

## Effect of paclobutrazol and ethephon on the biochemical constituents of cape gooseberry (*Physalis peruviana* L.)

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Cape gooseberry (*Physalis peruviana* L.) plants were treated with paclobutrazol (12.5, 25, 50 and 100 ppm) and ethephon (100, 200, 400 and 800 ppm) in a field experiment during Rabi season. The biochemical constituents estimated were acidity, total soluble solids (TSS), total sugar, reducing sugar, non-reducing sugar and ascorbic acid (Vit. 'C'). The result indicate that 50 ppm paclobutrazol and 400 ppm ethephon, significantly increased the TSS, total sugar, reducing sugar, ascorbic acid (Vit. 'C') and decreased acidity and non-reducing sugar. A highly significant increase in yield by 131 per cent with ethephon 400 ppm and by 105 per cent with paclobutrazol was noticed over control.

Key words: Cape gooseberry (*Physalis peruviana* L.), Paclobutrazol, Ethephon, Growth retardant, Biochemical constituents, Fruit quality

### INTRODUCTION

Cape gooseberry (*Physalis peruviana* L.) has been an under exploited fruit crop so far in India as well as other parts of the world. The fruit is non-climacteric and contains many tiny seeds about 180 to 250 in number in a normal berry. Berries are cheap, delicious and acidic sweet in taste and have very pleasant flavour with dusty yellow colour on ripening. It performs considerably well without much care and gives quick returns because of short gestation period. An improvement in fruits quality may make its cultivation still more advantageous. In recent years use of growth regulators have proved very effective in improving fruits quality and yield in several tropical and subtropical fruit crops. Among the growth retarding chemicals, paclobutrazol is effective on a very wide range of species where its principal mode of action is the inhibition of gibberellins biosynthesis. Ahmad *et al.* (2000) reported that total soluble solids content of litchi fruits was higher in paclobutrazol (5ml/m<sup>2</sup> plant spread) treated trees. Highest seed yield and ascorbic acid content of *Amaranthus tricolor* was recorded from paclobutrazol at 80 ppm (Singh, 2000).

Whereas, ethephon is known as ripening hormones. Its mode of action on plants is similar to the influence of hormonal antiauxins and releases ethylene. Foliar

application of ethephon has resulted in retardation of vegetative growth and increased yield of tomatoes (Costro, *et al.*, 1983). It is also reported to increase the ascorbic acid content in mango (Mann, 1985) and total soluble solids in ber (Sandhu *et al.*, 1989). The present investigation was, therefore, conducted to determine the biochemical constituents and yield of cape gooseberry as influenced by paclobutrazol and ethephon.

### MATERIALS AND METHODS

An experiment was conducted in sandy loam soil at Allahabad Agricultural Institute, Allahabad during *rabi* season. One month old nursery raised seedlings of cape gooseberry were transplanted in the field in a randomised block design with four replications on 25th August during both the years. Four levels of paclobutrazol i.e. 12.5, 25, 50 and 100 ppm and four levels of ethephon i.e. 100, 200, 400 and 800 ppm were tried along with the control. Few drops of 'Teepol' were added to all the solutions as a sticking agent.

The acidity was determined by titrating the fruit juice against standard N/10 NaOH. The total soluble solid of the fruit juice was determined by hand refractometer. The total sugar, reducing and non-reducing sugar were estimated using the Fehling's solution. The ascorbic acid (Vit. 'C') was determined by 2, 6, dichlorophenol indophenol dye.

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