The Pharma Innovation Journal 2023; SP-12(11): 696-698

www.ThePharmaJournal.com

The Pharma Innovation

ISSN (E): 2277-7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2023; SP-12(11): 696-698

www.thepharmajournal.com
Received: 07-08-2023
Accepted: 11-09-2023

Lal Singh Patel
Young Professional at National Rural Livelihood Mission, Kondagaon, Chhattisgarh, India

Uttam Singh
Senior Research Fellow, ICAR – National Institute of Biotic Stress Management, Raipur, Chhattisgarh, India

Corresponding Author:
Lal Singh Patel
Young Professional at National Rural Livelihood Mission, Kondagaon, Chhattisgarh, India

Assessing technological gaps in various maize farming approaches practicing by farmers of Chhattisgarh

Lal Singh Patel and Uttam Singh

Abstract
Maize, a staple food for the majority of India's population and a critical cereal crop in both Kharif and Rabi seasons, relies heavily on technology as the primary driver of change. To prevent technology fatigue and address technology gaps, it is imperative to rejuvenate research, education, and extension systems. This study aimed to identify technological gaps in various maize cultivation practices adopted by farmers. The research was conducted in the Nagri block of Chhattisgarh's Dhamtari district, which is comprised of four development blocks: Dhamtari, Kurud, Nagri, and Magarlod. The findings revealed that 50.00 percent of respondents had a medium level of technological gap, while 26.67 percent exhibited a low gap, and 23.33 percent experienced a high technological gap in recommended maize production practices.

Keywords: Maize cultivation, technology gaps, recommended practices, Chhattisgarh

Introduction
The surge in food grain demand in India, driven by population growth and rising incomes, presents a significant challenge to the scientific community. The primary goal is to enhance food grain production, not only to meet the increasing needs of the growing population but also to generate surpluses for export, fostering overall economic development. The Green Revolution ushered in technological advancements that boosted food grain production, especially cereals, which constitute a substantial portion of human dietary staples (Swaminathan, 1966) [11]. Cereals are known for being an economical source of dietary energy, contributing significantly to calorie and protein intake. Prominent cereal crops encompass rice, wheat, maize, barley, and jowar, among others (Pingali & Rosegrant, 1995) [7]. Wheat, a vital staple in temperate regions, is witnessing heightened demand in urbanizing and industrializing nations (FAO, 2015) [2]. Beyond its starch and energy content, wheat delivers essential health-enhancing components, including protein, B vitamins, dietary fiber, and phytochemicals (Seal *et al*., 2019) [8]. Notably, wheat plays a pivotal role as a source of dietary fiber, with bread alone accounting for 20% of daily intake in the UK. Research has established strong links between cereal dietary fiber consumption and reduced risks of cardiovascular disease, type 2 diabetes, and various cancers, such as colorectal cancer (Aune *et al*., 2016) [1]. Wheat exhibits substantial variability in the levels and compositions of these beneficial components, with some, like dietary fiber, showing high heritability. Consequently, plant breeders have the potential to select for not only increased crop yield but also enhanced health benefits (Shewry & Hey, 2015) [9].
Despite the wealth of research on maize production technology in India's agricultural universities and research institutions, farmers' actual adoption of these technologies does not align entirely with scientific recommendations (Tripathi *et al*., 2019) [12]. A persistent gap exists between the technologies recommended by experts and their implementation by the end users. In light of this disparity, this research endeavor titled "An Investigation into Technological Discrepancies and Challenges in Maize Cultivation in the Nagri Block of Dhamtari District, Chhattisgarh" aims to address this issue (Kumar & Mishra, 2020) [4].

Materials and Methodology
The research was carried out in the Nagri block, located within the Dhamtari district of the Chhattisgarh state. This district is divided into four distinct developmental blocks, namely Dhamtari, Kurud, Nagri, and Magarlod. The entire geographical expanse of the district covers 4,081.93 square kilometers and is situated at an elevation of approximately 321.54 meters above mean sea level.

Dhamtari district shares its boundaries with Raipur district to the north, Dhamtari and Bastar districts to the south, parts of Orissa state to the east, and Durg and Dhamtari districts to the west. Mahanadi stands as the principal river in this district and is referred to as Kankannadi and Chitrotpala at different points. The fertility of the lands in the Dhamtari district owes much to the presence of the Mahanadi river. Paddy is the primary crop cultivated in this region. Mahanadi, one of the major rivers in central India, originates in the Sihawa hills and flows eastward, ultimately reaching the Bay of Bengal.

Results and Discussions

The average technological gaps: The analysis of Table 1 reveals that the practice-wise technological gap within the technology gap of recommended maize production varies significantly. In descending order of rank, the highest technological gap was observed in "Seed treatment with bio-fertilizer" at 91.80 percent, followed by "Seed treatment with fungicide" at 87.72 percent. Subsequently, "Chemical weed control" recorded a gap of 58.14 percent, while "Application of chemical fertilizer" stood at 43.86 percent. "Inter-culturing" exhibited a gap of 40.80 percent, "Time of sowing" at 38.76 percent, "Disease management" at 36.72 percent, and "Irrigation" and "Spacing" both at 35.00 percent.

Additional components that displayed technological gaps include "Insect control" at 32.64 percent, "Application of FYM" at 28.00 percent, "Seed rate" at 24.48 percent, "Hand Weeding" at 22.44 percent, "Harvesting" at 18.36 percent, and "Land preparation" at 16.32 percent. When considering all the listed practices together, the overall technological gap in the technology gap of recommended maize production practices amounted to 40.60 percent. This observation aligns with the findings of Patel (2007) [6] and Kumar *et al*. (2008) [3].

Table 1: The average technological gaps for each component within the technology gap of recommended maize production technology.

Sr. No.	Different components of maize production technology	Technological gap (percent)	Rank
1	Land preparation	16.32	XV
2	Time of sowing	38.76	VI
3	Seed rate	24.48	XII
4	Seed treatment with fungicide	87.72	II
5	Seed treatment with bio-fertilizer	91.80	I
6	Spacing	35.00	VIII
7	Application of FYM	28.00	XI
8	Application of chemical fertilizer	43.86	IV
9	Inter-culturing	40.80	V
10	Hand Weeding	22.44	XIII
11	Chemical weed control	58.14	III
12	Irrigation	34.00	IX
13	Insect control	32.64	X
14	Disease management	36.72	VII
15	Harvesting	18.36	XIV
	Overall technological gap (Average)	40.60	

The overall technological gap within the technology gap of recommended maize production practices.

Based on the scores obtained by maize producers, they were categorized into three groups: (i) Low technological gap, (ii) Medium technological gap, and (iii) High technological gap. The relevant data is presented in Table 2 and visualized graphically in Figure 1.

Table 2: The distribution of respondents according to their overall technological gap within the technology gap of recommended maize production practices.

N=120

S. No.	Overall technological gap	No. of respondents	Percentage
1.	Low	32	26.67
2.	Medium	60	50.00
3.	High	28	23.33
Total		120	100.00

The data presented in Table 2 clearly indicate that 50.00 percent of the respondents had a medium technological gap, while 26.67 percent fell into the low technological gap category, and 23.33 percent had a high technological gap within the recommended maize production practices. Several factors may contribute to these findings. Firstly, it's possible that farmers did not receive timely and easily understandable information about production technology. Secondly, farmers may have made efforts to adopt maize production technology, but various constraints might have impeded their full adoption, leading to the observed technological gap. Additionally, factors such as limited education, low income, small and marginal farming operations, limited exposure to mass media, and low participation in agricultural extension services among maize producers could be responsible for the overall technological gap. These findings are consistent with the results of previous studies conducted by Singh (2007) [10], Patel (2007) [6], Kumar *et al*. (2008) [3], and Patel *et al*. (2011) [5].

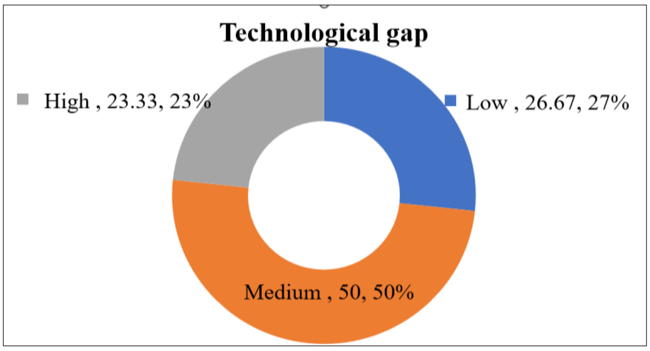

Fig 1: Technological gap

Conclusion

In conclusion, a comprehensive review of research reports and findings from research journals reveals a notable disparity between the package of practices adopted by farmers and the recommendations put forth by scientists for achieving optimal maize production. In India, substantial research has been conducted on maize production technology within agricultural universities and research institutes. However, the challenge lies in the fact that the intended beneficiaries of this technology have not been able to fully embrace it to the desired extent. This persistent gap between the recommended technologies and their actual adoption by end-users remains a significant concern.

Furthermore, our study sheds light on the existence of varying levels of technological gaps across different components of recommended maize production practices. These technological gaps are influenced by a myriad of factors, including farmers' access to information, economic constraints, education levels, farm size, mass media exposure, and participation in extension services. Recognizing and addressing these technological gaps is paramount for enhancing maize production, meeting the rising demand for food, and ultimately contributing to the overall growth and sustainability of the agricultural sector. It is imperative for agricultural stakeholders, including researchers, policymakers, and extension services, to bridge this divide and ensure that the wealth of knowledge generated by the scientific community reaches the farmers effectively. This, in turn, will empower farmers to adopt advanced maize production technologies, maximize crop yields, and improve their livelihoods.

References

1. Aune D, Keum N, Giovannucci E, Fadnes LT, Boffetta P, Greenwood DC, *et al*. Dietary fibre and the risk of colorectal cancer: A systematic review and meta-analysis of prospective studies. European Journal of Epidemiology. 2016;31(10):1001-1015.
2. Food and Agriculture Organization (FAO). World agriculture: Towards 2015/2030 - The 2015 revision. FAO; c2015.
3. Kumar V, Khalache PG, Gaikwad JH. A study of relationship between selected characteristics of the respondent paddy growers and technological gap in paddy cultivation of Sitamarhi district of Bihar. Agriculture Update. 2008;3(3/4):339-341.
4. Kumar A, Mishra PK. Determinants of agricultural technology adoption in Indian agriculture: A review. Agricultural Reviews. 2020;41(3):251-259.
5. Patel S, Patel RC, Patel BM, Badhe DK. Technological gap in adoption of cotton production technology. Agriculture Update. 2011;6(3/4):188-190.
6. Patel RM. Discriminate functional analysis of technological gap of tribal maize growers of Vadodara district of Gujarat state. Ph.D. Thesis (Unpublished), Submitted to AAU, Anand; c2007.
7. Pingali PL, Rosegrant MW. Agricultural commercialization and diversification: Processes and policies. Food Policy. 1995;20(3):171-185.
8. Seal CJ, Brandt K, Lakin J, Paraskeva C. Wheat dietary fibre: Benefits and novel applications. Cereal Foods World. 2019;64(1):4-6.
9. Shewry PR, Hey SJ. The contribution of wheat to human diet and health. Food and Energy Security. 2015;4(3):178-202.
10. Singh B. Factors influencing technological gaps in adoption of mustad (*Brassica juncea* L.) production technology in arid zone of Rajasthan. J. of spices and aromatic crops. 2007;16(1):50-54.
11. Swaminathan MS. Agricultural research and India's food crisis. The Economic Weekly. 1966;18(5):173-175.
12. Tripathi D, Shukla A, Singh PK, Singh B. Adoption of maize production technology in Bastar plateau of Chhattisgarh, India: Implications for future research and extension. International Journal of Current Microbiology and Applied Sciences. 2019;8(10):1729-1739.