



ISSN (E): 2277-7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2022; SP-11(10): 816-819
© 2022 TPI
www.thepharmajournal.com
Received: 28-07-2022
Accepted: 30-08-2022

S Arivarasan
Department of Agricultural
Economics, School of
Agriculture, VELS Institute of
Science, Technology & Advanced
Studies (VISTAS), Pallavaram,
Chennai, Tamil Nadu, India

V Balamurugan
Department of Agricultural
Economics, AC & RI, Madurai,
Tamil Nadu, India

T Anitha
Department of Post Harvest
Technology, HC & RI,
Periyakulam, Tamil Nadu, India

M Balakrishnan
Senior Bid Finance Analyst,
Vodafone Telecommunications,
Singapore

Dr. S Selvam
Professor and Head,
Department of Agricultural
Economics, AC & RI, Madurai

Dr. KR Vijayalatha
Assistant Professor (Hort.)
HC & RI (W), Trichy

Corresponding Author:
S Arivarasan
Department of Agricultural
Economics, School of
Agriculture, VELS Institute of
Science, Technology & Advanced
Studies (VISTAS), Pallavaram,
Chennai, Tamil Nadu, India

An economic analysis of production and marketing and constraints faced by the maize farmers in Cuddalore district of Tamil Nadu

S Arivarasan, V Balamurugan, T Anitha, M Balakrishnan, Dr. S Selvam and Dr. KR Vijayalatha

Abstract

The present study was conducted in Cuddalore district of Tamil Nadu. After selecting Cuddalore district, the Mangalur block was purposively selected since it has the largest area under maize cultivation. The overall objective of the study was to examine production and marketing aspects in maize. The result showed that the cost A1 accounted for nearly 83.73 percent of the cost of cultivation. Since the entire sample farmers were owner operators, Cost A2 was the same as that of Cost A1. Cost B1 and B2 accounted for 84.17 percent and 98.64 percent of the total cost of cultivation respectively. Cost C1 accounted for 85.54 percent of the total cost of cultivation, while the value of Cost C2 found to be 100 percent. There was marginal increase in per hectare yield of maize with increase in size groups. The results of Cobb-Douglas production function analysis of rainfed maize revealed that the R^2 was 0.59 which indicated that 59 percent of the variation in the dependent variable was accounted by the independent variables selected for the study. The variables like seeds, FYM and potassium were significant at one percent level of probability which indicated that an increase in one kg of seed, FYM and potassium *Ceteris paribus*, would increase the yield by 0.30, 0.10 and 0.07 percent. The study also revealed that 81.67 percent of maize growers marketed cent percent of their produce immediately after harvest, while 10 percent of the farmers marketed 76 to 99 percent of their harvested produce. Furthermore, it was found that 100 percent of the farmers marketed their produce only through the village merchants. Price spread analysis revealed that the farmers received 95.03 percent of the consumer's price. With respect to the problems faced by the sample farmers, inadequate transport facility was the major problem faced with a mean score of 61.40 percent, followed by distant location of regulated market with the mean score of 50.90 percent and inadequate storage facility 43.85 percent.

Keywords: Maize, production, marketing, price spread and efficiency, constraints

Introduction

Maize, also known as corn, is a cereal grain that was first grown by people in Central America. It is now the third most important cereal crop in the world and is called the 'Queen of Cereals'. Maize is a leafy stalk whose kernels have seeds inside. The importance of maize is due to its wide diversity of uses. It is used both as food for human and feed for animals. Corn is nearly directly consumed as feed. Corn is converted into a variety of foods such as popped snack food and staple alkali-cooked called "Mexican" foods. The starch, the major constituent of the corn kernel, is used in foods and industrial products. The starch is also converted into glucose/fructose for use as food sweetness. Maize has a nutritional value for both animals and humans. The major growing districts of Tamil Nadu are Perambalur, Ariyalur, Cuddalore, Dindigul and Tirupur. The kharif maize acreage is marginally lower at 0.16 lakh hectares. The demand for maize is increasing during the last decade due to the value-added product in the industry besides the increasing poultry industry. Most of the maize growing areas are in assured rainfall and on soils which are more fertile than those where other millets are grown. Maize is used widely in poultry feed. In this situation, it is necessary to study the prevailing maize economy in the study area and efficiency level of maize production. It is also found that growers face some specific problems in marketing. Hence, it felt that it would be appropriate to make an in-depth study on the above crop, with the general objective to examine the economics of cultivation and marketing aspects in maize which would pave way for the development of the same in the rainfed block of Cuddalore district.

Materials and Methods

The area selected for the study was Cuddalore district of Tamil Nadu. The maize production

was higher in Mangalur block in the selected district. For the collection of primary data from the sample respondents, the villages *viz.*, Mangalur, Ma. Podaiyur and Thachur were selected based on the highest area and productivity. The total size of the sample farms was fixed as 120 from Mangalur block. The sample farmers thus selected were post stratified into small, medium and large farmers. For this classification, the criteria used by Integrated Rural Development Programme was adopted, namely farms having 0.1 to 1 hectare of irrigated land (or) 0.1 to 2.0 hectare of rainfed land as small, 1.0 to 2.0 hectare of irrigated land (or) 2.0 hectare to 4.0 hectare of rainfed land as medium and more than 2 hectares of irrigated land or more than 4 hectares of rainfed land as large farms (Elamurugannan, 2001) [6]. The primary data required for the study were collected through personal interview with the help of pre-tested comprehensive interview schedule. The schedule for the farmers covered aspects such as cost of cultivation, net returns from the crops, marketing of maize, problem in production and marketing, etc.,. The data collected were tabulated, processed and subjected to statistical analysis.

Results and Discussion

Cost of cultivation

An analysis of cost would enable the farmers to re-examine the utilization of farm resources effectively. Various cost concepts such as Cost A₁, Cost A₂, Cost B₁, Cost B₂, Cost C₁ and Cost C₂ were estimated and discussed.

Rainfed maize

The details regarding cost of production of rainfed maize for the sample farm is presented in Table 1. It could be noted from the Table 1 that among the cost component of A₁, expenditure towards labour charges was maximum, followed by costs of manures and fertilizers, seed costs and plant protection chemicals. Maize being labour intensive short duration crop and the wages prevailed in the study area was also high comparatively with Rs. 200 per men per day and Rs. 100 per women per day. This is followed by costs of manures and fertilizers, seed costs and plant protection chemicals. The Cost A₁ is Rs. 34,369.01. Since the entire sample farmers were owner operators, Cost A₂ was the same as that of Cost A₁.

Table 1: Cost of production for rainfed maize (Rs. /ha)

S. No	Cost components	Cost (Rs)
1.	Cost of seed	4,446 (10.83)
2.	Labour charges	19,661.2 (47.90)
3.	Manures and fertilizers	7,719.5 (18.81)
4.	Plant protection chemicals	1827.5 (4.45)
5.	Interest on working capital (12.5%)	294.81 (0.72)
6.	Depreciation on buildings (5%) and implements (10%)	420.00 (1.02)
	Cost A ₁	34,369.01 (83.73)
7.	Rental value of leased in land	0.00 (0.00)
	Cost A ₂	34,369.01 (83.73)
8.	Interest on fixed capital other than land	182.80 (0.45)
	Cost B ₁	34,551.81 (84.17)
9.	Rental value of owned land	5937.30 (14.46)
	Cost B ₂	40,489.11 (98.64)
10.	Imputed value of family labour	560 (1.36)
11.	Cost B ₁ + Imputed value of family labour = Cost C ₁	35111.81 (85.54)
12.	Cost B ₂ + Imputed value of family labour = Cost C ₂	41,049.11 (100.00)
13.	Yield per hectare (quintals)	37.05
14.	Cost of production / quintal	1107.94

By adding the interest on fixed capital excluding land, to Cost A₂, Cost B₁ was found to be Rs. 34,551.81. By adding the rental value of owned land to Cost B₁, Cost B₂ was arrived. The estimated cost was Rs. 40,489.11. The Cost C₁ was arrived at by adding the imputed value of family labour to

Cost B₁. The estimated cost is Rs. 35,111.81. The cost C₂ is Rs. 41,049.11 it is obtained by adding the imputed value of family labour to Cost B₂.

The yield per hectare was found to be 37.05 quintals for the area of one hectare. The cost of production per quintals of

maize was Rs. 1107.94 for one hectare.

Summary of cost of production of maize

Table 2: Summary of cost of production of maize

S. No	Particulars	Cost (Rs)
1.	A ₁	34,369.01
2.	A ₂	34,369.01
3.	B ₁	34,551.81
4.	B ₂	40,489.11
5.	C ₁	35,111.81
6.	C ₂	41,049.11
7.	Yield (quintal)	37.05
8.	Cost of production / Quintal	1107.94
9.	Gross Income	74,100.00
10.	Net Income	33,051.00

It could be seen from the Table 2 that the farmers depended more on family labour and utilization of high wages increased with size of farm. This could be seen from variations in cost C₁ (Cost B₁ + Imputed value of family labour). The imputed value of family labour was Rs. 560 in farms indicating the family labour used in the farms. The Cost C₂ was Rs. 41,049.11. The net income from the maize cultivation and production was Rs. 33,051.00 for one hectare. The labour charge of the field for one hectare is Rs. 19,661.2. The cost of production per quintal was Rs. 1107.94.

Production function analysis

The results of the production function analysis on factors influencing the yield of rainfed maize are given in table 3

Table 3: Results of Cobb-Douglas production function for rainfed maize

S. No	Explanatory variables	Co-efficient	Standard Error
1.	Constant	-0.3797	1.2994
2.	Quantity of seed (kg)	0.3359***	0.0545
3.	FYM (tonnes)	0.1078***	0.0219
4.	Quantity of nitrogen (kg)	-0.0075	0.0263
5.	Quantity of phosphorous (kg)	0.0775	0.0193
6.	Quantity of potassium (kg)	0.0766***	0.0579
7.	Machine labour (hours)	0.1325	0.0814
8.	Labour (man days)	0.3301	0.2815

R² = 0.59 *** Significant at 1% level
 N = 120 ** Significant at 5% level
 F = 0.000013 * Significant at 10% level

The results showed that the (co-efficient of multiple determination) R² was 0.59 which indicates that 59 percent of the variation in the dependent variable was accounted by the independent variables selected for the study. Though comparatively R² was less, but for rainfed conditions, where there were many uncertainties involved in production, this can be said to be fairly a good fit. The variables seeds, farmyard manure and potassium were significant at one percent level of probability, which indicated that an increase in one kg of seed, farmyard manure and potassium *Ceteris paribus*, would increase the yield by 0.30, 0.10 and 0.07 percent. This showed that in rainfed maize, an increase in seeds, farmyard manure and potassium would attribute towards an increase in maize yield.

Problems encountered in production of maize

Maize farmers faces many problems in production of maize.

In order to know the major problems, the sample farmers were asked to rank the various problems faced by them. The individual ranks were given scores according to their percent position using Garrett table. The mean scores were worked out for each problem and accordingly ranks were allotted. The results of Garrett rankings are as furnished in Table 4.

Table 4: Problems encountered in production of maize

S. No.	Factors	Mean score	Rank
1.	Deficit rainfall	65.44	I
2.	Severe pest incidence	59.25	II
3.	Reduced yield	51.52	III
4.	Less labour involvement	47.65	IV
5.	High input cost	45.09	V

It could be seen from Table 4, that the deficiency of sufficient rainfall was the major problem faced by the farmers, because the farmers in the area greatly depend on the incidence of rainfall. Apart from this, the severe incidence of the pest, Armyworm has been added newly to the prevailing problems in the maize cultivation, damaging the yield to a greater extent. This was followed by the reduced yield of the produce which was the third problem accounting to 51.52 percent. The fourth problem was that the increased usage of machineries has led to the decreased labour involvement in the production with a mean score of 47.65 percent. So, the living standards of the labourers are affected severely. With a mean score of 45.09 percent, the fifth problem of the maize production was the high cost of seeds as they are using hybrids as seed material.

Marketing of Maize

The maize being not a staple food, it could not be marketed like other traditional crops grown in the study area. Maize is consumed very little by producer's family. Hence most of maize thus produced was marketed. With this background, in order to know the problems in marketing of maize it was decided to find out the channels through which they were marketed and also efficiency of these channels were worked out.

Percentage of quantity of marketing of maize

The Table 5 revealed that 81.67 percent of maize growers marketed cent percent of their produce immediately after harvest, while 10 percent of farmers marketed 76 to 99 percent of their harvested produce.

Table 5: Percentage quantity of marketing of maize by sample farms

S. No	Marketable surplus	Number	Percent
1.	100% of harvested produce	98	81.67
2.	76-99% of harvested produce	12	10.00
3.	51-75% of harvested produce	7	5.83
4.	26-50% of harvested produce	3	2.50
5.	Upto 25% of harvested produce	-	-
	Total	120	100.00

Remaining 10 percent and 5.83 percent of farmers marketed 51-75 percent and 26 to 50 percent of their harvested produce respectively. So it was found that majority of the maize growers (98.00 percent) marketed their entire harvested produce.

Marketing channels for maize

The following marketing channels were identified through

which the sample farmers marketed their produce.

Farmer → Village merchant → Wholesaler → Consumer

From the above channel, it was found that the 100 percent of farmers marketed their produce only through village merchants.

Price spread for Market Channel

It could be seen from the Table 6 that, the farmers have received Rs. 1500.00 per bag which constituted 95.03 percent to consumer’s price. The marketing cost incurred by village merchant was Rs. 9.75 per bag which constituted 0.62 percent to consumer’s price and marketing margin was Rs 29.75 per bag which constituted to 1.88 percent to consumer’s price.

Farmer → Village Merchant → Wholesale market → Wholesaler

Table 6: Price spread for Market Channel

(Rs./bag of 75 kg)

S. No.	Particulars of cost	Amount (Rs.)	Percent
1.	Farmer		
	Price received by the farmer	1500.00	95.03
2.	Village merchant		
	Purchase price	1500.00	95.03
	Loading charges	1.17	
	Transportation cost	4.25	
	Unloading charges	2.00	
	Weighing and watching charges	1.00	
	Miscellaneous charges	1.33	
	Marketing cost	9.75	0.62
	Marketing margin	29.75	1.88
	Sale price	1,539.50	
3.	Wholesaler		
	Purchase price	1,539.50	97.53
	Loading and unloading charges	4.12	
	Transportation cost	13.70	
	Miscellaneous charges	1.68	
	Marketing cost	19.50	1.23
	Marketing margin	19.50	1.23
4.	Consumer		
	Purchase price	1,578.5	100.00

Problems encountered in marketing of maize

Maize farmers face many problems in marketing of maize. In order to know the major problem, the sample farmers were asked to rank the various problems faced by them. The individual ranks were given scores according to their percent position, using Garrett table. The mean scores were worked out for each problem and accordingly ranks were allotted. The results of Garrett ranking are as furnished in Table 7.

Table 7: Problems faced by farmers in marketing of maize

S. No.	Factors	Mean score	Rank
1.	Inadequate transport facilities	61.40	I
2.	Distant location of regulated market	50.90	II
3.	Inadequate storage facilities	43.85	III
4.	Fluctuation in market price	34.55	IV
5.	Lack of credit in regulated market	21.25	V

As could be observed from above Table 7, that among the constraints expressed by maize growers, inadequate transport

facility was the major problem faced by farmers with a mean score of 61.40 percent. Subsequently, distant location of regulated market was ranked second with mean score of 50.90 percent. Inadequate storage facility occupied third major problem with 43.85 percent. Fluctuations in market prices and lack of credit in regulated markets were not major problems compared to the first three problems. It was expected that the developments in the transport facilities could solve the problem of distant location of regulated market enabling more farmers to sell their produce with increased return through the channel. This will increase their income.

Conclusion

The following are the conclusions of the present study. There existed a scope for increasing the income of the farmers by way of reorganizing the use of existing resources with the present level of technical knowledge. Marketing of produce through regulated market was found to be not efficient as the transportation cost to the long distant regulated market only leads to the increased expenditure. So, the farmers seem to be satisfied with selling their produce to the village merchants as further expenses are reduced. Scarcity of labourers due to mechanization and inadequate transport facilities were the foremost problem faced by the farmers during the production and marketing of maize in the study area.

Reference

- Arivarasan S, Chinnadurai M, Ashok KR. Resource Use Efficiency of Cassava Production System in Kalvarayan and Kolli hills in Western Tamil Nadu, Progressive Research-An International Journal. 2016;11(Special-II):1203-1205. Print ISSN:0973-6417, online ISSN :2454-6003,
- Ajmer Singh, Satyavir Singh, Surendra Singh. An Economic Analysis of Production Constraints in Wheat Crop: Case of Northwestern India, Agricultural Situation in India. 2008;46(3):145-150.
- Brodrick Awerjie, Sanzidur Rahman. Profitability and Efficiency of Cassava Production at the Farm Level in Delta State, Nigeria, Reseach Gate. 2015;4(5):24-30.
- Elise Stephanie MeyoMvodo and Dapeng Liang. Cassava Sector Development in Cameroon: Production and Marketing Factors Affecting Price, Agricultural Sciences, 2012;3(5):651-657.
- Janakirani A, Murugan PP. Constraint Analysis of Cassava growers and Strategies for Increasing Production and Productivity in Salem, Tamil Nadu, Agriculture Update. 2010;5(1&2):17-21.
- Elamurugannan S. Economics of Mixed Farming in Rainfed Agriculture in Erode District of Tamil Nadu. Unpub. M. Sc.(Ag.) Thesis, AC&RI, TNAU, Coimbatore; c2001.