

Soybean Syndrome

Farmers Can Help In Research To Detect Green Bean Syndrome

BETTY VALLE GEGG-NAEGER

MidAmerica Farmer Grower

MILAN, TENN.

Green bean syndrome in soybeans is the topic of research conducted by Dr. John Rupe, plant pathologist at the University of Arkansas. Rupe described the condition recently.

“This is a condition where the soybean fails to produce and doesn’t senesce the end of the season,” he said. “Often we see scattered plants in the field, we’re not very concerned about that; however there are occasions where we have extensive areas in a field, sometimes the entire

not the whole answer.

“When we look at the affected plants we see a number of different symptoms,” Rupe said. “Sometimes we see a symptom we call bud proliferation, where you have a lot of small pods at the nodes, there may be a few other pods that have one or two seeds on the plant but its not enough to trigger the maturity process. And those types of symptoms are very typical of viruses, things like tobacco ring spot virus or phytoplasmas; but again we were not able to consistently associate either of those types of pathogens with those symptoms.

“Last year in Lafayette County we saw some plants that had hardly any pods on them at all, some bud proliferation; we also saw some plants that were loaded up with pods but all the seeds had stopped developing, so we don’t know what the cause was. There are probably multiple causes for this syndrome.”

What makes it difficult for researchers and the reason people have avoided working on this is that this problem is very erratic. No one knows where it is going to occur so it can’t be observed early in the process.

“When we see the symptoms, it’s probably related to something that happened one month before or even earlier,” he continued. “So we are trying to find those fields that have the problems, interview the grower and find out what kind of cropping practices, herbicides or other chemicals have been on there. We are looking for patterns in the field like we saw last year where the low spots didn’t senesce properly and we are trying to build up a data base of these things so we can start seeing if there are any pat-

terns so we can predict it.

“One of the fields that we looked at last year, the good part of the field, yielded 45 bushels an acre; the rest of the field the farmer baled for hay. So you can have 100 percent loss in some of these areas,” Rupe said.

In 2008 there was one spot where the whole field was green when it should have been ready to be harvested. That was an irrigated field and those beans were probably waist high.

“We saw another nearby field, probably the best beans were knee high and it was non-irrigated; that was a rolling field rather than a flat field so we haven’t seen any kind of pattern, unfortunately.”

The trial now is in the preliminary research stage. The thing that makes it difficult is that no one can predict when it is going to happen.

“If we did we could put cultivars out, we could start a breeding approach to that, or if we could associate it with certain conditions we could find ways of working around those, or maybe mitigating those, but right now we’re just trying to figure out what’s causing it.”

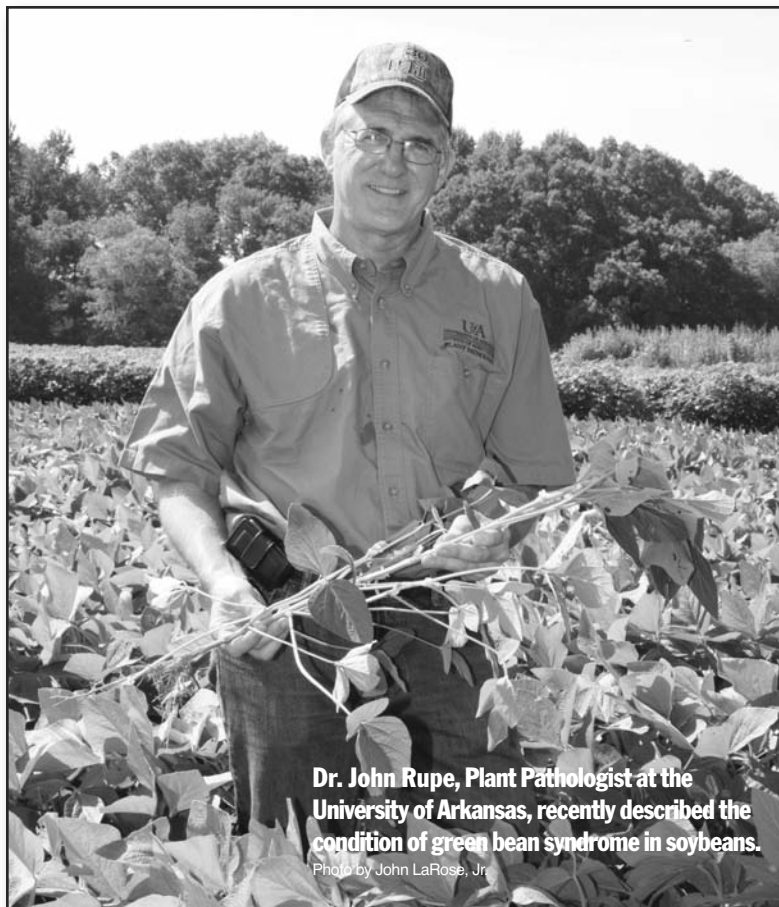
Rupe asked that farmers who see this condition in their beans contact him.

“We can examine the plants, find out what the history of that field is so that we can gather more information that is associated with these problems and maybe get a handle on what’s causing it,” he said.

Some of the key signs that farmers should look for include: a field that is still green at harvest time; plants that have very few pods or small pods; numerous small pods at the nodes; or numerous flat pods.

“The main thing is to look for is if there are very few seeds out there,” he said. “Farmers should monitor their fields for stink bugs. We know that is a problem in and of itself. It can cause this, it can also cause other forms of damage. So monitoring your fields for insects, particularly stink bugs, and getting an insecticide out on them promptly should help reduce the chances of this condition.”

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



Dr. John Rupe, Plant Pathologist at the University of Arkansas, recently described the condition of green bean syndrome in soybeans.
Photo by John LaRose, Jr.

field will not produce any seed and the crop will stay green until the end of the season. This is a condition that has been observed since the 1970s.”

The problem has surfaced in a number of states, including Arkansas, the mid-south, as well as in Argentina. When the condition develops, the farmer loses yield because plants aren’t producing seed; also the green plants interfere with harvest because they clog up the combine. It can be quite a loss for growers. There are many possibilities for causes of this and all have to do with the pod not producing seed. The developing seed is necessary to initiate the process of senescence; if you don’t have seeds the plants don’t senesce.

“Senesce is when the plants mature out,” Rupe explained. “In the last two years we have observed areas where we have had many fields with extensive damage. In 2008 those fields were in Prairie County, which is about 40 miles east of Little Rock; in those areas the infected fields were planted in mid-May to early-June. We looked at the plants, and couldn’t find viruses or small bacteria that have been associated with this kind of problem before. We weren’t sure that there was much stinkbug damage, which is another potential cause for this because the stink bug when they feed on the pods can kill the seed; so if you have heavy stinkbug damage you can get green bean syndrome.”

Last year it appeared in southwest Arkansas and in those fields it showed up across a number of different cultivars, maturity groups, Roundup Ready, conventional soybeans. One pattern that Rupe observed is that the low spots in the field matured normally; it was the well drained parts of the field that didn’t.

“In that part of the state we had very high levels of rainfall in September,” he said. “We don’t know if that was a direct cause. One of the things it did was prevent the application of insecticides and we know that there was stink bug pressure.”

Entomologists have looked at these plants and feel that while stink bugs may be a part of it, it’s



Link Directly To: **PIONEER**