

Integrated farming system approach through coconut: A success story from Attappady Hills

Regi Jacob Thomas, M. Shareefa and E.R. Ashokan
ICAR-CPCRI, Regional Station, Kayamkulam, Kerala

Shri. P. A. Mathew, Puthuparambil House, is an enterprising farmer from Agali (under Sholayur Krishi Bhavan of Attappady) of Palakkad District. He is 73 years old and has 61 years of experience in farming. He started assisting his father when he was a school student (at 12 years of age). His parents are from Melukavu Panchayat of Kottayam District and afterwards moved to Chittur Village of Attapady. During 1960's their family had estates at Kuruvanpadi and Puliwara in Chittur Village of Attapady.

Crop diversification

During 1999, he sold his property at Kuruvanpadi and moved to Agali and purchased 17 acres of land. The land at Agali had coconut palms alone. Agali village located in Attappady in general has a tropical climate and is about 505 m above mean sea level. The average annual temperature in Agali is 23.4 °C. The soil is lateritic with neutral pH but low in Nitrogen. The annual rainfall is around 500-800 mm.

When he purchased the plot, the coconut palms in





his plot at Agali were weak and showed pencil point symptoms. However, his Agricultural Officer advised him to purchase the land considering its fertility status. Gradually he introduced other crops like Coffee, Mandarin, Orange, Lime, Rambutan, Banana and spices crops like Nutmeg, Black pepper, Ginger and Turmeric. He also started integrated farming with components like cow, goose (12 nos.), chicken (20 nos.) and two honey bee colony. The cropping system consists of coconut intercropped with Coffee -Nutmeg - Black pepper (trailed on coconut palms) - Banana/tuber crops. He has intercropped one part of his coconut garden with fruit crops like orange, mandarin, guava, mango and amla (Gooseberry). He has more than 675 coconut palms of which 650 are yielding palms in 12 acre area. In addition, he has arecanut in 3.0 acres (2000 nos.), coffee as mixed crops (3000 nos.) and nutmeg 520 nos.

Parentage (Pedigree) of crops

The importance of quality planting materials in agriculture has been recognized from the time immemorial. Manu smrithi says 'Subeejam, sukshethre jayate sampadyathe', ie. Good seed in good soil yield abundantly. His success lies in identifying good mother palms/source of planting materials of all crops from different farmers' plots and he purchases the planting materials from those farmers once he is convinced about its quality. He has raised all coconut seedlings from the seed nuts procured from Nellipathy Village (near Attapady). In addition to these WCT, few hybrid varieties viz. Kerasree and Kera Sankara are also grown in his farm. He is keen in selecting best varieties in terms of yield; quality and adaptability of all crops which are cultivated in his orchard. Based on experience, he has selected banana varieties like Zanzibar, Nendran and Popoulu, Nagpur Mandarin, Hima Pasand and Hybrid varieties of mango for cultivation in his farm. Nutmeg varieties are Viswasree variety from IISR-



Calicut and two farmer's variety viz., Kadukanmakkaal and Kinnattukara).

Nutrient management

He adopts organic farming to the maximum possible extent. Initial planting is done with bone meal (5 kg) and FYM (75 kg). This is followed by application of fertilizers once the coconut palms are three years old. He applies fertilizers in three dozes (first dose in June-July, second dose during October and third dose in November). In addition, he applies the fertilizer mixture (10:5:20) @ 4 kg/



palm and Dolomite @2 kg/palm along with 5 kg of Fish meal. He purchases organic compost (procured from Kottakkal Estate run by Kottakkal Arya Vaidya Sala, having different medicinal tree crops) and applies the organic compost @ 5 kg to each palm basin depending on availability. He also applies 100 kg FYM (50 + 50 kg) in two split doze (during June & October).

Soil and water management

He is keen to form a basin of 2.0 meter radius in the basin of all coconut palms and he advices farmers to apply fertilizer only in the peripheral area (and not near the trunk) for maximum fertilizer absorption as feeder roots and active only in and around 1.5-2.0 meter radius. His approach of forming



wide basins supplemented with balanced fertilizers and proper irrigation, followed by timely weeding and mulching is the success of his coconut farm. Recently, after implementation of 'Kera Gramam' programme in Sholayur Krishi Bhavan area, his farm (he has adopted Half moon micro catchment method for water harvesting). Before adopting half moon micro catchment, he had to irrigate the coconut palms once in a week. But after adopting half moon method, he needs to irrigate only once in two weeks. The productivity recorded was 170 nuts /palm/ year during 2013-14 and after adopting half moon micro catchment the yield has gone up to 200 nuts/palm (2014-15). He is still getting more than 200 nuts/palm/year. His entire farm is irrigated using hose irrigation. He has constructed one 8.5 feet deep ferro-cement tank (with 3.60 lakh litres capacity) at the top most point of his estate. The tank was constructed with funding from State Horticultural Mission, Govt. of Kerala. His land is mostly on sloppy terrain and he depends on nearby Bhavani river for his irrigation needs.

Economics

He sells mature coconuts to merchants from Kankayam (Tamilnadu) in bulk and local markets of Changanacherry and Kottayam. It fetches him Rs.44.50/kg of husked nuts (as per 2020 price). He get nearly 1,50,000 coconuts from 650 palms (revenue of Rs. 28 to 30 lakhs) and arecanut (ripe

nut yield of 10 tonnes @ Rs.48/kg which fetches Rs. 4.80 lakhs, Nutmeg for Rs. 5.0 lakhs, and Coffee for 2.4 lakhs, black pepper for 15 lakhs and from Banana Rs. 1.0 lakhs. The gross return is Rs.54-55 lakhs and the expenditure comes to Rs. 45 lakhs, of which major chunk is to meet labour charges and cost of fertilizers. On an average net income is around 8 to 8.5 lakhs. But his drawback is that he doesn't adopt mechanization. His opinion is that if he depends too much on mechanization, the cost of cultivation will go up and he may not be in a position to complete farm operations in time. Farm labour (from Tamilnadu and Jharkand) is cheap and easily available near Agali.

Advice to farmers based on experience

His major focus is on wider basin for coconut palms and systematic soil and water conservation techniques. Soil and water conservation practices will reduce loss of moisture and nutrients from top soil. Water shed approach adopted helps to harvest rain water in the palm basin itself. He recommends timely adoption of various agro techniques like weeding, mulching and irrigation. If weeding is not done continuously it will affect productivity.

Setback faced during COVID period

His over dependence on human labour has directly affected the farming especially during the COVID pandemic period. Because of shortage of labour,

he could not do even essential farm operations like irrigation, manuring, weeding etc and that has resulted in some reduction in nut production.

Pest and Disease management

In Mathew's farm, pest and disease incidence is very less especially in coconut and other component crops. He has two cows (one local breed and one Holstein Friesian). The occasional problems he noticed in coconut are bud rot, eriophyid mite and rhinoceros beetle. But the extent of rhinoceros beetle damage noticed is less than 1%. The recent outbreak of whitefly and associated sooty mould affected most of the palms in his orchard also and for managing the whitefly, he had applied neem based insecticide 'Azadiractin'. According to his experience this was very effective and presently the whitefly infestation has reduced naturally.

Mathew has received 'Kera Kesrari' award

instituted by Department of Agriculture, Govt. of Kerala during 2008-09 and Kshoni Samrakshana award of Directorate of Soil Survey & Soil Conservation, Govt. of Kerala during 2014-15. His wife Smt. Thresiamma Mathew assists him in all farm operations. He has also received many awards and recognitions from different agencies and Krishi Bhavan. Considering the demand of planting materials of coconut and intercrops especially fruit trees and tree spices, he also initiated a nursery business 'Puthenpurayil nursery'. According to him, nursery business is also a very successful enterprise as he is selling planting materials of assured quality at a reasonable price. He is always happy to share his experiences and expertise with other farmers.

Contact address: Mr. P. A. Mathew, Puthuparambil House, Agali, Attapady, Palakkad- Phone: 9020706090.

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