Internat. J. Agric. Sci. Vol.3 No.2 June, 2007: 138-140

# Yield attributes, seed yield and net returns of rainfed castor as influenced by plant geometry and nitrogen levels

# C. VENUGOPAL AND G. KRISHNA REDDY\*

Department of Agronomy, S.V.Agricultural College, TIRUPATI (T.N.) INDIA

# ABSTRACT

Field experiment was conducted at dry land farm, S.V.Agricultural College, Tirupati campus of Acharya N G Ranga Agricultural University to study the performance of rainfed castor (Cultivar Kranthi) under varied levels of nitrogen with different planting patterns during *kharif* 2002. The experimental site is situated at an altitude of 182.9 m above mean sea level (MSL),  $79^{0}36^{1}$  E longitude and  $13^{0}27^{1}$  N latitude, located in the Southern Agro climatic zone of Andhra Pradesh.The study was laid out in a randomized block design with factorial concept, replicated thrice, comprising of four planting patterns, Viz.,  $90x20 \text{ cm}(P_{1})$ ,  $60x30 \text{ cm}(P_{2})$ ,  $45x40\text{ cm}(P_{3})$  and  $75x24\text{ cm}(P_{4})$  and three nitrogen levels viz.,  $40 \text{ Kg ha}^{-1}(N_{1})$ ,  $60 \text{ Kg ha}^{-1}(N_{2})$ , and  $80 \text{ Kg ha}^{-1}(N_{3})$ . The highest number of spikes plant<sup>-1</sup>, capsules spike<sup>-1</sup>, longest spikes, seed yield and net returns were recorded with the planting pattern of 60x30 cm with application of nitrogen @  $80 \text{ kg ha}^{-1}$  whereas they were lowest with planting pattern of 75X24 cm along with application of nitrogen @  $40 \text{ kg ha}^{-1}$ . The planting pattern 45 X40cm took more number of days to attain 50 per cent flowering which was at par with planting pattern of 60X30 cm along with the application of nitrogen @  $80 \text{ kg ha}^{-1}$ .

Key words : Rainfed castor, Plant geometry, Nitrogen levels, Yield attributes, Seed yield and Net returns.

# **INTRODUCTION**

The productivity of castor in Andhra Pradesh is very low, because castor is grown on marginal and submarginal soils under rainfed conditions, coupled with incidence of a host of biotic stresses like pests and diseases such as *Heliothis* and *Botrytis*, besides low input use by the resource poor farmers and poor level of crop management. As a consequence, cultivation of castor during *kharif*, under rainfed conditions has become less remunerative.

Enhanced production is possible mainly through appropriate agro techniques such as genotypes sown at optimum time, maintaining optimum plant stand and judicious use of nutrients. The present study was, therefore, designed to obtain reasonably higher level of productivity of castor by selecting the suitable planting pattern and nitrogen levels in the southern agro-climatic zone of Andhra Pradesh.

#### MATERIALS AND METHODS

The experiment was conducted at dry land farm, S.V.Agricultural College, Tirupati during *kharif* 2002. The experiment was laid out in a randomized block design with factorial concept, replicated thrice comprising of four planting patterns. Viz., 90x20 cm (P<sub>1</sub>), 60x30 cm (P<sub>2</sub>), 45x40cm (P<sub>3</sub>) and 75x24cm (P<sub>4</sub>) and three nitrogen levels viz., 40 Kg ha<sup>-1</sup> (N<sub>1</sub>), 60 Kg ha<sup>-1</sup> (N<sub>2</sub>), and 80 Kg ha<sup>-1</sup> (N<sub>3</sub>). The entire quantity of  $P_2O_5$  (40 kg ha<sup>-1</sup>) and half

\* Author for correspondence.

the quantity of N was applied as a basal dose. The remaining half of N was equally applied as top dress at 40 and 70 DAS. The soil of the experimental field was in sandy loam texture having neutral pH, 223.7 Kg ha<sup>-1</sup> available N, 22.7 Kg ha<sup>-1</sup> available P and 315 Kg ha<sup>-1</sup> available K. A total rainfall of 416.5 mm was received in 33 rainy days.

## Number of spikes plant<sup>-1</sup>:

The total number of spikes on each of the five tagged plants were counted and the average was worked out and expressed in number of spikes plant<sup>-1</sup>.

#### Number of capsules spike<sup>-1</sup>:

The total number of capsules from each spike of each of the tagged plants in every plot was counted and average number of capsules spike<sup>-1</sup> was recorded.

#### Spike length :

Length of the spike was measured in centimeters with a linear meter scale on each of the five-tagged plants. The average was worked out and expressed as mean length of spikes.

## Days to 50 per cent flowering:

Number of days taken to 50 per cent flowering was counted from sowing date to the day on which 50 per cent of plants in each plot flowered and expressed in