EFFECTS OF ESTABLISHMENT TECHNIQUE AND NUTRIENT MANAGEMENT OF INTER-SEASONAL GRAIN LEGUMES ON SUBSEQUENT RICE CROP

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This study focused on assessing inter-seasonal crop type, establishment technique and nutrient management on subsequent rice crop in paddy soils of the dry zone, Sri Lanka. A field experiment was carried out at Field Crops Research and Development Institute, Mahailluppallama. Three factor factorial experiment was laid on a Split-Plot Design. Main plot factor was nutrient management with two levels; *i.e.* non-fertilized and fertilized. Sub-plot factors were crop type; cowpea (*Vigna unguiculata*) and mung bean (*Vigna radiata*) and row seeding and broadcasting as establishment techniques. After harvesting of the previous season rice crop, two legumes were established as per treatments. At full maturity, legumes were harvested, seed yields were measured and the straw was incorporated to rice fields according to treatments. Rice variety Bg 250 was established following recommended guidelines. Soil fertility, growth and yield performance of rice was measured. Soil available P, K and organic matter showed substantial accumulations, and N was inferior in contrast. Accumulation of P depended on all factors, while highest P was recorded in non-fertilized, broadcasted mung bean plots. Cowpea resulted deficit P accumulation in contrast to mung bean, while broadcasting out-performed row seeding. Despite low accumulation of N in general, greater accumulation of N was recorded in non-fertilized fields and it did not exceed 3 kg ha^{-1}. Organic matter, P and K accumulation in plots were greater than 20 kg ha^{-1} in contrast to a fallowed field, irrespective of the factor. Growth of subsequent rice crop at pre-heading was significantly influenced by the interaction between crop and establishment technique ($p=0.004$). Rice plants in broadcasted cowpea plots were superior to rest, while both broadcasted and row-seeded mung bean resulted in higher dry matter yield than row-seeded cowpea. It is too early to conclude on costs and benefits. However, certain agronomic benefits were visible with an inter-seasonal legume.

Keywords: Crop establishment, Inter-seasonal legume, Nutrient management, Rice