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## Insects, Mites, and Nematodes

**Rootworm Digging Time!** - (*John Obermeyer, Rich Edwards, and Larry Bledsoe*) -

- High risk fields should be evaluated for rootworm immediately
- Impact on yield depends on how much damage and whether plants lodge
- Consider the possibility / benefit of a rescue treatment
- Treatment guidelines are given

One of the worst surprises a producer encounters while harvesting within a corn field that looked so good from the road are areas of lodged and "goose necked" corn. At that time rootworm feeding is often suspected, but post-mortem diagnosis is difficult at best. Scouting root systems now can reveal rootworm feeding and the potential for toppling during summer storms.

Plants with nodal roots being destroyed and pruned brace roots where contacting the soil, will likely lodge during storms coupled with high winds. Should lodging

occur just before or during pollination, yields will be cut dramatically. Plants will attempt to right themselves, "goose neck," which may help during harvest. Soil pathogens infect damaged plants through the feeding wounds, this may lead to stalk rots during dry down.

Using a shovel to sample, lift out the root mass and surrounding soil (about a 7" cube) and place on a dark surface (black plastic garbage bags work well). Carefully break up the clods and sort through the soil. Look for 1/4 to 1/2 inch long, slender, creamy-white larvae with a brownish-black head and tail. Once the soil has been separated from the root mass, inspect it for root scarring and pruning. You may find the rootworms under the leaf collars that are in close proximity to nodal roots, tear these leaves away to check. Also, you may even observe the rootworms' hind-ends sticking out of roots. Repeat this process with several plants representing different areas of a field. An average of two or more larvae per plant represents a rootworm population that signals the need for a cultivation application.



Insecticides applied after planting must be directed toward the base of plants. It is also important to cultivate the soil near the plants to incorporate the insecticide. Throwing soil up around plants will also promote the establishment of brace roots. A good brace root system will help prevent plant lodging and reduce losses due to rootworm feeding. If a no-till field has an economic population of larvae, placing the insecticide on top of the ground will normally not be effective. The only exceptions might be if the soil insecticide is watered in through irrigation or rainfall (ideally a 1/2" or more). Two liquid soil insecticides, Furadan 4F and Lorsban 4E, are labeled for post-directed applications. Furadan, being more soluble, would better move into the root zone if rainfall is minimal. If one decides to mix the insecticide with a liquid nitrogen source for a carrier, compatibility checks should be made.

Additional information about rootworms can be found in extension publication *Managing Corn Rootworm – 2001*, available from county extension offices or on the web at <<http://www.entm.purdue.edu/entomology/ext/targets/e-series/EseriesPDF/E-49.pdf>>.



Dwain Rule digging for rootworm larvae



Rootworm larvae



Examining root mass for larvae

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**How's Your Rootworm Insecticide Doing?** – (John Obermeyer) –

Two things that accelerate the breakdown of soil insecticides are sunlight and rainfall. Consider these as you determine whether or not to check your corn now for rootworm feeding (see previous article). The sun's UV rays will degrade insecticide exposed on the surface of the soil. T-band applications may leave a considerable percent of product exposed if there wasn't any incorporation (e.g., drag chains).

High moisture levels move the insecticides deeper into the soil profile, sometimes too far. Insecticide chemistries vary in their solubility. However, those fields that received "toad croakers" may have either physically moved the insecticide off-target or caused deeper movement into the soil.

Think of your insecticide application methods and the environmental factors that your rootworm protection has contended with since planting. The key to control then may depend on the larval populations with the field. Happy scouting!

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**Corn Borer Moths Still Flying** – (John Obermeyer, Larry Bledsoe, and Rich Edwards) -

- First brood moth flight extended by environmental extremes
- Though significant moths are noted, not much damage being seen
- NE Indiana counties are at greatest risk for this first generation
- Second brood population and damage cannot be determined at this time

The weird swings in temperatures and moisture that we've experienced over the last couple months seem to have encouraged an extended first generation corn borer moth flight. Those early emerging moths attempting to find tall, lush corn in which to lay eggs were certainly disappointed. However, now the corn is quickly growing, those moths that are still flying may find corn a suitable egg laying site.

Black light traps and alert pest managers have confirmed that corn borer moths are trying their best to populate. Though Ron Blackwell's corn borer surveys have shown little success in the first generation. One area of the state to especially be aware of is northeastern Indiana, which had some of the highest infestation levels last year.

Though corn borer is down, don't count it out for the 2001 growing season. Even a small number of moths from this first generation, given ideal environmental conditions during mating and egg laying, can cause significant damage to some fields later this summer. Actively pollinating corn is most attractive to the moths for egg laying, usually this correlates to late planted fields.

Stay tuned to future issues of the *Pest&Crop* as we track the moth flight and infestations of this pest throughout the season.

| County     | #PLH / Sweep | Stem Ht. (in.) |
|------------|--------------|----------------|
| Tippecanoe | 0.5          | 8.3            |
| Tippecanoe | 1.1          | 10.8           |
| Tippecanoe | 2.8          | 19.9           |
| Warren     | 0.1          | 3.8            |
| Warren     | 0.1          | 4.5            |

| County (Fields) Sampled | Extended Leaf Height (in.) | % of plants/field w/ damage | Avg. # Egg masses/plant |
|-------------------------|----------------------------|-----------------------------|-------------------------|
| Cass                    | 45.0                       | 2%                          | 0.0                     |
| Cass                    | 38.8                       | 7%                          | 0.0                     |
| Cass                    | 28.5                       | 3%                          | 0.1                     |
| Tippecanoe              | 41.8                       | 0%                          | 0.0                     |
| Tippecanoe              | 35.1                       | 0%                          | 0.0                     |
| Warren                  | 41.0                       | 0%                          | 0.0                     |
| Warren                  | 47.5                       | 5%                          | 0.0                     |
| White                   | 33.5                       | 0%                          | 0.1                     |
| White                   | 25.4                       | 0%                          | 0.0                     |

| County/Cooperator         | 5/30/01 - 6/4/01 |     |     |    |     |     |      | 6/5/01 - 6/11/01 |     |     |    |     |     |      |
|---------------------------|------------------|-----|-----|----|-----|-----|------|------------------|-----|-----|----|-----|-----|------|
|                           | VC               | BCW | ECB | GC | CEW | FAW | AW   | VC               | BCW | ECB | GC | CEW | FAW | AW   |
| Clinton/Blackwell         | 46               | 46  | 24  | 2  | 0   | 0   | 964  | 186              | 191 | 95  | 0  | 0   | 0   | 3196 |
| Dubois/SIPAC              | 8                | 6   | 0   | 9  | 0   | 0   | 76   | 89               | 46  | 3   | 4  | 0   | 0   | 1335 |
| Jennings/SEPAC            | 11               | 4   | 8   | 4  | 0   | 0   | 35   | 76               | 7   | 31  | 9  | 0   | 0   | 310  |
| LaPorte/Pinney Ag Center  | 0                | 0   | 0   | 0  | 0   | 0   | 28   | 28               | 4   | 54  | 0  | 0   | 0   | 216  |
| Lawrence/Feldun Ag Center | 9                | 32  | 3   | 6  | 0   | 0   | 331  | 18               | 11  | 0   | 9  | 0   | 0   | 214  |
| Randolph/Davis Ag Center  | 4                | 3   | 7   | 0  | 0   | 0   | 85   | 25               | 6   | 70  | 7  | 0   | 0   | 361  |
| Tippecanoe/TPAC           | 146              | 8   | 71  | 3  | 0   | 0   | 1056 |                  |     |     |    |     |     |      |
| Tippecanoe/P. J. Boeve    |                  |     | 72  |    |     |     |      |                  |     |     |    |     |     |      |
| Whitley/NEPAC             | 4                | 1   | 2   | 1  | 0   | 0   | 103  | 30               | 18  | 217 | 3  | 0   | 0   | 401  |

BCW = Black Cutworm      ECB = European Corn Borer      GC = Green Cloverworm      CEW = Corn Earworm  
 AW = Armyworm              FAW = Fall Armyworm              VC = Variegated Cutworm

**Moth Invasions Around Homes at Nights?** - (Timothy J. Gibb, *Extension Entomologist*, May 22, 2001) - Many reports are coming in of brownish-gray to buff colored moths congregating near homes and landscapes in the evening hours. These have been identified as the adult stage of the armyworm caterpillar (Noctuidae: *Pseudaletia unipuncta*). During the early spring, caterpillars measuring 1.5 inches in length and having longitudinal white stripes on the sides and back, were commonly reported in agronomic and turfgrass areas where they were found feeding on many different plants. Some damage to crops and other plants was reported, however, most damage is done by the first generation of the year. Later in the spring and summer, damage tapers off considerably as do the numbers of armyworms.

Possibly, the unusual weather conditions we experienced early this year in some way allowed the armyworms to increase to higher than normal populations. The result — lots of the moths flying around lights and residences right now.

Homeowners should know that, although these moths are a nuisance and sometimes find their way into homes, they will not harm people, houses, or yards. For more information on armyworms see <<http://www.entm.purdue.edu/entomology/ext/index.htm>>.

Click on the sites below to see images.

<<http://www.ppd.org/dd/uploads/dd01-505.jpg>>  
<<http://www.ppd.org/dd/uploads/dd01-506.jpg>>  
<<http://www.ppd.org/dd/uploads/dd01-507.jpg>>  
<<http://www.ppd.org/dd/uploads/dd01-508.jpg>>  
<<http://www.ppd.org/dd/uploads/dd01-509.jpg>>

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**Spring of 2001 Might Well Go Down in History as the Year of the 'Moth'** - (Timothy J. Gibb, *Extension Entomologist*, June 14, 2001) -

Some are reminded of Hitchcock's horror film - *The Birds*, when huge swarms of dusty colored moths appear everywhere they look. The explanation of this phenomenon is simple. The invasions of armyworms and cutworms into the mid-west that caused damage to crops and turfgrass earlier this spring is now manifesting itself as a flush of brownish-gray night flying moths everywhere. These moths are especially active in the early evening hours where they fly from vegetation across roads, lawns and towards porch lights. Some are concerned about the thousands that are 'splattering' on car windshields (motorcyclists have a bigger concern), others are concerned about the numbers that are finding their way into homes, and still others are concerned about the thousands that are resting on trees and other vegetation during the day.

Rest assured that these moths are not the damaging stage of this insect. They do not bite people nor damage homes or plants. They are mostly just a nuisance pest because of their high numbers right now. We expect their numbers to decrease dramatically after about 10 days or two weeks time. It is not possible to tell for sure whether or not a second generation will appear but all reports suggest that it will not be nearly as large as the present generation. Reports from the agriculture industry are that caterpillars are already dying from naturally occurring diseases and parasites. Allowing these controls to continue will help assure that the next generation will be moderate. Until then, be patient, keep doors and windows screened and porch light off unless needed, and recognize that the moths are not a health threat (unless you ride a motorcycle).

# Weather Update

Temperature Accumulations from Jan. 1 to June 13, 2001

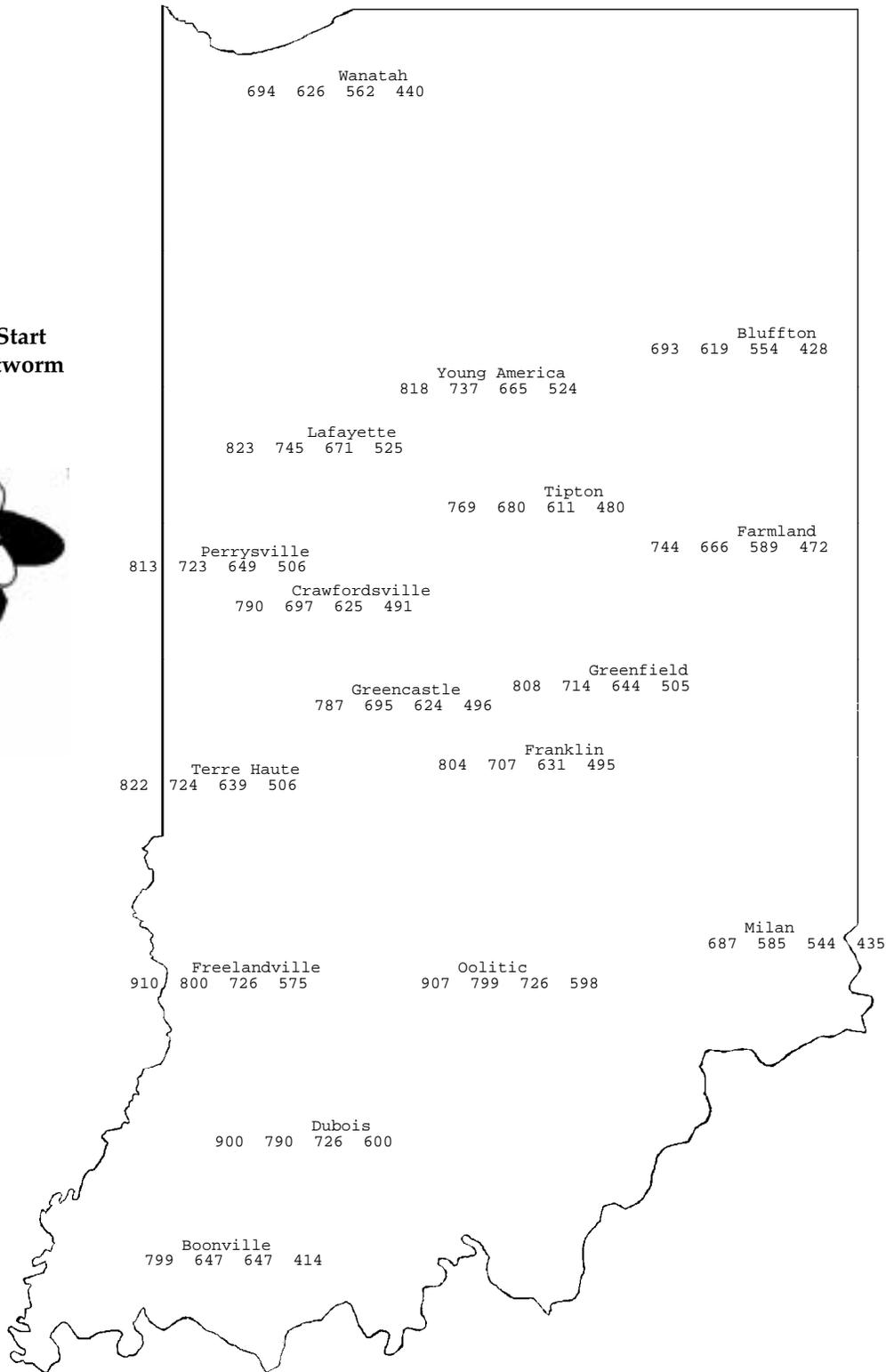
| MAP KEY  |         |         |         |
|----------|---------|---------|---------|
| Location |         |         |         |
| GDD(4)   | GDD(10) | GDD(60) | GDD(90) |

## 4" Bare Soil Temperatures 6/6/01

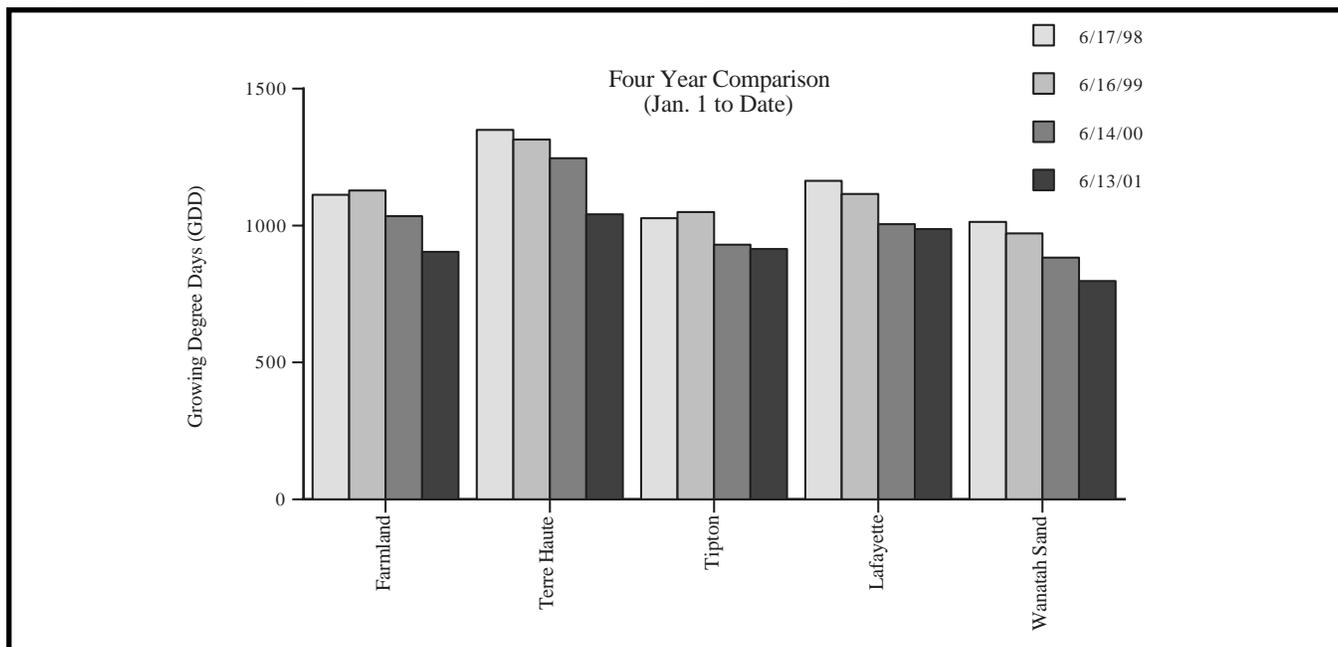
| Location       | Max. | Min. |
|----------------|------|------|
| Wtfd Mills     | 74   | 69   |
| Wanatah        | 81   | 71   |
| Columbia City  | 72   | 70   |
| Bluffton       | 72   | 71   |
| W Laf Agro     | 87   | 74   |
| Tipton         | 74   | 69   |
| Farmland       | 76   | 65   |
| Perrysville    | 79   | 71   |
| Crawfordsville | 81   | 73   |
| Trafalgar      | 84   | 70   |
| Liberty        | 78   | 69   |
| Terre Haute    | 80   | 73   |
| Vincennes      | 87   | 70   |
| Oolitic        | 78   | 72   |
| Dubois         | 96   | 72   |

GDD(4) = Growing Degree Days from April 14 (4% of Indiana's corn planted), for corn growth and development  
 GDD(10) = Growing Degree Days from May 1 (10% of Indiana's corn planted), for corn growth and development  
 GDD(60) = Growing Degree Days from May 5 (60% of Indiana's corn planted), for corn growth and development  
 GDD(90) = Growing Degree Days from May 12 (90% of Indiana's corn planted), for corn growth and development

**Bug Sout says, "Start scouting for rootworm larval damage!"**



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



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