Experiencing coconut cultivation in a sloping terrain

A unique saga of Sri. A. Narayanan Nair from Thonikkadavu village, Kasaragod, Kerala

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Thonikkadavu is a small village nestled in the hilly tracts of Kasaragod district in Kerala. In this picturesque setting, farming is the main source of income. Agriculture crops such as coconut, arecanut, and rubber dominate in this scenic location. Mr. Adukkadukkam Narayanan Nair, an elderly farmer from this hamlet, is 85 years old and passionate about farming, particularly coconut farming. Even though he is in his eighties, he still wants to be linked with farming. He still keeps a close eye on agricultural activities, even though he no longer participates in physical activities due to age-related health difficulties. Mr Ravichandran, his oldest son, is entrusted with the management of the farm.

Mr. Narayanan Nair treasures the memory of toiling in the soil and the difficulties he had in farming to provide for his family's needs. When he was five years old, he lost his father. They were living in another village, Kuniyeri in Muliyar panchayat at that time. His family's financial predicament prevented him from attending school and receiving a formal education. His family moved from Kuniyeri to Thonikkadavu when he was 18 years old. To begin farming, a tiny plot of land was purchased and toiled on. The farm was gradually expanded by purchasing surrounding additional property with minor savings and by taking loans. His property in Thonikkadavu village presently covers 27 acres, including coconut in 12 acres, arecanut in five acres and other crops in the remaining area.

Cultivation of coconut in the sloping terrain

Cultivation of coconut in the sloping terrain and utilisation of 'Surangam', an indigenous water harnessing technique for irrigation are the unique features of farming in Narayanan Nair's farm. Further, he could realise high productivity from 'Bedakam thengu' a popular local tall ecotype of coconut.

Soil and water conservation and irrigation

The coconut garden is situated on one side of a steeply sloping hillside. He turned the steep hillock into a series of terraces, which helps the garden conserve soil and water. The breadth of the terrace varies depending on the slope of the soil. To lower the vertical height between terraces, steeper slopes were changed to thin slopes. When the slope drops, wider terraces were used. The terraces were flat with a little incline towards one end to let water flow itself by gravity. To transport irrigation water, a tiny channel was cut on the upstream, inner side of each terrace.

Water sources

The farmer has about 27 acres of irrigated agricultural land. He has six 'surangams,' a unique water-harvesting structure. Surangams can be found in the mountainous portions of Kerala's Kasaragod district and surrounding areas of Karnataka's Dakshina Kannada district. It is a unique indigenous technology used by farmers to collect groundwater in steep terrain. Water pours out of the edge of a horizontal tunnel excavated into a laterite hilltop. Some local specialists used to locate good surangam construction sites in the hilly area based on the slope, topography, and soil qualities. Surangam building, like open dug wells, requires a certain level of competence and is normally constructed by skilled persons. Narayanan Nair recalls his laborious surangam-making days in his farm. Water harvested through surangam is primarily used for drinking and other household purposes. Also, a small stream flows through his farm, which by December, gets dried up. However, his main supply of irrigation water is a river called 'Payaswini,' which is about a kilometre away from his farm. During the night, water is pumped from the river and

transferred to a storage tank, where it is kept for irrigation. The storage tank with 1.25 Lakh with capacity is lined is located at the highest point on the farm.

Irrigation and water conservation

Sprinkler and basin irrigation are the two irrigation methods followed by the farmer. Coconut is being irrigated once in a week and arecanut is irrigated twice in a week. Sprinklers are operated for three hours each time. A portion of the arecanut farm is irrigated by flooding its basin using a hosepipe. Basins are made around the palm, below ground level, for this purpose. Basin irrigation is given to majority of the coconuts. Water from the storage tank located at the top of the farm is conveyed through open channels taken along the terraces to individual palms by gravity. When the water reaches the basin the flow is temporarily blocked manually and is diverted to the coconut basin. The process is repeated and it takes three to four days to complete one cycle of irrigation. Mulching is provided in the coconut basin using coconut leaves to reduce water loss by evaporation.

'Bedakam thengu' – Elite local ecotype of coconut

Coconut palms were planted in the farm between 1958 and 1960. As of now, the farm has approximately 1000 coconut palms. Mostly, the seed nuts were collected from the gardens of nearby locations and neighbouring farmers in the Bedadka panchayat. It is noteworthy that this particular area is popular among farmers as a resource hub for coconut seednuts of 'Bedakam thengu', the genetically superior tall local ecotype of coconut. Mr. Narayanan Nair has successfully demonstrated that 'Bedakam thengu' can produce good yields in rainfed gardens with minimal resource consumption and average crop management approaches. Even now farmers from various localities rely on coconut seednuts of 'Bedakam thengu' procured from selected coconut holdings in Bedadka panchayat. Mr. Narayanan Nair is delighted and optimistic that a collaborative farmer participatory initiative of ICAR-CPCRI, Department of Agriculture and Bedadka grama panchayat would provide a very positive dimension in the already scattered efforts of the farmers of Bedadka in popularizing the potential of 'Bedakam Thengu'.

Crop management practices

During earlier times, coconut growers were following rigorous procedures for seednut selection. Seednuts when put into water bodies or large vessels float vertically with the embryo portion up were used for sowing. Seedlings were planted at a spacing of 25 feet. In the first phase, coconut was planted in five acres in Narayanan Nair's farm. After 28 years coconut was planted in an additional area of seven acres. Narayanan Nair remembers that few of the coconut seedlings thus planted started flowering from the third year after planting and within seven years all the palms started yielding.

About 20 kg of farmyard manure and 30-40 kg of green leaf manure are regularly applied per coconut palm every year as organic manure. Besides, 15 kg of fish meal also is given per palm. To ameliorate acidity one kg lime is applied regularly. Except the application of Muriate of Potash, not much chemical fertilizers

are applied to the palms. According to Mr. Narayanan Nair if quality seedlings and soil health management practices are ensured high yield can be realised from any crop. It is very pertinent for coconut, he added.

Though eriophyid mite, whitefly and rhinoceros beetle infestation are observed in the coconut garden it's level of infestation is low and hence no significant crop loss is resulted due to this. According to him, earlier palm climbers were having the skill to clean the crown of coconut palms and also mechanically collect and destroy rhinoceros beetles using beetle hooks. But now a days climbers neither are skilful enough nor show any interest to take up such practices. They just climb palms and harvest nuts.

Yield and income from coconut farming

Narayanan Nair is able to realise very good yield from coconut. The average per palm yield of coconut from his farm is 150 nuts per year. Due to the scarcity of climbers, the frequency of harvesting coconut palms is reduced and is currently done only thrice a year. Retail merchants procure coconut from the farm itself so that they need not bother about the transportation of nuts to the market. Last year on an average Narayanan Nair could get a price of Rs. 32-35 per kg of nut. According to Narayanan Nair lack of labour, especially skilled climbers, and high wage rates are the major constraints in coconut farming. Of course, price fluctuation of coconut in the market is a perennial problem and the current price of coconut is less than Rs. 25 per kg, he added.

Due to his family's low financial position during his childhood, Mr. Narayanan Nair was unable to pursue formal schooling. He was, nonetheless, determined to provide his children with a solid education. Mr. Ravi Chandran (his eldest son) and Valsala (his daughter) are graduates, while his other two sons, Mr. Asokan and Mr. Ratnakaran, are engineers. Mr. Ratnakaran, his youngest son, who formerly worked in the computer industry, is into farm tourism since the past two years. 'Green Hills Thonikkadavu', his company, is attracting both foreign and

domestic tourists. Tourists visiting the farm, according to Narayanan Nair, very much appreciate the greenery, variety of crops, topography and ethnic foods.

Recognitions

Mr. Narayanan Nair has received several accolades and has been recognised by numerous institutions for his contributions to agriculture. During the Farmers' Day celebrations in 2017, the Bedadka Krishi Bhavan honoured him as the best organic farmer. Institutions such as the Lion's Club Kundamkuzhy and the Agricultural Improvement Society Kundamkuzhy also honoured him for his achievements.

Despite the numerous obstacles to sustainable coconut production, Mr. Narayanan Nair believes that coconut is still a solid source of revenue for farmers. He stated that the government and other agencies responsible for the growth of the coconut sector should support farmers by providing need-based incentives and promotional interventions to ensure a bright future for the coconut sector. ■