



Development and reproduction of *Tetranychus cinnabarinus* (Acari: Tetranychidae) on transgenic insect-resistant cotton plants*

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The effects of two insect-resistant transgenic cotton strains (transgenic Bt pest-resistant cotton Zhongkangza 5 and Lumianyan 23, transgenic Bt+CpTI pest-resistant cotton sGK958 and Zhongmiansuo 45) on the growth and reproduction of *Tetranychus cinnabarinus* was examined in comparison with non-transgenic cotton (K836) at 70% relative humidity and 30±0.5 °C. The results showed that *T. cinnabarinus* fed on transgenic Bt cotton and transgenic Bt+CpTI cotton differed significantly from those on conventional cotton in development time of various stages. Furthermore, the development times of mites on transgenic Bt cotton and transgenic Bt+CpTI cotton were the same, but the development times of *T. cinnabarinus* fed on transgenic Bt pest-resistant cotton Zhongkangza 5 and Lumianyan 23 were different, as well as the development times of *T. cinnabarinus* fed on transgenic Bt+CpTI pest-resistant cotton sGK958 and Zhongmiansuo 45. The pre-oviposition period, oviposition period and the female mite life span were longer (1.44 d, 12.71 d, and 14.11 d respectively) on non-transgenic cotton than on transgenic cotton. The maximum fecundity was 75.61 eggs per female on non-transgenic cotton and the minimum fecundity (54.68 eggs per female) was observed in mites fed on sGK958. The net reproductive rate (R_0) was the highest (55.000) on non-transgenic cotton, but was the smallest (37.219) on Zhongkangza 5. The intrinsic rate of increase (r_m) was the highest (0.454) on non-transgenic cotton, but was the smallest (0.246) on Zhongkangza 5. The finite rate of increase (λ) was the highest (1.575) on non-transgenic cotton, but was the smallest (1.278) on Zhongkangza 5. The population doubling time (DT) was the shortest (1.526 d) on non-transgenic cotton, but was the longest (2.823 d) on Zhongkangza 5. The results of this study indicated the negative effects of transgenic cotton on the development and reproduction of *T. cinnabarinus* was significant: the larvae had the lowest survival rate after feeding on five kinds of cotton, while deutonymphs had the highest survival rate; the hatching rate and deutonymph survival rate of *T. cinnabarinus* fed on CK were the highest, while the hatching rate and larval survival rate of the sGK958 were the lowest. Transgenic insect-resistant cotton basically showed significant effects on the development period of each stage and the whole generation of *T. cinnabarinus*, but there were no significant differences between univalent transgenic Bt cotton and bivalent transgenic Bt+CpTI cotton.

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