



## RESEARCH PAPER

# Effect of nitrogen and zinc fertilization on growth and productivity of maize

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**Abstract :** The experiment consisted of 12 treatments combinations comprising 4 nitrogen levels (60, 80, 100 and 120kg ha<sup>-1</sup>) and 3 zinc levels (2.5, 5.0 and 7.5kg ha<sup>-1</sup>). The experiment was laid out in Factorial Randomized Block Design with four replications. The experimental soil was clay loam in texture, slightly alkaline in reaction, medium in available nitrogen (275.0 kg ha<sup>-1</sup>) and phosphorus (20.21kg ha<sup>-1</sup>) and potassium (280.5kg ha<sup>-1</sup>) and low in available zinc (0.49ppm). The crop was shown on 9.7.2011 using variety PEHM-2 with recommended seed rate of 25kg ha<sup>-1</sup>. The results revealed that application of N upto 100kg ha<sup>-1</sup> recorded significantly higher plant height (50, 75DAS and at harvest), dry matter accumulation and leaf area index at all the growth stages over 60 and 80kg N ha<sup>-1</sup>. Likewise, application of N upto 100kg ha<sup>-1</sup> was found significantly superior in increasing RGR and NAR between 25 and 50 days compared to 60kg N ha<sup>-1</sup>. Application of 100 and 120kg N ha<sup>-1</sup> statistically at par were found significantly superior in increasing cob plant<sup>-1</sup>, grain cob<sup>-1</sup>, grain weight cob<sup>-1</sup>, 100 grains weight and shelling per cent over 60 and 80kg N ha<sup>-1</sup>. Application of 80 and 100kg N ha<sup>-1</sup> significantly increased grain; stover, biological yield and harvest index over 60kg N ha<sup>-1</sup>. The per cent increase in grain, stover and biological yields due to 100kg N ha<sup>-1</sup> was 39.03, 23.43 and 28.89, respectively compared to 60kg N ha<sup>-1</sup>. A significant increase in N, P and Zn content and their uptake was recorded under the application of 80, 100 and 120kg N ha<sup>-1</sup> compared to 60kg N ha<sup>-1</sup> but 120kg N ha<sup>-1</sup> was found statistically at par with 100kg N ha<sup>-1</sup>. Protein content in grain and chlorophyll in leaves increased significantly with successive increase in nitrogen doses upto 100kg ha<sup>-1</sup>.

**Key Words :** RGR, NAR, DAS, LAI, Maize

**View Point Article :** Sharma, Rajendra, Choudhary, Ramesh and Jat, Bhanwar Lal (2017). Effect of nitrogen and zinc fertilization on growth and productivity of maize. *Internat. J. agric. Sci.*, **13** (2) : 161-176, DOI:10.15740/HAS/IJAS/13.2/161-176.

**Article History :** Received : 18.02.2017; Revised : 01.04.2017; Accepted : 15.04.2017

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