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Problems experienced by farmers in arecanut cultivation

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ABSTRACT : The studies were conducted on problems experienced by farmers in arecanut cultivation. Observation was found that 16 per cent of yield gap between demonstration plot and actual farmers plot yield in arecanut. The total yield gap between potential yield and actual yield was 32 per cent. Majority of the big farmers (66 %) and small farmers (50 %) were medium level of adoption. Majority of the big farmers fully adopted the practices like spacing, pit size, number of seedlings per acre and drip irrigation methods, whereas technologies fully adopted by small farmers were pit size (86 %), number of seedlings per acre (74 %) and spacing (66 %). Cent per cent of small and big farmers have not applied weedicide. More than 70 per cent of small farmers have not adopted technologies such as improved variety selection, good quality seedling selection procedure, recommended dose of inorganic fertilizers and red palm weevil management, more than half of the big farmers did not adopt seedling selection procedure, pulse crops as intercrops and red palm weevil management practices. High cost and non availability of labour, erratic supply of electricity and low price for the produce were the major production constraints perceived by the arecanut growers. A great majority of big and small farmers opined that providing continuous power supply, fixed price for the produce, create awareness programmes for control of pest and diseases were the major suggestions to overcome the production constraint of arecanut by the farmers.

KEY WORDS : Adoption, Arecanut, Constraint, Demo, Extension, Yield

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Arecanut or betel nut (*Areca catechu* L.) is one of the important commercial crops grown in India, present ranks first in the world both in area and production of arecanut. Arecanut is mainly used for chewing and extraction of alkaloid purpose as it has got medicinal properties such as astringent, narcotic, antihelmentic and vermifuge.

Major arecanut producing countries of the world are India, China, Myanmar, Indonesia, Thailand, Bangladesh. India ranks first in both area and production of arecanut in the world. Kerala and Karnataka account for about 70 per cent of country's production. Arecanut consumption in the country is around 3.3 lakh tonnes. Very little information is available on the cultivation practices followed by the arecanut growers and difficulties experienced by them in cultivation and marketing of arecanut (Badhe and Tambat, 2009). The need of present era is to increase the productivity of each and every crop. This could be achieved by adopting improved production practice, high yield varieties and new technologies of crop. Efforts are made to transfer these recommendations among the arecanut growers by the extension workers. However, it has been observed that arecanut growers are still following their age old practices of arecanut cultivation. The practices followed by the arecanut growers of Tumkur district of Karnataka

have not been systematically documented so far. Hence, the study was undertaken on problems experienced by farmers in arecanut cultivation.

Main objective :

– To study the production constraints of arecanut growers

– To study yield gap of arecanut growers

– To study the adoption of production technology in arecanut cultivation

RESEARCH METHODS

Tumkuru district is the important arecanut growing district of Karnataka comprising of 10 taluks of which Gubbi and Tiptur taluk were selected for the study, it has the maximum area under arecanut growing compared to other taluks. 10 villages from Gubbi and Tiptur taluk having maximum area under arecanut were selected randomly.

	Gubbi taluk	Tiptur taluk
Sr. No.	Villages	Villages
1.	Muganahunse	Margondanahalli
2.	Chellur	Kibbahahalli
3.	Bellavathi	Hullihalli
4.	Kadaba	Madenur
5.	Nittur	Hindaskere

20 farmers from each village were selected in which ten belonged to big farmers category and ten belong to small farmers category. Thus, a total sample size of 200 was constituted by following the multistage random sampling technique. An interview schedule was used to collect the data from the respondents. The data were collected through personal interview during the year 2011-13. The information collected was tabulated, analysed and interpreted as per the objectives of the study.

Yield data of experiment was collected by Krishi Vigyan Kendra, Konehalli, Tiptur taluk, Tumkuru district for considered as the absolute maximum production potential yield of the crop in a given situation. Besides this, the demonstration plot yield was obtained using the data from the on farm trail and frontline demonstrations conducted in the farmers field under the close supervision of scientists from KVK, Konehalli, Tiptur in different locations of the district. Further, information on actual yield obtained by the farmers on their farms under their own management practices was collected at the time of interaction with farmers. Using these data the differences between potential yield and demonstration plot yield (Yield gap-I), difference between demonstration plot yield and actual yield (Yield gap- II) and difference between potential yield and actual yield (Total yield gap) were worked out.

RESEARCH FINDINGS AND DISCUSSION

The realized and estimated yield gaps are presented in Table 1, the potential yield of arecanut was found to be 2.50 kg/palm and the demonstration plot yield obtained through frontline demonstrations was found to be 2.10 kg/palm. The actual yield realized by the farmers on their farm with their own resources and management practices was 1.70 kg/palm. The magnitude of technological gap (yield gap-I) was 0.40 kg/palm, which was 16 per cent less than the maximum attributable yield. Extension gap (yield gap-II) refers to the difference between demonstration plot yield and actual yield and it was 0.40 kg / palm. There was 19 per cent reduction in yield compared to demonstration plots yield. A sizable total yield gap of 0.80 kg/palm was observed and it accounted for 32 per cent. These findings are in agreement with that of Changadeya *et al*. (2012) and Venkata Kumar *et al.* (2010).

The causes for such a large total yield gap may be attributed to environmental differences between research stations, extension worker and farmer's field and non adoption of production technologies (Mishra *et al*., 2007). It could be reduced through considerable co-ordination between extension workers, researchers and farmers (Hiremath and Hilli, 2012).

Extent of adoption level of recommended practices by arecanut growers:

The findings related to the extent of adoption levels are presented in Table 2. Majority of the big farmers (66 %) have medium level of overall adoption, whereas in the case of small farmers, half of the farmers (50 %) have medium level of overall adoption. As it is seen in the table, one third of the (35 %) small farmers have low level of adoption. The farm size and economic conditions were found to influence the adoption level of big farmers as compared to small farmers.

Adoption level of production technology:

The extent of adoption of production technologies by the arecanut growers were analysed and results are

presented in Table 3. Irrespective of small and big farmers all most all farmers have not applied weedicide in the arecanut garden for weed management and have not adopted improved varieties / hybrids. It is evident from the table that, majority (more than 80 %) of the big farmers fully adopted the practices like spacing, pit size and number of seedlings per acre. Significant percentage of big farmers partially adopted the technologies such as recommended FYM application (55 %), recommended dose of inorganic fertilizer application (58 %), mite pest management (65 %) and Ganoderma wilt (Anabe roga) management (46 %). More than half of the big farmers have not adopted red palm weevil management (60 %) technologies and growing pulse crops as intercrop (64%) in arecanut garden. The practices which were adopted fully by small farmers were pit size (86 %), number of seedlings /acre (74 %) and spacing (66 %). More than 70 per cent of small farmers have not adopted technologies such as red palm weevil management (78 %), recommended dose of inorganic fertilizers (72 %) and selection of seedlings (71 %). Significant percentage of small farmers have not adopted practices *viz.*, Ganoderma wilt (Anabe roga) management (68 %), mite pest management (66 %), scientific filling of pits (54 %), drip irrigation methods (54 %), growing pulse crops as intercrop (52 %), and use of recommended quantity of FYM (39 %).

The study revealed that the simple technologies

Table 1 : Yield gap identified in arecanut production

Particulars	Yield (kg/palm)	Percentage gap
Potential yield	2.50	--
Demonstration plot yield	2.10	--
Actual yield	1.70	--
Technological gap (Yield gap I)	0.40	16
Extension gap (Yield gap II)	0.40	19
Total yield gap	0.80	32

Table 2 : Extent of adoption level of recommended practices by arecanut growers (n=100)

Category	Big farmers		Small farmers	
	No	Percentage	No	Percentage
Low	16	16.00	35	35.00
Medium	66	66.00	50	50.00
High	18	18.00	15	15.00

Table 3 : Adoption level of production technology by arecanut growers

Production practices	Big farmers (n=100)						Small farmers (n=100)					
	Full adoption		Partial adoption		Non adoption		Full adoption		Partial adoption		Non adoption	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Improved variety	10	10	12	12	78	78	06	06	10	10	84	84
Selection of seedlings	13	13	32	32	55	55	08	08	21	21	71	71
Spacing	88	88	--	--	12	12	66	66	--	--	34	34
No. of seedlings/acre	81	81	19	19	--	--	74	74	26	26	--	--
Pit size	85	85	--	--	15	15	86	86	14	14	--	--
Filling materials for pit	14	14	40	40	46	46	12	12	34	34	54	54
Recommended quantity of FYM application	20	20	55	55	25	25	15	15	46	46	39	39
Recomonded dose of inorganic fertilizer application	30	30	58	58	12	12	12	12	16	16	72	72
Drip irrigation followed	60	60	22	22	18	18	10	10	36	36	54	54
Growing pulse crops as intercrop	10	10	26	26	64	64	08	08	40	40	52	52
Weedicide application	--	--	08	08	92	92	--	--	--	--	100	100
Mite pest management	05	05	65	65	30	30	04	04	30	30	66	66
Stem bleeding management	18	18	46	46	36	36	15	15	22	22	63	63
Red palm weevil management	08	08	32	32	60	60	04	04	18	18	78	78
Ganoderma wilt management	22	22	46	46	32	32	08	08	24	24	68	68

were adopted to a relatively greater extent as compared to complex technologies. Complexity of innovations may be one of the reasons for non adoption of practices like use of hybrids, red palm weevil and mite management, stem bleeding and ganoderma wilt management, similar results were obtained by Kaur *et al*. (2013); Patel and Kunnal (1998) and Jadav and Solanki (2009).

Reason for non-adoption of production technology by arecanut growers:

The findings related to production constraints are presented in Table 4. Big and small farmers opined that erratic supply of electricity (92% and 91%) and low price for the produce (85% and 88%), respectively as the major production constraints (Chavda, 1981). Majority of the big farmers expressed that high cost and non-availability of labour (84%), lack of knowledge regarding pest and disease management (81%), unawareness about nutrient management (60%), lack of adequate market information (60%) and high cost of inputs (50%) as major production constraints in arecanut cultivation (Raut, 2006). Lack of knowledge regarding pest and disease management (84%), high cost and non-availability of labour (82%), unawareness about nutrient management (70%), lack of adequate market information (73%) and high cost of inputs (74%) were the major production constraints expressed by the small farmers. These findings are in line with research findings of Mitra and Samajdar (2010); Jaitawat *et al*. (2007) and Kiran (2003).

The aforesaid production constraints imply that there is an urgent need to strengthen the outreach activities of developmental departments. These constraints also serve the policy makers to formulate strategies to develop irrigation sources, continuous power supply and fixed price for the produce. Training, demonstrations and other extension efforts targeting needy farmers on production technologies of arecanut by the developmental departments will reduce the technological and extension gap and will improve the socio-economic status of arecanut growers. The similar results were obtained by Meena and Gupta (2015) and Sharma (1997).

Suggestions for overcome the non-adoption of production technology by arecanut growers:

Suggestions of the arecanut growers are presented in Table 5. A great majority of big and small farmers expressed that providing continous power supply, fixed price for the produce and developing irrigation source were the solutions to overcome the production constraints. A significant percentage of big farmers opined that

Table 4 : Reason for non-adoption of production technology by arecanut growers

Reason for non-adoption	Big farmers (n=100)		Small farmers (n=100)	
	No.	Percentage	No.	Percentage
Non-availability of inputs	25	25	32	32
Inadequate irrigation source	42	42	52	52
High cost of inputs	50	50	74	74
High cost and non-availability of labour	84	84	82	82
Erratic supply of electricity	92	92	91	91
Unawareness about nutrient management	60	60	70	70
Lack of knowledge regarding pest and disease management	81	81	84	84
Low price for the produce	85	85	88	88
Lack of adequate market information	60	60	73	73

Table 5 : Suggestions for overcome the non-adoption of production technology

Improve the adoption by	Big farmers (n=100)		Small farmers (n=100)	
	No.	Percentage	No.	Percentage
Availability and supply of improved seedlings and inputs at right time at subsidized rates	70	70	79	79
Research efforts are needed for development of cost effective simple technologies for pest and disease management	66	66	71	71
Conducting demonstration cum training programmes	62	62	75	75
Providing crop insurance	72	72	80	80
Providing good market price	86	86	92	92
Providing continuous power supply	92	92	93	93
Developing irrigation source	82	82	92	92

providing crop insurance (72%), availability and supply of improved seedlings and inputs at right time (70%), research efforts for development of cost effective simple technologies for pest and disease management (66%) and conducting demonstration cum training programmes (62%) were the suggestions to overcome the constraints. Providing crop insurance (80%), availability and supply of improved seedlings and inputs at right time (79%), conducting demonstration cum training programmes (75%) and development of cost effective simple technologies for pest and disease management (71%) were the suggestions of small farmers to overcome the production constraints (Rai and Ramesh Babu, 2008). It can be concluded that adoption of scientific production practices can reduce the yield gap to a considerable extent, thus, leading to increased productivity of arecanut in the district. Hence, there is a need for reaching arecanut growers with different extension strategies like organizing capacity building activities for stakeholders, conducting demonstrations to show the worth of the technologies, organizing field visits to solve field problems, conducting exposure visits to successful farms to develop confidence about technologies and encouraging collaborative and group approaches may increase the production and productivity of arecanut in the district (Alagukannan *et al*., 2015 and Singh *et al.*, 2014).

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