COST AND RETURN ANALYSIS OF BANANA CULTIVATION AMONG MARGINAL AND SMALL FARMERS IN TIRUCHENDUR TALUK, THOOTHUKUDI DISTRICT

Mrs. S. Beulah
Ph.D., Research Scholar, Register No. : 12146
P.G. Dept. and Research Center in Economics
Pope's College (Autonomous), Sawyerpuram
Manonmaniam Sundaranar University
Abishekapatti, Tirunelveli, Tamil Nadu, India

Dr. S. Henry Pandian
Associate Professor and Research Supervisor
P.G. Dept. and Research Center in Economics
Pope's College (Autonomous), Sawyerpuram
Thoothukudi District, Tamil Nadu

Abstract

Cultivation of banana poses more problems when compared to other agricultural commodities. The cultivation of banana is generally depending on fertility of soil, climatic situations, high yielding varieties of seeds and rainfall. The farmers are facing many problems in cultivation of banana. The banana growers are affected by the problems in cultivation of banana due to non-availability of labour, high wage rate, high transportation cost, over aeration, cyclone, storage cost, poor quality of fertilizers, non-availability of fertile seeds, loss due to pest and inadequate technical know-how. The study major objectives are to estimate the cost and returns structure of banana cultivation for two groups of farmers namely marginal and small; and to study the input output ratio of banana cultivation in the study area. It is concluded from the above analysis that, the levels of input application were greater for small farmer compared with the marginal farmer producing banana. The more intensive use of energy inputs was done by the small farmers than by the marginal farmers. The net income earned would be comparatively higher even though the small farmers spent more on cultivation of banana crops.

Keywords: *Agriculture, Energy, Productivity, Income.*

Introduction

India is the largest banana producer in the world and the cultivators are facing many problems during cultivation. The productivity of banana in India is low when compared to other countries. At present the development of agriculture does not merely depend upon increasing the agricultural produce and productivity, but also upon the promotion of a better and well organized marketing by which the agricultural goods are moved from the field of the farmer to the places of ultimate customers. Banana production is seasonal in nature while its demand is inelastic. This affects the price fixation. There is a large variation in the quality of banana which makes their grading and standardization somewhat difficult.

The new agricultural technology is believed to have its desired impact only on regions endowed with ample resources. It is also felt that gains of new technology have not been evenly distributed among various sections of farmers and regions considerable headway is made in assessing the economic viability of adopting the new agricultural practices especially the use of high yielding difference in factor endowments and varying climatic conditions.

Statement of Problem

Cultivation of banana poses more problems when compared to other agricultural commodities. The cultivation of banana is generally depending on fertility of soil, climatic situations, high yielding varieties of seeds and rainfall. The farmers are facing many problems in cultivation of banana. The banana growers are affected by the problems in cultivation of banana due to non-availability of labour, high wage rate, high transportation cost, over aeration, cyclone, storage cost, poor quality of fertilizers, non-availability of fertile seeds, loss due to pest and inadequate technical know-how. At the juncture, the cost and returns structure of banana cultivation is highly affected by the farmers. This study is focused to find out the cost and returns structure and input output ratio of banana cultivation

Objectives of the Study

1. To estimate the cost and returns structure of banana cultivation for two groups of farmers namely marginal and small.
2. To study the input output ratio of banana cultivation in the study area.

Hypothesis

There is a no difference in yield of banana between marginal and small farmers.

Methodology

Thoothukudi district comprises of eight taluks and 12 blocks. Among them, Tiruchendur taluk have chosen as the study area. In Tiruchendur taluk comprises of two Blocks namely Alwarthirunegari and Tiruchendur are taken for the present study. The field survey was conducted from July 2017 to December 2017 for the collection of primary data.

Multistage stratified random sampling technique has been adopted for the study taking Thoothukudi district as the Universe, the taluk as the stratum, the village as the primary unit and banana cultivators as the ultimate unit.

In each of the selected block the revenue villages were listed and arrange in descending order of area under banana cultivation. At the first stage 10 villages were selected from Alwarthirunegari and another 10 villages from Tiruchendur blocks. The selected villages in each block accounted for more than 60 per cent of banana cultivation in the respective blocks considering the limitation of time, finance and manpower it was decided to have a sample of 179 banana growers in canal irrigation areas and 190 from ground water irrigation areas. Hence, a total of 369 sample banana cultivators were selected and it is 7.68 per cent of the total banana cultivators in these two blocks.

Neyman Method for Sampling

For sampling, stratified random sampling method was used. The sample size was calculated using the Neyman method (Yamane, 1967). The permissible error in the sample size was defined to be 95 per cent reliability.

Yamane (1967) provides a simplified formula to calculate sample sizes. This formula was used to calculate the sample sizes in Tables 1.2 and is shown below. A 95 per cent confidence level and P = 0.5 are assumed for equation. $n = \frac{N}{1+N\ (e)^2}$

Where n is the sample size, N is the population size, and e is the level of precision. When this formula is applied to the above sample, we get the equation.

$$n = \frac{4805}{1+4805\ (0.05)^2} = 369 \text{ cultivators}$$

Result and Discussion
Input-Output Structure

The input-output structure of banana cultivation per acre between marginal and small farmers is presented in Table 1.

Table 1 Input-Output Structure of Banana Cultivation Per Acre by Marginal and Small Farmers

Particular	Marginal Farmer	Small Farmer	t-value
Human Labour in Man days	142.15	152.18	4.201*
Bullock Labour in Pairs	7.36	8.76	0.957
Chemical Fertilizer in Rs.	3289.14	3924.18	4.315*
Pesticide in Rs.	810.32	902.48	1.712
Irrigation Cost in Rs.	1218.64	1387.46	3.613*
Mechanical Power in Hours	6.18	8.02	2.945*
Seed in Kgs.	10.57	11.06	1.347
Yield in Kgs.	13487.50	14785.50	2.816*
Sample Size	262	107	

Source: Field Survey. * Statistically significant at 5 per cent level.

Table 1 reveals that the yield per acre of banana for the marginal farmer was 13,487.50kg. And that for the small farmer was 14,785.50kg. Therefore, the first hypothesis that 'there is no difference in yield of banana between marginal and small farmers' is disproved. Hence, there was indeed a significant difference in yield per acre between the marginal and small farmers. The difference in average requirement of human labour per acre was significant and it was 142.15 man days in the case of the marginal farmers and 152.18 man days in the case of the small farmers. Per acre utilisation of fertilizer and pesticides by the marginal farmers was Rs. 3,289.14 and Rs. 810.32 respectively as against Rs. 3,924.48 and Rs. 902.48 by the small farmers respectively. The use of fertilizer and pesticides was also found statistically significant between the two groups of farmers. *There is significance difference in yield of banana marginal and small farmers was Rs. 3,289.14 and Rs. 810.32 respectively.*

The small farmers were found to utilize more mechanical power and the utility of irrigation cost per acre was more than the marginal farmers in the study area. For instance, the small farmers used 8.02 hours of mechanical power and Rs. 1,387.46 for irrigation cost per acre while the marginal farmers used only 6.18 hours of mechanical

power and Rs. 1,218.64 as irrigation cost per acre. The other inputs, namely bullock labour and seed cost were not significant between the two groups of farmers. Thus, the observation shows that the levels of input application were greater for small farmers when compared with the marginal farmers.

Cost and Returns Structure

The cost and return structure helps the farmers for making adjustments in the organisation and thereby they can try to secure optimum levels of production and income. Per acre cost and return structure of marginal and small farmers cultivating banana has been presented in Table 2.

Table 2 Cost and Returns Structure of Marginal and Small Farmers Cultivating Banana (Per Acre)

Sl. No	Item of Cost	Marginal Farmer		Small Farmer		Overall	
		Value in Rs.	In %	Value in Rs.	In %	Value in Rs.	In Percen-tage
1	**Cost A** Value of human labour including family labour	10624.4	40.20	12643.6	41.08	12045.6	40.24
2	Value of Bullock Labour	927.46	3.51	1132.45	3.68	1124.58	3.76
3	Chemical Fertilizer	3245.78	12.28	3718.59	12.08	3716.24	12.41
4	Pesticide	1914.56	7.24	2226.14	7.23	2178.45	7.28
5	Seed Cost	626.15	2.37	710.45	2.31	700.54	2.34
6	Farm Manure	2179.54	8.25	2478.95	8.06	2432.15	8.13
7	Cost of Irrigation	1465.24	5.54	1667.48	5.42	1612.84	5.39
8	Interest on Working Capital	1187.45	4.49	1265.87	4.11	1278.54	4.27
	Cost A - Total	22170.6	83.89	25843.5	83.98	25088.9	83.82
9	**Cost C** Rent	1012.35	3.83	1165.65	3.79	1154.58	3.86
10	Interest on Fixed Capital, Land Revenue, Cess and Tax, Depreciation of Implements and Machinery	3245.78	12.28	3765.28	12.24	3689.95	12.33
11	**Cost C - Total**	26428.7	100.00	30774.5	100.00	29933.5	100.00
12	Yield Per Acre in kgs.	3415.50		3845.50		3645.85	
13	Yield Per Acre in Rs.	51232.5		57682.5		54687.7	
14	Net Income in Rs.	24803.7		26907.9		24754.2	

Source: Field Survey

Table 2 shows that the net income earned by the marginal farmers was Rs. 24,803.74 as against Rs. 26,907.50 by the small farmers. The total cost incurred by the marginal farmers was Rs. 26,428.76 which was lesser than the cost incurred by the small farmers (i.e. Rs. 30,774.51). The variable cost accounted to 83.89 per cent for the marginal farmers and 83.98 per cent for the small farmers.

The human labour constituted the major cost component, accounting 40.20 per cent of the total cost in the case of the marginal farmers and 41.08 per cent in the case of the small farmers. Interest incurred on fixed capital was another important cost component which accounted 12.28 per cent for the marginal farmers and 12.24 per cent for the small farmers. Expenditure made on chemical fertilizer was greater in the case of small farmers, which were worked out to be 12.08 per cent against 12.28 per cent in the case of the marginal farmers.

The cost of rent calculated for marginal farmers was 3.83 per cent and it was 3.79 per cent for the small farmers. Pesticide cost was 7.24 per cent of the total cost for the marginal farmers and it was 7.23 per cent for the small farmers. Other costs such as seed cost, farm manures, irrigation cost and interest on working capital was worked out to be lesser than 9 per cent in both the groups. The net income earned by the marginal farmers was Rs. 24,803.74.

Input-Output Ratio

Table 3 presents a comparison of the input-output ratio for banana cultivated by both the marginal and small farmers.

Table 3 Economics of Cultivation of Banana Per Acre

Sl. No	Item of Cost	Marginal Farmer		Small Farmer		Overall	
		Unit in Qtls.	Value in Rs.	Unit inQtls.	Value in Rs.	Unit in Qtls.	Value in Rs.
1.	Output / Acre Main Product	34.15		38.46		36.46	
2.	Gross Return		51232.50		57682.50		54687.75
3.	Total Operating Cost (Cost A)		22170.63		25843.58		25088.97
4.	Net Return over Cost A		29061.87		31838.92		29598.78
5.	Cost C		26428.76		30774.51		29933.50
6.	Net Return over Cost C		24803.74		26907.99		24754.25
7.	Cost of Production/Qtl. (Cost A)		851.01		827.85		811.82
8.	Cost of Production/Qtl. (Cost C)		773.90		800.17		821.00
9.	Input-Output Ratio (Cost A)		2.31		2.23		2.18
10.	Input-Output Ratio (Cost C)		1.94		1.87		1.83
11.	Benefit – Cost Ratio (Cost C)		0.94		0.87		0.83

Source: Field Survey

The input-output ratio per acre of banana cultivation in terms of operational cost was Rs. 1.94 for the marginal farmers and Rs. 1.87 for the small farmers. The profit gained by the small farmers was greater than the benefit enjoyed by the marginal farmers. Benefit-cost ratio reveals that the small farmers gained Rs. .0.840 and the marginal farmers gained Rs. 0.839 only. Thus, it was observed that the cost of production and output per acre for the small farmers was higher than the marginal farmers. Cost of Rent calculated for marginal farmer was Rs. 383. The small farmers indeed, enjoyed greater monetary benefits than the marginal farmers in the study area.

Conclusion

It is concluded from the above analysis that, the levels of input application were greater for small farmer compared with the marginal farmer producing banana. The more intensive use of energy inputs was done by the small farmers than by the marginal farmers. The net income earned would be comparatively higher even though the small farmers spent more on cultivation of banana crops. The total cost for the marginal farmers was found to be less than that for the small farmers. The input-output ratio of banana cultivation shows that the cost of output per acre for the small farmers was higher than that of the marginal farmers.

Suggestions

- Integration of modern scientific knowledge and proven eco-friendly techniques of conservation and utilization of natural resources using area specific tools, implements and agricultural practices as well as scientific management of cattle and others. These indigenous systems can be made more economically viable.
- Water is major constraints outside the monsoon period. Rain water harvesting and storage in tanks offers immense possibilities for irrigation.
- The utilization of the available energy resources more efficiently to partially address the supply constraints and obviously, technological solutions have an advantage in this task.

References

1. Handan Akcaoz (2011)., Analysis of energy use for banana production: A case study from Turkey, African Journal of Agricultural Research, 5 November, Vol. 6(25), pp. 5618-5624,.
2. Hazarika, B.N., "Banana Cultivation:, Kisan World, 36(3): March 2009, pp.33-35.
3. Gurunathan, S., and Palanisami, K., (2008), "Energy Use and its Efficiency in Tamil Nadu Agriculture: A Case Study of Different Groundwater Development Regions in Coimbatore District of Tamil Nadu", Agricultural Economics Research Review, Vol. 21 January-June, pp.48-53.
4. Sangili, "Economics of Banana Cultivation in Anandanallur Block, Madurai" Unpublished Ph.D., Theis, Madurai Kamaraj University, 1980, p.251.