Pest & Crop

http://www.entm.purdue.edu/Entomology/ext/targets/newslett.htm

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In This Issue

Insects, Mites, and Nematodes

Monitoring for Western Corn Rootworm Beetles in Soybean – (*John Obermeyer and Larry Bledsoe*)

Western corn rootworm beetle numbers have been reported to be very low this year. This would be an excellent year to implement a weekly scouting program to determine the risk of rootworm larval feeding to next year's corn. Here's the why, what, how, when, and where of using sticky traps in soybean fields.

Why is there rootworm damage in corn following soybean?

Portions of northern Indiana have been affected by a dramatic change in western corn rootworm (WCR) beetle behavior. Previously, WCR adults laid eggs primarily in cornfields, but now variant WCR are laying large numbers of eggs in soybean fields, resulting in economic root damage to corn the following growing season. This behavioral change has virtually eliminated the benefit of crop rotation as a rootworm management tactic in the most severely affected regions of the problem area and has resulted in routine applications of soil insecticides to most cornfields.

What can be done to reduce unnecessary insecticide applications?

One way to reduce unnecessary insecticide applications on first-year corn is to monitor soybean

Lodging from WCR root feeding

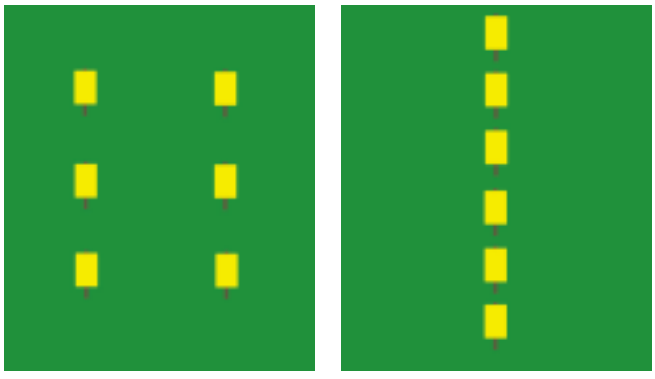
WCR damaged roots

fields for WCR beetles and treat the following year's corn only if significant beetle numbers are found in soybean. Using IPM practices (i.e., scouting and thresholds) as part of a management program will provide reliable information that can be used to make WCR management decisions. Pherocon® AM yellow sticky traps placed on stakes in a soybean field is a passive method for sampling WCR beetles. There are no lures (pheromone or food) on these traps. WCR beetles are attracted to the bright yellow traps and become entangled in the sticky surface.

Placing sticky trap on stake

How should traps be used to monitor WCR beetles in soybean?

Beginning no later than July 26, place 6 Pherocon® AM (unbaited) yellow sticky traps (sticky surface out) on stakes slightly above canopy level and distributed throughout a soybean field, keeping at least 100 feet away from field edges and/or waterways. Consider that large fields (>60 acres) with variable soil types, weed control, etc., will need more traps to improve estimates of rootworm abundance. Divide field into representative units if necessary. Remove soybean plants around the stakes to prevent leaves from sticking to the traps. For ease of collecting traps in drilled soybean, consider placement along wheel tracks, skipped rows, etc.



Suggested whole field trapping schemes

Each week for 6 weeks, or until the beetle threshold is reached, remove the traps, and place new ones just above the soybean canopy. Count and record the number of rootworm beetles on each trap. To determine the average number of beetles/trap/day, add the numbers for the 6 traps in each field, divide that number by 6, and then divide by the number of days the traps have been in the field. Although a 7-day sampling period is preferred, be sure to divide by the actual number of days the traps were in the field to determine the average.

Producer counting WCR beetles on trap

When do trap counts indicate the need for a management tactic?

If the Pherocon® AM traps in soybean fields average 5 or more beetles/trap/day **during any trapping week**, some management tactic should be implemented for WCR larval control in next year's corn. Management options include: 1) rotation to a crop other than corn or 2) using a rootworm insecticide. In research fields where at least 5 WCR beetles/trap/day in soybean were observed, >95% of the cornfields reached economic root damage the following year. Do not use a single trapped field to estimate rootworm abundance in surrounding fields.

ECONOMIC THRESHOLD:
AVERAGE OF **5** OR MORE
WESTERN CORN ROOTWORM
BEETLES PER TRAP PER DAY

Where can I get the traps?

Pherocon® AM yellow sticky traps can be purchased from several distributors. Two possible sources are: Gempler's (800-382-8473) and Great Lakes IPM (800-235-0285). This listing is not all inclusive, nor an endorsement by Purdue University. The manufacturer of the Pherocon® AM yellow sticky trap is Trece Inc. (831-758-0204).

A week's catch, which will include many other insects and debris

Two captured WCR beetles

Where can I get more WCR information?

WCR life history, damage, sampling methods, and management guidelines are available in the *Field Crops Pest Management Manual* (IPM-1). Updates of Indiana's risk areas and control products for this pest are presented in the publication E-49 *Managing Corn Rootworms* located at: <www.entm.purdue.edu/entomology/ext/targets/e-series/e-list.htm>. For these and other publications, call Purdue Extension at 888-EXT-INFO (398-4636)

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Soybean Aphid Update – (*John Obermeyer, Larry Bledsoe, and Bob O'Neil*)

- Aphid presence has increased but numbers remain low.
- More importantly, aphid numbers are low in "brood" states.
- Three important factors are compared from 2003's outbreak and this season.

Purdue researchers continue to monitor for the presence and/or increasing populations of soybean aphid in the state. Several counties in northern Indiana have confirmed aphid presence (Cass, Kosciosco, Miami, St. Joseph, Tippecanoe, Wabash, White), but populations remain low. To date, this has been the story for the aphid throughout the Midwest.

Whereas, a year ago at this time, aphid populations had built to treatable levels in states north and west of Indiana. By the end of July, with storm fronts moving from that region, mass numbers of winged aphids converged on northern Indiana. The rest was history as the economic populations soon developed.

Three significant differences exist from a year ago at this time: 1) Growth and development of soybean is ahead of last year. According to Indiana's Agricultural Statistics Service, as of July 11, 43% of soybean fields are blooming compared with 26% last year (8% podding compared to last year's 1%). Indicating that aphid populations won't likely build to economic numbers (250/plant) during the vulnerable early reproductive stages (R2-R4). 2) Soils were becoming dry last year during the critical pod setting stage. So far, weather patterns have kept most of Indiana fields well watered as we enter into pod-set. Therefore, aphid feeding (competing for plant moisture and nutrients) won't be as stressful and yield inhibiting to plants. 3) Soybean aphid densities in the upper Midwest are still low, so mass migration and subsequent population buildup is less likely until later in the season. Should this occur, late-planted soybean (i.e., double-crop and replanted) will be the most vulnerable to damage and yield loss.

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Soybean Aphid Look Alike - (*John Obermeyer and Larry Bledsoe*)

Correct identification of a pest is the first necessary step in Integrated Pest Management. The heightened interest in soybean aphid has many pest managers carefully observing backsides of leaves for this plant sucker. Some are surprised and unprepared to find the

plethora of insects in this realm, leading to misidentification of soybean aphid. The following magnified images highlight some common critters often seen with or without soybean aphid. The use of at least a 5X magnifier is necessary to correctly see and identify these arthropods. Size and color are not reliable identifying characteristics; most of the following arthropods will readily move about the leaf surface but soybean aphid moves very slowly if at all.

Early nymphs of potato leafhopper and soybean aphid

Nymphs of potato leafhopper

Soybean aphid and spider mites

Soybean thrips adult and nymphs

Pirate bug adult feeding on an egg

Pirate bug nymph

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Black Light Trap Catch Report - (John Obermeyer)														
County/Cooperator	6/29/04 - 7/05/04							7/06/04 - 7/13/04						
	VC	BCW	ECB	SWCB	CEW	FAW	AW	VC	BCW	ECB	SWCB	CEW	FAW	AW
Dubois/SIPAC		2					17			1				8
Jennings/SEPAC							5							13
Knox/SWPAC	1		3		2		6			2	1	3		6
LaPorte/Pinney Ag Center		2	5				16		6	1				15
Lawrence/Feldun Ag Center			1		1		6							3
Randolph/Davis Ag Center	4						36		1					15
Tippecanoe/TPAC Ag Center	2	1					57							9
Vermillion/Hutson							5							3
Whitley/NEPAC	3	2					129		8					227

VC = Variegated Cutworm, BCW = Black Cutworm, ECB = European Corn Borer, SWCB = Southwestern Corn Borer, CEW = Corn Earworm, FAW = Fall Armyworm, AW = Armyworm

Agronomy Tips

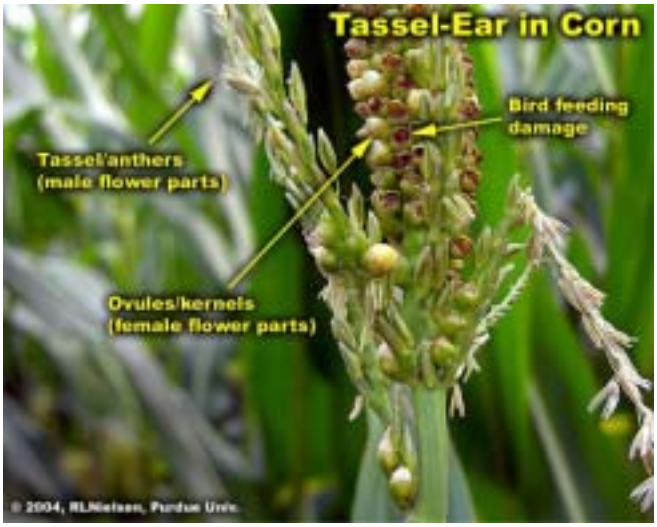
Tassel-Ears in Corn – (*Bob Nielsen*)

Seems like every year about this time someone walks into the Chat 'n Chew Cafe carrying an odd-looking tassel that is part tassel and part ear to show off to the guys over at the corner table. Much discussion always ensues over the causes of tassel-ears, but the usual consensus is that it falls into the general category of corny oddities and is rarely a yield-influencing factor.

A corn plant exhibits both male flowers and female flowers (a flowering habit called "monoecious" for you trivia fans.) Interestingly, both flowers are initially bisexual (aka "perfect"), but during the course of development the female components (gynoecia) of the male flowers and the male components (stamens) of the female flowers abort, resulting in tassel (male) and ear (female) development. Once in a while, the upper flower that typically becomes a tassel instead forms a combination of male and female floral parts on the same reproductive structure. This "tassel-ear" is an odd-looking affair and is found most commonly on tillers or "suckers" of a corn plant along the edges of a field. Without a protective husk covering, the kernels that develop on tassel-ears are at the mercy of weathering and exposed to hungry birds. Consequently, harvestable good quality grain from tassel-ears is a rarity.

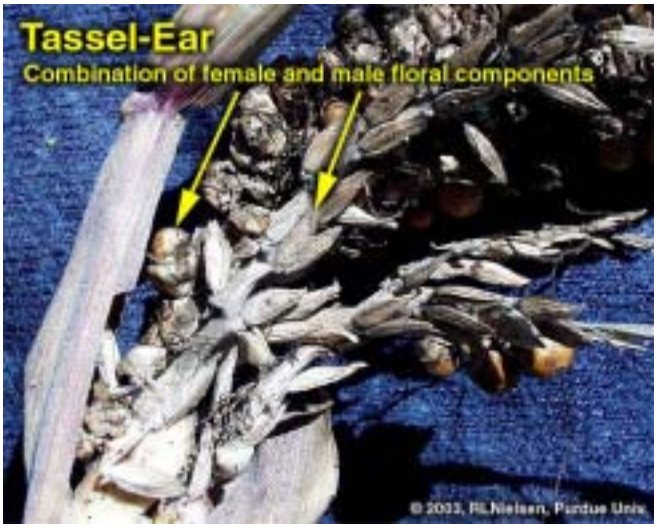
Tassel-ear on a tiller

A decrepit tassel-ear closer to harvest time.



Closer view of tassel-ear, depicting the male and female floralparts.

A normal ear on the main stalk and a tassel-ear on the tiller of a single plant.



Closer view of decrepit tassel-ear, depicting the male and female floral parts.

Related References

Nielsen, R.L. (Bob). 2003. **Tillers or "Suckers" in Corn: Good or Bad?** Corny News Network, Purdue Univ. Online at <www.kingcorn.org/news/articles.03/Tillers-0623.html>. (URL verified 7/13/04)

Nielsen, R.L. (Bob). 2004. **Grain Fill Stages in Corn.** Corny News Network, Purdue Univ. Online at <www.kingcorn.org/news/articles.04/GrainFill-0705.html>. (URL verified 7/13/04)

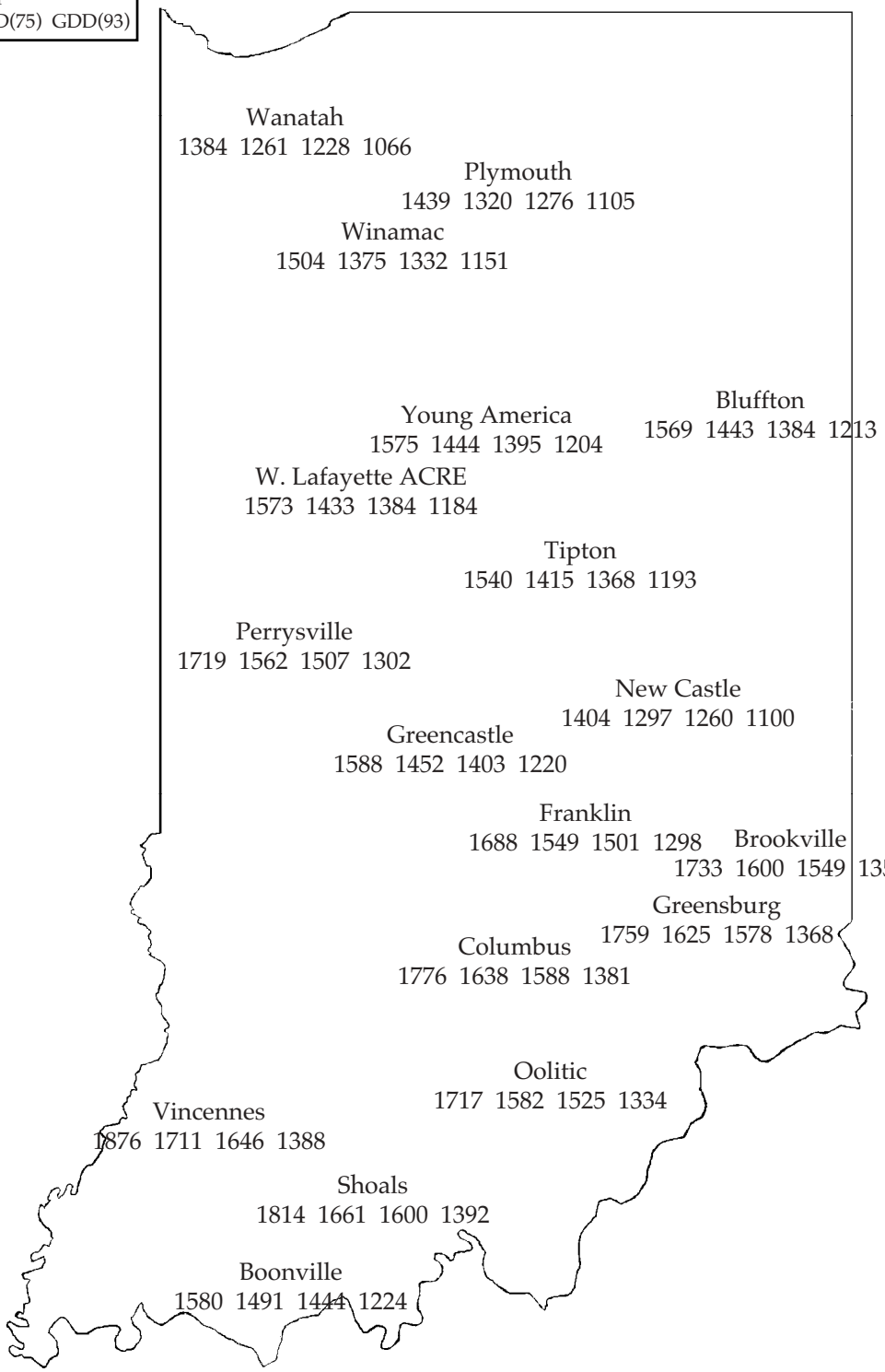
For other Corny News Network articles, browse through the CNN Archives at <www.kingcorn.org/news/index-cnn.html>. For other information about corn, take a look at the Corn Growers' Guidebook at <www.kingcorn.org>.

Weather Update

Temperatures as of July 14, 2004

GDD(5) = Growing Degree Days from April 7 (5% of Indiana's corn planted), for corn growth and development
GDD(42) = Growing Degree Days from April 21 (42% of Indiana's corn planted), for corn growth and development
GDD(75) = Growing Degree Days from April 30 (75% of Indiana's corn planted), for corn growth and development
GDD(93) = Growing Degree Days from May 14 (93% of Indiana's corn planted), for corn growth and development

MAP KEY
Location GDD(5) GDD(42) GDD(75) GDD(93)



4" Bare Soil Temperatures 7/14/04

Location	Max.	Min.
Wanatah	90	63
Winamac	88	69
Bluffton	75	74
Chalmers	75	71
W Laf Acre	92	75
Tipton	83	75
Farmland	80	74
Perrysville	84	78
Crawfordsville	80	76
Liberty	91	72