

Influence of intercropping on the growth and yield of little millet and pigeonpea

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ABSTRACT

A field experiment was conducted at Saidapur farm, Main Agricultural Research Station, Dharwad during *Kharif* 2002 on alfisols to study the effect of row proportions of little millet + pigeonpea intercropping system on growth and yield of component crops. Among the intercropping treatments little millet and pigeonpea intercropped in 5:1 row ratio produced significantly higher dry matter production, ear length, grain weight, grain yield of little millet and pigeonpea. As regards sole and intercropping systems, yield of little millet and pigeonpea was highest in sole cropping. The highest little millet equivalent yield was recorded with 4:2 row ratio followed by 2:1, 6:2 and 3:1 row ratios. Relay cropping of little millet + horsegram recorded significantly higher LMGEY than that obtained under little millet alone. Among all the treatments sole little millet alone recorded the lowest LMGEY.

Key words : Little millet, Pigeonpea, Intercrops, LMGEY, Row proportion

INTRODUCTION

Little millet (*Panicum sumatrense* L.) and pigeonpea (*Cajanus cajan* L.) are important *Kharif* crops on shallow alfisols of northern transitional zone of Karnataka. Little millet is quick growing and early maturing crop. Under the present system of cultivation the land and other resources are under utilized. The land use efficiency can be increased particularly after harvest of this crop, which can be efficiently utilized by adopting intercropping system. In intercropping system, the competitive effects between main and intercrop depends on the rooting pattern, canopy structure and days to maturity. The intercropping system of cereals + pigeonpea/legumes were tested and found to be profitable systems (Dhoble *et al.*, 1990; Goyal *et al.*, 1993; Pal *et al.*, 1991). The present experiment, therefore, was planned to study the competitiveness of short duration little millet with long duration pigeonpea crops grown in intercropping systems.

MATERIALS AND METHODS

The field experiment was conducted at Saidapur farm, Main Agricultural Research Station, Dharwad during the *Kharif* season 2002 using Sukshema (TNAU-63) variety of little millet and Asha (ICPL-87119) variety of pigeonpea in 2:1, 3:1, 5:1, 4:2 and 6:2 row ratio. It was laid out in randomised block design with three replications. The crops were sown on 14th June 2003 on alfisols (red soil). Both the crops were fertilized separately as per the recommendation. The data on dry matter accumulation per m row length in leaf, stem and reproductive parts and total dry matter production, yield and yield components were recorded in both the crops. Harvest index and LMGEY were also computed. Little millet was harvested

on 7th September 2002 and that of pigeonpea on 10th December 2002.

RESULTS AND DISCUSSION

Little millet yield obtained in sole and intercropping treatments differed significantly. Growing of little millet as an entire crop with normal row spacing (30 cm) recorded significantly higher grain yield (783 kg/ha) than the intercropped little millet (549 kg/ha). It was at par with little millet in relay intercropping systems (776 kg/ha). The extent of reduction in grain yield of little millet due to intercropping was 29.88 per cent compared to sole cropping. The higher yield of little millet under sole cropping could be attributed to higher population and competition free environment as compared to intercropped little millet (population varied from 66.67-83.33%) which resulted in better growth and yield components. Similar findings had been reported by Shashidhar *et al.* (2000) in little millet + pigeonpea.

Row proportion had a significant influence on grain yield of little millet. Little millet and pigeonpea in 5:1 row ratio recorded significantly higher little millet grain yield (650 kg/ha). The extent of increase in grain yield of little millet in 5:1 row proportion was to an extent of 10.77, 16.92, 21.54 and 28.47 per cent over 6:2, 3:1, 4:2 and 2:1 row proportions, respectively. This variation in the grain yield of little millet could be attributed to better yield components, higher population of little millet in 5:1 row proportion and least competition between the component crops. The extent of increase in population in 5:1 was 11.11, 11.11, 24.99 and 24.99 per cent over 6:2, 3:1, 4:2 and 2:1 row ratios, respectively. Though the population was same in 6:2 and 3:1 or 4:2 and 2:1, higher grain yield of little millet was recorded in 6:2 and 4:2 compared to

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