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Research Article

N use efficiency and balance of hybrid maize by balanced fertilization in *Vertisol* and *Alfisol* of Tamil Nadu

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Summary

Field experiments were conducted during July – October of 2006-2007 and 2007-2008 to study the effect of balanced fertilization on yield of hybrid maize (COHM 5), nitrogen use efficiency and its balance in Pilamedu and Palaviduthi soil series (Vertisol and Alfisol, respectively) of Tamil Nadu. The experiments were conducted in a Randomized Block Design with thirteen treatments comprising of different levels of N, P and K with Zn as inorganic fertilizers. The treatments were replicated thrice. The range of PFP was from 17.73 to 45.26 kg of grain per kg of nitrogen applied to hybrid maize in Pilamedu soil series and the range was from 18.60 to 43.85 kg kg $(N)^{-1}$ in Palaviduthi soil series. The agronomic efficiency varied from 3.3 to 22.17 and 5.26 to 24.09 kg N ha^{-1} in Pilamedu and Palaviduthi soil series, respectively. The highest values (93.65 and 95.21 kg kg $(N)^{-1}$) of physiological efficiency were registered in the treatments omitted by Zn in both soils. The fraction of applied N that is absorbed by a crop is expressed as apparent N recovery. The mean recovery efficiency ranged from 34.03 to 91.04 and 29.16 to 81.10 per cent for the two soil. The net positive nitrogen balance was found to Pilamedu soil series and the negative balance was observed in Palaviduthi soil series.

Key words : Nitrogen, N use efficiency, Nitrogen balance, Maize, Vertisols, Alfisol

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