

Role of Intercrops in Reducing the Establishment Cost of Lime Orchards

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ABSTRACT

Fruits are vital for human health. Citrus fruits are rich source of Vitamin 'C', lime fruits are rich in vitamin 'C' because of its acidic nature; it is used for flavouring the dishes. The study was conducted in Bijapur district of Karnataka. The data were collected from 95 lime growers during the year 1992-93. Tabular analysis was used to analyse the data. The cost of establishment worked out to Rs. 56,429.58 in small, Rs. 49,179.62 in medium and Rs. 47,143.09 in large orchards. The farmers have taken the intercrops such as groundnut, onion, chilli, sunflower, jowar, bajra etc. The intercrops helped the farmers to a great extent in reducing the establishment cost of lime orchards. It was to the extent of 58.82 per cent in small, 53.90 per cent in medium and 46.88 per cent in large orchards.

Fruits of citrus family occupies commercially a very important place. In addition to being rich source of vitamin 'C', the limes are used in preparation of pickles, citric acid, citrate of lime and cosmetic. Lime fruits are available throughout the year and are used for flavouring vegetable dishes, fish, meat and salads. In Karnataka the citrus occupies an area of 32,895 hectares and Bijapur district accounts for 9.29 per cent (1990-91). In Bijapur district, among citrus species only limes being cultivated and Indi taluk occupies an area of 2075.90 hectares accounting for 64.39 per cent of the district area (3223.56 ha) under lime (1991-92). Since, the lime plants does not develop entire canopy in the initial four years of its establishment, farmers grow intercrops. This practice is having economic implications. The present study is intended to estimate the influence of intercrops on finan-

cial requirement of farmers during establishment period. This would enable the extension departments and financial institution for effectively participating in promotion of lime cultivation.

Methodology

The study was conducted in Indi taluk, Bijapur district of Karnataka where the lime cultivation is popular. The data were collected from the lime cultivators through personal interview method with the help of pre-tested questionnaire. The data pertained to the year 1992-93. The total sample consisted of 95 lime growers spread over five villages of Indi taluk. Tabular analysis was employed to work out establishment cost and costs and returns for intercrops.

RESULTS AND DISCUSSION

General characteristics of the sample lime growers

The data required for the purpose of the study were collected from 95 lime growers. The farmers were post classified into small, medium and large based on their lime holdings. The average size of lime holdings were 0.37 ha, 0.71 ha and 1.57 ha for small, medium and large farmers, respectively (Table I). The average size of lime orchard in proportion to the lime holding was very less in almost all category of farmers. This was due to the fact that major portion of their land holding was unirrigated and the lime requires frequent irrigations. Kagzi variety was grown in the study area by majority of lime growers. This variety was preferred by growers due to easy availability of seedlings, good yield and comparable resistance to pests and diseases. Average number of plants per hectare was 300 compared to 270 as advocated by horticulturists. The orchards were in the age group of 5 to 26 years and the average expected life span of lime orchard was 30 years.

TABLE 1
General characteristics of sample lime growers

Sl. No.	Item	Units	Orchards		
			Small	Medium	Large
1.	Sample size	Number	39	31	25
2.	Average land holdings	Hectare	6.07	8.15	21.34
3.	Lime holdings	Hectare	0.37	0.71	1.57
4.	Percentage of lime holdings to average land holding	—	6.09	8.72	7.36
5.	Variety grown	—	Kagzi lime	Kagzi lime	Kagzi lime
6.	Range of age of bearing orchards	Years	5-26	5-26	5-26
7.	Average expected life span of orchards	Years	30	30	30
8.	Average number of plants per hectare	Number	300	300	300

Cost of establishment of lime orchards

The establishment of lime orchard needs four years period. Establishment costs are classified into investment and maintenance costs. The investment cost includes the costs on rental value of leased land for the initial four years, sprayer, plant material, layout of field and fencing. The maintenance costs comprised of the expenditure on labour and other inputs such as farm yard manure (FYM), plant protection chemicals (PPC). The cost incurred on intercrops during the gestation period were also included in the maintenance cost.

The results of the analysis of cost of establishment in lime orchards of different size groups are presented in the Table 2. The investment costs were considered at the beginning of the establishment while, the cost of maintenance were for the four-year period upto bearing stage.

The total per hectare establishment cost was highest in the case of small (Rs. 56,429.58) followed by medium (Rs. 49,179.62) and large (Rs. 47,143.09) orchards indicating economies of scale. This finding is in conformity with Krishnaraj (1981) who evaluated the levels of investments in arecanut plantations. The cost on plant material was high in medium and large orchards because they brought the seedlings from other orchards which added to the transportation cost. The small orchard owners raised the seedlings for their requirement and even they were selling the seedlings to others. For all the orchards, prevailing rental value of land (Rs. 3,000 per hectare) was considered. Thus, the per hectare investment cost worked out to be Rs. 16,577.00 in small, Rs. 16,524.49 in medium and Rs. 16,456.56 in large orchards. The maintenance costs were Rs. 39,852.38 in small, Rs. 32,655.13 in medium and Rs. 30,686.53 in large orchards. This was due to the intensive practice followed by farmers with

TABLE 2

Cost of establishment of lime orchards of different size groups

(Rs. per hectare)

Sl. No.	Particulars	Orchards		
		Small	Medium	Large
A. Investment costs				
1.	Rental value of leased in land (for four years)	12000.00 (21.26)	12000.00 (24.40)	12000.00 (25.46)
2.	Sprayer	555.42 (0.98)	424.13 (0.86)	371.07 (0.78)
3.	Plant material	610.08 (1.08)	717.09 (1.46)	732.50 (1.55)
4.	Layout of field	881.70 (1.56)	852.63 (1.73)	822.99 (1.75)
5.	Fencing	2530.00 (4.48)	2530.00 (5.14)	2530.00 (5.36)
	Total (A)	16577.20 (29.37)	16524.49 (33.60)	16456.56 (34.91)
B. Maintenance costs				
1.	First Year	9287.60 (16.45)	8076.63 (16.42)	7278.96 (15.44)
2.	Second Year	9748.81 (17.28)	8160.47 (16.59)	7596.82 (16.11)
3.	Third Year	10213.54 (18.10)	8188.03 (16.65)	7844.42 (16.64)
4.	Fourth Year	10602.43 (18.79)	8230.00 (16.73)	7966.33 (16.90)
	Total cost during four years (Total B)	39852.38 (70.62)	32655.13 (66.40)	30686.53 (65.09)
	Total establishment cost (A+B)	56429.58 (100.00)	49179.62 (100.00)	47143.09 (100.00)

Figures in parentheses indicate percentages to the total establishment cost.

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Costs and Returns of Intercrops in Lime Orchard During Gestation Period

(Rupees per hectare)

Particulars	I year	Crops	II year	Crops	III year	Crops	IV year	Crops	Total
Small orchards									
Gross returns	8961.89	Ground nut	8513.51	Ground nut	8131.27	Onion	7586.48	Sun flower	33193.15
Costs	2367.00	Wheat	2257.64	Wheat	2003.46	Chilli	1987.43	Jowar	8615.53
Net returns	6594.89		6255.87		6127.81		5599.05		24577.62
Medium orchards									
Gross returns	7945.83	Ground nut	7015.31	Ground nut	5828.20	Maize	4612.14	Bajra	25431.48
Costs	2225.90	Wheat	2120.21	Wheat	1833.13	Jowar	1661.00	Jowar	7840.24
Net returns	5719.93		4895.10		4025.07		2951.14		16099.97
Large orchards									
Gross returns	6500.24	Ground nut	6000.69	Ground nut	5300.50	Maize	4300.49	Bajra	22101.92
Costs	1800.72	Wheat	1600.35	Wheat	1400.64	Jowar	1200.24	Jowar	6001.95
Net returns	6099.97		4699.52		4400.34		3899.86		16099.97

small orchards. However, the maintenance cost increased over the years in all the size group of orchards. As the main crop (lime plants) developed the input requirements were also more.

Costs and Returns of Intercrops

The lime cultivators have grown intercrops during gestation period. The returns from the intercrop helped the farmers in reducing the requirement of cash for establishment. Chinnappa (1981) also reported that the establishment cost could be reduced when some intercrops were grown during 3 years of establishment of guava orchard.

Generally groundnut, sunflower, onion, chilli, jowar, bajra and wheat were taken as intercrops. However, the farmers had not grown the intercrops during summer season due to the scarcity of water. During third and fourth year of the establishment the medium and large orchard owners have grown the crops which were not commercially important and require less costs. They have grown the crops to feed cattle, whereas, the small orchard owners grown the crops which were commercially important throughout the gestation period (Table 3).

The total costs incurred in growing intercrops were Rs. 8615.53, Rs. 7840.24 and Rs. 6001.95 in small, medium and large orchards, respectively. As the size of the orchard increased the intercrops received lesser importance. Growing intercrop is incidental in large orchards whereas, it was mandatory for small orchards. The cumulative gross returns were high in small (Rs. 33193.15) followed by medium (Rs. 25431.48) and large (Rs. 22101.92) orchards the reason is obvious.

From the table 3 it is clear that the costs decreased over the years from Rs. 2367.00 to Rs. 1987.43 in small, Rs. 2225.90 to 1661.00 in medium and Rs. 1800.72 to 1200.24 in large orchards. The gross returns also decreased from Rs. 8961.89 to Rs. 7586.48 in small, Rs.

7945.83 to Rs. 4612.48 in small, Rs. 7945.83 to Rs. 4300.49 in large orchards. The returns decreased over the years in all the size groups because of two reasons viz., as the main crop developed the space available for cultivation decreased and increase in nutrient intake by the main crop.

The intercrops covered the establishment costs by 58.82 per cent in small, 53.90 per cent in medium and 46.88 per cent in large orchards. As it covers more than 50 per cent of the establishment cost in small and medium orchards it encourages the small and medium farmers to establish lime orchards.

Conclusions

(1) The establishment cost was high in small followed by medium and large orchards indicating economics of scale.

(2) Maintenance cost will have to be incurred during gestation period by growing intercrops it is possible to earn the positive returns.

(3) The costs and returns of intercrops were high in small orchards because of intensive care and commercial crops. Growing of intercrop is incidental in large orchards whereas, the growing of intercrops is a question of sustainability for small orchards.

(4) Intercrops covered more than 50 per cent of the establishment costs in small and medium orchards. Hence, it encourages the establishment of lime orchards in these categories.

References

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