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Technological gap in recommended sesame production technology perceived by farmers of Jabalpur District

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Abstract
A study on technological gap in Sihora block of Jabalpur district of Madhya Pradesh was conducted in 2016 under ex-post facto research design. A sample of hundred sesame growers representing ten villages of Sihora block was drawn by using three stage sampling technique. The study revealed that 72% of sesame growers belonged to medium technological gap category. The major contributors in technological gap of sesame production technology were fertilizer management, weed management and plant protection management. The exception was in the technology of harvesting. Thus, it is suggested in general that sesame cultivators from Madhya Pradesh should adopt almost all the recommended technologies to harvest the free benefit of these technologies for having maximum production and therefore, overall farm returns in general

Keywords: Technological gap, es-post facto, sesame growers, recommended, technologies

Introduction
Sesame (S*esamum indicum L.)*, world famous as the 'queen of oils' is an ancient oilseed crop of India with maximum oil per cent (50%) as compared to groundnut (45%), soybean (40%), mustard (34%) and sunflower (45%). India ranks first in the world in terms of sesame growing area (23%) and second largest producer of sesame in the world after Myanmar exporting 25% of total production (between 5 lakh to 6 lakh metric tonnes of sesame annually) (Anonymous, 2016) [1]. But the productivity is only 409kg/ha which is lower than most of the sesame growing countries (Anonymous, 2012-13) [2]. This probably indicates a great opportunity for a higher increase in sesame productivity in India.
Among all oilseeds, sesame costs maximum in terms of export i.e. Rs. 3583.46 crore (groundnut- Rs. 3212.06 crore and niger- Rs. 113.61 crore) (Anonymous, 2014) [3]. The potential yield of sesame (2000kg/ha) is much higher than actual yield, as much damage occurs by pests and diseases, insufficient weed control and lack of nutrients (Mkamilo and Bedigian, 2007) [7].
In general, average productivity of sesame continues to decline than expected from agricultural technology for the last 40 years, mainly due to its cultivation on marginal lands, poor management practices and low input application (Kumar *et al*. 2014) [5].
The major constraints responsible for lower yield is inappropriate fertilizer management and absence of weed and plant protection management. It is also noticed by reviewing the research reports and findings of research journals that the package of practices as adopted by the farmers are somewhat different from what is recommended by the scientists.
Keeping this in view, technological gap in recommended sesame production technology has been worked out to bridge the gap between old & traditional and economic benefits of latest improved technologies to the farmers.

Materials and methods
An extensive survey was conducted to collect information pertaining to various cultivation practices of sesame in the Sihora block of Jabalpur district. Hundred farmers (sesame growers) from ten villages were selected for compiling the data. Ex-post facto research design with three stage sampling was applied. An interview schedule was prepared and administered to the respondents and data were analyzed through percentage.

The technological gap in different package of practices was worked out by using following mentioned formula as advocated by Bhoite (1983) [4].

$$\text{Technological gap index} = \frac{R-A}{R} \times 100$$

Where,
R = Maximum possible adoption score that a respondent could obtain
A = Score obtained by respondent by virtue of his adoption of given component of technology.

Results

Table 1: Distribution of sesame growers according to their technological gap in sesame cultivation.

S. No.	Categories	Frequency	Percentage
1.	Low (1 to 33.33)	25	25.00
2.	Medium (33.34 to 66.66)	72	72.00
3.	High (66.67 to 100)	03	03.00
Total		100	100.00

Table 2: Technological gap of sesame growers according to their different package of practices.

S. No.	Technological components	Mean	Rank	Overall Mean	Overall Rank
1.	Field preparation	-	-	47.99	IV
1.1	Type of soil	00.50	III	-	-
1.2	Ploughing	45.00	II	-	-
1.3	Farm Yard Manure	99.00	I	-	-
2.	Seed and sowing management	-	-	43.66	V
2.1	High Yielding Varieties	50.00	II	-	-
2.2	Seed rate	32.00	III	-	-
2.3	Seed treatment	56.00	I	-	-
3.	Fertilizer management	-	-	85.66	I
3.1	NPK	79.00	II	-	-
3.2	Sulphur	79.00	III	-	-
3.3	Bio-fertilizer	99.00	I	-	-
4.	Weed management	-	-	65.00	II
5.	Plant protection management	-	-	51.50	III
5.1	Insect identification	06.50	IV	-	-
5.2	Insect control	52.00	III	-	-
5.3	Disease identification	74.50	II	-	-
5.4	Disease control	76.00	I	-	-
6.	Harvesting	-	-	08.75	VI
6.1	Duration	-	-	-	-
6.2	Method of harvesting	-	-	-	-
6.3	Threshing and winnowing	-	-	-	-

Discussion

The responses received from the farmers were categorized into three groups namely, low (up to 33.33%), medium (33.34-66.66%) and high (above 66.66) categories. From the findings of Table 1. it can be inferred the 72% of farmers had medium technological gap followed by low (25%) and high (03%) technological gap in recommended sesame production technology (Mishra *et al*., 2009) [6]. The data of Table 2. Shows that technological gap of sesame growers according to their different package of practices or technological components of sesame production technology. The maximum technological gap was seen in fertilizer management (85.66%) followed by weed management (65%), plant protection management (51.50%), field preparation (47.99%) and seed & sowing management (43.66%) while the least was found in harvesting where majority of the farmers seems to adopt recommended improved technology (Tripathi and Singh, 2012) [8].

The six major technological components or package of practices further divided into three to four sub components or practices. With respect to fertilizer management, maximum technological gap was observed in application of bio-fertilizer (99%) followed by sulphur (79%) and NPK (99%) application.

Regarding plant protection management, a major technological gap was found in disease control (76%) followed by disease identification (74.50%), insect control (52%) and insect identification (6.5%) practices.

With regards to field preparation it was maximum in FYM (99%) followed by ploughing (45%).

Seed treatment possess the highest technological gap (56%) followed by high yielding varieties (50%) and seed rate (32%) in the seed & sowing management practice.

A negligible technological gap was observed in the harvesting practice.

Conclusion

As per results, the highest technological gap was evident in fertilizer management followed by weed management, plant protection management, field preparation and seed & sowing management, whereas the majority of the sesame growers fell under medium technological gap category, which may be due to poor socio-economic conditions, less awareness of package of practices from the grass root level workers and poor mass-media exposure. Hence, efforts should be made to bridge the gap. Intensive dissemination of technology should be followed for reducing the technological gap in adoption of recommended sesame production technology.

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