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Paper

## Influence of plant growth regulators on growth parameters and yield components of interspecific hybrid cotton

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### ABSTRACT

Field experiments were conducted at Agricultural Research Station, Dharwad, University of Agricultural Sciences, Dharwad during *Kharif* 2005-06 and 2006-07 to know the influence of plant growth regulators on growth parameters and yield components of interspecific hybrid cotton. Significant differences were observed in all parameters studied during two years. The treatment naphthalene acetic acid (30 ppm) recorded significantly higher yield (kg/ha) and lowest in cycocel (80 ppm) sprayed at 70 + 90 days after sowing. The absolute growth rate (AGR) and crop growth rate (CGR) were higher during flower initiation and peak flowering stages in all the treatments. In the present study, naphthalene acetic acid treatments (10, 20, 30 ppm) showed higher absolute growth rate (AGR) and crop growth rate (CGR). At initial stage (60-90 DAS), higher relative growth rate (RGR) was recorded with naphthalene acetic acid (NAA) treatments; while at later stages of crop growth, higher relative growth rate was recorded by growth retardant treatments. The net assimilation rate (NAR) decreased continuously from 90 days after sowing until harvest in all the treatments. The decrease in net assimilation rate at later stages could be due to mutual shading of leaves.

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**Key words :** Cotton, PGRs, Hybrid cotton, Interspecific hybrid, Growth parameters, Growth retardants

## INTRODUCTION

Cotton is one of the most important fibre crops playing a key role in the economic and social affairs of the world. It is the oldest among the commercial crops of the world and is regarded as white gold. Cotton plant has a natural mechanism to prevent excessive vegetative growth with higher nitrogen levels, soil moisture, temperature and fruit loss by insect, disease and nematodes. In many cases, these factors are not well balanced and growth regulators are needed to maintain proper plant size and to synchronize boll set and to regulate maturity. Additionally, indeterminate varieties also require plant growth regulators to shift cotton from vegetative to reproductive growth.

Plant growth regulators are known to modify the source to sink relationship and increase the translocation and photosynthetic efficiency resulting in increased square and boll retention and boll set per cent (Kiran Kumar, 2001). Mepiquat chloride is an anti-gibberelin that inhibits cell expansion but not cell division. Its spray directs carbohydrates into reproductive organs and hence, used to control plant growth. It is available in different trade

names that include pix, mepex, pixplus, pix ultra and others. Pix, which is a growth retardant when applied as foliar spray reduces the vegetative growth, leaves become coarse and dark green in color (Cothren and Osterhuis, 1993; Edmisten, 2000).

## MATERIALS AND METHODS

Field experiments were conducted during *Kharif* 2005-06 and 2006-07 to know the influence of plant growth regulators on growth parameters and yield components of interspecific hybrid cotton. Five plants from each treatment were selected randomly and tagged for recording various observations. The design adopted for the experiment was randomized block design with three replications. The genotype used for the experiment is DHB-290. Various treatments given were cycocel (40, 60, 80 ppm), mepiquat chloride (50, 100 ppm), naphthalene acetic acid (10, 20, 30 ppm) and sprayed at 70, 90 and 70 + 90 days after sowing. But, all naphthalene acetic acid concentrations sprayed at 60 days after sowing.