

**RESEARCH ARTICLE :**

Production and marketing pattern of banana in Nagaon district of Assam

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SUMMARY : The study was conducted to examine the marketing pattern of banana in Nagaon district of Assam. The marketing process of banana in the study area was facilitated by various market intermediaries like pre harvest Contractors cum Processor (Distant), Pre harvest Contractors cum wholesaler, Distant Wholesaler, Local traders etc. The pre-harvest contractors play a vital role in marketing of banana in the district. Out of the six marketing channels identified in the study area, major portion of produces were sold through channel II (Producer-Pre harvest Contractors cum wholesaler - Distant Wholesaler –Distant Retailers - Consumers) where the pre-harvest contractors cum wholesalers directly brought the produces to distant markets and sold to distant wholesalers and thereby to distant retailers and then to consumers. Within the district major marketing channel was observed to be channel IV (Producer- Wholesalers-retailers -consumers) where 26.53 per cent of the total produce by the sample farms were routed to the ultimate consumers through the wholesalers and retailers. Channel V (Producer-Retailers - Consumers) was found to be the most efficient channel in marketing of banana in Nagaon district with the efficiency index of 1.764 (following the Shepherds' approach) involving middlemen.

KEY WORDS:

Market intermediaries, Pre-harvest contractors, Distant wholesaler, Marketing cost, Marketing margin, Marketing efficiency

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BACKGROUND AND OBJECTIVES

Although fruit cultivation has been practised in Assam since long but it was not on a large scale. Soil and climatic condition of Assam is suitable for growing majority of the fruit crops. But the cultivation of fruit crops in a systematic manner is, however still neglected in Assam, probably due to ignorance, heavy capital investment and long gestation period. Moreover, due to the existence of weak marketing infrastructure fruit growers have often failed to realize

expenses incurred for cultivation of the crop. Marketing plays an important role in the development of agriculture as the adoption of new technology depends on the return, profitability as well as efficient marketing of crops. An efficient marketing system only can help the producers in getting the remunerative prices for their produces. Production and marketing of agricultural produce are interdependent to each other. Thus, an efficient marketing system is very much crucial to farmers for production of crops at

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commercial level. Marketing of horticultural crops is quite complex and risky due to the perishable nature of the produce, seasonal production and bulkiness. The high profit margin of intermediaries is quite disproportionate to their services. According to the Research Report, 2011-12 on Agricultural Marketing System in Assam conducted by National Institute of Agricultural Marketing (NIAM), Jaipur Rajasthan (Yadav, 2012), agricultural marketing system in Eastern and North-Eastern States is distinctly different from the other states in the country. The markets operate under pressure in terms of infrastructure, service and facilities, introduction by innovations, new technologies etc. Therefore, keeping in view all these aspects present study was conducted to analyse the marketing scenario of banana in Assam with the following objectives:

- To study the production pattern of banana
- To study the existing channels of banana marketing, price spread and marketing efficiency of the channels.

RESOURCES AND METHODS

Multistage random sampling technique was followed for selection of final sample for the present study. At first stage three blocks (one block from each of the 3 civil sub divisions) namely Nagaon, Kaliabor and Hojai) were selected. At the second stage five banana growing villages from each block and at the third stage from each village 10 banana growers were selected at random. The selected sample fruit growers were categorised into 3 categories according to their area under fruit cultivation *viz.*, Marginal (<1ha), small (1.01 to 2 ha) and medium (2.01 to 3 ha) and sample fruit growers from each village were drawn in the ratio of 5:3:2. A total of 50 growers from each block and 150 growers are taken as final sample. For market study three markets *viz.*, Samaguri, Lanka and Dhing market in Nagaon district were purposively selected for relevant data collection on marketing pattern and marketing costs. The primary data were collected from sample cultivators through pre-tested interview schedule for the agricultural year 2012-13. However the data pertaining to the year 2012-13 and relating to the price of items, cost and returns in production and marketing of crops etc. were updated/modified to the price level of the year 2013-14 and accordingly analysis were done.

Analytical framework :

Marketing costs:

Marketing cost is worked out by using the following formula (Baruah *et al.*, 2001)

$$Tc = C_p + \sum_{i=1}^n MC_i$$

where, Tc gives the total cost of marketing

C_p shows the cost incurred by the producer in marketing of his produce

MC_i are the marketing costs incurred by the *i*th trader.

Marketing margin:

Marketing margin is calculated by using the following formula (Baruah *et al.*, 2001)

$$A_m = P_m a - (P_b a + M_c)$$

where, a=Quantity of produce

A_m is the absolute margin of the middlemen or the traders

P_m is the selling price of the traders

P_b is the buying price of the traders

M_c is represent the marketing costs of the traders

The producers' share in consumers' rupee is worked out by using the following formula

$$P_o = (P_p / P_r) \times 100$$

where P_o is the producers share in the consumers' rupee

P_p is producers' price for their produce

P_r is the price paid by the consumers or sale price of the retailers.

Marketing efficiency :

The marketing efficiency of the selected channels are studied with the help of slightly modified Acharya's formula (Acharya and Agarwal, 2009) as given below:

$$MME = FP / (MC + MM)$$

where, MME= Modified measure of marketing efficiency

FP= Farmers' price

MC=Marketing costs

MM= Marketing margin of intermediaries

Marketing efficiency can also be calculated using the Shepherd's approach (Pandey *et al.*, 2011) as

$$M.E. = C_p / (P_c + C + A_m)$$

where, C_p= Consumers purchase price,

P_c= Marketing cost of producer,

C= Marketing cost of all the intermediaries involved in the channel

A_{mi} = Market margin of the intermediaries involved in the channel.

OBSERVATIONS AND ANALYSIS

Banana is one of the remunerative plantation fruit crops grown in Assam. It is cultivated in every household of Assam in homestead gardens. There are different varieties of banana cultivated in Assam. In the present study only “Amritsagar” variety of banana is considered being cultivated by majority of the commercial banana cultivators of Nagaon district.

Distribution of area and number of plants :

Average area under banana plantation was 1.10 ha in the sample farms of the district which ranged between 0.37 ha in marginal farms to 2.41 ha in medium farms. Analysing the plant population among the banana orchards of different group of banana growers, it was observed that the banana growers did not maintained uniform plant population. Average per hectare plant population varied from 2410 numbers in medium farms

to 2694 numbers in marginal farms which decreased with the increase in size of the farms. Average per farm and per hectare plant population were found 2789 numbers and 2541 numbers, respectively in the sample farms.

Production pattern of banana :

Table 2 presents the production pattern of banana in the sample farms of the study area and shows that total production of banana was 4,18,288 number of bunches which varied from 75,252 number of bunches in marginal farms to 1,74,513 number of bunches in medium farms. It was observed that each bunch of banana comprised of about 6 hands and each hand comprised of 14 fingers. On the other hand, the number of banana bunches produced in the sample farms were found about 5 per cent less than the total plant population. The result also reveals that per hectare production of banana varied from 2,290 number of bunches in medium farms to 2,560 number of bunches in marginal farms with an average of 2414 number of bunches. Average per farm production was found to be 2,649 number of

Table 1 : Distribution of area and plant population of banana according to size group of farms in Nagaon district

Size category	No. of household	Area under banana (ha)		Total	No. of plants	
		Total	Per farm		Per farm	Per hectare
Marginal	75	27.93	0.37	75252	1003	2694
Small	45	64.27	1.43	168523	3745	2622
Medium	30	72.4	2.41	174513	5817	2410
Pooled	150	164.60	1.10	418288	2789	2541

Table 2 : Area and production pattern of banana across various size groups of farms in Nagaon district

Size category	No. of household	Total area (ha)	Total no. of plants	Production (no. of bunches)		
				Total	Per ha	Per farm
Marginal	75	27.93	75252	71490	2560	953
Small	45	64.27	168523	160096	2491	3558
Medium	30	72.40	174513	165787	2290	5526
Pooled	150	164.60	418288	397373	2414	2649

Table 3 : Channel wise transaction of banana in Nagaon district

Sr. No.	Channels	Total No. of bunches transacted	Per cent of bunches transacted (%)
1.	Producer-Pre harvest Contractors cum Processor (Distant) – Retailers - Consumers	55621	14.39
2.	Producer-Pre harvest Contractors cum wholesaler -Distant Wholesaler – Distant Retailers - Consumers	104207	26.96
3.	Producer- Local traders– Wholesalers – Retailers - Consumers	89171	23.07
4.	Producer- Wholesalers-retailers -consumers	102545	26.53
5.	Producer-Retailers - Consumers	33473	8.66
6.	Producer- Consumer	1507	0.39
	Total	386524	100.00

bunches which varied from 953 number of bunches in marginal farms to 5,526 number of bunches in medium farms.

Marketing pattern of banana:

The marketing process of banana in the study area

was facilitated by various market intermediaries like pre harvest Contractors cum Processor (Distant), Pre harvest Contractors cum wholesaler, Distant Wholesaler, Local traders etc. The pre-harvest contractors play a vital role in marketing of banana in the district. The terms and conditions of the contract vary from one farm to another

Table 4 : Channel wise marketing cost, marketing margin and price spread in banana marketing (Rupees per 100 bunches)

Name of the functionary/items of cost	Channel III	Channel IV	Channel V
Cost incurred by the producer			
Transportation cost	0	300.32(1.19)	335.14(1.38)
Market fee	0	50.21(0.19)	53.56(0.22)
Spoilage cost	27.81 (0.097)	28.78(0.11)	27.67(0.11)
Miscellaneous cost	50.15(0.176)	45.34(0.18)	56.07(0.23)
Subtotal	77.96(0.274)	424.65(1.68)	472.44(1.94)
Net price to producer	8,922.04 (31.331)	9375.35(37.06)	10527.56(43.31)
Gross price to producer	9,000(31.605)	9800(38.74)	11000 (45.26)
	Local traders purchase price	Wholesalers purchase price	Retailers purchase price
Cost incurred by the local traders'			
Transportation	398.68(1.4)	-	-
Loading and unloading	49.56(0.174)	-	-
Spoilage cost	869.4(3.053)	-	-
Godown rent/Shop rent	58.4(0.20)	-	-
Market fee	55.74(0.19)	-	-
Miscellaneous cost	40.12(0.14)	-	-
Local traders' margin	1800(6.32)	-	-
Local traders sale price / Wholesalers' purchase price	12,271.9(43.09)	-	-
Cost incurred by the wholesaler			
Transportation	600.13(2.11)	595.67(2.35)	-
Loading and unloading	65.11(0.23)	60.03(0.24)	-
Spoilage cost	1490.81(5.23)	1357.85(5.37)	-
Godown rent/Shop rent	60.14(0.21)	75.11(0.66)	-
Market fee	50.32(0.18)	64.88(0.26)	-
Miscellaneous cost	150(0.53)	-	-
Wholesaler margin	2250(7.90)	1950.33(7.71)	-
Wholesaler sale price /retailer purchase price	16,938.41(59.48)	13903.87(54.96)	-
Cost incurred by the retailer			
Transportation	455.04(1.60)	445.11(1.76)	556.54(2.29)
Godown rent/Shop rent	50.25(0.18)	30.01(0.12)	30(0.12)
Spoilage cost	898.4(3.15)	895.17(3.54)	950.25(3.91)
Market fee	56.45(0.19)	65.14(0.26)	65.15(0.27)
Ripening cost (labour cost)	50.02(0.18)	54.89(0.22)	53.65(0.22)
Miscellaneous cost	47.69(0.17)	40.05(0.16)	60.32(0.25)
Retailers' margin(@Rs. 1.2503/finger)	9980(35.05)	9865.08(38.99)	11589.49(47.68)
Sub Total	11,537.85(40.52)	11395.45(45.04)	
Retailers sale price/consumers price	28,476.26(100)	25299.32(100)	24305.40(100)
Price spread	19,554.22	15923.97	13305.40
Producer Share in Consumer Rupee (%)	31.60(Gross price basis)	38.74 (Gross price basis)	45.26(Gross price basis)
	31.33(Net price basis)	37.06 (Net price basis)	43.31(Net price basis)

N.B. Figures within parentheses indicate percentage to total

depending upon the bargaining power of the grower. Some of the pre-harvest contractors play the role of wholesaler and sell the produce to distant retailers. Generally the pre-harvest contractors directly bring the produces to markets outside the district generally to Guwahati, Shillong etc and sell the produces to distant wholesalers or retailers. On the other hand majority of the pre harvest contractors own processing plants.

In the present study, six marketing channels were identified in the marketing of the banana in Nagaon district which are as follows and the channel wise transaction of banana in the district is presented in Table 3.

- Channel-I : Producer-Pre harvest Contractors cum Processor (Distant) - Retailers - Consumers
- Channel-II : Producer-Pre harvest Contractors cum wholesaler -Distant Wholesaler -Distant Retailers - Consumers
- Channel-III : Producer-Local traders-Wholesalers - Retailers -Consumers
- Channel-IV : Producer- Wholesalers-retailers - Consumers
- Channel-V : Producer-Retailers - Consumers
- Channel-VI : Producer- Consumer

It was observed that the major portion of produces were sold through channel II(26.96%) where the pre-harvest contractors cum wholesalers directly brought the produces to distant markets and sold to distant

wholesalers and thereby to distant retailers and then to consumers.

Within the district major marketing channel was observed to be channel IV where 26.53 per cent of the total produce by the sample farms were routed to the ultimate consumers through the wholesalers and retailers. The producers sold the banana to wholesalers in bulk and the wholesalers sold the produces to retailers for retail sale to consumers.

About 23.17 per cent of total produce were transacted through channel III within the district where local traders collect the fruits from the producers and then sell to the wholesalers and then to the retailers.

Marketing margin and price spread :

For analysing the marketing margin, price spread and efficiency of banana marketing channels of Nagaon district of Assam, following three major marketing channels operating at Samaguri, Dhing and Hojai markets of Nagaon district are taken into consideration.

Channel III : Producer-Local traders-Wholesalers - Retailers - Consumers

Channel IV : Producer- Wholesalers-retailers - Consumers

Channel V : Producer-Retailers - Consumers

Marketing efficiency of various marketing channels of banana:

Marketing efficiency of various marketing channels

Table 5 : Marketing efficiency and price spread of marketing channels of banana in Nagaon district of Assam				
Sr. No.	Particulars	Channel III	Channel IV	Channel V
1.	Price received by producer (Rs.)	9000.00	9800	11000
2.	Marketing cost incurred by: (Rs.)			
	Producer	77.96	424.65	472.44
	Local Trader	1471.90	-	-
	Wholesaler	2416.51	2153.54	-
	Retailer	1557.85	1530.37	1715.91
	Total	5524.22	4108.56	2188.35
3.	Marketing margin (Rs.) of			
	Local Trader	1800.00	-	-
	Wholesaler	2250.00	1950.33	-
	Retailer	9980.00	9865.08	11589.49
	Total	14030.00	11815.41	11589.49
4.	Price paid by consumer (Rs.)	28476.26	25299.32	24305.4
5.	Price spread (Rs.)	19554.22	15923.97	13305.4
6.	Marketing efficiency (%) (using Shepherds' approach)	1.456	1.589	1.764
7.	Marketing efficiency (%) (using modified Acharya's formula)	0.460	0.615	0.798

of banana is presented in Table 5. Comparing various marketing channels of banana in three markets of Nagaon district, total marketing cost per 100 bunches of banana was found highest in the channel III (Rs. 5,524.22) followed by channel IV (Rs. 4,108.56) and Channel V (Rs.2,188.35). Whereas, marketing margins of market functionaries were found as high as Rs.14,030.00 per 100 bunches in case of channel III and as low as Rs.11,589.49 per 100 bunches in channel V. Consumers' purchase price (Rs. 28,476.26 per 100 bunches) as well as price spread (Rs. 19,554.22 per 100 bunches) were found maximum in channel III. While computing the marketing efficiency it was found that channel V was the most efficient channel in marketing of banana in Nagaon district with the efficiency index of 1.764 (following the Shepherds' approach). This was because in this channel, less number of market intermediaries were involved in marketing of banana from producers to the ultimate consumers. Marketing efficiency index was found to be 1.456 and 1.589 in channel I and Channel II, respectively. Similar work related to the present investigation was also carried out by Amin and Hossain (2012); Deka *et al.* (2004); Mahapatra *et al.* (2010); Mali *et al.* (2003); Rao *et al.* (2009) and Suresh *et al.* (2004)

Conclusion:

Average per hectare plant population of banana orchards in the study area varied from 2410 numbers in medium farms to 2694 numbers in marginal orchards which decreased with the increase in size of orchards. Per hectare banana production varied from 2,290 number of bunches in medium farms to 2,560 number of bunches in marginal farms with an average of 2414 number of bunches. Five marketing channels were found functioning in marketing of banana in the district out of which major portion (26.96 %) of produce were routed through channel II (Producer-Pre harvest Contractors cum wholesaler - Distant Wholeseller -Retailers – Consumers).Whereas Channel V (Producer-Retailers – Consumers) was found most efficient channel (1.764) in marketing of banana in

Nagaon district due to the involvement of less number of market intermediaries.

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