

Response of lucerne (*Medicago sativa* L.) to phosphate application in arid zone

N. D. YADAVA

Central Arid Zone Research Institute, Regional Research Station, Bikaner-334004

ABSTRACT

Lucerne (*Medicago sativa* L.) was grown in sandy soil at Bikaner under sprinkler system of irrigation with 4 levels of phosphate (20, 40, 60 and 80 kg/ha) and uniform application of nitrogen (16 kg/ha). The maximum green forage (158.53 q/ha) and dry forage (28.89 q/ha) were obtained with 40 and 60 kg/ha phosphate, respectively. Out of four cuttings, second and third cuttings contributed more than 70 per cent of the total forage yield.

Lucerne (*Medicago sativa* L.), a major forage crop is widely cultivated in arid and humid regions. In western Rajasthan the production of green fodder is restricted due to light texture sandy soils with poor water holding capacity, high permeability, low and poor quality available ground water. Sprinklers may prove effective for efficient utilization of ground water and thereby enhance the primary productivity.

Studies were undertaken during winter season of 1991-92 at Bikaner with lucerne as test crop & four levels of phosphatic fertilisers (20, 40, 60 & 80 kg/ha) and alongwith uniform application of 16 kg/ha N under sprinkler system. The experiment was laid out in a randomised block design with four replications. The soil was sandy loam with poor water holding capacity (8-10 %) and low in organic carbon (0.21 %). Sowing of lucerne was done in the month of November and fertilizers were applied as basal (at sowing time) in furrows (20 cm apart). All the treatments were uniformly irrigated through sprinkler system at three days interval for 20 minutes. Green fodder was harvested in four cuttings, first cutting at 60 days after sowing and subsequent cuttings at 20 days intervals.

The green and dry forage yields of lucerne were significantly affected with different doses of phosphate application (Table 1). Maximum green forage yield of 158.53 q/ha was recorded when 40 kg/ha P_2O_5 + 16 kg/ha N were applied. Maximum dry forage