



May 18, 2001 - No. 9

In This Issue

Insects, Mites, and Nematodes

- Armyworms Marching Big Time, This is NO Parade
- More "Worm" Reports
- Black Light Trap Catch Report

Weeds

- Help Us Welcome Aboard a New Extension Weed Scientist
- What to Expect from Your Soil-Applied Herbicide Program

Agronomy Tips

- Mother's Day Frost Causes Some Damage to Indiana Corn and Soybean
- Growing Points of Interest

Weather Update

- Temperature Accumulations

Insects, Mites, and Nematodes

Armyworms Marching Big Time, This is NO Parade – (John Obermeyer, Rich Edwards, and Larry Bledsoe) –

- Severe damage occurring in many southwestern Indiana wheat and pasture fields
- Problem could be brewing further north, especially northeastern counties
- Labeled insecticides and harvest restrictions for various crops are given

Thanks to many Purdue extension educators (Jerry Nelson, Bob Yoder, Jim Peters, and Phil Schmidt) and Grower's Co-op (Chad Brown and Betsy Smith) for alerting us to the armyworm situation in southwestern Indiana. Upon visiting this area, the damage seen in many fields will leave a lasting impression. Wheat, grass pastures, soybean fields, and lawns were observed with devastating damage. It certainly gives one an appreciation for the biotic potential of this insect. At present (Tuesday, May 16) damage has not been reported north of Greene County. It may be just a matter of time, as the armyworm development moves further into the state. Please let us know what you are seeing.

We have been asked by several producers on why the "biblical" proportion of armyworm numbers. Simply, there is not a good answer. The facts are that three weeks ago our black light traps picked up impressive numbers of adults (a high of 670 moths in Whitley County). This certainly set the stage for tremendous egg laying. The continual dry conditions, especially apparent in southern Indiana, hasn't allowed for fungal pathogens to multiply and spread throughout the armyworm population. As well, the damage is aggravated with the stressed crops growing slowly. Parasitic flies have had very little impact, during our inspections only one parasitized larva was observed (white eggs on the worm's body).

High risk crops are those associated with tall growing grasses, e.g., wheat, rye, fescue, etc. Egg laden female moths were attracted to these sites for laying. The newly hatched larvae are very small and damage is negligible. Then, what seems like overnight, the armyworm are 1/2 to 1 inch long and devouring crops; especially where grasses are burned down with herbicides leaving only the emerging crop. When green leaf material gets scarce they move, often in mass, to the adjoining fields. With



numbers like those observed in southwestern Indiana, economic thresholds are quickly reached if not exceeded (thresholds for corn and wheat are in the last two issues

of the *Pest&Crop*). See the following table for suggested insecticides.

Armyworm Insecticides (Read and follow ALL label rate, application, and use directions)		
Crop	Product (Formulation)	Restrictions (days to harvest)
Corn	Ambush (EC)	30
	Asana XL	21
	Lannate (SP)	21
	Lorsban (4E)	35
	Malathion (EC)	5
	Pennacp-M	12
	Pounce (EC)	30
	Sevin (4F, 80S, XLR)	48
Soybean	Larvin (EC)	28
	Lorsban (4E)	28
	Sevin (4F, 80S, XLR)	14
	Warrior T	45
Wheat	Lannate (SP)	7 (10 for grazing/ feeding)
	Malathion (EC)	7
	Pennacp-M	15 (harvest or grazing)
	Sevin (4F, 80S, XLR)	21 grain harvest, 7 grazing forage
	Warrior T	30
Grass Pasture	Malathion (EC)	0
	Sevin (4F, 80S, XLR)	14 (harvest or grazing)
Alfalfa	Lannate (SP)	7 for grazing/ feeding
	Lorsban (4E)	14
	Malathion (EC)	0
	Sevin (4F, 80S, XLR)	7 (harvest or grazing)
	Warrior T	1 forage, 7 hay

• • P&C • •

More "Worm" Reports – (John Obermeyer) -

Armyworm: Curt Ross reports significant number of small armyworm feeding in seed corn in southern Jasper County. The field had a considerable amount of weedy residue after being burned down with herbicides. Larry Hight reports a wheat field being treated in the southern portion of Clay County.

Black Cutworm: Curt Ross, Melvin Nicholson, and Jeff Phillips report various levels of cutworm damage, with several west central Indiana fields being treated. Many of the fields had residue cover from burned-down winter annuals. Many of the fields are extremely dry which is going to make control a challenge.

Wireworm: Sporadic reports of wireworm-damaged fields have been received. Jeff Nagel has reported that one newer seed treatment labeled for wireworm did a good job of protecting the seed but not the seedling. The majority of damage reported is in pockets of fields.

ROOTworm: Fireflies flashing and heat unit projections told Larry Bledsoe to begin looking for rootworm hatch. Sure enough, on May 16, Larry found a first instar larva in the roots of corn taken from a field in Tippecanoe County. The last time hatch was this early was 1985. More on this major pest in future issues of the *Pest&Crop*.



Armyworm feeding on remaining stubble



Grass pasture denuded



Armyworm on blades of grass



Armyworm on leaf-less stem

Armyworm pictures by Jerry Nelson, Knox County Extension Educator

• • P&C • •

Black Light Trap Catch Report (Ron Blackwell)														
County/Cooperator	5/1/01 - 5/7/01							5/8/01 - 5/14/01						
	VC	BCW	ECB	GC	CEW	FAW	AW	VC	BCW	ECB	GC	CEW	FAW	AW
Clinton/Blackwell	1	2	0	0	0	0	0	0	0	3	0	0	0	1
Dubois/SIPAC	2	0	1	1	1	0	12	1	0	3	1	0	0	2
Jennings/SEPAC	0	0	3	0	0	0	8	1	0	7	0	0	0	1
LaPorte/Pinney Ag Center	10	5	0	0	1	0	97	1	0	0	0	0	0	6
Lawrence/Feldun Ag Center	2	0	4	0	0	0	20	0	0	1	0	0	0	1
Randolph/Davis Ag Center	5	5	2	0	0	0	70	0	3	5	0	0	0	12
Whitley/NEPAC	5	1	4	0	0	0	351							

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

Help Us Welcome Aboard a New Extension Weed Scientist – (Case Medlin and Tom Bauman) -

The weed science team at Purdue has increased its numbers by one. This week Glenn Nice started his 100% extension appointment in the Department of Botany and Plant Pathology. Glenn, Tom Bauman, and I will coordinate the weed science extension effort so that we can better serve you through our activities including; the *Pest&Crop* weekly newsletters, the Crop Diagnostic Training and Research Center, the Plant & Pest Diagnostic Lab, winter meetings, and responding to phone calls.

Glenn is a native of Winnipeg Canada where he received his BS in Biology from the University of Winnipeg in 1995. In 1996, Glenn started his MS in Weed Science at Mississippi State University (T.J., we're still out-numbered, but we're gainin on 'em!). During the next three years, Glenn evaluated various chemical and cultural weed control methods for use in soybean, corn, and cotton. Upon completion of his degree in 1999, Glenn accepted a Research Assistant position at the North Mississippi Research and Extension Center near Verona, MS. This new position allowed him to become more involved in the extension effort of the Mississippi State system. Tom and I expect great things from Glenn and gladly welcome him aboard.

• • P&C • •

What to Expect from Your Soil-Applied Herbicide Program – (Tom Bauman, Case Medlin, Mike White, and Glenn Nice) -

Who forgot to pay the water bill?!?! (It must have been Jordan. Who better to blame.) Until this week, much on Indiana has been without any measurable rainfall since the middle of April. Luckily northeastern and southern Indiana has been getting a few rains, but the rest of us are struggling.

Over the past week some people have asked, "What will the lack of rainfall do to weed control with my soil-applied herbicide program?" As you know, soil-applied herbicides need an activating rainfall to be effective. For shoot-absorbed herbicides, (Dual II, Degree, Harness, Outlook, Frontier, TopNotch, etc.), the herbicide must be in soil solution when weeds germinate. Since these products are not root absorbed, rainfall after weed emergence will not help to control emerged weeds, but will help prevent future weed flushes.

Root-absorbing herbicides (atrazine, Prowl, Treflan, Balance Pro, Canopy XL, Command, etc) also need to be in soil solution to be taken up by the weeds, but not necessarily at the time of weed germination. If activating rainfall (1) occurs soon after emergence, and (2) is enough to wash the herbicide into the root zone, these products can still provide effective control of emerged weeds and help control future weed flushes.

We anticipate that postemergence products will be used earlier than usual this year due to lack of rainfall. This coupled with windy conditions could result in many drift problems. You should be particularly careful with herbicides that contain 2,4-D, dicamba, or glyphosate, and do what you can to reduce drift and your liability. Your neighbors will appreciate it!

Agronomy Tips

Mother's Day Frost Causes Some Damage to Indiana Corn and Soybean - (Bob Nielsen) –

- Mother's Day frost damaged some corn and soybean
- Patience is a virtue when assessing extent of damage

Corn and soybean in parts of Indiana were damaged by frost in the wee hours of Mother's Day 2001. Air temperatures from most official weather reporting stations were in the 30's, but likely dropped into the 20's in lower lying areas, especially muck fields. As with any frost event, patience is a virtue when assessing the extent of damage to corn and soybean.

At young developmental stages, soybean is relatively more susceptible to above-ground frost damage than corn because of its exposed growing points whereas the growing point of corn remains below ground until the 5- to 6-leaf collar stage. Axillary buds exist at each leaf axil of a soybean plant, including the cotyledons. Recovery from frost damage can occur if any of these buds remain alive. Frost damage extending below the cotyledons translates to complete death of that seedling.

Little of the state's corn crop is yet to the 5- to 6-leaf collar stage of development, so the consequences of the frost damage should be minor and limited to death of above-ground plant parts. Corn can easily recover from this type of damage early in its development and suffer no yield loss whatsoever. The fly in the ointment will be any low lying fields where temperatures actually dropped to lethal levels (28°F or less). In this situation, even the below-ground growing point may have been exposed to damaging temperatures.

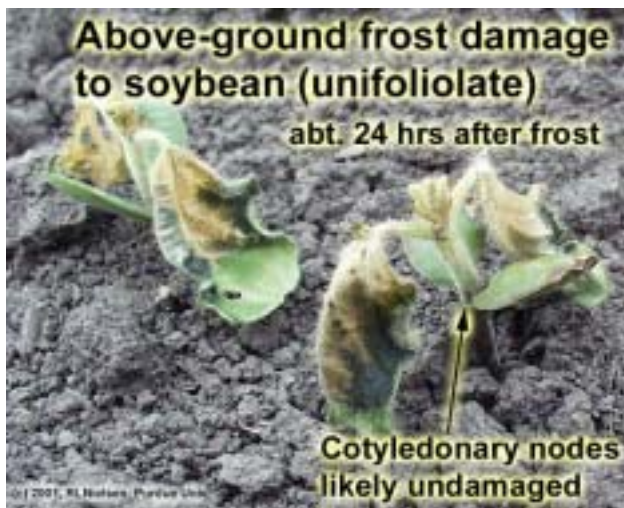
The key issue for assessing frost damage to either corn or soybean is the need to be patient and allow the plants to show you whether they are capable of recovering. The true extent of tissue damage may not be discernible a day or two after the frost event. The secret is to avoid looking at the damaged field(s) for three to five days. After that period of time, recovery of the surviving plants should be evident while those plants that are truly dead will not exhibit signs of recovery.

Signs of recovery in corn will be extension of fresh leaf material in the whorl. The dead tissue of the damaged part of the whorl may restrict this leaf extension for a while, but in most cases will not restrict it completely. Signs of recovery in soybean will be new leaves elongating from one or more of the axillary buds.

Frost Damage Symptoms on Corn



Frost Damage Symptoms on Soybeans



• • P&C • •

Growing Points of Interest - (Bob Nielsen) –

- Recovery from early season damage to corn is dependent on health of growing point region

There is something about the rumble of thunder, sheets of driving rain and a few hailstones that makes one curious about the ability of corn to recover from early season damage. When corn is damaged early in the growing season, growers are sometimes faced with the decision of whether or not to replant the field.

One of the most important, and most difficult, steps in making a replant decision is estimating the surviving plant population in the field. Corn is remarkably resilient to above-ground damage early in the season, yet growers often underestimate the recovery potential of a damaged corn field. As a result, much replanting is unnecessarily performed each year. Use my replant publication (AY-264) to estimate yield and dollar returns to corn replanting.

The health and condition of the corn plant's growing point region plays a major role in determining whether a damaged corn plant will recover or not. A damaged plant with a healthy, undamaged growing point (apical meristem) will survive. Damage to the growing point area will either kill the plant or severely stunt its recovery.

Corn's growing point is initially located 1/4 to 3/4 inch below the soil surface, near the crown. The growing point remains below ground until about V6. The stalk internodes begin to elongate shortly before growth stage V6, rapidly elevating the growing point above soil surface. From this point on, the growing point becomes increasingly vulnerable to above-ground damage.

Prior to V6, a plant is relatively immune to above-ground damage from 'single event' damage by frost, hail, cutworm, sandblasting, anhydrous ammonia burn, 28% N solution burn, and paraquat drift. However, repeated injury to young plants may stunt a plant's development severely enough to eventually kill the plant even though the growing point was technically not injured.

While corn younger than V6 can tolerate a fair degree of above-ground damage to leaf tissue by frost, lethal cold temperatures (32°F or less for several hours) can 'penetrate' the upper soil surface and damage or kill the growing point of a young corn plant. Corn younger than V6 is also susceptible to below-ground damage from soil insects, disease and flooding.

Damaged corn fields need to be left alone for several days after the damage occurs to give them some time to initiate recovery. Recovery from the whorl will appear within 3 to 10 days, depending on temperature and soil moisture. Warmer temperatures and adequate soil moisture encourage rapid recovery, while cooler temperatures and/or drought stress restrict the rate of recovery.

The stalk tissue near the growing point region should remain firm and yellowish-white. Injury occurring close to the growing point may alter normal hormonal activity and cause deformed regrowth. Given sufficient time, surviving corn plants should be showing new leaf tissue expanding from the whorls, while dead corn plants will still look dead.

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/chatchew.htm>>. 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

Temperature Accumulations from Jan. 1 to May 16, 2001

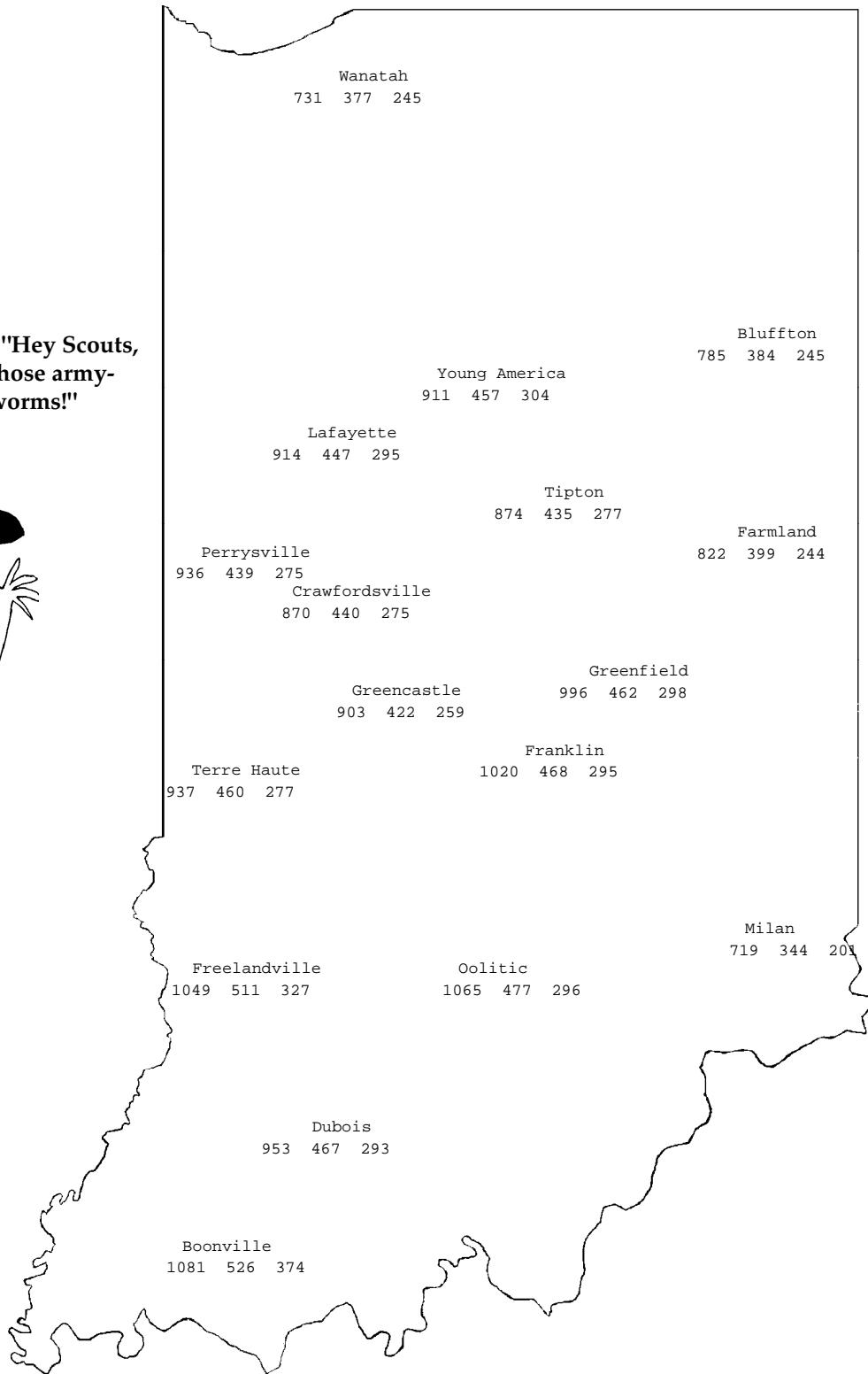
MAP KEY		
Location		
HU 41	GDD(3)	GDD(40)

HU41 = heat units at a 41°F base from Jan. 1, larval movement begins at approx. 1,400
 GDD(3) = Growing Degree Days from April 14 (3% of Indiana's corn planted), for corn growth and development)
 GDD(40) = Growing Degree Days from April 28 (40% of Indiana's corn planted), for corn growth and development)

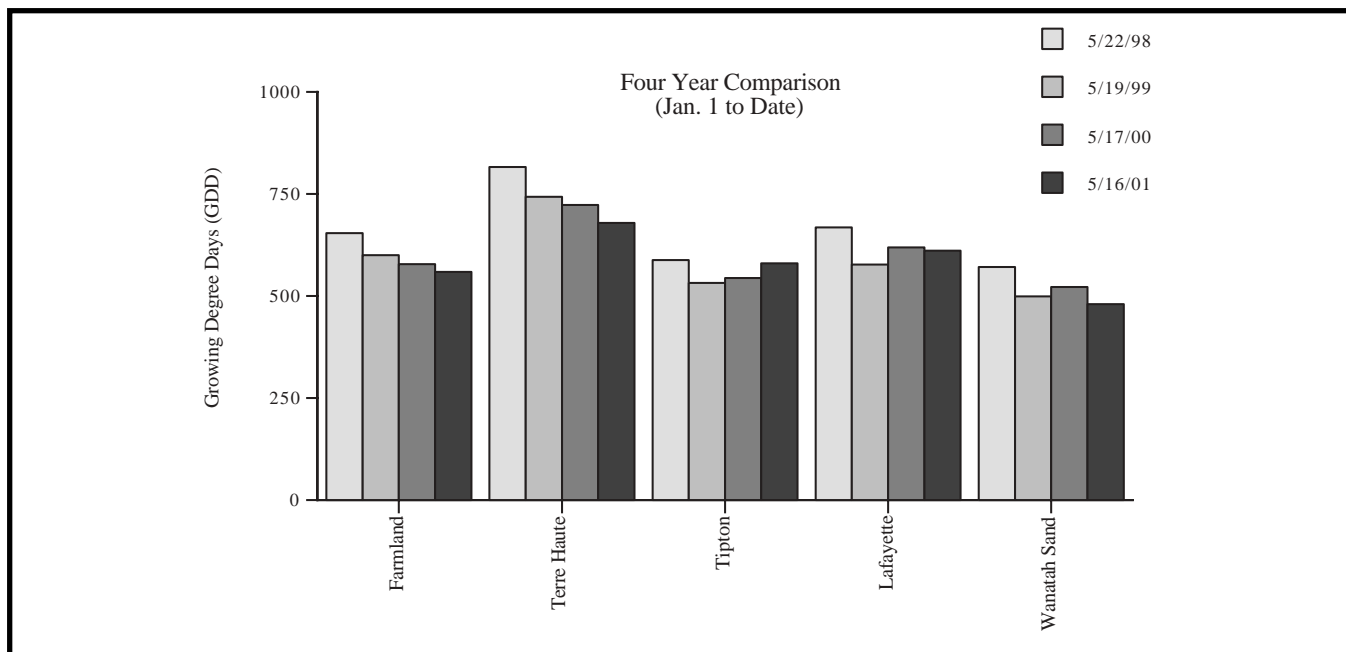
4" Bare Soil Temperatures 5/16/01

Location	Max.	Min.
Whitford Mills	70	58
Wanatah	76	57
Columbia City	71	55
Bluffton	61	61
W Laf Agro	77	54
Tipton	65	57
Farmland	701	56
Crawfordsville	71	58
Trafalgar	65	60
Terre Haute	80	66
Vincennes	77	72
Oolitic	69	63
Dubois	95	68

Bug Scout says, "Hey Scouts, be looking for those army-worms and cutworms!"



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



The *Pest Management and Crop Production Newsletter* is produced by the Departments of Agronomy, Botany and Plant Pathology, and Entomology at Purdue University. The Newsletter is published monthly February, March, October, and November. Weekly publication begins the first week of April and continues through mid-September. If there are questions or problems, contact the Extension Entomology Office at (765) 494-8761.

DISCLAIMER

Reference to products in this publication is not intended to be an endorsement to the exclusion of others which may have similar uses. Any person using products listed in this publication assumes full responsibility for their use in accordance with current directions of the manufacturer.