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Constraint's Analysis of Sugarcane Cultivation in Sant Kabir Nagar District

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Authors' contributions

This manuscript work was carried out in collaboration among all the authors mentioned. Author BY designed the study, performed the statistical analysis and prepared the initial outline of the manuscript. Authors RRK, RSY and PKS helped in the manuscript management during the study. All the relevant resources are collected and briefed by them. Author AKY also helped in overall preparation and revision of the manuscript. Finally, the manuscript was approved by all the contributors.

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ABSTRACT

The study was conducted using multistage stratified, purposive cum random sampling procedure and hundred respondents were selected from a block of district. Primary data was collected through personal interview technique and required secondary information for the reference was taken from the records available at district and block offices. Simple tabular, functional analysis using Garrett ranking method was used to cook the inferences. As per the results found and seen from the analysis, lack of technical knowledge was found as the first rank followed by labor constraints in peak time at the second position. Seeds unavailability at the third rank and irrigation facility and unavailability of finance facility were found at fourth and fifth ranks respectively. Rest all problems were found afterwards.

Keywords: Constraints; sugarcane; garrett ranking.

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1. INTRODUCTION

Sugarcane is the main source of sugar in India and holds a prominent position as a cash crop. After Brazil, India is the second largest producer of sugar in the world. Sugarcane provides sugar, biofuel, fiber, fertilizer and myriad of byproducts. It is also a renewable and natural agricultural resource. Gur and Khandsari are also one of the major products. Several products become major sources of earning foreign exchange [1]. So, it plays a very important role in the economy of India as a major fraction in agro-economy. But from few years the sugarcane growers have been seen to be shifting over other crops due to several reasons [*2*]. Hence the output such as revenue and the foreign exchange associated are also suffering. Sugarcane growers which earlier solely were dependent on this cash crop outputs are now facing several fallacies**.** There is need to make an attempt to throw focus on relationships among socio-economic and technological variables, which have significant implications for agricultural development and for the people who are dependent on agriculture [3]. All over results show decline in sugar factories all over the country resulting in unemployment. So, it becomes necessary to look into the very respective arena. Therefore, the present study is being framed with the objective of studying the constraints associated with the sugarcane cultivation in district Sant Kabir Nagar.

2. METHODOLOGY

2.1 Sampling Design

The multistage stratified, purposive cum random sampling procedure was used for the selection of district, block, village and respondents.

2.2 Selection of District

The district Sant Kabir Nagar was selected purposively in order to avoid operational inconvenience of the investigator.

2.3 Selection of Blocks

At first, a list of all 9 blocks of Sant Kabir Nagar district of Uttar Pradesh along with acreage in field sugarcane cultivation were prepared. The block namely “Haisar” was selected purposively for this study.

2.4 Selection of Villages

A list of all the villages falling under Haisar block was prepared and 5 villages were selected randomly from this list.

2.5 Selection of Respondents

A separate list of all growers of sugarcane was prepared along with their holding size. From this list so prepared, 100 producers were selected through proportionate random sampling technique.

2.5.1 Method of enquiry and collection of data

The primary data were collected by survey method through personal interview with use of pre-structured and pre-tested schedule, while secondary data were collected from Vikash Bhawan, Department of Agriculture at Block and District head quarter, journals, reports, books and internet etc.

2.6 Techniques of Analysis

2.6.1 Analytical tools

For the interpretation of data simple tabular analysis like Garrett ranking technique for constraints analysis were applied for analysis of data and interpretation of result.

2.6.2 Averages

$$\overline{X} = \frac{\sum X}{N}$$

Where,

X= Value of variable
N= Number of observation
Percentage = Simple comparisons have been made on the basis of percentage.

2.7 Garrett Ranking

Garrett’s ranking technique was used to rank the constraints faced by respondents in production of sugarcane. Initially, the rank given by the respondents were changed to percent position using the following formula:

$$\text{Percent position} = \frac{100\,(Rij) - 0.5}{Nj}$$

Where,

R_{ij} = Rank given for i^{th} constraints by j^{th} respondent,
N_j = Number of constraints ranked by j^{th} respondent.

The percent of rank, for a single constraint, was added up for total sample to give the overall per cent position of that constraint. The overall per

cent position thus calculated divided by the number of respondents in order to derive the average per cent position, which was then converted to score by reforming to the transmutation table given by Garrett's value. The ranks were finally assigned by arranging the score in descending orders.

3. RESULTS

The perusal of the Table 1 reveals the constraints associated in the sugarcane production. The Garrett's score of 74.30 (Rank I) the major constraint was problem of technical knowledge. The results showed that61.46 percent of the producers faced the problem in availability of human and machinery labour in peak time and this constraint was ranked II. It was also observed among the producers that the seed availability in time was not found and identified as the major constraints and their Garrett's score was 56.88 with rank III. The poor facility of irrigation was ranked IV as the most impeding constraint. The difficult finance facility was ranked V^{th} and score was 55.05, another important constraint faced by farmer producers. Quality seed unavailability was also the main constraints due to which farmers face productivity depression, with Garrett's score 47.70 and ranked VI^{th}. In the case of plant protection chemicals, lack of their usage was found due to higher cost was constraint with Garrett's score 45.90 (Rank VII). With Garrett's score of 42.15 and rank as $VIII^{th}$ constraint faced by producers was blue bull which destroy the crop either feeding at early stages or by sheltering in them and unavailability of NPK optimum doses to the crops was found to be constraint by producers having Garrett's score of 36.99 and rank was IX^{th}. Whereas, Garrett's score of 23.55 was the constraint of natural calamity and rank was X^{th}. Agriculture producers in the study area were mostly devoid of the technical skills, better and advance farming practices to further improve their practices.

4. DISCUSSION

4.1 Unavailability of Seeds in Time

Better seeds as a better input can enhance the production and productivity. Farmers either do not have knowledge of improved seeds or are unable to reach the desirable seeds. So, it becomes a major drawback in case of the sugarcane growers [4] Seeds of desired quality was found one of the major constraints associated with cultivars in the area studied. Since, majority of the growers use the prior last season cane stalks; due to unawareness and unavailability of improved varieties.

4.1.1 Unavailability of human and machinery labor in peak time

It was found that during the peak time in locality labors are engaged here and there for daily wages due to majority of them belonging to marginal class. And labors from different regions far from locality will cause extra and more charges which will not be affordable to the producers [5,6]. So, it falls as a constraint in sugarcane cultivation.

4.2 Irrigation Facility

Although the study area has plenty of water resources due to the region falling by river aside. But for irrigation marginal farmers which are in majority can't afford pump sets and submersibles. Sugarcane crop requires irrigation very timely and its failure can cause severe impact on production and finally on returns. So, inadequacy of water for irrigation at required time can be seen as encountered constraint [4].

4.2.1 Unavailability of finance facility

Banks do not provide easy procedural loan to the farmers so they feel typical in approaching the final credit to their accounts due to lots of paper works. Mostly small and medium farmers approach for the credits. Constraints like agriculture credit – Extent of and access to Institutional Credit are associated with almost all the farms in India (*Kumar R.*). Inadequate credit is identified as the major contraint of sugarcane production [*7*]. So, in the study area the finance facility is seen as the constraints in cultivation of sugarcane.

4.2.2 Unavailability of NPK dose

Fertilizers are used consistently by the farmers, but are not possible for all of them as well as their excess use due to improper practices also deniable and act as constraint [5]. Marginal ones mostly depend on the fertility gained by natural procedures and by crop rotations [4] So, this corollary also falls as constraints in farming pactices, especially when cash crop are concerned.

Table 1. Constraints associated with the sugarcane production

S.No.	Constraints	Percent position	Garret value	Total score	Average score	Rank
1	Unavailability of seeds in time	5	82	5688	56.88	III
2	Unavailability of human and machinery labor in peak time	15	70	6146	61.46	II
3	Irrigation facility	25	63	5547	55.47	IV
4	Unavailability of finance facility	35	58	5505	55.05	V
5	Unavailability of NPK dose	45	52	3644	36.44	IX
6	Unavailability of PP chemicals	55	48	4590	45.90	VII
7	Unavailability of quality seeds (HYV)	65	42	4770	47.70	VI
8	Problem of Blue Bull	75	36	4215	42.15	VIII
9	Problem of technical knowledge	85	29	7340	73.40	I
10	Natural calamity	95	18	2355	23.55	X

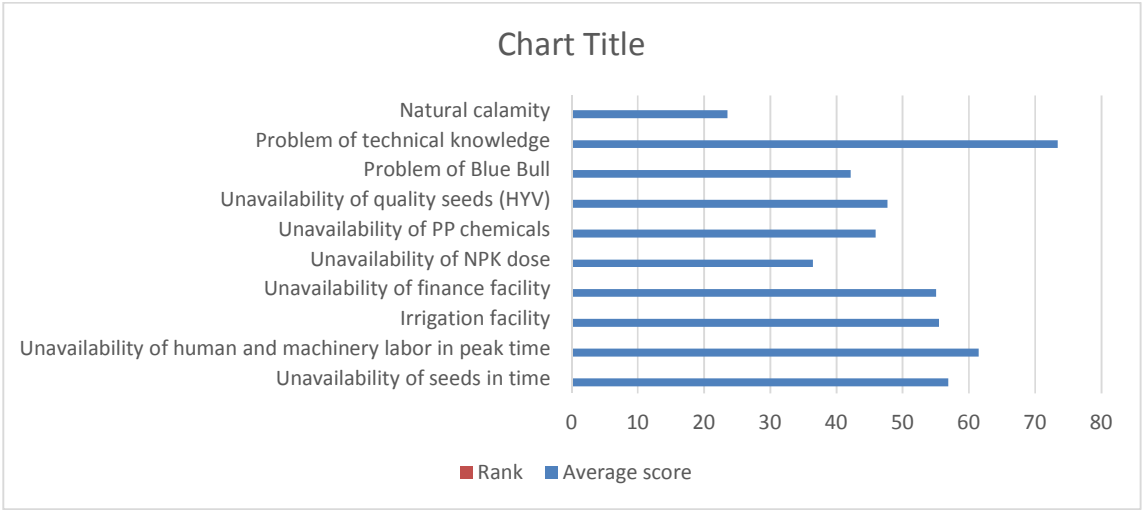

Fig. 1. Graphical presentation showing labor constraints

4.2.3 Unavailability of plant protection chemicals

PP chemicals were seen as almost negative in trends in the study area. Only the farmers stable in economic condition can be seen affording it. So, it is a constraint related to producers of sugarcane. One of the constraints encountered by most of the respondents in the adoption of sugarcane production technology is high cost of pesticides and lack of knowledge to use them in the area [4].

4.2.4 Problem of blue bull

It falls under natural constraint. The study area poses a lot of straw blue bulls which damage the crops during growth and also use them for hiding purpose. It was found as a constraint when studied.

4.3 Problem of Technical Knowledge

Although KVKs and Universities says that skills and trainings, improved varieties are being provided to the farmers either by calling them or by approaching them in villages. But the ground reality was found that none of the above is reaching the farmers efficiently. Technical knowledge includes ability to access input use efficiency, market knowledge, mechanized practices and many more. All this if unable to manage and understand becomes constraints and falls as decrease in returns on the producers pocket [2,3]. It was the major concerned constraint associated.

4.4 Natural Calamity

This was found at the last rank in the study. As it is rare in nature and falls very rarely on the crops but it is not avoidable and should be considered as it has a disastrous nature. Therefore, it is also considered as a constraint in case of cash crop sugarcane growers.

5. CONCLUSION

Lack of technical knowledge was found as the first rank followed by labor constraints in peak time at the second position. Seeds unavailability at the third rank and rest of all the constraints consequently. These constraints are leading the majority of sugarcane growers shifting towards other crops. Hence, proper remedies should be imposed in rural societies so that, this decline of major economic crop should be controlled.

SUGGESTIONS

1. Time to time updating producers with hybrid and improved varieties, advance practices, management of produce etc. should be introduced.
2. Flow of Credit and its processing should be easy going and to each and every door.
3. Farmers should be taught and trained to modern implements and machinery and their used to and also management of nutrients in the fields.

CONSENT

As per international standard or university standard, respondents' written consent has been collected and preserved by the author(s).

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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