

Coconut based Mixed Cropping and Integrated Farming system for Realizing Higher Income

Success story of Sachidananda Gopalakrishnan

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'Of late, the coconut price situation in the market is not at all encouraging; only because of the cushioning effect rendered by the mixed cropping and integrated farming components in my orchard I am pulling on. It is learned that government is planning to intervene in the market by making arrangements for procuring coconuts through co-operative societies. Hope the situation will improve through these interventions. The practice of procurement of coconut through Krishibhavan as done earlier needs to be brought back...'. These are the words of Shri Sachithananda Gopalakrishnan from Meenakshipuram, Perumatty gramapanchayat of Palakkad district, Kerala. Sachithananda is a leading coconut grower of Meenakshipuram area bordering Pollachi taluk of Tamil nadu. His coconut garden is located at Kadamanpara in Moolathara village of Perumatty gramapanchayat. He entered farming profession at the age of 16 years and now he is 56 years.

Sachithananda's coconut farm in 16 acres has around 1000 palms. The palms, belonging to West Coast Tall variety, are mostly 25 to 30 years old and few are in the juvenile phase, planted five years ago. Black soil is the predominant soil type in the farm. Coconut is planted at a spacing of 7.5 to 8 metres. According to Sachithananda wider spacing is always better for higher productivity of coconut palms and also for effective and scientific intercropping.

Mixed cropping

Sachithananda is well aware of the advantages of mixed cropping system and hence has planted various crops like nutmeg, cocoa, arecanut, banana etc in his coconut garden.

Nutmeg: In five acres of his coconut orchard, nutmeg is planted as mixed crop. Each nutmeg tree is planted at the centre of four coconut palms. There



are around 350 nutmeg trees which are of 22-25 years age. The nutmeg is unique among tree spices as it yields two distinct spices, nutmeg and mace. Nutmeg is a very compatible intercrop which can be very well accommodated in the interspaces of coconut garden when it is planted at a spacing of 7.5 m x 7.5 m and more. Planting of nutmeg need to be done when the age of coconut palms attain 20 years and more since during that period light availability at the ground level is more than 40%. Besides, young nutmeg plants should be planted under 50% shade



as coconut plantation act as natural shade to the young nutmeg plants. Tap root system and compact canopy architecture of nutmeg makes it more suitable as intercrop in coconut garden. The feeding activity of coconut with fibrous root system is mostly confined to one meter depth and more specifically to 15 to 60 cm depth, whereas nutmeg is having taproot system and its feeding area goes beyond one meter depth and there is little competition between coconut and arecanut. Further coconut + nutmeg cropping system improve the microclimate condition and promote diversified beneficial microbiological activity.

According to Shri Sachithananda, though there is fluctuation in the price of nutmeg in the market, it a very compatible intercrop in coconut garden. No serious attack of pest and disease incidence is observed in nutmeg trees in his orchard, which is another advantage of nutmeg according to Sachithananda.

Cocoa: Around 1000 cocoa trees are being cultivated as a mixed crop in eight acres of his coconut orchard. Since cocoa is a shade loving crop, it is grown as one of the best intercrops in coconut plantation. As cocoa is highly susceptible to drought conditions, the option of growing it as intercrop makes it more productive. Various other advantages of growing cocoa as intercrop in coconut garden include the improvement of microclimate, reduction



in evaporation because of the canopy coverage and the regular litter fall which act as a natural mulching that improves the soil biological activity. Based on the physiology of cocoa, photosynthesis of cocoa leaves is saturated at 1/5th of the full day. Because of this reason cocoa perform better as intercrop compared to monocropping. The cocoa tree has tap-root system which grows straight if there is no physical obstruction. The success of intercropping of cocoa mostly depends on scientific and timely pruning. Pruning is an important operation in cocoa especially when it is grown as an intercrop. The main objective of pruning is to maintain the shape of the cocoa plant to make it more productive and efficient. According to Sachithananda, the price fluctuation and marketing issues are the major problems that he encounters in cocoa cultivation.

Areca nut: Though areca nut is not a recommended mixed crop in coconut garden, there are around 1000 areca palms planted in between coconut trees in his garden. These areca palms belonging to local variety are about 25 years of age. Areca seedlings were procured from local Krishibhavan.

Banana: Banana is intercropped in about one acre; mostly cultivated for selling the leaves. In the main season of marriages and similar occasions leaves are sold @Rs 3/leaf.



Integrated farming

A major source of income in Sachithananda's farm is from the cattle rearing component in the integrated farming system (IFS). 10 cross bred cows are reared which produces around 10 litres of milk per cow per day

Fodder grass: Hybrid Bajra Napier Co-4 variety fodder grass is cultivated as intercrop in his coconut garden in three acres.

A bio-gas plant is installed as part of IFS unit since the last six years. Bio gas is used for domestic purpose and the slurry is recycled back to coconut palms, fodder grass and other crops in the system. Since the last one year a fish pond is also maintained in the IFS unit apart from dairy animals.



Crop management practices

Nutrient management

Since the last three years only organic manure is applied to coconut palms in five acres out of the total 16 acres of the coconut farm. According to Shri. Sachithananda there was a slight fall in the yield during the initial two years after changing to organic mode of nutrient management. Subsequently yield of palms improved to the previous level. Manuring of coconut palms is done in two splits with the onset of South West monsoon during May-June and after heavy rains during August-September. Vermicompost, cow dung, neem cake, poultry manure and coir pith compost are the various organic manures applied in his garden. Neem cake is applied to the palms @ 1 kg per palm every year. Cow dung and poultry



maure is applied @ 20 kg per palm and @ 10 kg per palm respectively applied during alternate years.

In the remaining 11 ha coconut farm, integrated nutrient management practices are adopted. Besides organic manures, chemical fertilizers are also applied to coconut palms in two splits @ 3 kg fertilizer mixture per split. Urea (1 kg), Muriate of Potash (2 kg) and Super Phosphate (2 kg) are the fertilizers used in the mixture. Cow dung and poultry manure are applied in alternate years @ 20 kg per palm @ 10 kg per palm respectively. Shri Sachithananda is planning to gradually reduce the use of chemical fertilizers and to fully convert to organic farming.

Cow dung @ 20 kg per tree twice a year is applied for nutmeg besides small quantities of Muriate of potash. One kg of chemical fertilizer mixture containing urea, MOP and super phosphate (in the proportion of the mixture given to coconut palms) is given for cocoa trees. Cocoa leaves obtained after pruning and also fallen dried leaves are recycled back to cocoa basin as organic manure. Areca palms are managed with organic manures like cow dung, vermicompost and poultry manure.

Mulching

All the dried fallen coconut leaves, bunch wastes and dried leaves are recycled to the palms as mulching in the basin as and when these materials are available. According to Sachithananda recycling of bio-mass available in the farm by way of mulching greatly helps in moisture conservation and also improves soil health in the farm.

Irrigation

There are four open wells in the farm which are the sources of irrigation water and the coconut palms are provided irrigation during summer months using drip system. Tap type drippers are used in the drip system through which water is provided @100 litres per palm per day. According to Sachithananda, drip irrigation system helps in saving labour and also less weed growth is observed in the farm.

Crop protection

No serious pest and disease problems are experienced in the coconut based cropping system except for the recently observed root (wilt) disease like symptom appeared in 2-3 coconut palms which of course is a concern according to Shri Sachithanada.

Labour management

Sachithananda is having three men and women permanent labourers from nearby areas of Tamil Nadu, for managing farm activities. He got a tractor for tillage and other works and a bush cutter for weeding. A chaff cutter is used for cutting the fodder grass to feed cattle

Productivity and income

On an average, the recorded yield in Sachithananda's farm is about 150 nuts per palm per year while few palms are having the yield of more than 200 nuts per palm. Coconut palms are harvested six times a year at 60 days interval. During the last few harvest Sachithananda could get on an average of Rs. 25 per kg of coconut. He feels the minimum



price should be at least about Rs 40 per kg nut to make the coconut farming remunerative.

Sachithananda has given 400 coconut palms for toddy tapping for which he is receiving Rs. 400 per palm per month which is realising a better income. Nutmeg is harvested twice in an year and he is getting on an average 4-5 kg fruits per tree. During the previous season he could get on an average Rs. 450 per kg nut and Rs. 1900 per kg mace. The average yield of cocoa from his farm is about 2-3 kg wet beans per tree. Cocoa beans are sold to the cocoa collection centre at Anamalai in Tamil Nadu. Arecanut is sold to local traders who collect it directly from the farm and unhusked fresh arecanuts are sold @ Rs 24-27 per kg. During the last season he

could harvest about five tonnes of fresh arecanuts.

Shri Sachithananda's family which consists of his wife Smt Arunadevi and two daughters is wholeheartedly supporting him in managing his farm. Shri Sachithananda Gopalakrishnan is actively engaged in many social activities also. He is the president of Moolathara Co-operative Milk Producers' Society and also acting as the Director Board member of Moolathara Service Co-operative Bank. The milk society he heads has received the award for collecting the highest quantity of milk among the milk societies in Palakkad district. He is also actively involved in organising coconut growers of the locality into FPOs and is the President of Kadamanpara Coconut Producers Society (CPS). *Sachidananda can be contacted on 8547401126*

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