

Growth and yield of rice as influenced by age of seedlings and integrated N management for late planted situation

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ABSTRACT

A two-year field investigation conducted on a sandy clay loam showed that the crop transplanted with 45-day-old seedlings in rice resulted in significantly higher dry matter production at harvest, filled spikelets, and grain yield as compared to that of 30 and 60 day old seedlings. The increase was 5.9 and 13.0 per cent during Ist year, 3.6 and 13.4 per cent during IInd year compared to the crop planted with 30 and 60 day old seedlings, respectively. Application of 75% RDFN+ 25 kg GM-N+ 25 kg PM-N resulted in significantly higher number of tillers, panicles /m², filled spikelets / panicle and grain yield over that of application of 75% RDFN+25 kg GM-N/FYM/VC and 100%RDFN during both the years and was at par to all 125% RDN treatments. During both the years no significant differences were observed among different sources of nitrogen application either in excess or in recommended dose in growth, yield attributes and grain yields. This indicates there was possibility of substitution of 50 kg of 125% RDN and 25kg of 100% RDN through different organic sources. Application of 75% RDFN+25 kg PM-N (100% RDN) resulted in comparable grain yield to that of 125% RDN supplied through different sources indicating the saving of 25 kg N/ha.

Key words : Rice, INM, Age of seedlings, Growth, Yield

INTRODUCTION

In many parts of the country especially tail end areas under canal system and also under irrigation tanks, whose re-charging depends on the receipt of rainfall, often the farmers to transplant rice late beyond august using over aged seedlings. Under late planted conditions nitrogen management practices as well as proper utilization of seedlings is important to get better crop yields (Raju and Rao, 1984). Application of indiscriminate nitrogen fertiliser to the aged seedlings to coupe up the crop results in environmental pollution. Usefulness of integrated nitrogen management under normal planting is fairly well established fact, but limited information is available on the effect of integrated nutrient management in late planted rice with different seedling ages. Hence, the present experiment was conducted to find out the optimum age of seedlings and integrated N management practices for late-planted rice.

MATERIALS AND METHODS

A field experiment was conducted during two consecutive years of 2003 and 2004 on a sandy clay loam having pH of 7.9, 230 kg/ha of available N, 23 kg/ha of available P₂O₅ and 232 kg/ha of available K₂O to assess the effects of age of seedlings, organic and inorganic sources of nitrogen on rice. The experiment was laid out in split-plot design, replicated thrice with three age of seedlings (30, 45 and 60 day old) planted on single date in

main plots and nine nitrogen management practices (75% RDFN + 25 kg GM-N, 75% RDFN + 25 kg FYM-N, 75% RDFN + 25 kg VC-N, 75% RDFN + 25 kg PM-N, 75% RDFN + 25 kg GM-N + 25 kg FYM-N, 75% RDFN + 25 kg GM-N + 25 kg VC-N, 75% RDFN + 25 kg GM-N + 25 kg PM-N, 100% RDFN and 125% RDFN) in subplots. Nutrient content in different organic sources was taken into consideration to supply 25% and 50% recommended N on equal nutrient basis. Rice variety samba mashuri (BPT 5204) of 145 days duration was planted at a spacing of 15x10 cm using two seedlings per hill.

RESULTS AND DISCUSSION

The results obtained from the present investigation are summarized below :

Age of seedlings:

During both the years, transplanting of 30 day old seedlings produced significantly higher number of tillers / m² and LAI than that of 60 day old seedlings. There was no significant difference in number of tillers /m² and LAI between planting of 30 and 45 day old seedlings. Days to 50% flowering (planting onwards) decreased significantly with increase in the age of seedlings from 30 to 45 and 60 days (Table 1) Results are in agreement with the earlier observations of Mandal *et al.* (1984). Data on yield attributes reveal (Table 2) that during both the years, crop transplanted with 30-day-old seedlings produced

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