

Sucking pests and bollworm studies of late sown Bt Cotton (*Gossypium hirsutum* L.) as influenced by different plant spacings, fertilizer levels and NAA applications under irrigation

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ABSTRACT

A field experiment was conducted on vertisol to study the sucking pests and bollworm population of late sown Bt cotton as influenced by different plant spacings, fertilizer levels and NAA applications under irrigation during 2006-07 at College of Agriculture, Raichur farm, University of Agricultural Sciences, Dharwad. The results of the investigation indicate that at 45 DAS the aphids population was significantly higher with 90 x 30 cm spacing (9.29 leaf⁻¹ plant⁻¹), 150 per cent RDF (8.06 leaf⁻¹ plant⁻¹) and three sprays of NAA (8.03 leaf⁻¹ plant⁻¹). At 30 and 45 DAS, jassids population was significantly higher with 90 x 30 cm (1.88 and 2.88 leaf⁻¹ plant⁻¹, respectively) spacing, 150 per cent RDF (1.79 and 2.66 leaf⁻¹ plant⁻¹, respectively) and three sprays of NAA (1.84 and 2.73 leaf⁻¹ plant⁻¹, respectively). At 30 and 45 DAS, the thrips population was significantly higher with plant spacing of 90 x 30 cm (48.62 and 12.94 leaf⁻¹ plant⁻¹, respectively), 150 per cent RDF (46.0 and 12.90 leaf⁻¹ plant⁻¹, respectively) and three sprays of NAA (46.10 and 13.30 leaf⁻¹ plant⁻¹, respectively). At 75 and 90 DAS, significantly higher number of bollworms per plant was recorded with plant spacing of 90 x 30 cm (0.66 and 1.00, respectively), 150 per cent RDF (0.58 and 0.86, respectively) and three sprays of NAA (0.59 and 0.87, respectively). Interaction effects were found to be non significant.

Key words : Sucking pests, Bollworm, Bt cotton, Spacing, Fertilizer levels, NAA sprays

INTRODUCTION

Cotton (*Gossypium hirsutum* L.) is an important fibre crop of India contributing 85 per cent of raw materials to the textile industry. India ranks first in area and third in production after USA and China with an average productivity of 462 kg lint ha⁻¹ which is very low compared to world's average productivity of 682 kg lint ha⁻¹ (Khadi, 2007). Optimum time for sowing of hybrid cotton is upto July second fortnight. Delay in sowing beyond normal time becomes inevitable due to partial or total failure of rains and/or late release of canal water in *Kharif* season (Rao and Janawade, 2006). The research studies indicated a 28.9 per cent reduction in cotton yields when sowing was delayed by a month (Basavanneppa *et al.*, 2001). Under such conditions it is necessary to find out suitable agronomic practices for enhancing the cotton productivity. The present investigation was conducted to study the sucking pests and bollworm populations of late sown Bt Cotton (*Gossypium hirsutum* L.) as influenced by different plant spacings, fertilizer levels and NAA applications under irrigation.

MATERIALS AND METHODS

Field experiment was conducted during 2006-07 at College of Agriculture, Raichur, farm on black clay soil. The experiment was laid out in a split-split plot design. There were 18 treatment combinations replicated three

times with plant spacings (population levels), 90 cm x 30 cm (37,036 plants/ha), 90 cm x 45 cm (24,691 plants/ha) and 90 cm x 60 cm (18,518 plants/ha) in main plots, fertilizer levels (100 % 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 replicated three times. The recommended dose of fertilizer (RDF) for cotton comprised of 150:75:75 NPK kg ha⁻¹. Bt cotton (Bunny Bt) was sown on 25th September 2006, a delay of 45 days from optimum schedule.

RESULTS AND DISCUSSION

Population of thrips, aphids and Jassids differed significantly due to plant population levels at 30 and 45 DAS (Table 1 and 2). Significantly higher population of thrips, aphids and jassids was recorded with 90 x 30 cm spacing (37,036 plants ha⁻¹) where as lower population of these pests was recorded with 90 x 60 cm (18,518 plants ha⁻¹). Similar observations were also made on bollworm population at 75 and 90 DAS (Table 2). This might be due to change in microclimate with higher plant population. Effect of spacing levels was found significant with respect to incidence of aphids at 45 DAS, but it did not differ significantly at 30 DAS (Table 1). At 45 DAS, the aphid population was significantly higher with 90 x 30 cm spacing