RESEARCH PAPER

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Response of sunflower to moisture conservation practices and planting geometry

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ABSTRACT

A field experiment was conducted on farmers' field of Bijapur and Bagalkot districts to study the response of sunflower to moisture conservation practices and planting geometry under rain fed situations. The experiment was laid out in split plot design with moisture conservation practice as main plot and planting geometry as sub-plot. The main plot includes 1.off season tillage + repeated harrowing (ITK) 2. off season tillage + repeated harrowing + compartment bunding (IITK) 3.T₂+residue incorporation (scientific)and the sub plot includes three plant spacing a. sunflower at 35 cm row spacing (ITK) b. sunflower at 135cm with frequent inter cultivation (IITK) c. sunflower with paired roe planting at 45-135 cm with repeated intercultivation. Among the moisture conservation practices M3 *i.e.* compartment bunding + residue incorporation has given significantly higher yield of 1496 kg/ha over only compartment bunding (1414 kg/ha) and control (1157 kg/ha).the increased yield might be due to increased available soil moisture with M3 (30.8 cm/m). in case of planting geometry the pooled data showed significantly higher yield of 1689 kg/ha with a spacing of 135cm as compared to paired row planting (1498 kg/ha) and control (870 kg/ha).

Key words : Moisture, Sunflower, Geometry, Residue and tillage

INTRODUCTION

Vertisols and Vertic inceptisols of northern dryzone of Karnataka are facing many problems like, insufficient, undistributed rainfall (CV 30%) associated with higher PET values, which exceed normal rainfall during Kharif season. Consequently the length of growing period is hardly 85-90 days. Unevenly distributed Kharif rains are of shorter duration but of torrential. Vertisols overload with 8-10cm loose soil on the surface and endowed with low infiltrationrate because of high clay content and low organic matter are highly erodable. Hence these soils are not only hungry but are also equally thirsty. Identification of in-situ moisture conservation practice and sustainable soil management practice, which enhance further the effect of in-situ moisture conservation, is urgent need of the hour. With this view in mind an experiment was conducted in different locations of Bagalkot and Bijapur districts to find out suitable integrated practice for improving the productivity of sunflower on sustainable basis.

MATERIALS AND METHODS

The study was conducted in the farmer's fields of Bagalkot and Bijapur districts during *Rabi* season of 2001-02 and 2002-03. Two farmers were selected from each village *i.e.* Madabhavi and Kavalagi of Bijapur district and Benakatti, Bhagawati and Mannikatti of Bagalkot district for the study. The soil type was medium to deep black soil in its character

Experiment was laid out in split-plot design with nine treatment combinations and was replicated 10 times with a plot size was 500 sqm for each treatment, the treatments

under the study were, Main plot – Moisture conservation practices: M_1 .Off season tillage +repeated harrowing (ITK- Indigenous technical knowledge) M_2 .Off season tillage + repeated harrowing +compartment bunding (IITK-improved Indigenous technical knowledge) M_3 . T_2 + green gram residue incorporation (scientific) Sub plot -Planting geometry : S_1 .Sunflower at 35cm row spacing (ITK)

 S_2 Sunflower at 135cm with frequent intercultivation (IITK) S_3 .Sunflower with paired row planting at 45-135cm with repeated Intercultivation (scientific).

In main plot treatment of M_3 , green gram was sown during the month of June and the green gram residue was incorporated with the help of rotavator during August first fortnight after the harvest of pods and the compartment bunds were formed with the help of bund farmer in M_3 and M_2 treatments.

Sunflower was sown during September second fortnight and harvested during January month. The observations on growth and yield parameters were taken.

RESULTS AND DISCUSSION

The results indicated that over years significantly higher seed yield of 1496 kg/ha of sunflower was recorded with compartment bunding + residue incorporation in comparison with control (1157 kg/ha) and it was at par with the comportment bunding alone (1414 kg/ha). This higher yield might have been influenced by higher growth and yield attributing characters and in-situ moisture conservation practice. Significantly higher plant height of 152cm was recorded with the treatment of greengram residue incorporation +compartment bunding over control