KNOWLEDGE OF WHEAT GROWERS REGARDING IMPROVED WHEAT PRODUCTION TECHNOLOGY IN JAMUI DISTRICT OF BIHAR

ABSTRACT

Wheat (*Triticum aestivum L.*) is a major cereal crop that plays a crucial role in ensuring food security in India. This study aimed to assess the knowledge level of wheat growers regarding improved wheat production technologies in Jamui district of Bihar. A multistage random sampling technique was employed to select a sample of 120 respondents from 12 villages across two blocks. Primary data were collected through personal interviews using a pre-structured interview schedule. The results revealed that 56.66% of the respondents possessed a medium level of knowledge, while 25% had low knowledge, and 18.34% had high knowledge. Farmers exhibited the highest knowledge regarding sowing time (90.56%), irrigation management (88%), and harvesting (75.34%). Practices like plant growth regulators (45.37%) and intercropping (56.76%) had relatively lower knowledge levels. Correlation analysis showed that variables like age, caste, education, risk orientation, scientific orientation, and extension contact had a significant positive correlation with knowledge level. Annual income, marital status, land holding, family type, and family size exhibited a positive but statistically insignificant correlation, while economic motivation showed a negative correlation with knowledge level.The study highlights the need for strengthening extension services, educational programs, and promoting scientific orientation and risk-taking ability among farmers to enhance their knowledge and facilitate the adoption of improved wheat production technologies, ultimately leading to increased productivity in the region.

INTRODUCTION

Wheat (*Triticum aestivum L.)* is one of the world's most extensively cultivated cereal crops, surpassed only by maize and rice (FAOSTAT, 2020). It serves as a staple food for approximately 40% of the global population (Giraldo et al., 2019). In India, wheat cultivation plays a crucial role in ensuring food security, with the country being one of the leading producers globally. The three major species of wheat cultivated in India are Triticum aestivum (bread wheat), Triticum durum (macaroni wheat), and Triticum dicoccum (Emmer

or Khapli wheat), contributing 95%, 4%, and 1% to the total wheat production, respectively (Singh et al., 2012).Understanding the morphological characteristics of the wheat plant, such as its root system, stem, leaves, inflorescence, and seed structure, is crucial for effective cultivation and management practices. Wheat has two distinct types of roots: seminal roots, originating from the germination of seedlings, and crown roots, also known as clonal roots, arising from the basal node of the plant (Singh et al., 2012).Wheat is a highly adaptable crop, capable of thriving in various soil conditions and climates, making it suitable for bread production and as a dietary staple (Al-Erwy et al., 2016). Its cultivation originated during the Neolithic Revolution, approximately 10,000 years ago, when humans transitioned from hunting and gathering to sedentary agriculture (Giraldo et al., 2019).

Bihar, a state located in the Indo-Gangetic plains, is an important contributor to India's wheat production. In the agricultural year 2020-21, Bihar recorded a wheat production of 6.76 million tonnes from an area of 2.07 million hectares, with a productivity of 3.27 tonnes per hectare (Directorate of Economics and Statistics, Govt. of Bihar, 2021). Jamui District, situated in the eastern part of Bihar, has a total cultivable area of 102,000 hectares, with wheat being one of the major Rabi crops grown in the region (Krishi Vigyan Kendra, Jamui, 2022)Wheat cultivation in Jamui District benefits from the tropical and subtropical conditions of the region. However, despite its potential, the district faces challenges in achieving optimal wheat yields, which can be attributed to various factors, including variations in fertilizer application, ineffective water management practices, and the prevalence of pests and diseases (Sendhil et al., 2014.

MATERIAL AND METHODS:

The present study was conducted in the Jamui district of Bihar (latitude 24°55'N & 23°74'N and longitude 86°13'E & 12°86'E) during the wheat growing season in 2023-2024. A multistage random sampling technique was employed to select the respondents. From the 10 blocks in Jamui, Jhajha and Gidhaur blocks were randomly selected. Five villages were randomly chosen from these two blocks, totaling 12 villages. Using proportional allocation, 12 wheat-growing farmers were randomly selected from each village, resulting in a total sample size of 120 respondents. Primary data were collected through personal interviews using a pre-structured interview schedule to gather information on the respondents' socio-economic characteristics, knowledge levels regarding improved wheat production technologies, and constraints faced in wheat cultivation. The collected data were coded, tabulated, and analyzed using the Statistical Package for Social Sciences (SPSS) software.

Descriptive statistics, such as frequency, percentage, mean, and standard deviation, were employed to summarize the data. Correlation analysis investigated the relationship between the independent variables and recommended practices' knowledgelevels.The knowledge level of farmers in adopting the recommended practices were ranked based on the mean score obtained for each statement.

RESULT AND DISCUSSION:

Table 1 Distribution of respondents according to their knowledge level. n=120

S.No.	Categories	f	%
1.	Low level (below 15)	30	25.00
2.	Medium level (16 to 25)	68	56.66
3.	High level (26above)	22	18.34
	Total	**120**	**100.00**

Mean= 16.28, S.D.= 1.6, Min.= 15, Max.= 26,

f= Frequency, **%**= Percentage

The data presented in Table 1 indicates that a majority of the wheat producers, specifically 56.66 percent, possessed a moderate level of knowledge. This was followed by 25.00 percent who had a low level of knowledge and 18.34 percent who had a high level of knowledge.

Table 2: Knowledge level of farmers regarding improved wheat practices

S. No.	Cultivation Practices	MPS	Rank
1.	Field preparation	71.00	IV
2.	High yielding varieties	68.00	VI
3.	Sowing time	**90.56**	**I**
4.	Spacing	63.00	IX
5.	Fertilizer application	63.67	VIII
6.	Irrigation management	**88.00**	**II**
7.	Plant growth regulator	45.37	XI
8.	Intercropping	56.76	X
9.	Weed management	69.00	V
10.	Plant protection measure	65.00	VII

11.	Harvesting	**75.34**	**III**

MPS = Mean Percent Score

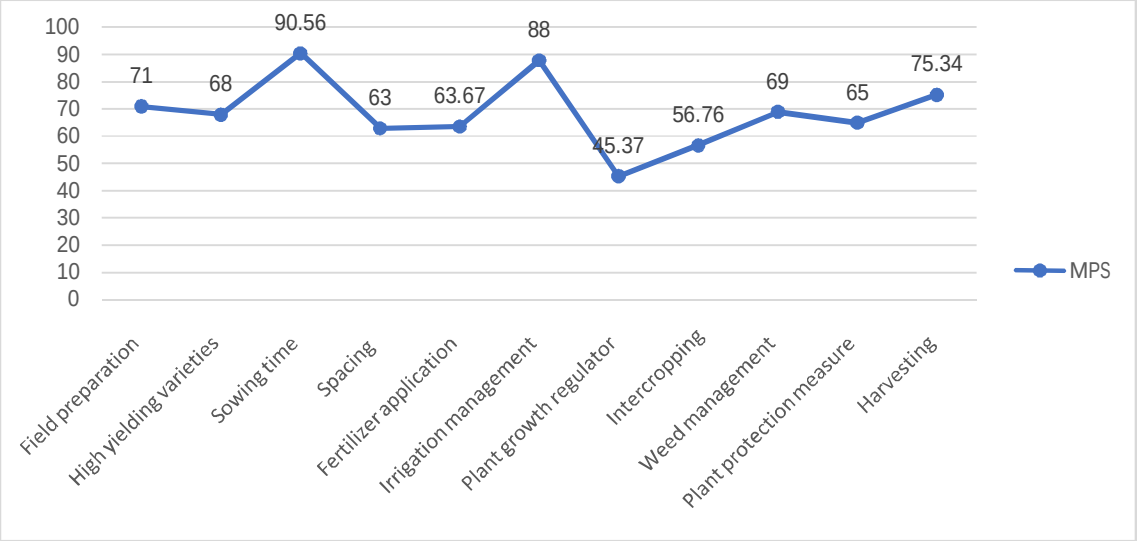

Figure 1: Shows the Knowledge level of farmers regarding various improved wheat practices

Based on the information presented in Table 2, the knowledge levels of eleven agricultural crop production methods were investigated. Regardingthe Mean Percentage Score (MPS), the sowing time obtained the greatest possible score of 90.56, so obtaining the top spot. In tight pursuit, irrigation management achieved an MPS of 88.00, which allowed them to secure the second spot. Because it received an MPS of 75.34, harvesting was ranked third on the list. Field preparation and weed management came in second and third, respectively, with MPS scores of 71.00 and 69.00, placing them in fourth and fifth place, respectively. It was determined that high-producing cultivars, which had an MPS of 68.00, secured the sixth seat. The plant protection measures, the application of fertilizer, and the spacing of plants achieved grades VII, VIII, and IX, respectively, with MPS values of 65.00, 63.67, and 63.00, the respective scores. After receiving MPS scores of 56.76 and 45.37, respectively, intercropping and plant growth regulators were positioned at positions X and XI, respectively. These two practices inhabited the lowest ranks.

Table3: Correlation coefficient between different variables and knowledge level of farmers regarding improved wheat production technology

S. No.	Variables	Correlation coefficient

1.	Age	0.600**
2.	Caste	0.420**
3.	Education	0.730**
4.	Annual income	0.111*
5.	Marital status	0.118*
6.	Land holding	0.100*
7.	Type of family	0.125*
8.	Size of family	0.78*
09.	Social participation	0.021^{NS}
10.	Risk orientation	0.635**
11.	Economic motivation	-0.035^{NS}
13.	Scientific orientation	0.396**
14.	Extension contacts	0.621**

***Statistically significant at a significance level of 0.05**
****Statistically significant at a significance level of 0.01**

According to the findings presented in Table 3, it can be observed that among the sixteen variables examined, namely age, caste, education, material ownership, risk orientation, scientific desire, and extended contact, a strong positive correlation was observed with knowledge level. The study revealed that variables such as annual income, marital status, land holding, type of family, size of family, and social involvement did not exhibit statistical significance. However, they did have a positive correlation with knowledge level. A lack of statistical significance and a negative correlation were observed between economic motivation and knowledge level. This implies that an increase in the value of these variables corresponds to an increase in the knowledge level of cultivation practices.

CONCLUSION

This study in Jamui district of Bihar assessed the knowledge levels of wheat growers regarding improved wheat production technologies. The results show that the majority of farmers possess moderate knowledge, with critical practices like sowing time, irrigation management, and harvesting being well understood. However, areas such as plant growth regulators and intercropping need more focus. Significant correlations were found between knowledge levels and factors like education, age, caste, risk orientation, and extension

contacts. To enhance wheat yields and achieve food security in the region, it is essential to implement targeted educational and extension programs that address these knowledge gaps and leverage influential factors.

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