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Production, Marketing and Storage Constraints in Onion Cultivation in Haryana

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ABSTRACT

The present paper was an attempt to study the constraints in production, marketing and storage under onion cultivation in Haryana. Multi-stage purposive sampling technique was used for the study. On the basis of Agro-climatic conditions, the state was divided into three zones and one district from each zone i.e. Yamunanagar, Mewat and Bhiwani was selected. In production constraints high cost of seed (70.00, 93.33 and 83.33%), lack of knowledge about seed/seedling treatment (70.00, 86.66 and 80.00%) and lack of knowledge about proper harvesting time (93.33, 53.33 and 90.00%) were major constraints. In marketing of onions, lack of technical knowledge (80.00, 90.00 and 83.33%), large storage losses (76.66, 86.66 and 66.66%) and lack of storage facilities (63.33, 43.33 and 63.33%) were major constraints in Yamunanagar, Mewat and Bhiwani, respectively due to which farmers were not interested in onion storage.

Key words: Constraints, marketing, production, storage

INTRODUCTION

The onion (*Allium cepa* L.) is one of the most important commercially grown and eaten vegetables in the world. It has been grown and eaten almost everywhere in the world since at least 4000 BC. The area around the Mediterranean Sea is where it spread to other parts of the world. Dehydrated onions come in the form of powder and flakes that can be used as spices. Onions can also be used to make oil and pectin, which are full of phosphorus, calcium, carbohydrates, proteins and vitamins (B and C). Onions can be used to treat many diseases and conditions. India is the biggest producer in the world. It makes up 25.57% of the total global output (FAO, 2020), with a production of 26.74 million tonnes and an average productivity of 18.65 t/ha. Between 1991-92 and 2017-18, the area under onion cultivation has almost tripled, while output grew by roughly four times (Horticultural Statistics at a Glance, 2018). Maharashtra (8854.09 thousand MT), Madhya Pradesh (3701.01 thousand MT), Karnataka (2986.59 thousand MT), Bihar (1240.59 thousand MT) and Andhra Pradesh are the top five states in terms of onion output (915.73 thousand MT). About 90% of India's production of onions comes from the top 10 states. The production/ha varied throughout the states, with Gujarat leading with 24.25 t/ha and Odisha coming in last with 10.77 t/ha. Mewat, Yamunanagar and Ambala are the main onion producing regions, but district Fatehabad, with productivity of 39.89 t/ha, is at the top, followed by Karnal and Sonipat, with productivity of 36.34 and 32.63 t/ha, respectively, (hortiharyana.gov.com). Haryana is in ninth place with an average productivity of 20.45 t/ha and production of 6.40 lakh tonnes (Usha *et al.,* 2022). Majority of the farmers bring onion directly to the market after harvest as proper storage facilities are not available with them. The present storage capacities are quite inadequate and most of the available units are traditional and unscientific. Due to high losses in traditional storage structure, farmers usually unload their entire stock within a month of harvest. As a result, during this period prices rule very low due to glut situation in the market. Thereafter, the rise in prices is quite rapid and sometimes wide fluctuations occur leading to dissatisfaction amongst the producers as well as consumers. Moreover, the crop situations are not timely predicted and

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thus, the information about losses in production during marketing and storage was not anticipated by market intelligence. These losses may be due to climatic factors like temperature, moisture and storage management practices which include choice of storage system type, volume and quality of product to store, storage space, aeration conditions, stock maintenance and length of storage duration and time of sale (Berhanu and Berhanu, 2014). Hence, there is need to quantify the post-harvest losses both in physical as well as monetary terms at different stages of marketing and at different time period of storage and extent of their impact on net returns received by onion growers and producer's net share in consumer's rupee.

MATERIALS AND METHODS

The present study was conducted in Haryana state. On the basis of Agro-climatic conditions, the state was divided into three zones and one district from each Agro-climatic zone i.e. Yamunanagar, Mewat and Bhiwani was purposively selected for the study of constraints in production, marketing and storage of onion crop during 2020-21. Multi-stage purposive sampling technique was used for the selection of ultimate sampling units for collection of primary data. The information about the problems faced by the onion growers was tabulated from the selected respondents/onion growers as well as market intermediaries on various aspects of onion production, marketing and storage of onion and assigned a rank on the basis of percentages calculated for different constraints. To fulfill the specific objectives of the study, simple statistical tools like averages and percentages were used to compare, contrast and interpret results properly.

RESULTS AND DISCUSSION

Highest per cent of the respondents had problems related to lack of knowledge about improved varieties and lack of knowledge about seeds or seedlings treatment followed by high cost of seed (70.00, 93.33 and 83.33%), poor quality of seed (46.66, 66.66 and 56.66%) and non-availability of seed and planting material in time (26.66, 43.33 and 30.00%). These were the problems expressed by the growers regarding seeds and seed treatment (Table 1). Majority of the respondents reported problem of high cost of fertilizers followed by lack of knowledge about recommended fertilizer doses (43.33, 73.33 and 53.33%) and non-availability of fertilizers in time was expressed by 23.33, 26.66 and 20.00%, respectively. In case of water management, 30.00, 33.33 and 60.00% of the respondents faced water shortage in summer followed by 20.00, 30.00 and 43.33% of the respondents who reported adequate irrigation facilities. With regards to weed management, 43.33, 40.00 and 73.33% of the respondents reported that hand weeding was time consuming and labour intensive followed by labour problem for weeding and less effective and costly weedicides (40.00, 46.66 and 40.00%). In case of diseases and pest management, 90.00, 70.00 and 93.33% of the respondents faced difficulty in identifying the pests and diseases followed by 56.66, 96.66 and 80.00%; 50.00, 70.00 and 83.33% and 26.66, 33.33 and 23.33% of the respondents having a problem of lack of knowledge about the control measures for various pests and diseases, high cost of pesticides and non-curable nature of onion diseases with pesticide, respectively (Kumar *et al.,* 2017). In case of harvesting, lack of knowledge about improved method of harvesting were the problems expressed by the 93.33, 53.33 and 90.00% followed by labour problem (73.33, 93.33 and 50.00%) at harvesting time and lack of knowledge about proper harvesting time (16.66, 20.00 and 13.33%). Shortage of labour, un- reliability of insecticide, transportation problems were major constraints in onion cultivation according to study results obtained by Shukla *et al.* (2019).

It was revealed that 33.33, 56.66 and 30.00% of the respondents experienced that open auction sale fetching low prices due to higher chances of pooling (Table 2), commission agents charging heavy commission (16.66, 23.33 and 0.00%), existence of large number of intermediaries in marketing process (23.33, 26.66 and 30.00%), low price/lack of remunerative price (70.00, 86.65 and 56.66%), non-availability/ lack of market information (46.66, 63.33 and 63.33%), malpractices adopted in market functionaries (60.00, 70.00 and 46.66%), high fluctuation in market prices (60.00, 46.66 and 70.00%), high transportation costs (33.33, 43.33 and 60.00%), lack of infrastructure facilities (16.66, 53.33 and

Table 1. Constraints expressed by the farmers during production of onion

S. No.	Production constraints	Yamunanagar (N = 30)			Mewat (N = 30)			Bhiwani (N =30)			Overall state (N = 90)		
		Frequency	%	Ranks	Frequency	%	Ranks	Frequency	%	Ranks	Frequency	%	Ranks
1.	**Seed and seed treatment**												
	Lack of knowledge about improved varieties	19	63.33	3	25	83.33	3	22	73.33	3	66	73.33	3
	Lack of knowledge about seedling treatment	21	70.00	2	26	86.66	2	24	80.00	2	71	78.88	2
	Non-availability of seed and planting material in time	8	26.66	5	13	43.33	5	9	30.00	5	30	33.33	5
	High cost of seed	21	70.00	1	28	93.33	1	25	83.33	1	74	24.66	1
	Poor quality of seed	14	46.66	4	20	66.66	4	17	56.66	4	51	56.66	4
2.	**Fertilizer application**												
	High cost of fertilizers	11	36.66	2	19	63.33	2	9	30.00	2	39	43.33	2
	Non-availability of fertilizer in time	7	23.33	3	8	26.66	3	6	20.00	3	21	23.33	3
	Lack of knowledge of recommended fertilizer doses	13	43.33	1	22	73.33	1	16	53.33	1	51	56.66	1
3.	**Water management**												
	Inadequate irrigation facilities	6	20.00	2	9	30.00	2	13	43.33	2	28	31.11	2
	Water shortage in summer	9	30.00	1	10	33.33	1	18	60.00	1	37	41.11	1
4.	**Weed management**												
	Time consuming/ labour intensive weeding	13	43.33	3	12	40.00	3	22	73.33	2	47	52.22	2
	Labour problem for weeding	15	50.00	2	11	36.66	4	20	66.66	3	46	51.11	3
	Less effective and costly weedicides	12	40.00	4	14	46.66	2	12	40.00	4	38	42.22	4
	High cost of labour	24	80.00	1	18	60.00	1	22	73.33	1	64	71.11	1
5.	**Disease and pest management**												
	Difficulty in identifying the pest and diseases	27	90.00	1	21	70.00	2	28	93.33	1	76	84.44	1
	Lack of knowledge about control measures	17	56.66	2	29	96.66	1	24	80.00	3	70	77.77	2
	Non-curable nature of onion diseases	8	26.66	4	10	33.33	4	7	23.33	4	25	83.33	4
	High cost of pesticides	15	50.00	3	21	70.00	3	25	83.33	2	61	67.77	3
6.	**Harvesting of onion**												
	Lack of knowledge about proper harvesting time	28	93.33	1	16	53.33	2	27	90.00	1	71	78.88	1
	Labour problem during harvesting	22	73.33	2	28	93.33	1	15	50.00	2	65	72.22	2
	Lack of knowledge about improved method of harvesting	5	16.66	3	6	20.00	3	4	13.33	3	15	16.66	3

Table 2. Constraints faced by onion growers during marketing of onion

S. No.	Marketing constraints	Yamunanagar (N = 30)			Mewat (N = 30)			Bhiwani (N =30)			Overall state (N = 90)		
		Frequency	%	Ranks	Frequency	%	Ranks	Frequency	%	Ranks	Frequency	%	Ranks
1.	Low price at time of harvesting	21	70.00	3	26	86.66	2	17	56.66	6	64	71.11	3
2.	In case of open auction sale, chances of pooling	10	33.33	10	17	56.66	7	9	30.00	13	36	40.00	11
3.	Commission agent charge heavy commission	5	16.66	15	7	23.33	16	0	0.00	16	12	13.33	16
4.	Existence of large number of intermediaries in marketing process	7	23.33	12	8	26.66	15	9	30.00	13	27	30.00	13
5.	Mal practices adopted by market inter-mediates	18	60.00	4	21	70.00	5	14	46.66	9	53	58.88	4
6.	Lack of infrastructure facility	5	16.66	15	16	53.33	8	11	36.66	10	32	35.55	12
7.	Large distance from market	6	20.00	14	9	30.00	13	10	33.33	12	25	27.77	14
8.	High transportation cost	10	33.33	10	13	43.33	10	18	60.00	5	41	45.55	8
9.	High fluctuation in market prices	18	60.00	4	14	46.66	9	21	70.00	2	53	58.88	4
10.	Lack of appropriate credit facilities	12	40.00	8	23	76.66	3	11	36.66	10	46	51.11	7
11.	Lack of market information/news	14	46.66	6	19	63.33	6	19	63.33	4	52	57.77	6
12.	Lack of storage facilities	24	80.00	2	27	90.00	1	21	70.00	2	72	80.00	2
13.	Lack of knowledge about grading	28	93.33	1	22	73.33	4	30	100	1	80	88.88	1
14.	Lack of processing facilities	7	23.33	12	11	36.66	12	5	16.66	15	23	25.55	15
15.	Assembling problem	13	43.33	7	9	30.00	13	17	56.66	6	39	43.33	10
16.	Delay in payments	12	40.00	8	13	43.33	10	16	53.33	8	41	45.55	8

Table 3. Constraints faced by the farmers during storage of onion

S. No.	Storage constraints	Yamunanagar (N = 30)			Mewat (N = 30)			Bhiwani (N =30)			Overall state (N = 90)		
		Frequency	%	Ranks	Frequency	%	Ranks	Frequency	%	Ranks	Frequency	%	Ranks
1.	Unfavorable climatic condition	17	56.66	6	13	43.33	8	7	23.33	9	37	41.11	8
2.	Lack of technical knowledge	24	80.00	2	27	90.00	1	25	83.33	2	76	84.44	2
3.	Non-availability of good quality insecticides/pesticides	8	26.66	9	13	43.33	8	12	40.00	7	33	36.66	9
4.	Lack of storage facilities	19	63.33	5	13	43.33	8	19	63.33	5	51	56.66	5
5.	Poor quality of produce	8	26.66	9	7	23.33	10	6	20.00	10	21	23.33	10
6.	Lack of knowledge about curing and drying of onion	17	56.66	6	15	50.00	6	18	60.00	6	50	55.55	6
7.	Lack of knowledge about grading	28	93.33	1	22	73.33	4	30	100	1	80	88.88	1
8.	Lack of knowledge about handling/care during storage	24	80.00	2	17	56.66	5	21	70.00	3	62	68.88	4
9.	Lack of finance	12	40.00	8	23	76.66	3	11	36.66	8	46	51.11	7
10.	Large storage losses	23	76.66	4	26	86.66	2	20	66.66	4	69	76.66	3

36.66%), lack of appropriate credit facilities (40.00, 76.66 and 36.66%), lack of knowledge about grading (93.33, 73.33 and 100%) and assembling problem (43.33, 30.00 and 56.66%) were major problems in marketing of onion in different zones of Haryana, respectively because of negligence of government towards improvement of vegetable markets (Premi and Premi, 2017; Kumar *et al.,* 2020). Jayanthi and Vaideke (2014) in Tamil Nadu also identified these marketing specific problems which need to be rectified for smooth operating of vegetable markets.

Onion growers were not inclined towards storage as 56.66, 50.00 and 60.00% of the respondents had lack of knowledge about curing and drying of onion; 93.33, 73.33 and 100.00% of them were not aware about grading, while 80.00, 90.00 and 83.33% of them faced lack of knowledge about improved storage structure/technical knowledge. About 63.33, 43.33 and 63.33% of the respondents reported the problem of lack storage facilities and 80.00, 56.66 and 70.00% of the respondents were not capable of handling or care of onion produce during storage. Large storage losses were a major problem for 76.66, 86.66 and 66.66% farmers, while 40.00, 76.66 and 36.66% farmers faced problem of finance in zone-I, zone-II and zone-III, respectively (Table 3). Nimbrayan *et al.* (2021) and Mila *et al.* (2022) in vegetables also reported the problem of lack of storage facilities and finance and high post-harvest losses.

CONCLUSION

The study revealed that in production major constraints were high cost of seed (70.00, 93.33 and 83.33%), lack of knowledge about seed/ seedling treatment (70.00, 86.66 and 80.00%) and lack of knowledge about proper harvesting time (93.33, 53.33 and 90.00%). In marketing of onions, lack of technical knowledge (80.00, 90.00 and 83.33%), large storage losses (76.66, 86.66 and 66.66%) and lack of storage facilities (63.33, 43.33 and 63.33%) were major constraints in Yamunanagar, Mewat and Bhiwani, respectively, due to which farmers were not inclined towards onion storage.

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