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Application of garret ranking technique in studying the problems of mushroom production and marketing in Bilaspur district of Chhattisgarh

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Abstract
The study was conducted in Bilaspur district of Chhattisgarh during the year 2022-23 to 2023-24, had analysed the constraints of mushroom on different categories of farmers. The calculate of Garret value and ranking of problems faced by mushroom farmers are shown below. The majority of production reported the constraints *viz.* Difficulty in maintenance of temperature and humidity which is highest among all the constraints contributes (55.88 percent) which holds rank Ist under Garett ranking, lack of knowledge about mushroom production (53.00 percent), lack of good quality of spawn (50.13 percent), lack of proper spawn mixing (46.75 percent) and lack of skilled human labour (44.25 percent), was the most important constraint faced by the farmers. The calculation of garret value and ranking of problems faced by mushroom farmers are shown below. The majority of marketing reported the constraints *viz.* poor marketing facility which is highest among all the constraints contributes (52.25 percent) which holds rank Ist under Garett ranking, lack of storage facilities (52.00 percent), Lack of aware about mushroom processing products (51.75 percent), lack of advertisement (49.88 percent) and unawareness about mushroom value (44.13) was the most important constraint faced by the farmers.

Keywords: Constraints, garret value and garret ranking

1. Introduction

Mushroom cultivation is now one of the major sources of income for farmers of many states like Haryana, Uttar Pradesh, Punjab, Uttarakhand, Himachal Pradesh, and Tamil Nadu. In India, Punjab contributes 14 percent to mushroom production followed by Haryana, Odisha, Maharashtra, Uttarakhand, and Tamil Nadu [7, 3]. At present, the total mushroom production in India is approximately 0.13 million tons. From 2010-2017, the mushroom industry in India has registered an average growth rate of 4.3% per annum. Out of the total mushroom produced, white button mushroom share is 73% followed by oyster mushroom (16%), paddy straw mushroom (7%) and milky mushroom (3%). Compared to other vegetables; per capita consumption of mushrooms in India is meagre and data indicates it is less than 100 grams per year [7, 3]. Chhattisgarh state was major growing area of mushroom, In Chhattisgarh plain zone was Mahasamund district mushroom growers very skilled and higher production, Bilaspur, Raipur district large no of mushroom retailer and wholesaler present. Baster plateau zone was different species of mushroom found and production was high. Mushroom production has been highly profitable for farmers, women and youth in Chhattisgarh and like subsidiary occupation to get extra profit [12].

2. Materials and Methods

The study was carried out in Bilaspur district of Chhattisgarh. Primary data were collected from the farmers particularly engaged in mushroom cultivation in the area. The study incorporated questionnaires as a tool to engage with the farmers. The questionnaires were used in the form of interview keeping in mind the literacy gap in the farmers. Information regarding the problems faced by the farmers in mushroom cultivation was procured. Farmers were asked to rank the problems faced by them based on their experiences. Quantitative approach to study the ranking was used as the methodology.

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Garrett's Ranking Technique was applied to study the preference, change of orders of constraints and advantages into numerical scores. The prime advantage of this technique over simple frequency distribution is that the constraints are arranged based on their severity from the point of view of respondents. Hence, the same number of respondents on two or more constraints may have given different rank.

2.1 The garret's ranking technique
An attempt is made to recognize the problems faced by the growers in the cultivation of mushroom. The identified problems of growers in the cultivation of mushroom are ranked by making use of Garrett's Ranking Technique [1, 4, 8]. The technique was used to rank the preference mentioned by the respondents on different factors and aspects of the cultivation process. It is used to find the most significant factor which had influenced the respondent in their practices. Founded on the Garret's Ranking technique, the study had the respondents rank different problems and outcome based on their impact thereby converting into score value and rank with the help of the following formula:

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

Where,
R_{ij} = Rank given for the ith item (1,2, 3…., ith)
N_j = Number of items ranked by the jth individual (1.2, 3…., jth)

With the help of Garrett's Table, the percent position estimated is converted into scores by referring to the table given by Garret and Woodworth (1969) [1, 10]. Then for each factor, the scores of each individual are added and then total value of scores and mean values of score is calculated. The factors having highest mean value is considered to be the most important factor. Below is the tabular representation of the problems faced by the mushroom cultivating farmers in Bilaspur. The table is a random categorization of the problems found during personal interviewing and with the help of questionnaires. The table shows the preference and ranking of problems faced by farmers engaged in mushroom production and marketing.

3. Results and Discussion
3.1 Constraints faced by growers in production of mushroom
The study area were constraints faced by growers in production of mushroom following steps:

3.1.1 The rank given by the respondents
The survey aimed to identify the primary constraints faced by respondents in mushroom production, with respondents ranking five key issues. The survey results revealed significant insights into the constraints faced by mushroom producers. The constraint ranked most frequently as the top priority was the lack of knowledge about mushroom production, with 17 respondents ranking it first. This highlighted a critical area for intervention, as the majority of respondents considered it the most pressing issue [1, 3].

Following this, the difficulty in maintenance of temperature and humidity emerged as another major concern. It received the second-highest number of first-rankings (8) and the highest number of second-rankings (16). This indicated that while it may not have been the primary issue for most, it was a significant secondary concern.

The lack of proper spawn mixing was ranked first by 10 respondents, suggesting that while it was a critical issue for some, it was not as widespread a concern as the top two constraints. This was further evidenced by the 14 respondents who ranked it fifth, indicating that many did not see it as a primary issue.

In conclusion, the survey indicated that the primary areas needing attention were improving knowledge about mushroom production and better managing environmental conditions. Addressing these issues could significantly enhance mushroom production efficiency. Additionally, ensuring the availability of good quality spawn and skilled labour, along with proper spawn mixing techniques, would further better production.

Table 1: The rank given by the respondents

S. No.	Constraints	Rank given by respondents				
		1st	2nd	3rd	4th	5th
1	Lack of good quality of spawn	5	12	8	9	6
2	Difficulty in maintenance of temperature and humidity	8	16	11	0	5
3	Lack of skilled human labour	0	9	11	12	8
4	Lack of knowledge about mushroom production	17	0	3	13	7
5	Lack of proper spawn mixing	10	3	7	6	14

Source: Field survey 2023-24

3.1.2 The percent positions and garret values
The garret ranks were calculated by using appropriate garret ranking formula. The based on the garret ranks, the garret value was calculated. The garret tables and scores of each problem in the above table, and multiplied to records scores in next table, finally by adding each row, the total garret score was obtained [1].

Table 2: The percent positions and garret values

S. No.	100(Rij-0.5)/ Nj	Calculated value	Garret value
1	100(1-0.5)/5	10	75
2	100(2-0.5)/5	30	60
3	100(3-0.5)/5	50	50
4	100(4-0.5)/5	70	40
5	100(5-0.5)/5	90	25

3.1.3 The calculation of garret value and ranking
The production of mushroom is largely influenced by the constraints faced by farmers. An interview schedule was developed consisting was identified constraints. The present study revealed five constraints as reported by farmers were categorized under production of mushroom constraints. The calculate of Garret value and ranking of problems faced by mushroom farmers are shown below Table 3.
The majority of production reported the constraints *viz.*

Difficulty in maintenance of temperature and humidity which is highest among all the constraints contributes (55.88 percent) which holds rank Ist under Garett ranking, lack of knowledge about mushroom production (53.00 percent), lack of good quality of spawn (50.13 percent), lack of proper spawn mixing (46.75 percent) and lack of skilled human labour (44.25 percent), was the most important constraint faced by the farmers [6, 8, 9].

Table 3: The calculation of garret value and ranking

| S. No.	Constraints	Rank given by respondents					Total	Average	Rank
		1st	2nd	3rd	4th	5th			
1	Lack of good quality of spawn	375	720	400	360	150	2005	50.13	III
2	Difficulty in maintenance of temperature and humidity	600	960	550	0	125	2235	55.88	I
3	Lack of skilled human labour	0	540	550	480	200	1770	44.25	V
4	Lack of knowledge about mushroom production	1275	0	150	520	175	2120	53.00	II
5	Lack of proper spawn mixing	750	180	350	240	350	1870	46.75	IV
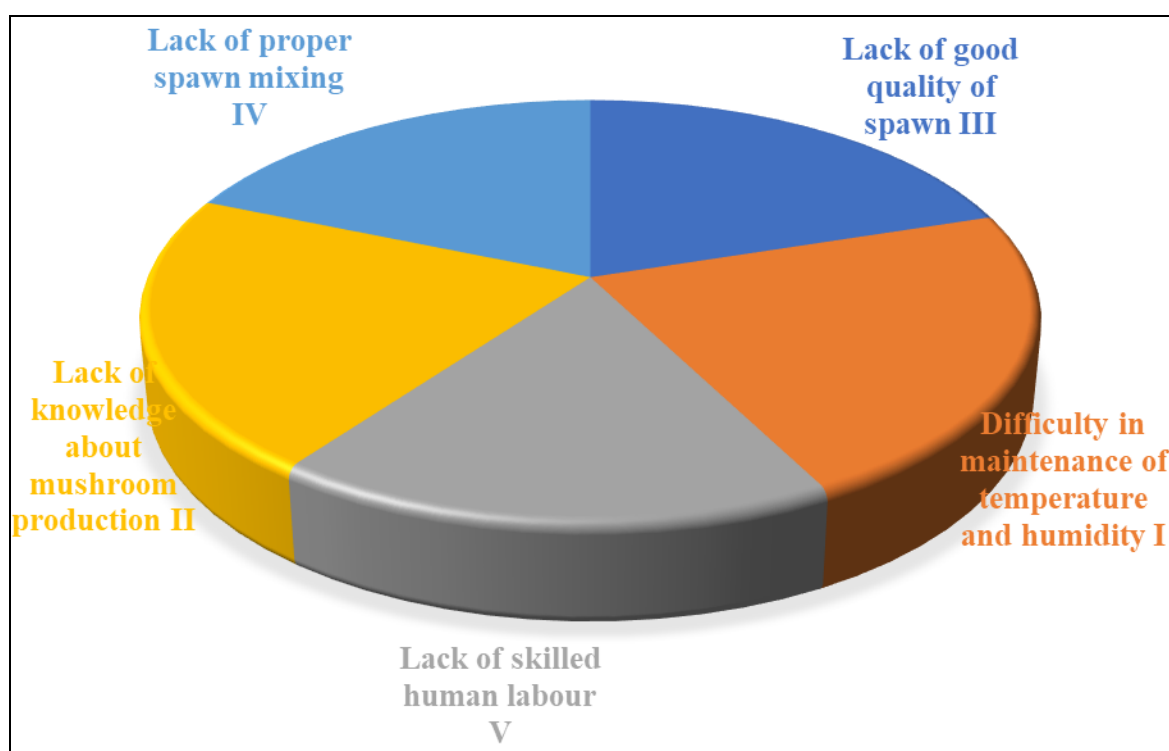
Fig 1: Ranking of production constraints in mushroom at Bilaspur district

3.2 Constraints faced by growers in marketing of mushroom
The study area were constraints faced by growers in marketing of mushroom following steps.

3.2.1 The rank given by the respondents
The study aimed to identify and rank the major constraints faced by mushroom growers in the Bilaspur district concerning the cultivation and marketing of mushrooms. Based on the responses gathered, table 4. summarized the ranking of five key constraints as identified by the respondents. The constraint of poor marketing facilities was identified as a significant barrier, receiving the highest number of first-place rankings (10 respondents). This indicated that many mushroom growers in the Bilaspur district faced considerable challenges in accessing effective marketing channels. The lack of adequate marketing infrastructure led to difficulties in reaching potential buyers and obtaining fair prices for their produce. This issue underscored the necessity for improved market linkages and support services that could facilitate better market access for small-scale

mushroom farmers [1].
Lack of storage facility emerged as another critical constraint, with 14 respondents ranking it second and 8 ranking it first. The absence of proper storage facilities was a significant issue given the highly perishable nature of mushrooms. Without adequate storage, farmers were forced to sell their produce immediately, often at lower prices, to avoid spoilage. This problem not only led to financial losses but also limited the ability of farmers to participate in more lucrative markets where longer-term storage might be required [13].
The lack of awareness about mushroom processing products was ranked first by 12 respondents, highlighting a substantial gap in knowledge regarding value-added products derived from mushrooms. This constraint reflected a missed opportunity for mushroom growers to diversify their income streams through the production and sale of processed mushroom products, such as dried mushrooms, mushroom powders, and other value-added items. Enhancing awareness and providing training on mushroom processing could have helped growers to capitalize

on this untapped market potential [11, 12].

The findings highlighted critical areas where interventions were needed to support mushroom growers in Bilaspur. Improving marketing infrastructure, expanding storage facilities, raising awareness about mushroom processing and value, and

enhancing advertising efforts were pivotal for overcoming the identified constraints. Addressing these challenges could facilitate better market access, reduce post-harvest losses, and increase the profitability of mushroom farming.

Table 4: The rank given by respondents

S. No.	Constraints	Rank given by respondents				
		1st	2nd	3rd	4th	5th
1	Poor marketing facilities	10	5	11	8	6
2	Lack of storage facility	8	14	8	0	10
3	Lack of aware about mushroom processing products	12	9	0	11	8
4	Unawareness about mushroom value	4	0	13	16	7
5	Lack of advertisement	6	12	8	5	9

Source: Field survey 2023-24

3.2.2 The percent positions and garret values
The garret ranks were calculated by using appropriate garret ranking formula. The based on the garret ranks, the garret value was calculated. The garret tables and scores of each problem in the above table, and multiplied to records scores in next table, finally by adding each row, the total garret score was obtained [1].

Table 5: The percent positions and garret values

S. No.	100(Rij-0.5)/ Nj	Calculated value	Garret value
1	100(1-0.5)/5	10	75
2	100(2-0.5)/5	30	60
3	100(3-0.5)/5	50	50
4	100(4-0.5)/5	70	40
5	100(5-0.5)/5	90	25

3.2.3 Calculation of garret value and ranking
The marketing of mushroom is largely influenced by the constraints faced by farmers. An interview schedule was developed consisting was identified constraints. The present study revealed five constraints as reported by farmers were categorized under marketing of mushroom constraints. The calculation of garret value and ranking of problems faced by mushroom farmers are shown below Table 6.

The majority of marketing reported the constraints *viz.* poor marketing facility which is highest among all the constraints contributes (52.25 percent) which holds rank Ist under Garett ranking, lack of storage facilities (52.00 percent), Lack of aware about mushroom processing products (51.75 percent), lack of advertisement (49.88 percent) and unawareness about mushroom value (44.13) was the most important constraint faced by the farmers [6, 8, 9].

Table 6: The calculation of garret value and ranking

| S. No.	Constraints	Rank given by respondents							
		1st	2nd	3rd	4th	5th	Total	Average	Rank
1	Lack of aware about mushroom processing products	750	300	550	320	150	2070	51.75	III
2	Poor marketing facilities	600	840	400	0	250	2090	52.25	I
3	Lack of storage facility	900	540	0	440	200	2080	52.00	II
4	Unawareness about mushroom value	300	0	650	640	175	1765	44.13	V
5	Lack of advertisement	450	720	400	200	225	1995	49.88	IV
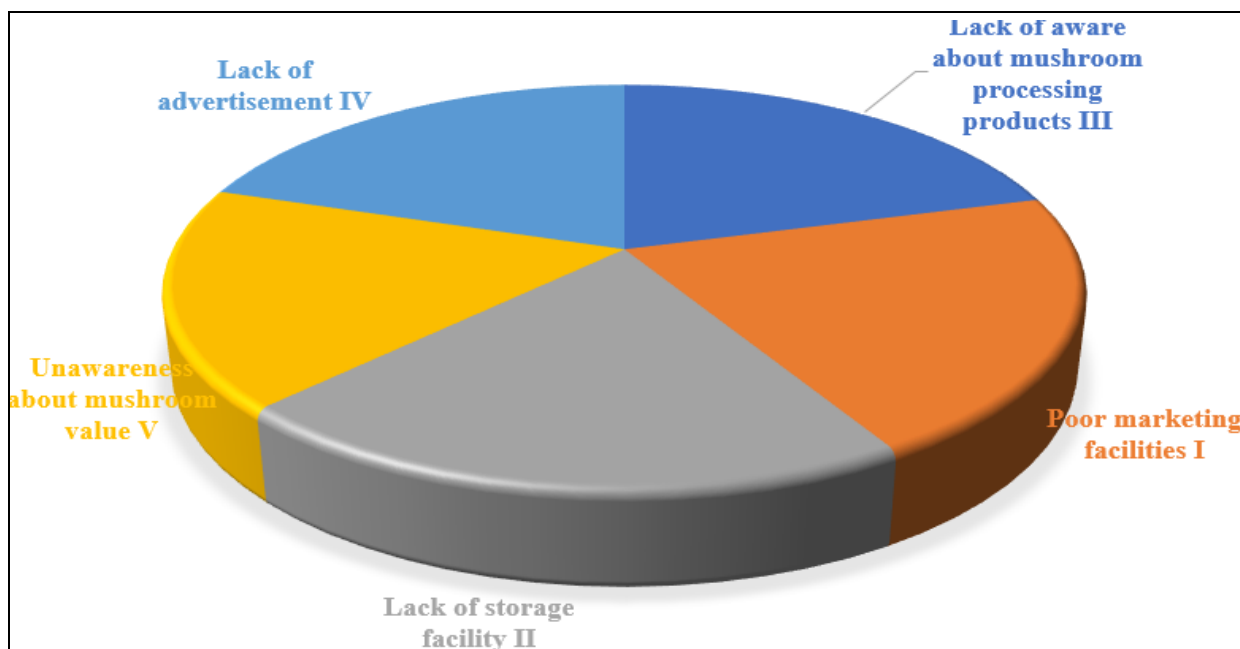
Fig 2: Ranking of marketing constraints in mushroom at Bilaspur district

Conclusions

The calculate of Garret value and ranking of problems faced by mushroom farmers are shown below. The majority of production reported the constraints *viz.* Difficulty in maintenance of temperature and humidity which is highest among all the constraints contributes (55.88 percent) which holds rank Ist under Garett ranking, lack of knowledge about mushroom production (53.00 percent), lack of good quality of spawn (50.13 percent), lack of proper spawn mixing (46.75 percent) and lack of skilled human labour (44.25 percent), was the most important constraint faced by the farmers. The calculation of garret value and ranking of problems faced by mushroom farmers are shown below. The majority of marketing reported the constraints *viz.* poor marketing facility which is highest among all the constraints contributes (52.25 percent) which holds rank Ist under Garett ranking, lack of storage facilities (52.00 percent), Lack of aware about mushroom processing products (51.75 percent), lack of advertisement (49.88 percent) and unawareness about mushroom value (44.13) was the most important constraint faced by the farmers.

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