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Research Article

Performance of Seed Villages and Farmers Self Help Group in Central India.

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Abstract

Seed is the basis of agriculture and decides the fate and ultimate productivity of other inputs. Good quality seed alone increases the yield by 15-20 per cent, as proven in various research trials. To meet the potential challenge of catering to the food need of 1.4 billion people of our country by 2025, a quantum increase in agricultural productivity is very much essential and hence production and distribution of high quality seeds of improved varieties/ hybrids to the fanning community is becoming increasingly important. The expansion of agriculture under tropical conditions due to the improvement of cultivars with juvenile period imposed scientific and technological challenges concerning the seed production under different environmental conditions. Self help group based informal seed production has recently gained popularity as an alternative to the formal seed sector of disseminating new crop varieties. This is because farmer produced seed is readily available and is more affordable by most farmers than certified seed. This study examined the profitability of farmer based seed production in Ujjain district of Madhya Pradesh through the centrally sponsored seed village scheme, through the Krishi Vigyan Kendra. The principal finding was that in the farmer based self help group seed production was a profitable enterprise and was less sensitive to market fluctuations. Compared to traditional farming, seed production as an enterprise gives more, net profit margins which may be five times higher. Speedy horizontal dissemination of new varieties and crop diversification are additional benefits of this system for sustainable production and food security.

Keywords: Self help group (SHG),Frontline demonstrations(FLD), Seed replacement rate (SRR),Seed multiplication rate (SMR), Benefit cost ratio (B: C)

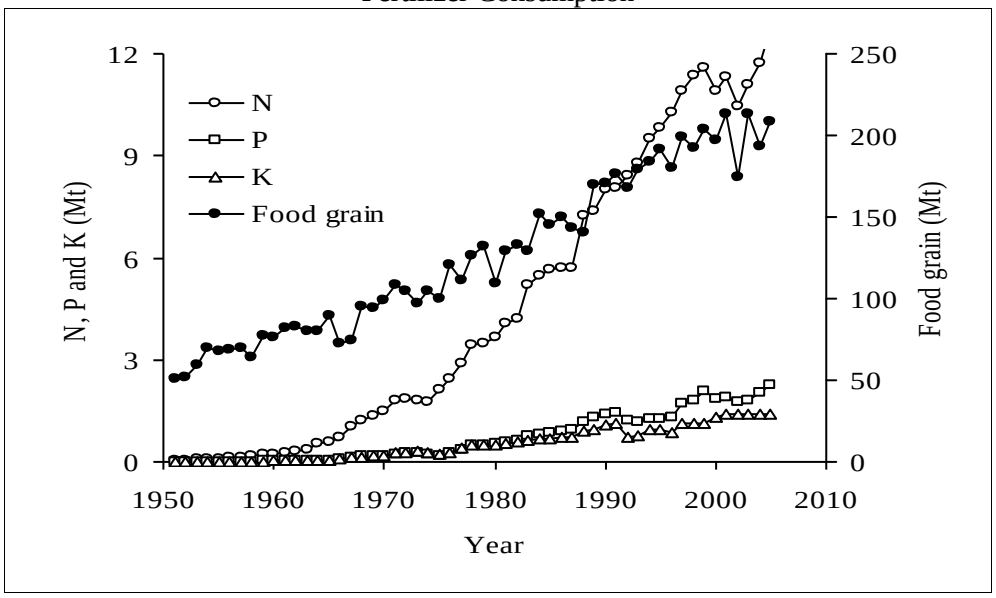
Introduction

Agriculture is a key primary industry in India that makes a significant contribution to the wealth and quality of life for rural and urban communities in India. This sector accounted for more than 30 per cent of total GDP till early Nineties, failed to maintain its growth and in fact, it has witnessed a sharp deceleration in growth after the mid-1990s, Agricultural Statistics (2005 and 2007). This happened despite the fact that agricultural productivity in most of the states was quite low and there was a lot of scope and potential for the growth of agricultural output. On the other hand, India has been targeting a more than 4 per cent growth rate in Indian agriculture, but the actual growth rate has not turned out to be even half of this target. As more than 50 per cent of the workforce and about same proportion of the total population of the country depends on agriculture for income and livelihood, slow growth in agriculture is putting them in distress.

Population trends project India to emerge as the most populous country in the world in the coming decades. Demand and supply prospects of food items become important indicators to the country's food security concerns. These projections are based on growth in population and income, price change and change in productivity levels. Although, various demand and supply estimates are available for cereals with alternative assumptions in literature, not much has been said about other food items. Based upon the anticipated growth in population India's population is

likely to stand at around 1329 million by 2020. This will happen despite the fall in annual compound growth rate from 2.14 in 1991 to 1.97 in 2001. Since the growth in population is exponential in nature, India's population will continue to dilate by an additional ~16 million people each year .Just to meet the requirements on food for this population alone (leave aside seed and feed needs), India will be required to produce additional 3.2 million t foods each year (1 t food is assumed to feed 5 persons for one year) Dyson and Hanchante, 2000. In order to keep below the Malthusian cross (i.e. when population growth rates exceed the rate of food supply increases) it will be necessary to achieve at least 2 t food grain productivity/ha from rain fed areas and 4 t/ha from irrigated areas, Hanchante and Dyson (2004). Current food grain productivity of rain fed crops stands at less than about 1 t/ha and that of irrigated crops at about 2 t /ha. Thus, the traditional agricultural systems though sustainable at low levels of productivity, will not be able to measure up to the rates of growth that can neutralize the needs of burgeoning population. A proper mix of technological interventions, inputs, extension and infrastructure support will become increasingly important to ward off any food deficiencies to arise.

Fig. 1: Food grain production and consumption of N, P and K in India: Fertilizer Consumption

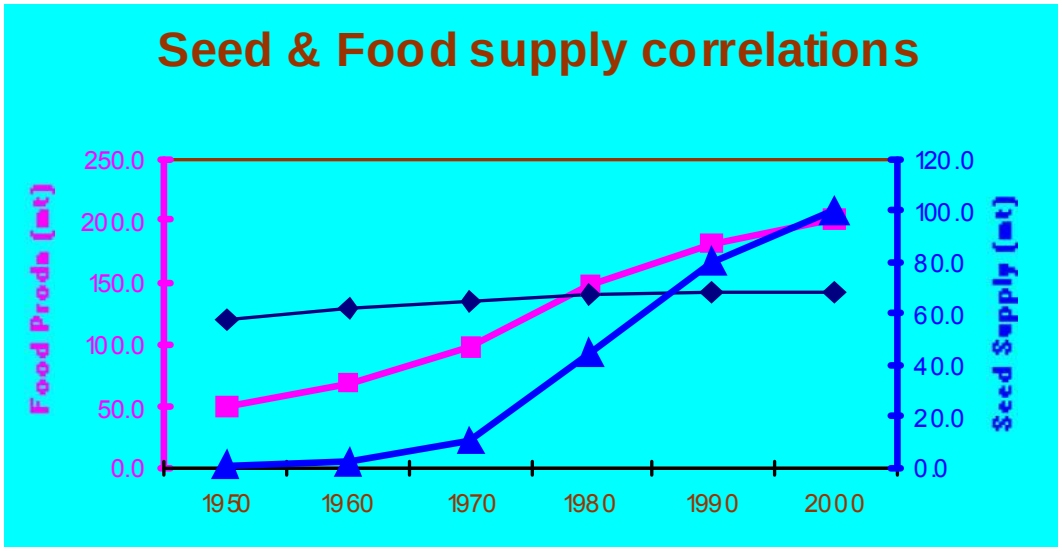


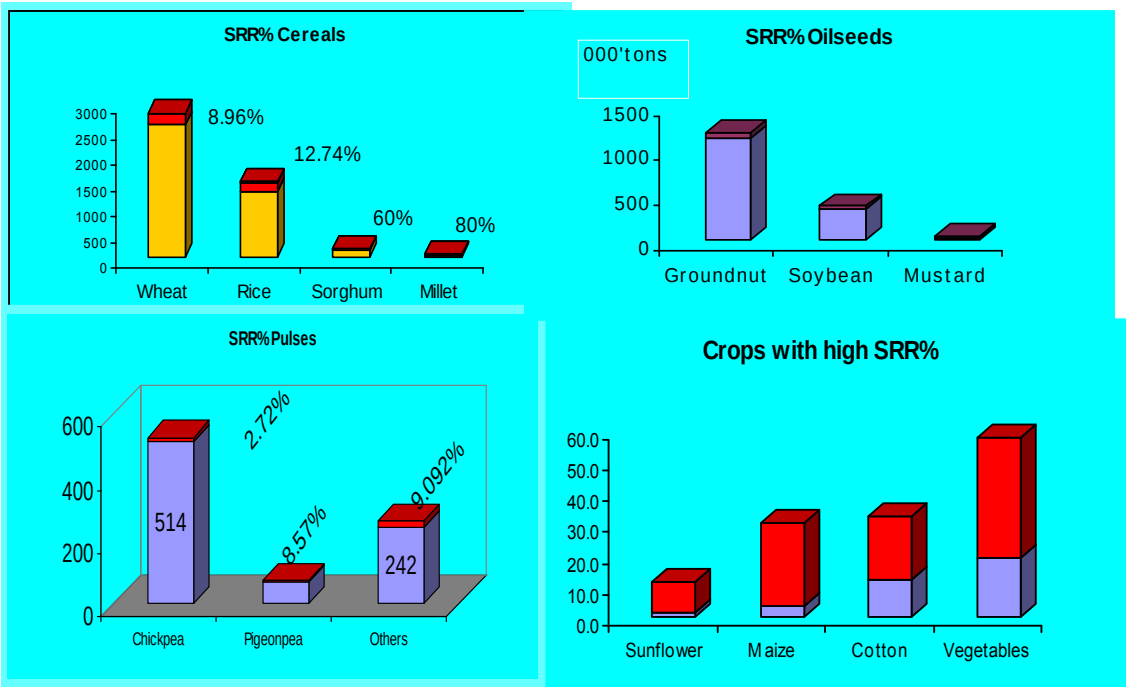
Relevance of seed based technologies for farmers

Seeds, the source of plant life, are the basis of the food and livelihood security for farmers. Even though it forms a relatively small part of the cost of production for farmers, the significance of access to and use of good quality seeds cannot be overemphasized. Under the WTO regime, along with quality, the aspect of preserving and using indigenous varieties becomes critical. Changing trends in the farming systems have played havoc with the lives of farmers. Among these changes, significant has been the shift in cultivation patterns from traditional landraces to expensive, high yielding varieties. This has placed an additional burden on our farmers, who already have to cope with the rising costs of other inputs such as fertilizers, water and electricity.

Drawing attention to these critical issues, seed village programme (SVP highlighted the trend among poor farmers to save the quality portion of their crop produce for use as seed during the next cropping season. Not only was this cost effective for the farmers, but it also ensured the protection and conservation of crop genetic diversity. In some instances, the seeds saved were stored in community seed/ gene banks from where farmers could procure such locally grown seeds. It was thus an effective way to conserve locally adapted varieties and genetic resources at the farm and community level, as well as promote production and consumption of the main regional food crop varieties amongst farming communities.

Seed based technologies, i.e. offering new varieties to farmers, have the potential to increase crop productivity by 20-30 % within a very short period of time. Soybean in kharif and gram in Rabi occupy almost 95 and 60 % area under cultivation in the district, respectively. As such both these crop face stagnation in the productivity owing to various reasons of which non- availability of improved high yielding seed being the basic reason .Using externally produced seeds create dependency in many ways.



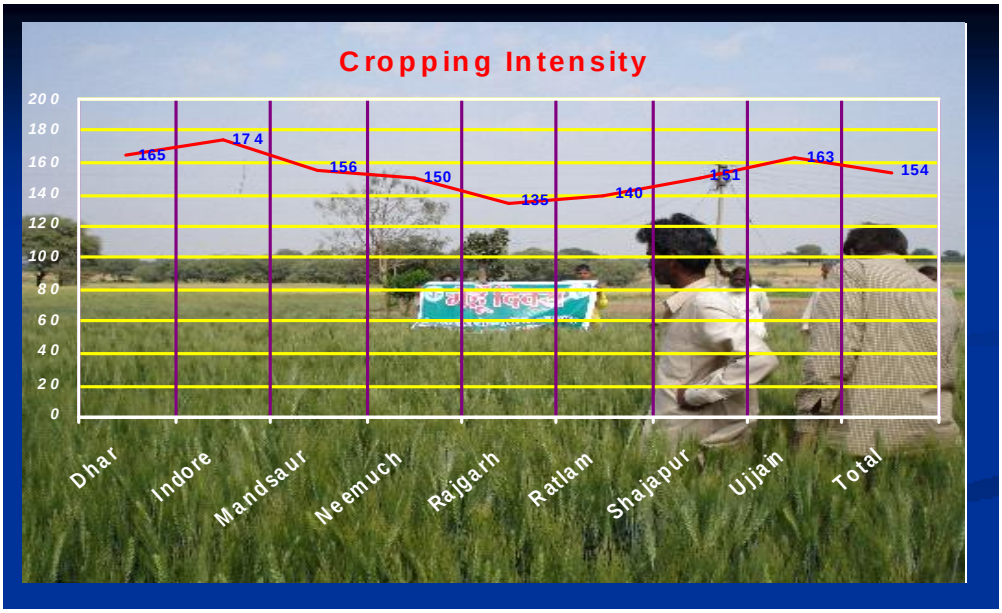


Commercially produced seeds may not always be available and in time. Farmers may have to choose from what traders or seed companies make available through sales or promotion. Keeping this in view and to cater the need of farmers in terms of quality, high yielding and low cost of seed, KVK Ujjain started seed village programme on soybean and Gram. Farmers with small holding in Ujjain district are still not inclined to purchase quality seed since they are not very much aware about its impact and also because of their socio-economic status. Therefore, the seed replacement rate is very low not exceeding 6 %. According to seed corporation total 180 tones seed of soybean and only 250 quintal of certified seed of

gram is supplied under seed production programme, Whereas the total requirement of seeds of soybean and is 1200 tonnes for an ideal SRR of 25-30 %. Hence, a proper technology transfer strategy has to be worked out to develop and alternative seed supply system as well as to popularize quality seed, particularly of the new improved varieties, with less cost involved in it.

Methodology: The KVK Approach (Phase –I)

The Krishi Vigyan Kendra (Farm Science Centre) Ujjain took the initiative to implement seed village concept in soybean and gram to supply quality seeds to the needy farmers. A group of farmers in selected villages were identified under seed village concept to produce quality seeds of a particular crop variety suited for their region. Farmer's selection is the most important part of this programme. In case of Ujjain district majority of farmers were interested to grow quality seed in large acreage but under this programme only 15 kg seed could be distributed to each farmers So keeping this in view those farmers who could easily grow 15 kg seed in isolation on their field having potential to produce quality seeds by adopting all the basic norms with required infrastructural facility like irrigations, approachable for scientists visit particularly during kharif season were selected.



The varieties identified for quality seed production were JS 93-05 and JS 95-60 in soybean and JG -11, JAKI, JG 412 of chickpea for implementation of seed production under seed village concept because, this region of Malwa Agro climatic zone is prone to drought hence early and medium maturing, drought tolerant, high yielding variety of both the crops were the best alternative. Before the start of the programme villagers were educated through a training programme about the seed village concept and its importance in disseminating the improved production technology entire seed production techniques, so as to saturate entire area with quality seeds. KVK supplied genetically pure seeds of improved varieties for sowing followed by the visit of seed unit scientists to the seed production plots of each village regularly and providing technical guidance to the farmers regarding seed production during the entire crop season. During the first season 510 quintal seed was produced and supplied to adjoining villages, relatives and friends. During the crop season, training was also organized to educate the farmers on seed production skills, storage post harvest handling and processing Krishak Sanghothi were organized, by inviting all the farmers of the selected villages to create awareness in them about improved quality of seed and in getting increased yield and disseminating information regarding availability of seed for farmers to farmers marketing.

During the production programme innovative techniques viz; seed treatment with bio-agent and Rhizobium culture, ridge and furrow method, plant protection measures and means to minimize the cost of cultivation was also explained.

The training on post harvest handling of produce was also arranged. Since the scientists visited the seed village regularly under fulfilled KVK mandates like; farmers training, FLDs, OFTs and extension activities, the problems faced by the farmers in the crop production of other crops were also resolved which proved to be very helpful to develop intimate relationship with the farmers.

Thus, the seed village approach is bound to develop an alternate seed supply system but also, the group approach would lead the farmers to economic upliftment if they adopt seed production as a profession particularly by the rural youth.

Case Study (Phase –II): Looking into the positive impact of seed village, KVK motivated the farmers to form self help group in the cluster area where the seed village programme was implemented. The groups were registered with the state seed certification and started entrepreneurship with a modest share capital. Three farmers group started seed production under the guidance of KVK and their performance was assessed after two years.

Results and Discussion

Data in Table 1 depicts the economy of district Ujjain as influenced by the agricultural commodities and reflects the need of quality seed in boosting the production of the farmers. Soybean is the ruling crop covering 52.8 percent of market share and contributing Rs. 2733.91 crores to the district revenue, followed by gram, wheat, mustard, black gram and maize, respectively. Productivity of all the crops except maize and mustard is higher than the yield levels at the state and national levels. Hence, it was imperative to intervene in providing the best genotype as seeds to face the variations in climate and the low rainfall situation of the district. Seed if available at the door steps of the farmers would not only increase the seed replacement rate but would also reflect in terms of higher productivity and crop diversification.

Table 1 Economic Contribution of Various Crops in Ujjain District

S. No	Crop	Area (000 ha)	Production Qt	Productivity (Kg /ha)	Total Market Value /year (Crore Rs)	Rank	Percent Market Share
Cereals							
1	Maize	6638	14935	2249	1.72	VI	0.03
2	Wheat	165200	6165264	3732	955.6	III	18.5
Pulses							
1	Black gram	1176	7056	600	2.96	V	0.1
2	Gram	201100	2372980	1180	1044.1	II	20.2
Oilseed							
1	Soybean	453610	6668067	1470	2733.91	I	52.8
2	Mustard	1920	18720	975	5.99	IV	0.1
TOTAL		849643			5175.59		

The major crop of the district being soybean, the need of quality seed was of utmost importance, as evident from the data in table 2. The data revealed that seed replacement rate of this important crop ranged between 4.32 to 6.02 over a period of four years, which gave a guiding force to KVK scientists to implement the seed village concept. Table 3 is indicative of the new seed varieties of soybean and chickpea which were introduced after due assessment. Total seed produced in three years cycle of both the crops was fully utilized by the beneficiaries and in propagating this material to their fellow farmers.

Table 2. Total area under seed production of soybean in Ujjain district

Year	Area Registered under certified seed (Ha)	Total seed Certified (Qt)	Seed Replacement Rate (SRR) %	Seed Multiplication Ratio (SMR)
2005-06	18950.9	205385	4.74	14.5
2006-07	19252.3	172115	4.81	11.9
2007-08	18364.5	184701	4.32	13.4
2008-09	27146.9	354007	6.02	17.4

Table: 3. Crop, Area and variety under seed village programme in Ujjain district

Year	Kharif			Rabi		
	Crop	Variety	Total Seed Produced	Crop	Variety	Total Seed Produced
2006-07	Soybean	JS-93-05	278	Chickpea	JG-130	319
2007-08	Soybean	JS-95-60	510	Chickpea	JAKI-9208 JG-412 Vishal	49.4 80.5 345.3
2008-09	Soybean	JS-93-05	525	Chickpea	JG-412	413

After successful intervention of seed village for three consecutive years, impact assessment and horizontal spread of soybean varieties was assessed and its effect on the economy of the district was worked out. The result in table 4, indicated that the seed produced in the first year in 30 hectare after four cycles of production spread over an area of 16,624 hectare and the production achieved was 2,96,091 quintals which was 84,135 quintals more than the production of the existing varieties. The phenomenal change was reflected was in terms of percentage of area replaced which rose up to 11.87 as against 6.02 percent before the inception of the seed village. In terms of economic gain the increased production led to a profit of 1304 crores over the existing seed varieties. Katungi et al, 2011 have reported similar economic scenario in seed based participatory interventions in Kenya.

Table: 4 Area occupied under Soybean seed production due to Seed Village Scheme, horizontal spread and its economic impact in Ujjain district.

Year	Horizontal spread Area (ha)	Total area of cluster(ha)	Prod. Under FP (qt)	Total production (Qt)	Additional prod. over control FP (Qt)	% of area replaced (Ha)	Additional Income (Lac Rs)
2007-08	30	68000	345	510	165	0.04	2.56
2008-09	710	68000	8698	12440	3743	1.04	58.02
2009-10	16617	210000	216021	290135	74114	7.91	1148.77
2010-11	16624	140000	211956	296091	84135	11.87	1304.09

Phase-II Study

Data in table.5 shows that initially 60.0 ha was registered under the seed production programme of soybean, wheat, potato and gram. The net income per hectare in seed enterprise was higher than the normal crop production where as the cost incurred in seed production led to a handsome return. In term of cost benefit ratio (B: C) on an average, for every rupee invested in seed gave an additional return of Rs 4.97. In all the crops the B:C ratio when compared to

normal crop production and seed production was almost 57,69 and 67 percent more. With such a return the enterprise is likely to remain sustainable and the net income of individual farmers would also be increased.

Table: 5. Impact of Farmers Self help group in Seed Production and its Economics.

Self Help Group	Crops	Area (ha)	Raw Seed Produced.qt	Total Cost of production.Rs	Market Value of produce .Rs	Sale Value of seed.Rs	Net Income. Rs	Net income/ha in seeds.Rs	B:C Seeds	B:C Grain
Maa Gyatri SHG	Soybean	20	270	325600	626400	927200	601600	30080	2.8	1.9
	Wheat	8	304	173120	462080	751040	577920	72240	4.3	2.7
	Gram	4	46	50880	165600	280320	229440	57360	5.5	3.3
	Potato	5	1050	519000	1260000	2001000	1482000	296400	3.9	2.4
	TOTAL	37	1670	1068600	2514080	3959560	2890960	456080	4.1	2.6
CSA Bichrod	Soybean	9	153	197100	626400	1055700	858600	95400	5.4	3.2
	Wheat	4	164	129120	462080	795040	665920	166480	6.2	3.6
	Potato	2.5	487.5	406500	1260000	2113500	1707000	682800	5.2	3.1
	TOTAL	15.5	2474.5	1801320	4862560	7923800	6122480	1400760	5.6	3.3
Uzhen group Kapeli	Wheat	6	246	151120	462080	773040	621920	103653.33	5.1	3.1
	Potato	1.5	292.5	361500	1260000	2158500	1797000	1198000	6.0	3.5
	TOTAL	7.5	538.5	512620	1722080	2931540	2418920	1301653	5.5	3.3
Grand Total		60	4683	3382540	9098720	14814900	11432360	3158493	5.0	3.0

Conclusion

The farmer–led seed enterprises in central India are contributing towards food and nutrition security through crop diversification, as well as the improvement of the livelihood through income earned from the seed business. The success of farmer-led seed enterprise models is based on building good partnerships with wide range of institutions/organizations for identifying, establishing and training seed growers groups. Building partnerships around these institutional linkages has been essential for the success of the project. This requires commitment of all partners, growers as well as local, regional and national research and development agencies. Continuous support of farmer led seed enterprises through capacity building of seed growers particularly in seed production and marketing is necessary to ensure that they grow on sustainable basis.

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