EFFECT OF MINIMUM TILLAGE ON FERTILIZER USE EFFICIENCY

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ABSTRACT

The reduced tillage system is highly site specific and increases the fertilizer efficiency on coarse to medium textured, well drained soils with low organic matter. The uptake of nitrogen fertilizers has been reported to be more under this system. Weed control can be accomplished by chemical herbicides and in compact and poorly drained soils, the problem can be overcome by an initial tillage technique through mould board plough.

INTRODUCTION

Reduced tillage system may help in the maintenance of prouctivity of some soils by reducing soil erosion, preserving soil structure, soil organic matter, nutrients and water holding capacity of the soil. However, reduced tillage is not able to solve all the problems related to crop management. The priority problems related to this system include weed control, amount and mode of fertilizer application particularly N-carriers. In the initial stage of adopting this practice, the N-requirement is generally more than with conventional tillage. Reduced tillage has been found to increase the fertilizer efficiency in some soils whereas on other occasions it has shown poor residues. The effects of this system can be studied in relation to soil properties, crop yields and fertilizer efficiency.

REVIEW OF LITERATURE

1. Effect of reduced tillage on soil properties

The oranic matter, cation exchange capacity, total N and hydraulic comductivity were high for the no tillage treatments as compared to conventional tillage (Lal - 1975). Shear and Moscher (1969) explained that favourable performance of no till has been partly by better moisture at the soil surface, and better water infiltration properties. Furthermore, P and K fertilizers also tend to accumulate near the surface layers. Soil organic matter and organic-N increased significantly in the top 5 cm of soil under no till management. No tillage with moderate rates of N preserved the chemical characteristics of the soil (Blevins et al 1977). Hargrove et al (1982) revealed that soil pH decreased more rapidly with depth than conventional tillage treatment, nutrient con-