[Vol. 38, No.

Indian J. Agron. 38 (1) : 13–15 (March 1993)

Economics of mustard (*Brassica juncea*)–based crop sequences

M. L. SHARMA, G. S. BHARADWAJ AND Y. S. CHAUHAN

College of Agriculture, Jawaharlal Nehru Krishi Vishwa Vidyalaya, Gwalior, Madhya Pradesh 474 002

Received: January 1992

ABSTRACT

A field experiment was conducted during 1989–90 and 1990–91 on the Inceptisol soil of Gwalior, to study the economics of mustard [*Brassica juncea* (L.) Czernj. & Cosson]-based crop sequences. The crop sequence of blackgram (*Phaseolus mungo* L.)–mustard gave the maximum net returns of Rs 14,646/ha, followed by fodder sorghum [*Sorghum bicolor* (L.) Moench]–mustard (Rs 13,627/ha) and fodder pearlmillet [*Pennisetum glaucum* (L.) R. Br. emend. Stuntz]–mustard (Rs 13,585/ha).

Mustard [*Brassica juncea* (L.) Czernj. & Cosson] is a prodominent crop of the northern region of Madhya Pradesh and is generally sown in fallow fields. However, the single crop system can be converted into double- or multiple-crop systems under irrigated conditions. The present study was therefore undertaken to increase the cropping intensity by selecting the suitable crop sequence for replacing the fallow-mustard sequence prevalent in area.

MATERIALS AND METHODS

The study was conducted at Gwalior during 1989–90 and 1990–91 on Inceptisol soil. The soil had organic carbon 0.41%, available nitrogen 174 kg/ha, available phosphorus 13 kg/ha and available potash 301 kg/ha, with pH 7.6 (on the basis of 2 years average). The study consisted of 8 cropping sequences, viz. fallow–mustard, blackgram (*Phaseolus mungo* L.)–mustard, greengram (*P. radiatus* L.)–mustard, grain cowpea [*Vigna unguiculata* (L.) Walp.]–mustard, fodder sorghum [*Sorghum bicolor* (L.) Moench]–mustard, fodder pearlmillet [*Pennisetum glaucum* (L.) R. Br. emend. Stuntz]–mustard, maize (*Zea mays* L.)–mustard and fodder clusterbean [*Cymopsis tetragonoloba* (L.) Taubert]–mustard. The treatments were replicated 4 times in randomized block design with a plot size of 4.5 m × 6.0 m. All the intercrops of the rainy season were sown on 12 July and 9 July, while fallow field kept for mustard was sown on 16 and 25 October during 1989–90 and 1990–91 respectively. The 2-year average duration taken for the rainy-season crops was 79 for blackgram, 69 for greengram, 83 for cowpea, 81 for fodder sorghum, 66 for fodder pearlmillet, 65 for fodder maize and 76 days for fodder clusterbean, whereas in the winter season fallow–mustard treatment was harvested in 136 days on the basis of 2-year average basis. Crops were raised with recommended package of practices. Pre-sowing irrigation was also applied after the harvest of the rainy-season crops to ensure good germination of mustard. The total rainfall

Table 1. Crop yield and net returns under different crop sequences (mean data of 2 years)

Crop sequence	First crop			Second crop			Total net returns (Rs/ha)
	Yield (q/ha)	Gross returns (Rs/ha)	Total cost (Rs/ha)	Yield (q/ha)	Gross returns (Rs/ha)	Total cost (Rs/ha)	
Fallow–mustard				20.42	16,336	4,226	12,110
Blackgram–mustard	5.89	5,595	3,102	20.16	16,128	3,975	14,646
Greengram (grain)–mustard	4.65	4,417	3,090	19.48	15,584	3,970	12,941
Cowpea (grain)–mustard	3.57	3,391	2,664	19.80	15,584	3,973	12,941
Sorghum (fodder)–mustard	242.00	6,050	1,294	16.04	12,832	3,961	13,627
Pearlmillet (fodder)–mustard	205.05	5,126	1,294	17.15	13,720	3,967	13,585
Maize (fodder)–mustard	185.10	4,627	1,316	17.05	13,640	3,970	12,981
Clusterbean (fodder)–mustard	105.10	2,627	1,397	19.57	15,656	3,970	12,916
CD (P = 0.05)				2.23			

Whole-sale price of produce (Rs/q): Greengram (grain) 950, blackgram (grain) 950, cowpea (grain) 950, sorghum (fodder) 25, pearlmillet (fodder) 25, maize (fodder) 25, clusterbean (fodder) 25 and mustard 800

received in mustard-crop season was 38.0 mm and 52.0 mm during 1989--90 and 1990--91 respectively.

RESULTS AND DISCUSSION

The highest mean yield of mustard was recorded in fallow -- mustard crop sequence, closely followed by blackgram -- mustard, cowpea -- mustard, clusterbean -- mustard and greengram--mustard (Table 1). Tomar and Tiwari (1990) also confirmed that blackgram -- mustard crop sequence was the most profitable crop sequence, whereas drastic reduction in seed yield of mustard was recorded in sorghum--mustard crop sequence which was also at par with maize (fodder)--mustard and pearlmillet (fodder) -- mustard and maize (fodder) -- mustard crop sequences in both the years.

Blackgram (grain)--mustard sequence gave the highest total net returns, followed by sorghum (fodder)--mustard sequence and pearlmillet (fodder)--mustard sequence. Kumar (1986), Tomar and Tiwari (1990) and Gupta and Rai (1990) also reported that the blackgram (grain)--mustard crop sequence was the most remunerative one.

Thus the adoption of blackgram--mustard cropping sequence may help in increasing the cropping intensity under northern region of Madhya Pradesh where irrigation facility exists.

REFERENCES

Gupta, S. K. and Rai, R. N. 1990. Cropping system for efficient crop land use in Sikkim. *Indian Journal of Agronomy* **35** (1, 2) : 36--39.

Kumar, P. R. 1986. 'Technology, package for increasing mustard production.' Paper presented at the *29th Annual* Rabi *Seeds Workshop*, held on 11--14 August, at Govind Ballabh Pant University of Agriculture and Technology, Pantnagar

Tomar, S. S. and Tiwari, A. S. 190. Production potential and economics of different crop sequences. *Indian Journal of Agronomy* **35** (1, 2) : 30--35.