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Constraints faced by cauliflower farmers in production and marketing of cauliflower in Sikar district of Rajasthan state

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Abstract
The present research was undertaken to know the constraints faced by cauliflower cultivators in production and marketing in Sikar district. Relevant data was collected through a survey method with the help of pre-tested questionnaire. The frequency and percentage of each constraint were worked out to measure the constraints encountered by the respondents, the data was collected pertaining to the agricultural year 2019-20. Data were collected from 60 farmers. Constraints in production and marketing of cauliflower were measured by Garrett's ranking method. The sample farmers reported that, major constrains in the production of cauliflower were high cost of quality seed followed by incidence of diseases and insects, lack of knowledge about doses of plant protection and shortage of labour during plantation of seedlings and harvesting of cauliflower head. Major constraints faced by sample farmers in the marketing of cauliflower were fluctuation in cauliflower price which ranked first followed low price of cauliflower, high transportation cost and lack of good storage facilities.

Keywords: Cauliflower, production, marketing, farmers

Introduction
Indian agriculture sector accounted for 15.87 percent of India's gross domestic products (GDP) and more than 50 percent of the population depended on agriculture during the year 2018-19. Contribution of horticulture towards the Indian GDP was 6 percent and about 30 percent in Agricultural GDP in 2018-19. Vegetables contribute about 60 percent in total horticulture production. Among the vegetable crops, cauliflower (*Brassica oleracea* var. *botrytis*) is one of the important cruciferous vegetable crop in India. Cauliflower has been recognized as an important food article due to its palatable taste and rich supply of minerals, protein, carbohydrates and dietary fibres and vitamin C and vitamin B-6. It is a winter crop and requires cool moist climate. It could be grown in plains during September to February. Deep loamy soils with a pH range of 5.5 to 6.6 with high organic matter and good drainage are suited for cauliflower cultivation.

Production of cauliflower was 25.2 million metric tonnes in the world during the year 2017-18. China and India contributed about 75 percent in cauliflower production. China was the largest cauliflower producing country with an area of 5,32,556 hectare with a production of 10.2 million metric tonnes and productivity of 191.52 quintal per hectare followed by India, Spain, Mexico, Italy etc. during the year 2017-18. (Source: Annual Report of Statista Research Department, 2018). India was the second largest cauliflower producing country with an area of 4, 52,000 hectare with a production of 8.6 million tonnes and productivity of 190.26 quintal per hectare during the year 2017-18. Major cauliflower producing states in India are West Bengal, Madhya Pradesh, Bihar, Haryana, Orissa, Gujarat, Uttar Pradesh, Punjab, Rajasthan etc. In Rajasthan state, area under cauliflower was 10, 251 ha with a production of 51,708 metric tonnes with productivity of 50.44 qt/ha during the year 2017-18. Major cauliflower producing districts in Rajasthan are Sikar, Ajmer, Sri Ganganagar, Jaipur etc. Sikar is the largest cauliflower producing district with an area of 417 hectare with a production of 6,015 metric tonnes with a productivity of 144.24 qt/ha during the year 2017-18. (Source: Rajasthan agriculture statistics at a glance, Horticulture department, Jaipur, 2017-18)

For effective farming, knowledge of cost of cultivation from each farm enterprise is a pre-requisite as it enables the cultivators to adjust and co-ordinate the accessible production resources in a profitable manner.

As increase in production solely will not help the farmers much but it is the effective production that really benefits the producers. Production is observed to be an efficient one, not only on the basis of how best one can produce but also on how best one can market the resultant products. An effective marketing system is an important means for raising the income level of the farmers. Good marketing facilities, efficient marketing channels and marketing functionaries give better price for the produce in the economy than its operation in haphazard way. These bring variation in the producer's share in consumer's rupees and the overall marketing efficiency of the system. So, there is a need to identify the market intermediaries and estimate marketing costs, margins and price spread in marketing of cauliflower and to know the constraints faced by farmers in production and marketing of cauliflower.

Materials and Methods

The present research was conducted in Sikar district of Rajasthan on the basis of highest production and productivity in this district over last five years *i.e.*, 2013-14 to 2017-18. Out of nine tehsils, one tehsil namely Sikar was selected purposively on the basis of highest production and productivity of cauliflower. Two villages, namely Radha kishanpura and sikar *kasba* of Sikar tehsil, having maximum production and productivity of cauliflower were selected purposively for the study. From selected villages, sixty cauliflower cultivators were selected randomly in proportion to their total number in each size farm group for detailed study. The primary data were collected from the selected cauliflower cultivators using personal interview method with the help of pre-structured interview schedule. Information related to the problems faced by sample farmers in production and marketing of cauliflower were also collected from the sample farmers.

Garrett's ranking technique was used to analyze the problems faced by the farmers in marketing of cauliflower.

$$\text{Percent position} = \frac{100\ (Rij - 0.50)}{Nj}$$

Where,

Rij = Ranking given for i^{th} item by j^{th} individual farmer

Nj = Number of items ranked by j^{th} individual farmer

Results and Discussion

Constraints in the Production of cauliflower

The constraints faced by sample farmers in the cauliflower production are given in table-1 and figure 1. It was indicated that out of eight constraints, high cost of quality seed was main problem expressed by the sample farmers with the total mean score of 74.98 that's why this constraint got rank-I. Similar findings were reported by Badhe and Saiyad (2011) [3] Goyal and Singh (2012) [7], Nanagouda and Rajasab (2012) [10], and Ghaswa *et al*. (2015) [6]. Incidence of diseases and insects was second major constraint in the cauliflower cultivation which assigned rank II with 64.30 mean score followed by lack of knowledge about doses of plant protection chemical (mean score of 57.41), shortage of labour during seedling plantation and harvesting of cauliflower head (mean score of 51.00), timely non availability of fertilizers (mean score of 48.38), lack of irrigation water (mean score of 39.28), grazing of by stray animals (mean score of 33.95) and insufficient crop insurance coverage (mean score of 29.90).

Table 1: Constraints faced by sample farmers in the cauliflower production

S. No.	Constraints faced by the sample farmers	Total no. of respondent	Total score	Total mean	Rank
1	High cost of quality seed	60	4499	74.98	I
2	Incidence of Diseases and insects	60	3858	64.30	II
3	Lack of knowledge about doses of plant protection chemicals	60	3445	57.41	III
4	Shortage of labour during seedling plantation and harvesting of cauliflower head	60	3060	51.00	IV
5	Timely non-availability of fertilizer	60	2903	48.38	V
6	Lack of irrigation water	60	2357	39.28	VI
7	Grazing by stray animals	60	2037	33.95	VII
8	Insufficient crop insurance coverage	60	1554	25.90	VIII

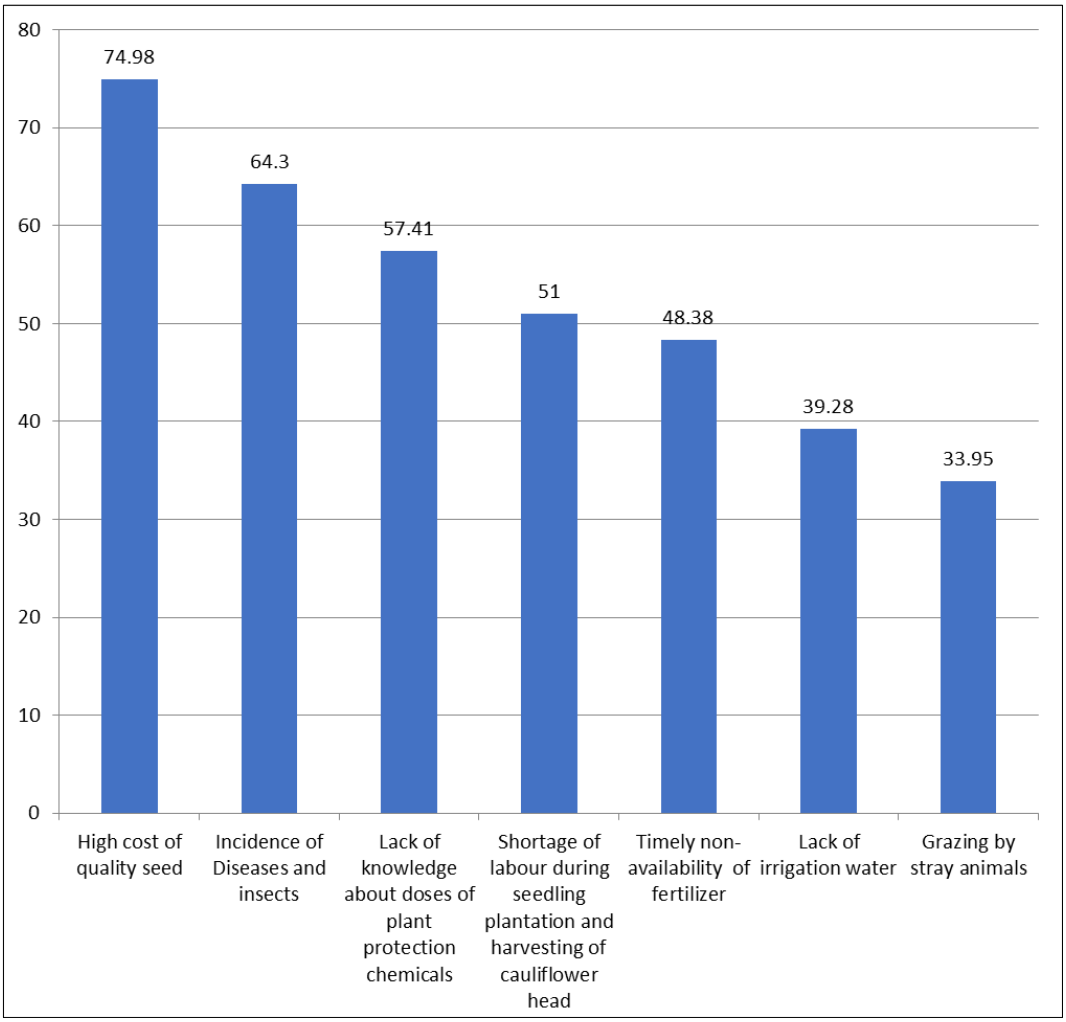

Fig 1: Constraints faced by sample farmers in the cauliflower production

Constraints in the marketing of cauliflower

It is obvious from Table 2 and figure-2 that among eight constraints of cauliflower marketing, fluctuation in market price was the prime constraint which had ranked I with mean score value of 78.13 this might be due to seasonal nature of cauliflower production. The findings of this study support the findings of Raghavendra *et al.* (2008) [11] and Chendake and Chauhan (2015) [4], Jangid (2017) [8], Kala (2019) [9]. Price fluctuation affected the demand and supply of cauliflower. Low price of cauliflower was second most problem in the cauliflower marketing with the mean score of 69.08. High transportation cost was found with mean score of 61.40 (rank III), It was due to the greater number of selected cauliflower-producer sell their produce to the wholesaler-cum commission agent in the *mandi* and the transportation costs were borne by themselves. Lack of good storage facilities had mean score of 48.91 (*i.e.*, rank IV) because the cauliflower cultivators could not afford to return the cauliflower to their farm, thus, they had to sell the produce at existing price at that time. Due to the biological nature of cauliflower, perishable nature of produce had ranked V with mean score of 44.13 followed by difficulties in maintaining to quality standards (mean score of 42.35), cut in weight of the produce due to poor quality standard (mean score of 40.60) and delay in payments by traders (mean score of 26.01).

Table 2: Constraints faced by sample farmers in the cauliflower marketing

S. No.	Problems faced by the sample farmers	Total no. of respondent	Total score	Total mean	Rank
1	Fluctuations in market price	60	4688	78.13	I
2	Low price of cauliflower	60	4145	69.08	II
3	High transportation cost	60	3684	61.40	III
4	Lack of good storage facilities.	60	2935	48.91	IV
5	Perishable nature of produce	60	2648	44.13	V
6	Difficulty in maintaining quality standards	60	2541	42.35	VI
7	Cut in weight of the produce due to poor quality standard	60	2436	40.60	VII
8	Delay in payments by traders	60	1561	26.01	VIII

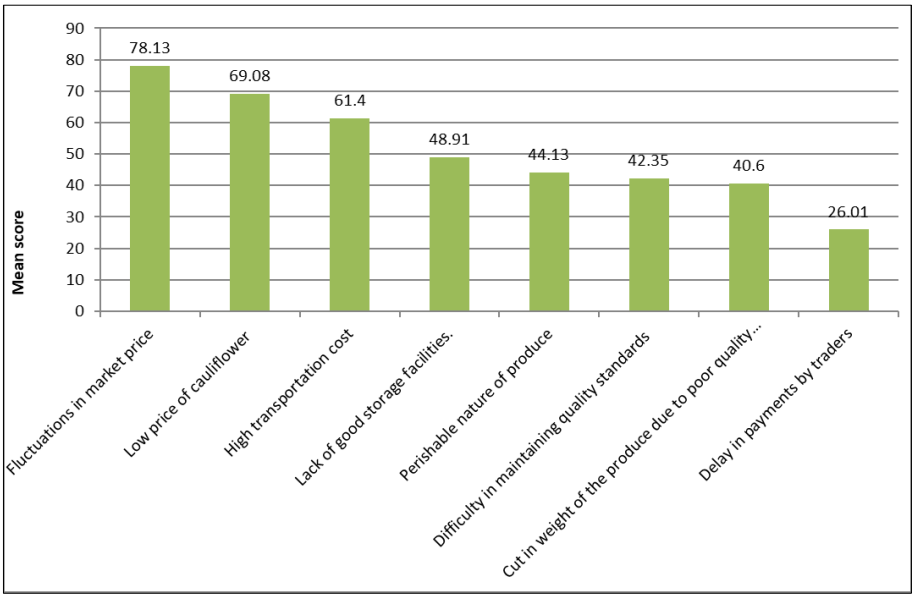

Fig 2: Constraints faced by sample farmers in cauliflower marketing

Conclusions

Among the vegetable crops, cauliflower (*Brassica oleracea* var. *botrytis*) is one of the important cruciferous vegetable crop in India. It is widely cultivated throughout of northern India. The present research was conducted in Sikar district of Rajasthan on the basis of highest production and productivity of cauliflower over last five years *i.e.*, 2013-14 to 2017-18. From selected villages, sixty cauliflower cultivators were selected randomly in proportion to their total number in each size farm group for detailed study.

Major constraints in cauliflower production were high cost of quality seed, incidence of diseases and insects, lack of knowledge about doses of plant protection, grazing by stray animals, shortage of labour during plantation of seedlings and harvesting of cauliflower head, timely non availability of fertilizer, lack of irrigation water and insufficient crop insurance coverage. Major constraints in marketing of cauliflower were fluctuations in cauliflower price low price of cauliflower, high transportation cost, difficulty maintaining quality standards, lack of good storage facilities, cut in weight of the produce due to poor quality standard, perishability of products and delay ins payment by traders have been analyzed in marketing of cauliflower.

Recommendations

Based on the conclusions drawn from the findings of the study, following recommendations may be made

1.The hybrid /improved varieties of cauliflower seeds along with resistance against diseases and insects may be distributed through vegetable seed mini kit program (such as oilseeds, fodder crops, pluses mini kit etc.) by government agencies like state agriculture as well as horticulture department to specially marginal and small farmers on concessional rate.

2.There is a need to create storage facilities and processing units to control the fluctuations in market price of cauliflower produce during glut and Government intervention to promote the MIS to protect cauliflower-producers against the low price and efforts should also made in the study area.

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