing of coconut has been confined to the production of edible and milling quality copra, coconut oil and coir and coir based products. Technological research has been successful in evolving appropriate processing technologies for the profitable utilization of products and by-products of the coconut palm including tendernut, coconut kernel, coconut water, coconut wood, shell and leaves. To cope with the market fluctuations, there is a need for product diversification and byproduct utilization. Hence, promotion of farm level and community level processing of diversified products and byproducts obtained from coconut palm are highly imperative. Tender coconut marketing is one of the profitable activities which need to be promoted in the state. Farmer's collectives as well as enterprising youths are to be supported in organizing marketing outlets in potential areas for tender coconut. Of late, virgin coconut oil is also getting popular as a value added product in the domestic and export markets.

Another strategic area which has raised lot of expectation is the potential for production and marketing of neera. Various value added products like coconut palm sugar, palm jaggery, coconut honey and coconut syrup can also be made from neera. Technologies are now available for preserving and packing coconut inflorescence sap as 'neera 'or sweet toddy as non-alcoholic health drink. The Government of Kerala has amended the abkari act and coconut producer federations are issued license to produce, process and market neera. Many of such federations have started producing and marketing neera. Constraints such as lack of skilled workers for neera tapping, high rate of drop out of neera technicians, cumbersome process involved in extraction of neera, non-availability of middle aged palms are reported to adversely affect the neera production and marketing. Further, efforts are needed to assess and refine the technologies made available for neera production so as to standardize the technologies for scaling up neera production on a commercially viable basis.

Encouraging more entrepreneurs in coconut sector by establishing 'Coconut Parks' by state government for organized processing for value addition will help coconut farmers to de-link the over dependence on coconut oil in determining coconut price.

**Promoting group approach**

Vast majority of coconut gardens in Kerala are small and marginal holdings which experience resource limitations. In general, the income from coconut farming in such fragmented holdings does not provide enough for meeting the requirements of farm families. Though technology options for enhancing income from coconut farming do exist, the fragmented holdings do not render themselves viable for the optimum utilization of



resources and the adoption of improved technologies by the cultivators. Group management of resources is suggested as a viable strategy to overcome the inherent weaknesses of the fragmented holdings. CDB has initiated the formation of Coconut Producer Societies (CPS) by associating 40-100 coconut growers in a contiguous area with a consolidated minimum of 4000-5000 palms. The objective is socio economic upliftment of the farmers through productivity improvement, cost reduction, efficient collective marketing and processing and product diversification. So far 7114 CPSs, 451 Coconut Producers Federations and 29 Coconut Producers Companies have been registered. State Department of Agriculture and LSGs also promote community approach among coconut growers at grass root level. Effective mechanism should be evolved to utilise these farmer producer organisations at grass root level as a platform for effective implementation of coconut development initiatives by agencies such as CDB, Department of Agriculture and LSGs ensuring active participation of coconut growers.

#### **Making available skilled climbers**

Lack of skilled palm climbers for undertaking timely plant protection operations as well as harvesting is another serious concern. CDB has facilitated training of

rural youth on palm climbing using mechanical device under the popular scheme 'Friends of Coconut Trees (FoCT)'. They are also trained on crop management practices including pest/disease management. LSGs can play a role in linking trained skilled palm climbers and coconut farmers by promoting labour bank concept under decentralized people's planning to address the problem of shortage of labour and high wage rate.

#### **Participatory research/ extension and linking institutions**

2016 is the centenary year of coconut research in the country. Kerala state is blessed with the renowned coconut research institutions including ICAR-CPCRI and research stations under KAU. Though large number of technologies has been generated for the improvement of coconut by these research institutes and various agencies are involved in the transfer of technologies in coconut in Kerala by implementing various extension activities and development programmes, the extent of utilization of the available technologies at farmers' level is not at a satisfactory level. The present scenario of technology adoption in coconut calls for the technology generation and dissemination programmes based on a viable extension strategy with the active participation of stakeholders. Further, effective linkage is to be established among different research, extension and development agencies and coconut farming community through well co-ordinated participatory research/ extension programmes for ensuring a meaningful technology generation and transfer in coconut. ICAR-CPCRI has implemented many initiatives on coconut in Kerala which have clearly demonstrated the efficacy of participatory community extension approaches for technology refinement and utilization. Efforts are needed to scale up these successful models for coconut development in Kerala.

#### **Conclusion**

Coconut sector in Kerala state faces challenges of various dimensions and effective steps are to be taken up on a priority basis to regain the past glory of coconut prosperity. Strategies emphasizing implementation of a comprehensive coconut rejuvenation programme, enhancing productivity through better technology integration and value addition through product diversification are needed besides a congenial policy environment. Community action should be facilitated among the small and marginal coconut growers at grass root level to revitalize the coconut sector in the state. A well developed sectoral innovation system of coconut in the state wherein effectively coordinated research and developmental activities with favourable policy outcomes along with participatory farmer initiatives, would certainly place the coconut sector of the state in forefront position among plantation crops. ■