

Pest & Crop

June 9, 2000 - No. 12

In This Issue

Insects, Mites, and Nematodes

- Grape Colaspis Grubs Feeding

Plant Diseases

- Seed Decay And Seedling Blights Of Corn

Agronomy Tips

- Double Crop Soybean Following Wheat
- Once Uniform, Now Uneven

Bits & Pieces

- U.S. EPA Bans Most Home Use of Dursban Pesticide
- Forage Education Opportunities
- Weed Day Spotlights Weed Control Strategies, Products

Weather Update

- Temperature Accumulations

Insects, Mites, and Nematodes

Grape Colaspis Grubs Feeding - (John Obermeyer, Larry Bledsoe and Rich Edwards) –

- This occasional pest is making its presence known in several Indiana fields
- Grubs will soon be pupating, feeding to decrease
- Sun and warm temperatures should help damaged plants

Larvae of the grape colaspis have been reported causing damage to corn and soybean in Rush and Vermillion Counties in Indiana and in several areas of Illinois. The damage is extensive enough in some fields that replanting has occurred or is being considered.

These small white 1/8 long grubs feed on the roots of a variety of plants including grapes, strawberries, clovers, soybeans, corn, rice, and grasses, just to name a few. In the past in Indiana, most of the feeding activity has been noted on corn following a legume, such as clover. The last time we received significant calls concerning grape colaspis larval damage was in 1988. Please don't construe this to imply that this pest is an indicator of a drought!

There is only one generation of this insect each year in Indiana. The winter is passed in the larval stage. The larvae become active in early spring and are full grown by approximately mid June. They pupate in earthen cells in the soil and the adults begin emerging in late June or the first of July. After emerging, the 3/16 inch long pale brown elliptical beetles are attracted to the foliage of many types of plants to feed. Their host range includes grapes, strawberries, clovers, soybeans, corn, various grasses, beets, potatoes, melons, apples, okra, roses, dock, smartweed, and a host of other plants. Following mating, eggs are laid near the roots of host species. The larvae hatch during late summer and early fall.

The symptoms of damage usually include one or more of the following: yellowing or purpling of leaves, wilting, and/or plant death. Although root feeding is the primary damage, the grubs will also feed on the underground portions of the stem. Most seasons when grape colaspis damage is observed, many of the larvae will have already pupated or changed into adults. Other plant stresses and the large numbers of grape colaspis in some fields is showing damage earlier this year. The extended forecast of sunshine and warmth should help most plants grow out of the damage.



Existing plant populations should be carefully evaluated before replanting is considered at this date (refer to the previous two issues of the *Pest & Crop* for corn and soybean replanting decisions). Another replant consideration is that the larvae are completing their larval development and the amount of new damage is decreasing if not complete.



Soybean root damage

The University of Illinois have just reported on "Preliminary Results from Grape Colaspis Insecticide Efficacy Trial" in the June 2, 2000 issue of the *Pest Management & Crop Development* newsletter <<http://www.ag.uiuc.edu/cespubs/pest/articles/200010a.html>>. Their initial results are not exactly encouraging for satisfactory control of this pest with our present insecticides.



Grape colaspis grub

Plant Diseases

Seed Decay And Seedling Blights Of Corn – (Gail Ruhl, *Plant & Pest Diagnostic Lab*) –

The following article is a revised version of an article that was written by Dr. Laura Sweets, Agronomic Plant Pathologist, University of Missouri-Columbia.

Within the last two weeks, the Plant and Pest Diagnostic Lab has received several samples of corn exhibiting discolored, girdled, mesocotyl tissue. Some seed decay has also been observed. Seed decay and seedling blights of corn may occur in dry as well as wet areas of the field. The seed decay we have observed is primarily a rotting or deterioration of the seed after germination, during the early time period when the seedling is still strongly dependent on the seed for nourishment. Loss of the seed from seed rot as well as deterioration of the mesocotyl tissue from seedling blight, at such an early developmental stage appears to be causing severe stunting and/or death of corn seedlings. Bob Nielsen, Extension Corn Agronomist has noted that the risk of such damage to corn is greater whenever the corn is developing at a very slow pace such as was experienced throughout Indiana in late April and early May of 2000. Insect damage, fertilizer or herbicide injury, soil conditions and environmental factors may be contributing to an increase in the incidence and severity of seedling blights and resulting stand establishment problems.

Seed decay and seedling blights of corn are generally caused by soil-inhabiting fungi such as *Pythium*,

Fusarium, *Diplodia*, *Rhizoctonia* and *Penicillium*. These fungi usually rot the seed prior to germination. Affected seeds are usually discolored and soft and may be overgrown with fungi. Rotted seeds may be difficult to find because they decompose very rapidly and because soil adheres fairly tightly to the decomposing seed. Insect feeding on seeds has been observed on some of the samples diagnosed with post germination seed rot.

With pre-emergence seedling blights, the seed germinates but the seedlings are killed before they emerge from the soil. The coleoptile and primary roots are usually discolored and have a wet, rotted appearance. With post-emergence seedling blights, the seedlings emerge through the soil surface before developing symptoms. Seedlings tend to yellow, wilt and die. Discolored, sunken lesions are usually evident on the mesocotyl tissue. Eventually the mesocotyl becomes soft and water soaked. The root system is usually poorly developed, and roots are discolored, water soaked and eventually slough off. If the primary root system and mesocotyl are severely affected before the nodal or permanent root system has developed, the plants have little chance of surviving. Insect feeding (possibly grubs) has also been observed on the roots and of blighted corn seedlings.

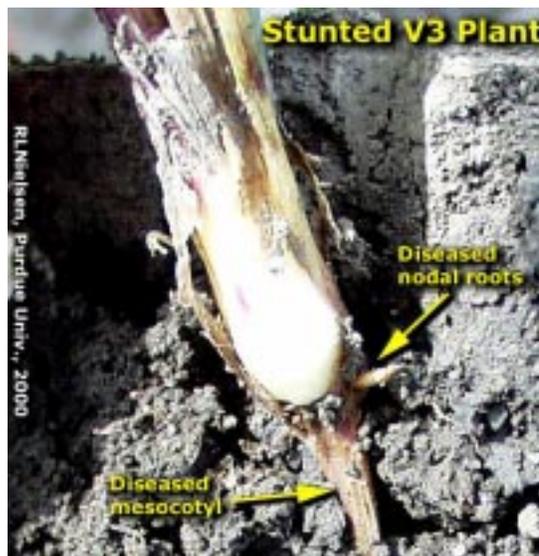
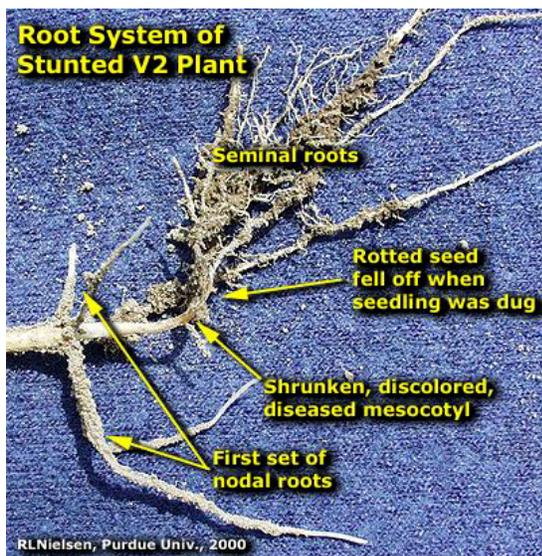
Corn seedling blights are usually more severe in wet soils in the low lying areas of a field or soils that have been compacted or remain wet for an extended period of time. Low soil temperatures (50-55°F) and wet soil conditions especially favor *Pythium* seed decay and seed-

ling blight. Disease severity is also affected by planting depth, soil type, seed quality, mechanical injury to seed, soil crusting, herbicide injury or other factors which delay germination and emergence of corn. This season, the primary fungal pathogen isolated from diseased mesocotyl tissue has been *Fusarium graminearum*, a common inhabitant in the soil in which the seed is planted.

Regardless of which pathogen or pathogens are involved, the best way to avoid corn seed decay and

seedling blights is to plant high quality seed (treated with a seed treatment fungicide) in a well-prepared seed bed, when soil temperatures are above 50°F.

For a photo gallery of seedling blights in west central Indiana corn fields go to the following URL: http://www.agry.purdue.edu/ext/corn/news/articles.00/Stand_Establ-0604-Gallery.html



Agronomy Tips

Double Crop Soybean Following Wheat – (Ellsworth P. Christmas) -

- The 2000 wheat harvest will be a little earlier than last year and about a week earlier than normal!
- Double crop soybean production **MAY** be possible North of the traditional double crop line in 2000

The 2000 wheat crop is developing at a rate slightly ahead of last year that will result in wheat harvest occurring about a week earlier than normal. The possibility of an early wheat harvest has raised a number of questions related to the geographic area of Indiana where double crop soybeans might be successful this year.

Before you jump into the double crop arena, you need to be able to answer several questions regarding the production of double crop soybean.

1. Do you have the capability of harvesting wheat at 20-22% moisture and drying it to a moisture of 12.5 to 13% for market? If you have that capability, then it will be possible to plant double crop soybean in 2000 from 10 to 12 days earlier than normal.

2. In addition to harvesting wheat at higher moisture level, the combine should be equipped with a good chopper and chaff spreader to distribute the residue evenly over the soil. If the straw is to be removed, harvest the wheat so that at least 8 inches of stubble is left after removal of the straw. This is very important to get the lower pods higher above the soil to prevent harvest loss.

3. Where is your farm located within the state? Using historical weather data and the assumption of an earlier wheat harvest this year of one week, the area of Indiana where double cropping of soybean following wheat could be attempted would be South and West of a line from Brookville northwest to Warsaw and then West to Wheatfield. This is based on a 25% probability or one in four years of a 32 degree or lower temperature. A commonly used rule of thumb for a cutoff date to stop planting soybeans is 90 days prior to the first 32 degree frost for a given area within the state. The magical date for the Bluffton area in northeastern Indiana is June 30, while in the Lafayette area it is July 5. Soybean planting should cease in most of the southern half of Indiana by July 10 except for the southwest corner where planting can occur up to July 15.

4. Do you have the proper equipment for planting double crop soybeans? To be successful with double cropping, it is essential to use a good no-till drill capable of cutting through the residue, placing the seed at the proper depth and closing the opening to give good seed to soil contact. Under no condition should tillage be used since this would result in the loss of precious soil moisture. A seeding rate of 225,000-250,000 seeds per acre is essential.
5. What maturity group is best for double crop soybean? I would recommend a variety with a maturity one-half group earlier than a full season variety in your area. For example, if a Group 3.5 is considered a full season soybean for your area, then use a variety with a maturity of 3.0.
6. Use a burn down herbicide to kill all green vegetation in the field at the time of planting along with a product to give control during the balance of the season.
7. If soil moisture is not adequate to germinate the soybean, do not plant.
8. Push your pencil real hard to determine the total costs that will be involved in the production of the double crop soybean. I would suggest that you use your county loan rate as target price, this will be in the vicinity of \$5.26 per bushel. If your cost figures require a yield that is not attainable, do not plant.
9. Remember, double crop soybean production at the northern edge of the double crop zone is very risky!!

• • P&C • •

Once Uniform, Now Uneven – (Bob Nielsen) -

- Fields that were initially uniform can turn ugly
- The causes are usually below ground
- Typically, more than one cause is involved
- Growing conditions greatly influence the situation

Around the state, some corn growers are lamenting the fact that fields of corn that had emerged uniformly and initially developed uniformly are now fields that contain plants of uneven color and size. What can cause this transformation?

Almost invariably the cause lies below ground. Early last month, I briefly reviewed the initial root development process in corn (*P&C Newsletter*, 12 May). In that article, I emphasized the importance of maintaining the health of the seed and the mesocotyl until the nodal root system was successfully established.

As the nodal roots develop, the importance of the seed reserves and the mesocotyl (the 'pipeline' to those reserves) declines. If a field of corn successfully develops to about the V4 (four visible leaf collars) stage with no damage to the mesocotyls or seed, chances are that the field will look very uniform. For all practical purposes, the time from planting to about V4 to V6 can be labeled the 'stand establishment' period for corn.

Without access to the seed reserves during stand establishment, a seedling will either die or become severely stunted. Consequently, a field that may have emerged uniformly and initially looked quite uniform may become very uneven in appearance if initial seedling development has been affected by one or more stresses.

What Stresses?

The list of potential stresses that can injure the seed, seed roots or mesocotyl is not particularly long, but deciding which ones to blame can be difficult since more than one is usually present in any given field. The list of possible offenders includes:

Seed rot fungi	Wireworms
Seedling blight fungi	Seedcorn maggots
Excessively wet soils (death by drowning)	Grubs of various types
Excessively dry soils (death by dessication)	Prying agronomists
Fertilizer 'burn'	

Other factors that influence the effects of these early stresses include cool soils in general, sandblasting injury, excessively dry conditions and ponding. All of these weather-related stresses slow or hinder the early growth of corn seedlings and make them more vulnerable to the above list of stresses. Similarly, while most herbicides that can injure corn do not do so to such young seedlings, later injury will subsequently hamper the recovery of an already struggling crop.

Seed quality and the hybrid's inherent seedling vigor also play an important role in determining the consequence of injury during stand establishment. Otherwise minor stresses during stand establishment can have major effects on overall plant health if seed quality is less than acceptable or if seedling vigor is simply average.

So, What Do You Do?

The bad news is that if stand establishment this year is crappy (an agronomic term meaning uneven), there is little you can do about it now. As you think about next year, there are a few things you can keep in mind to minimize the future risk of crappy stands.

- Create as little surface compaction as you possibly can prior to planting.
- Don't go hog-wild on earlier than normal planting. Recognize that seed fungicide treatments only provide 10 to 14 days of protection under "normal" conditions (*Illinois Pest & Crop Bulletin*, 15 May 1998).

Plant your best-vigor hybrids first. (Requires homework on your part)

- Plant your best quality seed lots first. (Requires homework on your part)
- Plant your best drained fields first.
- Consider planter-applied insecticide for protection against wireworm and seedcorn maggot if you are certain of their presence.

A Final Comment

Corn planting began very early in Indiana this year due to warm temperatures and little to no rainfall in late March and early April. Earlier than normal planting always comes with a greater risk of lengthy germination

and emergence periods. Indeed, many fields planted in early April did not emerge for three to four weeks as temperatures reverted to their fairly normally cool levels for much April and early May. Even fields planted in late April were slow in developing throughout much of May.

Any time that germination, emergence AND stand establishment are delayed significantly, the developing crop is similarly exposed to a lengthier period of stresses from the list above. The consequence of such stresses on a slowly developing crop is exactly the uneven stands of corn that some corn growers are lamenting about now.

(NOTE: A photo gallery of disease-related stand establishment problems from a recent field visit of mine can be viewed on the Web at http://www.kingcorn.org/news/articles.00/Stand_Establishment-0604-Gallery.html >.)

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/chatnchew.htm> . For other information about corn, take a look at the Corn Growers' Guidebook on the World Wide Web at <http://www.kingcorn.org/>



Bits & Pieces

U.S. EPA Bans Most Home Use of Dursban Pesticide - (June 8, 2000, *Reuters/AP*) -

WASHINGTON — The U.S. federal government was cited as banning today, as expected, most home uses of the pesticide Dursban—the most widely used pesticide in the nation due to health risks including blurred vision and memory loss. The Environmental Protection Agency

was cited as saying blurred vision, muscle weakness, headaches and memory loss have been linked to large amounts of exposure to Dursban, and that therefore its use in homes should be restricted.

The pesticide is used in 20 million U.S. households annually, and has been manufactured for more than 30 years by a unit of Dow Chemical Company. EPA Admin-

istrator Carol Browner was cited as saying that under an agreement signed late on Wednesday between the EPA and Dow Chemical, production of Dursban will end by the end of the year. Browner added the agency decided to work out such an agreement with the company instead of banning the product and ordering the immediate removal of Dursban from store shelves a legal and regulatory process which could have taken several years, stating, "In terms of how best to go about protecting our children, this was the fastest possible way for us to get the kind of reduction in the manufacturing (of Dursban). We are getting a 10 million pound reduction in the manufacturing of this pesticide by the end of this year."

Dursban, the most commonly known brand of the chemical chlorpyrifos, is used to kill insects that attack everything from home-grown tomatoes to commercial corn fields. It is also a powerful weapon against termites and cockroaches, and is used in pet collars to kill ticks. The story notes that Dow Chemical has defended Dursban, saying more than 3,600 scientific studies have proven it to be harmless when used as directed.

Environmental and consumer groups praised the EPA's plans to limit the use of Dursban and urged retailers to pull the pesticide. Todd Hettenbach, a pesticide analyst with the Environmental Working Group was quoted as saying, "Now it's time for retail chains like The Home Depot, Wal-Mart, Lowes and others to take Dursban products off store shelves."

• • P&C • •

Forage Education Opportunities - (Keith Johnson) -

Two educational opportunities regarding forage crop production and utilization will be occurring in the West Lafayette area this summer. The first, Purdue Forage Day, will be held on June 22 at the Purdue University Animal Sciences Education and Research Center located 10 miles northwest of West Lafayette. Registration begins at 8:30 a.m. EST. Educational topics covered in the morning will address issues related to forage use by beef cattle and dairy cattle, and forage production concerns. After lunch, 19 equipment companies will be demonstrating the latest technologies in hay making equipment. From 4-6p.m., educational tours will highlight forage use by sheep, water system development at the Scholer Animal Sciences Farm, and the dairy unit's facilities. A trade show and hay quality contest are part of the day's activities, too. Continuing Education Credits and Continuing Certification Hours have been approved for this event. For complete details, call (765)494-4783 or access web site www.agry.purdue.edu/ext/forages/.

The second educational event is a Forage Crops Diagnostic Clinic to be held August 22 at the Agronomy Research Center, West Lafayette. Details of the day are being finalized. The first opportunity to register for this space-limited session will be at the Purdue Forage Day. Individuals will be provided a hands-on education event that will emphasize improvement in forage production diagnostic skills. There will be a fee assessed for this program. Continuing Education Credits and Continuing Certification Hours will be requested. For additional information, contact (765)494-4783 or (765)494-4773.

• • P&C • •

Weed Day Spotlights Weed Control Strategies, Products - (Amy Raley, Ag Answers) -

To avoid producing a crop of weeds along with their corn and soybeans, producers will be learning the latest in weed control at Purdue's annual Weed Day, 8:30 a.m. to noon June 27 at Purdue's Agronomy Research Center.

According to Purdue Extension weed specialist Tom Bauman, the free event will showcase the latest weed-fighting strategies and products. "What we'll look at is weed control, crop injury and the economics of weed management systems," Bauman says.

About 40 acres of trial plots will feature comparisons of about 20 herbicide products. "This is a good place for comparing the standards of different products," says Purdue weed scientist Mike White. White added that several experimental corn herbicides and genetically enhanced crop varieties also will be on display.

Shuttle buses will run Weed Day visitors from the research center parking area to the trial plots and back. The event will go on rain or shine. The center is seven miles northwest of campus on U.S. 52.

Those interested in attending are asked to pre-register by calling Anita Eberle at (765) 494-9871.

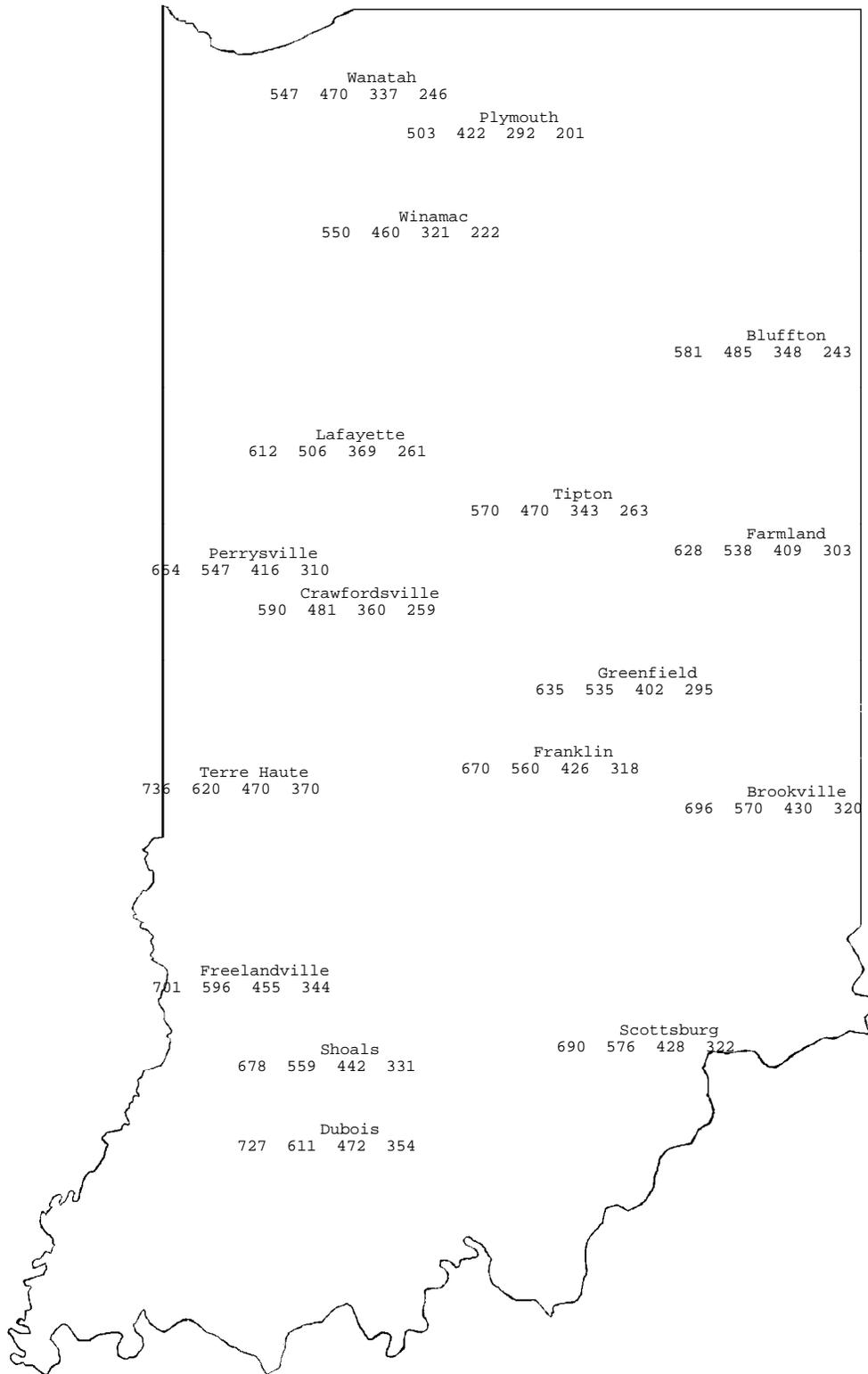
Weather Update

Temperature Accumulations from Jan. 1 to June 7, 2000

MAP KEY			
Location			
GDD(5)	GDD(35)	GDD(66)	GDD(86)

4" Bare Soil Temperatures 6/7/00

GDD(5) = Growing Degree Days from April 15 (5% of Indiana's corn planted), for corn growth and development
 GDD(35) = Growing Degree Days from April 30 (35% of Indiana's corn planted), for corn growth and development
 GDD(66) = Growing Degree Days from May 8 (66% of Indiana's corn planted), for corn growth and development
 GDD(86) = Growing Degree Days from May 15 (86% of Indiana's corn planted), for corn growth and development

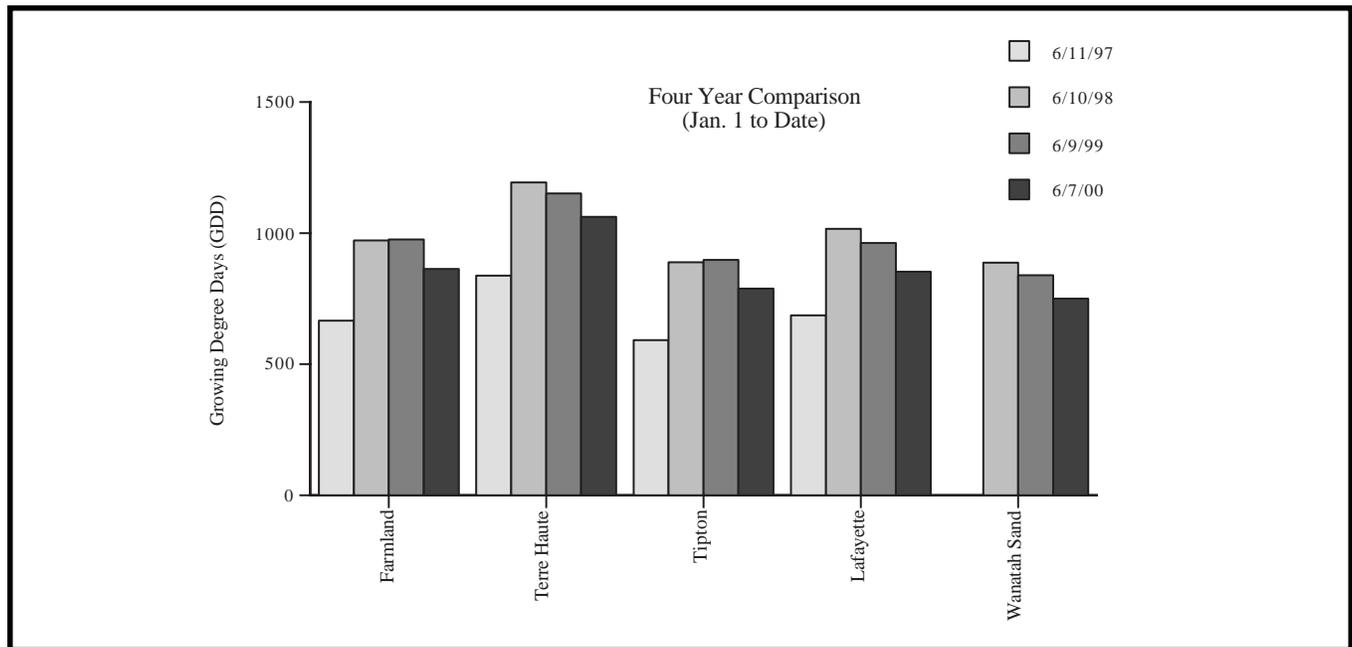


Location	Max.	Min.
Wtfd Mills	64	58
Wanatah	69	57
Columbia City	66	50
Winamac	73	55
Kentland	74	57
Bluffton	57	56
W Laf Agro	69	53
Tipton	68	53
Farmland	60	54
Perrysville	71	62
Crawfordsville	69	62
Liberty	78	54
Trafalgar	78	56
Terre Haute	73	62
Oolitic	75	65
Vincennes	79	58
Dubois	79	55

Pest Management and Crop Production Newsletter

Extension Entomology Office
Department of Entomology
Purdue University
1158 Smith Hall
West Lafayette, IN 47907-1158

<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.