

Studies on integrated nutrient management for pigeonpea + pearl millet intercropping system under dryland conditions

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ABSTRACT

Under NATP-RPPS-6 project field experiment was conducted during *kharif* seasons of 2000 and 2001 on clayey soils at Rahuri (Maharashtra) to study the INM for pigeonpea + pearl millet intercropping system under the dryland condition. The results revealed that maximum productivity and net returns, improvement in fertility status and chemical properties of soil could be possible from pigeonpea+ pearl millet intercropping system with application of 50 % RDF of the respective crops on the basis of area. Proportion and use of 50 % RDF + vermicompost @ 3 t/ha or FYM @ 5 t/ha + biofertilizers was found best proposition for INM system for the intercropping system.

Key words : Nutrient management, Pearl millet, Pigeonpea, Equivalent yield, Intercropping, Dryland

INTRODUCTION

There has been growing interest in intercropping as a potential tool in improving and sustaining soil health as well as productivity. Intercropping is traditionally a low cost input agriculture system. Pulses owing to their leguminous nature form an important component of the intercropping systems. Ahuja and Singh (1987) reported the increase in grain yield of sorghum due to association of legumes. Aher *et al* (1996) also revealed that pearl millet + mothbean (2:1) intercropping system was more stable efficient and remunerative. More specially an intercropping is the best choice in the scarcity regions where length of growing season is not long enough for sequential cropping.

When two crops of dissimilar nutrient requirements are grown together, it sometimes become operationally difficult to meet the nutrient needs of two crops simultaneously. Combined need of nutrients of associated crops is often higher than either of sole crop. Yadav *et al.* (1997) reported the reduction in pigeonpea yield when intercropped with pearl millet, if no fertilizers were given to intercrops.

The balanced way of application of both organic and inorganic appears to be an ideal proposition to meet nutrient requirements rather than application of either of the two. Sharma and Dixit (1987) observed that the yield of soybean was significantly increased by the combined use of fertilizer and FYM over chemical fertilizer alone. An INM may play a vital role in sustaining both soil health

and crop production on long-term basis. With these considerations in view, the present study was conducted during *kharif* 2000 and 2001 under NATP-RPPS-6 project at Mahatma Phule Krishi Vidyapeeth, Rahuri (Maharashtra).

MATERIALS AND METHODS

The field experiment was laid out in Randomized Block Design with three replications and ten treatments as detailed in Table 1. The soil of the experimental plot was clayey in texture, low in available nitrogen (140.15 kg/ha), medium in available phosphorus (15.10 kg/ha) and high in available potassium (415.90 kg/ha).

Drilling was carried out at 45 cm row spacing by maintaining 2:2 row proportion of pigeonpea + pearl millet. The recommended dose for pigeonpea and pearl millet was 25:50:0 and 60:30:30 kg N:P:K/ha, respectively. Biofertilizers *viz.* Azospirillum for pearl millet and Rhizobium for pigeonpea were used wherever applicable as per treatments.

RESULTS AND DISCUSSION

Grain and fodder yield :

On pooled mean basis (Table 1) in pigeonpea + pearl millet intercropping system, application of 50 % RDF + 3 t/ha vermicompost + biofertilizers recorded significantly higher grain yield of pigeonpea and pearl millet (19.16 and 16.61 q/ha) followed by 50 % RDF + 5 t/ha FYM + biofertilizers to both the component crops. However, two

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