

MM 3.1: IPM at village level to produce cost effective quality fiber

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Introduction:

IPM module was successfully demonstrated in 60 villages throughout the country in a farmers' participatory mode. Keeping pace with the technological advancements, timely incorporation of Bt cotton as a component of IPM was made at 12 field centers across three zones and most of the Bt hybrids released so far were evaluated for their performance vis-à-vis the conventional cotton in IPM and non-IPM modes. Bt cotton received only the most relevant critical inputs of the conventional IPM module of a location.

Pest Scenario:

Among the sucking pests, the population of jassids and whiteflies were found to be very low. However, it was found that the thrips population in general is on the increase in all the three zones. It was ranging from 6.15 – 12.51, 6.13 – 14.85 and 2.29 – 5.56 / 3 leaves in north, central and south zones respectively (Fig. 1). In both Bt cotton as well as conventional cotton the thrips population was less in IPM compared to farmers' practice. Population of American bollworm (ABW) and spotted bollworm (SBW) was very low (less than 1 larva / plant) in both Bt and conventional cotton IPM and non IPM. However, in case of pink bollworm (PBW) it was 14.03, 11.21, 16.48 and 22.26 larvae / plant in Bt cotton IPM, non IPM, conventional cotton IPM and non IPM respectively (Fig. 2a, 2b and 2c). Fruiting bodies damage was very less in both Bt as well as conventional cotton at all the centres. Though the square damage was noted in Bt cotton, but the flower and boll damage was in traces compared to conventional cotton IPM and non IPM fields. The boll damage ranged from 0.03 to 1.29, 0.0 to 2.51, 2.39 to 7.75 and 3.64 to 10.59 in Bt cotton IPM, non IPM, conventional cotton IPM and non IPM respectively (Fig 3). Natural enemies population was less than 1/plant in both Bt as well as conventional cotton.

Emerging Pests :

Pink bollworm is assuming importance as a key bollworm on cotton at many of the field centers, as even on Bt cotton the pest has been noted to be not managed effectively because of several possible reasons. Now the American bollworm appears to be relegated to secondary status. Increasing incidence of pink bollworm as well as *Spodoptera litura* is evident from the pheromone trap catches at Rangri village in Sirsa district during 2005-06 and 2006-07 season (Table 1). The data indicated that there was appreciable reduction in the population of ABW as well as SBW with a mean of 0.73 & 0.88 moths / week and 3.91 & 4.48 moths / week during 2005 & 2006 respectively. Whereas the average population of PBW was 7.77 moths / week during 2005 and it increased to 39.63 moths / week during 2006. The peak trap catch of 124 moths of PBW were noticed in 43rd standard week in 2006. *S. litura* moth trap catches also ranged from 26.17 to 42.94 moths during 2005 and 2006 respectively.

Economics of IPM :

Seed cotton yield was 18.81 – 29.18 q / ha in Bt cotton IPM followed by Bt cotton non IPM (19.83 – 25.21q/ha), conventional cotton IPM (15.45 – 22.45 q/ha) and conventional cotton non IPM (12.66 – 18.98 q/ha) (Fig. 4). Reduction of 39% pesticide sprays was achieved in Bt cotton IPM over Bt cotton non IPM. However, it was 51% in case of conventional cotton IPM compared to conventional cotton non IPM. Accordingly, the cost benefit ratio was also more in IPM than that of respective non IPM fields.

IPM Educational Tools:

Pest management information system (PMIS), a decision support system in cotton has been developed to cater to the needs of master trainers, training organizers, krishi vigyan kendras, progressive farmers, etc. All the information required for implementing an IPM programme are included in PMIS. The leaflets and folders containing IPM module were developed from different field centers for distribution among farmers (Fig. 5). The songs on IPM components in Telugu were developed from Nandyal center. These songs also had been broadcast through AIR many times during cotton season. CD contains six songs on different aspects as follows (Fig. 6).

Plant Health Clinics:

Efforts were made to develop Plant Health Clinics at each of the nucleus villages. The concept of this clinic is to provide expert advice on identification of insect pests and natural enemies and knowledge on other IPM technologies to the farmers of nucleus as well as cluster villages. The photographs of insect pests and natural enemies as well as the pamphlets/leaflets on IPM were displayed in this clinic. One trained field staff was made available for any queries throughout the day, who was assisted by Research Associate as well as the scientist

involved in this project. The Plant Health Clinic was operated successfully at three of our field centers viz., CICR, Sirsa, ANGRAU, Nandyal and CICR, Coimbatore.

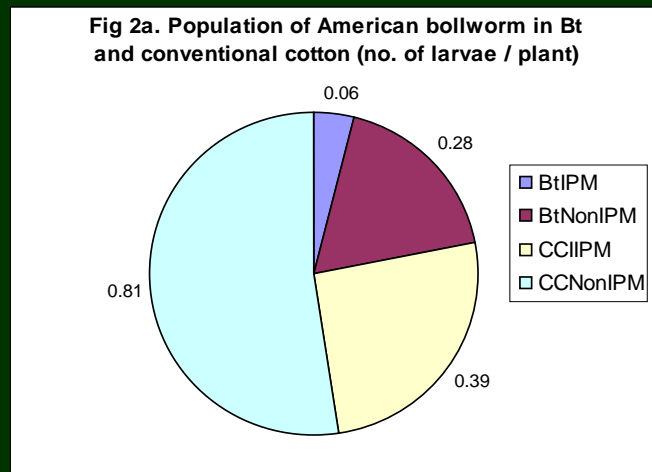
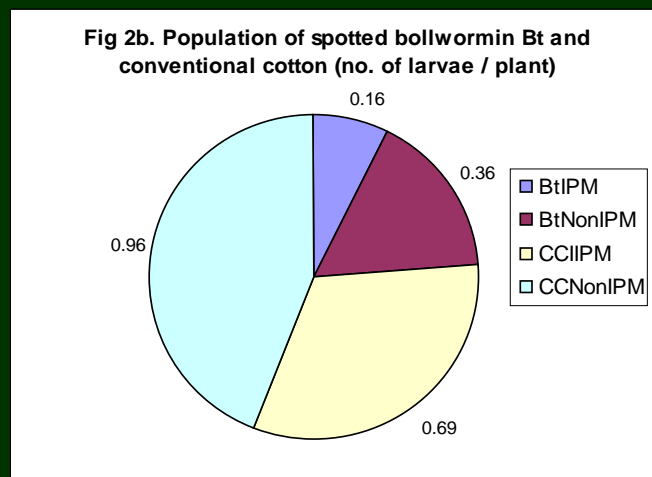
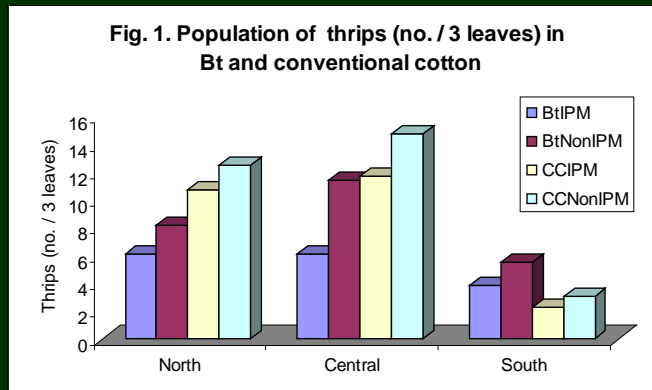


Fig 2c. Population of pink bollworm Bt and conventional cotton (no. of larvae / plant)

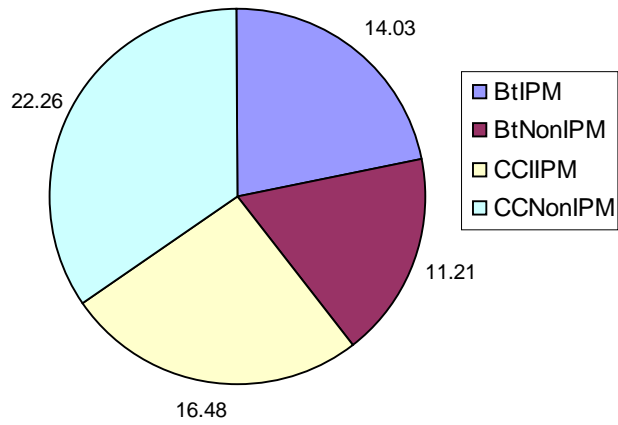


Fig. 4. Seed cotton yield (q / ha) in Bt and conventional cotton

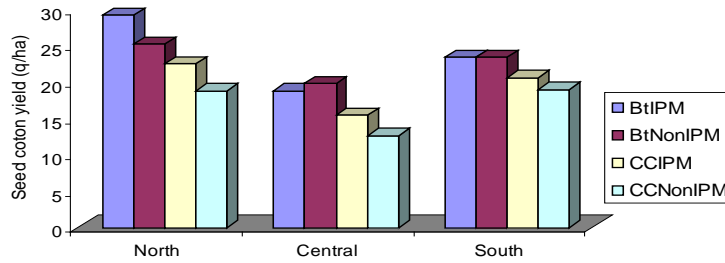


Fig. 3. Boll damage (%) in Bt and conventional cotton

