

**Integrated Pest
Management
for
Calhoun, Victoria
And
Refugio Counties**

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Corn Refuge Compliance Down, Monitoring May Increase

Patrick Porter
Extension Entomologist, Lubbock
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Transgenic corn refuge compliance is down, worries about resistant insects are up, and compliance monitoring will intensify in places this year.

Compliance is the term that EPA and the seed companies use to describe whether a grower has or has not planted the required number of refuge acres, and in the proper configuration, for the type of Bt corn that was planted. If it was done correctly then the grower is said to be in compliance. If it was done incorrectly then the grower is considered to be out of compliance. It was recently reported that about 80 percent of U.S. corn growers of all insect-protected traits were in compliance (based on a phone survey) but only 69 percent of growers who plant stacked Bt corn that protects against both caterpillar pests and corn rootworms were in compliance. The most striking statistic was that 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. This very low compliance in the Southern region has not gone unnoticed.

The Agricultural Biotechnology Stewardship Technical Committee (ABSTC) is an organization composed of the companies that develop and market the traits in Bt transgenic crops. It exists to monitor for resistance, survey compliance and promote resistance management through grower education. EPA must approve the registration for every toxin in transgenic corn and cotton, and the conditions for registration require the things that ABSTC does. ABSTC must send compliance statistics to EPA each year, and a low rate of compliance makes the companies' situation very difficult with EPA. 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 increased monitoring activity should be anticipated in this area.

While it is not clear what the increased scrutiny will involve, it is 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, there is now a draft rule working its way through EPA that, if not altered by the time it becomes final, will start fining growers for refuge violations.

Refuge requirements are in place to slow the development of resistance to toxins in the corn. All of the corn toxins are similar or identical to those in Bt cotton, so our caterpillar pests are exposed to similar toxins all season long, generation after generation. Reduced susceptibility (greater tolerance) to many of these toxins has now been found in corn earworm (the cotton bollworm) across the mid-south, and the scientific literature states that there is “strong evidence” that corn earworm is resistant to one or more of the toxins. Additionally, 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 collected some fall armyworm larvae in 2010 and had them examined in the laboratory for possible Cry1F resistance, and fortunately none was found. **As far as we know there are no Bt corn resistant fall armyworms in Texas.** However, we are watching for the spread of the resistance genes from Florida.

Corn growers are advised to double-check their refuge acres and planting configuration this year. ABSTC has helped the National Corn Growers Association 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. Seed dealers will be happy to help with this as well.

