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COMPARISON OF VARIOUS ORGANIC AND INORGANIC FERTILIZER COMBINATIONS FOR ECONOMICAL RICE PRODUCTION

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ABSTRACT

Field studies were envisaged to find out the most profitable fertilizer scheme for rice crop. Soil of the site was normal sandy clay loam with medium fertility status. Experiment was laid out according to randomized complete block design with four replications having 4 x 4 m plot size and 20 x 20 cm plant spacing. Fertilizer treatments included control, N alone, NP, NK, PK, NPK, NPK + ZnSO4, NPK + FYM, FYM, and NPK + FYM (1/2 rate). Fertilizer application rate was as N 120, P2O5 80, K2O 60, and ZnSO4 20 kg ha^{-1}, and the full rate of FYM was kept at 10 t ha-1. Rice CV. Basmati-385 was grown. Results depicted the superiority of NPK + FYM combination both at full as well as half application with respect to plant height, tillers count, panicles count, and paddy and straw yields. FYM alone and NPK + Zn also gave encouraging response. Comparatively NPK + FYM (1/2 dose) was found the most economically feasible combination of organic and synthetic fertilizers due to higher rice yield and value cost ratio obtained through this fertilizer treatment.

INTRODUCTION

In Asia, rice production has increased on an average of 2.7 % per annum which is some what slower than the growth in demand and it does not cope with the yield (Gunasena and Ahmed, 1977). Application of farm yard manure (FYM) @ 25 t ha^{-1} adds about 160 kg N, 22 kg P and 110 kg K, and if given to a responsive crop will be equivalent to about 45 kg N, 22 kg P and 90 kg K supplied as normal fertilizer. Whereas the micronutrient contents of FYM are 20, 201, 1.0, 9.6 and 2.1 mg kg^{-1} of B, Mn, Co, Zn and Mo, respectively (Russel, 1973).

While surveying the various technologies of paddy production in Punjab, Mian (1984) compared the fertilizer management practices on high yield farms (HYF), intermediate yield farms (INTYM) and low yield farms (LYM) and found that although at almost all types of farms, the quantity of fertilizer applied was equal but there was a large difference among the yields. It was concluded that the nature, type, intensity and timing of operations and practices are responsible for the high efficiency of HYF.

Presently, great opportunities exist for increased rice production by improving management of mineral fertilizers and by an integrated nutrient management