

## Influence of moisture conservation practices and planting geometry on *Rabi* sorghum in vertisols

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### ABSTRACT

A study was conducted to know the influence of moisture conservation practices and planting geometry on *Rabi* sorghum. The experiment was laid out in split plot design in the farmer's field of Bijapur and Bagalkot districts. The experiment consist of three moisture conservation practices (including one as control) and three planting geometry. The results indicated that compartment bunding + residue incorporation produced significantly higher yield of 2429 kg/ha. With the net returns of Rs. 14,466/- per hectare compare to the rest of the treatment. Incase of planting geometry the pooled data of two years showed significantly higher yield of 2773 kg/ha with a spacing of 90 cm compared to paired planting (2352 kg/ha) and control 1670 kg/ha. The higher yield with the spacing of 90cm might be due to the better light interception and reduced competition for moisture and nutrients.

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**Key words :** Moisture, Sorghum, Geometry, Residue, Compartment bunding and tillage

### INTRODUCTION

Sorghum [*Sorghum bicolor* (L.) moench] is an important staple food crop of India, Karnataka is the second important sorghum growing state in the country and it is mainly grown in rainfed condition in northern parts. Moisture is the major limiting factor in dryland agriculture. Rainfall in dryland areas is erratic, illdistributed and occasionally occurs with high intensity and within a shorter period of time it erodes lots of topsoil through run off. Therefore it is necessary to control the run off and conserve the rainwater through efficient *in situ* moisture conservation practices. These provide more opportunity time for ponded water to infiltrate in to the soil. In recent years increased usage of only chemical fertilizers temporarily affected the soil health, so in order to maintain the soil health, addition of crop residues in to the soil which are left over after the harvest of the crop and also use of green manures become essential. Incorporation of crop residues improves the physical, chemical and biological properties of the soil. Keeping these important constraints in view an experiment was conducted with appropriate treatment combinations in the farmers fields of Bijapur and Bagalkot district to achieve sustainable higher yields.

### MATERIALS AND METHODS

The study was conducted in the farmer's fields of Bagalkot and Bijapur districts, during the *Rabi* seasons

of 2001-02 and 2002-03. Two farmers were selected from each village of Madabhavi and Kavalagi in Bijapur district and Benakatti, mannikatti and Bhagawati in Bagalkot district. The soil type was medium to deep black.

Experiment was laid out in split-plot design which comprises of nine treatment combinations, each farmer is considered as one replication and the treatment were replicated ten times with a plot size of 500 sqm for each treatment. The treatment under the study were

#### Mian plot - Moisture conservation practices:

M<sub>1</sub> - Off season tillage + repeated harrowing (ITK-Indigenous Technical Knowledge)

M<sub>2</sub> - Off season tillage + repeated harrowing + compartment bunding (IITK-improved Indigenous Technical Knowledge)

M<sub>3</sub> - T<sub>2</sub>+greengram residue incorporation (scientific)

#### Sub plot - Planting geometry:

S<sub>1</sub> - *Rabi* sorghum at 35cm

S<sub>2</sub> - *Rabi* sorghum at 90cm

S<sub>3</sub> - *Rabi* sorghum with paired row planting at 45-90 cm with repeated Intercultivation (scientific)

In main plot with moisture conservation practice (M<sub>3</sub>), green gram was sown during the month of June and the residue of green gram were incorporated during first fortnight of August with rotovater and the compartment bunds were formed with the help of bund farmer in M<sub>2</sub> and M<sub>3</sub> treatments.

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