Rademacher Farms Newsletter

Newsletter 6 - What The Heck is Up With the Beans?! July 25, 2019

Intro

This topic wasn't really planned…it was supposed to be the wheat update, but here we are. If you live in an area that grows soybeans, you may have noticed that some may look a bit odd. There may be a white cast to the field, leaves look puckered and rounded, and instead of branching out, plants may have drawn in a little. This effect is caused by herbicide damage from nearby fields. It's showed up in our field, and countless others recently. In this newsletter I'll explain what's going on.

Quick Review of GMO's and Herbicide Tolerant Crops

In a previous newsletter, I briefly mentioned the idea of Genetically Modified Organisms (GMO), which is all the buzz these days. A quick review of that: GMO crops have a gene from another organism inserted into them so that they have some trait. GMO Corn has genes inserted that make it produce defensive toxins against insects, while other genes make it tolerant of certain herbicides that would otherwise kill it. GMO soybeans don't have insect killing toxins, only genes that make it tolerant of herbicides. And there are different herbicide tolerant genes available, so GMO soybean A can be sprayed with a certain herbicide, and GMO soybean B can be sprayed with another. If you spray soybean A with the herbicide that soybean B is made for…soybean A dies even though it is a GMO; it's not the correct herbicide for that GMO.

In addition to Non-GMO soybeans, there are 3 approved GMO soybean technologies available, with a few more on the way. These GMO soybean options are named for the herbicide they can be sprayed with; Round-up, Liberty, and Dicamba. So, using our previous example: Liberty beans can be sprayed with Liberty herbicide and wont die. Dicamba beans can't be sprayed with Liberty herbicide or they'll die and vice-a-versa. Non-GMO soybeans can't be sprayed with any of the herbicides GMO soybeans are made for. At first glance this isn't really an issue…just don't spray certain soybeans with the wrong herbicide. The issue is with one of the herbicides themselves, Dicamba.

All about Dicamba

Dicamba has been around for decades. At the right dose, it makes broadleaf plants curl up and die. Typically, it would sometimes be used early in the spring to kill weeds before crops are planted. In recent years, GMO soybeans have been created that can be sprayed with Dicamba and be unaffected. However, the chemical composition of dicamba has a major flaw. Under the right conditions, some of the chemical will turn into a gas, and easily be carried over a mile (or 2) by wind. This is especially true during hot and humid conditions… Which is like, you know ...EVERY. SUMMER. DAY. Before the option

for in-crop use was approved, every farmer could have told you that dicamba likes to get up and move. Weed scientists came out in droves saying that approving dicamba use in summer was dumb. But. The agriculture company, who shall remain unnamed, that spent billions of dollars doing genetic research, marketing, and plant breeding wasn't about to let that get in their way. For regulatory approval, deep pockets often have more impact than facts. The dicamba herbicide was "reformulated" so that it "wouldn't get up and move out of the field." Well, a quick look around and it would appear they kinda dropped the ball. Like we said earlier, any soybean that isn't a dicamba soybean will be affected by the herbicide in the air, even other GMO soybeans.

Effect on Soybeans

How are soybean yields affected and how long does it stick around? It's near impossible to tell. It depends on how much chemical they get hit with, the developmental stage, and the weather following exposure. There's also often nothing to compare to, since the entire field may be affected. Personally we've had yield loss ranges from 1-10 bushels (~10-100$/acre), but it can easily be higher. Our entire field is showing signs of damage, along with thousands of other fields.

Also, if an organic field of soybeans shows damage and tissue tests show a certain level of chemical, that field is not considered organic anymore. The grower loses about half of his grain price that year and must recertify the field as organic. This entails 3 years of growing without chemicals but only selling grain for non-organic prices. That means a lost year of potential income, plus an additional 3 years of lost income.

Based on some driving around, and reports we've heard, essentially every non-dicamba soybean field in our area is showing signs of dicamba damage. I spoke to one farmer that said nearly all non-dicamba fields he saw were damaged on his drive from Wisconsin to Missouri.

Several examples of the small puckered leaves from dicamba damage.These are present on every damaged plant in a field

Other Effects

Unfortunately, it is not just a soybean issue. A quick walk around our farm house and it's easy to find bushes and trees with curled leaves. And dicamba can be especially hard on tomatoes, grapes,