



Constraints on Cole Crop of Production and Marketing: A Case Study of Sultanpur District of Uttar Pradesh, 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

This study was conducted in the Sultanpur district of Uttar Pradesh State with the aim of identifying the constraints faced by cole crop growers in cultivation, production, and marketing. The researchers utilized the Garrett ranking method to analyze the data obtained from the respondents. A random sampling technique was employed to select participants for the study, with two blocks being chosen to ensure meaningful findings. The survey encompassed ten communities and involved 120 farmers from selected villages. The data collected for this study spanned the years

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2021-2022. To gather primary data, personal interviews were conducted with cole crop growers using a pretested questionnaire. The study revealed several significant production constraints faced by the farmers, including the non-availability of credit, a lack of knowledge about the latest production technology, inadequate access to quality water, insufficient government assistance, and poor quality land. Furthermore, the research also highlighted key marketing constraints, which included price fluctuations, a lack of scientific storage facilities, high transportation costs, limited local demand for the produce, and a lack of scientific knowledge and training among the growers. This study sheds light on the various challenges encountered by cole crop growers in the Sultanpur district of Uttar Pradesh. The findings highlight the need for interventions to address these constraints in order to enhance cole crop cultivation, production, and marketing in the region. Effective measures such as improving credit accessibility, providing training on modern production techniques, ensuring the availability of quality water, supporting the establishment of scientific storage facilities, addressing transportation cost issues, and promoting market demand for the produce can contribute to the overall improvement of the cole crop sector in the area.

Keywords: Constraints; production and marketing; cole crop.

1. INTRODUCTION

Cole crops were named after the Latin word "Caulis," which means "plant stem or stalk." Cole crops are one of the most diverse groups of temperate vegetables, including cauliflower (*Brassica oleracea* var. *botrytis*), cabbage (*B. oleracea* var. *capitata*), sprouting broccoli (*B. oleracea* var. *italica*), Brussels sprout (*B. oleracea* var. *gemmifera*), kale (*B. oleracea* var. *acephala*), and knolkhol (*B. oleracea* var. *gongylodes*). Cole crops are high in vitamin C and include a variety of minerals. Carotene is abundant in broccoli and kale [1-3].

Several volatile sulphur compounds contribute to the characteristic aroma of cole crops. Antioxidants and phytochemicals that aid in the prevention of cancer and heart disease. The main fragrance component in cooked Brassicaceous vegetables has been identified as dimethyl trisulfide [4], (Kumar et al. 2022).

India is the world's second largest producer of vegetables (101mt) after China. Cabbage and cauliflower are the major cole crops but broccoli and knolkhol are also being cultivated in limited scale. In India, cabbage and cauliflower are ranked 4th and 5th places, respectively, the total area and production of cabbage in India was 400 (mha) and 9127 (mt) respectively in 2018-19. And the total area and production of cauliflower in India was 465 (mha) and 9083 (mt) respectively in 2018-19 [5].

The production of cabbage in Uttar Pradesh rank 10th in the whole of India, the total area and production of cabbage in Uttar Pradesh was 9.06 (mha) and 302.97 (mt), respectively in 2017-18,

and the production of cauliflower in Uttar Pradesh rank 9th in the whole India, the total area and production of cauliflower in Uttar Pradesh was 17.53 (mha) and 400.81 (mt), respectively in 2017-18 [6].

Sultanpur district of Uttar Pradesh is an agricultural specific district, here vegetable enterprise is the main occupation of the farmers and vegetables are produced in huge quantities. Cauliflower and cabbage are mainly grown in Sultanpur district of Uttar Pradesh.

2. MATERIALS AND METHODS

The present study is based on an analysis of primary data at the Sultanpur district of Uttar Pradesh. The 2 blocks were selected for present study. The study covered 10 villages & it covered 120 farmer in the selected villages. Data for the study was gathered for the years 2021-22. Primary data was obtained from chosen cole crop growers using the personal interview approach and pre-tested schedules to obtain information on Constraints in the Production and Marketing of cole crop related elements. The collected data were compiled, tabulated and analyzed to accomplish the objectives of the present study.

In order to study the constraints, a schedule was developed in accordance with the available literature. Accordingly, constraints were identified and sub divided into production and marketing constraints and there after the response of the sample farmers were recorded. The data will be analysed by using simple statistical tools such as Garrett's Ranking Technique used by Singh et al. [7]; Gautam et al. [8] and Singh et al. [9,10].

2.1 Analytical Tools Garrett's Ranking Technique

The ranks given by the respondents were then converted into percentage position with the help of formula given by Garrett. Garrett's formula for converting ranks into percent is:

$$\text{Percent position} = \frac{100(R_{ij} - 0.5)}{N}$$

Where, R_{ij} is the rank given to i th item by the j th individual and N is the number of item ranked by the j th individual. The per cent position of each rank thus obtained was converted into scores using Garrett's table. Then for each reason the scores of individual respondents were added and divided by the total number of respondents. Thus the mean score for each constraints was ranked by arranging them in a descending order.

3. RESULTS AND DISCUSSION

3.1 Production Constraints Faced by Cole Crop Growers

The major production constraint faced by most cole crop growers in the study area, as revealed in Table 1, is the non-availability of finance, with a score of 52.12 (rank I). This indicates a strong need to strengthen extension services among cole crop growers. The second most important constraint is the lack of assistance, which includes issues like delayed precipitation during the rainy season, excessive rainfall, or prevalence of winter rains. The overall Garrett score for this constraint is 51.91.

The other significant constraints reported by cole crop growers are as follows: Non-availability of high-yielding variety (HYV) seeds, with an overall Garrett score of 51.84 (rank III). Unavailability of machinery and implements, resulting in a Garrett mean score of 50.40 and rank IV. Lack of knowledge about balanced fertilizer and integrated pest management (IPM) concepts, scoring 49.16 in the Garrett ranking system (rank V).

In addition to the major constraints mentioned below, there are also minor problems faced by cole crop growers in the study area. These include:

1. Unavailability of timely labor (VI).
2. Poor confidence in recommended new technologies (VII).
3. Problems with irrigation facilities (VIII).
4. Poor quality of land (IX)
5. Unfavorable weather conditions (X).

Overall, the major constraints faced by cole crop growers in the study area are non-availability of finance, lack of assistance, non-availability of HYV seeds, unavailability of machinery and implements, and lack of knowledge about balanced fertilizer and IPM concepts. These challenges highlight the importance of strengthening extension services to address the needs of cole crop growers effectively. Additionally, there are several minor problems related to labor, technology adoption, irrigation facilities, land quality, and weather conditions.

Table 1. Production constraints faced by Cole Crops growers

S. No.	Constraints	Total	Average Score	Final Rank
1	Poor quality of Land	5783	48.19	9
2	Non- availability of Finance	6254	52.12	1
3	Lack of Assistant	6229	51.91	2
4	Unavailability of timely labour	5868	48.90	6
5	Problem of irrigation facilities	5827	48.56	8
6	Unfavorable weather conditions	5780	48.17	10
7	Poor confidence in recommended newly technology	5851	48.76	7
8	Unavailability of machine and implements	6048	50.40	4
9	Lack of knowledge about balance fertilizer/IPM concept	5899	49.16	5
10	Non-availability of HYV seed	6221	51.84	3

3.2 Marketing Constraints Faced by Cole Crops Growers

Table 2. Marketing constraints faced by Cole cropsgrowers

S. No.	Constraints	Total	Average Score	Final Rank
1	Higher commission charges	5973	49.78	4
2	Lack of availability about market news	5778	48.15	8
3	Lack of skilled labour for grading of Cole crops	5881	49.01	6
4	Lack of demand of produce in local area	5922	49.35	5
5	Lack of scientific storage facilities	6501	54.18	1
6	High cost of transportation	6223	51.86	3
7	Problem faced due small quantity of marketable surplus	5842	48.68	7
8	Lack of skilled labour for grading of Cole crops	6285	52.38	2
9	Delay in payment	5672	47.27	10
10	Perishability nature	5683	47.36	9

According to Table 2, cole crop growers in the study area face various marketing problems. The most significant constraint reported by the growers is the lack of scientific storage facilities, which ranks first with a mean score value of 54.18 (rank I). This is followed by a lack of skilled labor for grading cole crops, with a Garrett score of 52.38 (rank II). The high cost of transportation ranks third, with a mean score value of 51.86 (rank III). The fourth major constraint identified by cole crop growers is higher commission charges, with an overall Garrett score of 49.78. Additionally, the lack of demand for produce in the local area is a significant concern, ranking fifth with a score of 49.35 (rank V).

In addition to these primary problems, the following minor issues are also faced by cole crop growers in the study area:

1. Lack of skilled labor for grading cole crops (VI).
2. Problem of having a small quantity of marketable surplus (VII).
3. Lack of availability of market news (VIII).

Furthermore, there are two minor problems faced by growers in the study area, including the perishable nature of cole crops (IX) and delays in payment (X).

Overall, the major marketing problems faced by cole crop growers in the study area are the lack of scientific storage facilities, a shortage of skilled labor for grading cole crops, high transportation costs, higher commission charges, and limited demand for produce locally. The minor problems include a lack of skilled labor, small marketable surplus, insufficient market news availability, perishability issues, and delays in payment.

These challenges highlight the need to address storage facilities, labor availability, transportation costs, and market demand to improve the marketing situation for cole crop growers.

4. CONCLUSION

The study concluded that the major common production constraints for cole crop, i.e. were non-availability of Credit, Lack of knowledge about the latest production technology, non-availability of quality water, assistance by the government, and Poor quality land. etc. in the study area.

The major common Marketing constraints for cole crop, i.e Price fluctuations, Lack of scientific storage facilities, High cost of transportation, lack of demand for Produce in the local area, Lack of scientific knowledge and training, etc. in the study area.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Gupta V, Singh D, Mishra AK, Singh BP, Kumar R, Pandey RK. A study on constraints faced by Cauliflower Grower in Western Uttar Pradesh. International Journal of Current Microbiology Applied Science. 2017;6(7):2646-2651.
2. Shah P, Ansari MA. A study of marketing and production constraints faced by vegetable growers. Asian Journal of Agricultural Extension, Economics & Sociology. 2021;38(11):257-263.

3. Sri K, Choudhury A, Yumnam A, Singh R, Dek N. An Assessment of Constraints Faced by Cabbage Growers in the East Khasi Hills District of Meghalaya: India. International Journal of Plant & Soil Science. 2022;34(20):722-729.
4. Dhurwey CK, Choudhry VK, Bante R, Shrey R. Constraints perceived by farmers in production and marketing of major cole vegetable crops in bemetara district of Chhattisgarh state. International Research Journal of Agricultural Economics and Statistics. 2015;6(1): 193-96.
5. Kant U, Paswan AK, Kumar N, Kumar A. Market channel used by cauliflower and cabbage growers in Patna district. International Journal of Current Microbiology and Applied Sciences, 2020;10:330-332.
6. Singh AK, Singh BK, Baksh H. marketing practices and assessment of post-harvest losses of cole crops (cabbage & cauliflower) in the jaunpur district of Uttar Pradesh. Ind. J. Pure App. Biosci. 2019;7(4):379-384. ISSN: 2582 – 2845.
7. Singh A, Singh KK, Srivastava A, Srivastava AB, Mishra H. Constraints on sesame and mustard of production and marketing by using Garrett ranking. The Pharma innovation, 2022;11(7):585-588.
8. Gautam S, Supriya, Srivastava AB, Bohra D. Factors constraining farmer's adoption of the e-national agriculture market (enam) in Sultanpur district of Uttar Pradesh. Asian Journal of Agricultural Extension, Economics & Sociology. 2022;40(12):501-506.
9. Singh PK, Singh KK, Yadav B, Kumar A, Srivastava AB. Constraints in the production and marketing of rose and marigold. The Pharma Innovation Journal. 2022;11(6S):1463-1466.
10. Kumar AS, Aski SG. Constraints faced by cabbage growers and nature of marketing in north Karnataka. International Journal of Current Microbiology Applied Science. 2016;6(7):2646-2651.

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