

Improved soybean production dissemination technology at district Ratlam Madhya Pradesh

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SUMMARY

Krishi Vigyan Kendra Jaora District Ratlam conducted Front Line Demonstration programme for increase yield of *Kharif* crop soybean through use of improved variety seed in KVK operating area. Soybean is one of the most important oilseed crops in Madhya Pradesh, where it is grown 4.25 million ha area with the annual production of 4.50 million tones. Its cultivation is pre dominantly done in Ratlam district. It is observed that the farmers of Patidar, Dhakad and Aanjna community adopted the technology easily in comparison to other community farmers. Similarly adoption technology was more in educated farmer than uneducated farmers. Rich farmers took risk and adopted new technology faster than poor farmers. Front Line Demonstration was conducted for year 2004-05 to 2008-09 showed that percentage increased 29.36 to 41.50 compared to farmers practice in yield every year. Front line demonstration play important role in increasing the production of soybean with provide full package of practices to the farmers, like providy improved seed, seed inoculation with rhizobium culture, seed treatment with carbendazim or thiram, application of plant protection measures and weedicide application.

Key Words : FLD, HYV soybean, Impact analysis, Dissemination

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Soybean has become an important oilseed crop of our country, occupying the third place next to groundnut, rapeseed and mustard in area and production. This crop has a greater potentiality to substitute different oilseeds to overcome the shortage of edible oil and protein rich food. Soybean is one of the oldest cultivated crops of the world. Soybean is known as “Golden bean”, “Miracle crop” etc.,

because of its several uses. Soybean, besides having high yield potential (30-35qt/ha), provides cholesterol free oil (20%) and high quality protein (40%). It is a versatile crop with innumerable possibilities of improving agriculture and supporting industry. The soybean protein is rich in lysine (4-6%) and the oil extracted is edible one. In India is large portion of the population are vegetarians, under this situation crop like soybean with high protein content and high yield potential became an important crop in India. Soybean protein is receiving more attention than any other source of protein today. Besides, it contains several vitamins, calcium, phosphorous and iron. They are ideally suited for human beings. Food uses of soybean include beverages; fermented products like soya sauce and cheese. Small quantities of soybean flour are already being used in baked goods, primarily biscuits and in snacks. In Ratlam district during *Kharif* season, it is the major crop covering almost 80-90 per cent area of under rainfed cultivation. Soybean-wheat, soybean-gram, soybean-garlic cropping systems are being followed. It has been observed that most of the farmers are using the seeds of soybean which they are growing since

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last 10-15 years *i.e.* JS-7105, JS-9041, these varieties has lost its potential yield as well as there are more attack of insects and pests resulting in low production and quality. There is urgent need of the replacement of good quality seed of new varieties available in the Research Centres and Beej Nigam. Case study in the impact of training programme Front Line Demonstration and In-service training programme on seed production technology is presented on the basis of five year study.

MATERIALS AND METHODS

The productivity of soybean crops continues to be quite low due to technological gaps in adoption of soybean technologies and other factors also. The yield of soybean crops can be increased by demonstrating their cultivation technologies at the farmer fields under the supervision of scientist working in the operational area, keeping in view the importance of Front Line Demonstration (FLD). The KVK Jaora (Ratlam) conducted demonstrations on improved agricultural technologies of soybean crop in scientific manner at farmers field of seven villages namely Jhanjhakhedi, Kalukheda, Chiklana, Richhadevda, Sakkerkhedi, Roopnagar and Bhimakhedi of Piploda and Jaora blocks of Ratlam district. Impact of training programme Front Line Demonstration and In-service training programme on seed production technology is presented on the basis of five year study during the year 2004-05, 2005-06, 2006-07, 2007-08 and 2008-09 and achieved the expected yield in mainly two variety JS-335 and JS-9305.

RESULTS AND DISCUSSION

According to Table 1, data of Ratlam district showed the increasing area of production and productivity. Krishi Vigyan Kendra, Jaora (Ratlam) emphasized on seed production

technology of soybean and conducted regular training programme on advanced crop production and seed production technology under Front Line Demonstration (FLD) at farmer's field and seed production of improved variety of soybean at KVK farm. In order to spread the technology in the Ratlam district, with the help of Extension functionaries of state department of Agriculture and are also given the training of seed production technology. The major goal of production technology is to increase agricultural production through the spread of good quality seeds of high yielding varieties.

Training programme based on seed production technology of soybean conducted by KVK for improving knowledge developing skill and attitude towards seed production for practicing farmers, Rural Youth and Extension functionaries. KVK conducted 35 training programmes on seed production technology from the year 2004-05 to 2008-09 and 725 participants participated in the training programmes and 5 training programmes were conducted by KVK for Extension functionaries in which 102 extension personnel participated in the programme. Results of Table 2 showed that percentage increased 29.36 to 41.50 in yield every year. It is also recorded that demonstration average yield was higher than local check yield. Front line demonstration plays an important role in increasing the production of soybean with full package of practices to the farmers, like providing improved seed, seed inoculation with rhizobium culture, seed treatment with carbendazim or thiram, application of plant protection measures and weedicide application. Since, these practices are important from the point of increasing production and net return. Technology disseminate to surrounded villages and district through educational activities like organizing trainings, demonstrations, exhibitions, field days etc. should be undertaken to reduce the technological gap.

Seed Production Programme was also conducted at KVK farm and produced 232.52 quintal seeds of improved variety

Table 1: Area, production and productivity of soybean in Ratlam district

	2004-05			2005-06			2006-07			2007-08		
	Area (in lakh ha)	Yield kg/ ha	Product. (lakh MT.)	Area (in lakh ha)	Yield kg / ha	Production (lakh MT.)	Area (in lakh ha) kg	Yield kg/ ha	Production (lakh MT.)	Area (in lakh ha) kg	Yield kg/ ha	Production (lakh MT.)
Madhya Pradesh	42.25	890	40.28	44.58	885	39.42	48.79	1021	49.80	51.43	1123	57.75
Ratlam Distt.	1.75	679	1.21	1.80	1010	1.81	1.90	1073	2.04	2.13	1141	2.43

Source: DDA Ratlam (M.P.)

Table 2: FLD Programme conducted for seed production of soybean by KVK Jaora (Ratlam)

Year	Variety	Area (ha)	No. of Demo.	Avg. yield (q/ha)		% increase yield	Total produce (Q.)
				Demo.	Local		
2004-05	JS-335	10	20	16.58	12.00	41.50	339.60
2005-06	JS-9305	05	10	16.28	11.50	29.36	162.80
2006-07	JS-9305	05	10	18.72	14.00	33.77	187.20
2007-08	JS-9305	05	10	16.90	13.00	30.00	169.00
2008-09	JS-9305	05	10	20.96	16.00	31.00	209.60

of soybean and was distributed in different village between 639 farmers of Jaora and Piploda Block of Ratlam district. Increase in agricultural production through quickest possible spread of new varieties developed by the plant breeder. The improved seeds of new varieties must be made available well in time, so that the planting schedule of farmers is not disturbed and they are able to use good seed for planting purpose. This is necessary to obtain expected dividends from the use of seeds of improved varieties.

It was observed Table 4 that the horizontal spread in respect of area and production was found in increasing manner in succession of the year and total seed production up to the farmer's level recorded 10493.20 quintals from the demonstration year 2004-05 to 2008-09. Front line demonstration programme conducted by KVK in 07 village amongst 60 farmers and technology demonstrated further 110 farmers in same village and between 64 in other village. Adoption of soybean farming in M.P. fills a gap in *Kharif* season. Being more remunerative than other crops, it raised the income levels of the farmers as also living standard. Under

front line demonstration important techniques were demonstrated at farmer's field for showing better result over to farmer's practices.

Conclusion :

Front line Demonstration programme played an important role for adoption and dissemination of improved seed production technology. The results of front line demonstrations convincingly brought out that the yield of soybean could be increased by 29.36 per cent to 41.50 per cent with the intervention on full package of practices. The front line demonstration (FLDs) plays a very important role to disseminate recommended technologies because it shows the potential of technologies resulting in an increase in yield at farmers' level. Under demonstrations some specific technologies like seed treatment, spacing, improved varieties, balance use of fertilizer, inter-cultural and plant protection measures were undertaken in a proper way. These technologies were found to be the main reason for increase in the yield and thus it can be said that FLDs were the most successful tools for transfer of technology.

Table 3: Soybean seed production at KVK Farm

Year	Variety	Total seed produce (Q.)	Supply to farmers (Nos.)	Area covered under production (ha.)
2004-05	JS-335	7.20	24	10.20
	JS-9305	7.99	29	11.41
2005-06	JS-335	11.50	38	16.40
	JS-9305	17.35	58	24.78
	NRC-37	13.60	45	17.00
2006-07	JS-335	6.00	20	8.57
	JS-9041	11.25	38	16.00
	NRC-37	8.00	27	10.00
2007-08	JS-335	32.83	82	46.00
	JS-9305	27.90	56	39.80
	JS-9560	7.00	28	10.00
2008-09	JS-335	20.00	40	28.57
	JS-9305	35.00	87	50.00
	JS-9560	26.90	67	53.80
	Total	232.52	639	342.53

Table 4: Horizontal spread of the technology

Variety	2004-05 (Demo. year)			2005-06			2006-07			2007-08			2008-09			Total Production (q)	
	Area (ha)	Demo (No.)	Tot. Produ. (q)	Area (ha)	Demo (No.)	Tot. Produ. (q)	Area (ha)	Demo (No.)	Tot. Produ. (q)	Area (ha)	Demo (No.)	Tot. Produ. (q)	Area (ha)	Demo (No.)	Tot. Produ. (q)		
JS-335	10	20	339.6	20	45	660	30	50	900	60	100	1920	-	-	-	3819.6	
JS-9305	05	10	162.8	15	25	480	25	50	800	40	90	1280	-	-	-	2722.8	
JS- 9305	-	-	-	05	10	187.2	10	20	370	20	40	700	30	60	1050	2307.2	
JS-9305	-	-	-	-	-	-	05	10	169	10	20	330	15	30	525	1024	
JS-9305	-	-	-	-	-	-	-	-	-	05	10	209.6	10	20	410	619.6	
																Total	10493.2

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