

ECONOMICS OF IMPROVED CHICKPEA (*Cicer Arietinum L*) TECHNOLOGY IN KYAMORE AND SATPURA HILLS OF MADHYA PRADESH

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ABSTRACT

Front line demonstration (FLDs) on chickpea (*Cicer arietinum L.*) was conducted in Kymore Plateau and Satpura hills at four locations during (winter seasons) 1996-1997, 1997-1998, 1998-1999 and 2000-2001. Data collected from 323 farmers, indicated that additional yield and income of 4.7q/ha and Rs. 6471/ha respectively were obtained following improved technology package. Timely supply of adequate quality seeds was found to be the major constraints in the hilly region of Madhya Pradesh.

INTRODUCTION

Importance of pluses in Indian Agriculture is widely recognized, Pulses are the primary source of protein for the poor and the vegetarian who constitute the majority of the India population. They also sustain the productivity of cropping system by adding nitrogen, which is economically more sound and environmentally acceptable with 35 % of the world's area and 27 % of production, India is the largest pulse producing country. This crop accounts for one fifth of cultivated area and one twelfth of food production. The area under pulses in India is at present around 23 million ha with the production 15 million tones and productivity being 650 kg./ha, respectively. The country would need at least 22 million tones of pulses by 2005 AD and 30 million tones by 2020 AD. The major pulses are chickpea, lentil (*Lens esculenta Monech*) and field pea (*Pisum arvense L.*) grown during rabi season accounts 60 % of total pulse area in the coutry. Madhya Pradesh is largest producer of pulses in the country, accounting 24.3 percent of total pulses production. The state is also known as leading state for chickpea, occupying first position in the country. During 1998-1999 area production and productivity of chickpea were 2.58 million ha, 2.51 million tones and 975 kg/ha respectively. The Malwa Pateau, Vindhyan Pateau and Kyamore Pateau and Satpura hills are the major chickpea grown area of Madhya Pradesh.

MATRIALS AND METHODS

FLDs on chickpea were conducted in four district viz, Jabalpur, Seoni, Satna and Sidhi of Kyamore Plateau and Satpura Hills after analyzing the gap between exisiting farmer's practice and latest technology available for increasing the production. In all 323 FLSs, covering 158 ha area conducted during Rabi 1996-97, 1997-98, 1998-99, 1999-2000 and 2001-02. Data of improved demonstrations (ID) and farmer's practices (FP), in relation to grain yield, cost of cash inputs (seed, manure, fertilizer & pesticides) were recorded in the study. The economics of ID in relation to FP were studied taking into consideration the prevailing market price. The comparative study of ID over FP was assessed mainly in terms of yield, increments, additional net return (ANR) incremental benefit cost ratio (IBCR) following Kiresur. et al. (1995).

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RESULTS AND DISCUSSION

Kyamore Plateau and Satpura hills zone comprises the districts of Seoni, Jabalpur, Satna, Panna and some parts of Sidhi district. The soil of zone is mixed red and black and light to heavy textured. The rainfall though reasonably well (1000-1500 mm) is confined to Kharif season (June-Sept) and although occasional rainfall occurring during winter helps the Rabi crops.

Yield performance

It is evident from the Table -1 that at Jabalpur highest grain yields under ID was 23.3q/ha during 1997-98 and lowest (12.8 q)/ha during 1996-97. Overall mean yield of ID at Jabalpur was 18.7 q/ha as against local check of 14.0q/ha. The increase in yield over FP range from 23 to 48 % showing instability of yield. In Seoni district highest and lowest yield of ID was also recorded during 1997-98 cropping season. Average yield of ID in the district was 12.2q/ha, which was 57 % over FP yield. The FLDs at Satna showed that grain yield as high as 21.9 /ha could be realized from FD. The yield increase varied from 54 - 112 %. The higher grain yield during 1997-98 may be attributed to the intermittent rains occurred during cropping seasons. In Sidhi district the performance of FLDs was not up to expectation, although the increase in yield over FP was more than 50 %. The average grain yield was recorded highest (18.7q/ha) at Jabalpur district followed by Satna (17.8q/ha) the yield was lowest (9.8q/ha) at Sidhi. At Seoni yield was 12.2q/ha. The overall -zone yield was 14.6q/ha as against 10.0q/ha of FP.

Although yield was higher at Jabalpur but increase in yield over was highest at Satna (80%) followed by Sidhi (62%) and with zonal increase of 58 % (Table 2).

Economics

Under ID in the, mean cost of cash inputs range from Rs. 2258 - 3538 q/ha. Highest cost of cash inputs was incurred at Jabalpur (Rs. 3538/ha) and lowest (Rs. 2258/ha) at Sidhi where farmer's incurred only Rs. 1226/ha on cash inputs. In the zone in the mean additional cost of cash inputs over FP was as Rs. 1023, Rs. 1032, Rs. 1324 and Rs. 1324/ha for Seoni, Sidhi, Satna and Jabalpur respectively. Mean highest additional returns of Rs. 11850/ha was recorded at Satna it was lowest (Rs. 5550/ha) at Sidhi. The overall additional return in zone was Rs. 7650/ha. Mean additional return over FP was highest (Rs. 10526/ha) at Satna and lowest (Rs. 4518/ha) at Sidhi with over all zonal of Rs. 5871/ha. Among the districts highest benefit ratio (8.98) was recorded at Satna (Table 3). It may be concluded from the study that the improved technology was profitable and economically viable for the farmers with additional return over farmer's practice. To sustain the productivity of chickpea in these hills of Madhya Pradesh there is urgent need to reduce the bottleneck in adoption of technology. However, thrust in the context should be timely supply of adequate quality of seed should be measure policy thrust to enhance the chickpea production in the hilly zone of Madhya Pradesh.

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Table 1. Grain Yield of chickpea under Front Line Demonstrations in Kymore Plateau and Satpura Hills

District	Number Demonstration	Area ha	Variety	Grain yield (q/ha)		Increase in yield % over FP	Cost Cash inputs Rs/ha	
				ID	FP		ID	FP
Jabalpur								
1996-97	3	3	JG-315	23.3	16	41	3900	2000
1997-98	-	-	-	-	-	-	-	-
1998-99	7	3	JG-315	18.6	15.17	23	3600	2755
1999-00	33	13.2	JG-315	20.7	15	38	3800	2250
2000-01	89	35.6	JG-315	12.8	10	28	2850	1800
Seoni								
1996-97	23	10	JG-315	14.6	8.3	75	2692	1800
1997-98	20	20	JG-74	7.5	4.78	58	3030	1975
1998-99	13	5	JG-74	14.3	8.95	59	2997	1330
1999-00	25	10	JG-74	13.8	8.45	63	2100	1400
2000-01	5	2	JG-74	12.8	9.35	34	2800	2000
Satna								
1996-97	16	7.8	Awarodhi	21.9	11.5	89	3237	2445
1997-98	12	4.9	Awarodhi	17.0	10.04	69	2581	1749
1998-99	7	3	Awarodhi	19.9	9.38	112	2920	1850
1999-00	24	10	Awarodhi	17.0	11.08	54	2425	1850
2000-01	8	5	JG-315	13.3	7.5	74	-	-
Sidhi								
1996-97	13	5	JG-315	9.6	6	60	2166	1328
1997-98	25	10	JG-315	10.0	6.1	64	2350	1125

Table 2. Average grain yield of chickpea in different location (1996-97-2000-2001)

District	Number of demonstration	Area (ha)	Grain Yield (q/ha)		Increase in yield % over FP	Average cost of cash inputs (Rs./ha)	
			ID	FD		ID	FP
Jabalpur	132	55	18.7	14	33	3538	2201
Seoni	86	47	12.3	8	54	2724	1701
Satna	67	30.7	17.8	9.9	80	2815	1491
Sidhi	38	15	9.8	6.1	61	2258	1226
Total/mean	23	148	14.6	9.5	57	2834	1655

Table 3 Economic of Improved Demonstration of chickpea in Kymore Plateau and Satpura Hills

District	No. of FLDs	Mean yield (q/ha)	Additional Yield (q/ha)	Mean cost of cash input (Rs./ha)	Mean additional Cost over FP (Rs./ha)	Mean additional Return (Rs./ha)	Mean additional Net Return Over FP (Rs./ha)	Benefit cost ratio
Jabalpur	132	18.7	4.7	3538	1337	6990	5653	5.2
Seoni	86	12.3	4.3	2724	1023	6420	5397	5.3
Satna	67	17.8	7.9	2815	1324	11850	10526	8.9
Sidhi	38	9.8	3.7	2258	1032	5550	4518	5.4
Zone	323	14.6	5.1	2834	1179	7650	6471	6.4