

## Analysis on Relationship between Insect-resistibility and Purity of *Npt-Ⅱ* Marker Gene in Transgenic Cotton Groups

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**Abstract:** Insect-resistance decline is a serious problem during the insect-resistant transgenic cotton spreading. Six domestic varieties and four foreign ones were applied in analyzing the transgenic cotton purity of *Npt-Ⅱ* marker genes. Eight varieties from Jiangsu region trials were adopted in studying the relationship between insect-resistibility and the purity of *Npt-Ⅱ* marker gene in transgenic cotton groups. The patent method of identifying seed purity of transgenic cotton and the method of reproducing and keeping the transgenic cotton varieties purity in seed plot were taken in the paper. The method of inoculating leaves with worms in laboratory and inoculating plants in covering cages were applied to identify biological resistance to bollworm.

The result in the paper showed as follows. Firstly, the *Npt-Ⅱ* genes purity of transgenic cottons had differences between domestic and foreign varieties. The marker gene purity and stability of foreign varieties were significantly higher than domestic ones. For instance, averaged *Npt-Ⅱ* genes purity of four foreign varie-

ties was over 99.0% and the variance coefficient was only 0.41%. The purity of domestic varieties was lower, the averaged purity of the six varieties was only 78.1% and the variance coefficient reached 44.56%.

Secondly, there was remarkable positive correlation between insect-resistibility and the purity of *Npt-Ⅱ* genes, the correlation coefficient was 0.9227. The result implied that the higher the purity of *Npt-Ⅱ* genes of transgenic cotton, the stronger its biological insect-resistibility.

Finally, the methods of eliminating miscellaneous plant on seed plot were used to reproduce and keep the cotton varieties purity. Through two cycle eliminating miscellaneous plant on seed plot, the purity of variety A065 rised from 69.37% in 2000 to 83.44% in 2001, and lastly to 96.80% in 2002, the *Npt-Ⅱ* genes purity rised 27.4 in percent points. Synchronously, the variety of A065 biological resistance to bollworm from middle resistance in 2000 to high resistance in 2002.

According to the study, the patent method of raising the purity of *Npt-Ⅱ* genes of transgenic cotton varieties can be used to significantly enhance their insect-resistibility. It means that we can simply and cheaply reach the aim to track and keep the group insect-resistance by applying the patent technology of eliminating miscellaneous plant on seed plot.

**Key words:** transgenic Bt cotton; *Npt-Ⅱ* marker gene; insect-resistance; correlation