RESEARCH PAPER

Economics of pineapple production and marketing in Imphal east district of Manipur

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Abstract : The overall per hectare cost of cultivation of pineapple was found to be Rs. 1,73,611.39 at cost 'A' , Rs. 2,27,268.05 at cost 'B' and Rs. 2,32,355.71 at cost 'C'. The average yield was 348.45 quintals, per hectare gross return was Rs. 3,14,608.18 with a benefit cost ratio of 1.35. From the study area, three marketing channels were identified *i.e.* Channel I, II and III. Price spread was Rs. 153.88 per quintal, Rs. 446.21 per quintal and Rs. 844.02 per quintal at channel I,II and III, respectively. The producer's share in consumer's rupee was 85.44 per cent, 64.71 per cent in and 43.98 per cent in channel I, II and III, respectively. In terms of constraints faced in production and marketing "non-availability and high labour rate" and "lack of regulated market and price fluctuation" were the major problem faced by the farmers.It can be concluded from the study that pineapple cultivation is a profitable venture for the farmers.

Key Words : Pineapple production, Marketing

INTRODUCTION

Manipur is one of the seven sisters state residing in the north east part of India. It is bounded by Nagaland to the north, Mizoram to the south, Assam to the west and shares an international border with Myanmar to the east. The state covers a total geographical area of 22,327 square kilometres with an elevation of 790 metres above sea level and lies at a latitude of 23°83'N – 25°68'N and a longitude of 93°03'E – 94°78'E. The state enjoys an amiable climate having a maximum temperature of 32–34 °C in summer and minimum of 1–2 °C in winter with an average annual precipitation of 1650 mm. The soil of Manipur belongs to 4 orders with Inceptisols being the dominant soils followed by Ultisols, Entisols and Alfisols occupying 38.4 per cent, 36.4 per cent, 23.1 per cent of the total geographical area of the State, respectively making it favourable for growing cash crops like Lychee, Cashew, Walnut, Orange, Lemon, Pineapple, Papaya, Passion Fruit, Peach, Pear and Plum. In the year 2020-2021, the state produced 134820 metric tonnes of pineapple covering an area of 12120 hectare and productivity of 11.12 metric tonnes per hectare. Among the districts, Senapati district had the highest production

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followed by Churachandpur, Thoubal and Imphal East districts accounting for 38231,27362, 20966 and 20393 metric tonnes, respectively. In case of the area also Senapati had the highest followed by Churachandpur, Thoubal and Imphal East districts with an area of 3210, 2241, 1664 and 1602 hectares, respectively while in the case of productivity the highest is seen in Ukhrul district followed by Imphal East, Thoubal and Imphal West accounting for 14.84, 12.73, 12.60 and 12.43 metric tonne per hectare, respectively.

objectives :

– To estimate the cost and returns of pineapple cultivation.

– To study the marketing of pineapple.

– To analyse the constraints in production and marketing of pineapple.

MATERIAL AND METHODS

The aim of any specific investigation is to draw conclusion which is useful in the light of the objectives of the study. For the investigator it is essential to adopt appropriate method and procedures in order to arrive at the conclusions.

Selection of area :

The present study was undertaken in Imphal East district of Manipur. The district was selected purposively as the district had the second highest productivity.

Selection of blocks and villages :

Two blocks namely Keirao-Bitra and Sawombung were selected randomly and five villages from each block were also selected randomly for the present study.

The list of villages growing pineapple was collected from the Department of Horticulture and Soil Conservation, Manipur and is given in Table 2.

Selection of samples :

The list of pineapple farmers was obtained from Department of Horticulture and Soil Conservation, Manipur. For the present study ten pineapple farmers from each village i.e., total hundred were randomly selected.

The selected farmers were categorized into marginal, small and medium according to their land holding.

For the study of marketing of pineapple ten wholesalers, ten retailers and ten local traders were purposively selected.

Collection of data :

With the help of pretested interview schedules pertaining to the year 2021-2022 the data of the pineapple farmers was collected. The data collected was in relation to the socio-economic characteristics, costs, returns and profitability, marketing channels and price spread, constraints in production and marketing of the pineapple farmers.

Analysis of data :

In order to accomplish the objectives of the study the simple tabular analysis was used. Cost of production of pineapple was calculated as per Standard cost concept used.

Marketing channels :

Marketing channels are the route through which produce moves from the producer to the ultimate consumers. With respect to pineapple three important marketing channels were found in the studied region *viz.*

– Channel I : Producer Consumer

– Channel II : Producer→ Village Trader→ Consumer

– Channel III : Producer →Wholesaler →Retailer→ Consumer.

Producer's share in consumer's rupee :

It is the price received by the farmers expressed as a percentage of the retail price(*i.e.,* price paid by the consumer). If it is the retail price the producer's share in the consumer's rupee (Ps) will be expressed as:

$$Ps = \frac{\text{Net price recieved by the producer}}{\text{Price paid by consumer}}$$

Constraints faced by farmers :

The constraints in the production and marketing of pineapple was analyse by Garrett's ranking technique. The ranks given by each respondent was converted into per cent position by using the formula:

$$\text{Per cent position} = \frac{100 \times (R_{ij} - 0.5)}{N_j}$$

where,

R_{ij} = Rank given to i^{th} constraint by the jth individual and

N_j = Number of constraints ranked by the jth

individual.

The mean score values estimated for each factor was arranged in the descending order. The constraints with the highest mean value were considered as the most important one and the other followed in that order.

RESULTS AND DISCUSSION

Per hectare cost of cultivation of pineapple for overall farmers :

The per hectare cost of cultivation of pineapple on overall farmers was workout and is presented in below Table 1-5.

At overall level it was observed from the Table 1 that, the per hectare cost of cultivation of pineapple was found to be Rs. 1,73,611.40 at cost 'A', Rs.2,27,268.05 at cost 'B' and Rs. 2,32,355.71 at cost 'C'. The maximum share in cost at cost 'A' was seen in amortization value, hired human labour and manures with Rs. 1,05,394.00

(45.36%), Rs. 39168.14 (16.86%) and Rs. 14,943.31 (6.43%). At cost 'B', maximum share of cost was seen in rental value of land with Rs. 52,134.70 (22.44%).

It was revealed from Table 2 that, the per hectare average yield for marginal, small and medium group of pineapple farmers were 349.66 quintals, 342.07 quintals and 361.55 quintals, respectively and the average yield at overall level was 348.45 quintals. The per hectare gross return for marginal, small and medium group of pineapple farmers were Rs.3,47,715.14, Rs. 2,84,433.89 and Rs. 3,02,2954.67, respectively and at overall level was Rs. 3,14,608.18.

It can be seen from the table that the cost of cultivation of pineapple decreased as the farm size increased *i.e.* from Rs. 2,61,329.23 at cost 'C' for marginal farmers to Rs. 2,11,742.53 at cost 'C' for small to Rs. 2,07,310.63 at cost 'C' for medium. At overall level it was Rs. 2,32,355.71 at cost 'C'. The net return

Sr. No.	Items	Units		Input	Cost/unit (Rs.)	Total cost	Per cent to total cost
1.	2	3		4	5	6	
1.	Hired human labour						
		Male	Days	39.54	417.15	16494.36	7.10
		Female	Days	64.17	353.33	22673.78	9.76
		Sub total		103.71		39168.14	16.86
2.	Manures	Tonnes		1.87	7991.07	14943.31	6.43
3.	Incidental charges					2027.01	0.87
4.	Repairing charges					84.11	0.04
5.	Working capital (Items 1 to 4)					56222.58	24.20
6.	Interest on working capital @ 12% per annum					6746.71	2.90
7.	Depreciation					4948.10	2.13
8.	land revenue and other taxes					300.00	0.13
9.	Amortization cost					105394.00	45.36
10.	Cost A (Items 5 to 9)					173611.40	74.72
11.	Interest on fixed capital @10% per annum					1521.96	0.66
12.	Rental value of land					52134.70	22.44
13.	Cost B (Items 10 to 12)					227268.05	97.81
14.	Family labour						
		Man	Days	8.48	396.81	3365.03	1.45
		Female	Days	4.76	361.89	1722.63	0.74
		Sub total		13.24		5087.66	2.19
15.	Cost C (Items 13 to 14)					232355.71	100.00
16.	Yield per hectare		qtl.			348.45	
17.	Per qtl. cost at cost C					666.72	

Table 1: Per hectare cost of cultivation of pineapple for overall farmers (Rs./ha)

at Cost 'C' for marginal, small and medium group of farmers were Rs. 86,385.91, Rs. 72,691.36 and Rs. 95,644.04, respectively and at overall level was Rs. 82,252.47.

It can also be observed that the benefit cost ratio increased as the farm size increased *i.e.*, from 1.33 at cost 'C' for marginal farmers to 1.34 at cost 'C' for small farmers to 1.46 at cost 'C' for medium farmers and at overall level it was 1.35. The benefit cost ratio at cost 'A' and cost 'B' for marginal farmers was 1.77 and 1.36, respectively, for small farmers it was 1.81 and 1.38, respectively, for medium farmers it was 1.98 and 1.48, respectively and at overall level it was 1.81 and 1.38, respectively.

Marketing of pineapple :

In this section various aspects pertaining to marketing of pineapple *viz.*, channels of distribution, price spread, producer's share in consumer's rupees etc have been discussed. Cost of marketing of pineapple includes

marketing cost incurred by producers, wholesalers, retailers and village traders and includes various charges such as loading, transportation, weighing charges, market fee etc.

It can be observed from the Table 3 that, pineapple was distributed in three channels *i.e.* Channel I (Producer → Consumer) in which 14 farmers sold their produce in the channel, Channel II (Producer → Village Trader → Consumer) in which 25 farmers sold their produce and Channel III (Producer → Wholesaler → Retailer → Consumer) in which 61 farmers sold their produce.

Out of 100 farmers, 14 farmers with 1279.63 quintals (3.64%) which were farmers under marginal group of land holding sold their produce in channel I *i.e.* producer to consumer directly as such farmers had lesser quantity as compared to small and medium categories of farmers and that pineapple is harvested on weekly basis. Even so, large quantity 30151.87 quintals (85.92%) was sold in channel III followed by 3662.30 quintals (10.44%) in channel II.

Table 2 : Economics of pineapple cultivation (Rs./ha)

Sr. No.	Particulars	Marginal	Small	Medium	Overall
1.	Main Produce(q/ha)	349.66	342.07	361.55	348.45
2.	Value of Main produce	343917.00	280045.00	298626.30	310483.00
3.	By Produce	3798.14	4388.89	4328.37	4125.18
4.	Gross Returns	347715.14	284433.89	302954.67	314608.18
5.	Cost of Cultivation at				
	Cost A	196972.57	157163.65	152975.53	173611.39
	Cost B	256601.32	205438.39	204373.33	227268.05
	Cost C	261329.23	211742.53	207310.63	232355.71
6.	Return at				
	Cost A	150742.57	127270.24	149979.14	140996.79
	Cost B	91113.82	78995.50	98581.34	87340.13
	Cost C	86385.91	72691.36	95644.04	82252.47
7.	Benefit: Cost ratio at				
	Cost A	1.77	1.81	1.98	1.81
	Cost B	1.36	1.38	1.48	1.38
	Cost C	1.33	1.34	1.46	1.35

Table 3 : Distribution of pineapple through various channels

Sr. No.	Channels	No. of farmers	Quantity sold (qtl.)
1.	Channel I (Producer ? Consumer)	14	1279.63 (3.64)
2.	Channel II (Producer ? Village Trader ? Consumer)	25	3662.30 (10.44)
3.	Channel III (Producer ? Wholesaler ? Retailer ? Consumer)	61	30151.87 (85.92)
	Total	100	35093.80 (100.00)

(Figures in parentheses indicates the percentage to total)

Table 4 : Marketing cost of pineapple				(Rs./qtl.)
Sr. No.	Particulars	Channel I	Channel II	Channel III
A	**Marketing cost incurred by producer**			
1.	Cost of gunny bag	13.27	13.28	13.27
2.	Transportation charges	46.43	46.49	47.77
3.	Loading and unloading charges	13.27	13.28	11.94
4.	Weighing charges	6.63	6.64	5.31
5.	Labour charges	8.29	9.68	10.23
6.	Grading	5.31	5.31	5.31
7.	Losses	10.69	11.88	10.85
8.	Market fees	50.00	50.00	50.00
	Marketing cost	153.88	156.58	154.68
	Selling Price of the producer	1056.64	974.74	817.26
	Net Price received by the producer	902.76	818.16	662.57
B	**Marketing cost incurred by wholesaler**			
1.	Cost of gunny bag	-	-	12.35
2.	Transportation charges	-	-	37.04
3.	Loading and unloading charges	-	-	12.35
4.	Weighing charges	-	-	4.94
5.	Labour charges	-	-	7.09
6.	Grading	-	-	4.94
7.	Losses	-	-	22.22
8.	Market fees	-	-	40.00
	Marketing cost	-	-	140.93
	Marketing margin	-	-	152.92
	Selling Price of the wholesaler	-	-	1111.11
C	**Marketing cost incurred by retailer**			
1.	Cost of gunny Bag	-	-	12.56
2.	Transportation charges	-	-	37.69
3.	Loading and unloading charges	-	-	12.56
4.	Weighing charges	-	-	6.28
5.	Shop rent	-	-	11.63
6.	Losses	-	-	50.25
7.	Market fees	-	-	80.00
	Marketing cost	-	-	210.98
	Marketing margin	-	-	184.50
	Selling Price of the retailer	-	-	1506.59
D	**Marketing cost incurred by village trader**			
1.	Cost of gunny Bag	-	12.78	-
2.	Transportation charges	-	51.13	-
3.	Loading and unloading charges	-	12.78	-
4.	Weighing charges	-	6.39	-
5.	Shop rent	-	4.89	-
6.	Losses	-	23.01	-
7.	Market fees	-	50.00	-
	Marketing cost	-	161.00	-
	Marketing margin	-	163.30	-
	Selling Price of the retailer	-	1264.37	-

It was observed from Table 4 that, the per quintal marketing cost incurred by pineapple famers was highest in channel II with Rs.156.58 followed by channel III with Rs.154.68 and channel I with Rs.153.88. The marketing cost incurred by wholesaler and retailer in channel III were Rs. 140.93 and Rs. 210.98. Also, the marketing cost incurred by village trader in channel II was Rs. 161.00.

It was also found that the per quintal selling price of pineapple by the farmers were Rs.1056.64 at channel I, Rs. 974.74 at channel II and Rs. 817.26 at channel III of which the net price received by the farmers were Rs. 902.76, Rs. 818.16 and Rs. 662.57, respectively. The selling price of wholesaler and retailer at channel II was Rs. 1111.11 and Rs. 1506.59, respectively of which the marketing margin were Rs. 152.92 and Rs. 184.50, respectively. Also, the selling price of village trader at channel II was Rs. 1264.37 of which the marketing margin was Rs. 163.30.

It was observed from Table 5 that, the net price received by the farmer decreases as the number of intermediaries increases *i.e.* at channel I it was Rs. 902.76 which was decreased to Rs. 818.16 at channel II and Rs. 662.57 at channel III. Similarly, the producer's share in consumer's rupee also decreased from 85.44 per cent in channel I to 64.71 per cent in channel II and 43.98 per cent in channel III. However, the price spread increased from Rs. 153.88 at channel I to 446.21 at channel II and Rs. 844.02 at channel III. In channel I the marketing cost incurred by producer was 14.56 per cent to the purchasing price of the consumer. At channel II marketing cost incurred by producer and village trader was 12.38 per cent and 12.73 per cent, respectively to the purchasing price of consumer and the net margin made by the village trader was 10.17 per cent to the purchasing price of consumer. At channel III, marketing cost incurred by producer, wholesaler and retailer accounted for 10.26 per cent, 9.35 per cent and 14.00

Table 5 : Price spread in marketing of pineapple			(Rs./qtl.)
Particulars	Channel I	Channel II	Channel III
Producer			
Gross Price received by Producer	1056.64 (100.00)	974.74 (77.09)	817.26 (54.25)
Marketing cost incurred	153.88 (14.56)	156.58 (12.38)	154.58 (10.26)
Net price received by producer	902.76 (85.44)	818.16 (64.71)	662.57 (43.98)
Wholesaler			
Purchased price	-	-	817.26 (54.25)
Marketing cost incurred	-	-	140.93 (9.35)
Net margin	-	-	152.92 (10.15)
Selling price	-	-	1111.11 (73.75)
Retailer			
Purchased price	-	-	1111.11 (73.75)
Marketing cost incurred	-	-	210.98 (14.00)
Net margin	-	-	184.50 (12.25)
Selling price	-	-	1506.59 (100.00)
Local trader			
Purchased price	-	974.74 (77.09)	-
Marketing cost incurred	-	161.00 (12.73)	-
Net margin	-	128.63 (10.17)	-
Selling price	-	1264.37 (100.00)	-
Consumer			
Purchasing Price	1056.64	1264.37	1506.59
Net price received by producer	902.76	818.16	662.57
Price spread	153.88	446.21	844.02
Producer's share in consumer's rupee	85.44	64.71	43.98

(Figures in parentheses indicates the percentage to total)

Table 6 : Constraints in production and marketing of pineapple

Sr. No.	Problems	Garrett mean score	Ranking
A	**Production constraints**		
1.	Lack of technology and technical knowledge	63.37	3
2.	Lack of good quality suckers	69.68	2
3.	Lack of training programme and poor linkage with extension agent	59.46	4
4.	Non availability and high labour rate	75.53	1
5.	Lack of financial credit	52.44	5
6.	Lack of irrigation facilities	28.23	10
7.	Non availability and high price of organic fertilizers	42.78	6
8.	Losses due to diseases, rodents and animals	37.22	7
9.	Damage due to high rain and temperature	31.53	9
10.	Non availability of plant protection chemicals	36.76	8
B	**Marketing constraints**		
1.	Lack of regulated market and price fluctuation	73.78	1
2.	Lack of transportation and high transportation charges	55.82	3
3.	Lack of grading facilities	42.63	5
4.	Lack of post-harvesting facilities	36.33	6
5.	Poor road condition	63.00	2
6.	Lack of market information	49.28	4
7.	Non-availability of packing material	29.16	7

per cent, respectively and the net margin for wholesaler and retailer were 10.15 per cent and 12.25 per cent, respectively.

It was observed from the table 6 that, in production non availability and high labour rate was the major problem faced with 75.53 garret mean score followed by lack of good quality suckers with 69.68 garret mean score, lack of technology and technical knowledge with 63.37 garret mean score, lack of training programme and poor linkage with extension agent with 59.46 garret mean score, lack of financial credit with 52.44 garret mean score, non-availability and high price of organic fertilizers with 42.78 garret mean score, losses due to diseases, rodents and animals with 37.22 garret mean score, non-availability of plant protection chemicals with 36.76 garret mean score, damage due to high rain and temperature with 31.53 garret mean score and lack of irrigation facilities with 28.23 garret mean score. While in marketing of pineapple the major problem faced was lack of regulated market and price fluctuation with 73.78 garret mean score followed by poor road condition with 63.00 garret mean score, lack of transportation and high transportation charges with 55.82 garret mean score, lack of market information with 49.28 garret mean score, lack of grading facilities with 42.63 garret mean score,

lack of post-harvesting facilities with 36.33 garret mean score and non-availability of packing material with 29.16 garret mean score.

Conclusion:

The overall per hectare cost of cultivation of pineapple was found to be Rs. 1,73,611.39 at cost 'A', Rs.2,27,268.05 at cost 'B' and Rs. 2,32,355.71 at cost 'C'. The maximum share in cost was seen in amortization value with 45.36 per cent, followed by rental value of land with 22.44 per cent, hired human labour with 16.86 per cent and manures and 6.43 per cent.

The average yield at overall level was 348.45 quintals, per hectare gross return was Rs. 3,14,608.18 with a benefit cost ratio of 1.35. Thus, indicating that pineapple cultivation is a profitable venture. Also, the cost of cultivation of pineapple decreased as the farm size increased while the benefit cost ratio increased as the farm size increased.

From the study area, three marketing channels were identified for pineapple *i.e.* Channel I (Producer → Consumer), Channel II (Producer → Village Trader → Consumer and Channel III (Producer→Wholesaler → Retailer →Consumer). Even though net price received by producer was highest in channel I, large number of

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the quantity was sold in channel III. As the number of intermediaries increased the marketing cost also increased. Similarly, price spread also increased from channel I with Rs.153.88 per quintal to Rs. 446.21per quintal at channel II and Rs. 844.02 per quintal at channel III. The producer's share in consumer's rupee was 85.44 per cent in channel I, 64.71 per cent in channel II and 43.98 per cent in channel III which indicated that producer's share in consumer's rupee tend to decrease as the number of intermediaries increased in the marketing channel.

In the result of opinion survey conducted to know the constraints in production and marketing of pineapple it revealed that in production, non-availability and high labour rate, lack of good quality suckers and lack of technology and technical knowledge were the major three problems while farmers also faced problem of lack of training programme and poor linkage with extension agent, lack of financial credit, non-availability and high price of organic fertilizers, losses due to diseases, rodents and animals, non-availability of plant protection chemicals, damage due to high rain and temperature and lack of irrigation facilities. In marketing, lack of regulated market and price, poor road condition, lack of transportation and high transportation charges were the major problems faced while farmers also faced problem of lack of market information, lack of grading facilities, lack of post-harvesting facilities and non-availability of packing material.

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