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Research Article

Impact of frontline demonstration on lentil in Ambala district of Haryana

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SUMMARY : Lentil is an important pulse crop of Haryana. Krishi Vigyan Kendra (KVK), Tepla, Ambala conducted 28 frontline demonstrations in different villages on lentil. The results were compared with full package of practices *viz.,* improved variety, seed treatment, seed inoculation, recommended dose of fertilizer, use of SSP fertilizer and plant protection management etc. and farmer practices included local or old variety, no seed treatment, no seed inoculation and imbalance and wrong choice of fertilizer. The FLD on lentil registered 24.51 per cent higher yield over farmers practice on an average. The highest yield (13.75 qt/ha) was recorded in the year 2009-2010 in FLD, which was 23.64 per cent more over the farmers practice (10.50 qt/ha.). Average extension gap was recorded 2.09 qt/ha. and average technology index was recorded 28.49 per cent. The technology gap ranged from 1.75 qt/ha. to 8.75 qt/ha. On an average, technology gap was 4.05 qt/ha.

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Key Words :
Lentil, Frontline demonstration, Extension gap, Technology gap

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BACKGROUND AND OBJECTIVES

Lentil (*Lens culinaris*) is one of the oldest pulse crops and most nutritious among the *Rabi* pulses. India ranks first in the world in respect of production as well as acreage. In India, it is mainly cultivated in Uttar Pradesh, Madhya Pradesh, Chhattisgarh, Jharkhand, Bihar and West Bengal. These states together contribute 85 per cent of area and 90 per cent production of lentil. However, the average productivity is significantly poor being only 714 kg/ha. below the world average of 1008 kg/ha. Annual species of the genus *Lens viz., L. culinaris* Medik has been divided into two sub species of *macrosperma* and *microsperma* mainly on the basis of seed size. Lentil originated in Near East and Mediterranean region (Kumar and Srivastava, 2007).

Lentil is generally grown in rainfed crop during *Rabi* after rice, maize and pearl millet. In intercropping it is mainly grown with barley and mustard. It is also grown as an inter crop in autumn planted sugarcane. In north-eastern plains, it is also grown as *utera* crop after rice. The seed are broadcast in standing crop of rice just before harvest (Anonymous, 2008).

The lower yields of lentil in Ambala region are attributed to the non-availability of improved cultivars that are sensitive to the pest and diseases and crop and land management practices. Among the different agronomic practices, date of sowing, crop geometry (row spacing), seed treatment, plant population and crop management practices play an important role in determining the yield of lentil. The basic objectives of FLD are the speedy spread of new technology of lentil in Ambala district.

RESOURCES AND METHODS

The present study was carried out by Krishi Vigyan Kendra (KVK), Tepla, Ambala (Haryana) during *Rabi* seasons from 2005-2006 to 2010-2011 at farmers' fields of adopted villages namely, Akbarpur, Harda, Jawahargarh, Dhurala, Gola, Goli, Sambhlkha and Chudiala. The area under each demonstration was 0.40 ha (1 acre). In the demonstration one control plot was also kept where farmers' practice was carried out. The improved package of practices like use of improved and recommended varieties, seed treatment, seed

inoculation, recommended dose of fertilizer, use of single super phosphate (SSP) fertilizer and plant protection measures were demonstrated on the farmers' fields through frontline demonstration at different locations. Materials for the present study with respect to FLD and farmers' practices are given in Table A. The demonstration farmers were facilitated by KVK scientists in performing field operation likes sowing, spraying, weeding, harvesting etc. during the course of training and visits. The collected data were calculated and analyzed to draw the inference.

Table A: Details of lentil growing under FLD and exiting practices

Sr. No.	Operation	Existing practices	Improved practices
1.	Use of seed	Local seed	Seed of improved and recommended varieties
2.	Seed treatment	No seed treatment	Seed treatment with carbendazim
3.	Seed inoculation	No seed inoculation	Seed inoculation with Rhizobium and PSB culture
4.	Fertilizer application	Application of DAP	Application of SSP
5.	Control of lentil pod borer	No insecticide used	Spray of Endosulfan

OBSERVATIONS AND ANALYSIS

Results of 28 frontline demonstrations conducted during 2005-2006 to 2010-2011 in 11 hectare area of 8 villages of Ambala district is presented in Table 1. These included the cultivation practices under FLD *viz.,* use of improved and recommended varieties (like Sapna, K-75, L-4076, L-931 and HM-1 in different years), seed treatment with carbendazim at the rate of 3 g per kg seed, balanced application of fertilizer (15 kg N: 40 kg P per ha.), seed inoculation with *Rhizobium* and Phosphate solubilizing bacteria (PSB) at the rate of 2.5 packet per ha, control of lentil pod borer by Endosulfan at economic threshold levels. The yield of lentil ranged between 6.25 qt/ha. and 13.75 qt/ha during observation period, which was 15.00 per cent to 33.74 per cent higher over farmers' practices (local check). On an overall basis, 24.51 per cent increase in yield was recorded. However, the variation in yield from location to location accounted for varying climatic conditions and variation in agricultural practices adopted. More or less similar reasons were provided by Tomar *et al.* (2003).

The extension gap ranged from 0.84 qt/ha. to 3.25 qt/ha. during the study period. Average extension gap was observed as 2.09 qt/ha., which emphasized the need to educate the farmers through various extension means like FLD, On-farm

trial (OFT), and Method of demonstrations etc. for adoption of improved agricultural technologies to revert the trend of extension gap.

The technology gap which is the difference between potential yield and yield of demonstration plots, was between 1.75 qt/ha. to 8.75 qt/ha during the study period. On an average, technology gap of 4.05 qt/ha was observed under five years FLD programme. The technology gap observed may be attributed to dissimilarity in the soil fertility status, agricultural practices and local climatic conditions. The technology index showed the feasibility of evolved technology at the farmers' field. The lower was the value of technology index, more was the feasibility of the technology demonstrated (Sagar and Chandra, 2004). The technology index varied from 11.29 per cent (2009-10) to 58.33 per cent (2005-06). However, in the present study no gradual reduction of technology index in successive years was observed which might be due to variation in yield in different years.

Conclusion:

The productivity gain under FLDs over traditional practice of lentil cultivation created greater awareness and motivated the other farmers to adopt appropriate production technology of lentil in Ambala district. The selection of specific technology like improved and recommended varieties, seed treatment, seed inoculation, balanced use of fertilizer and plant protection measures were undertaken in a proper way. These technologies were found to be the main reason for increase in yield and thus, it could be said that FLDs were the most successful tools for transfer of technology.

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