Biological Forum – An International Journal 14(1): 904-907(2022)

ISSN No. (Print): 0975-1130
ISSN No. (Online): 2249-3239

A Study of the Technological Gap between different Categories of Wheat Growers in Hoshangabad, Harda and Sehore Districts of Madhya Pradesh

Mangi Lal Jat[1*], D. K. Jaiswal[2] and Y.S. Saharawat[3]
[1]P.G. Scholar, Department of Extension Education, JNKVV, Jabalpur, (Madhya Pradesh), India.
[2]Professor, Department of Extension Education, JNKVV, Jabalpur, (Madhya Pradesh), India.
[3]Principal Scientist and Program Manager, IFDC, (New Delhi), India.

(Corresponding author: Mangi Lal Jat)*
(Received 02 November 2021, Accepted 07 January, 2022)
(Published by Research Trend, Website: www.researchtrend.net)

ABSTRACT: Wheat is an important nutrient in our everyday diet. Despite the fact that farmers in northern India have been cultivating wheat for a long time, many do not have a thorough understanding of wheat and its new varieties production procedures. The present study was conducted to know the technological gap faced by wheat growers among different categories of farmers in Hoshangabad, Harda and Sehore districts of Madhya Pradesh. 324 wheat growers, 9 farmers (3 big, 3 medium and 3 small farmers) were selected randomly from each (thirty-six) selected village of nine blocks of Hosangabad, Hadra and Sehore districts (M.P.). In terms of technological gap, the farmers of three categories, namely small, medium, and big farmers, differ. It is clear from that in case of small farmers 20.37 percent had low technological gap, 38.88 per cent medium and 40.74 percent farmers were in high technological gap. Of the medium farmers categories 37.96 per cent had low, 12.03 per cent medium and 50.00 percent had high where as incase of big farmers categories 50.00 had low, none farmers was found in medium farmers and 50.00 per cent in high technological gap. The overall technological gap of farmers 46.91 per cent were in high, 36.11 per cent in low and 16.97 percent were in medium technological gap. According to the combined statistics, 41.66 percent of wheat-growers had a medium degree of adoption of recommended wheat production techniques, followed by low (33.95 percent) and high (50 percent) adoption (24.38 percent). As a result of the data, it can be deduced that a greater percentage of wheat producers used suggested wheat production technique at a medium to high level.

Keywords: Wheat growers; Technology Gap; Adoption; Category of Farmers, Malwa Region

INTRODUCTION

For the majority of the world's population, wheat (*Triticum aestivum*) is an important and strategic cereal crop. It is about two billion people's most important staple food (36 percent of the world population). It outnumbers all other grain crops in terms of acreage and production (including rice, maize, and others) and is thus the world's most important cereal grain crop. In the majority of countries, wheat is the most important source of carbohydrates. Wheat has a wide range of minerals, vitamins, and fats (lipids). The wheat-based meal can be made more nutritious by adding a small amount of animal or legume protein. Wheat is grown on 30.60 million hectares in India, with a total production of 98.38 million tonnes and an average yield of 3216 kg/hectare (DAC & FM, 2017), and on 6.03 million hectares in Madhya Pradesh, with a total production of 17.94 million tonnes and an average yield of 2976 kg/ha (DAC & FM, 2017); (FWADD, 2017). Wheat is produced on 0.26 million hectares in Hoshangabad district, with a total production of 1.11 million tonnes and an average yield of 4440 kg/hectare (FWADD, 2017). Wheat is produced on 0.17 million hectares in the Harda district, with a total production of 0.66 million tonnes and an average yield of 3843 kg/hectare (FWADD, 2017). Wheat is produced on 0.25 million hectares in Sehore district, with a total production of 0.90 million tonnes and an average yield of 3645 kg/hectare (FWADD, 2017). Given the importance of the wheat crop, it is critical to investigate it from many perspectives so that we may gain a greater understanding of it, which will aid our research system in improving the production and efficiency of our agricultural sector. Our agricultural system in our nation is primarily organized into three components: research, education, and extension (ICAR handbook of agriculture). Extension plays an important role in bridging the gap between farmers and research, as evidenced by the late 1960s green revolution programmes' effectiveness. At the national, state district, sub-division, block, and village levels, the extension service has a large network of professional extension workers. Throughout the country, several programmes aimed at enhancing farmer knowledge and inspiring them to use new technologies is in place. However, there is still a significant gap between the technology available to researchers in research institutes and its implementation in farmer's fields, particularly in wheat. Farmers' adoption of improved wheat crop technology is uneven for a variety of reasons, including a lack of mechanization, a lack of quality seeds, a lack of irrigation facilities, and a lack of market facilities (Shitu *et al.,* 2018). As a result, the purpose of this research was to look into the different types of wheat growers. So this study was designed to study the technological gap faced by wheat growers among different categories of farmers in Malwa region of Madhya Pradesh.

RESEARCH METHODOLOGY

This study used an ex post facto research design. This study was conducted in the Madhya Pradesh districts of Hoshangabad, Harda, and Sehore in 2018-19 to determine the technical gap amongst wheat growers of various categories. On the basis of the highest area covered by wheat crop, a total of 36 villages were selected using a stratified random sample approach from 9 blocks: Hoshangabad, Pipariya, Itarsi, Harda, Timarni, Khirkiya, Sehore, Ichhawar, and Narsullaganj (4 villages from each block). A total of 324 wheat growers and 9 farmers (3 large, 3 medium, and 3 small farmers) were chosen at random from each of the study's villages. The primary data was acquired through group discussion and a pre-tested interview schedule based on the study's goals. It refers to the difference between what is advised and what is actually used by a person. For calculating the technical gap, eight wheat production technologies were considered: field preparation, seed and sowing management, fertilizer management, irrigation management, weed management, plant protection management, harvesting management, and wheat storage facilities. Respondents were grouped into low (21 to 26.11), medium (26.12 to 30.55), and high (30.56 to 35) based on their technology gap index scores, which were assigned 1, 2, and 3 correspondingly.

Technological gap index (TGI) $= \frac{R-A}{R} \times 100$

Where,

R = Maximum possible score of adoption that a respondent could get.

A = Actual score of adoption of technology by a respondent.

Complete, partial, and no adoption responses were recorded on a three-point continuum and given 3, 2, and 1 scores, respectively, to assess the amount of adoption. Respondents were grouped into low (25 to 28.33), medium (28.34 to 31.66), and high (31.67 to 35) based on their scores, which were assigned 1, 2, and 3 correspondingly.

RESULTS AND DISCUSSION

The degree to which technologies have not been embraced is determined through gap analysis. This feedback data is critical for identifying the program's weaknesses, eliminating bottlenecks, and speeding up adoption. The discrepancy between the suggested package of practices and the actual knowledge of the practices held by the respondents in the field was operational zed as the technological gap in recommended wheat manufacturing technology. The purpose of the study was to determine the amount of technology gaps between different types of farmers and to devise a plan to close such gaps. The information in Table 1 shows the distribution of different types of farmers based on their wheat crop technology gaps. According to data, farmers' complete technical gap may be bridged by translating. The table shows that among small farmers, 20.37 percent had a low technology difference, 38.88 percent had a medium technological gap, and 40.74 percent had a high technological disparity. In the case of medium farmers, 37.96% had a low, 12.03 percent had a medium, and 50.00 percent had a high technical gap, but in the case of big farmers, 50.00 had a low, none had a medium farmer, and 50.00 percent had a high technological gap. Overall, 46.91 percent of farmers had a high technology gap, 36.11 percent had a low technological gap, and 16.97 percent had a medium technological difference. This result is supported with the study of Raut (2014), Nirwan (2016), Choudhari (2011), Dubolia and Jaiswal (2000), Kadam *et al*. (2010), Machhar *et al*. (2015), Patel and Vyas (2014), Patel and Padheria (2010), Roy *et al.* (2013), Sharma *et al.* (2018) and Singh *et al.* (2018).

Table 1: Percentage distribution of different categories of farmers on the basis of their technological gap.

Sr. No.	Categories	Small farmers n- 108	Medium farmers n- 108	Big farmers n- 108	Overall farmers n- 324
		Freq.	Freq.	Freq.	Freq.
1.	Low (21.67 to 26.11)	22(20.37)	41(37.96)	54(50.00)	117(36.11)
2.	Medium (26.12 to 30.55)	42(38.88)	13(12.03)	-	55(16.97)
3.	High (30.56 to 35)	44(40.74)	54(50.00)	54(50.00)	152(46.91)
	Total	108(100.00)	108(100.00)	108(100.00)	324(100.00)

(Figures in parenthesis are percentage)

Results from Table 2 has revealed that in the case of small farmers, (41.66%) wheat-growers had medium level of adoption regarding recommended wheat production practices, followed by low (37.03%) and high (21.29%). In the case of medium farmers, (41.66%) wheat-growers had low adoption, followed by medium (32.40%) and high (25.92%) respectively. In the case of big farmers, 50.92%) wheat-growers had a medium level of adoption, followed by low (23.14%) and high (25.92%). All the pooled data has revealed that 41.66 per cent of the wheat-growers were had a medium level of adoption regarding recommended wheat production practices; followed by low (33.95%) and high (24.38%). Thus, it may be inferred from the data that the higher percentage of wheat growers had medium to high adoption level of recommended wheat production technology. The reason might be that, majority of the farmers had medium extension contact, medium material possession, medium economic motivation, medium scientific orientation and medium level of knowledge regarding recommended wheat production technology. Hence, all these factors might have influenced them to fall under the medium adoption category. Further, as the land holding and income increase naturally and they prove towards economical returns. The Extension programme may have played an effective role in changing the attitude, skill and knowledge of wheat growers toward recent technology for disease and pest management of wheat including their adoption. This result of this study is supported by the study of Kumar *et al.* (2012); Meena (2012); Painkra *et al.* (2014); Singh *et al.* (2014); Balaji and Manjunath (2011); Bhatia *et al.* (2011); Chinmalatpure *et al.* (2011); Kalpana Kumari *et al.* (2017); Lokesh Kumar Tinde et al. (2017); Patel *et al.* (2014); Maraddi *et al*. (2014); Rajashekhar *et al.* (2014); Sasane *et al.* (2012); Tengli and Sharma (2017); Wadekar (2013).

Table 2: Distribution of different categories of farmers on the basis of their adoption of recommended production practices by wheat growers

Sr. No.	Categories of adoption level	Frequencies of farmers			Overall Farmers
		Small Farmers	Medium Farmers	Big Farmers	
1.	Low (25 to 41)	40 (37.03)	45 (41.66)	25 (23.14)	110 (33.95)
2.	Medium (42 to 57)	45 (41.66)	35 (32.40)	55 (50.92)	135 (41.66)
3.	High (Above 57)	23 (21.29)	28 (25.92)	28 (25.92)	79 (24.38)
	Total	108 (100.00)	108 (100.00)	108 (100.00)	324 (100.00)

(Figures in parenthesis are percentage)

CONCLUSIONS

To close the gap, improved and low-cost technologies must be provided periodically through an extensive extension system with appropriate training programmers for all types of farmers. The majority of farmers have a difficulty with a lack of up-to-date information regarding wheat production technology. A new extension strategy should be adopted to build farmers' favorable attitudes toward scientific methods so that they comprehend the value of scientific suggestions and reap the benefits of their crops. It is critical to determine which components of technology farmers are able to keep and to what extent for effective technology transfer in agriculture today. As a result, it is imperative that the gap be bridged by adequate training in new innovation. As a result, a blanket advice for all types of farmers will not suffice. While planning any training programmed for the wheat producers in this region, particular needs and interests should be taken into account. Extension professionals will be aided in developing a suitable extension plan by knowing the gap between technology advocated and technology embraced by farmers. Overall, 46.91 percent of farmers had a high technology gap, 36.11 percent had a low technological gap, and 16.97 percent had a medium technological difference. Thus, it may be inferred from the data that the higher percentage of wheat growers had medium to high adoption level of recommended wheat production technology.

FUTURE SCOPE

This article focuses on wheat yield projections since these grains make up the majority of the human diet, and continuous yield increase is seen as the most important way to fulfil future world demand for food, feed, and fuel. We define farm yield (FY), achievable yield (AY, as determined by the best technology and sensible economics), and prospective yield (YP) for each location (PY, yield with the best varieties and agronomy and no manageable biotic or abiotic stresses). Progress in FY is determined by progress in PY and the gap between PY and FY (we express this gap as a percent of FY). Annual wheat yield gains (as a percentage of current yield) are presently barely around 1% globally, whereas this for percent. In the case of wheat, yields are declining in absolute terms (kg/ha/year) in emerging nations. Global demand modelling to 2050 suggests that yield growth rates will have a high real price sensitivity, with major price rises if present rates cannot be raised.

Acknowledgments. The authors appreciate the facility support provided by the Department of Extension Education, College of Agriculture, Jawaharlal Nehru Krishi Vishwa

Vidyalaya, Jabalpur, Madhaya Pradesh, India. Conflict of Interest. None.

Conflict of Interest. None.

REFERENCES

Balaji, J. and Manjunath (2011). Technological Gap in Adoption of Recommended Practices of Mango Cultivation. *Agric. Updat*, *6*(2): 38-41.

Bhatia, J. N., Devender, C. and Chauhan, R. S. (2011). Technological Gap in Adoption of Improved Mushroom Cultivation Practices in Haryana. *Agricultural Updates, 6*(3-4): 206-209.

Chinmalatpure, U. R., Bhugul, M. K. and Rajput, S. N. (2011). Technological Gap in Adoption of Dr. DKV Recommended Dry land technology. *Journal of Global Communication, 4*(2): 131-137.

Choudhari, R. P. (2011). Technological Gap in Rice Wheat Production System. *Indian Res. J. of Extn. Edn., 8*(10).

DAC&FM (2017). Agricultural Statistics at a Glance 2017.

Dubolia, S. R. and Jaiswal, P. K. (2000). Technological Gap of Groundnut Cultivation among Groundnut growers, *Maharashtra. J. of Agril. Sci.*, *19*: 216-217.

FWADD (2017). District Wise Area Production and Yield (2011-12).

Kadam, S. S., Thombare, B. M. and Mande, J. V. (2010). Technological Gap in Sugarcane Production Technology. *Journal Maharashtra Agriculture University*, *35*(3): 424-427.

Kalpana Kumari, Pyasi, V. K. and Sharma, A. (2017). Impact of Front Line Demonstration (FLD) on Area and Productivity of Wheat Growers in Jabalpur District of Madhya Pradesh, India. *Int. J. Curr. Microbiol. App. Sci., 6*(12): 2237-2242.

Kumar, A., Rathod, M. K. and Kalantri, L. B. (2012). Behaviour of Farmers in Adoption of Recommended Technology of Soybean. *Indian Research Journal of Extension Education, 2*: 223-227.

Lokesh Kumar Tinde, Arbind Kumar Sai, Kshitij Parmar, Deepak Hembram, Dibyendu Pal and Kushwaha, R. K. (2017). Socio-economic Characteristics of Wheat Growers Regarding Adoption of Improved Wheat Production Technology in Kanpur Dehat District, Uttar Pradesh (India). *Int. J. Curr. Microbiol. App. Sci.*, *6*(12): 2225-2229.

Machhar, R. G., Patel, S. K., Kacha, H. L., Patel, U. M., Patel, G. D. and Radha Rani, R. (2015). Technological Gap in Adoption of Improved Soybean Production Technology by Soybean Growers in Dahod district, Gujarat. *American Journal of Agriculture and Forestry*, *3*(6): 376-379.

Maraddi, G. N., Meti, S. K. and Tulsiram, J. (2014). Extent of Adoption of Improved Technologies by Groundnut Farmers and Constraints Analysis. *Karnataka Journal of Agricultural Sciences*, *27*(2): 177-180.

Meena, B. S. (2012). Adoption Behavior of Wheat Production Technology. *Agric. Update, 7*(3-4): 283-286.

Painkra, S. K., Singh, D. P. and Chauhan, A. S. (2014). Knowledge and Adoption Gap of Farmers towards Wheat Technology. *Research J. Science and Tech.., 6*(1): 20-22.

Patel, A. G. and Vyas, H. U. (2014). Technological Gap in Adoption of Sugarcane Cultivation Practices by Sugarcane Growers. *Gujarat Journal of Extension Education*, *25*(2): 227-229.

Patel, B. S., Patel, U. M. and Chaudhary, K. V. (2014). Technological Gap in Adoption of Recommended Maize Seed Production Practices by the Maize Seed Producers. *Gujarat Journal of Extension Education*, *25*(2): 197-200.

Patel, Y. V. and Late Padheria, M. M. (2010). Extent of Technological Gap and Its Relationship with Situational, Personal, Socio-Economic, Psychological and Communication Characteristics of Safflower Growers. *Indian Research Journal Extension Education, 10*(2): 93-98.

Rajashekhar, T. B., Kale, S. M. and Sunil (2014). Technological Gap in Adoption of Recommended Practices in Farmers about Papaya Cultivation. *Agriculture update, 9*(2): 197-200.

Raut, P. S. (2014). Technological Gap in Wheat Cultivation in Akola District. M.Sc. (Agri) Thesis (unpub.), Dr. PDKV, Akola.

Roy, D., Bandyopadhyay, A. K. and Ghosh, A. (2013). Identification of Technological Gap in Pineapple Cultivation in some Selected Areas of West Bengal. *International Journal of Science, Environment and Technology, 2*(3): 442–448.

Sasane, K. L., Patil, P. A. and Suthar, P. P. (2012). Knowledge and Adoption of Paddy Cultivation Practices among Farmers in North Kashmir. *Asian J. Extn. Edu.*, *23*(2): 46-51.

Sharma, C., Pande, A. K. and Khedkar, N. S. (2018). Technological Gap in Recommended Sesame Production Technology perceived by Farmers of Jabalpur District. *International Journal of Chemical Studies*, *6*(3): 822-824.

Shitu, A. G., Nain, M. S. & Singh, R. (2018). Developing Extension Model for Smallholder Farmers uptake of Precision Conservation Agricultural Practices in Developing Nations, Learning from Rice Wheat System of Africa & India, *Current Science*, *114*(4), 814-825.

Singh, H. and Jat, J. R. (2014). Constraints Faced by the Farmers in Adoption of Improved Technologies of Sesame Crop in Jodhpur District of Rajasthan. *International Journal of Extension Education and Research Development, 22*: 190-191.

Singh, R., Dogra, A., Sarkar, A., Saxena, A. and Singh, B. (2018). Technology Gap, Constraint Analysis and Improved Production Technologies for Yield Enhancement of Barley (*Hordeum vulgare*) and Chickpea (*Cicer arietinum*) under Arid conditions of Rajasthan. *Indian Journal of Agricultural Sciences*, *88*(2): 93-100.

Tengli, M. B. and Sharma, O. P. (2017). Technological Gap in Adoption of Improved Paddy Cultivation Practices. *International Journal of Current Microbiology and Applied Sciences, 6*(11): 1224-1229.

Wadekar, R. P. (2013). Adoption of Rice Cultivation Practices by Warli Tribal Farmers from Thane District of Maharashtra. M.Sc. (Agri.) Thesis, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli (M.S.). (Unpublished).

Nirwan, P. P. (2016). Technological Gap in Adoption of SRI Method of Paddy Cultivation. M. Sc. (Agri.) Thesis (Unpub.), Dr. PDKV, Akola.

How to cite this article: Mangi Lal Jat D. K. Jaiswal and Y.S. Saharawat (2022). A Study of the Technological Gap Between Different Categories of Wheat Growers in Hoshangabad, Harda and Sehore Districts of Madhya Pradesh. *Biological Forum – An International Journal*, *14*(1): 904-907.