Pest&Crop

April 7, 2000 - No. 3

In This Issue

Insects, Mites, and Nematodes

Last Minute Insecticide Decisions for First-Year Corn – (*John Obermeyer, Rich Edwards, and Larry Bledsoe*) –

- Rootworm damage in first-year corn is most likely in NW counties
- Many factors contribute to unsatisfactory rootworm control
- Environmental extremes and soil compaction are more harmful to corn than to rootworms

We are still receiving questions from producers on whether or not they should use a soil insecticide on their first-year corn this season. Obviously, one does not want to spend the 15 to 17 dollars per acre for the insecticide if it won't pay. In hindsight, many producers wished they had scouted their soybeans last August for the presence/absence of western corn rootworm beetles. This effort certainly would have increased one's knowledge of fields at risk for larval damage to this year's corn. Perhaps the following will help in last minute insecticide decisions.

Area of state. As outlined in past issues of the *Pest&Crop*, the northwestern counties of Indiana have the greatest risk to first-year corn damage. There we saw consistently high concentrations of western corn rootworm beetles in soybean. However, random soybean sweeps last August revealed dramatic variability in beetle numbers, not only from county to county but also field to field throughout northern Indiana. Once again, the best way to assess risk for your farm, area, etc. is to sample individual fields when the western corn rootworm beetles are active.

Insecticide performance. A variety of factors affect insecticide efficacy when applied to the soil. The most obvious, yet overlooked, problem is improper calibration of granular applicators on the planter. Simply put, all boxes should be calibrated every year. April corn planting stretches insecticide efficacy when rootworms are hatching in early June. Rootworm insecticides do not kill eggs, only hatched larvae! Soil moisture, temperature, microbes, and sunlight etc., begin the natural breakdown of insecticides immediately after application.

Wet soils. Tillage and planting in wet soils causes compaction. Compacted soils restrict corn root growth, which may inhibit moisture and nutrient uptake throughout the growing season. Compaction typically concentrates roots into narrow zones, if rootworms hatch within these areas, the larval damage can be devastating to the plant. Damage is further compounded should it get hot and dry (see the following paragraph). Excessive rain after planting may leach insecticides out of the root zone. Though insecticides differ in their solubility, none are immune to failure due to high moisture levels.

Dry soils. Is it going to be a drought year? Some prognosticators think so. Rootworm feeding that may not be economic during a "normal" growing season could be serious in a drought year. Rootworm feeding during drought, combined with compacted soils, just may be the last nail in the plant's coffin. Insecticides need some moisture to difuse the active ingredient from granular carriers through the soil around the root zone where rootworms feed.

So when is a rootworm insecticide most likely to pay? The correct answer is when rootworm observations in last year's soybean suggest the risk is high. Other possible, but less accurate, answers are: 1) if you farm in northerm Indiana and/or 2) if you compact wet soils and the weather later becomes dry. The wrong answer is if you plant and apply insecticide extremely early, especially it it is a wet spring.

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As Usual, Black Cutworm Moths Are Here - (*John Obermeyer, Rich Edwards, and Larry Bledsoe*)

- Black cutworm moths are beginning their annual arrival
- Moths arriving mid to late April pose the greatest threat to corn
- Scouting fields and treating when necessary makes more sense than the planting-time application of insecticides

Black cutworm moths have started to arrive in the state, see "Black Cutworm Adult Pheromone Trap Report." These data will continue to be collected by our cooperators and will be made available on a weekly basis during the early growing season. Black cutworm do not overwinter here, instead they are carried on wind currents sweeping into the Midwest from south Texas and northern Mexico.

Arrival of moths in March and early April is expected and means nothing to corn still in the bag. Moth flights of mid to late April are the ones to watch. Significant captures during this period, along with the use of heat units to predict the beginning of larval activity, gives us an indication of the potential severity of the problem and locations of concern. Thus, we are able to predict with some degree of accuracy when and where crop damage is likely to occur. Watch for future *Pest&Crop* articles concerning this pest.

Black Cutworm Adult Pheromone Trap Report
Week 1 = 3/23/00 - 3/29/00 Week 2 = 3/30/00 - 4/5/00
(Ron Blackwell)

County	Cooperator	BCW Trapped		County	Cooperator	BCW Trapped	
		Wk 1	Wk 2			Wk 1	Wk 2
Adams	Roe/Price Ag Services	3	1	Johnson	Truster/Ag Excel Inc.	2	5
Benton	Manning/Jasper Co. Extension	0	0	Lake	Lake/Kliene 1	0	7
Bartholomew	Ludwig/Growers Service	2	0	Lake	Lake/Kliene 2	0	1
Clay	Kramer/PK Agronomics (1)	6	1	Marshall	Huys/Pioneer	0	5
Clay	Kramer/PK Agronomics (2)	2	3	Porter	Mueller/Land O' Lakes	1	0
Clay	Smith/Growers Coop (Bzl)	2	0	Putnam	Nicholson Consulting	1	0
Clay	Smith/Growers Coop (CC)	1	0	Randolph	Jackson/Davis-Purdue Ag Center (N)	2	4
Clay	Smith/Growers Coop (BG)	2	5	Randolph	Jackson/Davis-Purdue Ag Center (S)	2	1
Clinton	Blackwell/Purdue	5	8	Rush	Peggs/Pioneer	5	3
Decatur	Miers/Pioneer	14*	7	Sullivan	Smith/Growers Coop (W)	8	0
Elkhart	Kauffman/Crop Tech (1)	3	0	Sullivan	Smith/Growers Coop (E)	4	0
Elkhart	Kauffman/Crop Tech (2)	3	1	Sullivan	Smith/Growers Coop (NL)	11	0
Fayette	Schelle	8	0	Sullivan	Smith/Growers Coop (Crle)	0	0
Gibson	Hirsch Farms	13*	1	Tippecanoe	Obermeyer/Purdue	7	4
Gibson	Shupe/Gibson Co. Coop (1)	12*	0	Tipton	Johnson/Pioneer	2	2
Gibson	Shupe/Gibson Co. Coop (2)	14	0	Tipton	Sybouts/Top Ag	0	11*
Grant	Sybouts/Top Ag	0	6	Vigo	Smith/Growers Coop	3	0
Green	Oester/Pioneer	0	0	White	Reynolds/Orville Redenbacher (1K)	0	0
Hamilton	Mroczkiewicz/Novartis	4	5	White	Reynolds/Orville Redenbacher (2P)	0	0
Henry	Henry/Schelle	2	0	Whitley	Walker/NEPAC	0	2
Jasper	Manning/Jasper Co. Extension	0	2				

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

Should one treat for black cutworm before or at planting? The tried, true, and **economic** approach to black cutworm management is to scout fields, determine infestation and damage levels, and use a rescue treatment if needed. Scouting, treatment thresholds, and control information will be provided in future *Pest&Crop* newsletters. (See page 4 for Black Cutworm Adult Pheromone Trap Locations.)

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Alfalfa Weevil Damage in Southern Indiana - (*John Obermeyer, Rich Edwards, and Larry Bledsoe*) -

- Alfalfa weevil damage observed in southern Indiana
- Scouting techniques are given
- Use damage and heat unit accumulation information when making management decisions

Surveys of southern Indiana alfalfa fields this past week (see "Alfalfa Weevil Larval Survey") reveal that alfalfa weevil feeding has begun with some significant damage. The number of plants with tip feeding reached as high as 60% (range 28 to 60%) with up to 2.7 weevil larvae per stem (range 0.7 to 2.7). Alfalfa in these fields ranged from 9.2 to 10.8 inches in height.

Field scouting for alfalfa weevil damage should begin when approximately 250 heat units, base 48°F, have accumulated from January 1 (see "Weather Update"). Sampling a field to determine the extent of alfalfa weevil damage is best accomplished by walking through the field in an "M-shaped pattern." Five alfalfa stems should be examined in each of 5 areas of the field, for a total of 25 stems from the entire field. Each stem should be examined for 1) tip feeding by alfalfa weevil larvae, 2) presence of healthy larvae, and 3) maturity of the stem, i.e., pre-bud, budding and/or flowering. The average size (length) of weevil larvae should also be considered. Large alfalfa weevil larvae are relatively easy to find. Small larvae are difficult to see. Thus, very close examination of leaves may be required to detect "pin-hole" feeding and small larvae.

By utilizing heat unit accumulation data to determine when sampling should begin and when a management action should be taken, producers can obtain the greatest economic return. If the application of an insecticide is required early in the weevil season, producers have the option of using a material that has good residual activity. Later in the season, short residual insecticides should be used and producers should pay close attention to harvest restrictions.

The management guidelines listed below have proven to be very effective in determining when alfalfa weevils should be controlled in southern Indiana. The times for sampling and the need for and timing of controls are based on accumulated heat units (HU) at a base temperature of 48°F and percentage tip feeding. Watch for HU information in each week's *Pest&Crop* "Weather Update." This HU information will help one determine when management steps should be taken.

Alfalfa Weevil Management Guidelines, 2000
Southern Indiana

Heat units	% Tip feeding	Advisory*
200-250		Begin sampling.
300	25	Re-evaluate in 7-10 days using the appropriate HU or treat immediately with a residual insecticide if 3 or more larvae are noted per stem and % tip feeding is above 50%.
400	50	Treat immediately with a residual insecticide.
500	75	Treat immediately.
600	75+	If cutting delayed more than 5 days, treat immediately.
750		If harvested or harvesting shortly, return to the field in 4 -5 days after cutting and spray if 1) there is no regrowth and weevil larvae are present OR 2) feeding damage is apparent on 50% of the stubble and weevil larvae are present.

*As the season progresses, watch for diseased larvae (color progresses from yellow, to brown, to black).

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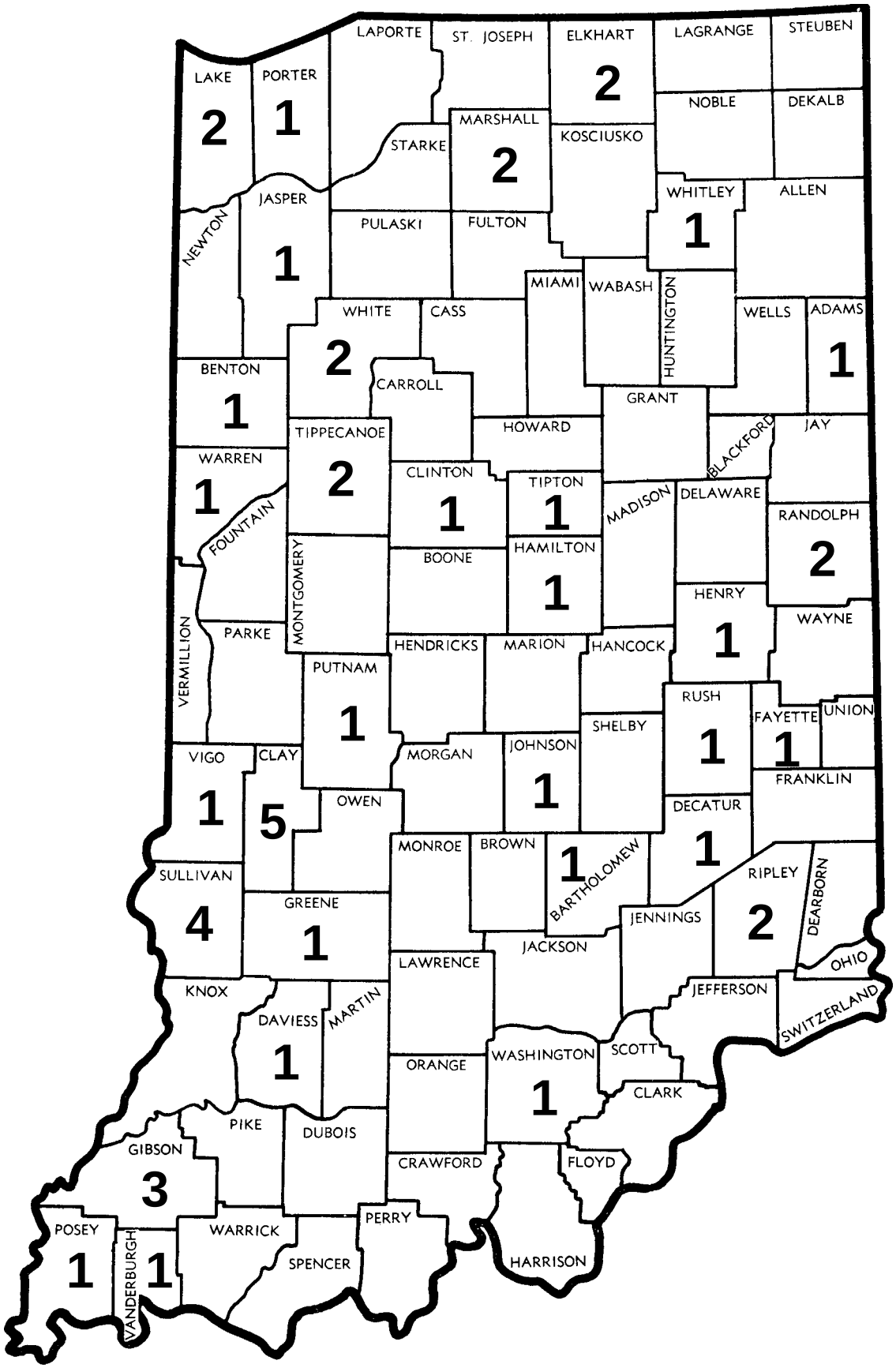
Alfalfa Weevil Larval Survey - 3/29/00
(Ron Blackwell)

Fields Sampled	Stem Ht. (in.)	Predominant Larval Instar	Total # Larvae*	% Tip Feeding
Dubois 1	9.3	2nd	50	56%
Dubois 2	10.5	3rd	36	36%
Dubois 3	9.3	3rd	17	28%
Dubois 4	9.2	4th	23	36%
Dubois 5	10.8	3rd	68	60%
Dubois 6	10.4	3rd	41	36%

*Number per 25 stems, extracted by Berlese funnel.

2000 Black Cutworm Pheromone Trap Locations (#/County)



Agronomy Tips

Corn Planting Fever! - (*Bob Nielsen*) -

- Early April plantings of corn are susceptible to many problems
- Use common sense

Corn Planting Fever! No, it's not the name of my favorite 70's disco song. Rather, it simply reflects a fact of life that warm, dry, sunny days in early spring bring on daffodils, crabapple blossoms, dandelions and corn planters. While I do not begrudge those who want to begin planting corn in early April, I feel compelled nonetheless to at least remind them of some of the risks of early corn planting.

An important fact of corn life to remember is that germination and emergence will not occur rapidly or uniformly when soil temperatures are hovering at or below the 50°F mark. In Indiana, soils typically do not warm to temperatures consistently above 50°F until mid-April (south) to early May (north). In fact, bare soil temperatures as I write this article are averaging less than 50°F in central and northern Indiana (see figures on page 6). Consequently, it is not uncommon for early April planted corn to emerge three to four weeks after planting.

Early April planted corn will typically yield 4 to 6 percent less than that planted in late April or very early May (see table below). Slowly developing seedlings are more susceptible to damage by soil diseases and insects. Slow, uneven germination and emergence results in uneven stand establishment. If uneven emergence or damage by insects or diseases occur, yield losses can easily increase to as high as 20 percent.

Stand establishment may be so poor as to warrant replanting, which results in greater expense to the producer and possibly less yield than if the field were planted in late April or early May to begin with. By the way, if you have planted prior to April 6 and subsequently need to replant a failed field, don't count on your crop insurance helping with the replant expenses (personal communication w/ George Patrick, Purdue Ag. Econ.). Check with your insurance agent for details.

The point of this discussion is to simply caution corn growers that there is plenty of calendar time within which to plant the 2000 crop before the proverbial end of the prime planting window in early May. If you are bound and determined to plant corn at the first opportunity, then consider the following tips:

- Begin planting with the hybrids in your lineup that are rated best for seedling vigor and/or whose cold germination ratings are the greatest.
- Use one of several available pesticide planter-box seed treatments to hedge against a lengthy period of exposure to soil diseases and insects.
- Avoid early planting in no-till fields with heavy levels of surface trash, because temperatures will be even cooler in those seed beds than in more bare fields.
- Do not plant extra shallow hoping to capitalize on warmer temperatures nearer the surface. A seeding depth of 1 to 1? inches remains a viable target even with early plantings. Shallower depths are more susceptible to the effects of soil drying, bird and rodent feeding, and uneven planter depth control.
- Apply starter fertilizer in a 2-by-2 placement at rates of nitrogen no less than 20 lbs of actual N per acre.

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/

Expected Grain Yield Due to Various Planting Dates and Final Plant Populations

Planting date	Plant population (final) per acre													
	10,000	12,000	14,000	16,000	18,000	20,000	22,000	24,000	26,000	28,000	30,000	32,000	34,000	36,000
	Percent of optimum yield													
10-Apr	62	68	73	78	82	85	88	91	92	93	94	94	93	91
15-Apr	65	71	76	81	85	88	91	94	95	96	97	96	96	94
20-Apr	67	73	78	83	87	90	93	96	97	98	99	98	98	96
25-Apr	68	74	79	84	88	92	94	97	98	99	100	100	99	97
30-Apr	68	74	79	84	88	92	95	97	99	100	100	100	99	97
5-May	67	73	79	83	87	91	94	96	98	99	99	99	98	97
10-May	65	71	77	82	86	89	92	94	96	97	97	97	96	95
15-May	63	69	74	79	83	87	89	92	93	94	95	95	94	92
20-May	59	65	71	75	80	83	86	88	90	91	91	91	90	89
25-May	55	61	66	71	75	79	81	84	85	86	87	87	86	84
30-May	49	55	61	66	70	73	76	78	80	81	81	81	80	79

Source: Nafziger, 1994, J. Prod. Ag 7:59-62

Note: The highlighted area represents the optimum ranges (98 to100% yield) of plant populations and planting dates for productivity levels greater than about 125 bushels per acre. Optimum plant populations for soils with historical yields less than about 100 bushels per acre will likely not respond to final plant populations greater than about 24,000 plants per acre. (RLNielsen, Purdue Agronomy)

Fig. 1

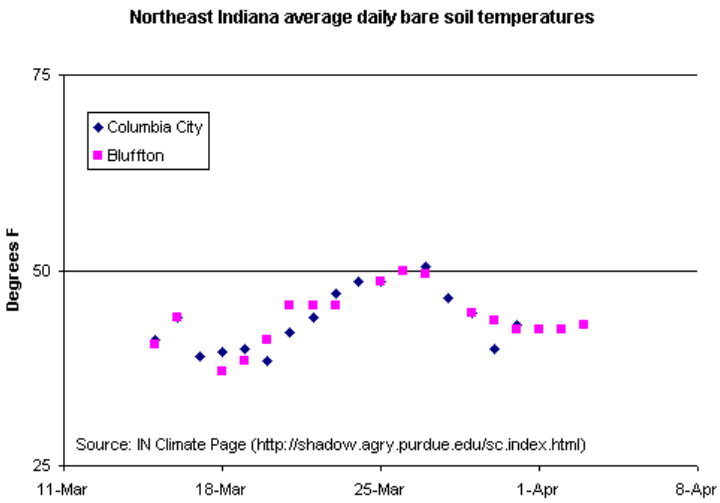


Fig. 2

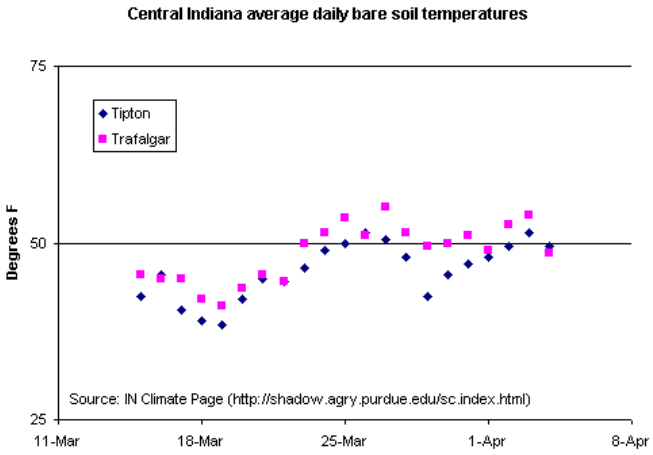
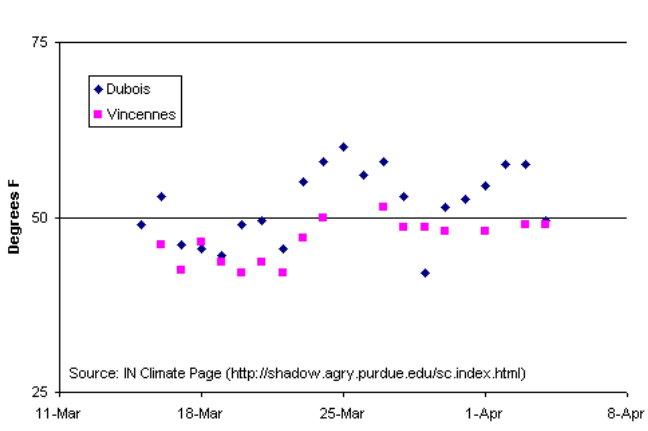


Fig. 3



Weather Update

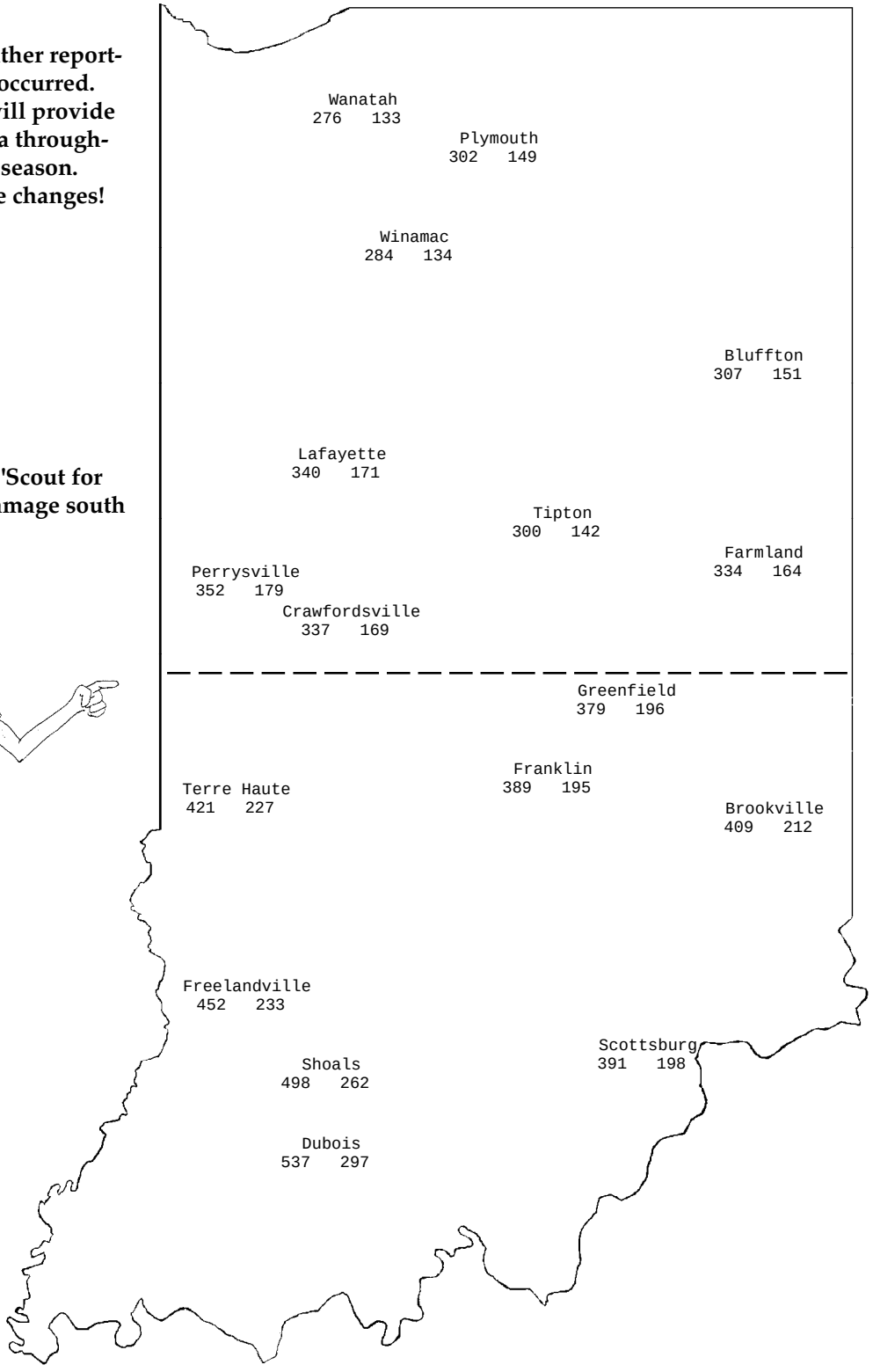
Temperature Accumulations from Jan. 1 to April 5, 2000

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)

NOTE:
A change of weather reporting stations has occurred. These stations will provide you accurate data throughout the growing season. Please note these changes!

Bug Scout says, "Scout for alfalfa weevil damage south of here!"



4" Bare Soil Temperatures 4/5/00

Location	Max.	Min.
Waterford Mills	43	40
Wanatah	49	45
Winamac	47	36
W Laf Agro	47	38
Tipton	47	38
Farmland	45	37
Perrysville	52	46
Crawfordsville	50	45
Liberty	49	39
Terre Haute	52	46
Oolitic	50	49
Vincennes	48	41
Dubois	54	36

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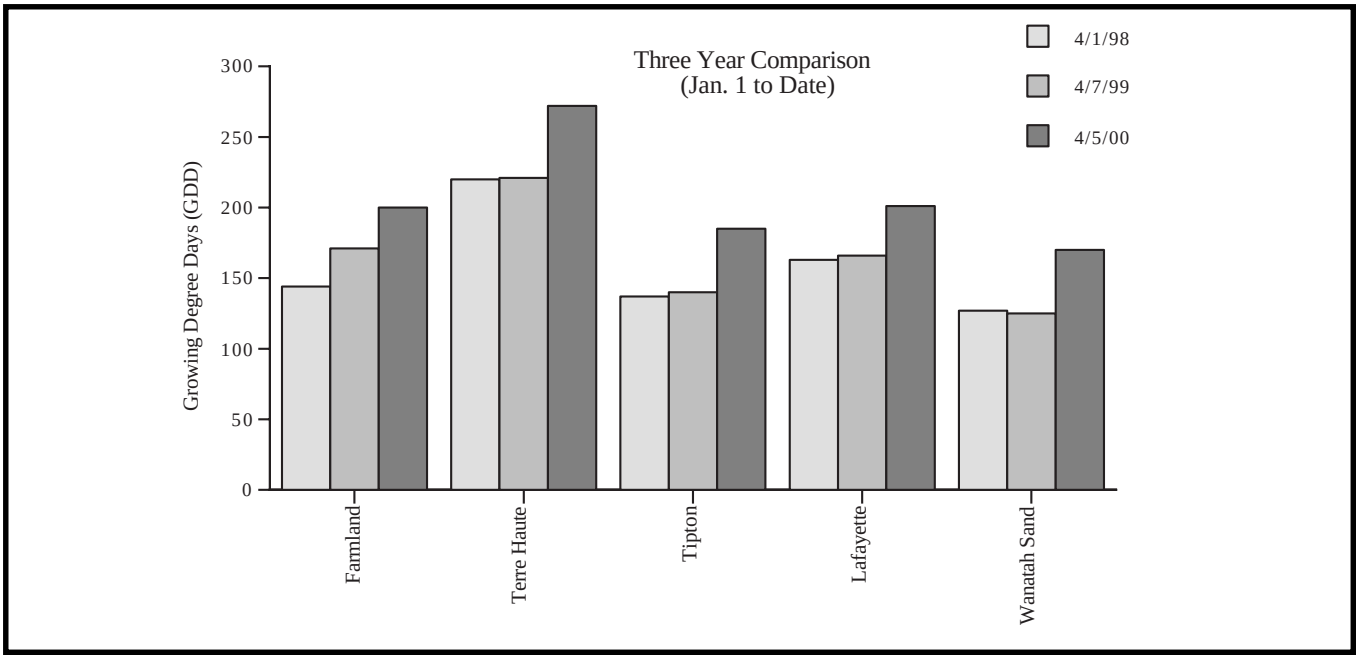

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