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In This Issue

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Insects, Mites, And Nematodes

VIDEO: Soybean Cyst Nematode Plot Time-Lapse – (*Jamal Faghihi, Kiersten Wise, and Virginia Ferris*)

Soybean cyst nematode (SCN) and sudden death syndrome (SDS) consistently cause soybean yield losses through out the North Central Region. Collaborative research has been under way in Indiana since 2010, to devise programs to manage these two pests simultaneously. We have documented the ability of SCN to overcome the most common source of SCN resistance, PI88788, in Indiana. Much of this research has been carried out in a grower's field in White County, Indiana where SCN populations are capable of overcoming PI88788 resistance and there is a history of SDS. This research indicates that drastic yield losses from SCN and SDS can occur in soybean fields with a history of SDS, and where SCN is capable of breaking down PI88788 resistance.

Beginning on August 1, we mounted a time-lapse camera in this field to monitor the symptoms of soybean varieties with various resistances to SCN and SDS. Although SDS symptoms were scarce in 2013, the sequence of pictures (i.e., video) demonstrates the lack of SCN resistance in PI88788 varieties. Varieties with a Peking source of resistance to SCN showed little to no symptoms of SCN. Also, this video dramatically shows that even though varieties may have the same source of resistance, the expression of resistance varies. As expected, the variety with no SCN resistance (marked as "S") exhibited extreme stress and accelerated maturity. Severe symptoms reduced the ability of the susceptible variety to canopy, resulting in increased weed pressure in these plots.

Panorama of plot on September 3, showing varietal differences

VIDEO: Soybean Vein Necrosis Virus Research at IPFW – (*Punya Nachappa, Christian Krupke, and Kiersten Wise*)

Soybean Vein Necrosis Virus

Soybean growers in the North Central region are facing a potential new threat to soybean production due to the detection of a novel soybean viral disease, *Soybean Vein Necrosis Virus* (SVNV). SVNV is a new *Tospovirus* that was first discovered in soybean fields in Tennessee in 2008. Currently the disease has been detected in sixteen states in the southern and north-central region including Indiana. The symptoms begin with vein clearing followed by chlorosis or appearance of light-green to yellow blotchy patches near the main vein, followed by necrosis or dying of the leaf tissue at late stage of infection; hence the name Soybean Vein Necrosis Virus (SVNV) (Fig. 1).

Thrips vector

SVNV is transmitted from plant-to-plant by soybean thrips. Adult thrips are tiny insects only 1.5-2 mm (or about 1/16") in length with a yellow body, a dark thorax and two distinct black crossbands on the forewings (Fig. 2). Immatures are usually pale yellow to straw-colored. Thrips feed primarily on the underside of leaves, especially along the veins. When flowers are present on soybeans they will often be found inside the flower feeding on pollen. Both immature and adult feeding often causes small yellowish or whitish scars where they penetrate individual leaf cells and suck up the cell contents. This damage is usually insignificant from a pest management perspective and thrips are not considered important pests of soybeans in the Midwest region. However, when thrips populations are high, leaves become crinkled. In rare cases, plants may be killed. Soybean is particularly susceptible to thrips damage early in the growing season from growth stages VE to V6.

Figure 1. Foliar symptoms of SVNV.

Figure 2. Soybean thrips, adult and immatures.

Management Options

The incidence of SVNV in soybean fields, and the economic impact (if any) on soybean production have not been determined in Indiana. Since disease transmission is facilitated by infestations of the thrips that vector the disease, it is critical to monitor insect vector populations in the region or state in order to try to anticipate future epidemics. Current disease control strategies are based on assumptions from related *Tospoviruses* and rely on managing the thrips vector using insecticides. Once the importance of this virus to soybean production has been assessed, we will be able to refine these approaches and identify new management strategies if necessary to minimize the potential impact of SVNV in Indiana soybeans.

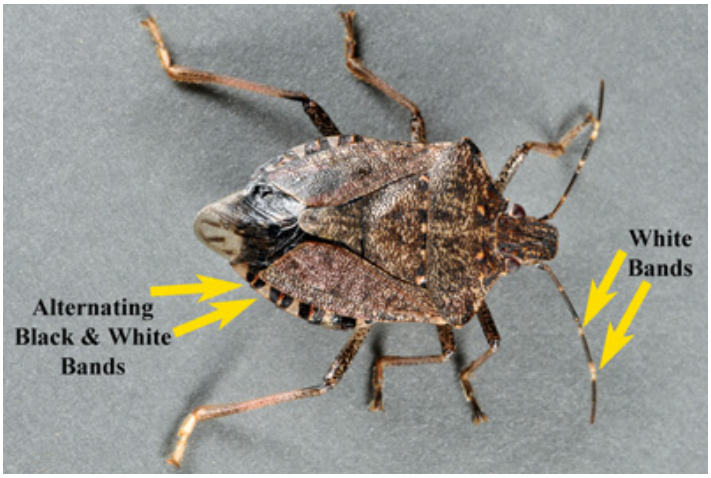
References

Khatabi B, Wen RH, Hershman D, Kennedy B, Newman M. 2012. Generation of polyclonal antibodies and serological analyses of nucleocapsid protein of Soybean vein necrosis-associated virus: A distinct soybean infecting tospovirus serotype. European Journal of Plant Pathology: 1-8.

Brown Marmorated Stink Bug Making Its Presence Known – (*Christian Krupke and John Obermeyer*)

Over the last several weeks, an insect invasion is unfolding throughout many areas of the state…the home invasion of the brown marmorated stink bug (BMSB). Regular readers will know this insect has been on our radar for several years, with some states to the east of Indiana having dealt with huge infestations during the last decade. Locally, we were able to find a few of these stink bugs on homes and campus buildings during last year and 2011. Today, the number has increased ten-fold. We are not alone, this week in both the Kentucky Pest News and Ohio State's C.O.RN. Newsletter they posted similar accounts of the increase of this pest in buildings as the days get shorter and nights get colder.

BMSB invades structures in the fall to overwinter, usually in multiples, a characteristic similar to the now-familiar multicolored Asian lady beetle. The stink bugs will not do any damage while in/on houses, although most find them unpleasant to find and they certainly don't like the "stink" that is emitted when disturbed or sucked up by a vacuum cleaner.



Key ID characteristics of the brown marmorated stink bug.

BMSB (left) compared to the brown stink bug (right)

Stink bugs get their name because they release a pungent chemical as a defensive mechanism when threatened. More importantly, these stink bugs can become a serious crop pest, particularly in some high value fruit, vegetable and nut crops. Fortunately they are not yet close to the numbers that can significantly impact our crops, although they have been documented causing minor damage to sweet corn and soybean this past season. Experience in the North Eastern United States indicate that this stink bug will become a pest in homes before it builds up numbers to become a serious crop pest. In fact, back when the USDA was a functional operation, they named this their "Top invasive insect of interest". Indiana and neighboring states, are in the "build-up" years. For the most up-to-date information on this pest, there is a website dedicated to disseminating research and extension updates as they happen: <http://www.stopbmsb.org/>.

This should be a first stop for finding out more about this pest and how to manage it – we can learn from our neighbors to the east and hopefully avoid some of the massive infestations that they have reported. Stay tuned!

Weeds

Use Fall Herbicide Treatments for Marestail (Horseweed) – (*Bill Johnson and Travis Legleiter*) -

Since harvest is progressing rapidly and we still have time left this fall to apply herbicides, we wanted to provide this reminder to strongly consider this tactic in fields with a history of problems or where marestail seedlings are observed in fall. Research over the last couple of years has shown that two shot burndown programs which include either 2 shots in the spring or fall plus spring burndown treatments are needed in areas with a history of poor marestail control due to glyphosate and ALS herbicide resistance.

The primary goal of a fall treatment is control of emerged plants, and it is not a substitute for a preplant herbicide treatment the following spring. An application of burndown and residual herbicides is still required closer to the time of planting in fields that were treated in the fall. For fall applications, we suggest using 2,4-D (1 lb ae/A) as the base herbicide to control marestail, and combining it with one of the following to ensure control of other winter weeds:

1. Glyphosate; dicamba (or premix - Brash, WeedMaster, Outlaw, Rifle); Basis; Express; a low rate of Canopy/Cloak EX or DF; or metribuzin.

2. You can add Canopy/Cloak to other herbicide combinations to obtain residual control of weeds into spring. However, do not expect residual control from fall-applied Canopy/Cloak to adequately control spring-emerging marestail, especially in areas where ALS resistance is common. We generally do not recommend the use of other residual herbicides in the fall due to cost and lack of residual control into spring.

3. You can add Basis, or low rate of metribuzin or Canopy/Cloak to early-fall applications to control weeds that emerge later in fall, but this should not be needed from mid-October on since emergence during late October and early November is minimal due to cooler temperatures.

Marestail competition/challenge in a cornfield.

Weather Update