

Studies on the response of fly ash alone and in conjunction with gypsum and green manure on rice under typic natrustalf sodic soil

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ABSTRACT : Field and laboratory studies were conducted for three consecutive kharif seasons 2011 to 2013 to evaluate the response of fly ash alone and in conjunction with gypsum and green manure on the salt tolerant rice “CSR-43” under Typic Natrustalf sodic soil. Average maximum grain yield (42.75 g/ha), harvest index (45.88%) and percentage of response over control (142.62%) were recorded with application of 50% gypsum + 20t fly ash/ha + 10t green manure/ha (T8), followed by T7 and T6. Yield attributing parameters viz. ear bearing tillers and test weight of 1000 grains also showed similar trends. Lowest average value of yield and yield attributing characteristics were noticed in that plot, which could not receive any ameliorant as treatment except recommended doses of fertilizers. In general, biomass accumulation in rice plants increased as age of plants advanced under various treatments denoting similar trends of responses. But for, nitrogen, phosphorus and potassium content in rice plants at 30, 60 & 90 DAT showed reverse trend of biomass accumulation in same age of rice plants. Nitrogen, phosphorus and potassium uptake by grain straw of rice determined maximum under conjunctive use of fly ash 20 t/ha along with 50% gypsum and 10t green manure/ha. Addition of 100% gypsum showed significantly higher response on yield and yield parameters, nutrients concentration and uptake by grain and straw than each levels of fly ash alone. Although grain yield of rice noticed positive correlations with grain/panicle, panicles/m², test weight and harvest index but day of 50% flowering, maturity and plant height recorded negative correlations with grain yield.

Key Words : Rice, typic Natrustalf sodic soil, fly ash, gypsum, green manure.