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RESEARCH NOTE

Influence of levels and methods of nitrogen application on growth and yield of summer pearl millet (*Pennisetum glacuem* L.)

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Pearl millet (*Pennisetum glacuem* L.) is one of the major cereals crop grown in arid and semi arid regions of the world. Pearl millet is adopted to stress intensive environment, yet it is highly versatile, input responsive and high quality cereal with great potential to become a valuable component of non-traditional season like summer under irrigated and high input management conditions. Among the plant nutrients, nitrogen is the most important and expensive nutrient and it has marked effect on the plant growth in cereals. Nitrogen plays an important role in the synthesis of chlorophyll as well as amino acids, which is building units of the protein. As nitrogen is mobile element, the time and rate of nitrogen application or splitting and foliar spray with different quantity of nitrogen as per requirement of the crop growth stage is the most important for efficient utilization of nitrogen as well as for maximization of the crop yield. Foliar application of urea can have benefits over soil treatments in increasing protein content and quality of pearl millet grain when applied at and after anthesis (Gooding and Davis,1992).

A field experiment was conducted during summer season of 2009 at Agronomy Farm, B. A. College of Agriculture, Anand Agricultural University, Anand. The soil of the experimental field was loamy sand in texture having pH 7.6 and organic carbon 0.36%. The field experiment comprised of fifteen treatment combinations comprising three different nitrogen levels *i.e.* (40, 80 and 120 kg N ha^{-1}) and five nitrogen application methods *i.e.* (50% basal + 50% top dressing at 30 DAS, 50% basal + 25% top dressing at 30 DAS + 25% top dressing at 60 DAS, 50% basal + 25% top dressing at 30 DAS + 25% foliar spray at 45 DAS, 50% basal + 25% top dressing at 30 DAS + 25% foliar spray at 60 DAS, 50% basal + 25% foliar spray at 30 DAS + 25% foliar spray at 60 DAS) were tried in Randomized Block Design with factorial concept and replicated four times. Common dose of phosphorus @ 40 kg ha^{-1} was applied as basal before sowing. The crop was grown under assured irrigation condition.

The results revealed that application of 120 kg N ha^{-1} gave significantly higher plant height at harvest (165 cm), number of productive tillers $plant^{-1}$, number of earheads $plant^{-1}$, earhead length, grain yield $plant^{-1}$, weight of 1000 grains, protein content in grain, grain yield (4,429 kg ha^{-1}), stover yield (8,639 kg ha^{-1}) and net realization Rs. 24,968 ha^{-1} as compared to 40 kg N ha^{-1}. Patel and Patel (2002) also reported similar results. This might be due to greater uptake of N which helped in proper nourishment of plants, increased photosynthetic area and higher dry matter production.

The nitrogen application method of 50% basal + 25% top dressing at 30 DAS + 25% foliar spray at 45 DAS showed significant increase in plant height at harvest (164.52 cm) over other treatment except treatment of 50% basal + 25% top dressing at 30 DAS + 25% foliar spray at 60 DAS. The treatment of 50% basal + 25%top dressing at 30 DAS + 25% foliar spray at 60 DAS recorded significantly higher number of

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