

# FOCUS on South Plains Agriculture

Texas AgriLife Research and Extension Center at Lubbock  
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## Corn Insects

Refuge monitoring may increase in 2011

## Corn Insects

### Corn Refuge Compliance Down, Monitoring May Increase

There are a couple of reasons to pay extra attention when planting your Bt corn refuge acres this year. The first is that resistance by insects is a constant threat and refuges are the best way to keep the technology. The second is that while “compliance” with the refuge rules is down nationally, compliance is much lower in the southern United States and so refuge inspection activities will increase dramatically.

Compliance is the term that EPA and the seed companies use to describe whether if a grower has or has not planted the required number of refuge acres, and in the proper location, for the type of Bt corn that was planted. If the planting is done correctly then the grower is said to be in compliance. If the corn refuge is planted incorrectly then the grower is considered to be out of compliance. The Southern U.S. has only 31 percent compliance with the refuge rules for corn that contains toxins to both caterpillar pests and corn rootworms according to a recent survey.

The Agricultural Biotechnology Stewardship Technical Committee (ABSTC) is an organization composed of the companies that develop and market the toxins in Bt transgenic crops. The ABSTC exists to monitor resistance, survey compliance and promote grower education about resistance management. EPA must approve the registration for every toxin in transgenic corn and cotton, and part of the condition of registration requires the things that ABSTC does. ABSTC must send compliance statistics to EPA each year, and a low rate of compliance results in ABSTC taking extra measures to address EPA concerns. In addition, low compliance greatly increases the chance

that resistance to the toxins will develop in pest insects. Low rates of compliance are a very serious issue to the seed companies and EPA. The companies that comprise ABSTC have decided to fund very extensive on-farm monitoring in two areas of the U.S. this year. They have not named the locations, but given the low compliance rates in the south it is not a leap to think they might come to Texas.

While it is not clear what the increased monitoring will involve, it is most likely that seed dealers will be audited for sales of Bt and non-Bt seed and then third party compliance teams will visit farms. (Such visits are allowed under the terms of the Technology/Stewardship Agreement that growers signed when they purchased Bt corn.) These teams will check that the proper number of acres have been planted to refuge corn and that the refuge is in the right configuration. Also, a draft rule is working its way through EPA that, if not altered by the time it becomes final, puts in a mechanism to fine growers for refuge violations.

Refuge requirements are in place to slow the development of resistance to the toxins in the corn. All of the corn toxins are similar or identical to those in Bt cotton, so our caterpillar pests are exposed season long, generation after generation, to toxins. Reduced susceptibility (greater tolerance) to many of these toxins has now been found in corn earworm (the bollworm) across the south, and the scientific literature states that there is "strong evidence" that corn earworm is resistant to at least two of the toxins. Fall armyworm populations in Puerto Rico and Florida are known to be resistant to Cry1F, the toxin in Herculex corn and one of the toxins in SmartStax, the multiple toxin pyramid Bt corn that is now coming on the market. Texas AgriLife Extension Service entomologists collected fall armyworm larvae in 2010 and had them examined in the laboratory for possible Cry1F resistance, and fortunately no resistance was found. AgriLife Extension is watching for the spread of the resistance genes from Florida to Texas and AgriLife Extension is concerned that resistance may be on our doorstep. **As far as we know**

### **there are no Bt corn resistant fall armyworms in Texas.**

Double checking your refuge acres and planting configuration this year will pay multiple dividends in 2011. ABSTC worked with the National Corn Growers Association to produce a very easy to use refuge configuration calculator. It covers Bt traits for all of the types of Bt corn sold in the U.S. and can be found at [www.irmcalculator.com](http://www.irmcalculator.com). Seed dealers will be happy to help with this as well. RPP

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