

Superior Varieties and Best Agricultural Practices Enhance Rapeseed-Mustard Productivity

R.K. Singh, Uday Kumar, Neena Bharti, Adarsh Kumar Srivastava, Vinay Kumar, & Zunaid Alam

Krishi Vigyan Kendra, Bokaro, Birsa Agricultural University, Ranchi

INTRODUCTION

Oilseed crops are vital to India's agricultural sector. Edible oils are primarily produced from crops like groundnut, rapeseed (including toria and mustard), sesame, soybean, sunflower, and Niger. Non-edible oils come from castor and linseed, while secondary sources include cottonseed, palm, and rice bran oil. In Jharkhand, groundnut, sesame, and Niger are grown during the Kharif season, while rapeseed, mustard, toria, and linseed are cultivated in the Rabi season.

Mustard is the main oilseed crop in Jharkhand, especially in Bokaro district, where it is grown on about 11,998 hectares during the Rabi season under irrigation. However, most farmers rely on local varieties and traditional methods, resulting in lower yields compared to improved practices. The area and production of various oilseed crops in Bokaro for 2024-25 are as follows:

S.N	Season	Crop	Area (ha)	Production (Qt.)
1	Kharif	Groundnut	371	4,797
2	Kharif	Sesame	76	2,432
3	Kharif	Soybean	110	7,920
4	Kharif	Niger	255	10,850
5	Rabi	Mustard	11,998	731,878
6	Rabi	Linseed	70	2,660

Source: District Agriculture Office, Bokaro

The area under mustard cultivation has increased due to the technological interventions demonstrated by Krishi Vigyan Kendra (KVK).

MAJOR PROBLEMS IDENTIFIED

Mustard productivity faces several challenges: poor water retention, high soil infiltration, low soil fertility, soil acidity, limited irrigation, inadequate marketing, lack of high-yielding varieties, and significant losses from pests and diseases. Additionally, traditional tillage, late sowing, and high seed rates further reduce yields.

KVK INTERVENTION

To address these challenges, KVK Bokaro initiated Front Line Demonstrations in 2019-20 to improve mustard productivity and profitability. Each year, 40 hectares are used for demonstrations with improved BBM-1 varieties, recommended fertilizer doses (N50P25K25S20), and appropriate pest management. KVK scientists provide regular training and field visits to help farmers adopt these improved practices.

RESULTS AND IMPACT

Practice	Yield (q/ha)	Gross Cost (Rs/ha)	Gross Income (Rs/ha)	Net Income (Rs/ha)	B:C Ratio
Farmer Practices	9.1	17,000	36,402	19,402	2.14
Demonstration	14.25	21,500	57,004	35,504	2.65
% Increase	56.59	26.47	56.58	82.99	

Demonstration plots yielded 14.25 q/ha, a 56.59% increase over traditional practices (9.1 q/ha). Gross income rose to Rs. 57,004/ha, and net income reached Rs. 35,504/ha, compared to Rs. 36,402/ha and Rs. 19,402/ha, respectively, for traditional methods. The benefit-cost ratio improved from 2.14 to 2.65, with only a 26.47% increase in cultivation costs. Yields were also 33.92% higher than the district average and 73.99% higher than the state average. These gains are attributed to the use of better varieties, recommended agronomic practices, and ongoing support from KVK staff.

TECHNOLOGY ADOPTION AND SPREAD

Year	Area under Mustard (ha)	Productivity (q/ha)	Area under Improved Varieties (BBM-1) (ha)	Productivity of Improved Varieties (q/ha)
2020-21	8,374	4.8	790	9.62
2021-22	8,865	5.6	2,692	10.80
2022-23	9,436	5.9	3,790	10.69
2023-24	10,825	6.1	5,340	10.94
2024-25	11,998	6.1	5,886	11.86

The table shows that about 50.94% of the total mustard cultivation area (11,998 ha) is now under improved BBM-1 varieties. Farmers using these varieties are achieving nearly double the yield compared to those using traditional varieties.

SUMMARY

The adoption of improved mustard varieties and recommended agricultural practices, supported by KVK Bokaro, has significantly increased yields and incomes for farmers. This success demonstrates how modern technologies and farmer education can transform oilseed production in the Bokaro district.

