

Pest & Crop

April 14, 2000 - No. 4

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Insects, Mites, and Nematodes

What About Seed Attacking Insects? - (John Obermeyer, Rich Edwards, and Larry Bledsoe)

- Early planting and slow germination increases seed damage from insects
- High residue and cool, wet field conditions may warrant the use of seed protectants
- Seed protectants most often only protect the seed, not the roots
- Don't use both a seed treatment containing an insecticide and a soil insecticide at planting

Most of our attention to soil insects is given to corn rootworm, but what about those other critters? Wireworms, grubs, maggots and seedcorn beetles occasionally damage seed and seedlings. According to the Indiana Agricultural Statistics Service, this year approximately 1% of the corn was planted before April 7. Since then we've had cool and damp weather, causing seed or sprouted seed to sit there for some time. Obviously, the longer that germination is delayed, the greater the chance for insect damage to occur. How about the seed that will be planted during the next window of opportunity, should it receive a soil insecticide or seed treatment to protect from these occasional pests?

Planting in fields with less than adequate drainage, in set-aside acreage (such as CRP land), or fields with high crop residue or where high rates of manure have been applied, the use of a seed protectant may be a good investment against seed attacking insects. This is true if a soil insecticide will not be used. Seed protection will be critical if our cool weather pattern continues and soil temperatures remain at less than ideal levels for rapid seed germination and plant growth.

Planter box seed treatments, such as Kernel Guard Supreme and KickStart VP are registered for both corn and soybean. The insecticide permethrin, same active ingredient in the foliar insecticides Ambush and Pounce, in these seed treatments should provide adequate control of seed maggots and beetles. In limited trials, these products have shown some protection from wireworms.

Planter box seed treatments with an insecticide are a low-cost alternative to the application of a soil insecticide for the control of seedcorn maggot, seedcorn beetles, and low levels of wireworms. The longer germination is delayed, the greater the chance that these pests may damage the seed. Because seed treatments do not protect



the plant once it sprouts, there is *no control* of white grubs, cutworms, rootworms, or high populations of wireworms. Where rootworm soil insecticides are applied at planting, the use of a seed treatment is not necessary.

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Calibrate Granular Insecticide Boxes Before Planting - (Rich Edwards, John Obermeyer, and Larry Bledsoe) -

- As you service and ready your planter for planting this spring, properly calibrate your insecticide boxes
- Be sure to calibrate each unit

Hopefully all producers have their planting equipment fine-tuned and ready for planting this spring. Just as it is important to have your planter units in good working order, your granular insecticide boxes should be cleaned, worn or broken parts replaced, and properly calibrated. The importance of this has been brought to light while working with several producers on research trials in northwestern Indiana. For the past several years we've calibrated producer's granular applicators before planting. Every year the applicator settings change, even when using the same product. Occasionally we find serious mechanical failures with boxes, causing significant misapplication.

Remember, each granular unit should be calibrated separately. Use calibration tubes and instructions supplied by the manufacturer or dealer for the insecticide of choice. To calibrate: 1) measuring off a distance of 500 feet along which the planter will travel at planting speed during the calibration process or operating the seeder units while the planter is in a stationary position that allows one to simulate traveling 500 feet at planting speed, 2) set each application unit at some beginning

setting (planter manual and/or insecticide label may help in this regard), 3) attach an insecticide collection device to each unit, 4) catch and weigh the insecticide that is metered out of each application unit over the prescribed distance using a weight scale or premarked volume cups, and 5) compare the amount of product caught for each unit with the amount that should be delivered over the prescribed distance.

If you are using a 15% granular insecticide (Lorsban 15G) at the rate of 1.2 ounces active ingredient per 1000 feet of row, your unit will be properly calibrated when you can consistently catch 4 ounces of the formulated granules per application unit over the 500 feet regardless of row width. For a 20% granular material (Counter CR) at the same rate, you will need to catch 3 ounces of the formulated product for each unit over the 500 feet. For Aztec 2.1G, applied at the rate of 0.14 ounces active ingredient per 1000 feet of row, you will need to catch 3.35 ounces of the formulated product for each unit over 500 feet. For Force 3G, which is applied at the rate of 0.12 ounces active ingredient per 1000 feet of row, you will need to catch 2 ounces of the formulated product per 500 feet. If using Fortress 5G, which is applied at the rate of 0.15 ounces active ingredient per 1000 feet of row, you will need to catch 1.5 ounces of the formulated product per 500 feet. For Regent 4 SC, see the manufacturer's label for calibration information.

When calibrating, don't forget to operate the planter at planting speed. Once you determine the correct setting for each unit, check each unit one more time to make sure that you are getting a fairly consistent reading. Also, record the setting somewhere on the insecticide box (but remember that you will still need to recalibrate next year even if using the same product). We can't stress enough the importance of proper calibration. Happy planting!

Black Cutworm Adult Pheromone Trap Report
Week 1 = 3/30/00 - 4/5/00 Week 2 = 4/6/00 - 4/12/00
(Ron Blackwell)

County	Cooperator	BCW Trapped		County	Cooperator	BCW Trapped	
		Wk 1	Wk 2			Wk 1	Wk 2
Adams	Roe/Price Ag Services	1	0	Lake	Lake/Kliene (1)	7	0
Benton	Manning/Jasper Co. Extension	2	0	Lake	Lake/Kliene (2)	1	1
Bartholomew	Ludwig/Growers Service	0	2	Marshall	Huys/Pioneer	5	0
Clay	Kramer/PK Agronomics (1)	1	10	Porter	Mueller/Land O' Lakes	0	0
Clay	Kramer/PK Agronomics (2)	3	1	Putnam	Nicholson Consulting	0	2
Clay	Smith/Growers Coop (Bzl)	0	5	Randolph	Jackson/Davis-Purdue Ag Center (N)	4	2
Clay	Smith/Growers Coop (CC)	0	0	Randolph	Jackson/Davis-Purdue Ag Center (S)	1	1
Clay	Smith/Growers Coop (BG)	5	1	Rush	Peggs/Pioneer	3	3
Clinton	Blackwell/Purdue	8	9	Sullivan	Smith/Growers Coop (W)	0	0
Decatur	Miers/Pioneer	7	6	Sullivan	Smith/Growers Coop (E)	0	0
Elkhart	Kauffman/Crop Tech (1)	0	0	Sullivan	Smith/Growers Coop (NL)	0	1
Elkhart	Kauffman/Crop Tech (2)	1	0	Sullivan	Smith/Growers Coop (Crle)	0	0
Fayette	Schelle	0	6	Tippecanoe	Obermeyer/Purdue	4	2
Gibson	Hirsch Farms	1	8	Tipton	Johnson/Pioneer	2	0
Gibson	Shupe/Gibson Co. Coop (1B)	0	17*	Tipton	Sybouts/Top Ag (DP)	11*	1
Gibson	Shupe/Gibson Co. Coop (2H)	0	13	Tipton	Sybouts/Top Ag (E)	0	15*
Grant	Sybouts/Top Ag	6	0	Vigo	Smith/Growers Coop	0	0
Hamilton	Mroczkiewicz/Novartis	5	5	Washington	Ballard/Floyd Co. Extension	0	6
Henry	Henry/Schelle	0	13*	White	Reynolds/Orville Redenbacher 1K	0	0
Jasper	Manning/Jasper Co. Extension	2	0	White	Reynolds/Orville Redenbacher 2P	0	0
Johnson	Truster/Ag Excel Inc.	5	15	Whitley	Walker/NEPAC	2	0

* = Intensive Capture.... An intensive capture occurs when 9 or more moths are caught over a 2-night period.

Weeds

Herbicide Rate Correction – (*Case Medlin and Tom Bauman*) -

In the first newsletter article concerning new herbicides we stated that Axiom AT had a use rate range of 9 to 16 oz/ acre. The correct rate range is 1.5 to 3.5 lb/ acre. Sorry for that mistake.

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Getting Off To A Good Start - (*Thomas N. Jordan*) –

- Making the most of your herbicide program
- Stressing good agronomic practices

Production input cost is a primary concern to Indiana producers this year. One of their main concerns is the price of weed control. Going after the cheapest products, while a good idea, works only if they are right for the weeds that are present in a field. There is no substitute for knowing the weed spectrum for each field and matching the herbicides for those weeds. There are few if any truly cheap herbicides left on the market. If only one species of weed escapes the herbicide program in populations high enough to cause economic problems to the crop, additional applications will be needed. This could cause the overall cost of the herbicide program to increase by 50 to 100%.

If the field is to be no-tilled, then the burndown program must be complete. This can only be accomplished if the right burndown products are used at the correct rates and when the temperature is favorable for good kill. Changing the rates of one of the mixture components may be needed. If there is a large number of broadleaf weeds such as marehail, fleabane, prickly lettuce, etc., additional 2,4-D might be needed; if a large number of grass species are present, then a little more Roundup or Touchdown will help. If the weeds can be controlled with Gramoxone, maybe an additional half pint will help achieve complete burndown. Adding a little more product to the burndown is cheaper than having escapes or regrowth which may take an additional late application of a product at the full labeled rate. Likewise, making the application a few days later when the temperature is warmer will cause the herbicides to work better. The other option is to add a residual herbicide to the burndown spray. In corn, adding a product which contains atrazine in the burndown tank mix can improve the control of many of the hard-to-control weeds in no-tilled fields. There are many residual soybean herbicides that can be mixed with burndown treatments to boost the performance of the herbicides and provide a clean seedbed to start the crop off right.

A healthy uniform crop stand can do wonders toward competing with weeds, especially late emerging weeds. Getting the crop off to a good start will make any herbicide program work better and will best allow less than maximum rates of postemergence herbicides to perform. A healthy and uniform crop stand will also come closer to eliminating the need for an additional postemergence herbicide application to control late emerging weeds.

Listed below are 10 tips that I feel will help make a successful weed control program, and at the same time keep the cost of the program at a minimum.

1. Review last year's herbicide program. If there is a potential for carryover, don't use herbicides with similar modes of action as those used last year. The same is true for herbicide resistance. Rotating crops is not enough to prevent resistant weeds from emerging; one should also rotate herbicide modes of action.
2. Compare herbicide products as to their effectiveness on the weeds that are in a given field, and buy the products or program of products that is most economical for controlling those weeds.
3. Don't cheat on the burndown herbicide program. Use full rates of Roundup, Touchdown, 2,4-D, or paraquat to achieve a complete control of existing weeds. Dandelions and marehail can be controlled with more 2,4-D and less Roundup or Touchdown in the mixture. Grasses will need more Roundup or Touchdown and less 2,4-D.
4. Don't spray burndown herbicides too early. When the temperatures are in the 50's, these products do not work as well as they do when the temperature is in the 70's or higher. Likewise, don't spray postemergence herbicides when there has been a prolonged dry period and the temperatures is in the high 90's. Usually this causes excessive crop damage and is not very effective at controlling weeds.
5. Use good agronomic practices to get a healthy well established uniform crop stand. The good start and early crop competition will reduce the need for rescue treatments and the overall cost of herbicides by shading out late emerging weeds.
6. Control weeds that emerge after the crop earlier than usual. This will allow for the use of less than maximum label rates of herbicides and reduce yield loss from early season weed competition, a critical time during crop development. Also, leave the weeds that come in after mid season unless they are ex-

tremely heavy and large. These weeds seldom cause yield losses.

7. Use the correct spray additives with burndown and postemergence herbicides. Use only those that are recommended on the product label. Many products will perform equally well, thus buy the cheapest ones. Use AMS with Roundup and other herbicide products that call for this additive on their label, especially when using hard water or water high in iron content. The new glyphosate (the active ingredient in Roundup) containing herbicides vary in their pre-packaged surfactant loads and therefore may require different additives at various rates.
8. When using less than the labeled rates of postemergence herbicides, spray earlier than normal to achieve good weed control. Be prepared to make a second application 10 to 14 days later if the reduced rates were not totally effective.
9. With highly mobile herbicides such as Roundup, Select, Poast or other grass specific products, reduce the spray volume to improve the performance of the herbicide. With Basagran, Blazer, Cobra, Reflex or other contact sprays, use the higher labeled recommended volume for best results.
10. Calibrate the spray equipment and use the proper nozzles to achieve the best coverage and reduce drift. Periodically check to ensure that the sprayer is still calibrated throughout the spraying season. The majority of sprayers over apply by 10 to 30% due to poor calibration and worn tips.

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Phone, Mail, World Wide Web Sales of Herbicide Products – (Thomas T. Bauman and Case Medlin) -

- Watch out for Tele-Marketing of herbicides!

We're receiving reports of herbicide products being sold to farmers over the phone. Typically, these products are marketed by out-of-state companies touting wild claims, but carrying a hefty price; particularly when you consider that the product itself contains a very low dosage of the active ingredient. Names of products recently being reported include "Triple Threat" a premix of three phenoxy herbicides and "Turf King", a nonselective herbicide containing 3.73% promaton (Pramitol).

The Indiana State Chemist offered these tips when you are contacted about suspect telephone sales of herbicides:

- Purchase products only from local dealers with an established business location. Avoid dealing with vendors whose only address is a post office box.
- Be sure to examine the herbicide label to determine that it is suitable for the intended use. Most local dealers have a supply of specimen labels for the herbicides they sell. Demand that the solicitor provide the EPA Registration Number of the product and an advance copy of the label before agreeing to accept shipment of the product.
- Herbicides sold through the mail or over the telephone are often unregistered and therefore not saleable in Indiana.
- Telephone solicitors often misrepresent the products they sell, either recommending them for inappropriate uses or exaggerating the length of their residual activity.
- Avoid vendors who claim they can provide a product "just like" one of the best-selling herbicides for 1/3 to 1/2 the price of the best-seller. There is no free lunch! If a deal sounds too good to be true, it probably is!
- Remember that when ordering by mail, E-mail or telephone, whether ordering pot holders, computer equipment, or herbicides, the best way to pay for a purchase is by credit card. Under the fair credit billing statutes, you have the right to withhold payment for products that are unsatisfactory or misrepresented. Most credit card companies are quite willing to assist consumers in resolving such disputes with vendors.

There are some good deals but remember buyers beware. Also products purchased this way even when as advertised may not be serviced by local dealers and chemical company personnel.



Plant Diseases

Continuous Soybeans: A Plant Pathologist's Perspective - (Gregory Shaner) -

- Growing soybeans after soybeans can create disease problems

In issue no. 2 of *Pest & Crop*, Ellsworth Christmas wrote about the advisability (or inadvisability) of growing soybeans after soybeans. In that article he mentioned that this practice could increase problems with soybean cyst nematode, this year and in the future. I would like to elaborate on this point and discuss the implications of continuous soybean cropping for several diseases.

Soilborne microorganisms cause most of the major soybean diseases in Indiana. These pathogens reside in soil and infect roots or lower stems of soybeans. During years that soybeans are not grown in a field, these pathogens are generally not able to multiply. They have several means of surviving during the "off" years. Many of them produce special structures that remain dormant in soil and withstand the various physical and biological vicissitudes of that environment. Examples are the cysts produced by the soybean cyst nematode, oospores produced by *Phytophthora sojae* (the Phytophthora root rot fungus), sclerotia produced by *Sclerotinia sclerotiorum* (the cause of white mold), and chlamydospores produced by *Fusarium solani* f. sp. *glycines* (the cause of sudden death syndrome). These structures may be embedded in soybean residue or exist freely in the soil.

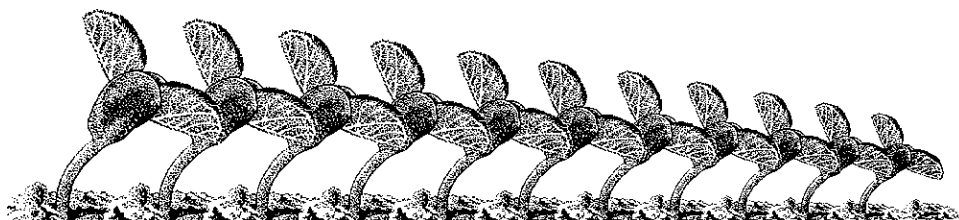
The population of a pathogen will decline when no host plants are available to infect. Rates of decline have not been carefully documented for most of these soybean pathogens, and the rate would be influenced by many variables (weather, soil type, tillage, chemical use, and intervening crop) so it is difficult to generalize. It is known that many of these soilborne pathogens of soybean can survive for several years in the absence of a soybean crop. For all practical purposes, once a pathogen is in a field where soybeans are grown, it can never be eliminated as long as soybeans continue to be grown there, even if the rotation sequence is long.

An important management strategy for these pathogens is to detect them early and then keep their numbers

at low, tolerable levels. This brings me back to the subject of growing soybeans after soybeans. Once one of these soybean pathogens is in a field, it will build up during the season when soybeans are grown. In the course of infecting and causing disease, the pathogen multiplies, often exponentially. If a grower comes back into the field with soybeans the following year, the pathogen population will increase further, perhaps to a destructive level that will take years to bring back down.

Crop rotation is a proven method of disease management for several of these soybean diseases. A corn-soybean rotation may be too short, allowing pathogens to slowly build up with each successive year of soybeans, but it is probably better than continuous soybeans. In a long term tillage-rotation experiment at the Purdue Agronomy Research Center at Lafayette, Scott Abney could only document an increase in the soybean cyst nematode in the continuous soybean plots, and not in the corn-soybean or corn-soybean-wheat rotation plots. This past year, Dr. Abney found that the sudden death syndrome pathogen population was much lower in the corn-soybean-wheat rotation plots compared to continuous soybeans or the corn-soybean rotation. With 2 years between successive soybean crops, Abney found that the soybean root systems were much larger and that general plant health was better compared to plots where soybeans were grown every year or every other year.

The kind, density, and distribution of soybean pathogens in soil vary greatly from field to field in Indiana. If a field has had no history of disease (Phytophthora rot, brown stem rot, sudden death syndrome, soybean cyst nematode, etc.), then growing soybeans for a second year may not have serious consequences from the disease perspective. However, if there has been a history of any of these problems, even though they have not been regarded as severe, a second year of soybeans could allow a population explosion of the pathogen. What had been only a moderate problem in the past could become a serious problem. The problem could persist for many years in the future, even if production shifted back to a corn-soybean rotation.



Agronomy Tips

Gird Thyself for Battle! - (Bob Nielsen) –

- Stand establishment and early season growth are critical for crop success
- Early season problems require early and accurate diagnoses
- Herein lies some tips, advice and references for crop diagnostics

Rain, in varying amounts, around the state has temporarily dampened the early planting fever that had been spreading like wildfire in recent weeks. Some of the regular patrons have even returned to the Chat 'n Chew Café to dispense their opinions and fearmongering about the pending 2000 crop season. One fellow was heard to remark that "Every hybrid's maximum yield potential exists while it is still in the seed bag. After we plant it, that potential is at risk from every insect, disease, soil and weather problem that comes along."

There is no question that initial stand establishment and early season growth of the crop are very important in protecting that maximum yield potential. Problems can begin with the planting process itself (see *P&C Newsletter*, 3 March 2000 for reminder about planter maintenance). As a wise mentor of mine once said, "The sins of planting will haunt you all season!"

Various problems can also occur during the germination, emergence and seedling establishment periods that result in uneven or failed stands of corn or soybean. Diagnosing the causes of such problems can be difficult because 1) the symptoms often do not point to a specific cause, 2) problems often develop as a result of an interaction between two or more causes, 3) the severity of the problem is often greatly influenced by weather conditions and 4) folks often wait too long to make the diagnosis. The consequence of the latter factor is that crop diagnostic evidence can disappear very quickly, making an accurate diagnosis difficult to accomplish. Here are some tips to help you become well-prepared for making timely and accurate crop problem diagnoses.

Do your homework!

It's probably been a long time since your parents admonished you to do that. Most of us, though, need to annually "bone up" on crop problems that can occur.

One of the best references for refreshing your crop problem diagnostic skills is Purdue's IPM-1, *Field Crops Pest Management Manual*. This impressive manual "...contains descriptions, scouting procedures, and management guidelines (many new or updated) for insect, weed, disease, nematode, and vertebrate pests of corn, soy-

beans, alfalfa, grain sorghum, and small grains. Problem diagnostic guides for each crop, as well as keys to the identification of insect and weed pests are included." The manual sells for \$80 and an order form can be downloaded from the Web at http://www.entm.purdue.edu/Entomology/ext/targets/HN/HN-13/IPM_1ad.pdf.

A number of other useful online references are available from Purdue and other neighboring landgrant universities. I have collected links to some of these and have posted them on one of my corny Web pages at <http://www.kingcorn.org/cgg6.htm>. These references cover the gamut from insects to diseases to weeds to growth and development.

Walk your fields!

Up at the counter at the Chat 'n Chew, Roy brags that he's been using remote sensing to scout his fields. Everyone knows that all Roy does is drive up and down the country roads at 20 miles per hour looking out the windshield at his fields. Until true remote sensing becomes practical, timely and affordable, the best advice that I can give for early detection of crop problems is to get off your duff and walk your fields as early and as often as you can.

Early detection is of little use unless it is coupled with accurate crop problem diagnosis of the cause(s). Completing your previously mentioned homework will better equip you to make such diagnoses yourself. Sometimes, though, you simply need to call in the "hired guns" to help out.

Qualified agronomic experts include your local county Extension educator, agronomists from your local fertilizer/chemical/seed supplier(s), regional sales agronomists, regional tech. reps., independent crop consultants and your friendly neighborhood university Extension specialists. A list of the latter experts was published in the first issue of the 2000 Purdue Pest & Crop Newsletter (online at <http://www.entm.purdue.edu/Entomology/ext/targets/p&c/P&C2000/P&C1.2000.pdf>). In addition, the Purdue Plant & Pest Diagnostic Lab. offers identification or diagnosis of plant and pest problems for samples submitted to the lab. Peggy Sellers is the director of the PPDL and can be reached at 765-494-7071.

Stay in touch!

Knowledge of what is going on or developing outside of your particular universe (farm) can help you avoid being caught off-guard by some agronomic prob-

lem. Obviously, the proverbial coffeshop discussions give you some insight into what others are experiencing. A number of agricultural input suppliers publish frequent newsletters for their customers and represent useful sources of timely information.

Other useful sources of timely information are the weekly or bi-weekly newsletters that are published by Purdue and other landgrant universities. Don't hesitate to read articles from our colleagues in neighboring states. Often the problems or issues they are writing about reflect what we are also experiencing or will soon experience.

If you have access to the Web, then bookmark my Chat 'n Chew Café site at <http://www.kingcorn.org/chatchew.htm> . At that site, I compile and publish links to those newsletters and other sources of timely agonomic information so that you do not have to "surf" the Web yourself. Other online sources of timely information are listed at our Agronomy Extension site at the URL <http://www.agry.purdue.edu/ext/timely.htm> .

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/index.html> .

Bits & Pieces

2000 DATES/LOCATIONS CONTAINER RECYCLING PROJECT

DATE	LOCATION	SITE CONTACT	SITE COORDINATOR
Aug. 1	NE SWMD Office ST. Rd. 4 E. of Ashley, IN	Pam Decamp 219-587-3063	Pam Decamp 219-587-3063
Aug. 2	Agriliance(Wilfarm) 1952 W. Market St. Nappanee, IN	Gary Hunter Dale Stevenson 219-773-7781	Dale Stevenson 219-773-7781
Aug. 3	Marshall Co. Fairgrounds 1 mi. E. Of US 31 On St. Rd. 10 Argos, IN	Ralph Booker 219-935-8545	Jr. Sutton 219-542-4030
Aug. 4	Liberty Landfill East of town on 119 Buffalo, IN	Terry Beasy 219-278-7139	Jim Hunt 219-583-8238
Aug. 8	Oak Ridge RDF CR 150 E. South of Logansport off Hwy 35 Logansport, IN	Mark Johnson Becky King 219-722-5771	Rod Erny
Aug. 9	Waste Mgmt. Systems C'ville Transfer Station 513 Bluff St. Crawfordsville, IN	Sue Dickerson 765-362-8394	
Aug. 10	Clay County Fairgrounds St. Rd. 59 South of U.S. 40 Brazil, IN	Janet Reed 812-443-0168	
Aug. 14	Davies Co. Landfill CR 650 E. North of Montgomery, IN	Lee Spalding 812-486-3774	Greg Traylor

**2000 DATES/LOCATIONS
CONTAINER RECYCLING PROJECT (Cont.)**

DATE	LOCATION	SITE CONTACT	SITE COORDINATOR
Aug. 15	Dubois Co. SWMD Recycling Facility 1103 S. 350 W. (Old Jasper Landfill) Jasper, IN	Tommy Thompson 812-481-7040	
Aug. 16	Perry Co. SWMD Branchville Site Old Hwy 37 & CR 40 Branchville, IN	Karen Stonewall 812-547-9787	
Aug. 17	Vanderburg Co. 4H Center West of US 41 Boonville/New Harmony Rd. Evansville, IN	Eddie Deutch 812-867-6217 Joe Ballard 812-436-7800	Brian Titzer 812-867-2463
Aug. 22	Laughery Valley Co-op 6490 N. US 421 Osgood, IN	Chris Linville 812-852-2080	Chris Linville 812-852-2080
Aug. 23	Lawrence Co. 4H Fairgrounds 1/2 mi W. of US 50 and St. Rd. 37 on US 50 Bedford, IN	Dave Redmond 812-275-4623	
Aug. 24	Bartholomew Co. Recycling 720 S. Mapleton St. Columbus, IN	John Hendricks 812-376-2614	
Aug. 29	Wabash Co. Fairgrounds Gillen Ave/W of St. Rd. 13 Wabash, IN	Vince Harrell 219-563-0661 Steve Johnson 219-563-7649	
Aug. 30	Cargill Inc. Aylesworth Elevator St. Rd. 8 @ 250 West Hebron, IN	Carlton Ebert 219-996-2500	Carlton Ebert 219-996-2500
Aug. 31	Benton Co. Fairgrounds St. Rd. 352 & US 41 Boswell, IN	Cedric Durkes 765-884-0140	Tom Thurston 765-884-1300
Sep. 5	Randolph Co. Fairgrounds 2.5 mi S. of Winchester on US 27 Winchester, IN	Dan Kirtley 765-584-2271	
Sep. 6	Blackford Co. Fairgrounds 310 E. Park Ave. E. of St. Rd. 3 Hartford City, IN	Carter Leonard 765-768-6748	

Weather Update

Temperature Accumulations from Jan. 1 to April 12, 2000

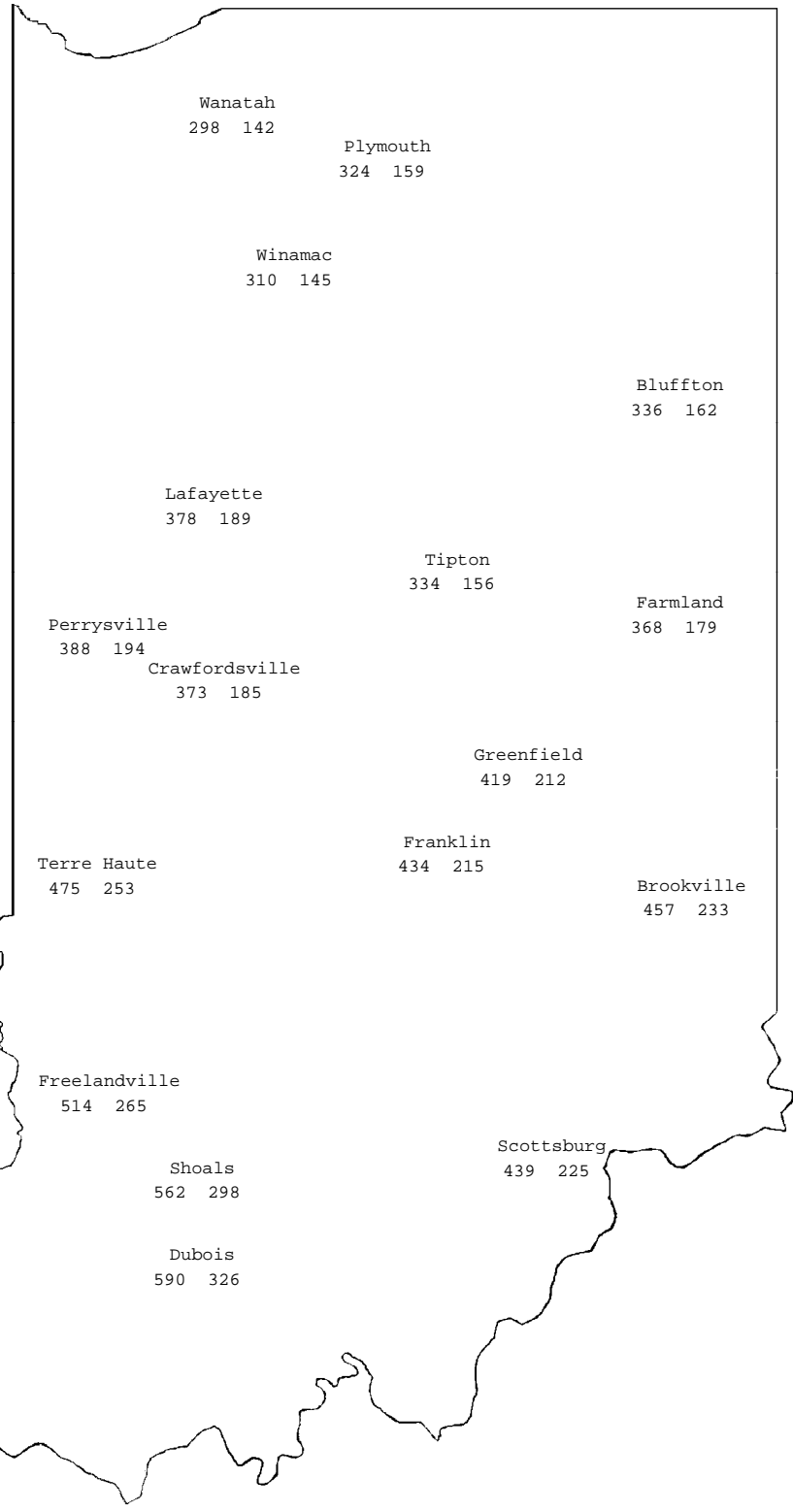
MAP KEY	
Location	
HU41	HU48

HU41 = heat units at a 41°F base from Jan. 1, egg hatch begins by 600

HU48 = heat units at a 48°F base from Jan. 1, for alfalfa weevil development (begin scouting at 200)

4" Bare Soil Temperatures 4/13/00

Location	Max.	Min.
Wanatah	57	43
Winamac	55	40
Bluffton	41	40
W Laf Agro	55	36
Tipton	53	37
Farmland	47	39
Perrysville	55	46
Crawfordsville	51	45
Liberty	53	40
Trafalgar	55	42
Oolitic	52	50
Dubois	65	38



Bug Scout says: "Hey southern Indiana, keep scouting that alfalfa for weevil damage!"

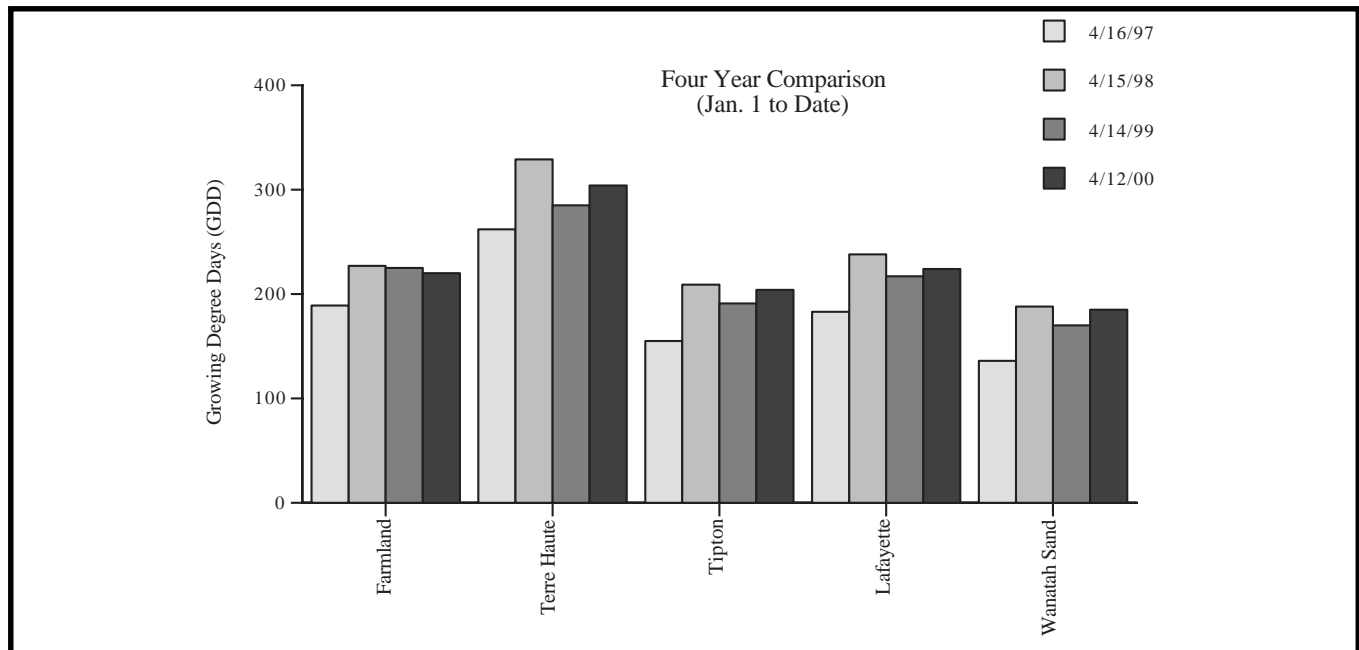


Pest Management and Crop Production Newsletter

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West Lafayette, IN 47907-1158

First Class
Presort Mail
U.S. Postage
Paid
Lafayette, IN
Permit No. 221

<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.