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An evaluation of constraints in production and marketing of strawberry in Jammu region of J&K (U.T.)

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Abstract
Strawberry (*Fragaria× ananassa*) is a non-climacteric fruit in the rosaceae family. It contains a high amount of antioxidant and is high in Vitamin C and fibres. Strawberry crop require more labour and highly capital-intensive crop. The total area under strawberry farming in Jammu and Kashmir is roughly 152 hectares with a production of 425 mt (anonymous 2018-19). The study was conducted in Jammu region of UT of Jammu and Kashmir to find out constraints in raising productivity and marketing of strawberry by the farmers. Primary data was collected through survey method from various respondents. Both primary and secondary data had been gathered from the farmers who produce strawberry using a comprehensive pre-tested schedule-cum-questionnaire as well as from Directorate of Horticulture, Jammu and its various publication issues. Data analysis should be done by using Garret ranking technique The results indicate that costlier quality planting material(I) followed by unawareness about plant protection material (II) in strawberry cultivation were the major problems expressed by the growers in raising strawberry productivity. Unfavourable climatic conditions, lack of resources, weak research-extension farmers linkages, inadequate or low irrigation, poor quality of land, non-availability of labour and lack of latest technical know-how of crop were the common constraints faced by growers. With respect to constraints of marketing, Costlier packaging material was ranked (I) by the respondents. Lack of market information, lack of storage facilities, low demand of final product got rank II, III and IV respectively. Based on the study, it would be recommended that government support should provide support for purchasing the planting material at fair enough price and there should be more training made available to strawberry growers regarding strawberry cultivation. Market intelligence should play a vital role in improving producer's share in consumer rupees, thus reducing marketing margin.

Keywords: Constraints, garret ranking, market intelligence

Introduction
Strawberry (*Fragaria x ananassa*) is one of the most consumed fruits in the world because of its delicious flavour, great aroma and attractive appearance. Out of the most widely cultivated soft fruits, strawberries has its specific place and are grown in plains and hills up to an elevation of 3000 metres in humid or dry areas. They are also widely grown in protected and open conditions in temperate and subtropical countries with maximum temperatures of 22ºC and 25ºC during the day and 7ºC and 13ºC at night strawberries are the berry that generates the fastest return in the shortest period of time among all the other types of berries. Strawberries are a good supply of proteins, the best source of antioxidants, minerals, Ca, P, and K, and a fair dose of vitamins A, B1, B2, niacin, and C. In India strawberry is majorly cultivates in the states like Maharashtra, Haryana, Uttar Pradesh, West Bengal, Delhi. As per the context of UT of Jammu and Kashmir, the irrigated belt of the Jammu and the valley of Kashmir are engaged in strawberry production. The strawberry cultivars Chandler, Dilpasand, Bangalore, Camarosa, winter dawn, and Nabila are significant ones in Jammu region. The strawberry growers of the Jammu area are facing constraints both in production and marketing of the crop. This paper was written with the aim of identifying the constraints faced by strawberry growers in Jammu region of UT of J&K in terms of production and marketing by using constraint analysis.

Review of literature
Kharse *et al.* (1995) [1] suggested that strawberry should be sold within a short period of time

due to its high perishability. Cold storage facilities, as well as proper transportation and market knowledge, will be more beneficial in order to earn more profit. Strawberry processing businesses, such as jam, jelly, ice cream, and other strawberry goods, have a lot of potential.

Naikawadi (1995)[2] suggested that strawberry growers faced many problems in marketing.Lack of cold storage, pre-cooling facilities at the village level, and the use of commission agents to market product were among the issues. The fruits were in short supply in the area. The report recommended building cooperative marketing in order to identify distant markets for products and provide greater returns to growers.

Sharma *et al.* (2011) [4] studied the constraints for vegetable production in the hilly region of Jammu division. The study "Constraints in Vegetable Production in Jammu Division's Hilly Areas" was carried out in three vegetable-growing villages, with marginal, small, and large farmers participating (20 from each category totaling 60 in number). To collect the data, a pre-tested interview schedule was created, and appropriate statistical procedures were used to evaluate the data for various limitations such as social, organizational, technology transfer, and economic. The study found that marginal farmers had higher mean scores for all of these restrictions than small and large farmer.

Prakash *et al.* (2018) [3] studied the production and marketing challenges faced by the farmers of Haryana state. As per production is concerned high cost of planting material that was runners in case of strawberry along with labour scarcity were the major issues. The unforeseen weather adversities like hailstorm highly impact their crops. In respect of marketing lack of scientific storage, lack of demand in local market, lack of agro processing units were the major constraints.

Material and Methods
The present study was conducted in Jammu region of UT of J&K. The districts were selected purposively on the basis of highest area under Strawberry. Within the three selected districts Rajouri, Katha and Jammu proportionate allocation procedure was adopted by taking 50, 25 and 25 farmers from the districts respectively to constitute a sample size of 100 respondents. The study was based on both primary and secondary data had been gathered from the farmers who produce strawberry using a comprehensive pre-tested schedule-cum-questionnaire as well as from Directorate of Horticulture, Jammu and its various publication issues. With reference to the goals of the study and the type of data gathered, appropriate statistical techniques of analysis were selected. In this study farmers issues with strawberry production and marketing ranked using the garrett rankingtechnique, the factors or issues were ranked by the respondents in accordance with garretts scoring methodology and these rankings were then transformed into percent positions using the following formula (Garrett 1969).

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

R_{ij} = Rank given for ith factor by jth individual
N_j = Number of factors ranked by jth individual

Results and Discussions
The Garrett scoring method was used to examine the production and marketing challenges that farmers in the research area faced. The outcomes are displayed below in Table 1 and Table 2.

Constraints in production of Strawberry in Study area
The Garrett scoring technique was used to rank the identified limitations in production. From the table no. 1 below it could be observed that costlier good planting material was ranked first with mean score of 63.81. Unawareness of plant protection material (mean score: 54.43) and unfavourable climatic conditions (meanscore: 54.02) were ranked as second and third. Lack of resources (mean score of: 48.47) and weak research - extension farmers linkages with mean score of 47.71 got fourth and fifth rank. Inadequate or low irrigation (mean score: 47.20), Poor quality of land (mean score: 46.91) and non-availability of labour(mean score 46.86) and lack of latest technical know-how of crop(mean score: 45.64) got sixth, seventh, eighth and ninth rank respectively based on their mean score. The tenth rank was given to lack of knowledge about recommended practices and recommended doses of fertilizers with mean score of 44.95.

## Constraints in marketing of strawberry in Study area
It could be observed from table no. 2 that costlier packaging material was ranked first by the respondents with mean score of 65.90. Lack of market information, lack of storage facilities, low demand of final product got second, third, fourth respectively. The fifth, sixth, seventh and eighth rank were gone to low price paid to farmers due to high market margins, lack of processing unit, lack of support price and lack of transportation facilities according to mean score shown in table no. 2. Un-organized marketing and low price paid to farmers, lack of regulated market and co-operative market and non - receipt of payment in time were ranked ninth, tenth and eleventh ranks were also some of the constraints.

**Table 1:** Garrett ranking for constraints in Production of Strawberry

Sr. No.	Constraints (n=100)	Mean score	Rank
1	Costlier quality planting material	63.81	I
2	Unawareness about plant protection material	54.43	II
3	Unfavorable climatic condition	54.02	III
4	Lack of resources	48.47	IV
5	Weak research - extension farmers linkages	47.71	V
6	Inadequate or no irrigation	47.20	VI
7	Poor quality land	46.91	VII
8	Non- availability of labour	46.86	VIII
9	Lack of latest technical know-how of the crop	45.64	IX
10	Lack of knowledge about recommended practices and recommended doses of fertilizers	44.95	X

Table 2: Garrett ranking for constraints in Marketing of Strawberry

S. No.	Constraints (n=100)	Average Score	Rank
1	Packaging material is costly	65.90	I
2	Lack of market information	62.01	II
3	Lack of storage facilities	55.81	III
4	Low demand of final product	51.25	IV
5	Low price paid to the farmers due to high market margins	50.99	V
6	Lack of processing unit	46.68	VI
7	Lack of support price	46.34	VII
8	Lack of transportation facilities	44.50	VIII
9	Un organized marketing and low price paid to farmers	43.15	IX
10	Lack of regulated market and co-operative market	42.96	X
11	Non - receipt of payment in time	39.41	XI
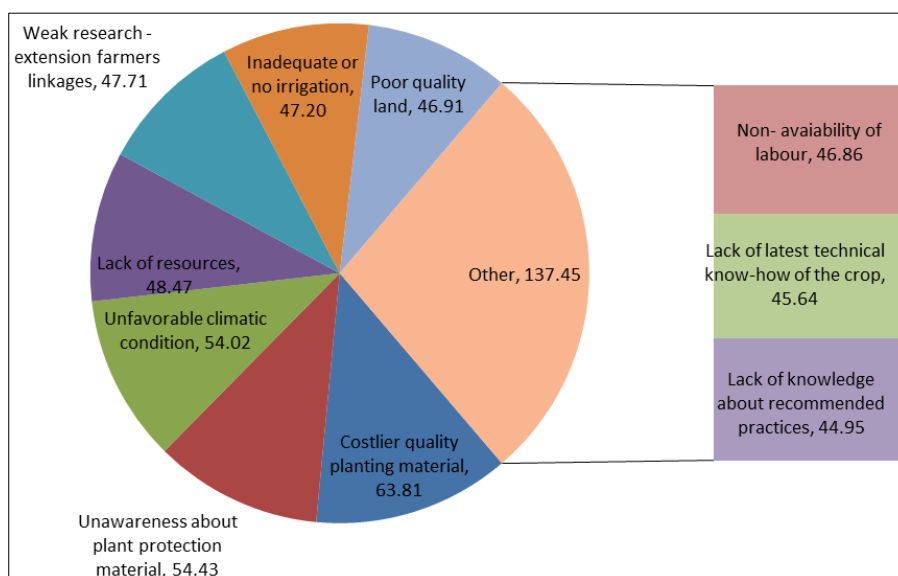
Graph 1: Represents Pie-chart depicting share and mean score of different constraints in production.
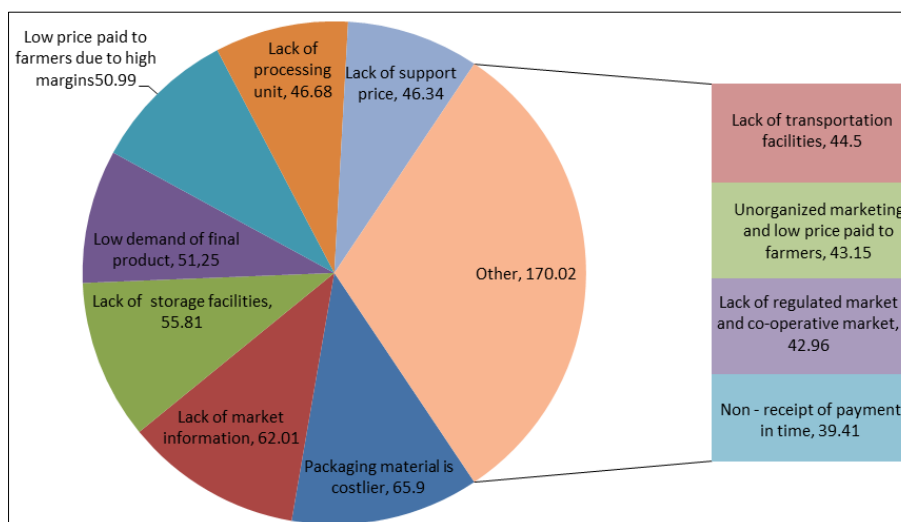
Graph2: Represents Pie-chart depicting share and garrett score of different constraints in marketing.

Conclusion

From the study, it was concluded that, the major constraints faced by sample farmers in strawberry production and marketing were costlier quality of planting material, unawareness of plant protection material, low price paid to the farmers, packaging material is costly. Strawberry is perishable thus it demands special attention in harvesting and handling as well as smart marketing thus it bring a lot of money for strawberry producer because it's a fruit crop with high market value. The issues that the farming community faces with relation to agricultural operations of strawberry cultivation have taken on a significant relevance in this study since they serve as a vital source of information for the policy makers as they develop policies for the welfare of the farming community.

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