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RESEARCH NOTE :

Cluster front line demonstration of lentil under moisture stress condition of Kanpur Dehat

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SUMMARY : The study through cluster front line demonstration was carried out during autumn season with the objective to increase the production of pulses and replace the old cultivars. The soil of operational area was sandy clay loam, having low fertility status. The improved cultivar KLB-320 of lentil was tested with local genotype which is familiar in the locality. The cv. KLB-320 was planted in the first fortnight of November 2015 and harvested after 120-125 days of sowing in first fortnight of March, 2016. The cultivar KLB-320 gave grain yield by 15.60 q/ha, which was higher over local check by a margin of 3.45 q/ha. The growth and yield traits were concordant to the seed yield of lentil. The maximum growth and yield parameters were recorded under cv. KLB-320 on degraded soil in rainfed situation.

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KEY WORDS :
Biotic, Abiotic factor, Degraded soils, Front line demonstration, Operational area, Rainfed situation

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Although the lentil is recognized as a valuable pulse grown in autumn season all over country, little attention has been paid to the crop. It is known to be the most nutritious of the pulse and is an important item in the diet of the human. In general, there is shortage of moisture in *Rabi* pulses, while the *Kharif* pulses are sensitive to excess water. Generally the water conserved from *Kharif* mansoon, farmers grow the lentil at this moisture under rainfed situation.

In India lentil is cultivated on an area of 1.47 million ha with total production of 1.03 million tones. However, its productivity remains low (5.71 q/ha) due to cultivation under moisture stress condition. It is fact that farming majority residing in rainfed area, cultivating the lentil as a rainfed crop. This area is about 80 per cent, which is poor in fertility. Thus, we can say that the poor fertility status of soil, moisture stress condition, lack of improved production technology, economic condition of farmers, biotic and abiotic factors etc. are responsible for low productivity of this crop.

In Uttar Pradesh, lentil is cultivating on area of 4.38 lakh hectare with total production of 2.85 lakh mt. The productivity of lentil in U.P. is 5.37 q/ha, which is low in comparison to potential yield (Anonymous, 2016). Singh *et al*. (2013) have stated that more than manuring and irrigation, it is the capacity of

Table 1 : Growth, yield parameters and yield of lentil under front line demonstration

Sr. No.	Variety	Branches/ plant	Pods length (cm)	Pods/ plant	Seeds/ pod	Seed yield (q/ha)
1.	*KLB-320*	6.40	2.15	46.00	1.74	15.60
2.	Local check	5.25	2.00	41.00	1.68	12.15

the variety to withstand the critical period of stress, which the plants have to face during the period of growth. Singh *et al.* (2013) reported that the front line demonstration with full package of practices on farmers field is the pin point for increased the productivity of pulses.

Keeping the above points in view, the present study was under taken to judge the response of variety under rainfed condition through cluster front line demonstration.

The present study was carried out during winter season of 2015-16 at K.V.K. Daleep Nagar, Kanpur, C.S. Azad University of Agriculture and Technology, Kanpur. The soil of pilot area was degraded sandy clay loam having pH 7.5-8.0, organic carbon 0.18-0.69 per cent, total nitrogen 0.01-0.06 per cent, available phosphorus 12-20 kg/ha and available potash 196-238 kg/ha, therefore, the fertility status of operational area was poor. The pH was determined by electrometric glass electrode method (Piper, 1950), while organic carbon was determined by colorimetric method (Datta *et al.,* 1962). The total nitrogen was analysed by Kjenldal's method as discussed by Piper (1950). The available phosphorus and potassium were determined by Olsen's method (Olsen *et al.,* 1954) and Flame photometric method (Singh, 1971).

The cultivar KLB-320 was tested with local check under cluster front line demonstration on 20 ha area. All the recommended package of practices was followed in front line demonstration. No protective irrigation was given in demonstration fields due to winter showering. Lentil variety KLB-320 was planted in cluster front line demonstration. The lentil was planted in the first fortnight of November 2015 and harvested after 120-125 days after sowing in first fortnight of March 2016. The essential dryland agronomical practices were also followed as suggested by Singh *et al.* (2013).

The average data obtained from the cluster demonstration of lentil are reported in Table 1 and discussed here.

In cluster front line demonstration cultivar KLB-320 of lentil produced higher branches/plant (6.40) over local cultivar (5.25) which is in practice. The maximum pods/plant (46.00) was counted in improved cultivar KLB-320, while local cultivar produced 41.00 pods/plant. The KLB-320 registered higher pod length by 2.15 cm in comparison to local genotype (2.00 cm). The similar trend was also noted in seeds/pod. The highest seeds/pod was counted by 1.74 in cv. KLB-320, while lowest seeds/pod by 1.68 was noted under local check.

The highest average yield (q/ha) of lentil was recorded in cultivar KLB-320 (15.60 q/ha), while, lowest average seed yield of 12.15 q/ha was recorded in local check. There had been considerable increase in branches/plant, pods/plant, pods length/plant, seeds/pod in cultivar KLB-320 sown under front line demonstration over local check that contributed to increase the seed yield (q/ha). These results are in agreement with those reported by Singh *et al.* (2013).

The full package of practices followed in demonstrated cultivar KLB-320 of lentil maintained better source-sink relationship. Under this condition the dry matter or photosynthates produced by source organs translocated towards sink organ (economic part) and produced higher seed yield of lentil. The sowing of cv. KLB-320 of lentil had higher number of pods/plant and seed/pod, means it possessed higher sink capacity to utilized the photoassimilates translocated from source, resulted in more seed yield (q/ha). These results confirm the findings of Panwar *et al.* (1986); Shrivastava and Bharadwaj (1986); Pachpor and Shete (2010) and Singh *et al.* (2016).

Conclusion :

The cultivar KLB-320 produced higher grain yield under rainfed condition on degraded soil, therefore, farm house hold can be suggested for adoption of aforementioned cultivar with full package of practices.

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