

Farmer's preference for coconut varieties – A participatory analysis

C.V. Sairam¹, S. Arulraj², C. Thamban², K. Samsudeen², S.J.D. Bosco²
V. Rajagopal² and V. Arunachalam²

Abstract

Farmer's preference for coconut varieties was determined through participatory analysis approach. The Central Plantation Crops Research Institute, Ariyankuppam Commune Coconut Farmer's Association and the Department of Agriculture, Government of Pondicherry undertook this study. Apart from the regular field visits, PRA tools such as transect walk were used for data collection. Farmers' have characterized coconut varieties using matrix ranking.

Seven major types of coconut cultivars are under cultivation in Ariyankuppam. East Coast Tall Green (61%) followed by East Coast Medium Tall (30%) were the most preferred cultivars. Sevvelanir (a pink tinged coconut) is cultivated because of its medicinal properties for curing Jaundice. Participatory analysis showed that East Coast Tall (ECT) is the most preferred variety by the farmers in Ariyankuppam Community, which has scored comparatively higher ranking and higher adoption rate throughout the community. Soil development efforts coupled with irrigation and good quality planting materials by selecting mother palms, collecting seed nuts and raising the seedlings are the major reasons for higher level of coconut productivity in this region. The average net return was Rs.38, 250/ha.

Keywords: Coconut varieties, participatory analysis, PRA, East Coast Tall Green, East Coast Medium Tall, Sevvelanir, quality planting material.

¹Senior Scientist (Agricultural Economics), ICAR TOT Project, Office of the Zonal Coordinating Unit, Zone VIII, NDRI Campus, Adugodi, Bangalore 560 030, India.

²Central Plantation Crops Research Institute, Kasaragod, Kerala-671 124, India.

1. Introduction

Coconut is a major smallholder's plantation crop cultivated predominantly in the peninsular, eastern and northeastern regions of India. The crop is grown in an area of 1.9 million ha with an annual production of 12.141.2 million nuts and average productivity of 6345 nuts/ha. Though the present level of coconut productivity is the highest in the world, it is possible to raise it further to the level of 471 nuts/palm/year by adopting better crop improvement and management techniques (Bavappa, 1999). The Central Plantation Crops Research Institute (CPCRI) and the Agricultural Universities located in the major coconut producing states in India have released several high yielding cultivars/hybrids with the objective of increasing profitability of coconut farming through productivity increase (Ratnambal, 1999). However, the preference of the farmers for the released types is influenced by socio-economic factors and traditional farming practices. Arulraj (1999) suggested participatory plant breeding approach for identification of location-specific varieties and their special traits. In this background, this paper discusses farmer's preference for coconut varieties based on the experience gained as a part of the ADB-funded International Plant Genetic Resources (IPGRI) sponsored research project "Developing sustainable coconut based income generating technologies in poor rural communities – at Ariyankuppam Coconut Community" near Pondicherry.

2. Materials and methods

The CPCRI, Ariyankuppam Commune Coconut Farmer's Association and the Department of Agriculture, Government of Pondicherry undertook the project jointly. Apart from the regular field visits, PRA tools such as transect walk were used for data collection. Farmers' have characterized coconut varieties using matrix ranking. For this a Diversity Fair

was organized on 6th June 2003 in the Ariyankuppam Coconut Community, in which 62 coconut farmers, who are the members of the Ariyankuppam Commune Coconut Farmer's Association have participated. Details on the common name, morphology, productivity and adaptation pattern of the major cultivars of the region were collected based on triangulation and discussions among 45 coconut farmers, in the presence of scientists and extension officials.

Matrix ranking was carried out for various varieties for the features such as a) easy availability of the seedlings, b) early bearing nature, c) field establishment, d) balanced growth in the bearing stage, e) yield in the regular period of bearing, f) response to organic and inorganic fertilizers, g) response to low input management, h) suitability of the cultivar/variety both for raw / tender nut and i) less incidence of pests and diseases. The details collected from this matrix ranking are analyzed through scoring techniques.

3. Results and discussions

3.1. Agro-climatic conditions

Ariyankuppam Commune Panchayat is a traditional coconut belt in the east coast of India. The site, located 10 km away from Pondicherry city, receives more than 75 percent of the rainfall from the North East Monsoon from October to December. The mean annual rainfall of the region is 1,060 mm. The farmers in this region are hard working and they hold valid reasons for the adoption or rejection of a particular technology. One of the most important characteristic features of coconut farming in this region is that 99 percent of the gardens are irrigated and water is not a constraint. The soil varies from coastal sandy to loamy type. About seven decades ago, coconut farmers in the region were blending the soil with the cotton waste from the century old Anglo French Textiles Mills located near the site. Coconut farmers opined that such long term soil development efforts coupled with irrigation and good quality planting materials

are the major reasons for higher level of coconut productivity in this region.

3.2. Management practices

The farmers speak Tamil in this region and they name coconut palm as “Thennai” and coconut as “Thengaai” and they grow coconut as a commercial crop. The major coconut variety cultivated in this region is the East Coast Tall. Other major types are Aayiramkachi, Sevvelanir, Tall X Dwarf hybrid, and dwarf varieties from Malaysia and Andhra Pradesh. The farmers in the region traditionally aim for highest per palm productivity and based on this criteria they select mother palms, collect seed nuts and raise the seedlings. They also collect seed nuts from reputed areas located outside the State. The general management practices adopted by farmers for coconut culture and the conditions of farming include the following:

- 1) Selection of seedlings with desired girth at collar and signs of early splitting of leaves
- 2) Digging of planting pits of size 1m x 1m x 1 m.
- 3) Planting of 8-11 month old seedlings in the optimum season of April/July/November.
- 4) Providing nutrients, irrigation and shade to the young seedlings.
- 5) Planting density in the main field varies from 6.5 m x 6.5 m to 7.5 X 7.5 m, consequently the plant population varies from 175 to 230 palms/ha.
- 6) On an average an adult palm receives 10-15 kg of green leaf manure, 30-40 kg of organic manures consisting of cow dung/poultry manure/goat manure and 3-5 kg of fertilizer mixture.
- 7) Irrigation is provided once in 6 days from January to October / till the onset of North East Monsoon. Flood irrigation is the commonly adopted method. Since water is not a constraint, farmers are not giving attention to water conservation practices such as drip/sprinkler system.
- 8) The average yield varies from 80 nuts to 150 nuts/palm/year depending upon the incidence of pests and diseases, adoption of management practices and prevalence of risk factors such as cyclones etc.
- 9) During the early years of planting (upto three years) coconut farmers cultivate vegetable crops like bhendi, brinjal, tomato, chillies and gourds, oil seeds such as groundnut, food crops like tapioca as intercrops. They could realize an additional net return of about Rs.10,000/ha from these crops. After the palms attain more than 20 years of age, they cultivate intercrops on a limited scale. Dairy is a major animal husbandry component well integrated with coconut farming in Ariyankuppam site. Some of the farmers adopt deep litter system of poultry rearing.
- 10) The major pest prevalent in the region is Eriyophid mite and the diseases are stem bleeding as well as Thanjavur wilt. Bud rot is also present in few palms.
- 11) Stem bleeding is a major disease prevalent in the area. At the time of introduction of the ADB/IPGRI project a training programme was organized at the project site for management of stem bleeding and other major diseases of coconut. This training programme had positive impact on the farmers as well as on the officials of the Department of Agriculture, Government of Pondicherry, by which arrangements were made to procure Calyxin (5%) and the infected palms were treated during December 2002. For effective control, the same treatment was repeated during June 2003.
- 12) Majority of the farmers sell their coconut as tender nut. It is interesting to observe that tender nuts plucked from the coconut gardens of this site has good taste and good

market demand at Chennai metro city and hence pre harvest contract system of future trading is the common marketing strategy widely followed for tender nut marketing. A certain group of farmers also prepares toddy from the sap extracted from the inflorescence. Since Pondicherry region is well known for toddy as well as toddy based products, farmers who are adopting this technology are very well satisfied with the economic worthiness of this technology. Farmers also dry coconuts, prepare copra and extract oil mainly for domestic consumption. Raw nut is also sold through contractors, who in turn sell this to Tamil Nadu as well as Kerala state. The husk is used as fuel in the case of small and marginal farms, whereas the same is used as mulching materials in other gardens. In addition, a major share of the husk is collected and sold for coir manufacturing units. The leaves of the palm are mostly used for thatching huts and in some gardens dried leaves are mixed with farmyard manure for applying to palms.

- 13) The average cost of cultivation of coconut in the region was Rs.17,750/ha and the gross return Rs.56,000/ha. The average net return was Rs.38,250/ha.

3.3. Characterization of coconut varieties

Based on PRA techniques, farmers classified and ranked each variety to the best of their knowledge. In this process, a few points were debated regarding the classification among the farmers as well as with the scientists of CPCRI and State Department officials. According to the classification made by the farmers there are 7 major types of coconut cultivars under cultivation in Ariyankuppam. Based on the farmer's

estimation, the prevalence of these types are East Coast medium tall 30%, Sevvelanir 1%, Orange dwarf 1%, Palm coconut 5%, Tall X Dwarf mixed 1%, Koorkane 1%, and East Coast Tall Green 61 %. The farmers mainly use the shape and colour of the nuts as well as the height of the palms as the major features for describing the varieties. Name and the major characteristics of the coconut varieties as per the opinion of the farmer's are presented in Table 1.

Few of the coconut cultivars viz., Sevvelanir (a pink tinged coconut) has medicinal properties for curing Jaundice. The farmers opined that the Jaundice patients in and around the community are particular in taking the tender nut of this variety, as they strongly believe that consumption of the tender nut water of this variety reduces their sufferings.

3.4. Ranking of varieties

The farmers were requested to rank the coconut varieties based on their perception on easy availability of seed nuts, bearing nature, field establishment, balanced growth, yield during the regular bearing period, response to manures and fertilizers, response to low input management, usefulness for tender nut as well as for raw nut and incidence of pests and diseases (Table 2).

Based on the results presented in Table 2, it could be inferred that the farmers' most preferred varieties are East Coast Medium Tall Green and East Coast Tall Green, which have scored better scores as compared to other varieties. The least preferred variety is Koorkane for its poor performance with reference to most of the attributes.

Table 1. Characterization of coconut varieties by the farmers

S. No	Common Name	Origin	Morphology	Yield/ Palm	Adaptation
01	East Coast Medium Tall Green (30)	TN/Pondicherry	Tall Medium Palms – Nuts green in colour – medium sized	150	Well adapted – best performance under good management
02	Sevvelanir (with pink tinch on top) (01)	Pondicherry	Semi Tall palms – Medium sized nuts – rich in coconut water content with sweet taste which has medicinal properties	150	Adapted to the conditions – tender nut water cures diseases like Jaundice
03	Orange Dwarf (01)	Tamil Nadu	Dwarf palms – Orange coloured Medium to small sized nuts suitable for tender nut purposes	100	Well adapted – medium bearing with better consistency – preferred as a tender nut variety
04	Palm Coconut (Panai Thennai) (05)	Pondicherry	Tall palms- medium sized oblong shaped nuts – heavy bearing nature	110	Well-adapted palms – heavy bearing under optimum input conditions. Less incidence of stem bleeding disease
05	Tall x Dwarf Mixed (01)	TN/Pondicherry	Semi Tall palms – Nuts	120	Well adapted – best performance if optimum input is applied
06	Koorkane (01)	Pondicherry	Heavy flowering – very poor bearing tall palms	10	Peculiar type of ECT. Present rarely in few gardens
07	East Coast Tall Green (61)	Pondicherry	Tall palms – Nuts medium to big sized – green in colour	130	Well adapted – best performance under good management

*Figures in parentheses in column two is the percentage of palms in the Ariyankuppam Community (as per the farmers' estimation)

Table 2. Farmers' ranking of coconut varieties

S. No	Common Name	Characters for scoring									
		A	B	C	D	E	F	G	H	I	J
01	East Coast Medium Tall Green	10	7	8	7	7	8	7	8	5	67
02	Sevvelanir	3	8	8	7	6	7	7	5	6	57
03	Orange Dwarf	5	9	8	7	6	8	7	5	5	60
04	Palm Coconut	4	7	8	7	7	8	7	5	5	58
05	Tall x Dwarf mixed	6	8	8	7	8	9	7	8	5	66
06	Koorkane	1	6	8	7	1	2	7	1	1	34
07	East Coast Tall Green	9	7	8	7	7	7	7	8	5	65

- A - Easy availability of the seedlings
- B - Early bearing nature
- C - Field establishment
- D - Balanced growth in the bearing stage
- E - Yield in the regular bearing period
- F - Response to organic manures and inorganic fertilizers
- G - Response to low input management
- H - Dual purpose variety (for nut as well as tender nut)
- I - Less incidence of pests and diseases
- J - Total Score

Conclusion

The major finding from the study on farmer's preference for coconut varieties conducted through participatory analysis was that East Coast Tall (ECT) is the most preferred variety by the farmers in Ariyankuppam Community, which has been proved by the comparative higher rank scored by that variety and higher adoption rate throughout the community.

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