

Research Article

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Impact of fly ash utilization on nutrient uptake and yield of rice grown in acid soils

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Summary

Fly ash, a waste material from thermal power station is now considered as a resource, based on its use in different sector. In agricultural sector it has been used to enhance soil fertility and improve crop productivity as a nutrient source and as soil ameliorant. With the view to use fly ash as an ameliorant for acid soil, the present investigation has been carried out during 2015 –2016 at Rice Research Station, Ambasamudram, where the soil was found to be acidic (pH-4.75). This is a comparative study of fly ash application alone in different levels and in combination with different liming materials viz., lime and dolomite along with recommended dose of fertilizers on soil acid neutralizing capacity and nutrient uptake and yield of rice. The treatments for the field experiment were laid out in RBD with 3 replications. The treatments include control, 100% RDF alone, Lime + RDF, Dolomite + RDF, FA @ 10,20,30 and 40 t ha⁻¹ along with RDF, 50% Lime + 50% FA + RDF and 50% Dolomite + 50% FA + RDF. The pH of post harvest soil ranged from 4.76 to 7.08. The application of 50% Dolomite + 50% Lime + RDF significantly increased the soil reaction (7.08) whereas in case of EC only a small magnitude of increase was observed over control. The highest N, P, K and micronutrient uptake was observed with application of 50% Dolomite + 50% Fly ash + RDF followed by 50% Lime + 50% Fly ash + RDF and FA @ 20 t ha⁻¹. The lower nutrient uptake with higher levels of Fly Ash might be due to formation of physical barrier for root elongation due to compaction of particles of fly ash. Thus, integrated application of fly ash with other liming materials like lime and dolomite and recommended dose of fertilizers and FA @ 20 t ha⁻¹ + RDF can be recommended for alleviated soil acidity and in turn enhancing nutrient uptake and yield of rice crop.

Key words : Fly ash, Lime, Dolomite, Ameliorant, pH, Nutrient uptake**Co-authors :**

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