

Status, problems and prospects of coconut cultivation in Gujarat

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The coconut palm is one of the five legendary Devavrikshas and is eulogised as Kalpavriksha - in Indian classics. All parts of the palm are used in one or another way in the daily life of the people of the country in the traditional coconut growing areas. Its fruit is called Lakshmi Phal and is used in social and religious occasions irrespective of whether the palm is locally grown or not.

In India, coconut is cultivated in 18 states and 3 Union Territories. Almost 90% of total area under coconut cultivation and 93% of total production falls within four southern states viz., Kerala, Tamil Nadu, Karnataka and Andhra Pradesh. There are some other traditional coconut growing states where more area can be brought under coconut cultivation. Especially states like Goa, Maharashtra and Gujarat having favourable agro climatic conditions and coastal line offer good potential. Since coconut as a crop offers lot of opportunities for intercropping

and mixed cropping, a 'coconut based integrated farming system' is needed to be encouraged in these potential areas of traditional states. On the eastern coast, parts of West Bengal, Odisha and Andhra Pradesh are having conducive agro climatic conditions, where coconut based integrated farming system can be introduced. Non-traditional states like Bihar, Chhattisgarh, Jharkhand and the entire North Eastern states also offer areas which are quite suitable for coconut cultivation and coconut based farming system. In non-traditional coconut growing areas, there is a huge demand for tender nut and hence the coconut plantations solely dedicated for tender nut purpose are picking up recently and needs further encouragement.

Present status of coconut cultivation in Gujarat

Coconut is one of the important plantation crops of Gujarat state, particularly in coastal belt of 1600 kms,



the highest for any state in the country. As per statistics of 2015-16, the total area under coconut cultivation in Gujarat was around 22,813 ha. with a production of 312.68 million nuts and productivity of 13706 nuts/ha. thereby occupying the seventh position among Indian states in area and production and the fourth rank in productivity. About 60 per cent of the area and production of coconut comes from the undivided coastal districts of Junagadh, Bhavnagar, Valsad, Gir Somnath and Dev bhumi Dwarka. The area under coconut plantation in Gujarat has increased from 14,650 hectares in 2005-2006 to 22,813 ha in 2015-2016. Coconut is generally utilized as matured nuts during festival seasons and people are not much aware about the value added products.

Coconut research in Gujarat

In Gujarat, two major research organisations are working with a mandate to increase coconut production in the state. One is Agriculture Research Station (Fruit Crops), Mahuva (Dist.: Bhavnagar) under Junagadh Agricultural University which was established with an objective to bring fallow land of coastal area under horticulture crops like mango, coconut, arecanut, chiku, banana, etc. AICRP on palms centre was operating at the station, with the objective of evolving high yielding variety of coconut, to determine most suitable and effective agronomical practices for the coconut production, to supply the hybrid coconut seedlings to the farmers and to find out suitable plant protection measures against coconut pest and disease. Another station is, Horticulture Research Station, ASPEE College of Horticulture and Forestry, Navsari under Navsari Agricultural University, where in ICAR-AICRP on palms centre is operating since 2009. Both the centres are working with the objective of collection, evaluation and maintenance of indigenous and exotic germplasm of coconut palm, to generate germplasm for developing high yielding pest and disease resistant and high yielding varieties of coconut, testing of newly developed genotypes under various environments to find out their suitability,



Coconut nursery at Mahuva

to develop location specific production technology including harvest and post-harvest technology as well as organic farming practices, to produce and distribute good quality seedlings of different varieties of coconut and to disseminate production technology of coconut crop to the farmers using various extension tools.

Achievements of ICAR-AICRP on Palms centre

The AICRP centre helped in improving overall coconut yield and productivity of the state by encouraging farmers to use quality planting materials and advocating farmers for adoption of scientific technologies for coconut production.

Crop improvement

Germplasm collection and evaluation: Four local germplasms were collected and being evaluated.

Demonstration of released varieties of coconut: The coconut varieties Kera Bastar, Kalyani coconut-1, Kalpa Mitra, Kalpa Dhenu, Gauthami Ganga and Kalpa Prathibha were found suitable to the local agro-climatic conditions of the state.

Evaluation of cocoa clones for their performance as mixed crop in coconut gardens:

The clone VTLCC-1 performed better with respect to growth, yield and quality of cocoa.



Intercropping with turmeric



HDMSCS with banana and elephant foot yam

Crop Production

Development of coconut based integrated cropping system model:

- Turmeric as intercrop in coconut garden.
- The combinations of coconut + banana + turmeric + elephant foot yam + black pepper was found profitable compared to monocropping of coconut.

- Noni (*Morindacitrifolia*) as inter-crop in coconut: Noni was identified as a promising component crop in coconut based mixed cropping system where, the seedlings were found better compared to tissue culture plants.

- Farmers in Junaghad and Gir Somanath area are practicing the intercropping of banana and vegetable crop in coconut gardens.

Potential for coconut sector

Coconut cultivation should be extended to other non-traditional districts of the state besides the traditional coastal districts. It is estimated that another 40,000 ha area can be brought under coconut with the collaborative efforts of the Government of Gujarat as well as ICAR- All India Coordinated Research Project on Palms by implementing location specific programmes in the state. Even though Gujarat is a coconut producing state, there is no coconut oil production unit in the state. However, there is a good market for coconut oil for toiletry purpose with annual consumption of about 8 thousand tonnes per year. In summer months, demand for tender coconut is increasing. The consumption of edible copra is not much in the state whereas, the demand increases during the festival season. Desiccated coconut powder is mainly used by biscuits, bakery and sweets manufacturing industries. There are few manufacturing units in private and cooperative sector located in and around Junagadh, Bhavnagar and Valsad districts. Keeping in view of the potential for production and post-harvest processing of coconut, integrated development approach should be taken for further expansion of coconut production and development of coconut industries in the state.

Opportunities for enhancing productivity

Since the land holdings of coconut farmers in Gujarat state are very small, the suitable method for enhancing on-farm income is through the promotion of coconut based farming system. Government of Gujarat and ICAR-AICRP on Palms need to work together to converge various schemes/ programmes under NHM, RKVY, ATMA and state plan being implemented in the state to provide maximum benefits



to the farming community. More emphasis should be given to increase the area under coconut, improving the productivity of existing plantations, capacity building on the latest technology, skill training, awareness campaign for entrepreneurship on coconut based industry etc. Timely supply of quality planting material at the doorstep of the farmers should be ensured by the Government agencies. Concerted efforts need to be done by the Coconut Development Board as well as the Directorate of Horticulture, Government of Gujarat for improving the production and productivity of coconut by adopting innovative schemes and technologies suitable for the location. Integrated coconut based industry for value added products like packed tender nut water, desiccated coconut, virgin coconut oil, activated carbon, shell charcoal, coir based products etc. should be established in major coconut growing districts for increasing the coconut price at farm gate.

Financial assistance extended under NHM can be made available to the farmers for adopting coconut based farming system by integrating the implementation of suitable NHM and CDB schemes. In order to promote replanting/under planting with quality seedlings, the nursery programmes in the state both private and public sector may be linked with the replanting programmes to make seedlings available to the farmers. The nursery programme should be targeted to produce and supply only high yielding hybrids or selected ecotypes which are suitable for cultivation under different agro climatic conditions. Planting of dwarf varieties in new locations as well as in existing gardens where space is available should be encouraged for ensuring regular supply of tender nuts.

The APMC, Mahuva (Junagadh) is the major market for matured nuts and accounts for nearly 70 per cent of the total sale of the matured nuts. However, recently Una, Kodinar, Mangrol, Gir



Somnath and Devbhumi Dwarka have also developed the independent assembling and marketing centre of coconut in the state. It has been reported that about 20 per cent of the total coconut produced in the state are consumed as tender nuts and 5 per cent are retained by the farmers for household and seed nut purpose. Farmers harvest tender nuts and they transport it to collection centres in small trucks or small vehicles. In collection centres they load it to large trucks for transporting to different parts of the country. About 42 per cent of the coconut production is consumed in the state itself and 33 per cent is moved to Delhi, Punjab, Haryana, Maharashtra and Madhya Pradesh. Since the tender nuts are available throughout the year, they are sold all over the state along the highways, bus stand, railway station and rural market centres. The demand increases to the maximum during peak summer months from March to June.

Tendernut trade in Gujarat

Constraints in coconut farming

Coconut in Gujarat is essentially a homestead crop and forms the main component of various crops grown by the farmers. Small size of holdings is the characteristic feature of land holdings in Gujarat. Most of the holdings are less than 0.1 ha and only few farmers possess holdings of size above 0.40ha. Since the size of holdings is small and most of these are homestead gardens it could not generate adequate income to support the dependant families. Labour shortage and high labour charges also force the farmers to ignore the timely adoption of agronomic practices and regular harvesting. As a result they neglect adoption of management practices especially in small holdings leading to low productivity and high cost of production. High density of over 200 plants per hectare coupled with poor adoption of management practices leads to low productivity. Though organic manure application is practiced by majority of farmers, the application of inorganic

fertilizers to the recommended level is practiced only by few farmers. Most of the holdings follow traditional cultural practices. Severe infestation of diseases and pests are other major problem faced by the farmers in growing new palms for reviving coconut gardens.

Scientific plant protection measures and fertilizer application are yet to be adopted on a wider scale. The reasons for this low level of technology adoption are high cost of fertilizers and difficulty in getting the trained persons for applying plant protection measures. The limitations in the areas of plant protection and fertilizer application should be removed by providing financial assistance through development programmes. Due to shortage of raw materials for coconut based industries as well as poor marketing infrastructure, the entrepreneurs are not coming forward for establishing coconut based industries in Gujarat state.

State programmes/plans/schemes on the development of coconut industries

Now the ICAR, SAU's and Directorate of Horticulture, Gujarat state are working on an ambitious coconut cultivation programme with an outlay of maximum budget during last five years, that aims not only to bring back its old glory, but also make Gujarat one of the top three states in coconut productivity and area under plantation. Concerted efforts need to be done by the SAU's as well as the Directorate of Horticulture, Government of Gujarat for improving the production and productivity of coconut by adopting innovative schemes and technologies suitable for the farming community. All the potential area suitable for coconut cultivation in Gujarat (about 40,000 ha) should be brought under coconut on a mission mode by the agricultural universities as well as Government of Gujarat by providing higher incentives and supplying quality seedlings in time at the door step of the interested farmers. Farmers should be encouraged to adopt drip irrigation system and should adopt coconut based high density multiple cropping system with other profitable crops to increase the production and productivity of coconut as well as to enhance the income of the farming community from unit area. Integrated coconut based industry for value added products like packed tender coconut water, neera, coconut sugar, desiccated coconut, virgin coconut oil, activated carbon, shell charcoal, coir based products etc. should be established in major coconut growing districts for increasing the coconut price at farm gate as well as enhancing the better utilization of coconut. ■