

Research Paper :

Incidence of Boll Rot, Boll and Locule Damage in Different Bt Cotton Crops

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SUMMARY

Studies on boll rot due to pathogens, boll worm damage and primary boll rot in Bt cotton were initiated on 23 – Bt and 3 – non Bt cotton hybrids and 7 – Bt and 4 – non Bt hybrids. Observations on the incidence of boll rot on 23 – Bt and 3 – non Bt cotton hybrids and 7 – Bt and 4 – non Bt hybrids revealed that there was more boll rot on non Bt hybrids than that in Bt hybrids. Non-Bt hybrids showed higher secondary boll rot than Bt hybrids. The Bt hybrids suffered less boll and locule damage than non-Bt hybrids. The bollworms were capable of causing damage to non-Bt hybrids, because Bt gene imparted resistance to Bt cottons. The non-Bt hybrids suffered more bollworm damage than Bt hybrids.

Key words :

Boll rot, Locule damage, Primary invader, Cotton crop

Cotton left by Indus valley civilizations among the three great civilizations of began era, silk by Chinese, flax by Nile valley and cotton by Indus valley civilization. Cotton fulfils one of the three sartorial needs of mankind. The crop in India occupied the largest area of 8.77 m ha among the countries of the world in 2006 – 2007 standing fourth (22.15 m bales) in its production. Indian economy continued to receive great support through this commercial crop known as “King of fibres” (or) “The White gold”, the world over. Cotton was susceptible to bollworms, which reduced the yield and fibre quality to a great extent. Introduction of transgenic cotton by incorporating Bt gene from *Bacillus thuringiensis* was done by USA in 1996 to control the bollworms. Bt cotton in turn is also expected to reduce boll rot and improve yield and fibre quality. The total area under Bt cotton cultivated has been estimated to be 9.8 m ha in 2006 accounting to 28% of the global area under cotton. In India the area under Bt cotton is 13 m ha with the corresponding figure for M.P. as 0.145 m ha in 2006 [ISAAA, 2006]. The present investigation was undertaken on boll rot in Bt cottons the primary boll rot incited by pathogens and possibly negligible boll worm damage due to incorporation of Bt gene resulting in reduced boll and locule damage.

MATERIALS AND METHODS

The experiments were carried out in the

research fields of All India Coordinated Cotton Project and the P.G. laboratory, Plant Pathology Section, College Of Agriculture, Indore (M.P.).

Seed:

The seed of 26 hybrids (*i.e.* 23 – Bt hybrids, coded as 6101 – 6122 and 6126 and 3 non Bt coded as 6123 – 6125) for testing from AIC improvement project for central zone.

Cleaning solution:

The cleaning solution contained chromic acid ($K_2Cr_2O_7$ 60 g + H_2SO_4 (conc.) 60 ml + water 940 ml) followed by thorough rinsing with water. The glass wares were dried in hot air oven at 60°C for half an hour.

Chemicals and solutions:

$HgCl_2$, alcohol, Potato Dextrose Agar (PDA) medium, Czapeck's dox agar, Nutrient glucose agar, Mounting Medium, Gram's stain, Counter stain.

Methods:

Twenty-three Bt (6101 to 6122, 6126) and three non-Bt hybrids (6123 to 6125) were selected for studies on primary boll rot by pathogens, boll damage and boll rot due to primary invaders.

Collection of boll specimen:

Boll samples were collected from all the experimental plots from the 26 hybrids from

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