Price spread and post harvest losses during the marketing of cabbage in west district of Tripura

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Abstract

The present study was undertaken with a view to study the disposal pattern, marketed and marketable surplus, price spread, marketing efficiency and post harvest losses for cabbage growers in west district of Tripura A sample of 60 farmers from 6 villages were selected by random sampling method, while for the computation of price, 20 traders, 10 wholesalers and 10 retailers were selected for the present study. The post harvest losses were highest at farm level with 54.08 per cent, followed by wholesaler and retailers. The overall total post harvest losses were recorded as 15.12 kg / q. Whereas the major constraints identified viz; lack of transportation, storage facilities, minimum support prices, wholesale market, market information, regulated market, finance facilities, etc.

Introduction

At present, India is second largest producer of vegetable; just next to China with 14.45 per cent of the total world's production. Now vegetable has becomes an integral part of human daily diet for all sections of people in the Indian society. As per the recommendation by Government of India (GOI, 2012), for an balanced diet, for an adult needs about 280 grams of vegetables, out of which 85 grams comprises of root vegetables, 110 grams are leafy vegetable and 85 g are other kind of vegetable, however an average India's national per capita consumption is recorded as 59.10 g / day for men and 64.20 g / day for women (NHB, 2012).

Horticulture is an important industry among the land based agricultural systems. It's the fastest emerging as the most remunerative sector for changing the age-old subsistence farming especially in the rainfed area, dry lands, hills, arid and coastal agro-ecosystems. Horticultural crops are characterized by high productivity, higher returns, and higher potential for employment generation and exports too, comparatively lower requirement of water and easy adaptability to adverse soil and waste land situations. The input-output ratio in most horticultural crops is much higher than field crops (FAO, 2014).

Vegetable has twin importance as a source of food and as well as for health care aspects; due to the variation in agro-climatic condition available in the country the different vegetable are most suitable to grow it easily, to gain remunerative price by replacing the subsistence farming. As our country is blessed to grow the off-season vegetables, due to the scope of off-season vegetable and it great demand in the domestic as well as international market; this situation will further enhance the income and employment in general.

Methodology

Sampling Area

The west Tripura district was selected purposely during the year 2013-14 due to its varied agro-eco system, dominancy in vegetable production, which was about 6.14 ha in area basis and diversified vegetable production viz; Teliamura and Kalyanpur both blocks were selected randomly for the present study.

Sampling Procedure

The study comprises of 60 numbers of cabbage growers / farmers by following the multi-stratified random sampling method. In the first stage, two blocks viz; Teliamura and Kalyanpur were selected, while in

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the second stage, three villages from each selected block were selected by random method. Lastly, ten numbers of cabbage growers from each village were selected for the collection of primary data from West district of Tripura as all the sample households were stratified into three groups viz; Group I: marginal (0.01-1ha), Group II: small (1.01-2.00 ha) and medium (2.01-3.00 ha) based on land holding size and further sample size was categorized by following the probability proportional sampling (PPS) method. The primary data were collected from the respective respondents with the help of specially designed schedule for the present study purpose to fulfil the objective fame out for the purpose (Chakma, 2014).

Prevailing Marketing Channels
i.   Channel-I: Producer-Consumer,
ii. Channel-II: Producer-Village Trader-Consumer, and
iii. Channel-III: Producer-Trader-Wholesaler-Retailer-Consumer

In addition to above three marketing channels identified, 20 traders, 10 wholesalers and 10 retailers were randomly selected for identified the marketing channels.

Analytical tools used
Marketable surplus

The marketable surplus is used to quantity the quantity, it was a surplus under varying conditions after the consumption and other requirements / needs by the farmer, which is computed by the formula:

$MS = P - C$

Whereas: MS = Marketable surplus,
    P = Gross production, and
    C = Total requirement.

Marketed surplus

The marketed surplus was used to denote the actual quantity of sales by the production irrespective of their requirements (seed, home consumption etc). Marketed surplus may be less than, equal to or greater than marketable surplus depend upon the situation prevailed, mostly for the small and marginal farmer marketed surplus is higher than marketable surplus.

Producer's share in consumer's price / rupee

As producer's share in consumer's price is price received by the farmer, to the retail price, expressed in percentage:

$Ps = (Pf / Pr) \times 100$

Whereas: Pr = is the retail price,
        Pf = is the price received by the farmer, and
        Ps = Producer's share in consumer's rupee.

Marketing margin of the middlemen

It is the difference between the total payments (cost + purchase price) and receipt (sale price) of the middleman, the ith agency.

Percentage margin of the ith middleman,

$(P_{mi}) = P_{ri} - (P_{ri} + C_{mi}) / P_{ri} \times 100$

Whereas: P_{ri} = Total value receipts per unit (sale price),
        P_{mi} = Purchase value of goods per unit,
        C_{mi} = Cost incurred in marketing per unit.

Total cost of marketing

The total cost incurred on the marketing is either in cash or kind by the producer-seller and other various intermediaries / agencies involved in the sale and the purchase of the product by the consumers, may be computed as follows:

$C = C_f + C_{m1} + C_{m2} + ... + C_{mi}$

Whereas: C = Total cost of marketing of the commodity,
        C_f = Total cost paid by the producer from the time of purchase leaves farm till the sale,
        C_{mi} = Cost incurred by the ith middleman in the process of buying and selling of product.

Marketing Efficiency

It is the ratio of the market output to market input (adopted from Shephered formula). An increase of this ratio represents improved efficiency and decrease denotes reduced efficiency. It is effectiveness or competence with which a market structure performs its designated function.

$ME = \{(V/I) - 1\}$

Whereas: V = Value of goods sold, and
        I = Total marketing cost.

Results and Discussion

Cabbage being the semi-perishable, bulky and seasonal in nature, the profitability depends how marketing of the crop has been undertaken by the producers. Therefore, different aspects of marketing viz; disposal pattern of total output, marketable and marketed surplus, price spread, producer's share in consumer's price, post harvest losses, marketing cost and margins were studied and results were discussed in details.

Disposal Pattern

Table 1 reveals that the disposal of cabbage through different marketing channels by different farm holding sizes in percentages, which clearly indicates that marginal farmers preferred channel-III (13.33 per cent) as compared to channel-II (10.00 per cent) and channel-I (6.67 per cent) to dispose their produce, while on small farmer preferred channel-III (26.67 per cent) as compared to channel-II (13.33 per cent) and channel-I (5.00 per cent) to dispose their produce.

While the medium farmers also follow the trend and preferred channel-III (18.33 per cent) as compared to channel-II (6.67 per cent). Also, on overall farm size the most preferred channel is channel-III to dispose their produce, followed by channel-II and it was found nil on channel-I, respectively. Hence the most preferred was channel-III on different farm size groups (Chakma, 2014).

Table 1: Disposal Pattern of Cabbage growers by sample farms

SN	Farm size	Marketing Channel			Total
		I	II	III	
1	Marginal	4(6.67)	6(10.00)	8(13.33)	18(30.00)
2	Small	3(5.00)	8(13.33)	16(26.67)	27(45.00)
3	Medium	0(0.0)	4(6.67)	11(18.33)	15(25.00)
	Total	7(11.67)	18(30.00)	35(58.33)	60(100.00)

(Figure in parentheses indicate percentage of total production)

Marketable and Marketed Surplus

Table 2 reveals that the Marketed surplus of cabbage increases with increase in production on all the three categories of farm size groups, while on medium farm size group it was recorded as highest (6.45 q), followed by small (4.21 q) and least on marginal (3.56 q), respectively. No transaction being done in kind and further on the family consumption it increases with increase in farm size groups. There is no significant difference between marketable and marketed surplus, the marketable surplus was 6.01, 3.91, 3.33 q in case of medium, small and marginal farmers, while the marketed surplus has been found more than 94.00 per cent of total cabbage production similar study carried out by Baba *et al.*, 2010. The present study reveals that the marketed surplus varied from 94.26 to 95.72 per cent on medium to small farmers; the present study was in the line with the Tripathy *et al*, 2014.

Price Spread

There is an inverse relationship between farmer's net share and the length of marketing channel, i. e; longer marketing channel, lower the farmer's net share. Marketing channels started with cabbage growers, passed through commission agent, trader and wholesaler cum retailer and to the ultimate consumer (Sarkar *et al.*, 1992). Altogether all the three marketing channels were prevailing in the present study area, while the price spread was following the decreasing trend according to increase in farm size recorded on different marketing channel.

Table 3 reveals that the price spread in cabbage per quintal on channel-I (i. e; producer-consumer), which shows a direct linkage to the producer were received Rs 885.00/-, while consumer were paid Rs 907.00/- out of that Rs 22.00/- was incurred by the producer as price spread, the similar study carried out was Tripathy *et al*, 2014 and Chakma, 2014.

Table 3: Price Spread / quintal in Channel-I (Producer-Consumer)

S.No.	Particulars	Amount (Rs)	%tage
1.	Net price received by producer	885.00	97.57
2.	Cost incurred by producer	22.00	2.43
3.	Consumer's purchasing price	907.00	100.00

Table 4 reveals that as channel-II the produce was marketed through village trader were recorded lower than the channel-I, even the cost incurred was Rs 22.00/- only, while the expenses incurred by the village trader was Rs 45.45/-, as the margin of Rs 52.55/- by the village trader and consumer purchasing price was Rs 1005.00/-, whereas farmer's net share was 88.06 per cent on channel-II (Chakma, 2014).

Table 5 reveals that the cost incurred by the producer were Rs 62.00/-, where consumer's purchasing price Rs 1234.50/-; out of which producer's net share was 71.69 per cent, which was found to be

Table 2: Marketable and Marketed Surplus of Cabbage in Sample Farms (q/ha)

S.No.	Farm size	Farm size categories					
		Marginal	Per cent	Small	Per cent	Medium	Per cent
1	Total production	3.56	100.00	4.21	100.00	6.45	100.00
2	Payment in Kind	0	0.0	0	0.0	0	0.0
3	Family consumption	0.23	6.46	0.30	7.13	0.44	6.82
4	Marketable surplus	3.33	93.54	3.91	92.87	6.01	93.18
5	Marketed surplus	3.40	95.51	4.03	95.72	6.08	94.26

Table 4: Price Spread/quintal in Channel-II (Producer-Village Trader-Consumer)

S.No.	Particulars	Amount	%tage
1	Net price received by producer	885.00	88.06
2	Cost incurred by producer	22.00	2.19
3	Expenses incurred by village trader	45.45	4.52
4	Margin of village trader	52.55	5.23
5	Consumer's purchasing price	1005.00	100.00

lowest than channel-I and channel-II, which is basically due to more market intermediaries the finding were in the line with Tripathy *et al* (2014) and (Chakma, 2014).

Table 5: Price Spread/quintal in Channel-III (Producer-Wholesaler-Retailer-Consumer)

S.No.	Particulars	Amount	%tage
1	Net price received by producer	885.00	71.69
2	Cost incurred by producer	62.00	5.02
3	Expenses incurred by Wholesaler	75.00	6.08
4	Margin of Wholesaler	58.00	4.70
5	Expenses incurred by Retailer	72.50	5.88
6	Margin of Retailer	82.00	6.64
7	Consumer's purchasing price	1234.50	100.00

Marketing cost, margin and producer's share in consumer rupee through different channels

As marketing intervention was more due to intermediaries, share on consumer's price by producer go on decreasing due to different market costs, commissions, charges etc. Similar finding were carried out by the Kumar *et al*, 2008, Baba *et al*, 2010, Tripathy *et al*, 2014 and Chakma, 2014.

Table 6: Marketing cost, margin and producer share in consumer rupees

S.No.	Particulars	Marketing Channels		
		I	II	III
1	Producer's share	97.57	88.06	71.69
2	Marketing Cost	2.43	6.71	16.98
3	Marketing Margin	0.0	5.23	11.33
4	Consumer Price	100.00	100.00	100.00

Table 6 reveals that on marketing channel-I the producer's share in consumer' price was 97.57 per cent and producer marketing cost was 2.43 per cent. While on channel-II the producer's share was 88.06 per cent of the total investment the marketing cost was 6.71 per cent and marketing margin was 5.23 per cent and on channel-III the producer's share was 71.69

per cent of the total investment the marketing cost was 16.98 per cent and marketing margin was 11.33 per cent, respectively, the cost incurred study was similar of the research carried out by the Tripathy *et al*, (2014).

Indices of marketing efficiency in different channels

The knowledge of price spread helps the policy makers in devising suitable policies for increasing marketing efficiency either by way of reducing the marketing costs or by eliminating unwanted middleman from the marketing process or by both. (Gajanana *et al.*, 2011) also reported the marketing efficiency declined with inclusion of PHL as an item of cost thereby indicating the importance of PHL and its minimization in the supply / value chain. Therefore, scope lies to study the PHL's of cabbage on marketing efficiency (Chakma, 2014).

Table 7 reveals that the indices of marketing efficiency on channel-I was higher than the channel-II and channel-III, which is due to lower marketing and its margin. The marketing efficiency indices of channel-I, II, III were 40.23, 8.38, 3.53, respectively. From the analysis it was found that the marketing efficiency increased with the decrease in the number of intermediaries and vice versa (Gajanana *et al.*, 2011) even the past studies reported the marketing efficiency declined with inclusion of PHL as an item of cost thereby indicating the importance of PHL and its minimization in the supply / value chain.

Table 7: Indices of Marketing efficiency in different channels

S. No.	Particulars	Marketing Channels		
		I	II	III
1.	Value of goods in Rs.	885.00	1005.00	1234.50
2.	Marketing cost and margin	22.00	120.00	349.50
3.	Index of marketing efficiency	40.23	8.38	3.53

Post Harvest Losses (PHL)

The PHL have been estimated on number as well as weight basis at farm level, trader, wholesale and retail level. The total PHL's on weight basis was 15.12 kg / q. Highest loss was at field level per cent and in weight basis it was kg / q, which was followed by wholesaler kg, retailer level kg (Waheed *et al*, 1986). The major cause of PHL's at farm level per cent was damaged by wrong method are handling in harvesting (1 per cent) followed by packing, storing, transportation, marketing etc. The losses were different at different level. It is observed that the loss was more

in farm level. Kumar *et al*, 2008, Tripathy *et al*, 2014) and Chakma, 2014.

Table 8: Post harvest losses in different channels at different stages

S.No.	Stages	Loss in Kg/q	%tage
I	*Farm level losses due to*:		
1	Harvesting injuries	2.05	13.56
2	Packing	1.32	8.73
3	Storage	1.12	7.41
4	Transportation	0.87	5.75
5	Marketing	0.62	4.10
	Loss at farm level	5.98	39.55
II	*Trader level losses due to*:		
1	Storage	1.12	7.41
2	Transportation / Transit	1.98	13.10
	Loss at Trader's level	3.10	20.50
III	*Wholesaler level losses due to*:		
1	Storage	1.14	7.54
2	Transportation / Transit	2.02	13.36
	Loss at Wholesaler level	3.16	20.90
IV	*Retailer level losses due to*:		
1	Transportation / Transit	1.01	6.68
2	Spoilage and handling losses	1.87	12.37
	Loss at Retailer level	2.88	19.05
	Total Loss	15.12	100.00

Marketing Problems

Table 9 reveals that the lack of good transportation facilities and market information's like new arrivals and prevailing prices is the major drawback in good marketing experience by the farmers in marketing of their produce. Farmers are still carry their produce on head cycle, and cart, which is an age old practice due to the lack of road connectivity in the rural areas, which makes transportation very costly as well as difficult, ultimately the farmers could not supply their produce in the distant market, 70.34% of the respondent were faced problems due to lack of transportation facilities, lack of storage facilities, lack of finance facilities, lack of market information in time, lack of wholesale market, lack of regulated market, lack of wholesale market, lack of price control mechanism/agency, lack of processing units, lack of minimum support price and lack of infrastructural facilities are the important aspects which create force sale of the producer-farmers (Chakma, 2014).

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Table 9: Marketing Problems of farms in study area in percentage

S.No.	Particulars	Response in %tage
1	Lack of Transportation facilities	22.5
2	Lack of Storage facilities	20.5
3	Lack of Finance facilities	14.5
4	Lack of Market Information in time	11.5
5	Lack of Wholesale market	8
6	Lack of Regulated market	6
7	Lack of Price control mechanism /agency	6
8	Lack of Processing units	5
9	Lack of minimum support price	3.5
10	Lack of Infrastructural facilities	2.5

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