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Research Paper

Role of front line demonstration on transfer of isabgol production technology in Barmer district of Rajasthan

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SUMMARY : The present study was conducted in Gudhamalani, Panchayat Samiti, Barmer district of Rajasthan. From Panchayat Samiti was selected maximum number (70) of front line demonstrations on isabgol crop conducted by Krishi Vigyan Kendra, Danta, Barmer district during the last five years (2005-06 to 2009-10). The results revealed that the average yield recorded in the FLD,s field and farmer's field was 8.50 and 6.50 q/ha' during 2007-2008, respectively and FLDs field and farmers field lowest yield was 5.5 and 4.40 q/ha: during 2006- 2007, respectively. The result showed 30.68 to 35.24 per cent yield increase in FLDs over farmers practice during 2005-06 to 2009-2010. Therefore, front line demonstration programme was an effective tool for increasing the productivity of isabgol and changing knowledge, attitude and skill of farmers. This created greater awareness and motivated the other farmers to adopt improved practices of isabgol.

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Isabgol, FLDs, Demonstration

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BACKGROUND AND OBJECTIVES

Isabgol is one of the most important medicinal crops grown for its husk and seeds. India ranks first in isabgol production (98%) and the sole supplier of seeds and husk in the international market. At present isabgol crop has required the place "Dollar earner" in north Gujarat and southwestern Rajasthan (Modi *et al.,* 1974). As a whole, India holds near monopoly in production and export of isabgol to the world market and about 80-90 per cent produce is exported through, which about Rs. 100 crores are earned annually (Maiti and Mandal, 2000). Among medicinal plant, isabgol is the first ranking foreign exchange earner for the country (Rupees 30 million annually) Dhar *et al*. (2005). The mucilage content in isabgol seeds cultivated in India is high (Dalal and Sriram, 1995).Isabgol contains a significant amount of proteins and husk yields colloidal mucilage which are valued for medicinal application and used in aryuvedic, unani and allopathic systems of medicines. It is an annual herb and cultivated in Rajasthan, Gujarat, Madhya Pradesh and Haryana. Rajasthan is one of the main isabgol producing states of India. The state ranks first in terms of area and production in the country.During 2003-04 the area and production of isabgol in Rajasthan was 120954 hectare and 74147 tonnes, respectively, with an average productivity of 613 kg ha^{-1} (Anonymous, 2003 and 2011). Application of phosphorus not only increases the crop yield but also improves the quality and imparts resistance against diseases. The use of phosphate solubilizing bacteria assumes greater significance because it helps to convert insoluble organic phosphate into simple and soluble forms. Members *Pseudomonas, micrococus, Bacillus* are some of the PSB. Inoculation of seeds with PSB culture also increase

Table A: Area, production and productivity of Isabgol in Rajasthan *Rabi* 2010-11

Districts	Area (ha)	Production (ones)	Productivity (kg/ha)
Barmer	60829	19621	323
Jalore	36922	21963	595
Jodhpur	34474	30011	871
Nagaur	40283	23791	591
Jaisalmer	26243	9791	373
Rajasthan	214188	113344	529

Source: Vital Agriculture Statistics (2011-12)

nodulation, crop growth, nutrient availability and uptake and crop yield (Shrivastav and Ahlawat, 1993).

The deficiency of zinc is major cause of poor yield or even crop failure (Takkar and Randhawa, 1978). It has also play a significant role in various enzymatic and physiological activity of the plant body. Zinc catalyses the process of oxidation in plant cells and vital for transformation of carbohydrate. Therefore, present investigation was under taken to find out the effect of phosphorus, PSB and zinc on the performance of isabgol. The mucilage present in its husk has medicinal properties and used against constipation, irritation of digestive track etc. The seed and after husk removal part is used as animal feed. Isabgol thrive well in warm temperate region and requires cool and dry weather during its crop season hence, generally it is sown during winter months. Early sowing makes the crop vulnerable to downy mildew disease and too late sowing provides shorter growing period along with possibility of shattering of seeds due to winter rains. It can be grown well in saline soils with poor quality water in Barmer as *Rabi* crop due to its low water requirement.

It matures in about 120 days (November to March-April). The spikes are harvested when they turn red. The average yield comes to 800-1000 kg/ha. The husk constitutes about 25 per cent of the seed by weight. Generally, no chemical fertiliser is used but if the nutrient contain in soil is very low, 25 kg/ha nitrogen and 25 kg/ha phosphorous are required to be applied as basal doses. Several investigators have pointed to the usefulness of ionizing radiation for inducing mutation in psyllium (Bhagat and Hardas, 1980, Sareen and Kaul, 1991, Lal and Sharma, 2002 and Jain *et al*., 2005). The usefulness of any mutagens in plant breeding depends not only on its mutagenic effectiveness but also on its efficiency (Krishna *et al*., 1984, Kharkwal, 1998 and Jain, 2004). Isabgol products available in the market are used as laxative that is particularly beneficial in constipation, chronic ailments and dysentery. Seed prices are not governed by any regulations and are solely dependent upon the farmers. The average price of the seed is around Rs. 35 to Rs. 55 per kg (FAI, 2004-05). The crop covers 214188 hectares with the production of 113344 ton and average productivity of 529 kg/ha (Vital Agriculture Statistics, 2010-11) in the state. However, isabgol cultivation under arid condition with sandy loam soil is a profitable venture, which is gaining popularity among the farmers of western Rajasthan.

RESOURCES AND METHODS

The present study was conducted in Gudhamalani, Barmer, Chohtan, Dhorimanna Panchayat Samiti, Barmer district of Rajasthan. These Panchayat Samiti were selected

Table 1: Difference between demonstration package and farmers practices of Isabgol

Sr. No.	Particular practice	Domonstration package	Farmers practices
1.	Variety	RI 89	Local
2.	Seed rate	05 kg/ha"	15 - 20 kg/ ha"
3.	Seed treatment	Carbendazim @ 3g/kg PSB+ *Azotobactor* 500g/ha each	Not applied
4.	Sowing method	Line sowing	Broadcasting
5.	Fertilizer doses	30: 25: 00 (N : P: K kg/ha)	Less quantity without knowledge
6.	Plant protection measures	Need based spray of insecticides and pesticides	No use of insecticide and fungicides

Table 2 : Year wise result of demonstration conducted

Years	No. of FLDs	No. of farm families	Ave. demo.	Yield of local check	Percentage
2005- 06	20	10	7.25	5.5	31.81
2006-07	20	10	5.75	4.4	30.68
2007-08	30	15	8.50	6.5	30.76
2008-09	20	10	8.30	6.2	33.87
2009-10	20	10	8.25	6.1	35.24

maximum number (110) of front line demonstrations on isabgol crop were conducted by Krishi Vigyan Kendra, Danta, Banner district during last five year (2005-2006 to 2009-2010). The primary data were collected from the fanners with the help of interview schedule and interpreted and presented in terms of percentage and the qualitative data were converted into quantitative form and expressed in terms of per cent increased yield. Thus, a total sample size comprised of 110 respondents from 16 villages where FLDs were conducted by KVK, Danta, Barmer district of Rajasthan and were included for the study.

OBSERVATIONS AND ANALYSIS

The result obtained from the present investigation has been discussed below:

Major difference between demonstration package and farmers practices of isabgol:

The differences in adoption of demonstration and local farmers practices of isabgol production technologies were measured as per recommended package and practices in which the major differences were observed regarding high yield variety (HYVs), seed rate, seed treatment and balance use of fertilizers. Table 1 shows that under FLDs only recommended HYVs, seed rate @ 05 kg/ha, carbendazim @ 3 g/kg PSB+ *Azotobactor* 500g/ha each seed with fungicide, insecticide for seed treatment given to the farmers for demonstration. Whereas, under farmers practice they generally used local self-seed at high seed rate without treatment. These differences in the packages were in line with the findings of Singh and Varshney (2010), Verma *et al.* (2010), Khan and Chauhan (2005) and Veerasamy *et al.* (2003). The results obtained during last five years (2005-06 to 2009-10) are presented in the Table 2. The results revealed that the average yield recorded in the FLDs field and farmers field was 8.50 and 6.50 q/ha during 2007-2008 and in FLDs field and farmer's field lowest yield was 5.5 and 4.40 q/ha' during 2006-2007, respectively. The result shows (Table 3) that 30.68 to 35.24 per cent yield increase in FLDs over farmers practice during 2005-06 to 2009-2010. These effects in the demonstration packages were in line with the findings of Singh and Varshney (2010), Verma *et al.* (2010) and Veerasamy *et al.* (2003). Similar work by Narolia *et al.* (2003) was done on the growth and quality of isabgol by phosphorus, PSB and zinc (Kumar *et al.*, 2013) also worked on the assessment of genetic variability and magnitude of correlation co-efficient among different traits in isabgol.

Conclusion:

It is concluded that the front line demonstration programme was an effective tool for increasing the productivity of crops and changing knowledge, attitude and skill of farmers. The 30.68 to 35.24 per cent (2005-2006 to 2009-10) yield increase in FLDs over farmers practice (traditional) was recorded in isabgol cultivation. This created greater awareness and motivated the other farmers to adopt improved practice of isabgol. These demonstrations also built the relationship and confidence between farmers and scientists. The beneficiary farmers of FLDs also play an important role as source of information and pure seeds for wider dissemination of the HYV of isabgol for other nearby farmers.

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REFERENCES

Anonymous (2003). *Vital agricultural statistics, 2002-03*. A publication of Directorate of Agriculture, Government of Rajasthan (JAIPUR) INDIA.

Annonyms (2011). Rajasthan agricultural statistics at a glance for year, 2010-11. *Commission rate of agriculture Rajasthan, Jaipur (statistics cell).* pp. 111.

Bhagat, N.R. and Hardas, M.W. (1980). Studies in Induced and Natural Polygenic Variation in *Plantago ovato* L. Forsk. *Indian Drugs,* **8**: 376-380.

Bremer-Reinders, D.E. (1962). Mutation research in canary grass. *Euphytica*, **11**: 293-310.

Choudhary, Madan Lal and Pagaria, Pradeep (2012). Demonstration-An effective technology for increasing the productivity of Isabgol. *Agric. Update,* **7**(1&2) : 99-101.

Dalal, K.C. and Sriram, S. (1995). Advances in Horticulture – Medicinal and Aromatic Plants, **11**: 575-604.

Dhar, M.K., Kaul, S., Sareen, S. and Koul, M.K.(2005). *Plantago ovata*: Genetic diversity, cultivation, utilization and Chemistry. *Plant Gen. Res. Characterization & Utilization*, **3**(2): 252-263.

Jain, D.K., Ranwah B.R. and Bordia, P.C. (2005). Mutagenic effectiveness and efficiency of gamma-rays in isabgol (*Plantago ovata* L. Forsk). *Crop Improv.,* **32**: 71-77.

Jain, S.K. (2004). Induction of genetic variability through mutagenesis in black gram (*Vigna mungo* L. Hepper) Ph.D. Thesis, Department of Plant Breeding and Genetics, Maharana Pratap University of Agriculture and Technology, Udaipur, RAJASTHAN (INDIA).

Khan, P. M. and Chauhan, J. (2005). Demonstration – An effective technology for increasing the productivity of gram. *Indian Res. J. Extn. Edu.,* **16**: 221-223.

Kharkwal, M.C. (1998). Induced mutations in chickpea (*Cicer arietinum* L.): Comparative mutagenic effectiveness and efficiency of physical and chemical mutagens. *Indian J. Genet.,* **58**: 159-167.

Krishna, G.K., Shivashankar, G. and Nath, J. (1984). Mutagenic response of Rhodes grass (*Chloris gayana* Kunth.) to gamma-rays. 11. Studies on second (M_2) generation parameters. *Euphytica,* **33**: 517-524.

Kumar, Rajnish, Dodiya, N.S., Khatik, C.L. and Padiwal, N.K. (2013). Assessment of genetic variability and magnitude of correlation co-efficient among different traits in isabgol [*Plantago ovata* (L.) Forsk]. *Internat. J. Plant Sci.,* **8** (1) : 193-196.

Lal, R.K. and Sharma, J.R. (2002). Induction by gamma irradiation (^{60}CO), characterization and utilization of mutants for economic traits in isabgol. *J. Med. Arom. Plant Sci.,* **24**: 689-694.

Maiti, S. and Mandal, K. (2000). *Cultivation of isabgol*. A publication of NCR for Medicinal Aromatic Plants. Boriavi, Anand (GUJARAT) INDIA.

Modi, J.M., Mehata, K.G. and Gupta, R. (1974). Isabgol is a Dollar earner of North Gujarat. *Indian Fmg*., **23** (12) : 9-14.

Narolia, G.P., Shivran, A.C. and Reager, M.L. (2013). Growth and quality of isabgol (*Plantago ovata* Forsk) influenced by phosphorus, PSB and zinc. *Internat. J. Plant Sci.,* **8** (1) : 160-162.

Sareen, S., Kaul, V. and Kaul, A.K. (1999). Resource allocation in induced variants of [*Plantago ovata* (L.) Forsk.]. *Crop Improv.,***26**: 38-45.

Shrivastava, T.K. and Ahlawat, I.P.S. (1993). Response of pea (*Pisum sativum*) to phosphorus, molybdenum and biofertilizers (PSB and *Rhizobium*). *Indian J. Agron*., **40** : 630-635.

Singh, P.K. and Varshney, J.G. (2010). Adoption level and constraints in coriander production technology. *Indian Res. J. Extn. Edu.,* **10**(1): 91-94.

Takkar, P.N. and Randhawa, N.S. (1978). Micronutrient in Indian agriculture – A review. *Fert. News,* **23** (3) : 8-26.

Veerasamy, S., Satpathy, C. and Rao, G.A. (2003). Constraints of coriander production in orissa. *Indian Res. J. Extn. Edu.,* **33**(1&2) : 58-63.

Verma,A.K.,Meena, R.R., Dhakar, S.D. and Suwalka, R.L.(2010). Assessment of coriander cultivation practices in Jhalawar district. Souvenir, National Semiar on Precision Farming in Horticulture, pp. 686-689.