

## Effect of plant growth regulators on morpho-physiological parameters and yield in bittergourd

GEETA BIRADAR, C.M. NAWALAGATTI\*, M.B.DODDAMANI AND M.B.CHETTI

Department of Crop Physiology, College of Agriculture, University of Agricultural Sciences, DHARWAD (KARNATAKA) INDIA

### ABSTRACT

A field experiment was conducted at Main Agricultural Research Station, University of Agricultural Sciences, Dharwad during *Rabi* 2007-08 to study the effect of plant growth regulators on growth, yield and yield components in bittergourd. The experiment consisted of two varieties (MHBI-15 and Chaman Plus) and seven plant growth regulators *viz.*, three different levels of GA<sub>3</sub> (20, 40 and 60 ppm), NAA (50 ppm) and two levels of CCC (100 and 200 ppm) and control. The results of the investigation indicated significant differences between the treatments and varieties on vine length and number of leaves at all the stages. Among the treatments GA<sub>3</sub> @ 20 ppm had recorded significantly maximum vine length and number of leaves followed by GA<sub>3</sub> 40 ppm as compared to other treatments except cycocel (100 ppm) which recorded significantly lowest in vine length and number of leaves. The experimental data revealed that the maximum fruit yield was recorded significantly with the application of GA<sub>3</sub> (20 ppm) followed by, CCC (200 ppm) as compared to other treatments and significant lowest yield was obtained in control. The increase in the fruit yield was attributed due to increase in number of female flowers per plant and number of fruits per plant. However, among the varieties, performance of Chaman Plus was superior compared to MHBI-15 in all the parameters.

**Key words :** Plant growth regulators

### INTRODUCTION

Bittergourd (*Momordica charantia* L.) is one of the most important cucurbitaceous vegetable widely cultivated in India. The importance of bittergourd has long been recognized due to its high nutritive value and medicinal properties. In India, it is cultivated in an area of 26,004 ha with a production of 1,62,196 tons and the productivity level is 6.23 t/ha. In Karnataka, it is cultivated in an area of 1,872 ha with a production of 13,676 tons and the productivity is 7.0 t/ha (Anonymous, 2008). Bittergourd has immense medicinal properties due to the presence of beneficial phytochemicals which is known to have antibiotic, antimutagenic, antioxidant, antiviral, antidiabetic and immune enhancing properties (Grover and Yadav, 2004). A compound known as charantin, present in the bittergourd is used in the treatment of diabetes in reducing blood sugar level (Lotlikar and Rajaramrao, 1966).

The plant growth regulators (PGRs) is considered as a new generation of agrochemicals after fertilizers, pesticides and herbicides, known to enhance the source-sink relationship and stimulate the translocation of photo-assimilates thereby helping better fruit set. Similarly, even in bittergourd, it is possible to increase the yield level by increasing the fruit set per cent by use of some growth regulators. Use of plant growth regulators (PGRs) might be a useful alternative to increase crop production. Recently, there has been global realization of the important role of PGR's in increasing crop yield. Gibberellic acid is

an important growth regulator that has many uses to modify the growth, yield and yield contributing characters of plant (Rafeekher *et al.* 2002).

Though the PGR's have great potentialities to influence plant growth morphogenesis, its application and aroal assessments have to be judiciously planned in terms of optimal concentrations, stage of application, species specificity, seasons, etc. Which constitute the major impediments in PGR's applicability. Since, very little information is available on the effect of growth regulators on growth and yield in vegetables especially in bittergourd, the present investigation was aimed to find out suitable growth regulators for increasing the fruit yield potential and also quality in bittergourd with the objective to find out the effect of plant growth regulators on growth and yield in bittergourd.

### MATERIALS AND METHODS

A field experiment was conducted during *Rabi* 2007, at Main Agricultural Research Station, University of Agricultural Sciences, Dharwad to study the effect of plant growth regulators (GA<sub>3</sub>, NAA and cycocel) on morphological parameters and yield in bittergourd. The experiment consisted of two varieties (MHBI-15 and Chaman Plus) and laid out in factorial Randomized Block Design with seven treatments *viz.*, gibberellic acid (20, 40 and 60 ppm), naphthalene acetic acid (50 ppm), and cycocel (100 and 200 ppm). Treatments were imposed at 45 days after sowing (DAS) in both the varieties.

\* Author for correspondence.