- **Resistance to Transgenics**

  Genetically engineered Bt cotton has been grown for five years under the fear that insects will develop resistance to the Bt toxin. How long it will take to develop resistance or how many crop generations of a particular Bt gene can be grown without development of resistance is not known. However, the Bt toxin's presence during the entire life of the plant and in all parts suggests that it will not take many generations for the problem to come to the surface. The Agricultural Research Service (ARS) of the USDA has monitored the development of resistance in transgenic cotton since the beginning of commercial cultivation in the USA. According to their latest report, insects are not developing resistance to the Bt toxin. The ARS Southern Insect Management Research Unit at Stoneville, Mississippi, has tracked tobacco budworm tolerance to the Bt protein as part of the resistance management program. In five years, researchers have not detected any change in the tolerance of tobacco budworm to Bt cotton. This does not mean that the chances of the development of resistance have been lessened and that resistance management programs can relax. Many insects have developed resistance to the Bt toxin in foliar applications. Therefore, concerns over the emergence of resistance to the Bt protein within the cotton plant are justified, and a strong resistance management strategy is required. The team also studies other bollworms but results are not yet available.

  Plants can also develop resistance to chemicals. If a herbicide is sprayed year after year, chances are that weeds will develop resistance. The development could be slow because, unlike the Bt protein, the sprayed weed is killed. According to the March 2001 issue of the *Ag Biotech Reporter*, horseweed *Conyza canadensis*, a cotton weed readily found in reduced-tillage production practices, is developing resistance to Roundup, a popular herbicide. Horseweed plants showing resistance to the herbicide have been detected in soybean fields.