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Identification of Constraints in Production and Marketing of Soybean *(Glycine max)*

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Abstract

A study was conducted on identification of constraints faced by farmers in production and marketing of soyabean in Pratapgargh district of Rajasthan with a sample of 180 households. The data were analyzed by Garrett's ranking technique. The findings of study indicated that the high cost of seed, fertilizer and pesticides was the most serious constraint (with a Garrett score of 107.32) followed by the infestation of pest and disease (with a Garrett score of 105.49) and the least serious constraint was the lack of knowledge about soybean cultivation practices (with a Garrett score of 48.42). As regards marketing constraints, the analysis indicated that the low price of produce in mandi just after harvesting the soybean was the most serious constraint, ranked first with a Garrett score of 125.64 followed by the low price of soybean produce offered by village trader (with a Garrett score of 98.18) and the least serious constraint was the untimely payment of produce by village trader (with a Garrett score of 38.06).

Keywords: Soyabean, constraints, production, marketing.

Introduction

Soybean have emerged as an important crop in the worldwide agricultural economy due to their multiple applications in food, livestock feed, and biofuels. Soybean *(Glycine max)* is an annual legume that produces edible seeds. It is the most economically important bean because it contains ingredients for a variety of chemical products and vegetable protein for millions of people and livestock around the world. Rajasthan ranks as the third-largest soybean producer in India. Pratapgarh district accounts for 13.68 percent share of the production and 11.81 percent share of the area of soyabean of Rajasthan state (Directorate of Economics and Statistics, 2024).

Identifying the constraints faced by farmers in production and marketing sheds light on the challenges hindering soybean cultivation and marketing. Addressing these constraints through targeted interventions, policy measures, technological innovations can enhance productivity, reduce losses and improve the livelihoods of farmers. Given the paramount significance of soybean production within the legume sector, a research study was undertaken with the specific objective to identify the constraints faced by farmers in production and marketing of soyabean.

Materials and Methods

Pratapgarh district of Rajasthan was purposively selected due to first position in term of area (with 1,30,538 hectare) and production of soybean (1,65,103 tonnes) in Southern Rajasthan during the year 2022-23 (Directorate of Statistics and Economics, 2022-23). Two tehsils (Pratapgarh and Chotti Sadari) based on the maximum area under soybean cultivation have been Selected. Three villages viz., Basad, Amlawada and Kherot were selected from Pratapgarh tehsil and Kalakot, Narani and Lalpura were chosen from Chhoti Sadri tehsil. A random sample of 30 farmers from each selected village was taken. Thus, a total 180 soybean farmers were selected for the study. This study based on primary data which were collected during the kharif season of the 2023-24 year. Garrett's ranking technique was employed to assess the constraints experienced by soyabean farmers. In this technique, farmer ranked all the factors, and the resulting rankings were transformed into score values using the following formula:

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Per cent position =
$$\frac{100 \ (R_{ij}-0.50)}{N_j}$$

Where,

R_{ij} = rank given for the ith constraint (i=1,2,3…. n) by the jth farmer /processor (j= 1,2,3…. n)

N_j = number of constraints ranked by the jth individual farmer/processors.

Once the per cent positions were obtained, the per cent position of each rank was converted to Garrett scores by referring to table given in Garrett and Woods worth (1969). Then the scores for each factor were summed over the number of sample farmers/processors who ranked that factor. In this way, total scores were arrived for each of the nth factors and mean scores were calculated by dividing the total score by the number of respondents. Finally, overall ranking of the nth factors were ranked by assigning rank I, II, III,. and so on in the descending order of the mean scores.

Results and Discussion

Farmers' constraints in the soybean cultivation have been broken down into production and marketing constraints separately as follows.

1. Constraints faced by farmers in production of Soybean

2. Constraints faced by farmers in marketing of Soybean

1.1 Constraints faced by small size farmers in production of Soybean

The constraints faced by small farmers in the production of soybean are presented in Table 1. The analysis indicated that the non-availability of sufficient funds to purchase inputs was the most serious constraint, ranked first with a Garrett score of 86.39 followed by high cost of seeds, fertilizers, and pesticides (with a Garrett score of 66.39) and the least serious constraint was the lack of knowledge about soybean cultivation practices, with a Garrett score of 31.50. Other constraints included pest and disease infestations, non-availability of labour in the peak harvesting season, green seed and seed coat cracking, shattering of pod after maturity, and non-availability of inputs at the right time, which were ranked third, fourth, fifth, sixth and seventh, respectively.

Table1: Constraints faced by small size farmers in production of Soybean

S. No.	Constraints	Garrett score	Rank
1	Shattering of pods after maturity	44.77	VI
2	Non-availability of sufficient fund to purchase input	86.39	I
3	Infestation of pest and diseases	54.63	III
4	Non-availability of labours at peak harvesting season	47.89	IV
5	Green seed and seed coat cracking	46.30	V
6	Non-availability of inputs at right time	31.54	VII
7	Lack of knowledge about cultivation practice of Soybean	31.50	VIII
8	High cost of seed, fertilizers and pesticides	66.97	II

1.2 Constraints faced by medium size farmers in production of Soybean

The constraints faced by medium farmers in the production of soybean are presented in Table 2. The analysis indicates that the high cost of seeds, fertilizers, and pesticides was the most serious constraint, ranked first with a Garrett score of 21.53 followed by infestation of pest and disease (with a Garrett score of 21.33) and the least serious constraint was the lack of knowledge about soybean cultivation practices, with a Garrett score of 9.35. Other constraints included non-availability of inputs at the right time, non-availability of labour during the peak harvesting season, green seed and seed coat cracking, shattering of pod after maturity and non-availability of sufficient funds to purchase inputs, which were ranked third, fourth, fifth, sixth and seventh, respectively.

Table 2: Constraints faced by farmers in getting credits

S. No.	Constraints	Garrett score	Rank
1	Shattering of pods after maturity	13.38	VI
2	Non-availability of sufficient fund to purchase input	19.66	III
3	Infestation of pest and diseases	21.33	II
4	Non-availability of labours at peak harvesting season	14.32	IV
5	Green seed and seed coat cracking	13.89	V
6	Non-availability of inputs at right time	9.49	VII
7	Lack of knowledge about cultivation practice of Soybean	9.35	VIII
8	High cost of seed, fertilizers and pesticides	21.53	I

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1.3 Constraints faced by large size farmers in production of Soybean

The constraints faced by large farmers in the production of soybean are presented in Table 3. The analysis indicates that the non-availability of labour during the peak harvesting season was the most serious constraint, ranked first with a Garrett score of 17.16 followed by high cost of seed, fertilizer and pesticides (with a Garrett score of 16.99) and least serious constraint was the lack of knowledge about soybean cultivation practices, with a Garrett score of 7.57. Other constraints included infestation of pest and disease, non-availability of fund to purchase input, green seed and seed coat cracking, shattering of pod after maturity and non-availability of inputs at the right time, which were ranked third, fourth, fifth, sixth and seventh, respectively.

Table 3: Constraints faced by large size farmers in production of Soybean

S. No.	Constraints	Garrett score	Rank
1	Shattering of pods after maturity	10.74	VI
2	Non-availability of sufficient fund to purchase input	11.44	IV
3	Infestation of pest and diseases	15.62	III
4	Non-availability of labours at peak harvesting season	17.16	I
5	Green seed and seed coat cracking	10.97	V
6	Non-availability of inputs at right time	7.62	VII
7	Lack of knowledge about cultivation practice of Soybean	7.57	VIII
8	High cost of seed, fertilizers and pesticides	16.99	II

1.4. Constraints faced by all sample farmers in production of Soybean

The constraints faced by all size farmers in the production of soybean are presented in Table 4. The analysis indicates that the high cost of seed, fertilizer and pesticides was the most serious constraint, ranked first with a Garrett score of 107.32 followed by infestation of pest and disease (with a Garrett score of 105.49). and least serious constraint was the lack of knowledge about soybean cultivation practices, with a Garrett score of 48.42. Other constraints included, non-availability of labour at peak harvesting season, non-availability of sufficient fund to purchase input, shattering of pod after maturity green seed and seed coat cracking and non-availability of inputs at the right

time, which were ranked third, fourth, fifth, sixth and seventh, respectively. The similar constraint was found most serious in the study of Jamanal and Sadaqath (2017).

Table 4: Constraints faced by all sample farmers in production of Soybean

S. No.	Constraints	Garrett score	Rank
1	Shattering of pods after maturity	71.16	V
2	Non-availability of sufficient fund to purchase input	79.37	IV
3	Infestation of pest and diseases	105.49	II
4	Non-availability of labours at peak harvesting season	91.58	III
5	Green seed and seed coat cracking	68.89	VI
6	Non-availability of inputs at right time	58.82	VII
7	Lack of knowledge about cultivation practice of Soybean	48.42	VIII
8	High cost of seed, fertilizers and pesticides	107.32	I

Thus, it can be concluded from above constraints analysis that serious constraints of small, medium, large and all sampled farmers were non-availability of sufficient fund to purchase inputs, high cost of seed, fertilizers and pesticides, non-availability of labour at peak harvesting season and high cost of seed, fertilizers and pesticides, respectively. While least constraints was lack of knowledge about cultivation practice of soybean for all size of farmers in production of Soybean.

2. Constraints faced by farmers in Marketing of Soybean

2.1 Constraints faced by small size farmers in marketing of Soybean

The constraints faced by small farmers in the marketing of soybean are presented in Table 5. The analysis indicates that the low price of soybean produce offered by village trader was the most serious constraint, ranked first with a Garrett score of 87.97 followed by low price of produce in mandi just after harvesting the soybean (with a Garrett score of 60.22) and least serious constraint was the untimely payment of produce by village trader, with a Garrett score of 27.76. Other constraints included, lack of storage, lack of reliable and timing marketing information, high transportation charges and distant location of mandi,

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which were ranked third, fourth, fifth and sixth, respectively.

Table 5: Constraints faced by small size farmers in marketing of Soybean

S. No.	Constraints	Garrett Score	Rank
1	Lack of storage	48.92	III
2	Low price of produce in mandi just after harvesting the soybean	60.22	II
3	Lack of reliable and timely marketing information	42.95	IV
4	High transportation charges	42.12	V
5	Low price of soybean produce offered by village traders	87.97	I
6	Distant location of mandi	38.74	VI
7	Un-timely payment of produce by village traders	27.76	VII

2.2 Constraints faced by medium size farmers in marketing of Soybean

The constraints faced by medium farmers in the marketing of soybean are presented in Table 6. The analysis indicated that the low price of produce in mandi just after harvesting the soybean was the most serious constraint, ranked first with a Garrett score of 20.80 followed by low price of soybean produce offered by village trader (with a Garrett score of 20.68) and least serious constraint was the untimely payment of produce by village trader, with a Garrett score of 5.68. Other constraints included high transportation charges, lack of reliable and timing marketing information, lack of storage and distant location of mandi, which were ranked third, fourth, fifth and sixth, respectively.

Table 6: Constraints faced by medium size farmers in marketing of Soybean

S. No.	Constraints	Garrett Score	Rank
1	Lack of storage	12.46	V
2	Low price of produce in mandi just after harvesting the soybean	20.80	I
3	Lack of reliable and timely marketing information	13.54	IV
4	High transportation charges	18.95	III
5	Low price of soybean produce offered by village traders	20.68	II
6	Distant location of mandi	11.65	VI
7	Un-timely payment of produce by village traders	5.68	VII

2.3 Constraints faced by large size farmers in marketing of Soybean

The constraints faced by large farmers in the marketing of soybean are presented in Table 7. The analysis indicates that the low price of produce in mandi just after harvesting the soybean was the most serious constraint, ranked first with a Garrett score of 17.16 followed by low price of soybean produce offered by village trader (with a Garrett score of 16.99) and least serious constraint was the untimely payment of produce by village trader, with a Garrett score of 4.62. Other constraints included lack of reliable and timing marketing information, high transportation charges, lack of storage and distant location of mandi, which were ranked third, fourth, fifth and sixth, respectively.

Table 7: Constraints faced by large size farmers in marketing of Soybean

S. No.	Constraints	Garrett Score	Rank
1	Lack of storage	11.44	V
2	Low price of produce in mandi just after harvesting the soybean	16.99	II
3	Lack of reliable and timely marketing information	15.62	III
4	High transportation charges	11.68	IV
5	Low price of soybean produce offered by village traders	17.16	I
6	Distant location of mandi	10.20	VI
7	Un-timely payment of produce by village traders	4.62	VII

2.4 Constraints faced by all size farmers in marketing of Soybean

The constraints faced by all size farmers in the marketing of soybean are presented in Table 8. The analysis indicates that the low price of produce in mandi just after harvesting the soybean was the most serious constraint, ranked first with a Garrett score of 125.64. The low price of soybean produce offered by village trader ranked second with a Garrett score of 98.18. The least serious constraint was the untimely payment of produce by village trader, with a Garrett score of 38.06. Other constraints included lack of storage, lack of reliable and timing marketing information, high transportation charges and distant location of mandi, which were ranked third, fourth,

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fifth and sixth, respectively. The similar constraint was found most serious in the study of Medat *et al.,* (2016).

Table 8: Constraints faced by all size farmers in marketing of Soybean

S. No.	Marketing Constraints	Garrett Score	Rank
1	Lack of storage	72.82	III
2	Low price of produce in mandi just after harvesting the soybean	125.64	I
3	Lack of reliable and timely marketing information	72.75	IV
4	High transportation charges	72.11	V
5	Low price of soybean produce offered by village traders	98.18	II
6	Distant location of mandi	60.59	VI
7	Un-timely payment of produce by village traders	38.06	VII

Thus, in the marketing of soybean, the low prices offered in mandi just after harvesting the soybean was serious constraint. The similar constraint was found serious in the study of Tawale and Pawar (2011). These low prices make it difficult for farmers to cover their production costs and achieve a reasonable profit margin, leading to financial instability and discouraging future investment in farming operations.

Conclusion

It can be concluded from the constraints analysis that numerous constraints faced by the farmers in production of soyabean. the major constraints faced by small, medium, large and all sampled farmers were non-availability of sufficient fund to purchase inputs, high cost of seed, fertilizers and pesticides, non- availability of labour at peak harvesting season and high cost of seed, fertilizers and pesticides, respectively. While least constraints were lack of knowledge about cultivation practice of Soybean for all size of farmers in production of Soybean. As regards constraints faced by farmers in marketing of soybean, serious constraints were low prices obtained in mandi just after harvesting the soybean. The low prices make it difficult for farmers to achieve a reasonable profit margin, leading to financial instability and discouraging future investment in farming operations. Results of constraints analysis indicated that there is need to made available financial facility by government and bankers and farmers should try to hold the produce for few months after just harvesting of soybean produces. There is no processing unit of soybean in study area, therefore, it is necessary to the establish soybean processing units in the study area to boost farmers' income and generate employment opportunities.

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