Price Spread and Vegetables Marketing in the Hinterlands of Pusa and Tajpur Blocks of Samastipur District of Bihar (India)

Article · October 2017

CITATIONS
4

READS
1,126

4 authors, including:

Nasim Ahmad
Dr. Rajendra Prasad Central Agricultural University, Pusa (Samastipur)
102 PUBLICATIONS **267** CITATIONS
SEE PROFILE

D.K.Sinha Sinha
Rajendra Agricultural University
60 PUBLICATIONS **201** CITATIONS
SEE PROFILE

K. M. Singh
Dr Rajendra Prasad Central Agricultural University Pusa
482 PUBLICATIONS **2,168** CITATIONS
SEE PROFILE

Nasim Ahmad *et al*, International Journal of Advances in Agricultural Science and Technology,
Vol.4 Issue.10, October- 2017, pg. 54-66 ISSN: 2348-1358
Impact Factor: 6.057

Price Spread and Vegetables Marketing in the Hinterlands of Pusa and Tajpur Blocks of Samastipur District of Bihar (India)

Nasim Ahmad*, R. R. Mishra, D.K. Sinha, K.M. Singh
Department of Agricultural Economics
Dr. Rajendra Prasad Central Agricultural University, Pusa, Samastipur (Bihar)
* Corresponding Author: nasim.rau@gmail.com

Abstract: ***The present study aims at assessing price-spread in marketing of important vegetables grown in Pusa Block and Tajpur Block of Samastipur District of Bihar. The study is based on primary data collected from 120 vegetable growers located in 8 villages of the two blocks.***
It was observed that out of the total marketable surplus of important vegetables, larger share was from cauliflower (37.05per cent) closely followed by brinjal (35.95per cent) and pointed gourd (11.29per cent). Farm size wise analysis of marketable surplus indicated that larger contribution was from small farmers followed by medium and marginal farmers. Post-harvest losses were found to be higher in case of cabbage, cauliflower and brinjal. Four marketing channels were observed in operation (I) Producer → Commission Agent → Wholesaler (distant market) → Commission agent (distant market) → Retailer (distant market) → Consumer (II) Producer → Commission agent → Retailer → Consumer (III) Producer → Commission agent → Consumer (IV). Producer → Commission agent (Darbhanga) → Retailer (Darbhanga) → Consumer. Channel (IV) is special channel which operate in case of pointed gourd, cauliflower and brinjal only. Of these channels channel-III was found to be more efficient followed by channel-II, channel-IV and channel-I. Higher charges of intermediaries, defective weighing of produce, lack of market place, lack of cold storage were some of the important problems in perception of vegetable growers. Provision of refrigerated vans, creation of cold storage and installation of processing facilities may prove important milestone in increasing income of the vegetable growers.
Keywords: Vegetables, Price-spread, marketable surplus, marketing channel, commission agent, intermediaries.

Introduction

Bihar is blessed with diverse agro-climatic regions and distinct crop seasons, making it possible to grow different types of vegetables. Vegetables with shorter duration and higher productivity fetch good economic returns to the cultivators. With improvement in living standards, rapid urbanization and growing health consciousness, the demand for high value crop like vegetables has increased considerably in the recent past. Demand for vegetables is expected to increase even further (Meena and Singh 2014). On the production side, if cereal pricing is left to market forces, land will be

released from traditional cultivation to meet the growing demand of non-cereal crops such as fruits and vegetables in accordance with the diversification in consumption pattern (Mittal, 2006). Cultivation of vegetables can be promoted to increase the economic status of the farmers. It can play an important role for the state where about 91per cent cultivators are marginal cumulating 1.61 crore farm holdings. The rural economy had been facing the challenge of inability to manage the problems involved with transition of agriculture from supply-driven value to demand-led market oriented supply chain (Viswanadham 2006).

Bihar has a large potential of vegetable production among various states of our country. It ranks first among all states of India and its vegetables are exported to far-off states. The total vegetables production was 142.84 lakh tonnes in 2015-16. The important vegetables produced during 2015-16 were potato (63.46 lakh tonnes), onion (12.47 lakh tonnes), tomato (10.01 lakh tonnes), cauliflower (10.04 lakh tonnes), cabbage (7.20 lakh tonnes), brinjal (11.38 lakh tonnes) bottle gourd (6.32lakh tonnes) and radish (2.47 lakh tonnes). Average productivity of vegetables was 17.18 tonnes/ha which was at par with national average, that is, 17.76 tonnes/ha.

Samastipur is one of the leading vegetable growing districts of the state where various vegetables are grown in 18132 ha of land and its production is 280668 tonnes showing the productivity of 15.48 tonnes/ha. In Samastipur district, Pusa Road and Tajpur are two important assembling centres of vegetables where from surrounding areas, large quantities of vegetables like okera (Bhindi), brinjal, cauliflower, cabbage, parwal, tomato, cowpea, greenpea, green chillies etc arrive. From these two assembling centres, substantial quantities of vegetables are supplied to distant places like Patna, Bhagalpur, Kolkata, Guwahati, Siliguri etc. However, the process of marketing at these centres is not properly organised. There is complete lack of infrastructure such as shed, cold storage etc and farmers are compelled to keep their vegetables and sell them on both sides of the road under open sky leading to wastage of considerable amount due to perishable nature of raw vegetables. The result is, vegetables are sold on low price to the intermediaries causing lower share of producers in consumer's rupee.

The present study was undertaken to study the price spread and efficiency in marketing of various vegetables grown in the area and problems faced by growers

Materials and Method

The study was conducted in and around Pusa Road and Tajpur vegetable market during 2015-16. A list of vegetable growing villages from the above said blocks was prepared. Thereafter four vegetable growing villages from each block on the basis of larger area under vegetables were selected. The villages identified for detailed investigation were Dighra, Bathua, Harpur and Dhobgama from Pusa block and Kothia, Bherokhera, Rahimabad and Adharpur from Tajpur block.

Important vegetables grown in the study area were found to be Parwal (Pointed gourd), brinjal, bhindi(ladies finger), Karaila (bitter gourd), Tomato, Cabbage, Cauliflower and Green pea.

A list of vegetable growers for each of the eight selected villages was prepared alongwith their size of holdings. Based on their size of holdings the vegetable growers were categorised as marginal (<1 ha), small (1-2 ha), medium (2-4 ha) and large (more than 4 ha). Vegetable growers owning more than 4 ha of land were not found in any of the selected villages. Then from each selected village 15 vegetable growers were selected following proportionate to size method. In this way the total marginal farmers were 77, small 35 and medium 8, thus a total of 120 vegetable growers in all were selected for detailed study.

Marketable and marketed surplus: Marketable surplus was worked out by deducting the total quantity required for own consumption and farm needs from the total quantity available.

$$\text{Marketable surplus} = \text{Total production} - \text{total consumption and other requirement}$$

Marketable surplus refers to actual quantity of produce sold by the farmer in the market.

Marketing Cost: The marketing cost incurred by farmers was computed by using the following formula:

$$Marketing\ Cost = Average\ cost\ of\ grading + Average\ cost\ of\ packing + average\ cost\ of\ transportation + Average\ amount\ of\ commission\ paid + Average\ miscellaneous\ cost$$

All the costs are in rupees/quintal

Absolute and per cent margin:

$$Absolute\ margin = Total\ value\ of\ receipt\ (Sell\ price) - (Purchase\ price + Cost\ incurred\ in\ marketing)$$

Producer's share in consumer's rupee: The Producer's share in consumer's was found out as hereunder:

$$\textbf{Producer's share in consumer's} = \frac{\textbf{Price of the produce received by the farmer}}{\textbf{Price of the produce paid by the consumer}} \textbf{ x 100}$$

Marketing efficiency: The marketing efficiency of various identified marketing channels was estimated by using Shephered's formula as mentioned below.

$$\textbf{Marketing efficiency} = \left(\frac{\mathbf{V}}{\mathbf{I}}\right) - \mathbf{1}$$

Where **V** = Value of goods sold (consumer's price)

I = Total marketing cost

Results and Discussion

Marketable and marketed surplus: Table 1 presents per household marketable surplus of different vegetables. It is clear from the table that on an average marketable surplus was found to be 63 quintals/household. Out of that larger share (37.05 per cent) was from cauliflower closely followed by brinjal contributing 35.95 per cent. Other important contributors were parwal (11.29 per cent) and cabbage (5.19 per cent).

Table 1: Average Marketable Surplus of different Vegetables (quintals/ household)

	Per household marketable surplus (Quintals / Household)								
Farm Size	Parwal	Brinjal	Bhindi	Karaila	Tomato	Cabbage	Cauliflower	Pea	Total
Marginal	6.57 (14.10)	16.92 (36.31)	2.86 (6.14)	0.74 (1.59)	0.85 (1.82)	1.67 (3.58)	16.35 (35.09)	0.64 (1.37)	46.60 (100.0)
Small	7.64 (8.08)	27.71 (29.30)	0.64 (0.68)	3.31 (3.50)	4.41 (4.66)	7.27 (7.69)	42.89 (45.36)	0.42 (0.44)	94.56 (100.0)
Medium	9.96 (12.03)	55.57 (67.12)	2.04 (2.46)	1.09 (1.32)	_	_	5.08 (6.14)	9.05 (10.93)	82.79 (100.0)
Pooled	7.11 (11.29)	22.65 (35.95)	2.16 (3.43)	1.51 (2.40)	1.83 (2.90)	3.27 (5.19)	23.34 (37.05)	1.14 (1.81)	63.00 (100.0)

Figures in parentheses indicate percentage to total

Within various farm size households, it was observed that brinjal emerged to be the larger contributor to total marketable surplus (36.31 per cent) in marginal farm size group. It was closely followed by cauliflower contributing 35.09 per cent of the total marketable surplus. Parwal too contributed a fair share (14.10 per cent) in this size group. In case of small households, the two major contributors were again brinjal and cauliflower. However, larger contribution in this case was from cauliflower (45.36 per cent) followed by brinjal which contributed 29.30 per cent of the total marketable surplus. In case of medium vegetable growers brinjal alone contributed more than two-thirds (67.12 per cent) of the total marketable surplus.

Higher production of respective vegetables led to higher marketable surplus of these crops.

The production, loss, home consumption and marketable surplus of all the selected vegetable growers have been shown in Table 2.

Total Marketable Surplus of different Vegetables

Table 2: Production, Loss, Home Consumption and Marketable surplus of different vegetables

(In Quintals)

Crop	Production	Loss	Home Consumption	Marketable Surplus
Parwal	906.25 (100.0)	18.13 (2.00)	35.20 (3.88)	852.92 (94.12)
Brinjal	2938.15 (100.0)	132.22 (4.50)	88.40 (3.00)	2717.53 (92.50)
Bhindi	282.9 (100.0)	14.15 (5.00)	10.00 (3.53)	258.75 (91.47)
Karaila	191.9 (100.0)	3.84 (2.00)	6.40 (3.34)	181.66 (94.66)
Tomato	233.4 (100.0)	8.17 (3.50)	5.30 (2.27)	219.93 (94.23)
Cabbage	419.5 (100.0)	20.98 (5.00)	5.60 (1.33)	392.92 (93.67)
Cauliflower	3004.8 (100.0)	150.24 (5.00)	54.00 (1.80)	2800.56 (93.20)
Pea	145.0 (100.0)	2.90 (2.00)	5.90 (4.07)	136.2 (93.93)

Figures in parentheses indicate percentage to total

It may be observed from the table that in case of parwal, the percentage of loss on account of wastage (damage by pests, diseases, spoilage during transportation etc) was estimated at 2.00. Home consumption of this vegetable was calculated as 3.88 per cent of the total production. Marketable surplus was estimated at 94.12 per cent of the total production. In case of brinjal, the loss percentage was estimated at 4.50 and home consumption was estimated at 3.00 per cent. The marketable surplus was 92.50 per cent of the total production. The loss was found to be 5.00 per cent in case of bhindi and home consumption was observed to be 3.53 per cent. The marketable surplus was found to be 91.47 per cent of the total production in bhindi. Loss percentage on account of damage by pest and diseases, damages due to transportation etc. was 2.00 and home consumption was 3.34 per cent and marketable

surplus was found to be 94.66 per cent in case of karaila. The loss percentage in case of tomato was 3.50 and home consumption was 2.27 percent and marketable surplus was 94.23 percent of the total production.

In case of cabbage, the loss, home consumption and marketable surplus were found to be 5.00 per cent, 1.33 per cent and 93.67 per cent respectively. These figures were 5.00 per cent, 1.80 per cent, 93.20 per cent for cauliflower. In case of green pea the loss percentage was observed to be 2.00, home consumption was 4.07 per cent and marketable surplus was 93.93 per cent of the total production.

In short, higher wastage was observed in cabbage, cauliflower and brinjal. Green pea, Karaila, Bhindi and Parwal were consumed at home in larger proportion.

Marketable surplus and marketed surplus were equal in case of all the vegetables.

Marketing Channels identified

Marketing channels are the routes through which the produce passes from the producer to the ultimate consumers. Four marketing channels were identified in the study area. These were

1. Producer → Commission Agent at Pusa Road/ Tajpur → Wholesaler at Patna → Commission agent at Patna → Retailer at Patna → Consumer at Patna
2. Producer → Commission agent at Pusa Road/ Tajpur → Retailer at Pusa Road/ Tajpur → Consumer
3. Producer → Commission agent at Pusa / Tajpur → Consumer
4. Producer → Commission agent at Darbhanga → Retailer at Darbhanga → Consumer

Channel IV was a special channel. The produce in this case was directly taken to Darbhanga in mini trucks. This produce did not come to local market. Channel IV was in operation in case of parwal, cauliflower and brinjal.

Price spread

Price spread is referred to the difference between consumer's price and producer's price. The price spread in Parwal for all the four channels was estimated and has been shown in Table 3. It was observed that producers' share in consumers' rupee was 48.40 percent in channel-I, 60.48 percent in channel II, 97.17 percent in channel-III and 51.94 percent in channel-IV. It was further, observed that channel-III was more efficient than all other channels mainly because of less number of intermediaries involved. On the contrary, channel-I was found to be less efficient than all other channels as it involved larger number of intermediaries.

Table 3: Price Spread in Parwal

Particulars	Channel I	Channel II	Channel III	Channel IV
Producer's net Price	955.71	1040.71	1130.00	1029.00
Consumer's Price	1974.71	1720.71	1200.00	1981.00
Marketing Cost	1019.00	680.00	70.00	952.00
Producer's Share in Consumer's rupee	48.40	60.48	94.17	51.94
Marketing Efficiency	0.94	1.53	16.14	1.08

Table 4: Price Spread in Brinjal

Particulars	Channel I	Channel II	Channel III	Channel IV
Producer's net Price	699.25	787.00	882.00	1030.00
Consumer's Price	1428.25	1319.00	950.00	1558.00
Marketing Cost	729.00	532.00	68.00	528.00
Producer's Share in Consumer's rupee	48.96	59.67	92.84	66.11
Marketing Efficiency	0.96	1.48	12.97	1.14

Table 5: Price Spread in Bhindi

Particulars	Channel I	Channel II	Channel III
Producer's net Price	463.82	555.00	646.00
Consumer's Price	1048.82	940.00	700.00
Marketing Cost	585.00	385.00	54.00
Producer's Share in Consumer's rupee	44.22	59.04	92.29
Marketing Efficiency	0.79	1.44	11.96

Table 6: Price Spread in Karaila

Particulars	**Channel I**	**Channel II**	**Channel III**
Producer's net Price	1387.27	1506.00	1598.00
Consumer's Price	2515.27	2219.00	1680.00
Marketing Cost	1128.00	713.00	82.00
Producer's Share in Consumer's rupee	55.15	67.87	95.12
Marketing Efficiency	1.23	2.11	19.49

Table 7: Price Spread in Tomato

Particulars	**Channel I**	**Channel II**	**Channel III**
Producer's net Price	728.33	818.00	912.00
Consumer's Price	1488.33	1271.00	980.00
Marketing Cost	755.00	453	68.00
Producer's Share in Consumer's rupee	49.10	64.36	93.06
Marketing Efficiency	0.96	1.81	13.41

Table 8: Price Spread in Cabbage

Particulars	**Channel I**	**Channel II**	**Channel III**
Producer's net Price	566.76	655.00	742.00
Consumer's Price	1237.76	1016.00	810.00
Marketing Cost	671.00	361.00	68.00
Producer's Share in Consumer's rupee	45.79	64.47	91.60
Marketing Efficiency	0.84	1.81	10.91

Table 9: Price Spread in Cauliflower

Particulars	**Channel I**	**Channel II**	**Channel III**	**Channel IV**
Producer's net Price	528.30	614.00	718.00	635.00
Consumer's Price	1138.30	951.50	770.00	1191.00
Marketing Cost	610.00	337.50	52.00	588.00
Producer's Share in Consumer's rupee	46.41	64.53	93.25	51.92
Marketing Efficiency	0.87	1.82	18.81	1.07

Table 10: Price Spread in Pea

Particulars	**Channel I**	**Channel II**	**Channel III**
Producer's net Price	862.50	940.00	1038.00
Consumer's Price	1737.00	1516.00	1120.00
Marketing Cost	874.50	576.00	82.00
Producer's Share in Consumer's rupee	49.65	62.01	92.68
Marketing Efficiency	0.99	1.63	12.66

Price spread in brinjal has been shown in Table 4. It was observed that producer's share in consumer's rupee and marketing efficiency were 48.96 percent, 59.67 percent, 92.84 percent and 53.27 percent and 0.96, 1.48, 12.97 and1.14 in channel I, II, III and IV respectively.

Price spread in bhindi has been shown in Table 5. Producer's share in consumer's rupee and marketing efficiency were found to be 44.22 percent, 59.04 percent and 92.29 percent and 0.79, 1.44 and 11.96 in channel I, II and III respectively.

Price spread in Karaila has been shown in Table 6. Producer's share in consumer's rupee and marketing efficiency were observed to be 55.15 percent, 67.87 percent and 95.12 percent and 1.23, 2.11 and 19.49 in channel I, II and III respectively.

Price spread in tomato has been presented in Table 7. Producer's share in consumer's rupee and marketing efficiency were found to be 49.10 percent, 64.36 percent and 93.06 percent and 0.96, 1.81 and 13.41 in channel I, II and III respectively.

Price spread in cabbage has been shown in Table 8. Producer's share in consumer's rupee and marketing efficiency were observed to be 45.79 percent, 67.47 percent and 91.60 percent and 0.84, 1.81 and 10.91 in channel I, II and III respectively.

Price spread in cauliflower has been shown in Table 9. Producer's share in consumer's rupee and marketing efficiency were estimated to be 46.41 percent, 64.53 percent, 93.25 percent and 51.92 percent and 0.87, 1.82, 13.81 and 1.07 in channel I, II, III and IV respectively.

Price spread in pea has been presented in Table 10. The Producer's share in consumer's rupee and marketing efficiency were observed to be 49.65 percent, 62.01 percent and 92.68 percent and 0.99, 1.63 and 12.66 in channel I, II and III respectively.

Importance of Marketing Channels

Channel I was found to be the most important channel as 79.56 percent of produce was sold through this channel. Channel II came next in importance as 14.78 percent of vegetables was marketed through channel II. A meagre 5.66 percent produce is marketed through channel III.

Problems faced by vegetable growers in marketing the produce

Vegetable growers faced various problems in marketing their produce. The respondents were asked to report about the problems they faced and rank them as per their importance in their opinion. The responses of the vegetable growers have been shown in Table 11.

Table 11: Problems faced by vegetable growers

Problems	Percentage of respondents giving problems and their rank							Rank allotted
	I	II	III	IV	V	VI	VII	
Lack of market place	15.00	14.17	40.83	5.83	5.00	-	-	III
Defective weighing	17.50	42.50	10.83	6.67	5.00	-	-	II
Lack of cold storage	1.67	10.83	18.33	35.83	9.17	6.67	2.50	IV
Higher charges of intermediaries	47.50	19.17	6.67	2.50	-	-	-	I
Unavailability of labour	-	-	5.00	10.00	15.00	23.33	13.33	VI
Lack of railways	5.83	7.50	9.17	6.67	17.50	-	-	V
Lack of credit	-	-	1.67	5.83	9.17	15.00	22.50	VII

Higher charges of intermediaries were the most important problem in the opinion of the respondents. It occupied first rank. Weighing of produce was not correct and often the growers were to lose. Defective weighing occupied second rank in the perception of producers. Lack of market place and lack of cold storages were other important problems faced by the growers occupying third and fourth ranks respectively. The vegetable growers selling their produce at Tajpur were of the opinion that provision of railway line at Tajpur will improve their conditions a lot. This problem was ranked fifth in importance. Unavailability of labour and lack of credit facilities were other less important problems faced by the vegetable growers of the project area.

Conclusion

The analysis of total marketable surplus of different vegetables revealed that marketable surplus was 94.12 percent in case of parwal, 92.50 percent in case of brinjal, 91.47 percent in case of bhindi, 94.66 percent in case of karaila, 94.23 percent in case of tomato, 93.67 percent in case of cabbage, 93.20 percent in case of cauliflower and 93.93 percent in case of pea.

Higher wastage was observed in cabbage, cauliflower and brinjal. Green pea, karaila, bhindi and parwal were consumed at home in larger proportion.

The various marketing channels through which the produce passes from producers to ultimate consumers were studied and the following marketing channel were identified:

I. Producer → Commission Agent at Pusa Road/ Tajpur → Wholesaler at Patna → Commission agent at Patna → Retailer at Patna → Consumer at Patna

II. Producer → Commission agent at Pusa Road/ Tajpur → Retailer at Pusa Road/ Tajpur → Consumer

III. Producer → Commission agent at Pusa / Tajpur → Consumer

IV. Producer → Commission agent at Darbhanga → Retailer at Darbhanga → Consumer

Channel IV is a special channel as in this case, the produce is directly taken to Darbhanga market and it does not come to local market.

In analysis of price spread of parwal indicated that producer's share in consumer's rupee was 48.40 percent in channel I, 60.48 percent in channel II, 94.17 percent in channel II and 51.94 percent in channel IV. The marketing efficiency was estimated 0.94 in channel I, 1.53 in channel II, 16.14 in channel III and 1.08 in channel IV. Almost similar trend was observed in case of all other vegetables.

Higher charges of intermediaries, defective weighing of produce, lack of market place, lack of cold storage were important problems faced by the growers. Lack of railways at Tajpur, unavailability of labour and lack of credit were some other problems.

Policy implications: Looking at the perishable nature of the vegetables, effort should be made by policy makers to provide refrigerated vans for movement of vegetables from production place to different consumption centres without deterioration in quality of the produce, to erect cold storage near the market place to keep the produce free from damage and to provide the growers the facilities for adding value to the produce by installing processing facilities for vegetables. These facilities, if provided, may prove very helpful in increasing the income of the vegetable growers and may encourage the new entrepreneurs to take up agro-based enterprises related to preservation, transportation, processing and export of raw and processed vegetables to the other countries and thereby playing an important role in improving the economic condition of the vegetable growers. These are the some measures which may be beneficial for the vegetable growers to improve the marketing efficiency in the study area as well as in the state in general This will minimize the prevailing gap between price paid by the consumer and price received by the vegetable growers.

References:

[1]. Meena, Sushila and Singh, I.P. (2014). Price spread and efficiency of marketing of tomato in Rajasthan. Indian J. Agric Res. **48**(4):294-300.
[2]. Mittal, Surbhi (2006). Structural shift in Demand for Food: Projection for 2020. Working paper No. 184. New Delhi: Indian Council for Research on International Economic Relations (ICRIER).
[3]. Viswanadham, N (2006). Food and Retail Chain in India. ISAS Working paper No. 15 October 6, 2006, Singapore: ISAS.

