

Productivity and economics of sunflower based on intercropping systems during *Rabi* under rainfed conditions

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ABSTRACT

A field experiment was conducted during the *Rabi* seasons of 2006 and 2007 at Raichur, Karnataka to study the competition between component crops, crop geometry, productivity and profitability of sunflower based intercropping systems under rainfed conditions. Intercrop methi and coriander found better than linseed. Among various intercropping systems, sunflower + coriander (1:1) recorded maximum sunflower equivalent yield followed by sunflower + coriander (1:3) and sunflower + methi (1:3). With respect to monetary returns, sunflower + coriander (1:3) followed by sunflower + coriander (1:1) realized maximum net returns of Rs. 27743/ha and Rs. 27245/ha, respectively.

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Key words : Sunflower, Intercrop, Row ratio, Productivity, Economics

INTRODUCTION

Sunflower is an important oilseed crop of northern part of Karnataka extensively grown under rainfed conditions during *Rabi* season. Cultivation of this crop is becoming more risky due to the occurrence of necrosis right from initial growth stage to seed tilling stage. Suitable inter cropping system can be more efficient practice of farming to maximize the productivity and profits besides minimization of agricultural risks (Kaushik *et al.*, 1980). The suitable component crop and spatial arrangement in intercropping system influence the performance of crops. Hence, the present investigation was undertaken to identify the suitable component crop and row proportion in sunflower based intercropping system during *Rabi* under rainfed condition.

MATERIALS AND METHODS

A field experiment was conducted during *Rabi* seasons of 2006 and 2007 under rainfed conditions at Raichur, Karnataka. The soil was medium black with a pH of 8.1, available nitrogen of 245 kg/ha, 25.6 kg/ha available phosphorus and available potassium of 396 kg/ha. The experiment consisted of 11 treatments including four sole crops *viz.*, sunflower (60 cm x 30 cm), sunflower (120 cm x 15 cm), linseed (30 cm x 10 cm), methi (30 cm x 10 cm) and coriander (30 cm x 10 cm) and six combinations of sunflower intercropped with linseed, methi and coriander in 1:1 and 1:3 row proportions. Single row

of methi, linseed and coriander at 1:1 and three rows of methi, linseed and coriander at 1:3 row proportion was taken in the experiment. All the crops grown in intercropping system were fertilized at their recommended dose of base crops. The experiment was laid out in Randomized Block Design with three replications. The amount of rainfall received was 572.8 mm and 928.9 mm, respectively during 2006 and 2007. The economic parameters, monetary advantage based on land equivalent ratio (LER) was computed as described by Jain and Rao (1980). The yields were further evaluated for different indices of competition functions as suggested by Willey (1979).

RESULTS AND DISCUSSION

The results of the present study as well as relevant discussion have been presented under the following sub heads:

Sunflower yield:

The sole crop of sunflower sown at 60 x 30 cm and 120 x 15 cm realized significantly higher seed yield of 1198 kg/ha and 1148 kg/ha, respectively over intercropped sunflower yields (Table 1). The reduction in yield was due to the effect of intercropping system. The reduction of sunflower yield in intercropping with methi was 13%, with coriander was 11% and with linseed was 12.3% when compared to sole sunflower with normal spacing (60 cm x 30 cm).

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