

## Growth parameters of late sown Bt cotton as influenced by different plant spacings, fertilizer levels and NAA applications under irrigation

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### ABSTRACT

A field experiment was conducted to study the growth parameters of late sown Bt cotton as influenced by plant spacings, fertilizer levels and NAA application under irrigation in vertisol during 2006-07 at College of Agriculture, Raichur farm, University of Agricultural Sciences, Dharwad. The results of the investigation indicate that at harvest plant height was significantly higher with 90 x 60 cm spacing (127.88 cm), 150 per cent RDF (125.13 cm) and three sprays of NAA (126.00 cm). At harvest, 90 x 60 cm spacing (24.04), 150 per cent (23.39) and three sprays of NAA recorded significantly higher number of main stem nodes per plant (23.53). At harvest 90 x 60 cm row spacing (77.11 dm<sup>2</sup> plant<sup>-1</sup>), 150 per cent RDF (71.54 dm<sup>2</sup> plant<sup>-1</sup>) and three sprays of NAA (71.90 dm<sup>2</sup> plant<sup>-1</sup>) recorded significantly higher leaf area. LAI recorded at harvest was significantly superior with 90 x 60 cm spacing (1.42), 150 per cent RDF (1.86) and three sprays of NAA (1.86). At 135 DAS, 90 x 60 cm spacing (22.37), 150 per cent RDF (21.12) and three sprays of NAA (21.32) recorded significantly higher number of sympodial branches per plant. Similar trend was observed at harvest. The influence of spacings, different levels of fertilizer and NAA sprays at 90 and 135 DAS and at harvest was found significant on total dry matter production per plant. Interaction effect were also found to be non significant.

**Key words :** Plant height, Leaf area, Total dry matter, Bt cotton, Spacing, Fertilizer levels, NAA sprays

### INTRODUCTION

Cotton is very specific to its climatic requirements and reacts unfavorably for any shift in dates of sowing from the normal period. In Tungabhadra project (TBP) area of Karnataka, the optimum time for sowing of hybrid cotton is upto July second fortnight. In this region, delay in sowing beyond normal time becomes inevitable due to partially or total failure of early rains and/or late release of canal water in *Kharif* season (Rao and Janawade, 2006). This compels the farmers to go in for late sowing of cotton. In the present study, attempt was made to study the growth parameters of late sown Bt cotton as influenced by different plant spacings, fertilizer levels and NAA applications under irrigation in vertisol in the Deccan zone.

### MATERIALS AND METHODS

The field experiment was conducted during 2006-07 in Vertisol at College of Agriculture, Raichur, farm University of Agricultural Sciences, Dharwad (Karnataka). The experiment was laid out on medium black soil with a split-split plot design. There were 18 treatment combinations replicated three times with three plant spacings (90 x 30 cm, 90 x 45 cm, 90 x 60 cm) in main plots, fertilizer levels (100 % RDF and 150 % RDF) in sub plots and growth regulator sprays (control (water spray), NAA @ 10 ppm-two sprays at flower commencement and full blooming stage and NAA @ 10 ppm-three sprays at squaring, flower commencement and

full blooming stage) in sub-sub plots. The recommended dose of fertilizer (RDF) for cotton comprised of 150:75:75 NPK kg ha<sup>-1</sup>.

The cultivar used was Bunny Bt. The crop was sown by delaying one and half month beyond optimum schedule on 25<sup>th</sup> September, 2006. The other cultivation practices were followed as per recommended package.

### RESULTS AND DISCUSSION

At harvest plant height was significantly higher with 90 x 60 cm spacing (127.88 cm) than 90 x 45 cm spacing (122.26 cm) which in turn was significantly superior to 90 x 30 cm spacing (118.74 cm). Significantly higher plant height was recorded with the application of 150 per cent RDF (125.13 cm) as compared to application of 100 per cent RDF (120.78 cm) at harvest. Significantly higher plant height (126.00 cm) was recorded with three sprays of NAA as compared to two sprays of NAA (122.33 cm) which in turn was significant over control – water spray (120.46 cm) (Table 1).

Number of main stem nodes per plant differed significantly at harvest due to application of different levels of fertilizer. The plant spacing 90 x 60 cm recorded significantly higher number of main stem nodes per plant (24.04) as compared to 90 x 45 and 90 x 30 cm spacings, while the number of nodes per plant was significantly lower with 90 x 30 cm spacing (21.51). Application of 150 per cent recorded significantly higher number of nodes per plant (23.39) over 100 per cent RDF (22.10). And three sprays of NAA recorded significantly higher