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Research Article

SUBHASH PALEKAR NATURAL FARMING: MARKETING CHANNEL AND MARKETING EFFICIENCY OF MAJOR CROPS IN SAURASHTRA REGION

RABADIYA V.D.*, KHUNT K.A. AND NAGANI C.M.
PG Institute of Agri-business Management, Junagadh Agricultural University, Junagadh, 362001, India
*Corresponding Author: Email-rabadiyavandana15@gmail.com

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Abstract: The present study aimed at marketing of groundnut, wheat and sugarcane natural farming. Junagadh, Gir Somanath, Rajkot and Amreli districts were selected purposively for the study. A total 30 market intermediaries were studied comprising wholesalers and retailers from selected districts. Shepherd's formula was used to estimate marketing efficiency. There are two marketing channels for groundnut and wheat *i.e.*, channel-I: producer-retailer, channel-II: producer–wholesaler–retailer. The net price received by farmer was found higher in channel–I for both crops. The marketing efficiency for groundnut and wheat was found highest in channel-I. In sugarcane, there were three marketing channels *viz*; channel-I: producer–retailer, channel-II: producer–sugar factory–retailer and channel-III: producer–jaggery factory–retailer. The highest net price was received by farmer in channel-I. The marketing efficiency for sugarcane was found highest in channel-III.

Keywords: *Marketing channel, Marketing efficiency*
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Introduction

India has made significant advances in agricultural production in recent decades, including the introduction of high-yield seed varieties and increased use of fertilizers. In the 1960s, the Green Revolution allowed developing countries, like India, to overcome continual food scarcity by producing more food and other agricultural products by using high-yielding varieties of seeds, modifying farm equipment, and substantially increasing use of chemical fertilizers. With the increase in the usage of fertilizers and chemicals government implemented ZBNF in Himachal Pradesh in 2018 with targets to convert the whole Himachal Pradesh to ZBNF by 2022. In 12 districts of the state, a target of 50,000 farmers has already set for the year 2019-20 [1]. Gujarat State has about 93.84 thousand ha land under certification process [2]. However, there are many pockets in Saurashtra and Kutch where farmers are producing cotton, cereals, pulses, vegetables and fruits without using any chemical fertilizers and pesticides for a long time. Mostly, they do natural farming with the understanding of social values, ethics and religious considerations but not for marketing purposes. There is a lack of linkage between the producers and traders of organic farm products. SPNF prescribes the 100 per cent elimination of synthetic chemical inputs (fertilizers and pesticides) and encourages the use of locally sourced inputs, such as natural concoctions and inoculums prepared with cow dung, cow urine, jaggery, green chillies, neem paste [3].

As SPNF is scaled up across Andhra Pradesh, it will considerably alter the landscape of chemical inputs in agriculture, especially fertilizers. In 2017–18, the consumption of urea in the state was reported to be 1.4 million tonnes and that of DAP was a little over 326,000 tonnes [4]. Total subsidy outlay on fertilizers in Andhra Pradesh in 2017–18 is estimated to be INR 3,485 crores (approximately, USD 490 million). As such, the savings in subsidies from taking ZBNF to scale would be significant, which could be redirected towards more sustainable uses, including funding ZBNF scaling efforts.

Asha *et al*., (2019) [5] calculated production and marketing of sugarcane in Visakhapatnam district of Andhra Pradesh.

The results revealed coefficients human labour (0.73), manure (0.25) and seed rate (0.39) were showing positive significant effect on output and plant protection chemicals (-0.08) showing negative significant effect on output. The price spread analysis for the selected channel indicated that the producer received 70.83 per cent of consumer's price in channel 1 (sugar), 81.43 per cent in channel 2 (jaggery). Total marketing cost was highest for channel 1 (34.30%) than the channel 2 (18.80%). The index of marketing efficiency was high for channel 2 *i.e.*, 3.33 as compared to 1.06 for channel 1.

Imlibenla and Sharma (2019) [6] analyzed the marketing cost, price spread, marketing channels, and marketing efficiency of different tea plantation farms in Mokokchung district of Nagaland state, using both primary and secondary data were used. The primary data pertained to the year 2018-19 and was elicited from 90 tea plantation cultivators and 10 market intermediaries were also selected for the data collection through pre-tested questionnaires. The total marketing cost incurred in Channel-I was Rs 7.08/- per kg, the total cost incurred in channel-II was Rs 6.55/-, which showed that total marketing cost was more in Channel-I as compared to Channel-II. In both the channels, marketing margin obtained by the processing unit was Rs 52.14/- per kg of processed tea leaf. The marketing margin obtained by processing unit was high due to various value addition process carried out during processing. The total margin observed in Channel-I was Rs 77.94/-, which was slightly higher than Rs 76.94/- as obtained in Channel-II, respectively.

Kumar *et al*., (2019) [7] calculated marketing cost, marketing margin and price spread under selecting marketing channels for Pigeon pea in the Bundelkhand zone. Simple random sampling was used to select farmers. They selected two-channels, producers-whole seller-retailer-consumer for regulated market and producer-village trader-whole seller-retailer-consumer for the unregulated market. Producer's shares were 85.80 per cent and 89.94 per cent for regulated and unregulated markets, respectively. Price spread was up to 14.2 in the regulated market and 18.06 in the unregulated market.

Sodhi and Patel (2019) [8] studied price spread and marketing efficiency of potato marketing channels in Gujarat. The selection of channel was made using two stage stratified random sampling technique. Marketing efficiency of the channels was calculated by Acharya's modified method. Three major marketing channels identified in the study were (I) Farmer (F)-Wholesaler (WS)-Retailer (R) – Consumer (C), (II) F-WS through CA-SWS-R-C and (III) F-R-C. The farmers had to incur high expenses towards packing material and transportations whereas for other intermediaries in all the channels, weight loss and spoilage followed by transportation were the major marketing cost. The price spread was low in channel III as the produce was sold to the retailer directly by the farmer. The channel III had the highest marketing efficiency. Comparing channel I and II, it was revealed that relatively lower marketing efficiency of channel II was due to one additional intermediary (commission agent).

Bhargava and Kumar (2020) [9] studied post-harvest losses, marketing cost, marketing margin, marketing efficiency and price spread in groundnut. The study was conducted for the agricultural year 2019-2020. This paper reveled that 77kg/ha post-harvest losses occurs at various stages of operations and several factors effecting for losses at farm level. These losses have a direct and negative impact on the income of both farmers and consumers. Three marketing channel were found in study area. Marketed surplus was worked out 88.14 per cent. The marketing cost came to Rs. 161,430 and Rs. 504 in channel-I, II and III respectively. Marketing margin of intermediaries in consumer rupee came to 840 and 860 in channel-II and channel-III respectively. The marketing cost and marketing margin were proposinate with number of intermediaries.

Objective of the study

To identify the marketing channels and to work out the market efficiency

Material and Methods

The data collection was tabulated and analyzed for examining the marketing cost, margins and price spread [10].

Marketing margins and costs

The modified formula was used for separating the post-harvest loss during marketing at a different stage of marketing as well as for estimating the producers' share and marketing margins.

Net farmers' price

The net price received by the grower was estimated as the difference in gross price received and a sum of marketing costs and value loss during harvesting, grading, transit and marketing. Thus, the net farmer's price was expressed mathematically as follows:

NPF = GPF-{CF + (LF × GPF)} or

NPF = {GPF}-{CF}-{LF × GPF}

Where,

NPF-Net price received by the farmers (Rs./ kg),

GPF-Gross price received by the farmers or wholesale price to farmers (Rs./kg),

CF-Cost incurred by the farmers during marketing (Rs./kg),

LF-Physical loss in produce from harvest till it reaches the assembly market (per kg)

Marketing margins

The margins of market intermediaries included their profit, which accrued to them for storage, the interest on capital and establishment after adjusting for the marketing loss due to handling. The general expression for estimating the margin for intermediaries is given here.

Margin = Gross price-Price paid-Cost of loss in value

Thus, the total marketing margin of the market intermediaries (MM) was calculated as

MM = MMW + MMR

Where,

MMW-Market margin of wholesalers

MMR-Market margin of retailers

Marketing cost

The total marketing cost (MC) incurred by the producer/ seller and by various intermediaries was calculated as:

MC = CF + CW + CR

Where,

CF-Cost of farmers during a marketing

CW-Cost of wholesalers during a marketing

CR-Cost of retailers during a marketing

The total loss in the value of produce due to damage caused during handling of products from the point of the harvest till it reached the consumers was estimated as

ML = {LF × GPF} + {LW ×GPW} + {LR × GPR}

Where, ML = Marketing loss,

LF-Loss of farmers,

GPF-Goss price of farmers,

LW-Loss of wholesalers,

GPW-Goss price of wholesalers,

LR-Loss of retailers,

GPR-Goss price of retailers

Price spread

It refers to the difference between the price paid by the consumer and the price received by the producer for an equivalent quantity of the farm product. This price spread consists of marketing costs and margins of the intermediaries. It gives a fair idea about the relative efficiency of various marketing systems and channels.

Price spread = Price paid by consumer-Net price received by producers

Marketing efficiency

The marketing efficiency of commodities produced by natural farming was calculated by using the Shepherd formula.

Results

The study of marketing system includes identification of marketing channel, estimation of marketing cost, price spread and marketing efficiency of groundnut, wheat and sugarcane produced through SPNF practices in Saurashtra region. The estimated marketing cost, marketing margin, price-spread and marketing efficiency in different groundnut marketing channels during the year 2019-20 are given in [Table-1].

Marketing Channels and Market Efficiency in Groundnut Crop

The following important channels for groundnut marketing have been identified with reference to the selected market *i.e*., channel-I: producer-retailer and channel-II: producer-wholesaler-retailer. It is evident that most of the farmers sell groundnut through the channel-I as there is no a separate market for natural farming produces. In majority cases, SPNF farmers sell their product only to relatives or known persons. They don't get premium prices in the market yard or in any other channel. Choudhary *et al*., (2017) [11] also identified two channels in marketing of groundnut in Porbandar district of Gujarat.

The result revealed that the average gross price received by the producers was Rs. 5914.29 per quintal, whereas net price received was Rs. 5546.14, in channel-I. While in case of channel-II, average gross price received by the producers was Rs. 5683.33 per quintal, whereas net price received was Rs. 5309.27. Thus, channel-I is more profitable to farmers. At producers level, the highest cost was incurred in bagging/ packaging charges (Rs. 165.42/qtl) followed by and transportation cost (Rs. 98.57/qtl) for channel-I while it was Rs. 174.67 and Rs. 99.67 for channel-II, respectively. Total expenses incurred by wholesaler in channel-II are amounted to Rs. 190.33 per quintal in which transportation and bagging and packing charge were the major costs. The margin of the wholesaler was estimated to Rs. 226.33 per quintal in groundnut trading. Total expenses incurred by retailers amounted to Rs. 99.67 per quintal in channel-II. The major cost of retailer was transportation cost. The realization of retailer was Rs. 533.67 per quintal.

Table-1 *Comparison of different marketing channel of groundnut (Rs/Qtl.)*

SN	Particulars	Channel –I (n=7)	Channel –II (n=3)
	Cost incurred by farmer		
1	Price received by farmers	5914.29	5683.33
2	Expenses incurred		
	Bagging/ Packaging charges	165.42(2.79)	174.67(2.59)
	Loading/ Unloading	10.42(0.17)	10.67(0.16)
	Weighing	10.42(0.17)	10.33(0.15)
	Cleaning/Grading cost	49.85(0.84)	50.67(0.75)
	Transport cost	98.57(1.67)	99.67(1.48)
	Storage charge	19.42(0.32)	18.00(0.27)
	Loss (in Rs.)	14.28(0.24)	9.67(0.14)
	Total expenses incurred	368.14(6.22)	373.67(5.55)
3	Net price received by farmer	5546.14(93.77)	5309.27(78.86)
	Cost incurred by wholesaler		
4	Purchase price	-	5683.33(84.40)
5	Expenses incurred		
	Bagging/ Packaging charges	-	48.33(0.72)
	Loading/ Unloading	-	11.33(0.17)
	Transport cost	-	50.00(0.74)
	Commission charge	-	30.00(0.45)
	Storage charge	-	25.33(0.38)
	Loss (in Rs.)	-	15.33(0.28)
	Other (if any)	-	10.00(0.15)
	Total expenses incurred	-	190.33(2.82)
6	Net price received	-	5909.67(87.76)
7	Margin of wholesaler	-	226.33(3.36)
	Cost incurred by retailer		
8	Purchase price	-	6100.00(90.59)
9	Expenses incurred		
	Bagging/ Packaging charges	-	19.33(0.28)
	Loading/ Unloading	-	9.67(0.14)
	Transport cost	-	50.67(0.75)
	Loss (in Rs.)	-	10.67(0.16)
	Other (if any)	-	9.33(0.14)
	Total expenses incurred	-	99.67(1.48)
10	Net price received	-	6633.67(98.51)
11	Margin of retailer	-	533.67(7.93)
12	Total marketing cost	368.14(6.22)	663.67(9.85)
13	Price paid by consumers	5914.29(100)	6733.33(100)

The total marketing costs were Rs. 368.14 and Rs. 663.67 per quintal for channel-I and channel-II, respectively. Thus, total marketing cost incurred in transferring produces from produces to consumers found higher in channel-II. In both, the channels share of bagging and packaging and transport cost found higher in both the channel. This result is also in conformity with the results obtained by Maurya *et al*., (2017) [12], in their study on price spread and marketing efficiency of groundnut marketing in Gorakhpur.

The marketing margins earned by various market functionaries as well as price spread in marketing of groundnut through both channels are given in [Table-2]. In channel-II, the total margin earned by intermediaries was Rs. 760.00 per quintal of groundnut, while in case of channel-I there are no intermediaries. A difference between price paid by consumer and net price received by producers is called price spread. Price spread of groundnut in two different marketing channels is given in table. It clearly observed that the price spread in marketing of groundnut was Rs. 368.14 per quintal in channel-I. While in channel-II, price spread in marketing of groundnut was Rs. 1423.67 per quintal of groundnut. The producer's share in consumer's rupee was less in channel-II than channel-I. Bhargva and Kumar (2020) also observed the same results in the study on marketing efficiency of groundnut in Andhra Pradesh.

The marketing efficiency for groundnut has been worked out as per Shepherd's formula and the results are presented in [Table-2]. Marketing efficiency was higher in channel-I (15.06) *i.e*., direct selling to consumers was more efficient than in channel-II (9.14). Therefore, channel-I was found to be more efficient as compared to channel-II. Efficiency of marketing can be improved by proper handling of crop after harvest. In Tamil Nadu, Balaji *et al*., (2001) [13] noted that higher efficient channel for groundnut was direct sale to consumer. Producer's share in consumer's rupee was highest in channel-I (93.78 per cent) then the channel-II (78.85 per cent).

Table-2 *Total marketing cost for groundnut under different marketing channels (Rs/Qtl.)*

	Channel –I	Channel –II
Net price received by farmers	5546.14	5309.66
Price paid by consumers	5914.28	6733.33
Producer's share in consumer's rupee (%)	93.78	78.85
Price spread	368.14	1423.67
Total Marketing margin	-	760.00
Total marketing cost	368.14	663.67
Marketing efficiency	15.06	9.14

Marketing Channels and Market Efficiency in Wheat Crop

The details of marketing cost and margins in wheat marketing in different channels is given in [Table-3]. The result shows that SPNF wheat producers were mostly sold their produce through channel-I. The important channels for the wheat marketing identified with reference to the selected market are channel-I: producer-retailer and channel-II: producer-wholesaler-retailer. Most of the farmers sell wheat in the channel-I as there is no separate market for natural farming produces. Generally, they are selling their product only to relatives or known persons. They do not get premium prices in the marketing yard or in any other channel. The, details of cost, margin and price spread were studied for both channels.

Table-3 *Comparison of different marketing channels of wheat (Rs/Qtl.)*

SN	Particulars	Channel–I (n=8)	Channel–II (n=2)
	Cost incurred by farmer		
1	Price received by farmers	1975.67	1753.49
2	Expenses incurred		
	Bagging/ Packaging charges	60.61(3.07)	60.84(2.82)
	Loading/ Unloading	12.67(0.64)	11.91(0.55)
	Weighing	19.83(1.00)	20.46(0.95)
	Cleaning/Grading cost	13.19(0.66)	11.54(0.53)
	Transport cost	35.67(1.80)	-
	Storage charge	10.51(0.53)	-
	Loss (in Rs.)	25.36(1.28)	22.53(1.04)
	Total expenses incurred	178.04(9.01)	127.28(5.92)
3	Net price received by farmers	1797.63(90.98)	1626.21(75.63)
	Cost incurred by wholesaler		
4	Purchase price	-	1753.49(81.55)
5	Expenses incurred		
	Loading/ Unloading	-	12.38(0.57)
	Transport cost	-	40.59(1.88)
	Commission charge	-	30.54(1.42)
	Storage charge	-	18.72(0.87)
	Loss (in Rs.)	-	17.10(0.79)
	Other (if any)	-	12.91(0.60)
	Total expenses incurred	-	132.24(6.15)
6	Net price received	-	1817.76(84.55)
7	Margin of wholesaler	-	64.27(2.92)
	Cost incurred by retailer		
8	Purchase price	-	1950(90.68)
9	Expenses incurred		
	Transport cost	-	25.37(1.18)
	Loss (in Rs.)	-	13.61(0.63)
	Other (if any)	-	7.83(2.17)
	Total expenses incurred	-	46.81(2.17)
10	Net price received	-	2103.19(97.82)
11	Margin of retailer	-	153.19(7.12)
12	Total marketing cost	178.04(9.01)	306.33(14.24)
13	Price paid by consumers	1975.67(100)	2150(100)

The result revealed that the average gross price received by the producers was Rs. 1975.67 per quintal, whereas net price received was Rs. 1797.63, in channel-I. While in case of channel-II, average gross price received by the producers was Rs. 1753.49 per quintal, whereas net price received was Rs. 1626.21. Thus, channel-I is more profitable to farmers. At producers' level, higher cost incurred in bagging/ packaging charges and transportation, which is Rs. 60.61 and Rs. 35.67 per quintal in channel-I, respectively and bagging/ packaging charges was Rs. 60.84 per quintal for channel-II. The total expenses incurred by wholesaler in channel-II are Rs. 132.24 per quintal in which the major cost components were transportation and commission charges. The total margin of wheat wholesaler was Rs. 64.27 per quintal.

Table-5 *Comparison of different marketing channels of sugarcane (Rs/Qtl.)*

SN	Particulars	Channel-I (sugarcane) (n=2)	Channel-II (sugar factory) (n=2)	Channel-III (jaggery factory) (n=6)
	Cost incurred by farmer			
1	Price received by farmers	525.00	492.50	520.00
2	Expenses incurred			
	Loading/ Unloading	50(9.52)	40(1.29)	40.33(0.85)
	Transport cost	112.50(21.42)	100(3.22)	80.33(1.70)
	Loss (in Rs.)	12.50(2.38)	10(0.32)	11.16(0.23)
	Total expenses incurred	175(33.33)	150(4.83)	131.83(2.80)
3	Net price received by farmers	350(66.67)	330(10.64)	388.16(8.25)
	Cost incurred by factory			
4	Purchase price	-	492.5(15.88)	520(11.06)
5	Expenses incurred			
	Bagging/ Packaging charge	-	32.50(1.04)	50.16(1.06)
	Loading/ Unloading	-	50(1.61)	19.33(0.41)
	Weighing	-	50(1.61)	40.50(0.86)
	Transport cost	-	262.5(8.46)	270(5.74)
	Storage charge	-	20(0.64)	11.16(0.23)
	Loss (in Rs.)	-	20(0.64)	14.66(0.31)
	Production cost of sugar/ jaggery preparation	-	600(19.35)	400(8.51)
	Total expenses incurred	-	1035(33.38)	805.83(17.12)
6	Net price received	-	2065(66.61)	3894.16(82.87)
7	Total marketing cost	175(33.33)	1185(38.22)	937.66(19.90)
8	Price paid by consumers	525(100)	3100(100)	4700(100)

Total expenses incurred by retailers amounted to Rs. 46.81 per quintal in channel-II. The major cost of retailer was transportation cost. The realization of retailer was Rs. 153.19 per quintal.

The total marketing costs were Rs. 178.04 and Rs. 306.33 per quintal for channel-I and channel-II, respectively. Thus, total marketing cost including cost incurred in transferring produce from producer to consumers was found higher in channel-II. In both the channels, share of bagging and packaging and transport cost was higher. This result is also in conformity with the results obtained by Dahiwade *et al*., (2017) [14], in their study on price spread and marketing efficiency of wheat marketing in Latur district of Maharashtra.

Table-4 *Total marketing cost for wheat under different marketing channel (Rs/Qtl.)*

	Channel –I	Channel –II
Net price received by farmers	1797.63	1626.21
Price paid by consumers	1975.67	2150.00
Producer's share in consumer's rupee (%)	90.99	75.63
Price spread	178.04	523.79
Total Marketing margin	-	217.46
Total marketing cost	178.04	306.33
Marketing efficiency	10.09	06.01

The marketing margins earned by various market functionaries as well as price spread in marketing of wheat through both channels are given in [Table-4]. In channel-II, the total margin earned by intermediaries was Rs. 217.46 per quintal of wheat, while in case of channel-I there are no intermediaries. A difference between price paid by consumer and net price received by producers is called price spread. Price spread of wheat in channel-I Rs. 178.04 per quintal and in channel-II was Rs. 523.79 per quintal of wheat. The producer's share in consumer's rupee was less in channel-II than channel-I. Patel *et al*., (2011) [15] also observed the same results in the study on marketing efficiency of wheat. They mentioned that producer's share in consumer's rupee was inversely related with the number of intermediaries. Producer's share in consumer's rupee was highest in channel-I (90.99 per cent) than the channel-II (75.63 per cent).

The marketing efficiency was higher in channel-I (10.09) *i.e*., direct selling to consumers was more efficient than in channel-II (6.01). Therefore, channel-I was found to be more efficient as compared to channel-II. Efficiency of marketing can be improved by proper handling of crop after harvest.

Marketing Channels and Market Efficiency in Sugarcane Crop

The following important channels for sugarcane marketing have been identified with reference to the selected market *i.e*., channel-I: producer-retailer, channel-II: producer-sugar factory-retailer and channel-III: producer-jaggery factory-retailer. It is evident that most of the farmers sell sugarcane through the channel-III as there is no a separate market for natural farming produces. Asha *et al*., (2019) also identified those channels, in which the intermediaries are sugar factory and jaggery factory in marketing of sugarcane in Vishakhapatnam district of Andhra Pradesh.

Table-6 *Total marketing cost for sugarcane under different marketing channels (Rs/Qtl.)*

	Channel-I	Channel-II	Channel-III
Net price received by farmers	350.00	330.00	338.16
Price paid by consumers	525.00	3100.00	4700.00
Producer's share in consumer's rupee (%)	66.67	10.65	8.25
Price spread	175.00	2770.00	4311.83
Total marketing cost	175.00	1185.00	937.66
Marketing efficiency	2.00	1.61	4.01

The result revealed that the average gross price received by the producers was Rs. 525 per quintal, whereas net price received was Rs. 350, in channel-I. While in case of channel-II and channel-III, average gross price received by the producers was Rs. 492.50 and Rs. 520 per quintal, whereas net price received were Rs. 330 and Rs. 388.16 per quintal, respectively. Thus, channel-III is more profitable to farmers. At producers level, the cost incurred by loading/unloading charges and transport cost were found higher, which are Rs. 50 and Rs. 112.50 for channel-I, Rs. 40 and Rs. 100 for channel-II and Rs. 40.33 and Rs. 80.33 for channel-III, respectively. Total expenses incurred in channel II and channel-III by retailers amounted to Rs. 1035 and Rs. 805.83 per quintal, respectively.

The total marketing costs were Rs. 175, Rs. 1185 and Rs. 937.66 per quintal for channel-I, channel-II and channel-III, respectively. Thus, total marketing cost including cost incurred in transferring produce from producer to consumers was found higher in channel-II. In all the channels share of loading/unloading charges and transport cost was found higher in sugarcane marketing.

The price spread of sugarcane in three different marketing channels is given in table. It is clearly observed that the price spread in marketing of sugarcane was Rs. 175 per quintal in channel-I and Rs. 2770 and Rs. 4311.83 per quintal of sugarcane in channel-II and channel-III respectively. The producer's share in consumer's rupee was less in channel-II (10.65 per cent) and channel-III (8.25 per cent) than channel-I (66.67 per cent).

The marketing efficiency was the highest in channel-III (4.01) *i.e.,* producers selling to jaggery factory followed by channel-I (2.00) and channel-II (1.61). Therefore, channel-III was found to be more efficient as compared other channels.

Conclusion

The study of marketing system for groundnut, wheat and sugarcane produced through SPNF practices revealed that there are two marketing channels for groundnut *i.e*., channel-I: producer-retailer, channel-II: producer-whole seller-retailer. Most of the farmers sell groundnut in the channel-I.

The net price received by farmer found higher in channel-II. The major marketing cost were bagging/packaging and transportation in both the channels. The total marketing cost found the higher (Rs. 663.67) in channel-II than channel-I (Rs. 368.14/qtl). The marketing efficiency for groundnut found higher in channel-I (15.06) than channel-II (9.10).

Two important channels for the wheat have been identified, *i.e*., channel-I: producer-retailer, channel-II: producer-whole seller-retailer. Most of the farmers sell wheat in the channel-I. The net price received by farmers found higher in channel-I (Rs.1797.63/qtl) than channel-II (Rs. 1626.2/qtl). The major marketing cost are packaging and bagging charges and transportation in both the channels. The total marketing cost incurred in channel-I and II is Rs. 178.04 and Rs. 306.33/qtl. The marketing efficiency for wheat found higher in channel-I (10.09) than channel-II (6.01).

In sugarcane, there were three marketing channels *viz*; channel-I: producer-retailer, channel-II: producer-sugar factory-retailer and channel-III: producer-jaggery factory-retailer. Most of the farmers had sold sugarcane in the channel-III. The highest net price received by farmer in channel-I (Rs. 350/qtl), followed by channel-III (Rs. 338.16/qtl) and channel-II (Rs. 330/qtl). The major marketing cost were transportation cost, bagging/packaging cost and loading/unloading cost. The total marketing cost was found highest in channel-II (Rs 1185/qtl) followed by channel-III (Rs. 937.66/qtl) and channel-I (Rs. 175/qtl), respectively. The marketing efficiency for sugarcane found high in channel-III as compared to channel-I and channel-II.

Application of research: Study of marketing channel and marketing efficiency of major crops in Saurashtra Region

Research Category: Agri-business Management

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Author statement: All authors read, reviewed, agreed and approved the final manuscript. Note-All authors agreed that- Written informed consent was obtained from all participants prior to publish / enrolment

Study area / Sample Collection: Junagadh, Gir Somanath, Rajkot and Amreli districts

Cultivar / Variety / Breed name: Groundnut, Wheat and Sugarcane

Conflict of Interest: None declared

Ethical approval: This article does not contain any studies with human participants or animals performed by any of the authors.
Ethical Committee Approval Number: Nil

References

[1] Kumar A. and Kumari S. (2020) *The Pharma Innovation*, 9(4), 236-239.
[2] Anonymous (2020) *Year Book, The World of Organic Agriculture Statistics and Emerging Trends*, 2019.
[3] Tripathi S., Tauseef S., Nagbhushan S. and Gupta N. (2018) *Zero budget natural farming for the sustainable development goals. Andhra Pradesh, India.*
[4] Anonymous (2018) *Annual Report. Fertiliser Association in India, Government of India, New Delhi.*
[5] Asha R., Babu G.S. and Teja T.S. (2019) *Journal of Research ANGRAU*, 47(4), 69-77.
[6] Imlibenla and Sharma A. (2019) *International Journal of Current Microbiology and Applied Science*, 8(6), 1164-1171.
[7] Kumar G., Ojha J. and Tiwari D. (2019) *International Journal of Chemical Studies*, 6(3), 62-65.
[8] Sodhi H. and Patel A. (2019) *Marketing Management*, 9(29), 41-44.
[9] Bhargava G. and Kumar S. (2020) *International Journal of Innovative Science and Research Technology*, 5(10), 821-825.
[10] Farkade V.R., Choudhari S.A., Amale A.J. and Tilker S.N. (2011) *Indian Journal of Marketing*, 25(2), 122-134.
[11] Choudhary R., Rathore D.S. and Sharma A. (2017) *Economic Affairs*, 62(3), 547-553.
[12] Maurya S.K., Kushwaha R.R., Mourya K.K. and Kumar S. (2017) *Journal of Pharmacognosy and Phytochemistry*, 6(6), 712-715.
[13] Balaji P., Sivakum S.D. and Chinniyan P. (2001) *Indian Journal of Agricultural Marketing*, 15(2), 36-42.
[14] Dahiwade P.M., Pawar B.R. and Mane P.S. (2013) *Agriculture Update*, 8(3), 476-479.
[15] Patel R.H., Patel A.A. and Bhatt B.K. (2011) *Indian Journal of Agriculture Research*, 45(2), 122-127.