

RESEARCH-FARMER-EXTENSION INTERFACE IN ARECANUT FOR BRIDGING THE KNOWLEDGE GAP - A SUCCESS STORY

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Introduction

Arecanut (*Areca catechu* L.) is one of the important commercial crops grown in parts of Karnataka, Kerala, Assam, Meghalaya, West Bengal and Andaman & Nicobar Islands. The cultivation has also been extended to other states like Tamil Nadu, Andhra Pradesh and Maharashtra. Arecanut plays an important role in the religious, social, cultural, political and economic life of our people irrespective of caste, creed or social status. Arecanut is known to have several medicinal properties. It has the quality of supplying stimulation to nervous system and increasing secretion of saliva in the mouth. It aids digestive system and it possesses the quality of removing bad odour from the mouth and creates a sense of general well being. Arecanut sector provides large number of employment opportunities both directly and indirectly for lakhs of farmers especially marginal and small farmers. India is the largest producer and consumer of arecanut in the world holding 62% of the area and 60% of the production. In India, Karnataka ranks first with respect to area, production and productivity of arecanut when compared to other states (Table 1).

It is estimated that more than 10 million people in Karnataka are dependent on arecanut, as they are engaged in cultivation, processing, marketing and other related activities. Different agencies viz., Central Plantation Crops Research Institute (CPCRI), State Agricultural and Horticultural Universities (SAHUs), Directorate of Arecanut and Spices Development (DASD), Central Arecanut & Cocoa Marketing & Processing Cooperative Ltd.(CAMPCO), Department of Horticulture, Farmers Organizations and Self Help Groups (SHG's) are doing research and extension activities for arecanut development. Through the systematic research conducted by CPCRI, a substantial number of viable technologies related to crop improvement, production, protection and processing have been evolved for enhancing arecanut production.

However, farmers are not able to exploit the production potential from these technologies to the extent desirable. Extent of adoption of the recommended practices plays a crucial role in improving productivity and income from arecanut farming. The present scenario of technology

Table 1. Area, production and productivity of arecanut in Karnataka in 2012

Crop	Area (lakh ha)	Production (lakh metric tons)	Productivity (Kg/ha)
Arecanut	2.16	3.5	1620

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adoption in arecanut calls for strengthening the technology dissemination programmes with the active participation of beneficiaries.

Research-farmer-extension interface programme is an approach for strengthening the transfer of technology efforts for the development of arecanut sector in the state. In this approach, researchers, extension personnel and farmers are brought together on a common platform to streamline the activities for the sustainable development of arecanut. In this context, CPCRI had organized research-farmer-extension interface programmes on arecanut in 12 districts of Karnataka during August 2013 - March, 2014 to create awareness about the technological options and developmental opportunities available to address the problems and enhance the profitability of farming. These programmes were organized as a collaborative effort with SAHUs, DASD, KVKs and Department of Horticulture in Karnataka. Thematic sessions related to crop improvement, crop production, crop protection and value addition were covered in the interface programmes, in which scientists from CPCRI, SAUs/SHUs of Karnataka and KVKs, extension personnel from Department of Horticulture and farmers had participated.

CPCRI has a history of more than five and half decades of arecanut research with high yielding varieties, package of practices, post harvest technologies. The demand for CPCRI technologies like high yielding varieties/ hybrids of arecanut, vermicomposting using arecanut wastes, integrated nutrient management with judicious, balanced and split application of organic and inorganic fertilizers, natural enemies/ predators in arecanut ecosystem and bio-control agents and integrated pests and diseases

management practices for arecanut has been very high among the farming community and other clientele. Research and extension activities are changed as per the demands of clients viz., farmers, agricultural/ horticultural officers, agro processors, self help groups, college/school students etc. Assessment and refinement of technologies is done through co-operation of Developmental Departments/Boards by organizing various programmes with the active participation of farmers.

Technologies on arecanut

Crop improvement: Arecanut varieties namely, Mangala, Sumangala, Sreemanagala, Mohithnagar, Swarnamangala were released from CPCRI which are suitable for Karnataka. Two arecanut dwarf hybrids viz., VTLAH1 (Hirehalli Dwarf x Sumangala) and VTLAH2 (Hirehalli Dwarf x Mohithnagar) were also released for Karnataka region. Recently two more new high yielding varieties viz., Madhuramangala and Nalbari were released and notified by Central Variety Release Committee.

Crop production: Agro techniques for arecanut such as spacing (2.7 X 2.7 m), fertilizer dose (100: 40: 140 g NPK respectively and 20kg FYM per palm per year) and irrigation of 30 mm water at 30 mm pan evaporation have been standardized. Technology for production of Oyster mushroom (*Pleurotus sajor caju*) from areca leaf sheath has been standardized. Vermicomposting of areca wastes using two cultured species of earthworms, *Eudrilus eugineae* and *Eisenia foetida* was proved as an efficient method of composting. High density multispecies cropping system involving arecanut, banana, pepper and cocoa had resulted in higher net return of almost 85-100 % over arecanut monocropping system.

Black pepper, betelvine, banana, cocoa, lemon/acid lime are some of the common intercrops in arecanut gardens. Experimental studies have indicated the feasibility of growing various medicinal plants viz., vetiver, shatavari, long pepper, brahmi, *Nilagiriathus ciliatus*, periwinkle, aloe vera and aromatic plants viz., lemon grass, palmarosa, basil, davana, patchouli in arecanut plantations. Technologies for fertigation and mixed farming in arecanut (dairy+fodder+fishery) have been standardized.

Crop protection: Integrated pest management practices for pests viz., mites, spindle bug, root grubs, pentatomid bug and scale insects have been standardized. Integrated disease management practices for diseases viz., Mahali/fruit rot, bud rot/crown rot, inflorescence die back/button shedding, anaberoga/foot rot, band disease, nut splitting have been standardized. For managing Yellow Leaf Disease, research trials are being taken up. Judicious use various management practices namely, cultural, biological, mechanical and chemical methods are emphasized in managing pests and diseases.

Interface programmes

The district level interface programmes were organized in 12 districts of Karnataka in which 1799 farmers had participated and the details are given in Table 2 and Fig 1.

Summary of feedback from arecanut growers of Karnataka

During the interface programmes lectures cum discussions on crop improvement, crop production, crop protection and processing technologies on arecanut were held. To formulate strategies for increasing the productivity and profitability of arecanut farming a number of

suggestions pointed out by farmers are given below.

- * Quality of agricultural inputs should be ensured thoroughly by the concerned department before distribution to the farmers
- * Labour saving devices especially for spraying and harvesting operations should be developed
- * Fixation of minimum support price for arecanut
- * Remedial measures/management practices for yellow leaf disease of arecanut are to be developed
- * Suitable alternate crops for arecanut YLD affected areas are to be identified
- * Technologies for application of fungicides through roots for the management of fruit rot, bud rot and crown rot in arecanut are to be developed
- * Training programmes on improved technologies on arecanut especially post harvest technologies and labour saving machineries are to be organized
- * Soil testing facilities are to be established at Taluk level for benefit of farming community
- * Arrangements are to be made for supply of good quality planting materials especially high yielding varieties and hybrids of arecanut
- * Training programmes on organic farming technologies in arecanut are to be organized
- * Video films on production technologies of arecanut in local language are to be produced
- * Exposure visits for the farmers to ICAR institutes, DASD, SAUs, SHUs, KVKs etc.

Table 2. Interface programmes in Karnataka

S.No.	Name of the programme	Date	Collaborating Institute / agency	No. of Participants
1	Research-Farmer-Extension interface on Arecanut in Udupi	24.8.13	KVK and ZAHRS, Brahmavar	180
2	Research- Farmer -Extension interface on Arecanut in Dakshina Kannada	27.8.13	Department of Horticulture, Sullia	153
3	Research- Farmer -Extension interface on Arecanut in Shimoga	30.8.13	KVK, Shimoga	130
4	Research- Farmer -Extension interface on Arecanut in Chamarajanagar	04.9.13	KVK, Chamarajanagar	104
5	Research- Farmer -Extension interface on Arecanut in Ramanagar	05.9.13	KVK, Ramanagar	101
6	Research- Farmer -Extension interface on Arecanut in Tumkur	12.9.13	KVK, Tiptur	208
7	Research- Farmer -Extension interface on Arecanut in Mysore	13.9.13	KVK, Mysore	110
8	Research- Farmer -Extension interface on Arecanut in Chitradurga	24.9.13	KVK, Chitradurga	123
19	Research- Farmer -Extension interface on Arecanut in Davanagere	25.9.13	KVK, Davanagere	151
10	Research- Farmer -Extension interface on Arecanut in Chickmagalore	07.10.13	HRS, Sringeri	190
11	Research- Farmer -Extension interface on Arecanut in Uttara Kannada	09.10.13	KVK & College of Forestry, Sirsi	122
12	Research- Farmer -Extension interface on Coconut and Arecanut in Hassan	11.10.13	KVK, Hassan	112
13	Research- Farmer -Extension interface on Arecanut based cropping system in Dakshina Kannada sponsored by DASD, Kozhikode	18.03.14	Anaje, Kodipady, Puttur	115
			Total	1799

Interface programmes in Karnataka



Inauguration by Shri. Pramod Madwaraj, MLA, Udupi on 24.8.13 at Udupi



Participants of interface programme on 24.8.13 at Udupi



Inauguration by Shri. B.Ramanatha Rai, Hon.Minister for Forest, Ecology & environment, Govt. of Karnataka on 27.8.13 at Sullia



Farmers at exhibition stall on 4.9.13 at Chamarajanagar



Inaugural address by Dr.George V.Thomas, Director, CPCRI, Kasaragod on 12.9.13 at Tiptur



Inaugural address by Dr.George V.Thomas, Director, CPCRI, Kasaragod on 18.3.14 at Puttur

for updating the latest technologies on arecanut are to be organized

- * Suitable arecanut varieties for malnad and plain areas for tender nut processing may be developed
- * Alternative fungicides to Bordeaux mixture in managing the Phytophthora diseases of arecanut are to be identified
- * Demonstration plots for the management of yellow leaf disease of arecanut are to be established
- * Frontline demonstration plots on 'Integrated management of root grubs in arecanut' are to be conducted
- * Linkage between CPCRI, DASD, SAUs, KVKS and Department of Horticulture should

be strengthened for effective dissemination of technologies to the farmers.

Conclusion

Arecanut is one of the important plantation crops in Karnataka which supports millions of farmers. Farmers are facing lot of field problems which are to be addressed by research and developmental agencies. Improved technologies by CPCRI and SAUS/SHUs have not reached the beneficiaries to the desired level. In this context, the research-farmer-extension interface programme initiated by CPCRI in collaboration with other agencies is an effort in strengthening the transfer of technologies to the farmers. Similar approach may be followed in other states to improve the productivity and profitability of arecanut farming.

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