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Constraints Faced by the Farmers in Production and Marketing of Cauliflower in Haryana, India

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Cauliflower (*Brassica oleracea var. Botrytis*) is one of the most important remunerative vegetable crops grown on commercial scale in India. It is widely grown across India and is a popular vegetable among the people. It is known for its white, tender head or curd, which is used in curries, soups, and for pickling. Cauliflower is a crucial winter vegetable grown in India. A survey was conducted among a group of cauliflower growers to understand the challenges they encounter during cauliflower production and marketing. The objective of the study was to identify the production and marketing constraints faced by the cauliflower growers. Panipat and Sonipat districts were purposively selected due to their significant cauliflower cultivation areas in the state. A total of 200 cauliflower growers were conveniently chosen to gather the necessary data. In Panipat and Sonipat district, the study revealed that the major constraints in cauliflower production included the high cost of cauliflower seeds, expensive fertilizers, labour scarcity during peak periods, and other

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similar challenges. In terms of cauliflower marketing, respondents reported multiple constraints such as high transportation costs, numerous intermediaries in the marketing process, price fluctuations, lack of awareness about the Bhavantar Bharpayee Yojana (BBY) and its complex procedures, and the higher margins of middlemen. To address these constraints, it is recommended to establish sufficient storage facilities that enable producers to distribute their sales throughout the year. Efforts should be made to ensure the availability of quality seeds and protect producers from experiencing low prices during peak seasons.

Keywords: Cauliflower; production; marketing; constraints; Garrett ranking.

1. INTRODUCTION

India is the world's second-largest producer of vegetables and a major exporter of vegetable products. Horticulture occupies only 5.6 percent of gross cropped area of the country but contributes about 25 percent to agriculture GDP of India [1]. Vegetable production plays a significant role in the country's agriculture sector, providing livelihood to millions of farmers and contributing to the country's economy. Vegetable production in the country was 59.51 per cent of the total horticulture production [2]. The country produces a wide range of vegetables, including tomatoes, onions, potatoes, carrots, peas, cucumbers, and various leafy vegetables, among others. Cauliflower is a crucial winter vegetable grown in India. It can thrive in a variety of soils, as long as they are fertile and have proper water management. It is a tasty vegetable that is typically eaten during the cooler seasons. Cauliflower is a nutritious and rich source of essential vitamins and minerals, including vitamin C, vitamin K, folate, and potassium. It is also low in calories, making it a popular choice among those who are watching their calorie intake. It can be used in a variety of dishes, including soups, stews, casseroles, and roasted as a side dish. Cauliflower accounts for 4.7% of the country's total vegetable production (FAOSTAT, 2020). The top states for cauliflower production in India are Bihar, Uttar Pradesh, Odisha, West Bengal and Assam.

Haryana is one of the leading states in India when it comes to vegetable production. The state of Haryana is located in the northern region of India. The state has a favourable climate and fertile soil, which makes it ideal for growing a variety of vegetables. The state government has taken several initiatives to encourage and support the growth of the vegetable industry, leading to a significant increase in vegetable production in recent years. Haryana is known for producing a wide range of vegetables, including tomatoes, onions, potatoes, carrots, and peas, among others. The state is also a major producer of leafy vegetables, such as spinach, cabbage, and cauliflower. In addition, Haryana has a rich tradition of growing various herbs and spices, including coriander, mint, and cumin. In the state of Haryana, 28.85 thousand hectares are dedicated to cauliflower cultivation, producing approximately 583 million tonnes annually, with an average productivity of 20.02 tonnes per hectare [3].

In India, there are additional challenges in the production, marketing, and selling of cauliflower, including managing pests and diseases, lack of storage facilities, transportation and logistics, pricing and marketing strategies, quality control, high cost of seed, high cost of fertilizers, lack of knowledge about government policies, high transportation cost, greater fluctuations in the prices etc.

2. METHODOLOGY

The present study was conducted purposively in selected two districts of Haryana namely Panipat and Sonipat were selected based on the highest area under cauliflower. Two blocks, namely Smalkha and Panipat from Panipat district, and Rai and Sonipat from Sonipat district, were chosen from each selected district due to having the largest cauliflower cultivation areas in their respective districts. A purposively sampling method was employed to select 50 cauliflower growers from each of the chosen blocks, resulting in a total of 200 interviews conducted with cauliflower growers to gather the required information. A survey was conducted among a group of cauliflower growers to understand the challenges they encounter during cauliflower production and marketing. To rank these constraints, Garrett's ranking technique was employed [4]. By applying Garrett's formula, the

percentage positions were converted into scores using Garrett's table.

Percent Position =100 (Rij–0.50) / Nj'

Where,

Rij = Rank given for ith item by jth individual
Nj = Number of items ranked by jth individual

This approach allowed for the calculation of mean score values, thereby identifying the constraints with the highest scores as the most significant.

3. RESULTS AND DISCUSSION

3.1 Production Constraints Faced by Cauliflower Growers

The cauliflower growers in Panipat and Sonipat district faced several constraints in their production. According to the Table 1, these constraints were identified and ranked based on mean scores. The most significant challenge, ranked first with a mean score of 73.63, was the high cost of cauliflower seed in Panipat district. Following closely was the labour scarcity during peak time, ranked second with a mean score of 68.25. The high cost of fertilizer was another important issue, ranking third with a mean score of 67.98. Other constraints included high labour cost (ranked fourth with a mean score of 65.97), the scarcity of farmyard manure (ranked fifth with a mean score of 56.43), and the erratic supply of electricity (ranked sixth with a mean score of 55.92). additionally, the manual weeding is time consuming and labour intensive ranked seventh with a mean score of 48.12, the lack of knowledge of recommended fertilizer doses (ranked eighth with a mean score of 55.92). The current findings are similar to the results of Pandit and Basak [5] and Pareek et al., [6]. Further, it can be said that production can be managed by effectively utilizing the resources, supported by Goyal et al., [7].

3.2 Marketing Constraints Faced by Cauliflower Growers

The data in Table 2 presents the marketing constraints encountered by cauliflower growers in the Panipat and Sonipat district. The table reveals that the most significant marketing issue faced by these growers is the high transportation cost, with a mean score of 74.43, ranking it in the first position in Panipat. The second-ranked problem is the existence of large number of intermediaries in marketing process, which received a mean score of 73.8. The third position is attributed to the farmers' frequent price fluctuation, assigning it the third rank. Lack of awareness and cumbersome process of Bhavantar Bharpayee Yojana (BBY) emerged as the fourth major constraint. Similarly, the higher margin of middlemen was identified as the fifth problem, lack of availability of market information as sixth Problem, labour problem for grading and packing as seventh, lack of information about government schemes and subsidies as eighth etc. The heavy losses in the market ranked thirteenth with a mean score of 27.85, and open auction sale fetches low price for produce ranked twelfth with a mean score of 27.85. The current findings are similar to the results of Goyal and Goyal [8] and Kumar et al., [9].

3.3 Production Constraints Faced by Cauliflower Growers

Table 3 presents the production challenges faced by cauliflower growers in Sonipat district of Haryana. The data indicates that, the primary issue was high cost of cauliflower seed, with a mean score of 75.22, ranking it as the most significant problem. The second concern was high cost of fertilizer, with a mean score of 73.66. Following that, the labour scarcity during peak time ranked third, with a mean score of 63.47. The scarcity of farmyard manure with a mean score of 58.08, placing it fourth on the table. Additionally, the high labour cost ranked fifth, with a mean score of 55.00. The lack of knowledge of recommended fertilizer doses with a mean score of 53.62, ranking it sixth. The seventh obstacle was the manual weeding is time consuming and labour intensive, with a mean score of 53.39. lower productivity of cauliflower ranked eighth, with a mean score of 53.24. On the other hand, the poor quality and inadequate underground water was reported as the least significant constraint, ranking fourteenth with a mean score of 20.66. The availability of quality seed ranked thirteenth, with a mean score of 21.8, followed by inadequate credit supply by financial institution, ranking twelfth, with a mean score of 36.14, and so on. The current findings are similar to the results of Shah and Ansari [10] and More et al., [11].

Table 1. Production constraints faced by cauliflower growers in Panipat district of Haryana

Sr. No.	Particulars	Mean Score	Rank
1	Labour scarcity during peak time	68.25	2nd
2	Erratic supply of electricity	55.92	6th
3	High labour cost	65.97	4th
4	Poor quality and inadequate underground water	30.75	14th
5	Unstable yield of cauliflower	35.63	11th
6	Lower productivity of cauliflower	35.49	12th
7	High cost of cauliflower seed	73.63	1st
8	High cost of fertilizer	67.98	3rd
9	Inadequate credit supply by financial institution	37.61	10th
10	High incidence pest and disease	43.68	9th
11	Non availability of quality seed	33.57	13th
12	Manual weeding is time consuming and labour intensive	48.12	7th
13	Lack of knowledge of recommended fertilizer doses	46.97	8th
14	Scarcity of farmyard manure	56.43	5th

Table 2. Marketing constraints faced by cauliflower growers in Panipat district of Haryana

Sr. No.	Particulars	Mean Score	Rank
1	Frequent price fluctuation	72.74	3rd
2	Existence of large number of intermediaries in marketing process	73.8	2nd
3	High transportation cost	74.43	1st
4	Lack of awareness and cumbersome process of bhavantar bharpayee yojana	69.22	4th
5	Higher margin of middlemen	58.33	5th
6	Heavy losses in the market	27.85	13th
7	Lack of market infrastructure	38.57	10th
8	Lack of availability of market information	54.64	6th
9	Labour problem for grading and packing	47.02	7th
10	Open auction sale fetches low price for produce	34.96	12th
11	Long distance from the production point to market	36.63	11th
12	Commission agents not maintaining the proper records of sale and prices	25.33	14th
13	Lack of information about government schemes and subsidies	44.32	8th
14	Lack of awareness of new technologies	42.16	9th

Table 3. Production constraints faced by cauliflower growers in Sonipat district of Haryana

Sr.No.	Particulars	Mean Score	Rank
1	Labour scarcity during peak time	63.47	3rd
2	Erratic supply of electricity	43.37	11th
3	High labour cost	55.00	5th
4	Poor quality and inadequate underground water	20.66	14th
5	Unstable yield of cauliflower	47.07	10th
6	Non availability of quality seed	21.8	13th
7	Lower productivity of cauliflower	53.24	8th
8	High cost of fertilizer	73.66	2nd
9	Inadequate credit supply by financial institution	36.14	12th
10	High incidence pest and disease	45.28	9th
11	High cost of cauliflower seed	75.22	1st
12	Manual weeding is time consuming and labour intensive	53.39	7th
13	Lack of knowledge of recommended fertilizer doses	53.62	6th
14	Scarcity of farmyard manure	58.08	4th

Table 4. Marketing constraints faced by cauliflower growers in Sonipat district of Haryana

Sr. No.	Particulars	Mean Score	Rank
1	Frequent price fluctuation	78.48	1st
2	Existence of large number of intermediaries in marketing process	62.48	4th
3	High transportation cost	75.59	2nd
4	Lack of awareness and cumbersome process of bhavantar bharpayee yojana	71.85	3rd
5	Higher margin of middlemen	52.66	6th
6	Heavy losses in the market	22.6	14th
7	Lack of market infrastructure	43.03	9th
8	Lack of availability of market information	53.36	5th
9	Labour problem for grading and packing	40.19	11th
10	Open auction sale fetches low price for produce	35.68	12th
11	Long distance from the production point to market	42.24	10th
12	Commission agents not maintaining the proper records of sale and prices	26.04	13th
13	Lack of information about government schemes and subsidies	50.89	7th
14	Lack of awareness of new technologies	44.91	8th

3.4 Marketing Constraints Faced by Cauliflower Grower

Table 4 presents the difficulties encountered by cauliflower growers in marketing within the Sonipat district of Haryana. The primary marketing issue faced by cauliflower growers is the frequent price fluctuation, which received the highest mean score of 78.48 and was ranked first. The second- ranked problem is the high transportation cost, with a mean score of 75.59. The challenges include difficulties in lack of awareness and cumbersome process of Bhavantar Bharpayee Yojana (mean score 71.85, rank 3), existence of large number of intermediaries in marketing process (mean score 62.48, rank 4), lack of availability of market information (mean score 53.36, rank 5), higher margin of middlemen (mean score 52.66, rank 6), lack of information about government schemes and subsidies with a mean score of 50.89 (rank 7), lack of awareness of new technologies (mean score 44.91, rank 8). The least significant marketing problem is the heavy losses in the market, which received the lowest rank of 14th with a mean score of 22.6. The current findings are similar to the results of Girdhar et al., [12-14].

4. CONCLUSION

Cauliflower plays a vital role in every household's diet, but its production and marketing face several challenges. The primary hindrances in cauliflower production in the districts of Panipat and Sonipat are the high cost of seeds and fertilizers, limited availability of labour during peak periods, scarcity of farmyard manure, and the time-consuming and labour- intensive process of manual weeding. When it comes to marketing, the most common obstacle is the frequent fluctuation in prices, followed by a lack of awareness about government procurement programs like BBY (Bhavantar Bharpai Yojana). Additionally, the presence of numerous intermediaries in the marketing process poses a significant problem for cauliflower farmers.

5. RECOMMENDATIONS

Based on the conclusions derived from the study's findings, the following recommendations can be proposed government agencies such as state agriculture and horticulture departments can distribute disease and pest-resistant hybrid cauliflower seeds to farmers at discounted rates through programs like vegetable seed mini kits. To address the issue of price fluctuation, the government should introduce a price stabilization scheme. This scheme should include providing market information on prices, displaying prices at each marketplace, establishing a minimum price for the produce, setting minimum labour charges, increasing procurement at nearby locations, and establishing separate markets for major produce. These measures aim to overcome the constraints faced by cauliflower growers. Extension agencies should take these factors into consideration while planning and

implementing programs for the benefit of cauliflower growers in Panipat and Sonipat districts.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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