PURDUE UNIVERSITY | Extension ENTOMOLOGY

Pest&Crop newsletter

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Purdue Cooperative Extension Service and USDA-NIFA Extension IPM Grant

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In This Issue

Bean Leaf Beetle Pod Feeding On Late Maturing Soybean

(Christian Krupke) & (John Obermeyer)

Within the past week, we've noticed a movement of bean leaf beetles from an early-maturing soybean field, i.e., yellowing leaves, to nearby "green" fields. Green soybean fields, especially those that are behind neighboring fields in development, should be monitored for this beetle. Bean leaf beetle will be attracted to these "trap crops" and begin to feed on the softer green pods as the foliage begins to yellow. Bean leaf beetles scar the surface of pods, but only occasionally feed through the pod to the developing beans. The problems come later, during pod maturation. At that time, this scar often cracks as it dries out, leaving an entry hole for moisture and airborne plant pathogens that may cause discolored, moldy, or shriveled beans.

Green areas in field to the left will attract surrounding bean leaf beetles.

It is important for pest managers to be able to predict whether economic damage will occur based on the numbers of beetles that are present now and the stage of pod development (i.e., green, yellow, yellow-brown, or brown pods). Once the pods turn yellow to yellow-brown, they become unattractive and less susceptible to damage (this is also part of the reason behind the movement from drying beans to still-green fields). Control is normally **not** warranted when pods are yellow or brown, and you likely won't contact many beetles with these sprays.

Bean leaf beetle pod scarring, note the remaining membrane.

To scout bean fields for pod damage: randomly select 2 plants in each of 5 areas of the field and count the number of pods per plant and the number that show damage (i.e. 10 total plants). Calculate the percentage of damaged pods per plant for the field as a whole. Note whether the pods are green, beginning to turn yellow, or are yellow/brown. You should also determine the number of beetles per sweep using an insect sweep net. Take 5 sets of 20 sweeps in the field. Determine the number of bean leaf beetles per sweep.

Membrane cracking open after bean leaf beetle pod scarring.

Use the following table to determine when a treatment may be necessary.

	No. of beetles per sweep in 30 inch (7 inch) row spacing		
Pod Injury Level	Less than 4(3)	4(3) to 7(5)	More than 7(5)
0 to 8%	Discontinue sampling	Sample again in 5 days	Control (preventive) if pods still green
8 to 12%	Samples again in 5 days	Control if pods are still green	Control if pods are green to yellow
Over 12%	Control if pods are still green and beetles are present	Control unless pods are completely dry	Control unless pods are completely dry

Table modified from the University of Illinois

If a treatment is deemed justified, be mindful of the insecticide's pre-harvest interval (PHI) which is stated on the label, this is the number of days before one can legally harvest those soybeans. It varies widely, with some recommended insecticides having a PHI of 45 days, which may be too long for some planned harvest windows.

VIDEO: Considerations For Bean Leaf Beetle Feeding In Late-Maturing Soybean

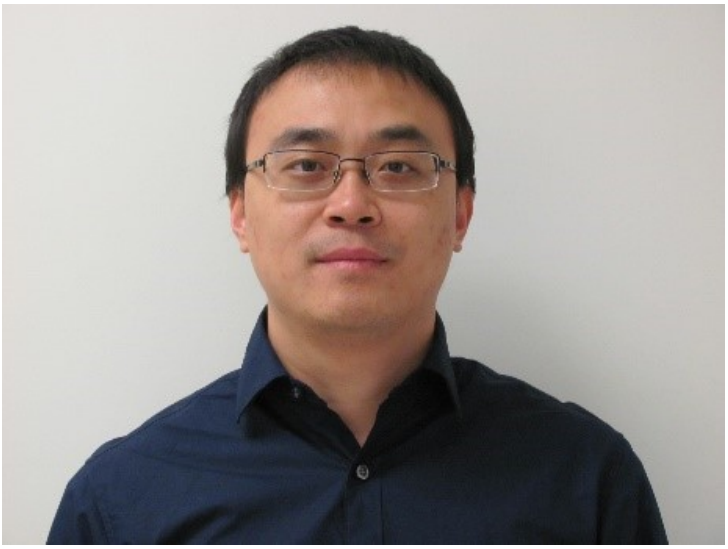
(Christian Krupke) & (John Obermeyer)

The following video addresses bean leaf beetle identification, biology, and late-season damage to soybean while keeping the marketable portion of the crop foremost in mind. Shown are simple ways to sample for their presence/abundance, an often forgotten step when eyes are concentrating on damage. Too, some very important control considerations for next year are presented.

Welcome To Our New Nematologist, Dr. Lei Zhang

(Darcy Telenko)

Please join us in welcoming Dr. Lei Zhang as our new Nematologist at Purdue University. Dr. Zhang is an Assistant Professor of Nematology at Purdue University, with a joint appointment between Department of Botany & Plant Pathology and Department of Entomology. Dr. Zhang received his PhD in Molecular Plant Sciences at Washington State University (WSU) and then conducted postdoctoral research on plant-parasitic nematodes at North Carolina State University and WSU. Dr. Zhang's research program at Purdue will focus on studying plant-parasitic nematodes causing serious crop yield losses in Indiana, including soybean cyst nematode and root-knot nematodes. Dr. Zhang's interest includes applied research on nematode diagnostics and management, and also basic research on molecular plant-nematode interactions. The overarching goal of research is to develop effective and sustainable tactics for nematode control in agriculture.



To help Dr. Zhang kick off his research program he is collaborating with Dr. Telenko, Extension Field Crop Pathologist, to increase the awareness of soybean cyst nematode and resistance management in Indiana.

We are providing FREE soybean cyst nematode (SCN) soil testing to Indiana growers with partial support from the SCN Coalition and National Soybean Board. We are looking for soil samples from fields this fall and spring 2021 for SCN counts. If, you have some trouble fields that you have not had a recent SCN test please consider sending us a soil sample. These samples will also assist Dr. Zhang to begin his research program to improve nematode diagnostics and management for Indiana.

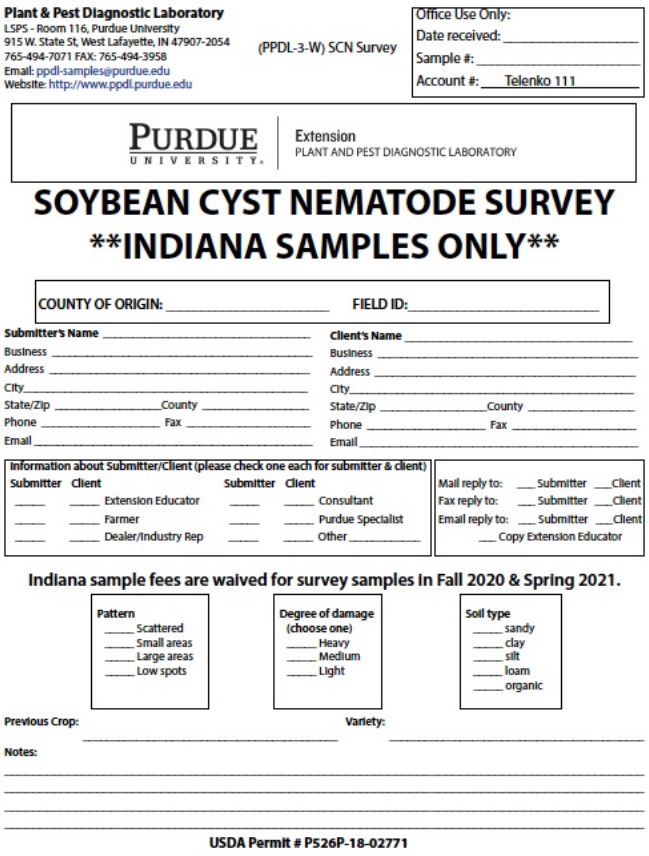
To take soil samples for SCN Testing

The equipment you need for sampling soil for soybean cyst nematode is the same equipment you use for taking a soil sample for soil nutrient analysis: a soil probe, a bucket, and a plastic soil bag.

To collect soil samples for SCN diagnosis, we recommend you collect 10 to 20 of cores of soil, each with 1 inch-diameter and 6 to 8 inches-depth in a 20-acre area. If the field is larger, break the field into 20-acre units and take 10 to 20 cores per unit.

Take cores from within root zones and use a zig-zag or M-pattern to collect soil cores. In addition, you may also want to include samples from a high-risk area, such as near a field entrance, areas where the yield seems to be a little lower than the last time soybeans were grown, or along fence lines where wind-blown soil accumulates.

Bulk the cores in a container and mix thoroughly. Take the time to mix the sample. The better the sample is mixed the better it represents the whole field. Put ~ 500 cm^3 or 1 pint of the thoroughly-mixed soil in a plastic bag and label it with a permanent marker. Don't put a paper label inside the bag. The moist soil will make it unreadable by the time the sample reaches us.



Plant & Pest Diagnostic Laboratory
LSPS - Room 116, Purdue University
915 W. State St, West Lafayette, IN 47907-2054
765-494-7071 FAX: 765-494-3958
Email: ppdl-samples@purdue.edu
Website: http://www.ppdl.purdue.edu

(PPDL-3-W) SCN Survey

Office Use Only:
Date received: _____
Sample #: _____
Account #: Telenko 111

PURDUE UNIVERSITY | Extension PLANT AND PEST DIAGNOSTIC LABORATORY

SOYBEAN CYST NEMATODE SURVEY
****INDIANA SAMPLES ONLY****

COUNTY OF ORIGIN: _____ FIELD ID: _____

Submitter's Name _____ Client's Name _____
Business _____ Business _____
Address _____ Address _____
City _____ City _____
State/Zip _____ County _____ State/Zip _____ County _____
Phone _____ Fax _____ Phone _____ Fax _____
Email _____ Email _____

Information about Submitter/Client (please check one each for submitter & client)

Submitter	Client		Submitter	Client	
____	____	Extension Educator	____	____	Consultant
____	____	Farmer	____	____	Purdue Specialist
____	____	Dealer/Industry Rep	____	____	Other _____

Mail reply to: ___ Submitter ___Client
Fax reply to: ___ Submitter ___Client
Email reply to: ___ Submitter ___Client
___ Copy Extension Educator

Indiana sample fees are waived for survey samples in Fall 2020 & Spring 2021.

Pattern
____ Scattered
____ Small areas
____ Large areas
____ Low spots

Degree of damage (choose one)
____ Heavy
____ Medium
____ Light

Soil type
____ sandy
____ clay
____ silt
____ loam
____ organic

Previous Crop: _____ Variety: _____

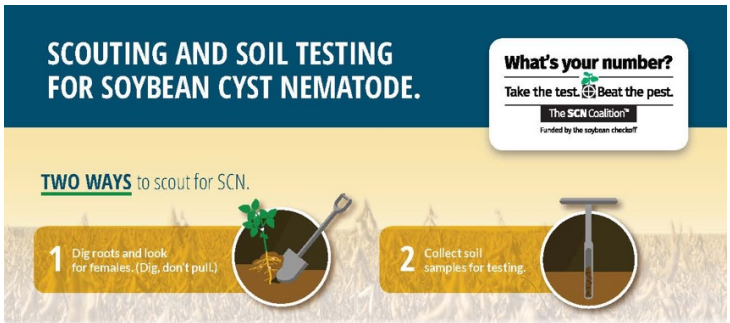
Notes:
_____
_____
_____
_____

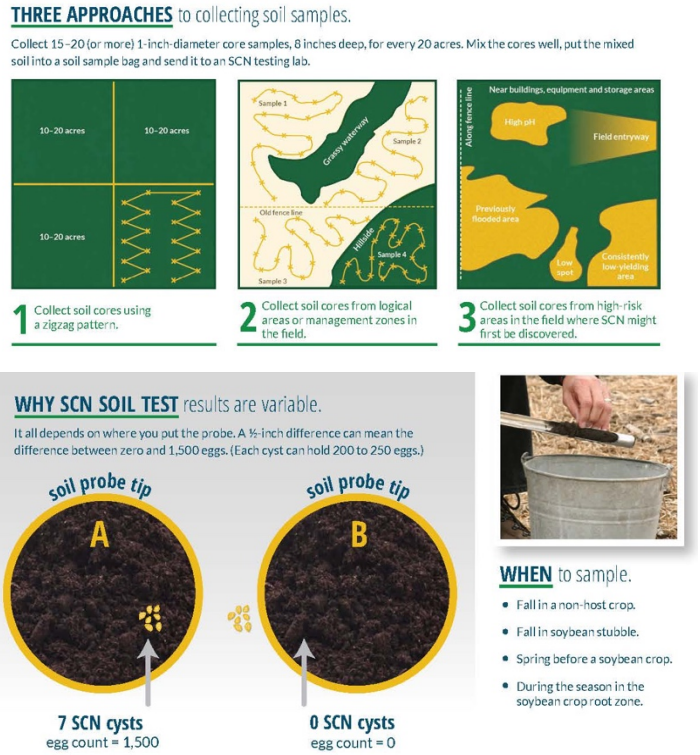
USDA Permit # P526P-18-02771

Soybean Cyst Nematode sample form.

Please keep the sample at room temperature or cooler and keep out of the sun or hot truck cab until you are ready to pack and ship it. Pack the samples in a box and cushion the samples with packing material so the bags don't break open during shipping. Please fill out the attached form, including your name, address, phone number and email address and send with your sample. Be sure to indicate the county where the sample was collected and any field designation needed to help you identify the location when your results are sent. The soybean cyst nematode collection form can also be downloaded from this link: https://ag.purdue.edu/btny/ppdl/Documents/PPDL-3-W%20SCN%20Survey.pdf

Ship to: Plant and Pest Diagnostic Laboratory
LSPS-Room 116, Purdue University
915 W. State Street
West Lafayette, Indiana 47907-2054
Phone: 765-494-7071





Visit the SCN Coalition: https://www.thescncoalition.com/ for more information.

Learning And Improving Diagnostic Skills Are Critical To Being A Top Agriculturalist

(Keith Johnson)

I had the opportunity yesterday to deliver a laboratory lesson to over 40 Purdue University undergraduate agriculture students enrolled in Dr. Ron Lemenager's beef management class. All students, Dr. Lemenager and I were wearing masks to protect one another from the persistent virus that lingers about. The students seemed eager to be in an outside laboratory environment at the Purdue University Crop Diagnostic Teaching and Research Center. The goal of the day was to introduce the students to forage diagnostic skills that were part of five different stations. It was a joy to see these young adults in purposeful action as they used resource materials to develop diagnostic skills. Continue to develop your own diagnostic skills as crop losses can be minimized with timely scouting and appropriate recommendations.

Identifying different forages common to Indiana. (Photo Credit: Keith Johnson)

Using sensory analysis (sight, touch and smell) to evaluate hay. (Photo Credit: Keith Johnson)

Comparing disease differences among four orchardgrass varieties. (Photo Credit: Keith Johnson)

Identifying problematic pasture weeds and determining different herbicide options for their control.
(Photo Credit: Keith Johnson)

Using a sweep net to identify beneficial and harmful insects in alfalfa. (Photo Credit: Keith Johnson)

Expect Cooler Than Normal Temperatures To Persist

(Beth Hall)

In last week's article, cooler and wetter conditions were noted for the first half of September with some uncertainty for the latter half of the month. Updated climate outlooks are continuing to indicate increased confidence for below-normal temperatures with weaker, yet significant, confidence for above-normal precipitation. The September monthly outlook provides no guidance for precipitation – possibly implying that these wetter-than-normal conditions in the first half of the month may not persist through the second half of the month. However, below-normal temperatures are still significantly probable throughout the month. This could be due to an incoming cold wave that is expected to bring much below-normal temperatures from the northern Plains into western Illinois September 10-11, 2020. Continue to keep an eye on

this forecast in case overnight lows drop too close to freezing. At this time, an early frost or freeze for Indiana seems highly unlikely for next week, but this year has certainly challenged even the most tolerant among us!

Accumulated modified growing degree days (GDDs) continue trying to catch up with previous years (Figures 1 and 2). It will be interesting to see if the warmer temperature for the rest of August will push this year's GDDs ahead of the pack. It is a race I am sure all of us are on the edges of our seats in anticipation of the outcome.

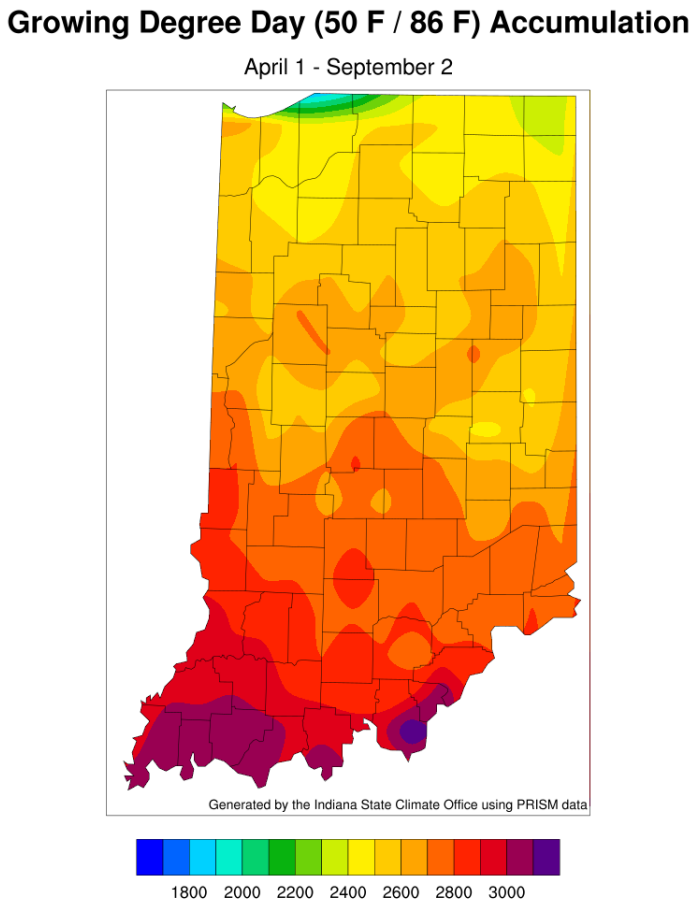


Figure 1. Modified accumulated growing degree-day units for April 1 – September 2, 2020.

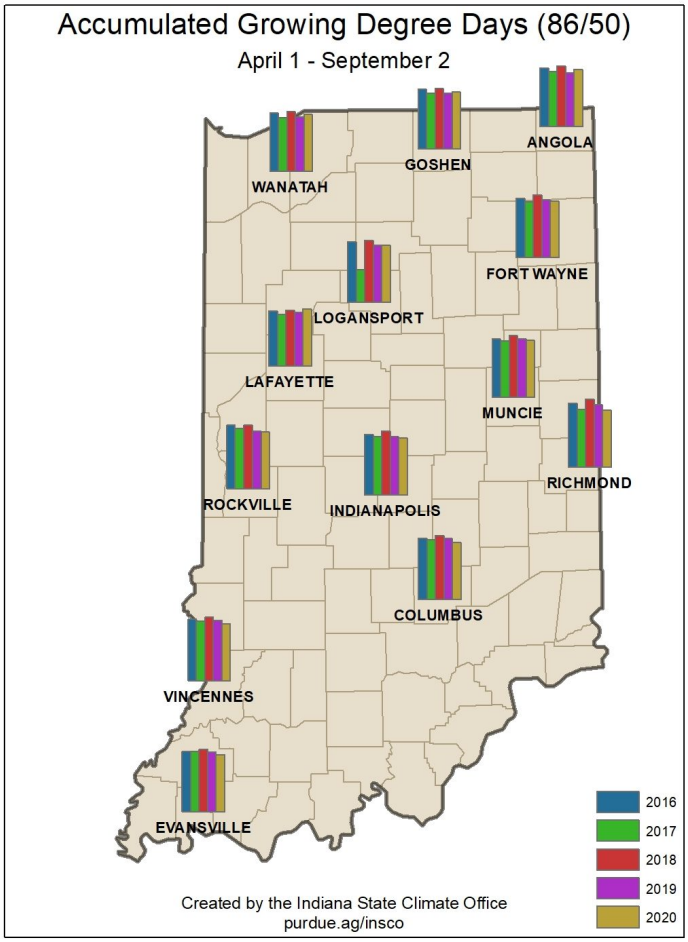


Figure 2. Comparison of accumulated modified growing degree days for April 1 through September 2 for 2016 through 2020.

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