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Intercrop association of pigeon pea (*Cajanus cajan*) with little millet (*Panicum sumatrence* L.)

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ABSTRACT

A field experiment was conducted during the (*Kharif*) 2002 on red sandy loam soil to evaluate the economically and biologically sustainable intercrop association of pigeonpea cv. ASHA (ICPL-87119) and little millet cv. SUKHEMA at Saidapur farm, Main Agricultural Research Station, Dharwad.Considering LER (Land equivalent ratio) differed significantly due to various treatments. All intercropping treatments recorded the land equivalent ratio more than unity (1.00). Among the various row proportions 4:2 row proportion recorded significantly higher land equivalent ratio (1.40) which was at par with 2:1, 6:2 and 3:1 row proportions (1.36, 1.30 and 1.28, respectively). Significant reduction in land equivalent ratio was observed in 5:1 row proportion (1.21). Area time equivalent ratio (ATER) differed significantly due to various treatments. Among different row proportions intercropping of little millet and pigeonpea in 4:2 row ratio recorded significantly higher area time equivalent ratio value (1.06) which was at par with 2:1 row proportion (1.04). Row proportions 5:1, 3:1 and 6:2 recorded area time equivalent ratio value less than unity (1.00) that obtained under sole crops. Intercropping of little millet and pigeonpea in 4:2 row proportion recorded significantly higher gross and net returns (12095 Rs./ha and 6608 Rs./ha, respectively) followed by 2:1 row proportion (11854 and 6367 Rs./ha, respectively) and lowest gross and net returns were recorded with sole little millet (6316 and 2610 Rs./ha, respectively). Maximum benefit:cost ratio was realised with 4:2 row proportion (2.20) followed by 2:1 row proportion (2.16) and least benefit:cost ratio was recorded with 5:1 row ratio (1.65). Intercropping of little millet with pigeonpea in 4:2 and 2:1 row proportions was optimum to get higher yield, net returns and efficient use of natural resources on alfisols of Northern Transitional Zone of Karnataka.

Key words : Pigeon pea, Little mittlet, *Kharif*, Intercrop

INTRODUCTION

Little millet (*Panicum sumatrense* L.) is an important food crop for the tribal folk, suitable for shallow gravels and poor alfislos. It is quick germinating, short duration crop tolerant to both drought and excess moisture. It becomes available for consumption at the time when there is an acute shortage of food grains in their households due to the crop is of shart duration (80-90 days), it is harvested early in end of August or beginning of September in comparison to other rainy season (*Kharif*) crops. It would be a advantage, if extra yield could be harvested from the same unit of land in addition to sole component. Thus intercropping of some other crops with little millet may be sustainable cropping system under low management conditions. The information on growing of little millet in association with other crops is inadequate. Hence, an experiment was conducted to evaluate the comparative performance of little millet with pigeonpea at different row ratios under rainfed conditions on shallow alfisols of transitional tract of Dharwad.

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 laidout in Randomized 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.

The grain yield was statistically analysed. It was further computed in terms of little millet equivalent yield and land equivalent ratio (LER) as described by Willey (1979). Also calculated area time equivalent ratio (ATER) as proposed by Heibsch and Macollan (1978) for little millet + pigeonpea intercropping system. The intercropping system was also evaluated on the basis of different economical parameters *viz.*, gross returns (Rs. ha^{-1}), net returns (Rs. ha^{-1}) and B:C ratio.

RESULTS AND DISCUSSION

Little millet yield obtained in sole and intercropping treatments differed significantly (Table 1). Growing of little millet as an entire crop with normal row spacing (30

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