



Effect of inorganic and organic sources of nutrients on the uptake of maize and its economics

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ABSTRACT

Field experiment was conducted during Rabi 2005-06 and 2006-07 at the crop Research Farm, Department of Soil and Environmental Sciences, Allahabad Agricultural Institute – Deemed University, Allahabad, to study the performance of winter maize as affected by inorganic and organic use of nutrients on the yield of Winter Maize (*Zea mays* L.). The experiment was laid out in randomized block with 13 treatments, each replicated three times, using Maize variety Arjun. The experimental observations were recorded during the cropping time are nitrogen content, phosphorous content, potassium content, nitrogen uptake, phosphorous uptake, potassium uptake and economics. All these parameters were recorded highest when 25 percent of poultry manure plus 75 percent nitrogen was applied (T₈), whereas, they were lowest in the case of control (T₀).

Key words: Inorganic and organic, nutrients, uptake, treatments, variety, manure.

INTRODUCTION

Maize crop is warm weather loving crop and used as test crop. Major nutrients plays important role in maize crops, especially nitrogen in maize is more important than any other nutrient through out its growing period right from seedling stage to grain filling stage and its deficiency at any stage of growth, especially at tasseling and silking stage, may lead to virtual crop failure. The nitrogen utilization pattern is found to be increased from seedling of knee height and reaches to the peak at tasseling stage. Phosphorus helps in development of maize at all phases of growth and shows deficiency mainly at seedling stage and delayed maturity with an imperfect ear formation. Maize plants need more than half of their potash requirement upto or before flowering stage. NPK uptake by all the crops increased with the increase in NPK rate and with farmyard application (Minhas and Sood, 1994).

MATERIALS AND METHODS

Field experiments were conducted during the Rabi seasons of 2005-2006 and 2006-07. The experiment was conducted at Soil Research Farm, Department of Soil and Environmental Science, Allahabad Agriculture Institute of Deemed

University, Allahabad, Uttar Pradesh. The soil of experiment was sandy loam. The experiment was laid in randomized block design with four levels of organic manure and four levels of Nitrogen with three replication and thirteen treatment and the crop was applied recommended dose of fertilizers i.e. N, P, K @ 120, 60, 60 Kg ha⁻¹. Half entire dose of Nitrogen and total doses of Phosphorus and Potash were applied as basal dressing before sowing. The rest of the nitrogen was applied in knee height and tasseling stage. The recommended spacing for maize crop is 60 cm x 30 cm (row to row and plant to plant). The uptake of nitrogen, phosphorous and potassium was computed by the formula i.e. (% in straw +seed)* (Straw yield +grain yield) and economics was computed by different formulas.

RESULTS AND DISCUSSION

Nitrogen content

Nitrogen content in maize plant at harvest showed significant variation in nitrogen content in the pooled data as presented in Table 1.

Pooled data of the two years shows that application of organic with inorganic fertilizers significant increase nitrogen content over the

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