Current status, constraints and prospects of coconut cultivation in Assam

L.S. Singh, Anok Uchoi and Alpana Das

ICAR-Central Plantation Crops Research Institute, Research Centre. Kahikuchi, Guwahati-781 017, Assam

The state of Assam is blessed with six agro-ecological zone viz., North Bank Plain, Upper Brahmaputra Valley, Central Brahmaputra Valley, Lower Brahmaputra Valley, Barak Valley and Hill zone which favours the growth of wide range of plantation crops. Among the various plantation crops grown in Assam, coconut is the one mostly grown by small and marginal farmers. Area under coconut in Assam is estimated to be 19,920 hectare with a production of 168.21 million nuts and the productivity is 8,444 nuts/ha. Nagoan district has the maximum area under coconut (2,941 ha) followed by Barpeta (1,622 ha) and Nalbari (1,390). Coconut is grown in most of the districts of Assam covering the Upper (Charaideo, Dhemaji, Dibrugarh, Golaghat, Jorhat, Lakhimpur, Majuli, Sivasagar and Tinsukia), Central (Dima Hasao, Hojai, East Karbi Anglong, West Karbi Anglong, Morigaon and Nagaon), Lower (Baksa, Barpeta, Bongaigaon, Chirang, Dhubri, Goalpara, Nalbari, Kamrup (M), Kamrup (R), Kokrajhar and South Salmara-Mankachar), Hills and Barak Valley (Cachar, Hailakandi and Karimganj) and North Assam (Biswanath, Darrang, Sonitpur and Udalguri). The soil and climatic condition of these regions provide congenial atmosphere for growth and development of coconut. The three distinct types of soil found in these zones are red sandy loam, alluvial red loam and lateritic soils. The climate of Assam is sub-tropical in nature receiving an annual rainfall of 1,840 mm to 3,528 mm. Though this region is non traditional area for coconut cultivation, there is potential scope for increasing the production and productivity through adoption of improved scientific cultivation practices. This article highlights the present scenario, prospects, in constraints and strategies for improving coconut cultivation in Assam.

Coconut Scenario in Assam

Coconut is an important cash crop in Assam and is having an important place in ritual and other social and cultural programmes. It is mainly grown as a homestead crop mostly by small and marginal farmers. The state occupies a major share, contributing 55% of the total area and 76% of the total production among the North Eastern regions of India. Though coconut is grown in most of the districts of Assam, its cultivation is mainly confined to Central and Lower Brahmaputra Valley Zone of Assam. Nagaon, Barpeta, Kamrup, Sonitpur, Nalbari, Golaghat, Cachar, Karimganj, Morigaon, Udalguri, Darang, Bongaigaon, Baksa and Shivsagar are the leading coconut growing and producing districts in

Assam. The crop has gain substantial importance among the farming community since they can sell the nuts at weekly/monthly interval whenever they face financial problem. Considering the area, production and productivity (Table 1) for the last eight years (2009-10 to 2017-18), area under coconut has increased from 18,800 hectare (2009-10) to 19,920 hectare (2017-18), while the production figure indicates uneven trend in productivity of about 1000 to 2000 nuts per hectare.

Table 1. Trends in area, production and productivity of coconut in Assam (2009-10 to 2017-18)

Year	Area	Production (Million nuts)	Productivity (Nuts/ ha)
2009-10	18800	157.90	8399
2011-12	20800	304.47	14638
2012-13	22150	160.21	7233
2013-14	20230	136.61	6753
2014-15	21140	237.49	11234
2015-16	19730	132.59	6720
2016-17	20600	153.27	7440
2017-18	19920	168.21	8444

Source: Directorate of Economics and Statistics, Ministry of Agriculture, Govt. of India

Suitability of new coconut varieties/ hybrids under Assam condition

Coconut though grown in all the 33 districts, covering the upper, middle and lower parts of Assam, most of the coconut grown is of the local type and there is scope for increasing the production and productivity in the state by going in for planting of more productive varieties. Assam Tall is the most common cultivar of coconut grown in this region. A higher average yield of about 80 nuts per palm per year has been reported in a selection of Assam Green Tall, at the Horticultural Research Station, Kahikuchi, Guwahati, Assam. This indicates the potential for improving coconut productivity in the state and also the need for identification of more improved varieties for cultivation in Assam. For the development of improved varieties for specific agro-climatic zones, it is necessary to characterize and evaluate the coconut genetic resources to identify their yield potential as well as adaptive features for utilization in the coconut improvement programme. Trial conducted at ICAR-Central Plantation Crops Research Institute, Research Centre, Kahikuchi, Guwahati


Kera Sankara


Chandra Sankara

Assam with fifteen coconut varieties viz., West Coast Tall, Assam Tall, Ganga Bondam, Chowghat Orange Dwarf, Malayan Yellow Dwarf, Malayan Green Dwarf, Malayan Orange Dwarf, Lakshadweep Ordinary, Fiji Tall, Chandra Sankara, Kera Sankara, Laksha Ganga, Chandra Laksha, Kera Ganga and Kerasree for growth, nut yield and nut characters resulted that among the coconut varieties/hybrids tested, Kera Sankara and Chandra Sankara hybrids were found to be suitable for the region with a potential nut yield of 96.25 and 78.0 nuts/palm/year respectively.

Constraints in coconut production in Assam

The crop needs utmost care to improve the production and productivity in Assam. The following are the main factors affecting coconut production in Assam.

▶ *Emergence of new pest*

A new pest of coconut rugose spiraling whitefly (RSW) (*Aleurodicus rugioperculatus Martin)* was reported in Kamrup and Nalbari districts of Assam hindering coconut production in Assam. The pest damage symptoms include deposition of sooty mould on the upper surface of palm leaflets. Awareness

Training on rugose spiraling whitefly

Release of *Leiochrinus Nilgirianus* in farmers field

programme on management of the pest has been done in Kamrup (Damdama, Hajo, Kalitakuchi) and Nalbari (Bijulighat, Barkuriha, Madhapur, Katpua, Tilana) district of Assam. To combat the pest incidence, augmentative biological control by releasing palm leaflets (10 cm) containing the E. guadeloupae and sooty mould feeding Leiochrinid beetle, Leiochrinus nilgirianus was undertaken in most of the pest affected hamlets by ICAR-CPCRI.

▶ Adoption of improved varieties

Coconut varieties like Kamrupa, Kalpa Samrudhi, Chowghat Orange Dwarf, Chowghat Green Dwarf and West Coast Tall have been recommended by ICAR-Central Plantation Crops Research Institute for Assam condition. However, farmers are still planting the local varieties and procurement of planting material is done mainly from local market of unknown sources.

▶ Quality planting material

Lack of quality planting material is one of the major constraints faced in the State. Though Assam is suitable for coconut cultivation, the productivity is low as non descriptive local varieties are mostly grown due to non availability of good quality planting material within easy reach of farmers. As per rough estimate by the Coconut Development Board, the annual requirement of coconut seedlings in Assam is around two lakhs but the production of quality seedlings is much below the above figure. The main problem associated with the supply of quality planting material is the lack of systematic survey for identification of quality mother plants of genuine varieties, lack of sufficient government certified nurseries for supply of coconut seedling to growers and lack of proper knowledge for selection of nuts for seed purpose from the mother plants. The seednuts collected for seedling purpose are not selected properly from genuine mother plants and scientific method of raising coconut nursery is not being followed by the nursery owners.

▶ Poor management practices

Coconut is mainly grown as a rainfed crop with poor management practices in Assam. Buttons and immature nut shedding is a common problem in coconut. Immature nut fall in coconut has been attributed to various factors like nutritional deficiencies, pathological conditions, insect pests and unfavourable condition like moisture stress, water logging and lack of aeration. Among the diseases, stem bleeding caused by the fungus *Theilaviopsis paradoxa* and among pest rhinoceros beetle, red palm weevil and eriophyd mite are the significant ones.

▶ Transfer of technology

Farmers are not aware of the improved production technology. Technology needs to be transfered at regular interval to create awareness among the farming community. Technique of seednut selection for nursery, fertilizer application, management of diseases and pests, production of quality planting material, cropping system and farm mechanization need to be disseminated. Through various researches, improved technologies have been developed, but the penetration at the farmers level is very poor particularly in non traditional coconut growing areas which need to be strengthened. Technologies like High Density Multispecies Cropping System suitable for a particular region need to be developed to enhance income from their small holding and technique of farm mechanization to enhance the productivity need to be introduced.

▶ Marketing

There is no proper market for coconut in Assam.

Demonstration of tender coconut punching and cutting machine

Training in coconut climbing

The farmers usually sell their produce in local market and the price of coconut is quite low ranging from Rs.30 to 40 per nut. The price of coconut is quite remunerative only during 'Bihu' festival and other religious ceremonies with the price rising to two to three fold of the normal price. Since, the coconut farmers are also not getting attractive prices due to non existence of coconut based industries and proper market tie ups, farmers harvest tender nut and sell to middlemen at lower price. The middlemen sell it in the local market and roadside of highways. Rate of tender coconut in market varies from Rs. 40 to 50 per nut depending on the size and season.

Prospects of coconut cultivation in Assam

Coconut serves as an additional livelihood enhancement crop in Assam. The importance of coconut is increasing day by day due to its various unique features. Sustainable system of production can be achieved through cropping system. In coconut garden spaced at 7.5m x 7.5m, inter space provide immense opportunity for growing shade loving annual and perennial crops for generating additional income to the growers. The availability of biomass from a well managed coconut garden is estimated to be 14 tonnes per hectare per year. Studies conducted at ICAR-Central Plantation Crops Research Institute, Kasaragod, Kerala has revealed that coconut biomass could be effectively converted into rich vermicompost using earthworm, Eudrilus sp. Low cost vermicomposting technology enables production of organic manure within a period of 60-75 days. On an average, 70% biomass recovery of vermicompost is obtained. Most of the coconut grown in Assam is by default organic and there is immense scope for producing organic coconut in this region. Farmers of Assam are not much aware about chemical fertilizers and plant protection chemicals. Thus, there is potential scope for converting this small holding into organic holdings. A holistic approach integrating IPM, IDM and INM practices is necessary to achieve higher production and productivity. Research finding yielded fruitful results in terms of increasing production and productivity through adoption of high yielding varieties and cropping system suitable for particular regions. In Assam, ICAR-Central Plantation Crops Research Institute, Coconut Development Board, Ministry of Agriculture, Govt. of India and Assam Agriculture University are working for improving the coconut scenario.

Strategies for increasing production and productivity

- Production of quality planting materials and distribution of best planting materials to the farmers.
- Identification of potential coconut pockets for higher productivity and establishment of coconut based industries like tender coconut water, coir etc.
- Establishment of coconut garden for attractive benefit to the farmers.
- Management of diseased/ unproductive / old coconut garden and need based replacement with new seedling and establishment of network for market tie-up and promotional activities.

Conclusion

Assam with its various unique features among the North Eastern regions of India plays an important role for various plantation crops. Study conducted at ICAR-Central Plantation Crops Research Institute, Research Centre, Kahikuchi among the coconut varieties evaluated under Assam condition, hybrids Kera Sankara and Chandra Sankara were found to perform better than other varieties. These hybrids can be recommended to farmers for commercial cultivation and can be included under the demonstration cum seed production programme also for enhancement of seedling production and distribution of planting material in the region. ■