

Research
Paper

Evaluation of different agronomic practices on nodule and yield attributes of lentil (*Lens culinaris* Medic L.)

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ABSTRACT

A pure and healthy seed of lentil genotype LH 90-54 was sown on November 17, 2005 as per planting technique treatments with three replications and total number of treatment combinations $3 \times 2 \times 3 = 18$ were tested against the growth parameters of lentil (*Lens culinaris*) at Pulse Research Area of CCS Haryana Agricultural University, Hisar during Rabi 2005-06. Raised bed sowing, one hand weeding at 60 DAS and application of irrigation over no irrigation produced significantly higher number of nodules plant⁻¹ and their dry weight as compared to flat, zero till sowing, pendimethalin and weedy check treatments. Whereas raised bed planting, application of one irrigation at flowering and various weed control treatment in lentil produced significantly higher number of pods per plant. Weed management shown a significant effect on the number of grains per pod. Irrigation, pendimethalin @ 1kg a.i. ha⁻¹ and one hand weeding at 30 DAS produced significantly higher 1000-grain weight. Grain and stover yield of lentil were significantly higher under raised bed planting system, irrigation and controlling of weeds either manually or chemically. Zero tillage and flat bed planting techniques being at par recorded significantly more harvest index over raised bed planting.

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Lentil (*Lens culinaris*) is one of the oldest and valuable human food crop. Mostly it is consumed as a dry grain (decorticated and split). Dehulled lentil grains contain 24-26 per cent protein, 1.3 per cent fat, 2.2 per cent ash, 3.2 per cent fibre and 57 per cent carbohydrate. It is a rich source of calcium (68 mg/100g grain), phosphorus (300 mg/100g grain) and iron (7 mg/100g grain). India represents 50 per cent of the world's acreage and 41 per cent of the world's production. The production of lentil in India is around 1.00 million tonnes from an area of 1.4 million hectare with the productivity of 660 kg/hectare (Anonymous, 2005). In Haryana, lentil is the important winter season pulse crop next to chickpea.

Inadequate soil moisture and heavy infestation of weeds are the important factors, which results in poor productivity of this crop. Timely sowing of lentil is very essential for getting higher yield. Lentil can be sown 7-10 days earlier by zero tillage machine directly without any field preparation after the harvest of rice crop by using residual soil moisture.

Another technology *i.e.* raised bed planting system that is a form of conventional tillage where in sowing is

done on raised beds. The important factor including weed management favours the introduction of bed planting because herbicide resistance is already a serious issue. Thus, this system provides an elbow space for increasing the productivity of dry or limited irrigated areas in the later part of crop growth.

Lentil normally meets most of its water requirement from conserved soil moisture. In the absence of enough stored soil moisture and adequate winter rains, the crop responds very well to supplemental irrigation. Water being the scarce commodity in lentil growing areas of India, it warrants judicious use to achieve higher efficiency.

Weeds in lentil have been reported to offer serious competition and cause yield reduction to the extent of 70 per cent (Singh and Singh, 1985). Weed emergence in lentil begins almost with the crop emergence leading to crop-weed competition from initial stages. Labour requirement to remove weeds manually may not be met due to the peak sowing season and hence, the use of herbicide can be explored to economize the weed control particularly in the initial stage as lentil is a slow growing crop.