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## Price spread in different marketing channels of garlic in Saurashtra region of Gujarat, India

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### Abstract

The present investigation was undertaken with a view to study the marketing cost, marketing margin, price spread and constraints marketing of garlic in Saurashtra region of Gujarat. The marketing cost, margin and price spread of different identified marketing channel and constraints of marketing were analysed. It is observed that the marketable surplus on sample farms was 99.06 per cent of total garlic production. The highest quantum of production (61.81%) was sold through commission agent, followed by wholesalers. The garlic growers paid the highest average total marketing cost of Rs. 61.23 per quintal of garlic sold through commission agent followed by wholesaler. On an average, about 7.12, 22.48 and 70.40 per cent of total garlic quantity was moved in the study area through Channel-I (Producer - Village Merchants - Consumers), Channel-II (Producer - Wholesaler - Retailer - Consumers) and Channel-III (Producer - Commission Agent - Wholesaler - Retailer - Consumer), respectively. The producers got the highest net price per quintal in the Channel-III. The marketing cost per quintal was the highest in the Channel-III (Rs. 368.89) while the marketing margin was the highest in Channel-I (Rs. 100.00) followed by Channel-II. The producer's share in consumer's rupee per quintal as well as marketing efficiency were the highest in Channel-I. Majority of the garlic cultivators felt the problem of lack of market facilities, high price of seed and unavailability of high yielding variety seed.

**Keywords:** price spread, marketing channels, garlic

### Introduction

Garlic is one of the important horticultural crop enhance the farmers economy occupied 3.16 lakh hectares area under cultivation with production of about 16.10 lakh metric tonnes in 2017-18 (Anon., 2019<sub>b</sub>)<sup>[3]</sup>. Moreover, area, production and yield of garlic crop grown considerably in India during last decade but it found quite unstable due to fluctuation in prices and several other factors. Gujarat is the leading garlic producing state in India with the highest productivity of 5.08 tonnes/ha in year 2017-18. The area and production of garlic was about 0.19 lakh hectares and 1.51 lakh tonnes, respectively during the year 2017-18 in Gujarat (Anon., 2019<sub>a</sub>)<sup>[2]</sup>. It is also noteworthy that Saurashtra region alone contributes area of 0.09 lakh hectares in garlic cultivation and 0.71 lakh tonnes of garlic production in year 2018-19.

The efficient marketing of garlic is one of the important factors determining the profitability of the crop due to perishability, bulkiness and seasonal nature of garlic. Therefore, considering the crucial role of marketing system and its efficiency, the present investigation was carried out to identify different marketing channels along with marketing cost and margins and to identify various constraints in garlic marketing in the study area.

### Materials and Methods

The Rajkot and Gondal regulated markets of Saurashtra region were selected on the basis of quantity of garlic arrived in the market. A sample of twenty respondents from each of different marketing functionaries like local merchants, wholesaler, commission agent and retailer was randomly selected from both the selected markets to study various marketing aspects. Thus, a total sample of 80 respondents from different marketing functionaries was selected for the study. The required primary data on various aspects of marketing was collected through interview schedule from the selected respondents.

### Marketing analysis

The producer's share, marketing costs and margins of middleman in marketing of garlic was worked out by using the formulas given by Acharya and Agarwal (2003)<sup>[1]</sup>.

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$$PS (\%) = \frac{PF}{PC} \times 100$$

where,  $P_S$  is Producer's share in consumer's rupee,  $P_F$  is Net price of the produce received by the farmer and  $P_C$  is Price of the produce paid by the consumer.

The absolute and percentage margin of middlemen involved in marketing estimated as under:

$$\text{Absolute margin of } i^{\text{th}} \text{ middleman} = P_{Ri} - (P_{Pi} + C_{mi})$$

$$\text{Percentage margin of } i^{\text{th}} \text{ middleman} = \frac{P_{Ri} - (P_{Pi} + C_{mi})}{P_{Ri}} \times 100$$

where,  $P_{Ri}$  is Sale price of the  $i^{\text{th}}$  middleman,  $P_{Pi}$  is Purchase price of the  $i^{\text{th}}$  middleman and  $C_{mi}$  is Cost incurred on marketing by the  $i^{\text{th}}$  middleman.

The total cost incurred on marketing of garlic by the farmers and intermediaries involved in the process of marketing was computed as:

$$C = C_F + C_{m1} + C_{m2} + \dots + C_{mn}$$

where,  $C$  is Total cost of marketing,  $C_F$  is Cost incurred by the producer in marketing of garlic and  $C_{mn}$  is Cost incurred by the  $i^{\text{th}}$  middleman in marketing garlic.

Marketing efficiency was computed by employing the following formula suggested by Acharya and Agarwal (2003) [3].

$$MME = [RP / (MC + MM)] - 1$$

$$RP = FP + MC + MM$$

Marketing efficiency was computed by employing the Shepherd's method.

$$ME = RP/MC$$

where,  $MME$  is Modified measure of marketing efficiency,  $ME$  is Marketing efficiency,  $RP$  is Prices paid by the consumer,  $MC$  is Total marketing costs,  $MM$  is Net marketing margins and  $FP$  is Prices received by the farmer.

The Garrett's ranking technique was adopted to analyse the problems faced in the production of garlic and its marketing problems. The selected respondent were asked to rank the factors that have limited garlic production and also the various marketing problems faced by them. The order of merit given by the respondents was converted into ranks using the following formula separately for both the production and the marketing problems.

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

where,  $R_{ij}$  is Rank given for  $i^{\text{th}}$  factor (constraint) by  $j^{\text{th}}$  individual and  $N_j$  is Number of factors (constraints) ranked by  $j^{\text{th}}$  individual.

## Results and Discussion

Different aspects of marketing *viz.*, disposal pattern, marketable surplus and agency through whom sold, place of sale, time of sale, marketing costs and margins *etc.* were analysed and the results are presented in Table 1. It can be observed from the table that on an overall basis, total

production was 12428.00 quintals per hectare. At overall level, out of total produce, 0.17 per cent was utilized for home consumption, 0.12 per cent was utilized for wage, 0.45 per cent was lost for damage and 0.20 per cent was utilized for relatives. It was also seen that majority of the produce (99.06 per cent) was available as marketable surplus for selling in the market through different channels. The marketable surplus ranged from 97.15 per cent in marginal farms to 99.31 per cent in large farms. High marketable surplus may be due to the fact that as being a hot spice, garlic is consumed in less quantity. Moreover, its high price are difficulty in storage due to perishable nature also leads to lower the home consumption and thereby increases the marketable surplus.

The farmer's decisions with respect to agency for sale of garlic are influenced by number of factors such as distance of markets, transportation facilities available, transportation cost, price of the produce, marketable quantity and economic conditions of the farmers. The agency-wise sale of total marketed surplus of garlic is presented in Table 2. On an overall basis, the total marketable surplus of garlic was observed to be 12311.29 quintals. Out of this, the highest produce (61.81 per cent) was sold through commission agents, followed by the sale through wholesalers (21.22 per cent), village merchants (9.19 per cent) and retailers (7.78 per cent) by sample garlic growers.

Marketing charges paid by the garlic growers for different components are furnished in Table 3. The highest per quintal average total marketing cost of commission agents (Rs. 61.23) followed by wholesalers (Rs. 58.21), village merchants (Rs. 54.38) and retailer (Rs. 45.49), respectively. So, it is clear that if farmers sell their produce at distance market (through commission agent or wholesaler), they will incur more marketing cost because of APMC is not available in village area.

The details about marketing cost incurred by different middleman in the marketing of onion are depicted in Table 4. The results brought to the fore that the highest average total marketing cost per quintal of garlic borne by commission agent (Rs. 113.05), followed by the marketing cost incurred by wholesaler (Rs. 103.89), retailer (Rs. 90.72) and village merchant (Rs. 74.20). Among the various cost components, transportation cost accounted for about 29.65 per cent of average total marketing cost which found to be the highest, followed by the cost of cleaning and grading (29.58%), loading and unloading (12.13%), damage/spoilage (10.45%), other costs (8.09%), packing cost (6.33%) and weighing charges (3.77%) in case of village merchants. Among the various cost components of wholesaler, transportation cost accounted for about 23.40 per cent of average total marketing cost which was the highest, followed by cleaning and grading cost (22.26%), commission (16.14%), loading and unloading cost (10.16%), damage/spoilage cost (8.50%), other cost (8.09%), packing cost (5.10%), market fee (4.43%) and weighing charges (3.13%). Among the various cost components of commission agent, transportation cost accounted for about 22.84 per cent of average total marketing cost which was found to be the highest, followed by cleaning and grading cost (21.25%), commission (15.57%), loading and unloading cost (10.57%), damage/spoilage cost (8.45%), other cost (7.70%), packing cost (5.57%), market fee (4.25%) and weighing charges (3.80%). Among the various cost components of retailers, cleaning and grading cost accounted for about 24.20 per cent of average total marketing cost which was found the highest, followed by transportation cost (23.81%), commission (15.98%), loading and unloading cost (9.37%), damage/spoilage cost (9.15%), other cost (5.86%),

market fee (4.79%), packing cost (4.08%) and weighing charges (2.76%). Commission agent incurred the highest marketing cost as compared to other middlemen.

Price spread includes cost of performing various marketing functions and margins of different agencies associated in the marketing process of the commodity. The extent of price spread helps policy makers in devising suitable policies for increasing marketing efficiency either by way of reducing the marketing costs or eliminating unwanted middlemen from the marketing process or by both. The marketing costs, margins and price spread in marketing of garlic through different channels have been presented based on the data collected from farmers and market functionaries. The channels identified in the study area are as given below:

Channel-I: Producer - Village Merchants - Consumers

Channel-II: Producer - Wholesaler - Retailer - Consumers

Channel-III: Producer - Commission Agent - Wholesaler - Retailer - Consumer

On an average, about 7.12, 22.48 and 70.40 per cent of total garlic quantity was moved in the study area through Channel-I, II and III, respectively. Thus, more than 70.40 per cent of garlic moved through producer to commission agent to wholesaler to retailer to consumer. As such, details of cost, margin and price spread were studied for all channels. The costs incurred and margins earned by various market functionaries as well as price spread in marketing of garlic through all channels are given in Table 5. The results of price spread analysis indicated that producers got the highest net price per quintal in the Channel-III followed by Channel-II and I. The marketing cost per quintal was the highest in the Channel-III (Rs. 368.89) followed by Channel-II and I. It also realized that marketing margin per quintal was the highest in Channel-I (Rs. 100) followed by Channel-II and III. The producer's share in consumer's rupee per quintal was the highest in Channel-I followed by Channel-II and III. The results reported by Chauhan (2004) [4] and Diddi (2013) [5] were quite closer to these findings.

The marketing efficiency for garlic has been worked out by considering Acharya's modified formula and the results are presented in Table 6. The highest marketing efficiency was found in Channel-I (7.40) followed by Channel-II (4.83) and Channel-III (3.47), respectively. Thus, Channel-I was the most efficient marketing channel along all three channels. The intermediaries in the marketing channels earned higher margins leading to lower marketing efficiency. The results of marketing efficiency was closer to findings reported by Solanki (2018) [8]. He observed that the average marketing efficiency of garlic was 8.65 in Madhya Pradesh. The marketing efficiency of garlic was found to be better in case

of sale of produce directly in the open market through the local traders as far as possible.

Production constraints faced by garlic growers based on the different attributes were assessed and ranked using Garret ranking and the results are presented in Table 7. The unavailability of seeds of high yielding variety was major problem because of high price of seed, lack of fund and poor knowledge about seed. It expressed with a Garrett's score of 77 (Rank-I) followed by lack of irrigation facilities (II), unavailability of labour on time (III), poor germination of seeds (IV), unavailability of required quantity of organic manures (V) and unavailability of fertilizer on time (VI) with a Garrett's score 63, 54, 45, 37 and 23, respectively. These results were in line with those of Chauhan (2004) [4] who found that the unavailability of seeds of high yielding variety was major problem in garlic cultivation in Madhya Pradesh in 2004.

Marketing constraints faced by garlic growers based on the different attributes were assessed and ranked using Garret ranking and the results are presented in Table 7. The selected farmers opined that lack of market facilities for garlic was the main problem expressed with 78 Garrett's score by sample farmers (Rank-I). The Garrett's score of 66 had reported for constraint of fluctuation of market prices which were ranked as second constraint while constraints of lack of storage facilities with a Garrett's score of 58, long distance of market with a Garrett's score of 50, high spoilage possibilities with a Garrett's score of 43, lack of transportation facilities with a Garrett's score of 35 and irregular payment of sale with a Garrett's score of 22 were other constraints opined by selected garlic grower. Similar results were found by Ghumatkar (2003) [6]. He observed that lack of market facilities has been found to be major problem in the marketing of garlic grower in Maharashtra.

Thus, the results of price spread analysis indicated that producers got the highest net price per quintal in the Channel-I followed by Channel-II, III. The marketing cost per quintal was the highest in the Channel-III (Rs. 368.89) followed by Channel-II and I. It also realized from the data that marketing margin per quintal was the highest in Channel-I (Rs. 100.00) followed by Channel-II and III. The producer's share in consumer's rupee per quintal was the highest in Channel-I followed by Channel-II and III. The highest marketing efficiency was observed in Channel-I 7.40 followed by Channel-II and III reported. As regard marketing constraints, majority of the garlic cultivators felt the problem of lack of market facilities (Rank-I) followed by fluctuation of market prices, lack of storage facilities, long distance of market, high spoilage possibilities, lack of transportation facilities and no regular payment of sale.

**Table 1:** Pattern of utilization of garlic on sample farm (Qty. in quintal)

Sr. No.	Particulars	Farm size				Total
		Marginal	Small	Medium	Large	
1.	<b>Total production</b>	697.50 (100.00)	1526.00 (100.00)	3410.50 (100.00)	6794.00 (100.00)	12428.00 (100.00)
2.	<b>On farm utilization</b>					
	(a) Home consumption	4.98 (0.71)	6.08 (0.40)	4.23 (0.12)	5.89 (0.09)	21.17 (0.17)
	(b) Wage purpose	4.40 (0.63)	4.12 (0.27)	1.92 (0.06)	4.95 (0.07)	15.40 (0.12)
	(c) Damage	6.51 (0.93)	8.83 (0.58)	13.35 (0.39)	27.21 (0.40)	55.91 (0.45)
	(d) Relatives	4.02 (0.58)	4.39 (0.29)	6.91 (0.20)	8.91 (0.13)	24.24 (0.20)
	Total (a to d)	19.91	23.43	26.40	46.97	116.71

		(2.85)	(1.54)	(0.77)	(0.69)	(0.94)
3.	Marketable surplus	677.59 (97.15)	1502.57 (98.46)	3384.10 (99.23)	6747.03 (99.31)	12311.29 (99.06)

**Note:** Figures in parentheses indicate per cent to total marketable surplus

**Table 2:** Agency wise sale of garlic (Qty. in quintal)

Marketing agency	Farm size				
	Marginal	Small	Medium	Large	Total
Village merchants	66.74 (9.85)	139.44 (9.28)	299.49 (8.85)	591.71 (8.77)	1131.10 (9.19)
Wholesaler	150.83 (22.26)	325.76 (21.68)	703.22 (20.78)	1359.53 (20.15)	2612.15 (21.22)
Commission agent	402.76 (59.44)	917.62 (61.07)	2129.27 (62.92)	4306.63 (63.83)	7610.22 (61.81)
Retailer	57.26 (8.45)	119.75 (7.97)	252.12 (7.45)	489.16 (7.25)	957.82 (7.78)
Total marketable surplus	677.59 (100.00)	1502.57 (100.00)	3384.10 (100.00)	6747.03 (100.00)	12311.29 (100.00)

**Note:** Figures in parentheses indicate per cent to total marketable surplus

**Table 3:** Marketing cost incurred by the garlic growers (Rs. /quintal)

Particular	Point of sale			
	Village Merchants (n=20)	Wholesaler (n=20)	Commission agent (n=20)	Retailer (n=20)
Weighting cost	0.28 (0.51)	0.32 (0.55)	0.36 (0.59)	0.23 (0.51)
Cleaning and Grading	15.25 (28.04)	17.35 (29.81)	18.57 (30.33)	11.26 (24.75)
Packing charges	4.11 (7.56)	4.18 (7.18)	4.45 (7.27)	3.75 (8.24)
Loading and Unloading charges	10.12 (18.61)	10.86 (18.66)	11.75 (19.19)	9.28 (20.40)
Transportation cost	17.67 (32.49)	18.25 (31.35)	18.52 (30.25)	16.32 (35.88)
Damage and other cost	6.95 (12.79)	7.25 (12.45)	7.58 (12.37)	4.65 (10.22)
Average Total Marketing Cost	54.38 (100.00)	58.21 (100.00)	61.23 (100.00)	45.49 (100.00)

**Note:** Figures in parentheses indicate per cent to total marketing cost

**Table 4:** Marketing cost incurred by different middleman (Rs. /quintal)

Particular	Village Merchants (n=20)	Wholesaler (n=20)	Commission agent (n=20)	Retailer (n=20)
Cleaning and Grading	21.95 (29.58)	23.13 (22.26)	24.02 (21.25)	21.95 (24.20)
Weighting cost	2.80 (3.77)	3.25 (3.13)	4.30 (3.80)	2.50 (2.76)
Transportation	22.00 (29.65)	24.31 (23.40)	25.82 (22.84)	21.60 (23.81)
Loading and Unloading charges	9.00 (12.13)	10.55 (10.16)	11.95 (10.57)	8.50 (9.37)
Packing charges	4.70 (6.33)	5.30 (5.10)	6.30 (5.57)	3.70 (4.08)
Market fee	0.00 (0.00)	4.60 (4.43)	4.81 (4.25)	4.35 (4.79)
Commission	0.00 (0.00)	16.77 (16.14)	17.60 (15.57)	14.50 (15.98)
Damage/Spoilage	7.75 (10.45)	8.84 (8.50)	9.55 (8.45)	8.30 (9.15)
Others	6.00 (8.09)	7.15 (6.88)	8.70 (7.70)	5.32 (5.86)
Average Total Marketing Cost	74.20 (100.00)	103.89 (100.00)	113.05 (100.00)	90.72 (100.00)

**Note:** Figures in parentheses indicate per cent to total marketing cost

**Table 5:** Cost, margin and price spread in marketing of garlic (Rs. /quintal)

Sr. No.	Particulars	Channel-I	Channel-II	Channel-III
1.	Producer's selling price	1820.00	1910.00	1945.00
2.	Producer's net price	1691.42 (88.09)	1657.08 (82.85)	1576.11 (77.64)
<b>Marketing Cost</b>				
3.	(a) Producer	54.38 (2.84)	58.31 (2.92)	61.23 (3.02)
	(b) Local merchant	74.20 (3.86)	--	--
	(c) Wholesaler	--	103.89 (5.19)	103.89 (5.12)
	(d) Commission agent	--	--	113.05 (5.57)
	(e) Retailer	--	90.72 (4.54)	90.72 (4.46)
		Total Cost	128.58 (6.70)	252.92 (12.65)
<b>Marketing Margin</b>				
4.	(a) Local merchant	100.00 (5.21)	--	--
	(b) Wholesaler	--	40.00 (2.00)	35.00 (1.72)
	(c) Commission agent	--	--	20.00 (0.99)
	(d) Retailer	--	50.00 (2.50)	30.00 (1.48)
		Total Margins	100.00 (5.21)	90.00 (4.50)
5.	Price spread (cost + margin)	228.58 (11.91)	342.92 (17.15)	453.89 (22.36)
6.	Consumer's purchase price	1920.00 (100.00)	2000.00 (100.00)	2030.00 (100.00)
7.	Producer's share in consumer's rupee (%)	88.09	82.85	77.64

**Note:** Figures in parentheses indicate per cent to consumer's purchase price

**Table 6:** Marketing efficiency of garlic

Particulars	Channel-I	Channel-II	Channel-III
Consumer's price (Rs. /q)	1920.00	2000.00	2030.00
Producer's net price (Rs. /q)	1691.42	1657.08	1576.11
Marketing cost (Rs. /q)	128.58	252.92	368.89
Marketing margin (Rs. /q)	100.00	90.00	85.00
Price spread (Rs. /q)	228.58	342.92	453.89
Marketing efficiency	7.40	4.83	3.47

**Table 7:** Marketing constraints faced by garlic growers

Sr. No.	Attributes	Total score	Garrett's score	Rank
1.	Lack of transportation facilities	4722	35	6
2.	Fluctuation of market prices	7984	66	2
3.	Lack of market facilities	8238	78	1
4.	Long distance market	6635	50	4
5.	Lack of storage facilities	7160	58	3
6.	No regular payment of sale	3809	22	7
7.	High spoilage possibilities	5979	43	5

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