

## A comparison of growth promoting and retarding compounds on yield performance in greengram during *Rabi*

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### ABSTRACT

The growth promoting compounds *viz.*, NAA (20 ppm) and brassinosteroid (20ppm) recorded significantly higher values for total dry matter production (TDM) over growth retardant treatments at all growth stages of greengram. However, photosynthetic rate, SCMR values, and nitrogen harvest index were higher with growth retarding substance *viz.*, chlormequat chloride. However, the seed yield was significantly more with NAA (20 ppm) followed by mepiquat chloride 5% AS, brassinosteroid (20 ppm) and chlormequat chloride (137.5 g a.i ha<sup>-1</sup>).

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**Key words :** Greengram, Plant growth regulators, Dry matter production, Biochemical parameters, Yield

### INTRODUCTION

Greengram occupies a prominent place by virtue of its high nutritive value, short duration and its ability to suit any cropping systems. The plant growth regulators (PGRs) have been playing an important role in overcoming the hurdles in manifestation of biological productivity in pulses. The use of plant growth regulators are known to improve the physiological efficiency including photosynthetic ability of plants and offer a significant role in realizing higher crop yields. The plant growth regulators are also known to enhance the source-sink relationship and stimulate the translocation of photo-assimilates, thereby increasing the productivity. Use of these regulators should be judicious in any given cropping system. The present paper deals with the effect of certain growth promoting and retarding compounds on yield performance in greengram.

### MATERIALS AND METHODS

A field experiment on greengram was conducted during *Rabi* 2009-2010 at Student's Farm, College of Agriculture, Rajendranagar, Hyderabad. The experiment consisted of 9 treatments *viz.*, chlormequat chloride 50% SL (137.5 g a.i ha<sup>-1</sup>, 162.5 g a.i ha<sup>-1</sup>, 187.5 g a.i ha<sup>-1</sup> and 375.0 g a.i ha<sup>-1</sup>), mepiquat chloride 5% AS, NAA (20 ppm), brassinosteroid (20 ppm), water spray and control. The experiment was laid out in Randomized Block Design using the cv. WGG-37 with three replications. The growth

regulators were sprayed at flower initiation stage (38 DAS). The destructive sampling was done at fortnightly intervals starting from 30 DAS. At each sampling five plants from the second row from either side in each plot were uprooted and component parts were separated and oven dried at 70°C. To know the number of root nodules, plants were dugout carefully and the roots were washed to remove the soil sticking to the roots and nodules. The crop was harvested when most of the pods turned black. The plants from one m<sup>2</sup> area were harvested and were used for the estimation of dry matter production and yield attributes. The photosynthetic rate (Pn) was measured using Infra Red Gas Analyzer of PP systems (Model TPS-1). A field experiment on greengram was conducted during *Rabi* 2009-2010 at Student's Farm, College of Agriculture, Rajendranagar, Hyderabad. The experiment consisted of 9 treatments *viz.*, chlormequat chloride 50% SL (137.5 g a.i ha<sup>-1</sup>, 162.5 g a.i ha<sup>-1</sup>, 187.5 g a.i ha<sup>-1</sup> and 375.0 g a.i ha<sup>-1</sup>), Mepiquat chloride 5% AS, NAA (20 ppm), Brassinosteroid (20 ppm), Water spray and Control. The experiment was laid out in Randomized Block Design using the cv. WGG-37 with three replications. The growth regulators were sprayed at flower initiation stage (38 DAS). The destructive sampling was done at fortnightly intervals starting from 30 DAS. At each sampling five plants from the second row from either side in each plot were uprooted and component parts were separated and oven dried at 70°C. To know the number of root nodules,

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