

Begin *With* Right Hybrids

The Bt Variables Offer Farmers A Wide Variety Of Selections

BETTY VALLE GEGG-NAEGER

MidAmerica Farmer Grower

DR. SCOTT D. STEWART

Professor and IPM Coordinator, The University of Tennessee West TN Research & Education Center

SIKESTON, MO.

“Choose your hybrids wisely.” That’s the advice of Dr. Scott Stewart, University of Tennessee Extension Entomologist, Jackson, Tenn. Stewart spoke recently about the changes that are taking place in Bt corn.

“There are a lot of new technologies coming out including stacks which include Bt traits for rootworm, Bt for corn borers, and reduced refuge requirements depending on the traits that you select. The market is in a real transition phase so it’s very confusing right now for growers,” he said. “They need to figure out what Bt hybrids they want and how that affects their refuge requirements.”

A lot of information is available from extension and the major corn seed companies. Pioneer and Monsanto have several Bt corn technologies they’re selling. They provide resistance management guidelines on their websites, but they are rather complicated.

“Your selection of Bt hybrids depends on whether you’re dealing with rootworm, corn borer or both. There are Bt traits for both. The refuge for Bt rootworm hybrids must be in the same field.

“The size of the refuge depends on the Bt trait package you select,” Stewart said. “It’s pretty complicated, and if you are growing a combination of old and new technologies, then that adds another level of complexity because the refuge requirements are not the same. So it is pretty challenging, and you have to do a lot of digging if you are legitimately trying to follow the refuge guidelines. And you still need good corn hybrids that are going to yield for you.”

Stewart presented some hand outs to define the differences in refuge requirements. One twist on the refuge requirement is that some farmers are starting to use a refuge-in-a-bag system in non-cotton growing areas. This is an option where the refuge seed comes in the bag at a 5 percent or 10 percent level depending on what Bt trait package you are using. That insures compliance and also makes it easier. But that can’t be done for all the new Bt corns or in areas where cotton is grown. So it’s important to know whether you’re in a corn growing area or a cotton growing area, and this is defined in the refuge guidelines.

Stewart discussed the efficacy of the new Bt technologies on their major target pests, corn borers, corn earworm and fall armyworm. All the Bt technologies provide excellent control of the corn borers whether it’s the southwestern or European corn borer. The newer ones add some control of corn earworm and fall armyworm.

“Everybody is familiar with DeKalb which has come out with VT Double Pro and VT Triple Pro hybrids” he explained. “Those have a second Bt gene that improves control of corn earworm and fall armyworm. Unlike VT Double Pro, VT Triple Pro also has a Bt gene for rootworm control. Pioneer has also come out with stacked Bt hybrids, for example Optimum Intrasect or Optimum AcreMax, that have two Bt traits for corn borers. It doesn’t add much activity on corn earworm above the original technologies. It does improve activity on fall armyworm and having two Bt traits for corn borer control is expected to help prevent resistance. Viptera, another Bt corn option, is also out there. Viptera also has two Bt toxins that control caterpillar pests, and the VIP gene in particular provides excellent control of corn earworm and fall armyworm. It’s probably the pick of the litter in terms of controlling corn earworm. You also have the option to add a Bt trait for rootworm control. So again the refuge requirements change.”

Fall armyworm is not a common problem in Tennessee, but corn earworms are commonly found feeding in ears. The products are doing more or less as advertised. They’re reducing

kernel damage caused from corn earworm and fall armyworm. Late planted corn tends to have higher infestations of corn earworm and fall armyworm. So the potential benefits of the newer Bt corns may be higher in later plantings, especially if fall armyworms are present. The fall armyworm appears to have more potential to cause yield loss.

“Keep in mind that Bt corn was originally developed mostly for European and Southwestern corn borer. We know those pests have the potential to develop resistance to Bt toxins,” he explained. “In the field, there has never been any



With all the changes that are taking place in Bt corn, Dr. Scott Stewart, University of Tennessee Extension Entomologist advises growers to “Choose your hybrids wisely.”

documented evidence of Bt resistance in either one of these species; and the nice thing about these new technologies is they have redundant toxins, so hopefully that’ll make it even harder for resistance to occur.”

By redundant he means there are two, sometimes three different Bt genes in the new technologies that have activity on corn borers, and they have different modes of action.

“The theory is it will be harder for an insect to develop resistance to multiple toxins simultaneously,” Stewart noted. “Now the other side of that coin is the older Bt technologies weren’t having a great impact on corn earworm and, in some cases, fall armyworm. These newer ones are. You could make the argument that the new Bt corn technologies are actually selecting more for resistance in corn earworm populations. Nobody really knows. This concerns us in the South because similar Bt traits are also used in cotton, where corn earworm, aka bollworm, is a serious threat. We rely heavily on Bt cotton for control of corn earworm. Who knows where we’re going. There may be Bt soybeans in the future. They are already marketed in some parts of the world.”

Stewart urges farmers not to buy new technologies just because they’re new.

“My data, and that of some others, is showing that we’re not seeing a corresponding yield increase even though the new technologies are reducing kernel damage,” Stewart said. “It’s been a little bit of a surprise and we’re still investigating, but my take-home message for growers is to pick your hybrids based on yield performance in variety trials and your refuge needs. The yield potential of a hybrid trumps what little increase may or may not be out there from the added corn earworm control. There are good Bt corn hybrids available with either the old or new technologies, but not all have the same yield potential. The flip side of that message is that the older, single-toxin Bt corn technologies are quickly disappearing. If you look at variety trials, the new hybrids mostly have the new Bt corn technologies. So again, again we’re in a transition period.”

BETTY VALLE GEGG-NAEGER: Senior Staff Writer, MidAmerica Farmer Grower

DR. SCOTT D. STEWART: Professor/IPM Coordinator, University of Tennessee

Cache River Valley Seed, LLC
888-CRV-SEED

Link Directly To: **CASH RIVER**

syngenta

Link Directly To: **SYNGENTA**