Research Article

Effect of integrated nutrient management practices on distribution of nitrogen fractions in soil

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Summary

A field study was carried out at College of Agriculture, Navile, Shimoga during *Kharif* 2009 to study the effect of integrated nutrient management practices on distribution of nitrogen fractions in soil.There were two levels of nitrogen applied through organics (FYM and vermicompost) and inorganics involving nine treatments combinations were tried in a RCBD with three replications. Significantly lower available nitrogen status was recorded in the treatments which received nitrogen only through fertilizers and without any organic matter application (196.00-200.50 kg ha^{-1}) including absolute control compared to all other treatments (238.00-243.60 kg ha^{-1}). Except inorganic nitrogen fractions, organic nitrogen fractions were recorded high in integrated treatments compared to the treatment which received nitrogen only in the form of fertilizers.

Key words : Integrated nutrient management, Nitrogen fractions, Organic manures

Introduction

Maize has high genetic yield potential than other cereal crops. Hence, it is called as 'miracle crop' and also as 'queen of cereals'. Being a C$_4$ plant, it is very efficient in converting solar energy in to dry matter. As heavy feeder of nutrients, maize productivity is largely dependent on nutrient management. Among the essential nutrient elements of plants, nitrogen plays an important role as far as plant growth and development is concerned and accounts for 1 to 4 per cent of dry matter of plants. Nitrogen content in plant tissue depend on its availability in soil which in turn dependent on soil factors like pH, organic matter status in soil and biological activity of soil. Many workers proved that available nitrogen status in soils increased with increased supply of nitrogen in the form of either fertilizers or organic manures which ultimately increased the productivity of maize. Further, they reported that only 30 to 40 per cent of the added nitrogen was recovered by crops due to its leaching, volatilization and denitrification

losses. The nitrate that is leached from fields, moves with water and contaminates either ground water or surface water bodies and causes an environmental pollution. Hence, management practices may be vital to increase nitrogen use efficiency by crops and also to reduce environmental pollution.

Transformation of added nitrogen through fertilizers or manures into different forms of nitrogen in soil and their availability to crops depends on soil properties and nature of nitrogen sources added to soils. According to the research reports, more than 90 per cent of nitrogen in the soil is present in organic form and concentrations of inorganic form *viz.,* nitrate nitrogen and ammonical nitrogen in soil at any given time is influenced by several soil factors. But, very little information is available with respect to the effect of integrated nutrient management practices on distribution of different forms of nitrogen in soils. The knowledge of distribution of various forms of nitrogen in soil attains greater importance in understanding the potential of a soil in supplying them to the crops and also to understand the nitrogen use efficiency by