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Study on marketing of major vegetables in Jasra, district Prayagraj, Uttar Pradesh

Leena Singh and Dr. Ramchandra

Abstract

Uttar Pradesh is blessed with extremely fertile alluvial soil ranges from sandy to clayey loam making it suitable for growing various kinds of horticultural crops mainly vegetables. It has been found that one per cent growth in agriculture is at least two to three times more powerful in reducing poverty than the same growth in non-agricultural sectors (World Development Report). A strong agriculture–poverty–nutrition linkage is expected in a developing country like India with serious malnourishment among rural population that depends largely on agriculture for sustenance. For this, various goals set by GOI to double farmers' income by 2022-23 and focusing on promoting farmers' welfare as well as reducing agrarian distress. The present study was conducted on the basis of respondents divided among different farm size in the study area, marketing of these perishable items and selected crop wise distribution of marketing channels and how the marketing problems impacts their life.

Keywords: Nutritional value, doubling farmers' income, marketing channel, marketing problems

1. Introduction

India has a wide variety of climate and soils on which a large number of Horticultural crops such as fruits, vegetables, ornamentals, medicinal and aromatic plants, plantation crops, and spices are grown. After the Green Revolution of the 1960s, it was realized that Indian topography and agro-climatic conditions are well suited for horticultural crops also and these crops would help in achieving sustainability of farmers with small holdings. Government initiatives like Mission for Integrated Development of Horticulture (MIDH) which is the central scheme sponsored in the holistic growth of the horticulture sector plays important role in growth in area, production and productivity of horticultural crops. The agriculture sector experienced buoyant growth in the past two years, accounting for a sizable 18.8% (2021-22) in Gross Value Added (GVA) of the country registering a growth of 3.6% in 2020-21 and 3.9% in 2021-22. India is the second-largest producer of fruits and vegetables, and horticulture is a sector with huge export potential. Horticulture accounts for 33 percent of India's agricultural GDP from a mere 18 percent of the total cropped area. The consistent increase in acreage of horticultural crops reflects the farmers' priorities as they have slowly and gradually been shifting towards producing fruits and vegetables, keeping in pace with the growing demands of these products (The Times of India, 2022). In year 2021, U.P produced the largest share of horticultural crops in India accounting 13%. West Bengal came second at over 10%. As a leading producer of low-costs fruits and vegetables, the country had an enormous export market. Considering all these factors, it is evident that horticulture can unlock the next level of possibilities not just for farmers in doubling their incomes (and more), but also for the country on the whole to bolster its economic output (Economic Times, 2022).

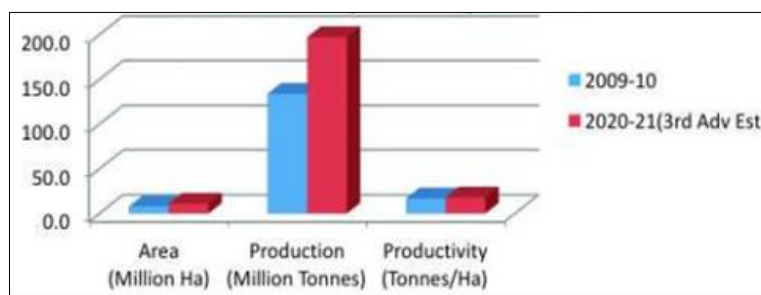


Fig 1: Growth in area, production and productivity of vegetables

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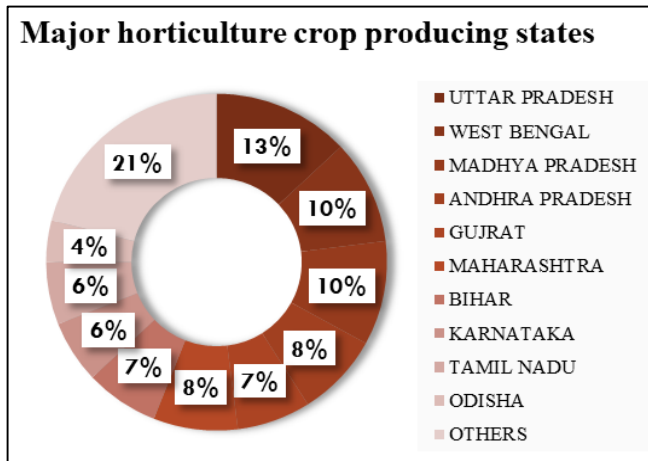


Fig 2: Major horticulture crop producing states

2. Objectives of the study

1. To study the socio-economic profile of respondents in the study area.
2. To find out crop wise marketing cost, marketable surplus, marketing margin, producer's share in consumer's rupee and marketing efficiency of the crop.
3. To identify the constraints and suggestions associated with the marketing of vegetables in selected area of study.

3. Materials and Methods

3.1 Selection of district

Uttar Pradesh has 75 districts, out of which Prayagraj district was selected purposively. Total area of Prayagraj district covers 5,482 km². The rivers Ganga and Jamuna divides Prayagraj in three distinct regions namely, Gangapaar, Jamunapaar and Dwaba. The Gangapaar and Jamunapaar and the City comprise of Prayagraj district whereas Dwaba area comes under district Kaushambi.

3.2 Selection of block

Prayagraj district consists of 8 tehsils and 23 blocks. Out of these Jasra block in Bara tehsil was selected purposively for the present study. The criterion for selecting block was the highest area in Jamunapaar under vegetable cultivation.

3.3 Selection of village

Selected block has 114 villages. Out of these 5% of village i.e; 6 villages Bara khas, Chak Saraipur, Dauna, Ghoorpur, Jari and Maida was randomly selected for the study. Further, 16-17 respondents were selected randomly from each selected village, making a total of 100 respondents.

3.4 Selection of respondents

A list of vegetable growers was prepared and arranged based on their land holding size. Allowing for the size, 10% of vegetable growers were selected randomly from different villages for the purpose of study They were classified into four strata viz.

Table 1: Classification of respondents on the basis of their land holding sizes

1.	Marginal Farmer	<1 ha
2.	Small Farmer	1-2 ha
3.	Semi-medium Farmer	2-4 ha
4.	Medium Farmer	4-10 ha
5.	Large Farmer	>10 ha

3.5 Selection of major vegetable crops

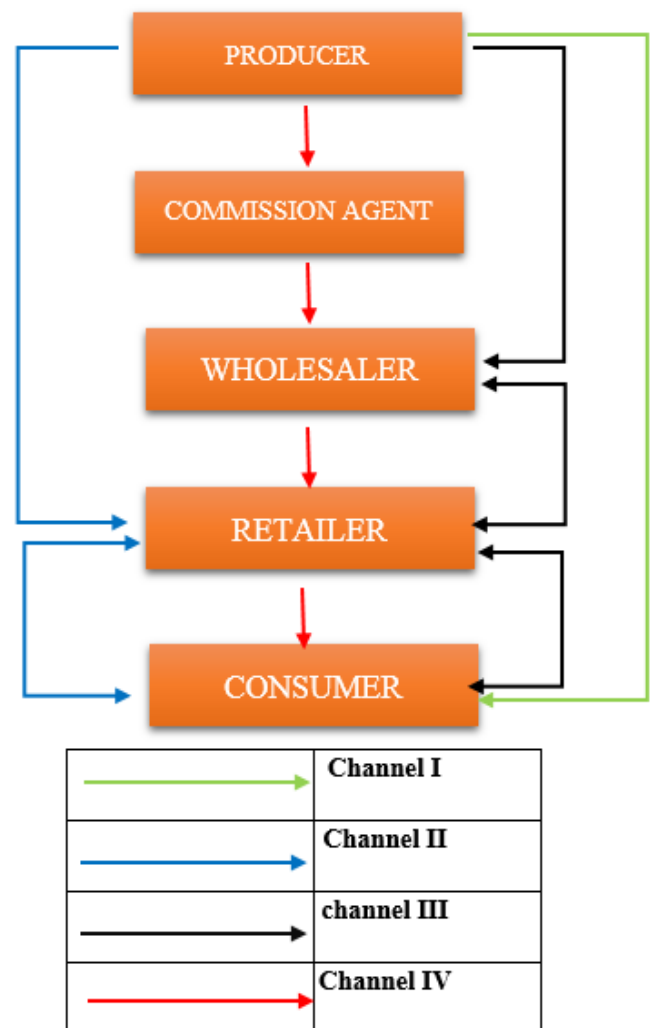
Vegetables based on maximum production in the area was randomly selected.

Table 2: List of selected vegetable crops in the study area

Name of selected commodity
Onion, Cauliflower, Chilli

3.6 Selection of market and functionaries

The primary and secondary market was selected purposively for the recent study. A list of all market functionaries of both primary and secondary market will be prepared with the help of market head. Out of total market functionaries 10% were selected randomly from market for present study. This market functionaries are considered for data collection regarding marketing charges in different marketing channel.



3.7 Analytical tools

Marketing Cost

The total cost incurred on marketing by various intermediaries involved in the sale and purchase of the commodity till it reaches the ultimate consumer;

$$C = C_f + C_{m1} + C_{m2} + C_{m3} + \dots + C_{mn}$$

where; C = Total cost of marketing

C_f= Cost borne by the producer farmer from the produce leaves the farm till the sale of the produce C_{mn}= Cost incurred by the Ith middlemen in the process of buying and selling

Marketable Surplus

$$MS = P - C$$

Where; MS= Marketable surplus,
P= Total production
C= Total requirements (farm and family)

Price Spread

$$\text{Price spread} = \frac{(\text{consumer price} - \text{net price of producer})}{\text{consumer price}} \times 100$$

Producer's Share in Consumer's Rupee

$$PNR = \frac{PS_i}{PC_i} \times 100$$

Where; PS_i = Producer's share in Consumer's Rupee in i^{th} channel
 PC_i = Consumer's Price (Rs./q) in i^{th} channel

Marketing Margin of Middlemen

$$\text{Absolute margin} = P_{ri} - (P_{pi} + C_{mi})$$

$$\text{Percent margin} = \frac{P_{ri} - (P_{pi} + C_{mi})}{P_{ri}} \times 100$$

Where, P_{ri} = Total value of receipts
 P_{pi} = Total purchase value of goods (purchase price)
 C_{mi} = Cost incurred in marketing

Modified Acharya's Method

Marketing efficiency will be calculated by using Acharya's approach

$$MME = \frac{FP}{MC + MM}$$

Where, MME=Modified marketing efficiency,
FP = Price received by the farmer
MC= Marketing cost
MM = Marketing margin

Garrett Ranking Technique

This technique was used to evaluate the problems faced by the researchers. The orders of merit given by the respondents were converted in to rank by using the formula:

$$\text{Percent Position} = \frac{100 \times (R_{ij} - 0.50)}{N_j}$$

Where, R_{ij} = the rank given to i^{th} item by the j^{th} individual
 N_j = the number of items ranked by the j^{th} individual

Standard Deviation

$$\sigma = \sqrt{\frac{\sum (x_i - \mu)^2}{N}}$$

Where, σ = population standard deviation
N = the size of the population
 x_i = each value from the population
 μ = the population mean

4. Result and Discussion

4.1 To study the socio-economic profile of the respondents in the study area

Table 3: Detail description of sample size of households/ families in different Size of Farms Group

Sl. No.	Particulars	Size of Farms Group					Sample Average
		Marginal	Small	Semi-Medium	Medium	Large	
1.	Average size of farm families	5.75 (100)	6.15 (100)	6.32 (100)	6.50 (100)	6.71 (100)	6.28 (100)
2.		Gender					
	Male	4.31 (74.95)	4.48 (72.84)	4.61 (72.94)	4.74 (72.92)	4.83 (71.98)	4.59 (73.08)
	Female	1.44 (25.05)	1.67 (27.16)	1.71 (27.06)	1.76 (27.03)	1.88 (28.02)	1.69 (26.92)
3.		Age Composition (years)					
	0-15	1.03 (17.91)	1.04 (16.91)	1.13 (17.87)	1.23 (18.92)	1.34 (19.97)	1.15 (18.31)
	15-40	3.50 (60.86)	3.69 (60.00)	3.72 (58.86)	3.77 (58.00)	3.82 (56.92)	3.70 (58.92)
	40-60	0.92 (16.00)	1.04 (16.91)	1.07 (16.93)	1.10 (16.92)	1.14 (16.98)	1.05 (16.72)
	>60	0.30 (5.21)	0.38 (6.17)	0.40 (6.32)	0.40 (6.15)	0.41 (6.11)	0.38 (6.05)

(Number of Respondents = 100)
(Marginal+ Small+ Semi-medium + Medium + Large) = 50+29+16+3+2=100
(Figures in the parenthesis indicates percentage to the total size of families)

Results in Table 3 revealed that most of the farmers belonged to age group (58.92%) ranging from 15 to 40 years followed by under 15 years (18.31%) age group, age group between 40-60 years having 16.72 per cent and old (>60 years) age group are having only 6.05%. The sample average percentage of

male and female for different size of farm groups was 73.08% and 26.92% respectively. Average size of farm families according to sex and age in marginal, small, semi- medium, medium and large size of farm groups were 5.75, 6.15, 6.32, 6.50, 6.71 respectively

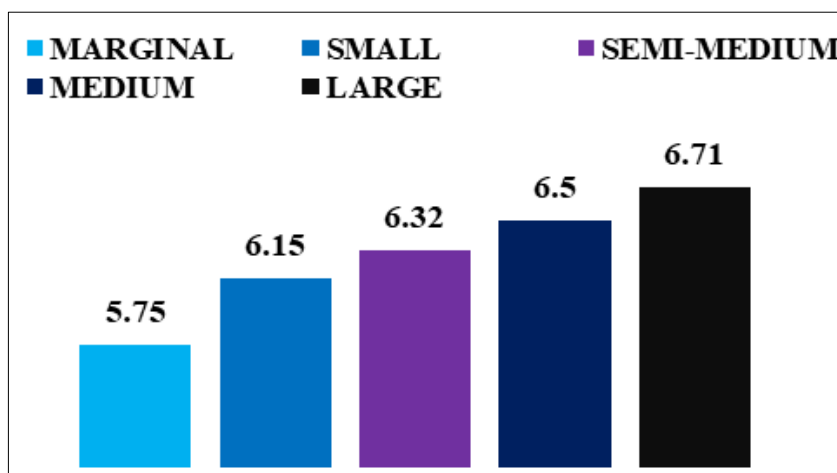


Fig 3: Average size of farm families

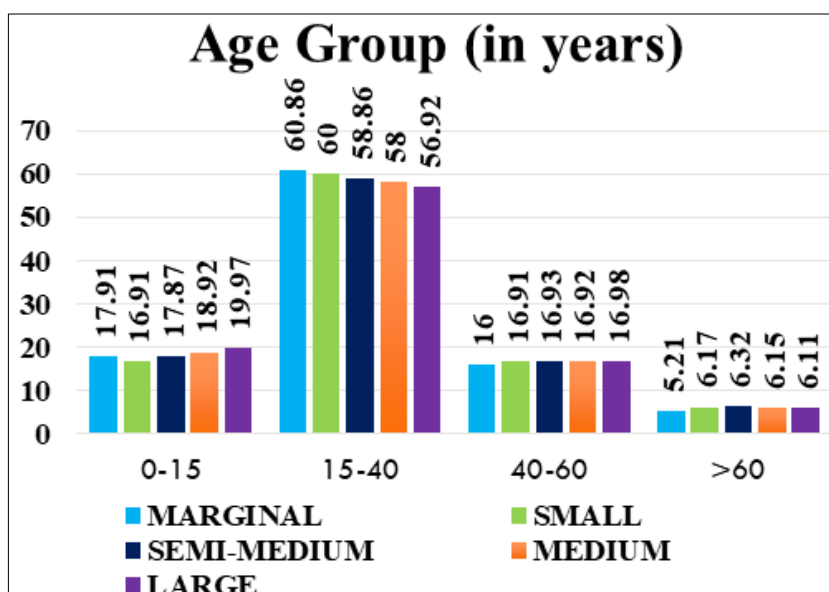


Fig 4: Classification of farmers on the basis of age

Table 4: Detail description of literacy in different size of farm groups

Sl. No.	Particulars	Size of Farms Group					Sample Average
		Marginal	Small	Semi-Medium	Medium	Large	
1.	Average size of farm families	5.75 (100)	6.15 (100)	6.32 (100)	6.50 (100)	6.71 (100)	6.28 (100)
2.		Educational Status					
	Primary school	1.25 (21.73)	1.41 (22.92)	1.42 (22.46)	1.49 (22.92)	1.54 (22.95)	1.42 (22.61)
	Middle-High School	1.58 (27.47)	1.62 (26.34)	1.68 (26.58)	1.70 (26.15)	1.76 (26.22)	1.66 (26.43)
	Intermediate	1.89 (32.86)	2.02 (32.84)	2.02 (31.96)	2.08 (32.00)	2.14 (31.89)	2.03 (32.32)
	Graduation and above	1.03 (17.91)	1.10 (0.17)	1.20 (18.98)	1.23 (18.92)	1.27 (18.92)	1.16 (18.64)
3.	Total Literacy	4.94 (85.91)	5.28 (85.85)	5.44 (86.07)	5.46 (84.00)	5.83 (86.88)	5.39 (85.83)
4.	Total Illiteracy	0.81 (14.08)	0.87 (14.14)	0.88 (13.92)	1.04 (16.00)	0.88 (13.11)	0.89 (14.17)

Number of Respondents = 100

(Marginal+ Small+ Semi-medium + Medium + Large) = 50+29+16+3+2=100

(Figures in the parenthesis indicates percentage to literacy of total size of farm groups)

Table 4 revealed the educational status of different size of farms groups. Literacy percentage was highest in large size farm group having 86.88 per cent followed by semi- medium size farm group of 86.07 per cent followed by marginal size group having 85.91 per cent followed by small size farm group of 85.85 per cent and medium size farm group of 84 per cent. This makes the total literacy of sample average for different size of farms group was 85.83 per cent. Among marginal, small, semi-medium, medium and large size farms group literates were 32.32 per cent of farms had studied

education up to intermediate, 26.43 per cent of farms then studied the middle high school followed by 22.61 per cent farms studied up to primary school. Only 18.64 per cent of farms had studied up to graduation. From the table it can be seen that illiteracy percentage was highest in medium size farms 16 per cent followed by small size farms 14.14 per cent then marginal size farms having 14.08 followed by semi-medium size farms of 13.92 and was lowest in large size farms 13.11 per cent. Sample average for total illiteracy was 14.17 per cent for different size of farms groups.

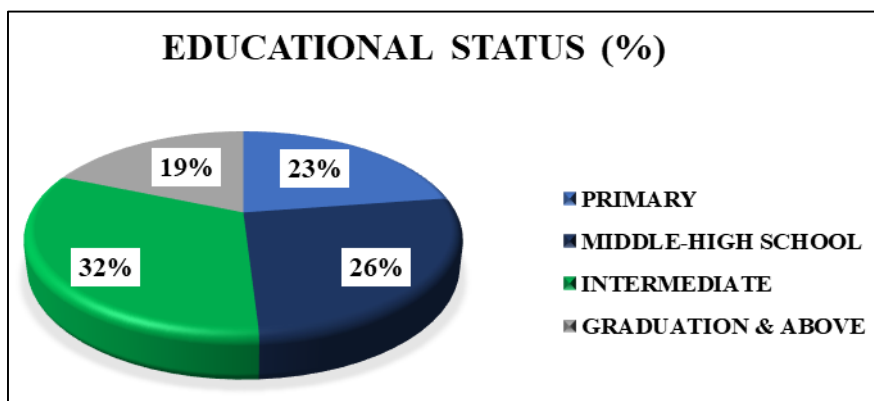


Fig 5: Classification of farmers on the basis of education.

Table 5: Detail description of occupational distribution of different size of farm groups

Sl. No.	Particulars	Size of Farms Group					Total number of samples
		Marginal	Small	Semi-Medium	Medium	Large	
1.	Size of farm group (in numbers)	50 (100.0)	29 (100.0)	16 (100.0)	3 (100.0)	2 (100.0)	100 (100.0)
2.		Occupation					
	One occupation (Primary occupation)	37 (74.0)	7 (24.13)	3 (18.75)	2 (66.66)	1 (50.0)	50 (50.0)
	Two occupations (Secondary occupation)	9 (18.0)	5 (17.24)	3 (18.75)	2 (66.66)	1 (50.0)	20 (20.0)
	Three occupations (Tertiary occupation)	13 (26.0)	8 (27.59)	4 (25.0)	3 (100.0)	2 (100.0)	30 (30.0)

Number of Respondents = 100

(Marginal+ Small+ Semi-medium + Medium + Large) = 50+29+16+3+2=100

(Figures in the parenthesis indicates percentage to occupation of total size of farm groups)

The results presented in Table 5 depicted that the occupation status of different size of farms groups. Primary occupation was highest in marginal size farms 74 per cent followed by medium size farms 66.66 per cent and lowest in case of semi-medium size farms 18.75 per cent respectively. This makes the sample average for primary occupation was 50 per cent for different farms size groups. Secondary occupation for marginal, small, semi-medium, medium and large size of farms group was 18 per cent, 17.24 per cent, 18.75 per cent,

66.66 percent and 50 per cent respectively and the sample average for secondary occupation was 20 per cent among different size of farms group.

Tertiary occupation was highest in medium and large size farms of 100 per cent followed by small size farms 27.59 per cent and lowest in semi-medium size farms 25 per cent respectively. This makes the sample average for tertiary occupation was 30 per cent in different size of farms groups.

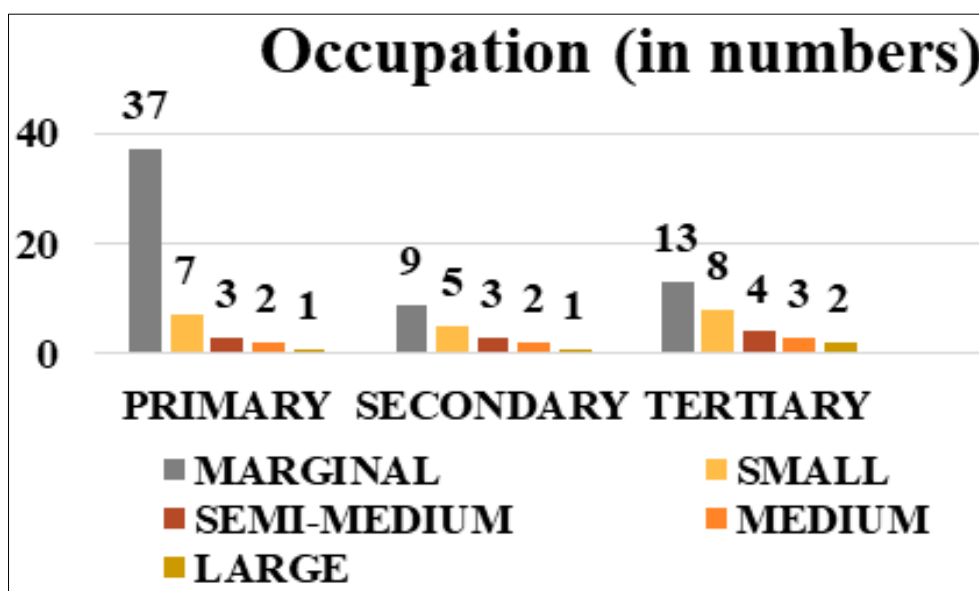


Fig 6: Classification of farmers on the basis of occupation

Table 6: Detail description of source of irrigation, farm asset structure and formal credit of different size of farm groups

Sl. No.	Particulars	Size of Farms Group					Total number of samples
		Marginal	Small	Semi-Medium	Medium	Large	
1.	Size of farm group (in numbers)	50 (100.0)	29 (100.0)	16 (100.0)	3 (100.0)	2 (100.0)	100 (100.0)
2.	Source of irrigation						
	Tube well	14(28.0)	9 (31.03)	4 (25.0)	2 (66.66)	1 (50.0)	30 (30.0)
	Open well and Tank	7 (14.0)	4 (44.44)	2 (12.50)	1 (33.33)	1 (50.0)	15 (15.0)
	Canal	27 (54.0)	13 (44.82)	10 (62.50)	3 (100.0)	2 (100.0)	55 (55.0)
3.	Farm asset structure						
	Tractor	25 (50.0)	15 (51.72)	12 (75.0)	2 (66.66)	1 (50.0)	55 (55.0)
	Diesel engine	6 (12.0)	4 (13.80)	3 (18.75)	1 (33.33)	1 (33.33)	15 (15.0)
	Tube well (Electricity/Diesel)	12 (24.0)	8 (27.60)	7 (43.75)	2 (66.66)	1 (50.0)	30 (30.0)
4.	Formal credit						
	Bank loan	21 (42.0)	5 (17.24)	4 (25.0)	3 (100.0)	2 (100.0)	35 (35.0)
	No loan	29 (58.0)	18 (62.06)	15 (51.72)	2 (66.66)	1(50.0)	65 (65.0)

Number of Respondents = 100

(Marginal+ Small+ Semi-medium + Medium + Large) = 50+29+16+3+2=100

(Figures in the parenthesis indicates percentage to source of irrigation, farm asset structure and formal credit of total size of farm groups)

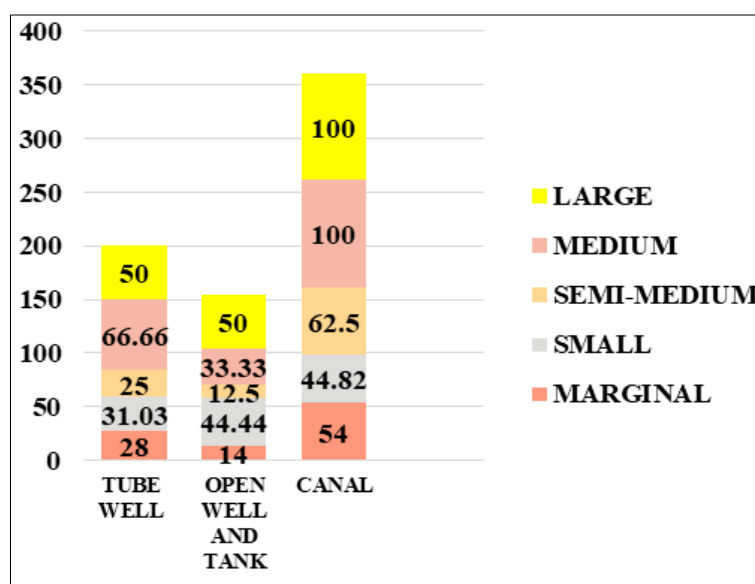


Fig 7: Sources of irrigation used by farmers

The results presented in Table 6 depicted that source of irrigation is done basically through canal having 55 percent in which it is mostly used by medium and large farm groups (100%) and least by small farm group of 44.82%, whereas mostly tube well was most used by medium farm groups of 66.66 per cent and lowest was used by semi- medium farm groups. Open well and tank is mostly used by large farm groups (50%) and least by semi-medium group (12.50%). In

farm asset structure, mostly tractor is used and mostly marginal and small farm groups preferred bank loans for their own agricultural purposes.

4.2 To find out crop wise marketing cost, marketable surplus, marketing margin, producer’s share in consumer’s rupee and marketing efficiency of the crop.

Table 7: Distribution of commodity traded under different marketing channels

Marketing channel	Name of commodity		
	Onion	Cauliflower	Chilli
Channel I	5	8	6
Channel II	23	10	29
Channel III	32	58	45
Channel IV	40	24	20
Total	100	100	100

Table 8: Marketing Cost, Marketing Margin, and Marketing Efficiency of Onion under different channels

Sl. No.	Particulars	Onion			
		Channel I	Channel II	Channel III	Channel IV
1.	Farmer Selling Price	1345	1270	1130	955
2.	Marketing Cost of Farmer	275	275	275	-
3.	Price Received by Farmer	1070	995	855	955
4.	Marketing Cost of Middlemen	-	-	-	170
5.	Middlemen Received Price	-	-	-	1270
6.	Market margin Of Middlemen	-	-	-	315
7.	Middlemen Selling Price	-	-	-	1440
8.	Marketing Cost of whole seller	-	-	182	182
9.	Wholesaler Selling Price	-	-	1605	1865
10.	Wholesaler Received price	-	-	1423	1683
11.	Market margin of Wholesaler	-	-	18	73
12.	Marketing Cost of Retailer	-	205	205	205
13.	Retailers Price/ Consumers price	1070	1625	1875	2180
14.	Market margin of Retailer	-	80	88	133
15.	TMC (2+4+8+12)	275	480	662	577
16.	TMM (6+11+14)	-	80	106	521
17.	Efficiency 3 / (15+16)	3.89	1.77	1.11	0.88

Table 8 revealed the total marketing cost incurred by producer, wholesaler, middlemen (village trader), and retailer in the marketing of Onion in all the four channels I, II, III, IV were Rs.275 /- per quintal, Rs.480/- per quintal, Rs.662/- per quintal and Rs.557/- per quintal respectively. The retailer's margin in Channel-II, Channel-III, and Channel-IV have operated out Rs.80/- per quintal, Rs.88/- per quintal and Rs.133/- per quintal respectively. The wholesaler margin in channel-IV was Rs.73 /- per quintal and middlemen margin in channel-IV was Rs.315/- per quintal. The prices paid by

consumers were Rs.1070/- per quintal, Rs.1625/- per quintal, Rs.1875/- per quintal and Rs.2180/- per quintal in Channel-I, Channel-II, Channel-III, and Channel-IV respectively. Table revealed that the marketing efficiency was higher in channel-I (3.89) followed by channel-II (1.77), channel-III (1.11), and channel-IV (0.88) for the Onion crop. The higher marketing margins intercepted by the market intermediaries in the channel-III, channel-IV resulted in the poor efficiency of marketing of Onion.

Table 9: Price spread in Onion (Rs./qt)

SL. No.	Particulars	Channel I	Channel II	Channel III	Channel IV
		Rs.	Rs.	Rs.	Rs.
1.	Net price received by producer	1070	995	855	955
2.	Total marketing cost	275 (20.44)	480 (29.53)	662 (35.30)	557 (25.55)
3.	Total marketing margin	-	80 (4.92)	106 (5.65)	521 (23.89)
4.	Producer's share in consumer's rupee	79.55	61.23	45.60	43.80
5.	Selling price of retailer or Purchase price of consumer	1345 (100.0)	1625 (100.0)	1875 (100.0)	2180 (100.0)

(Figures in parentheses show the percentage)

Table 9 described the price spread of Onion in channel-I the producers' shares in consumer rupee was 79.55 per-cent while the marketing cost incurred was 20.44 per-cent. The price paid by the consumer Rs. 1345/qt. The marketing cost incurred in channel-II was 29.53 percent. The value compensated by the consumer was Rs. 1625 /qt. in which the producer's share was 61.23 percent. The marketing margin was 4.92 per cent. The marketing cost incurred in channel-III was 35.30 percent. The marketing margin was 5.65 percent. The price compensated by the consumer in channel-III was Rs. 1875 /qt. In which producers share was 45.60 percent. The marketing cost incurred in channel-IV was 25.55 percent. The worth paid by the shopper in channel-IV was Rs. 2180 /qt. in

which the producer's share was 43.80 percent. The market margin was observed in Channel-IV 23.89 percent. Onion was marketed through various intermediaries starting from producer to the ultimate consumers. Intermediaries reduced the variety of services in the marketing of onion intending to earn some return. The producer's net share was the highest (79.55 percent) in Channel I while the lowest (43.80 percent) in Channel IV. Thus, Channel IV was the least favorable to the producers as their share was the lowest in consumer's rupee. It was due to the presence of a huge number of mediators between the producer and the consumer. So, the farmers were not getting a good remunerative price for their produce on Channel IV.

Table 10: Marketing Cost, Margin, and Marketing Efficiency of Cauliflower under different channels

SL. No.	Particulars	Cauliflower			
		Channel I	Channel II	Channel III	Channel IV
1.	Farmer Selling Price	1405	1300	1280	1040
2.	Marketing Cost of Farmer	160	160	160	-
3.	Price Received by Farmer	1245	1140	1120	1040
4.	Marketing Cost of Middlemen	-	-	-	145
5.	Middlemen Received Price	-	-	-	1130
6.	Market margin Of Middlemen	-	-	-	90
7.	Middlemen Selling Price	-	-	-	1275
8.	Marketing Cost of wholesaler	-	-	150	150
9.	Wholesaler Selling Price	-	-	1715	1820
10.	Wholesaler Received price	-	-	1565	1670
11.	Market margin of Wholesaler	-	-	125	250
12.	Marketing Cost of Retailer	-	157	157	157
13.	Retailers Price/ Consumers price	1245	1600	2025	2200
14.	Market margin of Retailer	-	140	160	230
15.	TMC (2+4+8+12)	160	317	467	452
16.	TMM (6+11+14)	-	140	285	570
17.	EFFICIENCY 3 / (15+16)	7.78	2.49	1.48	1.01

Table 10 The marketing costs were highest in channel III which was Rs. 467, followed by channel IV Rs.452, channel II Rs. 317 and for the channel I Rs. 160. The retailer's margin in Channel-II, Channel-III, and Channel-IV have worked out Rs.140/- per quintal, Rs.285/- per quintal and Rs.570/- per quintal respectively. The wholesaler margin in channel-IV was Rs.250/- per quintal and the middlemen in channel-IV was Rs.230/- per quintal. The prices paid by consumers were Rs.1245/- per quintal, Rs.1600/- per quintal, Rs.2025/- per

quintal Rs.2200/- per quintal in Channel-I, Channel-II, Channel-III, and Channel-IV respectively. Table revealed that the marketing efficiency was higher in channel-I (7.78) followed by channel-II (2.49), channel-III (1.48), and channel-IV (1.01) for the cauliflower crop. The higher marketing margins diverted by the market intermediaries in the channel-II, channel-III resulted in the unfortunate productivity of marketing of cauliflower.

Table 11: Price spread in cauliflower (rs./qt)

Sl. No.	Particulars	Channel I	Channel II	Channel III	Channel IV
		Rs.	Rs.	Rs.	Rs.
1.	Net price received by producer	1245	1140	1120	1040
2.	Total marketing cost	160 (11.38)	317 (19.81)	467 (23.06)	452 (20.54)
3.	Total marketing margin	-	140 (8.75)	285 (14.07)	570 (25.90)
4.	Producer's share in consumer's rupee	88.61	71.25	55.30	47.27
5.	Selling price of retailer or purchase price of consumer	1405 (100.0)	1600 (100.0)	2025 (100.0)	2200 (100.0)

(Figures in parentheses show the percentage)

Table 11 described the price spread of cauliflower in channel-I the producer's shares in consumer rupee was 88.61 percent while the marketing cost incurred by the producer was 11.38 percent. The price paid by the consumer Rs.1405/qt. The marketing cost incurred by the Producer and Retailer in channel-II was 19.81 percent. The price paid by the consumer was Rs.1600/qt. in which producers' share was 71.25 percent. The marketing margin was 8.75 percent. The marketing cost incurred by the Producer, Wholesaler, Aggregator, and Retailer in channel-III was 23.06 percent. The price compensated by the consumer in channel-III was Rs. 2025 /qt in which the producers' share was 55.30 percent. The marketing margin was 14.07 percent. The marketing cost incurred by Producer, Wholesaler and Retailer in channel-IV

was 20.54 percent. The price paid by the consumer in channel-IV was Rs.2200/qt in which producers share was 47.27 percent. The market margin was observed in Channel-IV at 25.90 percent which is highest among all. The producer's net share was the highest (88.61 percent) in Channel I while the lowest (47.27 percent) in Channel IV. Thus, Channel IV was the least favorable to the producers as their share was the lowest in consumer's rupee. It was due to the incidence of a large number of intermediaries among the producer and the consumer. So, the farmers were not getting a good remunerative price for their produce in Channel IV. It was found that comparatively channel-I found more profitable than channel-II channel-III and channel-IV in cauliflower marketing in Prayagraj district.

Table 12: Marketing Cost, Marketing margin, and Marketing Efficiency of Chilli under different channels

Sl. No.	Particulars	Chilli			
		Channel I	Channel II	Channel III	Channel IV
1.	Farmer Selling Price	2450	1880	1760	1615
2.	Marketing Cost of Farmer	170	170	170	-
3.	Price Received by Farmer	2280	1710	1590	1615
4.	Marketing Cost of Middlemen	-	-	-	155
5.	Middlemen Received Price	-	-	-	1700
6.	Market margin Of Middlemen	-	-	-	85
7.	Middlemen Selling Price	-	-	-	1855
8.	Marketing Cost of wholesaler	-	-	162	162
9.	Wholesaler Selling Price	-	-	2172	2275
10.	Wholesaler Received price	-	-	2010	2113
11.	Market margin of Wholesaler	-	-	80	103
12.	Marketing Cost of Retailer	-	168	168	168
13.	Retailers Price/ Consumers price	2280	2100	2420	2550
14.	Market margin of Retailer	-	50	86	113
15.	TMC (2+4+8+12)	170	338	500	485
16.	TMM (6+11+14)	-	50	166	301
17.	EFFICIENCY 3 / (15+16)	13.41	4.40	2.38	2.05

Table 12 revealed that the marketing efficiency was higher in channel-I (13.41) followed by channel-II (4.40), channel-III (2.38), and channel-IV (2.05) for the chilli crop. The higher marketing margins intercepted by the market intermediaries in

the channel-IV resulted in the poor efficiency of marketing of chilli. Middlemen collects the produce from the farmers, after bearing the marketing cost sell the produce to the wholesalers who in turn sell it to the retailers to reach the consumers.

Table 13: Price spread in Chilli (Rs./qt)

SL. No.	Particulars	Channel I	Channel II	Channel III	Channel IV
		Rs.	Rs.	Rs.	Rs.
1.	Net price received by producer	2280	1710	1590	1615
2.	Total marketing cost	170 (6.93)	338 (16.09)	500 (20.66)	485 (19.01)
3.	Total marketing margin	-	50 (2.38)	166 (6.85)	301 (11.80)
4.	Producer's share in consumer's rupee	93.06	81.42	65.70	63.33
5.	Selling price of retailer or Purchase price of consumer	2450 (100.0)	2100 (100.0)	2420 (100.0)	2550 (100.0)

(Figures in parentheses show the percentage)

Table 13 described the price spread of chilli in channel-I the producer's shares in consumer rupee was 93.06 percent and the price paid by the consumer was Rs.2450/qt, while the marketing cost incurred by the producer was 6.93 percent. The marketing cost incurred in channel-II was 16.09 percent. The producers' shares in consumers rupee was 81.42 percent and the price paid by consumer Rs 2100/qt. The marketing margin was 2.38 percent. Channel III producers share in consumer price 65.70 percent and marketing cost 20.66 percent. The marketing margin was 6.85 percent. And the price paid by the consumer was Rs. 2420qt. Channel IV marketing cost was 19.01 percent. The marketing margin at

channel IV was 11.80 percent. Producers' shares in consumer rupee was 63.33 per-cent and the price paid by the consumer was Rs. 2550/qt. It was found that comparatively channel-I found more profitable than channel-II channel-III and channel-IV in chilli marketing in Prayagraj district. The producer's net share was the highest (93.06 percent) on Channel I while the lowest (63.33) was on Channel IV in consumer's rupee. It was payable to the occurrence of a large number of mediators between the producer and the consumer. So, the farmers were not getting a good remunerative price for their produce in Channel -IV

Table 14: Marketing Cost, Marketing margin, and Marketing Efficiency of different commodity and channels

Vegetable	Sl. No.	Channel				
		I	II	III	IV	
Onion	1.	FP	1070	995	855	955
	2.	TMC	275	480	662	557
	3.	TMM	-	80	106	521
	Efficiency: 1/ (2+3)		3.89	1.77	1.11	0.88
Cauliflower	1.	FP	1245	1140	1120	1040
	2.	TMC	160	317	467	452
	3.	TMM	-	140	285	570
	Efficiency: 1/ (2+3)		7.78	2.49	1.48	1.01
Chilli	1.	FP	2280	1710	1590	1615
	2.	TMC	170	338	500	485
	3.	TMM	-	50	166	301
	Efficiency: 1/ (2+3)		13.41	4.40	2.38	2.05

Table 14 The marketing efficiency of the marketing channels of onion was 1.11 in channel III, 0.88 in channel IV. The channel II marketing efficiency was 1.77 and in the case of channel I, it was 3.89, where produce was directly marketed to consumers. The marketing efficiency of cauliflower was higher in channel I (7.78) in comparison to channel II (2.49), channel III (1.48), and channel IV (1.01). For chilli, the marketing efficiency was low for channel-IV (2.05) and highest in channel-I (13.41) followed by channel II (4.40) and channel III (2.38). Clearly, It can be seen that Channel I was highly efficient and Channel IV was worst amongst all.

4.3 To identify constraints and suggestions associated with the marketing of vegetables in selected area of study.

Table 15: Problems faced by farmers in the production of vegetables (Garrett's Score)

Sl. No.	Particulars	Average	Ranks
1.	Labor unavailability	60.19	I
2.	Water unavailability	52.83	II
3.	High tillage cost	52.26	III
4.	Non-availability of quality seeds	51.60	IV
5.	Non-availability of fertilizers	49.58	V
6.	Poor extension services	49.23	VI
7.	Poor marketing condition	47.88	VII
8.	Lack of credit facility	34.43	VIII

Problems in Production of High-value vegetable crops. The sample farmers revealed that as such there were many problems in the production of High-value vegetable crops. Among them, the top 8 problems were discussed here. Garrett's ranking technique revealed that concerning production problems of labor unavailability (Average: 60.19) was the most important. Non-availability of quality of seed (Average: 51.60) and high tillage cost (Average: 52.26) would influence farmers fetching lower returns and losses to the farmers. Water unavailability was a major problem (Average: 52.83). Non-availability of fertilizer (Average: 49.58) Poor marketing condition (Average: 47.88) Poor extension service (Average: 49.23) and Lack of credit facility (Average: 34.43). The vegetable market is another important problem as perceived by the majority of the farmers.

Table 16: Problems faced by farmers in the marketing of Onion (Garrett's Score)

Sl. No.	Particulars	Average	Ranks
1.	Fluctuation of the price of a product	60.61	I
2.	Lack of storage	56.87	II
3.	Lack of transport	55.79	III
4.	Lack of market information	50.42	IV
5.	High Marketing cost	44.28	V
6.	The low price of a product	43.88	VI
7.	Lack of market	43.33	VII
8.	Low consumer demand	42.82	VIII
9.	Perishability	41.78	IX
10.	High market distance	40.22	X

The major constraint faced by the farmers in the marketing of Onion is price fluctuations of the vegetables with a score of (60.61) ranked I. Since the vegetables are grown all-round the year, the prices fluctuate largely based on the demand and the supply of the vegetables. Due to this, the farmers are not able to predict the market price and end up in losses. The next major constraint was lack of storage (56.87) followed by Lack of transport (55.79), Lack of market information about prices

(50.42), Marketing of farmers also complained about Multiplicity of marketing cost (44.28), Low price of the product (43.88), No facilities for stay at the market (43.33) and the Low consumer demand problem (42.82). Few farmers felt that Perishability losses (41.78), and distance market (40.22), are constraint faced by them during Marketing.

Table 17: Problems faced by farmers in the marketing of Cauliflower (Garrett's Score)

Sl. No.	Particulars	Average	Ranks
1.	The fluctuation of the price of the product	59.89	I
2.	Lack of storage	57.44	II
3.	The low price of a product	55.66	III
4.	Lack of transport	51.60	IV
5.	Lack of market information	49.17	V
6.	Lack of market	48.10	VI
7.	High Marketing cost	42.85	VII
8.	Low consumer demand	35.29	VIII
9.	High market distance	32.15	IX
10.	Perishability	30.22	X

Constraints faced by the marketing of cauliflower. It is seen from the mean scores presented in the table that at the level the greatest challenge faced by farmers is the Fluctuation of the price of the product in the market with a score (59.89) rank I. The infrastructural facilities in the market were inadequate and this led to difficulties in the marketing of the produce. No storage facility rank (57.44) II. The constraints faced by the farmers were Low price of the product (55.66), Lack of transportation (51.60), Lack of market information (49.17), Lack of market (48.10), High marketing cost (42.85), Low consumer demand (35.29), High market distance (32.15) and Perishability (30.22). To conclude, it is to note that no storage facility is the major common constraints faced by the farmers.

Table 18: Problems faced by farmers in the marketing of Chilli (Garrett's Score)

Sl. No.	Particulars	Average	Ranks
1.	Lack of storage	58.47	I
2.	Fluctuation of the price of a product	56.17	II
3.	High Marketing cost	52.88	III
4.	Lack of transport	52.73	IV
5.	Lack of market information	49.25	V
6.	Low consumer demand	48.47	VI
7.	Lack of market	44.13	VII
8.	The low price of the product	37.90	VIII
9.	Perishability	36.27	IX
10.	High market distance	33.78	X

The major constraint faced by the farmers is Lack of storage of the vegetables with a score of (58.47) and rank I. The next major constraint was Fluctuation of the price of the product (56.17) many of the farmers also complained about Multiplicity of High marketing cost (52.88), Lack of Transport about prices (52.73), Lack of market information (49.25), Low consumer demand (48.47), No facilities for Lack of the market (44.13) and the Low price of the product (37.90). Few producers felt that Perishability (36.27), and High market distance (33.78) are constraints faced by them during production.

5. Conclusion

Channel I is found to be the most efficient channel in case of all crops Onion, Cauliflower and Chilli, channel II is found to

be the second next efficient after channel I. The marketing efficiency is higher for the channel I than channel II than III and channel IV. The producer's net share was the highest in Channel I while the lowest in Channel IV in all selected commodity. Thus, Channel IV was the least favorable to the producers as their share was the lowest in consumer's rupee. It was due to the presence of a huge number of mediators between the producer and the consumer. So, the farmers were not getting a good remunerative price for their produce on Channel IV. The sample farmers revealed that as such there were many problems in the production of major vegetables. The opinion survey was conducted to know the problems faced by sample farmers in the production of major vegetables and was subjected to Garrett's ranking technique. The major constraint faced by the farmers is production and marketing price fluctuations of the vegetables followed by storage. Price fluctuations are also the main problem faced by customers followed by high marketing cost, Labor unavailability condition and low quality of seed, lack of Transport problem, inadequate facilities in the market and poor market information were the major constraints faced by aggregators, besides price fluctuations.

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