Summary
VI. SUMMARY

Studies on population dynamics of insects on Bt cotton and non Bt cotton were carried out under irrigated conditions in the farmers field at Udamgal village in Raichur, Karnataka during 2002 - 03 and 2003- 04 growing seasons. The results of the investigations are summarized below.

- Thrips, aphid, leafhopper, whitefly, dusky cotton bug and red cotton bug were the sucking pests noticed on both Bt and non-Bt cottons.

- Thrips was first to appear at 35 DAS; aphid, leaf hopper and whitefly at 50 DAS; red cotton bug at 65 DAS and last to appear was dusky cotton bug at 95 DAS. Number of these sucking pests on non-Bt cotton was par with Bt cotton.

- Ladybird beetle, green lacewing and spider were recorded as predators on both Bt and non-Bt cotton.

- Count of these natural enemies was significantly more on Mech 162 Bt compared to Mech 162 NBt and NHH 44.

- Egg load of spotted bollworm and false American bollworm were similar on Bt and non-Bt cottons. But, the larval numbers of bollworms were significantly less on Bt than non-Bt cotton.

- Percent shoot damage by spotted bollworm was significantly less in Bt cotton (3.5 per cent) than Mech 162 NBt (4.5 per cent) and NHH (37.0 per cent).

- Locule damage by pink bollworm was significantly less in Mech 162 Bt (12.72 per cent) than non-Bt plots Mech 162 NBt (30.35 per cent) and NHH 44 (31.54 per cent).
Bollworm damage to fruiting bodies was very less in Bt cotton (5.22 per cent) when compared to Mech 162 NBt (26.39 per cent) and NHH 44 (26.55 per cent).

Number of good opened bolls was more on Mech 162Bt (34.66 per plant) than Mech 162 NBt (17.92 per plant) and NHH 44 (23.18 per plant). But, number of bad opened bolls was more on non-Bt cottons than Bt cotton.

Cry1Ac insecticide protein expression levels were more in the early stages of crop growth. As the crop matured, the expression levels decreased. But, the expressed insecticide protein levels were more than sufficient in managing the bollworm complex.

Bt protein expression levels were more in terminal leaf and followed by square, seeds and green bolls.

No difference was observed between Bt and non-Bt cottons with respect to available inorganic constituents like nitrogen, phosphors potash, calcium, zinc, iron, copper, manganese and magnesium.

One insecticidal spray was given to both Bt and non-Bt cottons for managing sucking pests. But, eight rounds of insecticide sprays were given to non Bt cotton as against just one spray to Bt cotton for controlling bollworms.

Seed cotton yield was significantly more from Mech 162 Bt plot (13.98 q/ha) when compared to Mech 162 NBt (7.45 q/ha) and NHH 44 (9.54 q/ha). There was 46.71 per cent increase in yield form Bt cotton over Mech 162 NBt and 31.76 per cent increase over NHH 44.
• Benefit cost ratio for Mech 162 Bt was 4.66, for Mech 162 NBt was 1.79 and for NHH 44 was 2.3.

This study clearly demonstrates the advantages of growing Bt cotton over non-Bt cotton. Thus, transgenic technology can serve as the ‘corner stone’ for more environmentally sound integrated pest management (IPM) programmes in cotton cultivation.