Production and Marketing of Maize in Perambalur District of Tamil Nadu

Abstract

Tamil Nadu has a pride of place in the national maize scenario due to steadily increasing area under maize than other millets. The present study was taken up to estimate the marketing cost and price spread for Maize in Preambular District, to identify the major marketing channels for Maize in the study area and to identify the production and marketing constraints/factors of Maize. Multi stage random sampling procedure was followed to select the blocks, villages and farmers. Finally, 100 farmers were selected for the study. The study identified that per hectare total cost of cultivation of maize worked out to be Rs.45766 per ha. The yield realized was 51 qtl per hectare. Gross returns realized from one hectare of maize grown by the sample farmers was Rs. 55080 per ha. Net returns realized from one hectare of maize grown by the sample farmers was Rs. 9314 per ha. Producer-farmers received a net price of Rs. 946.4/q in channel I (Producer - Commission Agent - Wholesaler- Processor / Consumer) which accounted for 75.23 per cent of consumer's price. And the same was Rs. 1015/q in channel II (Producer-Local Trader - Wholesaler - Processor / Consumer) which accounted for 75.69 per cent of consumer's price.

Keywords: Maize, Economics, Marketing, Perambalur district

Introduction

Maize (*Zea mays*) is one of the most important cereals of the world and provides more human food than any other cereal. Maize is of American origin having been domesticated about 7000 years ago. Maize provides nutrients for humans and animals and serves as a basic raw material for the production of starch, oil and protein, alcoholic beverages, food sweeteners and, more recently, fuel. Maize is high yielding, easy to process, readily digested, and costs less than other cereals. It is also a versatile crop, allowing it to grow across a range of agro ecological zones. Every part of the maize plant has economic value: the grain, leaves, stalk, tassel, and cob can all be used to produce a large variety of food and nonfood products.

Poultry feed provides the link between the maize and poultry sectors. Many of the large vertically-integrated companies produce their own poultry feed. Maize accounts for most of the energy in the feed ration for broilers. Broiler rations, on average, contain 60- 65 per cent maize, 28-30 per cent soybean meal, and two to three per cent oil. According to CIMMYT (International Maize and Wheat Improvement Center report 2009) approximately seven to eight million tons of maize is needed each year just for poultry feed. This represents over 50 per cent of India's total annual production of maize. In many parts of India, the supply of maize for use in

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poultry feed is becoming a problem. For example, the state of West Bengal needs about 2,100 tons of maize per day for poultry feed but only ten per cent of this is produced in West Bengal itself: the other 90 per cent is imported from other states.

Comment [H4]: Enrich the introduction part with the reviews related to the study

Tamil Nadu has a pride of place in the national maize scenario due to steadily increasing area under maize than other millets. Maize is mainly grown in Perambalur, Dindigul, Coimbatore, Salem, Erode and Virudhunagar districts. Currently, Perambalur district is the one of the top producer of maize and Onion (small) in Tamil Nadu. Small farmers of Perambalur district in Tamil Nadu have been depending on cotton and groundnut crops for their livelihoods. But, increasing costs of production and labour, coupled with severe pest problems, forced them to think of an alternative crop. It was the time when maize was being recognized as a high value crop, primarily for its use as poultry feed. Also, it had less labour requirement than cotton crop Naturally, farmers in this region started showing interest in maize cultivation. Farmers initially benefited from growing maize. Owing to its cash generating nature, farmers focused only on maize. With this background, the present study focuses on the following objectives

1) To estimate the marketing cost and price spread for Maize in Perambalur District
2) To identify the major marketing channels for Maize in the study area
3) To identify the production and marketing constraints/ factors of Maize

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Methodology

Sampling Design

Selection of the District and block

Maize is one of the important cereals grown in Tamil Nadu. Among the districts, Perambalur district had the largest area under Maize. Hence, Perambalur district was purposively selected for the present study. Multi stage random sampling procedure was followed to select the blocks, villages and farmers. Among the blocks of Perambalur district, Veppanthattai block was selected for the study because it had the largest area under Maize. Four villages of Veppanthattai block namely, Brammadesam, Mettupalayam, Devayur and Keelapuliyur formed ultimate sampling unit. From each selected village, 25 farmers were randomly selected for the study. Hence, the total sample size was 100 farmers.

Analytical techniques employed

Tabular analysis

This technique was used to work out the costs, returns, producer's share in consumer's rupee, problems faced by the farmers in production and marketing of Maize

Cost concepts

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For estimating the cost of cultivation, the cost concepts namely cost A, cost B and Cost C employed in the All-India Farm Management studies, were also employed in the present study. The details of items included under each of the concept were as follows

Components of cost A: Cash component: It includes the items such as hired human labour, hired bullock labour, value of purchased seeds, value of purchased manure, fertilizers, plant protection chemicals and interest on working capital

Cost B: It consisted of cost A plus rental value of land plus interest on fixed capital

Cost C: This cost included cost B plus imputed value of family labour

Producer's share in the consumer rupee

This refers to the farmer's net price to the retail price of the produce expressed in percentage.

Price spread

This refers to the difference between the net price received by the farmer and the price paid by the consumer for the produce.

Producer's share in consumer's rupee (PSCR)

This is the percentage of the net price received by the producer – seller to the price paid by the consumer or selling price of retailer.

PSCR = NPP / SPR *100

RESULTS AND DISCUSSION

In consonance with the objectives of the study the data collected from primary and secondary sources were analysed and interpreted. The results of the present study are presented under the following headings.

1.Cost and returns of maize in Perambalur district

2. Marketing costs and margins and Price spread in Perambalur district

3.Constraints in production and marketing of maize in Perambalur district

Costs and Returns analysis in Maize

Per hectare costs and returns in Maize cultivation is depicted in Table 1. The table revealed that variable costs accounted for major proportion (88.14 per cent) of the total cost.

Fixed costs accounted for 11. 86 percent of the total cost. Among the variable costs, the lion share was accounted by the human labour (35.79 per cent). Among the material inputs, the highest cost incurred was on fertilizers and manures (24.99 per cent) followed by cost of seeds (8. 41 per cent). Labour cost includes use of labour right from the preparation of land, application of inputs, harvesting, threshing, winnowing and bagging.

The per hectare total cost of cultivation of maize worked out to be Rs.45766 per ha. The yield realized was 51 qtl per hectare. Gross returns realized from one hectare of maize grown by the sample farmers was Rs. 55080 per ha. Net returns realized from one hectare of maize grown by the sample farmers was Rs. 9314 per ha (Table.1 & Table. 2). Similar results were observed

Comment [H6]: Formula need to be mentioned with citation

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in many of the earlier studies, for instance, Chahal and Katariya (2005), Navadkar, *et al.,* (2012) and Manohar *et al*., (2013).

Table: 1 Cost of cultivation of Maize per hectare

(per ha)

S.No	Particulars	Total cost (Rs/ha)	Per cent
A	Operational cost		
1	Human labour	16379	35.79
2	Machine labour	5423	11.85
3	Seed	3850	8.41
4	Fertilizers & Manure	11436	24.99
5	Plant protection	1657	3.62
6	Irrigation	875	1.91
7	Interest on working capital	720	1.57
	Total Operational cost	40340	88.14
B	Total Fixed cost	5426	11.86
C	Total cost (A+B)	45766	100.00
	Yield (qtl/ha)	51	

Table: 2 Yield and Return in Maize production

S.No	Particulars	Unit
1	Yield (qtl/ha)	51 qtl
2	Gross return (in Rs)	Rs. 55080
3	Total cost of cultivation (A+B)	Rs. 45766
4	Net return (in Rs)	Rs. 9314

2. Marketing Channels

The selection of the marketing channels becomes imperative for the farmers since the real benefit accrued for them is mainly dependent upon the choice of the agency or the channel for disposal of their produce. The channel selected by them must account for minimum marketing cost and ensure higher share of consumer rupee. The selection of marketing channel depends upon quantity of marketable surplus available with the farmer, withholding capacity of the farmer, price, availability of infrastructural facilities etc., In the marketing of maize important channels were identified and are given as below.

Channel I

Producer ⟶ Commission Agent ⟶ Wholesaler ⟶ Processor / Consumer

Channel II

Producer ⟶ Local Trader ⟶ Wholesaler ⟶ Processor / Consumer

Channel-II was the main channel in the marketing of maize produce because majority of the farmers marketed their produce through this channel in the study area. Channel-I was another important channel involving commission agent as an additional intermediary through which growers marketed their produce. Similar results were observed in many of the earlier studies, for instance, Chahal and Katariya (2005), Navadkar, *et al*., (2012) and Manohar *et al*., (2013).

2.1 Marketing cost incurred by the producer of maize

Marketing costs involved in the marketing channels have been always a matter of great interest, as the higher marketing costs make the marketing system inefficient and are against the interests of both producers and consumers.

Table No: 3 Marketing cost incurred by the producer of maize

Particulars	Price/Qtl	Percentage
Packaging	15.2	12.82
Loading and unloading	12.8	10.79
Transport charge	47.6	40.13
Wastage during transit	6.3	5.31
Market fee	9.5	8.01
Weighing	12.5	10.54
Miscellaneous cost (Toll charges etc.)	14.7	12.39
Total marketing cost of farmers	118.6	100.00

Marketing costs and margins of producers involved in the marketing of maize were analyzed and have been presented in Table 3. Different costs incurred by the farmers were to the extent of Rs 118.6/q in channel I. These included costs on packing, loading, unloading, transportation and wastage during transit, market fee and weighing.

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2.2 Price spread of Maize in Perambalur district in Channel I

Marketing costs involved in the marketing channels have been always a matter of great interest, as the higher marketing costs make the marketing system inefficient and are against the interests of both producers and consumers. Marketing costs and margins of different intermediaries involved in the marketing of maize were analyzed and have been presented in Table 3. Producer-farmers received a net price of Rs. 946.4/q in channel I which accounted for 75.23 per cent of consumer's price. Different costs incurred by the farmers were to the extent of Rs 118.6/q in channel I. These included costs on packing, loading, unloading, transportation and wastage during transit, market fee and weighing.

Marketing cost and marketing margins of wholesaler were Rs 74.9/q and Rs 93.43/q, respectively, which accounts for 5.95 and 7.42 per cent of consumer price in channel I. The commission agent was found to be an important intermediary in Channel-I, whose margin was Rs. 34.8 /q accounts for 2.77 per cent. Marketing cost incurred by processor / consumer before

further consumption was Rs 24.7/q which accounts for 1.96 per cent in channel I. Thus, the final consumer's price was determined at Rs. 1258 per quintal as against the farmers net price of Rs. 946.4 /quintal that means the price spread was 75.23 per cent indicating that farmers received 75 per cent of consumer price and the remaining 25 per cent meant for marketing cost and marketing margin of producer and intermediaries. Similar results were observed in many of the earlier studies, for instance, Chahal and Katariya (2005), Navadkar, *et al.*, (2012) and Manohar *et al*., (2013).

Table: 4.Price spread of Maize in Perambalur district in Channel I

Particulars	Price/Qtl	Percentage
Farmers		
Gross price received	1065	84.66
Packaging	15.2	1.21
Loading and unloading	12.8	1.02
Transport charge	47.6	3.78
Wastage during transit	6.3	0.50
Market fee	9.5	0.76
Weighing	12.5	0.99
Miscellaneous cost (Toll charges etc.)	14.7	1.17
Total marketing cost of farmers	118.6	9.43
Net price received by the farmers	946.4	75.23
Wholesaler		
Purchase price	1065	84.66
Loading and unloading	12.3	0.98
Wastage during transit	4.8	0.38
Weighing	5.1	0.41
Transport charge	19.6	1.56
Miscellaneous cost	3.1	0.25
commission charges	34.8	2.77
Total marketing cost of wholesaler	74.9	5.95
Marketing margin of wholesaler	93.4	7.42
Sale price	1233.3	98.04
Processor/Consumer		
Cost incurred by the processor/ consumer		
Loading and unloading	8.5	0.68
Transport charge	14.3	1.14

Comment [H12]: A clubbed table for channel I, II and III should be made for the easy comparison.

Miscellanuous cost	1.9	0.15
Marketing cost of processor	24.7	1.96
Purchase price of the processor/Consumer	1258	100.00
Price spread	311.6	

Price spread of Maize in Perambalur district in Channel II

Marketing costs and margins of different intermediaries involved in the marketing of maize in channel II were analyzed and have been presented in Table 5

Table 5. Price spread of Maize in Perambalur district in Channel II

Particulars	Price/Qtl	Percentage
Farmers		
Gross price received by farmer	1015	75.69
Cost incurred by local trader		0.00
Packaging	12.2	0.91
Loading and unloading	10.8	0.81
Transport charge	40.6	3.03
Wastage during transit	3.5	0.26
Market fee	9.5	0.71
Weighing	12.5	0.93
Miscellaneous cost (Toll charges etc.)	10.7	0.80
Total marketing cost	99.8	7.44
Margin of local trader	63.2	4.71
Sale price of local trader	1178	87.84
Wholesaler		
Purchase price	1178	87.84
Loading and unloading	12.3	0.92
Wastage during transit	4.8	0.36
Weighing	5.1	0.38
Transport charge	19.6	1.46
Miscellaneous cost	3.1	0.23
Total marketing cost	44.9	3.35
Marketing margin	93.4	6.96
Sale price	1316.3	98.16
Processor/Consumer		
Cost incurred the processor/Consumer		

Loading and unloading	8.5	0.63
Transport charge	14.3	1.07
Miscellanuous cost	1.9	0.14
Marketing cost	24.7	1.84
Purchase price of the processor/Consumer	1341	100.00
Price spread	326	

Producer-farmers received a net price of Rs. 1015/q in channel II which accounted for 75.69 per cent of consumer's price. Marketing cost and marketing margins of local trader were Rs 99.8/q and Rs 63.2/q, respectively. Marketing cost and marketing margins of wholesaler were Rs 44.9/q and Rs 93.4/q, respectively, which accounts for 3.35 and 6.96 per cent of consumer price in channel II. Marketing cost incurred by processor / consumer before further consumption was Rs 24.7/q which accounts for 1.84 per cent in channel II. Thus, the final consumer's price was determined at Rs. 1341 per quintal as against the farmers net price of Rs. 1015 /quintal that means the price spread was 75.69 per cent indicating that farmers received 75 per cent of consumer price and the remaining 25 per cent meant for marketing cost and marketing margin of producer and intermediaries. Similar results were observed in many of the earlier studies, for instance, Chahal and Katariya (2005), Navadkar, *et al*., (2012) and Manohar *et al*., (2013).

3. Production and Marketing constraints faced by the producers

Production constraints faced by the farmers were timely non availability of labour (96 per cent) followed by erratic monsoon (91 per cent), high cost of seed material (88 per cent), High cost of fertilizers (83 per cent) and high cost of plant protection chemicals (74 per cent).(Table 6)

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Table No 6 Production constraints faced by the farmers

S.No	Production constraints	Per cent
1	Timely non availability of labour	96
2	Erratic monsoon	91
3	High cost of seed material	88
4	High cost of fertilizers	83
5	High cost of plant protection chemicals	74

Marketing constraints faced by the farmers were fluctuation in market price (93 per cent) followed by high commission charges (82 per cent), delayed cash payment (77 per cent) and malpractices in weighing (71 per cent).(Table 7)

Table No 7. Marketing constraints faced by the farmers

S.No	Marketing constraints	Per cent
1	Fluctuation in market price	93
2	High commission charges	82

3	Delayed cash payment	77
4	Malpractices in weighing	71

Summary and Conclusion

The per hectare total cost of cultivation of maize worked out to be Rs.45766 per ha. The yield realized was 51 qtl per hectare. Gross returns realized from one hectare of maize grown by the sample farmers was Rs. 55080 per ha. Net returns realized from one hectare of maize grown by the sample farmers was Rs. 9314 per ha

Channel-I: Producer - Commission Agent – Wholesaler - Processor / Consumer was important channel involving commission agent as an additional intermediary through which growers marketed their produce. Channel-II: Producer - Local Trader - Wholesaler - Processor / Consumer was another important channel in the marketing of maize produce because majority of the farmers marketed their produce through this channel in the study area.

Producer-farmers received a net price of Rs. 946.4/q in channel I which accounted for 75.23 per cent of consumer's price. And the same was Rs. 1015/q in channel II which accounted for 75.69 per cent of consumer's price. Production constraints faced by the farmers were timely non availability of labour (96 per cent) followed by erratic monsoon (91 per cent), high cost of seed material (88 per cent). Marketing constraints faced by the farmers were fluctuation in market price (93 per cent) followed by high commission charges (82 per cent), delayed cash payment (77 per cent).

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