Pest & Crop

August 30, 2002 - No. 24

# In This Issue



# Insects, Mites, and Nematodes

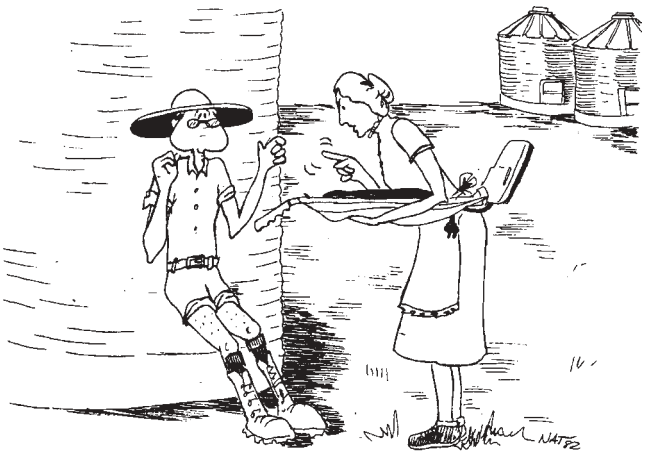
**Grain Bin Clean-Up** - (*Linda Mason and John Obermeyer*) -

- Stored grain insect infestations usually begin from poor sanitation
- Procedures are given to prevent infestations
- Now is the time to carry out bin clean-up procedures

Many grain bins have recently been emptied with higher market prices and preparation for this year's harvest. Storage facilities should be readied for corn that will likely carryover to next spring or summer. Preparing bins for storage now goes a long way toward preventing insect infestations. Several species of insects may infest grain in storage. The principal insects that cause damage are the adult and larval stages of beetles, and the larval stage of moths. Damage by these insects includes reducing grain weight and nutritional value, and by causing contamination (as live or dead insects), odor, mold, and heat damage that reduce the quality of grain.

Newly harvested corn may become infested with insects when it comes in contact with previously infested grain in combines, truck beds, wagons, other grain-handling equipment, augers, bucket lifts, grain dumps, or grain already in the bin. Insects may also crawl or fly into grain bins from nearby accumulations of old contaminated grain, livestock feeds, bags, litter, any other cereal products, or rodent burrows.

Insect infestations can be prevented by employing good management practices. Now that many grain bins are empty, the following guidelines should be used before the 2002-grain is placed in bins:



**Don't let me catch you with my vacuum cleaner in that grain bin again!**

- Brush, sweep out and/or vacuum the combine, truck beds, transport wagons, grain dumps, augers, and elevator buckets to remove insect-infested grain and debris.
- In empty bins, thoroughly sweep or brush down walls, ceilings, ledges, rafters, braces, and handling equipment and remove debris from bins.
- Inside cleaned bins, spray wall surfaces, ledges, braces, rafters, and floors with an approved insecticide (Chlorpyrifos-methyl, cyfluthrin, or diatomaceous earth) to create a perimeter barrier. Outside, complete this barrier by treating the bases and walls up to 15 feet high, plus the soil around the bins.
- Remove all debris from fans, exhausts, and aeration ducts (also from beneath slotted floors, when possible). Fumigate the false floor area if the bin has a history of insect infestation or you have not cleaned the false floor area recently. Only certified fumigation applicators may purchase and apply these.
- Remove all debris from the storage site and dispose of it properly according to area, state, and/or federal guidelines (the debris usually contains insect eggs, larvae, pupae, and/or adults, ready to infest the newly harvested grain).
- Remove all vegetation growing within ten feet of the bins (preferably the whole storage area). Then spray the cleaned area around bins with a residual herbicide to remove all undesirable weedy plants.
- Repair and seal all damaged areas to the grain storage structure. This is not only to prevent insect migration into the bin, but also to prevent water leakage, which leads to mold growth.
- Do not store newly harvested grain on old grain already in storage.
- Whenever fans are not operated, they should be covered and sealed. This reduces the opportunity for insects and vertebrates to enter the bin through the aeration system.

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**Late Season Soybean Defoliators** - (*John Obermeyer, Rich Edwards, and Larry Bledsoe*) -

- Bean leaf beetle will feed on the pods, seed producers be wary!
- Woollybears are foliage feeders only
- Grasshoppers obvious on field edges

Observations of several soybean fields reveal that foliage feeders are plentiful. Bean leaf beetle, woollybear caterpillars, and grasshoppers have been seen.

Bean leaf beetle will continue to feed on green leaves, then switch to green pods when the leaves begin to yellow. Though they don't directly feed on the seed, their scarring allows for moisture to enter the pod and create a perfect environment for molds. Those growing soybean for seed should be scouting for this damage! See the following threshold for pod feeding.

Numerous woollybears are crossing the county roads of Indiana (no, we can't tell you what that means as far as this winter's weather!). Areas in fields have been fed on, some with considerable defoliation. The good news is that they don't feed on pods and that many of the worms are becoming diseased. Diseased woollybear appear frozen, and eventually the "hairs" fall off. Why did the woollybear cross the road?….to find a place to pupate and over winter!

Grasshoppers will feed on both foliage and pods. However, their tendency is to move out of soybean fields once the foliage begins to senesce. Unlike bean leaf beetle, grasshopper pod feeding is complete removal of tissue, including the seed.

Bean Leaf Beetle Pod Feeding Treatment Threshold

| | 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% | Sample 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.

Severe woollybear feeding

Bean leaf beetle pod feeding

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**Black Light Trap Catch Report**
**(Ron Blackwell)**

| County/Cooperator | 8/13/02 - 8/19/02 | | | | | | | 8/20/02 - 8/26/02 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | VC | BCW | ECB | SWCB | CEW | FAW | AW | VC | BCW | ECB | SWCB | CEW | FAW | AW |
| Clinton/Blackwell | 0 | 27 | 104 | 0 | 51 | 17 | 12 | 0 | 9 | 70 | 0 | 37 | 8 | 8 |
| Dubois/SIPAC | 0 | 2 | 11 | 0 | 15 | 1 | 1 | 0 | 20 | 166 | 10 | 62 | 4 | 8 |
| Jennings/SEPAC | 1 | 4 | 4 | 0 | 50 | 4 | 5 | 0 | 6 | 10 | 0 | 176 | 7 | 14 |
| Knox/SWPAC | 1 | 0 | 18 | 1 | 0 | 0 | 2 | 0 | 0 | 95 | 9 | 2 | 0 | 8 |
| LaPorte/Pinney Ag Center | 0 | 0 | 628 | 0 | 19 | 2 | 1 | 0 | 0 | 154 | 0 | 35 | 0 | 1 |
| Lawrence/Feldun Ag Center | 0 | 28 | 9 | 0 | 22 | 10 | 22 | 1 | 10 | 44 | 0 | 11 | 8 | 4 |
| Randolph/Davis Ag Center | 0 | 11 | 26 | 0 | 27 | 17 | 31 | 0 | 1 | 5 | 0 | 7 | 2 | 5 |
| Vermillion/Hutson | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| Whitley/NEPAC | 0 | 0 | 242 | 0 | 16 | 22 | 24 | 0 | 4 | 20 | 0 | 26 | 2 | 4 |

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

# Plant Diseases

**Soybean Charcoal Rot** – (*Gregory Shaner and Gail Ruhl*)

- Charcoal rot is showing up in soybean fields in Indiana

Several samples of soybean recently submitted to Purdue's Plant and Pest Diagnostic Laboratory have been diagnosed as having charcoal rot. In the field, these plants appeared to be maturing prematurely, but did not show symptoms characteristic of sudden death syndrome or *Phytophthora* rot.

Charcoal rot is caused by a soil borne fungus, *Macrophomina phaseoli*. Charcoal rot occurs to some extent every year, and may be a major problem when fields are under heat and moisture stress. Other names for the disease are dry-weather wilt and summer wilt. Late planting of soybeans or thin stands help promote charcoal rot. The open canopy allows the sun to heat the soil, which gives the fungus a competitive advantage. The late planting this spring, and the subsequent hot and dry conditions this summer may result in more than the usual amount of charcoal rot.

Charcoal rot can often be diagnosed by scraping away the surface of the taproot and lower stem. The fungus produces tiny, black structures, called microsclerotia, in the plant's vascular system. When microsclerotia are numerous, the internal tissue has a speckled, grayish-black appearance, hence the name 'charcoal rot.' As the fungus progresses up into the stem it may cause a reddish-brown discoloration of the pith. This could be confused with brown stem rot; however microsclerotia are not present with brown stem rot. In stem tissue, black microsclerotia may be most evident at the nodes.

*Macrophomina phaseolina* is widespread in soil. Microsclerotia survive in host debris. The fungus has a wide host range, so residue of plants other than soybean may serve as a reservoir of inoculum. The fungus also survives in seed.

More information about charcoal rot of soybean can be found at <http://www.btny.purdue.edu/Extension/Pathology/CropDiseases/Soybean/soybean.html#charcoalrootrot/> or in extension publication BP-42 *Charcoal Rot of Soybeans*.

# Agronomy Tips

**Droopy Ears in Corn** - (*Bob Nielsen*) -

- Premature ear declination decreases grain yield
- Caused by cumulative stresses that shut down plant

Ears of corn normally remain erect until some time after physiological maturity has occurred (black layer development), after which the ear shanks eventually collapse and the ears decline or 'droop' down. In recent weeks, corn field connoisseurs have reported droopy ears in fields that have not yet reached physiological maturity.

Droopy ears are cute on certain breeds of dogs, but droopy ears on corn plants prior to physiological maturity are a signal that grain fill has slowed or halted. Premature ear declination (the fancy term for this problem) results in premature black layer formation, lightweight grain, and ultimately lower grain yields per acre.

**What Causes Droopy Ears?** The few times over the years that I have observed this symptom, severe drought stress has been a common denominator. Similar instances of premature ear declination occurred in areas of drought stress in 1991 and 1995. Under severe drought conditions, but where a sizeable ear nonetheless exists, a reduction in the turgidity of the ear shank occurs and the weight of the developing causes the ear shank to collapse. In some instances, collapsed ear shanks can also result from extensive tunneling by European corn borer larvae. Such tunneling weakens the ear shank, allowing it to collapse, and can ultimately also cause ear droppage from the plant.

**Impact on Yield?** Remember that the ear shank is the final "pipeline" for the flow of photosynthates into the developing ear. An ear shank that collapses prior to physiological maturity will greatly restrict, if not totally prevent, the completion of grain fill for that ear and will likely cause premature black layer development in the grain. If the droopy ears you've looked have not black layered yet, they will soon.

The timing of the onset of droopy ears determines the magnitude of the expected yield loss. If grain fill were totally shut down at the full dent stage of grain development (milk line barely visible at dent of kernels), the yield loss would be as much as 40 percent. If grain fill were totally shut down at the late dent stage of grain development (milk line halfway between dent and tip), yield losses for the affected ears would equal about 12 percent.

Multiplying the percentage of affected ears in a field by the estimated yield loss per ear will give you an estimate of whole field loss. For example, if ten percent of the field contained plants whose ears drooped prematurely at the late dent stage, whole field loss would be estimated at 1.2 percent (10 percent of the ears multiplied by 12 percent yield loss per ear).

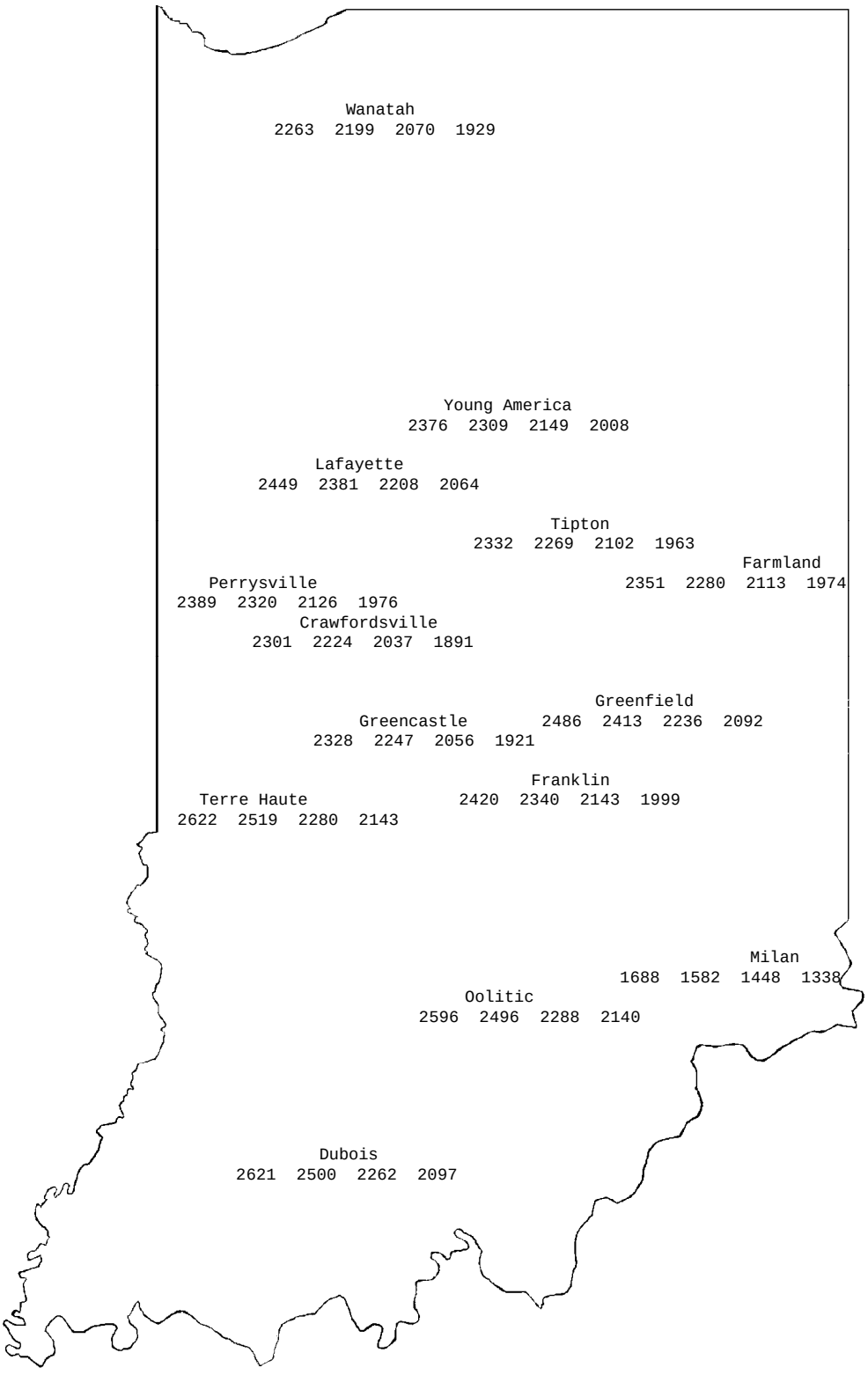
Don't forget, this and other timely information about corn can be viewed at the Chat 'n Chew Café on the World Wide Web at <http://www.kingcorn.org/cafe>. For other information about corn, take a look at the Corn Growers' Guidebook on the World Wide Web at <http://www.kingcorn.org/>.

# Weather Update

| MAP KEY |
|---|
| Location |
| GDD(2) GDD(10) GDD(43) GDD (75) |

## Temperature Accumulations from Jan. 1 to August 28, 2002

GDD(2) = Growing Degree Days from April 21 (2% of Indiana's corn planted), for corn growth and development
GDD(10) = Growing Degree Days from May 5 (10% of Indiana's corn planted), for corn growth and development
GDD(43) = Growing Degree Days from May 26 (43% of Indiana's corn planted), for corn growth and development
GDD(75) = Growing Degree Days from June 2 (75% of Indiana's corn planted), for corn growth and development




**4" Bare Soil Temperatures 8/28/02**

| Location | Max. | Min. |
|---|---|---|
| Wanatah | 90 | 71 |
| Winamac | 86 | 73 |
| W Laf Agro | 85 | 72 |
| Tipton | 83 | 77 |
| Farmland | 79 | 64 |
| Crawfordsville | 84 | 76 |
| Terre Haute | 86 | 72 |
| Oolitic | 82 | 74 |
| Dubois | 88 | 69 |

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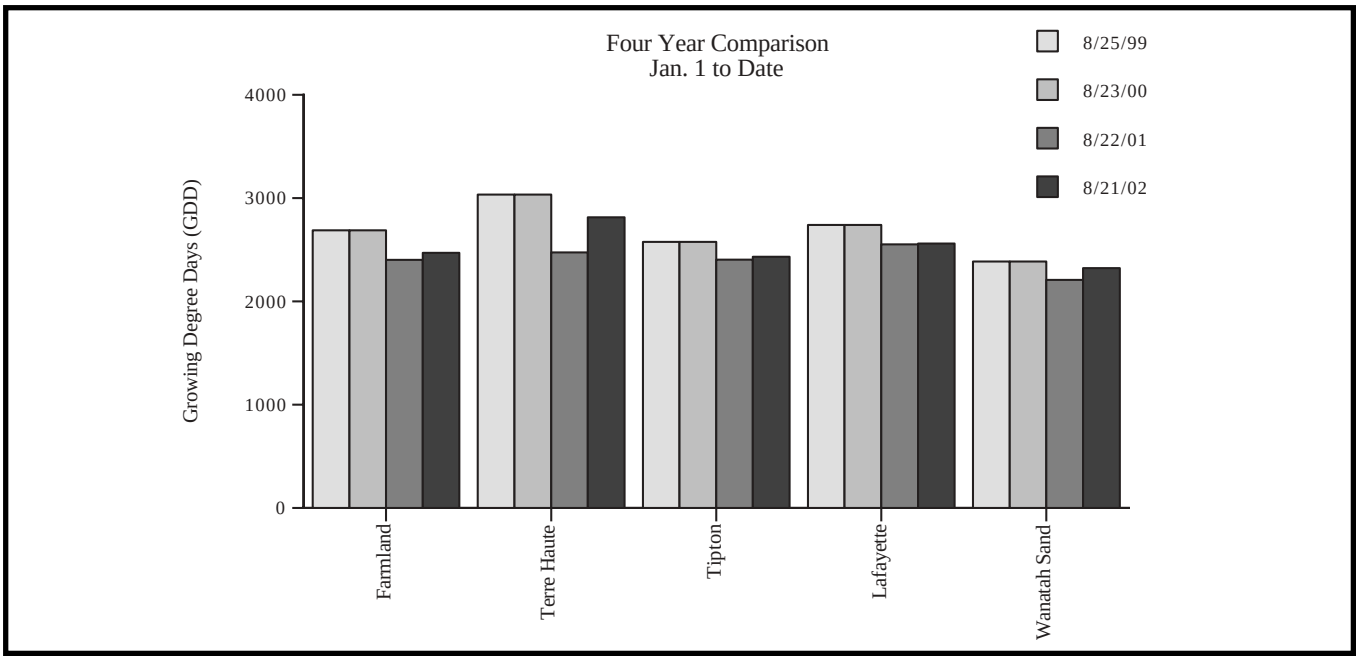
**http://www.entm.purdue.edu/Entomology/ext/targets/newslett.htm**

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