COST OF CULTIVATION ON MUSTARD (*BRASSICA OLERASIA*) IN MEERUT DISTRICT OF WESTERN UTTAR PRADESH, INDIA

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Abstract

India is the largest producer of oilseeds in the world and accounts for about 14 per cent of the global oilseeds area, 7% of the total vegetable oils production, and 10 % of the total edible oils consumption. Based on data block wise percentage area under mustard to the corresponding total crop area of the block was calculating & these blocks were arranged in descending order. The major component of the cost was human labour (37.52 per cent), rental value of owned land (26.39 per cent). This is to be attributed to the development of high yielding varieties coupled with improved production technologies, their widespread adoption and good support price. In spite of these achievements, there exists a gap between production potential and actual realization. The gap is to be bridged or narrowed down to feed the ever growing human and livestock population with minimal nutritional requirements, to meet the requirements of industries and to earn valuable foreign exchange through export of seed meal, oil and value added products.

Key words : Mustard (*Brassica olerasia*), production technology, agriculture sector.

Introduction

The agriculture sector plays a very important role in India's social security and overall economic welfare. Oilseeds crops are the second most important determinant of agricultural economy, next only to cereals. India is the largest producer of oilseeds in the world and accounts for about 14 per cent of the global oilseeds area, 7% of the total vegetable oils production and 10% of the total edible oils consumption. In India, oilseeds accounts for 3% to the Growth National Products and 10% to the total value of all agricultural products, and employs 14 and 1 million people respectively in oilseed cultivation and processing. In 2012-13, the total oilseed cultivated area, the total oilseed seed production and the total edible oil production, under the nine oilseeds crops, respectively, were 27 million ha, 29 million metric tones (mmt) and 7.45 mmt. Presently, India's annual edible oil consumption is about 17.5 mmt, which in the last decades has increased steadily at a compounded annual growth rate of 4.6%. The growth in per capita consumption is attributable to both rising income levels and living standards. However, the current per capita consumption of 14.3 kg/year in 2012-13 in India is considerably lower than the global

average of 24 kg/year. In 2012-13, the major edible oils consumed in the country are palm oil, soybean oil and mustard oil, with their respective shares of 46%, 16% and 12%. Given the taste preferences and the high price consciousness of the consumers, it is expected that these three oils will continue to account for the bulk of the edible oil consumption in India.

Mustard seed (RMSeed) is the second most important oil seed crop in India after soybean. It accounts for nearly 20-22% of the total oilseeds produced in the country. Mustard seed is grown with a different consumption pattern in the country. Indian mustard is mainly used for extraction of mustard oil while black mustard is mainly used as a spice. White mustard is used as fodder crop or as green manure. Though, the varieties grown under the Brassica family are different depending on the country, the trend in international futures prices in canola and rapeseed has an impact on domestic mustard seed as India is a major edible oil importing country.Rapeseed mustard includes eight different species viz. Indian mustard, toria, yellow sarson, brownsarson, gobhi sarson, karan rai, black mustard and taramira, which are cultivated in 53 countries.

India is the third largest rapeseed-mustard producer in the world, accounting for about 12% of the world's total rapeseed-mustard "seed" and about 8.5% of the world's total rapeseed-mustard "oil". In India, rapeseed–mustard is grown in diverse agro-climatic conditions ranging from north-eastern/north- western hills to down south. The crop is grown sole or in mixed cropping under both rainfed or irrigated conditions. Of the total area and production under the nine oilseeds crops grown in India, rapeseed-mustard accounts for 22.2% of the acreage and 22.6% of the production. The average rapeseed-mustard yield in India is about 1145 kg/ha compared to the combined oilseeds crops average of 1135 kg/ha. In India, although, rapeseed-mustard is cultivated in 13 states, production in Rajasthan, Uttar Pradesh, Haryana and West Bengal, with their respective share of 45, 13, 11 and 8% accounts for 77% of the National total. In the last 15 years, introduction of high-yielding rapeseed-mustard varieties, hybrids, improved production technology, increased area under cultivation; government price support policies and institutional support have revealed positive trends.

The area and production of mustard have been increasing constantly being an important source of oil and protein, mustard is grown across the world the area of mustard has risen from 24.68 million hectare to 30.06 million hectare with a compounded annual growth of 3.02% while the production has increased from 37.32 million tones to 55.97 million tones with a CAGR of 5.70% during the period 2010-11. European Union accounting for 36% of the world production followed by Canada (24%), China (22%), and India (13%). European union, China and Canada all together account for 82% of the world mustard production during 2010-11 (SEA of India, Karvy).

In India, mustard is mainly grown in North West part of India, Rajasthan, and U.P. is the major mustard producing state in the country. Rajasthan is the largest mustard producer in the country with a contribution of (54%) to the country's total mustard production followed by Punjab and Haryana which simultaneously contributes (14%).

In India, area under mustard was 6051 million hectares and its production was 7.67 million tones with productivity 1179 kg /ha in 2010-11 (Directorate of Economics and statistics, New Delhi).While area, production and productivity in U.P. were 0.61 million hectare, 0.68 million tones and 1113 Kg/ha, respectively (2009-10 Directorate of Economics and statistics, New Delhi). During the same period area, production and productivity of Mustard in Meerut district was 0.004438 million hectare, 0.0574351 million tones and 1324 kg/ha, respectively (2009-10).

Methodology

Keeping in view the objective of the study, Meerut district of western Uttar Pradesh was purposively selected. Block wise data on the area under mustard and the total cropped area were obtaining from secondary sources. Based on data block wise percentage area under mustard to the corresponding total crop area of the block was calculating & these blocks were arranged in descending order. The two blocks with maximum percentage area under mustard were selected. For each selected block, percentage area under mustard to the corresponding total cropped area was worked out for each of the villages of the block & the ten villages having maximum concentration of relative area under mustard were selected from each of the selected two block.

For each selected randomly of village, a separate list of mustard growing farmers was prepared and these farmers was regarded in to marginal (below 1ha.), small (1-2 ha), medium (2-4 ha), and large (4 ha & above) size group of farms. From each selected randomly of villages, 100 farmers were randomly selected. The allocation of these 100 selected farms of a selected randomly of villages in to marginal, small, medium, and large farms was based on the proportion of the mustard growing farms under each size groups to the total mustard growing farms. Simple tabular analysis was applied to work out the cost of cultivation.

The primary data were collected by survey method through personal interview on well structured and pre tested schedule, while secondary data were collected from books, journals, report and records of the district and block headquarters.

Both the tabular and functional analysis was used. Weighted Average was worked out for interpretation of data with the help of following formula.

$$Weighted\ average = \frac{\sum W_i X_i}{\sum W_i}$$

Where,

X_i = variable

W_i = Weights of variable

Results and Discussion

The cost of production per hectare of rapeseed-mustard on the sample farms have been worked out in table 1. It indicates that the cost of cultivation per hectare

Table 1 : Costs of cultivation of mustard crop on different size group of sample farms in the study area.　　　　　　(Rs)

S. No.	Particular	Size of sample farms (ha)				Overall average
		Marginal	Small	Medium	Large	
1.	Family labour	8210.51(14.44)	2492.45(5.07)	1803.71(3.82)	1377.56(2.93)	3140.06(6.24)
2.	Hired labour	13115.78(23.07)	11535.16(23.48)	10297.50(21.82)	10722.40(22.84)	11280.13(22.42)
	Total human labour	21326.29(37.52)	14027.61(28.56)	12101.21(25.64)	12099.96(25.77)	14420.19(28.66)
3.	Tractor labour	4665.78(8.20)	4500.00(9.17)	4407.01(9.34)	4375.84(9.32)	4487.15(8.91)
4.	Bullock labour	-	-	-	-	-
5.	Seed	1209.36(2.13)	1127.64(2.29)	1154.95(2.44)	1064.64(2.26)	1107.57(2.20)
6.	Manures andfertilizers	7556.72(13.29)	7143.96(14.54)	6953.70(14.73)	6474.45(13.79)	7382.22(14.67)
7.	Irrigation charge	3276.31(5.77)	3105.52(6.32)	3134.28(6.64)	3113.79(6.63)	3150.92(6.26)
8.	Plant protection	1871.04(3.29)	2052.74(4.17)	2169.40(4.59)	2715.51(5.78)	2254.61(4.48)
9.	Interest on working capital	644.10(1.14)	618.00(1.25)	670.61(1.42)	601.58(1.28)	632.03(1.25)
10.	Rental value of owned land	15000.00(26.39)	15000.00(30.54)	15000.00(31.79)	15000.00(31.95)	15000.00(29.81)
11.	Interest on fixed capital	1285.00(2.27)	1534.08(3.12)	1368.28(2.89)	1273.26(2.71)	1651.15(3.28)
12.	Land revenue	-	-	225.00(0.47)	225.00(0.47)	225.00(0.44)
	Grand total	**56834.60 (100.00)**	**49109.51 (100.00)**	**47184.44 (100.00)**	**46943.53 (100.00)**	**50310.84 (100.00)**

of rapeseed-mustard came to 50310.84 Rs./ha.

Table 1 indicate that, costs of cultivation was highest on marginal farms (Rs. 56834.60), followed by medium farms (Rs. 47184.44), large farms (Rs. 46943.53) and small farms (Rs. 49109.51). The overall average of costs of cultivation was observed (Rs. 50310.84) on sample farms.

The major component of the cost were human labour (37.52 per cent), rental value of owned land (26.39 per cent), manure & fertilizers (13.29 per cent), tractor labour (8.20 per cent), irrigation charge (5.77 per cent), plant protection (3.29 per cent) and interest on fixed capital (2.27 per cent), respectively of the total costs of cultivation.

Conclusion

India is the largest producer of oilseeds in the world and accounts for about 14 per cent of the global oilseeds area, 7% of the total vegetable oils production and 10% of the total edible oils consumption. In India, oilseeds accounts for 3% to the Growth National Products and 10% to the total value of all agricultural products, and employs 14 and 1 million people respectively in oilseed cultivation and processing. In 2012-13, the total oilseed cultivated area, the total oilseed seed production and the total edible oil production, under the nine oilseeds crops, respectively, were 27 million ha, 29 million metric tons (mmt) and 7.45 mmt.

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