

Fly ash – a Potential Source of Soil Amendment and a Component of Integrated Plant Nutrient Supply System

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ABSTRACT

To justify suitability of fly ash in agricultural applications, field investigation was carried out for six years, 1996 to 2001. An attempt was made to develop an integrated plant nutrition system (IPNS) utilizing fly ash (FA), and paper factory sludge (PFS), along with farm yard manure (FYM), crop residue (CR) and chemical fertilizers (CF) for rice –peanut cropping system. Direct and residual effects of FA were assessed on the basis of crop response and changes in soil characteristics.

Application of FA @ 10t ha⁻¹ in combination with organic sources (PFS / FYM / CR) and CF increased the grain yield of rice, pod yield of peanut and equivalent yield of both the crops by 31, 24 and 26 per cent respectively as compared to CF alone. There was beneficial effect of repeated application of FA as compared to one time application at the same level and the yield advantage derived by peanut through IPNS was greater than rice. Moreover, there was saving of CF in the order of 64.4 % N, 44% P₂O₅ and 43.3% K₂O. The alkaline fly ash (pH 8.4) could be used as a substitute of lime, a costlier material, for amending acidic soils and increased the availability of P, K, Ca, Mg, Zn, Cu and Co besides improving soil physico-chemical properties. The results indicated prospect of safe disposal and utilization of fly ash and organic wastes in agriculture for retaining productivity of problem soils, reduce the usage of costly chemical fertilizers, bring greater economy in cultivation and minimize environmental problems.