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## **Research Paper :**

# Effect of different drip irrigation levels on growth and yield of bitter gourd (*Momordica chanrantia*. L) in semi arid conditions of Karnataka

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## ABSTRACT

A field experiment was carried out to study the effect of different drip irrigation levels on growth and yield of bitter gourd in semi arid conditions of Raichur during *Rabi* / summer 2009-10. The different drip irrigation levels included  $T_1$ - 60 % ET,  $T_2$ - 80 % ET,  $T_3$ - 100 % ET,  $T_4$ - 120 % ET and  $T_5$ - furrow irrigation (control). The data revealed that 100 per cent ET level with drip irrigation produced superior values for plant height, number of branches, days taken for initiation of male and female flowers, number of fruits per plant, average fruit weight, fruit length, fruit girth and yield per hectare. The yield and yield parameters on either side of 100 per cent ET level and with furrow irrigation showed a decreasing pattern.

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Key words : Bitter gourd, Drip irrigation, Water requirement, Semi arid region

The sources of irrigation water are limited and the L demand for agricultural produces is increasing. Therefore, it is necessary to adopt efficient use of water through micro irrigation systems like drip which saves 27 to 42 per cent of water. The micro irrigation area has been increasing steadily. Micro irrigation helps to conserve irrigation water and increase water use efficiency by reducing soil evaporation and drainage losses. It also helps to maintain soil moisture conditions that are favourable to crop growth. Thus micro irrigation can help to sustain the productivity of the land. The dry land ecosystems in the semi arid tracts are blessed with rich natural resources required for crop production except the water. In these areas micro irrigation technology is rapidly expanding not only because of its water economy but also due to higher biological returns. Among the different crops vegetables have been found to be highly responsive to micro irrigation. Bitter gourd (Momordica chanrantia L.) crop is grown on a sizeable area owing to its food and medicinal importance. It is a member of the Cucurbitaceous family. It is widely grown in China and India and throughout Southeast Asia. The present investigation was, therefore, undertaken to find out the optimum drip irrigation levels for bitter gourd in order to economize the use of water and to enhance the productivity under the semi arid tract

of Raichur.

### METHODOLOGY

A field experiment was conducted at Main Agricultural Research Station, Raichur during Rabi/ summer 2009-10. The experiment was laid out in a Randomized Block Design with 5 treatments ( $T_1 - 60 \%$ ET, T<sub>2</sub> - 80 % ET, T<sub>3</sub> - 100 % ET, T<sub>4</sub> - 120 % ET, T<sub>5</sub> -Control treatment) and 4 replications. The soil was black sandy loam with a pH of 7.39 having normal EC (0.26 dSm<sup>-1</sup>) and low in organic carbon (0.32 %), medium in available N (296.12 kg ha<sup>-1</sup>), medium in available  $P_2O_5$  $(39.47 \text{ kg ha}^{-1})$  and low in available K<sub>2</sub>O (48.36 kg ha<sup>-1</sup>). The Bitter gourd variety Coimbatore long was grown with all the recommended practices. The irrigations were given as per the treatment. The daily water requirement for drip irrigation was computed using data from USDA Class-A open pan evaporimeter. The water requirements of bitter gourd crop per day per plant under drip irrigation were computed using the following equation.

$$Q = \frac{A \times B \times C \times D}{E}$$
where,