Pest & Crop

April 13, 2001 - No. 4

In This Issue

Insects, Mites, and Nematodes

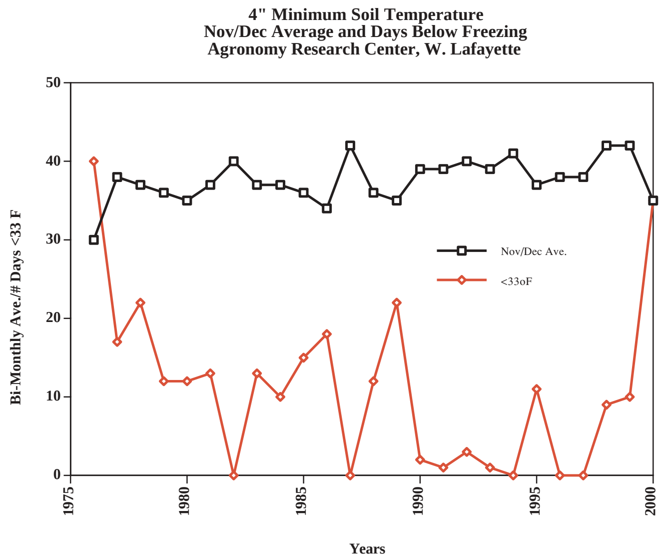
Grubs, a Secondary Pest? - (*John Obermeyer, Rich Edwards, and Larry Bledsoe*) -

- Grubs may be seen during field preparations
- Winter temperatures may have killed "whimpy" grubs
- Early corn planting and cool soils increase likelihood of grub damage
- Identification of the grub species is important
- No rescue treatments are available for economic populations

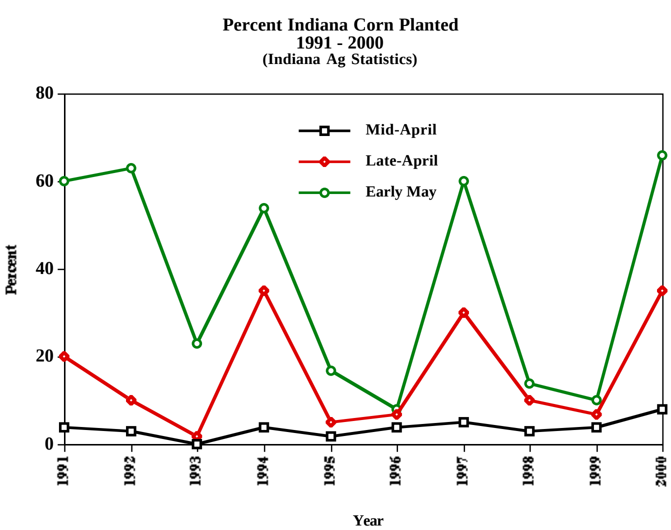
The crew went grub "hunting" a few days ago to inspect a field for possible inclusion as one of our insecticide trials for 2001. The soil has very high levels of organic matter (up to 60%) and has a history of Japanese beetle activity and subsequent grub damage the following season. In our random digs, we found anywhere from 0 to 7 grubs, most with 2. A majority were Japanese beetle grubs. With higher than normal grub calls and complaints the last few years, one certainly begins to look for the "smoking gun" on why this is happening. The most common explanations are warm winter temperatures, earlier planting, and reduced tillage, along with an adequate supply of adults the previous year.

Grubs overwinter as partially developed larvae about 4 to 6 inches deep in the soil. Little is known or understood about their ability to withstand extremes in soil temperature, moisture, and freezing/thawing action through the winter months. Up until this winter, we have had some extremely mild temperatures during our "cold" months, refer to the enclosed graph "4 Inch Minimum Soil Temperature, Nov/Dec Average and Days Below Freezing." One must go back to 1976 for soil temperatures lower than what we experienced this winter. Not all overwintering grubs have frozen, however. Yet, field observations from the past several years indicate that mild winters favor grub survival. If the December 2000 freeze snuffed out a significant portion of the "weak" grubs, then pressure on 2001 crops should be reduced.

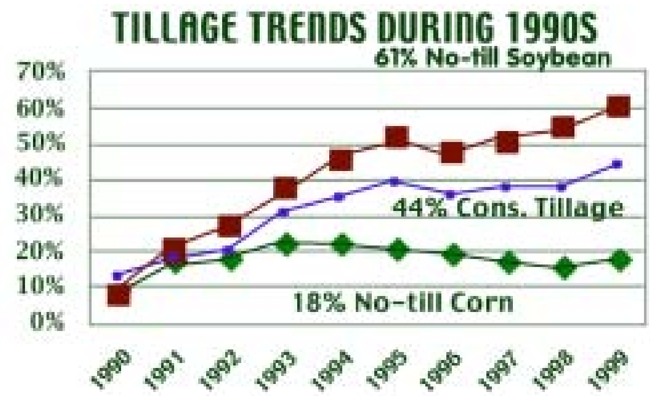
Purdue Cooperative Extension Service



There is little argument that a higher number of corn and soybean fields are being planted earlier than 15 to 20 years ago. However, when looking at Indiana's planting pace over the last decade (refer to graph "Percent Indiana Corn Planted, 1991 - 2000"), one can see that beginning in mid-April, producers plant whenever they can. No surprises here! Had the rains not hit this week, there'd be a bunch more seed in the ground. The seed already planted will be subjected to cooler soils and extended germination/emergence than seed now going in. If corn is slow to emerge and grubs are found nearby, it is often assumed that they are feeding on the seed/seedling. However, cool soil temperatures are usually the reason for slow plant emergence. Even with their presence, grubs may or may not be damaging the crop because they too are less active in cool soils. Once soils warm up … you can bet grubs will feed on most roots. The length of the feeding period and grub population will govern to a large degree as to whether economic damage will occur.



Also, conservation tillage has been steadily increasing for many years (see graph, "Tillage Trends During 1990s"). This has at least two implications concerning grubs. The first is that crop residues tend to keep soils cooler in the spring. As already discussed, cooler soils delay plant germination/emergence, which gives a longer interface between the grub and the slow growing seedling. The second consideration is that in the spring, most Japanese beetle grub feeding is on dead and/or decaying matter, but once roots cross their path their preference increases for fresh, actively growing roots. It is possible that increased residues and level of soil organic matter may be sustaining higher grub populations.



So, what does all this mean for 2001? Corn plantings after the first week in May reduces the chance of economic Japanese beetle grub damage. Producers who find grubs during tillage or other field preparation activities should collect several for identification. If not able to identify them, take specimens to the county extension educator, crop consultant, or agriculture chemical/fertilizer dealer for positive identification. Depending on the species, the numbers observed, the time of the year, and the crop to be planted control may or may not be warranted. Since rescue treatments are not available, the most effective way to control grubs is to apply a soil insecticide at planting (see table below). If an economic grub population is observed in a field that has already been planted and the stand is threatened, a soil insecticide could be used as part of a replant operation. Replanting, however, is not recommended unless a critical level of plants is being significantly damaged or destroyed by grubs. Remember that a number of factors can cause stand reductions. If a stand is declining due to grub activity, make sure that the grubs are still actively feeding on the roots before making a replant decision.

Products Labeled for Grubs at Planting*

Product	Label Claims:	Additional Label Notes:
Aztec 2.1G	control	
Capture 2 EC	control	
Counter CR	control	
Force 3G	control	Use higher labeled rate in-furrow for heavy infestations.
Fortress 5G	control	In-furrow application provides optimal control.
Lorsban 4E	control	
Lorsban 15G	control	Control at 1.5X rootworm rate for severe infestations.
Prescribe	protection	
ProShield	protect	
Regent	control	

* Products labeled for grubs often do NOT perform satisfactorily under heavy infestations. If grubs are causing economic damage in fields where products labeled for “control” are used, producers should be contacting their dealer and/or sales representative for a performance evaluation. Producers should be cautious using products labeled “protection” or “protect” where economic grub pressure is expected. Be sure to read the label for use and application information.

• • P&C • •

Black Cutworm Adult Pheromone Trap Report
Week 1 = 3/29/01 - 4/4/01 Week 2 = 4/5/01 - 4/11/01
(Ron Blackwell)

County	Cooperator	BCW Trapped		County	Cooperator	BCW Trapped	
		Wk 1	Wk 2			Wk 1	Wk 2
Adams	Roe/Price Ag Services	0	3	Marshall	Barry/Marshall Co. Coop	0	6
Bartholomew	Weinantz Farm/Pioneer	0	5	Parke	Hutson/Parke Co. Extension	0	0
Benton	Schellenberger/Jasper Co. Co-op	0	1	Parke	Hutson/Parke Co. Extension	0	0
Clay	Kramer/PK Agronomics (1)	0	3	Porter	Mueller/Agriliance	0	1
Clay	Smith/Growers Coop (Bzl)	0	3	Putnam	Nicholson Consulting	0	3
Clay	Smith/Growers Coop (CC)	1	3	Randolph	Jackson/Davis-Purdue Ag Center (S)	0	8
Clay	Smith/Growers Coop (BG)	1	0	Randolph	Jackson/Davis-Purdue Ag Center (N)	0	12
Clinton	Blackwell/Purdue	0	29*	Rush	Peggs/Pioneer	0	19*
Decatur	Miers Farm/Pioneer	0	7	Sullivan	Smith/Growers Coop (W)	1	3
Elkhart	Kauffman/Crop Tech (1)	0	0	Sullivan	Smith/Growers Coop (E)	1	2
Elkhart	Kauffman/Crop Tech (2)	0	1	Sullivan	Smith/Growers Coop (NL)	0	3
Fayette	Schelle/Falmouth Farm Supply	0	3	Sullivan	Smith/Growers Coop (Crle)	0	0
Gibson	Hirsch Farms	0	4	Tippecanoe	Obermeyer/Purdue	0	5
Grant	Sybouts/Impact Cooperative	0	6	Tipton	Johnson/Pioneer	0	7
Hamilton	Dobbins/FMC	0	9*	Tipton	Sybouts/Impact Cooperative	0	8
Hamilton	Mroczkiewicz/Syngenta	0	12*	Tipton	Sybouts/Impact Cooperative (E)	0	10*
Henry	Schelle/Falmouth Farm Supply	0	6	Vermillion	Hutson/Vermillion Co. Extension	0	12
Jasper	Manning/Jasper Co. Extension (W)	0	4	Vermillion	Hutson/Vermillion Co. Extension	0	6
Jasper	Manning/Jasper Co. Extension (S)	0	4	Vigo	Smith/Growers Coop	0	6
Knox	Smith/Growers Coop (Edwdsprt)	0	3	Warren	Schellenberger/Jasper Co. Co-op	2	6
Knox	Smith/Growers Coop (Vncnns)	0	0	White	Reynolds/Orville Redenbacher 1P	0	12
Johnson	Truster/Ag Excel Inc.	0	1	White	Reynolds/Orville Redenbacher 2K	0	14*
Lake	Lake/Kliene (1)	0	2	Whitley	Walker/NEPAC	0	2
Lake	Lake/Kliene (2)	0	4				

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

Weeds

Controlling Johnsongrass - (*Merrill Ross*) -

- Johnsongrass (*Sorghum halepense*) is a tall warm season perennial grass that rapidly spreads by seeds and rhizomes.
- Introduced into U. S. — 1800 for forage crop. Selma, Alabama in 1840. Colonel William Johnson.

- Plants from seeds as well as those from rhizomes must be held in check.
- High temperature and moisture- grows June through September.

Herbicides for Johnsongrass Control[1] in Indiana Crops

	Soil applied activity		Foliar applied activity		
		Shoot from	Emerged	Emerged shoot	
Herbicide	Seed	Rhizome	Seedling	from rhizome	Crops[2]
Selective applications					
PPI					
Trifluralin	G	P-F	N	N	soy, cot, veg, ornm
Pendimethalin	G	P-F	N	N	soy, cot, veg, ornm, tob
Benefin	G	?	N	N	turf, ssl, let, ornm
EPTC	G	F	N	N	corn, veg, ssl
PPI & PRE					
Acetochlor	P-F	N	N	N	corn, soy
Alachlor	P	N	N	N	corn, soy
Dimethenamide	P-F	N	N	N	corn, soy
Metolachlor	P-F	N	N	N	corn, soy, veg, ornm
PRE					
Pendimethalin	F	P	N	N	corn, soy, cot, veg, ornm, turf
Oryzalin	F	?	N	N	ornm
POST					
Imazethapyr	P	N	F-G	P-F	soy, cornGA, ssl
Nicosulfuron	N	N	E	G	corn
Primisulfuron	N	N	G	F-G	corn
Fluazifop	N	N	E	G	soy, cot, ornm, sod
Quizalofop	N	N	E	G	soy, cot,
Fenoxaprop	N	N	G	F	soy, cot, ornm, sod, turf
Clethodim	N	N	E	G	soy, cot
Sethoxydim	N	N	G-E	F-G	soy, cot, veg, ssl, ornm,
Glyphosate	N	N	E	E	soyGA (cornGA)
Glufosinate	N	N	G-E	F	cornGA (soyGA)
Non-selective applications					
POST					
Glyphosate	N	N	E	E	no residual in soil
Glufosinate	N	N	G-E	P-F	no residual in soil
SOIL Highly persistent					
Sulfometuron	G	G	G	G	total vegetation control
Sodium chlorate	G	G	G	G	total vegetation control
Imazapyr	G	G	G	G	total vegetation control
Bromacil	G	G	G	G	total vegetation control

[1]N = none, P = poor, F = Fair, G = good, E = excellent, P = shoot kill then immediate recovery
[2]soy = soybeans, cot = cotton, veg = vegetables, ornm = ornamentals, ssl = small seeded legumes, GA = genetically altered, tob = tobacco

Control Methods

Herbicides. We now have the technology at our disposal to cost effectively control johnsongrass in any situation where it will be a problem in Indiana. The improved control of johnsongrass can all be attributed to new and better herbicides.

Competitive Crops. Vigorous crops can be used to compete with johnsongrass.

Alfalfa hay, alfalfa-grass hay mixtures, grass pastures, and cool season turfgrasses all compete well with johnsongrass when used in conjunction with repeated mowing and/or grazing. Without mowing or grazing johnsongrass will outgrow these crops and dominate them.

Winter wheat can be grown in infested areas without need for control measures since johnsongrass is held in check until harvest. After wheat harvest johnsongrass develops rapidly and herbicides or tillage are viable options for control.

Summer annual crops such as corn and soybeans also provide some suppression of johnsongrass.

Tillage. Fallow (clean cultivation) for one growing season was the major method for reducing extensive established stands of johnsongrass in cropland prior to development of effective selective herbicides.

Conventional tillage alone within a crop, does not provide adequate control of johnsongrass.

Mowing. Mowing can prevent seed formation and in many instances can reduce the vigor of established johnsongrass stands. To prevent seed formation, johnsongrass should be mowed at three to four week intervals (three to five times) starting in June and continuing through September. A competitive forage crop, turfgrass or other grass sod helps.

• • P&C • •

Controlling Canada Thistle – (*Merrill Ross*) -

Biology

Canada thistle reproduces by seed and by an extensive system of horizontal and vertical creeping roots. Canada thistle is a major weed problem in Canada and the northern half of the United States.

Individual patches tend to have either male or female flowers. Casual inspection of a patch with male flowers may lead to the incorrect conclusion that seed is not produced. Seeds can survive burial in the soil for at least 20 years so that continuing reestablishment from seed should be expected. Canada thistle seedlings start slowly and compete poorly, particularly if they are shaded, so that seedling establishment occurs primarily in open areas. Plants from seed produce creeping roots when two to three weeks old.

The spread of horizontal creeping roots from the parent plant results in the dense round patches of shoots typically encountered in the field. Roots from an established plant may spread over a circular area 10 to 20 ft. in diameter in one year.

Roots can extend to depths of l0 or more feet if not restricted by water tables or impervious soil layers.

Shoots regenerating from creeping roots emerge in April from the soil are in the bud stage by late May and early June, and reach full bloom in late June. Following seed maturation (early July in the southern part of the range), the flowering stalks become inactive. A flush of new shoots emerges in September and growth continues until the tops are killed by freezing temperatures. Canada thistle can tolerate frost and continues to grow later into the fall than most broadleaf species. In Indiana Canada thistle can grow into November. This late season growth period provides major replenishment of depleted underground food reserves and contributes significantly to its survival.

Response to Cultural and Mechanical Methods

Competitive Crop. A competitive crop will help keep Canada thistle in check as long as the management system permits the crop to get ahead and stay ahead of the thistle. Well managed alfalfa can result in control of an established stand in three or four years.

Tillage. Control is enhanced by conventional tillage operations. One to two years of clean fallow with tillage will provide substantial reduction of established stands.

Mowing. Repeated mowing should limit seed production if properly timed (bud stage). Substantial control may be achieved when mowing is combined with sod or hay crops.

Herbicides. Most programs for selective control of Canada thistle depend on the use of postemergence herbicides. Degrees of expected control can be categorized into those which provide shoot kill only, shoot kill and some damage underground, and herbicides which provide shoot kill and substantial kill underground.

Since dormant buds are present on Canada thistle roots, several sequenced treatments will be needed to provide long-term control. Programs should be planned to use full advantage of shading from a competitive crop.

Selective herbicides which provide shoot kill only. One or two applications will allow a competitive warm season crop to canopy over Canada thistle and keep it non-competitive until harvest. A quick closing crop canopy is needed for success.

Some herbicides with this amount of activity include bentazon, aciflurofen, fomesafen and lactofen.

Selective herbicides which provide shoot kill and some damage underground. At least two applications per season will be required in a crop not able to form a closed canopy. Expect seasonal control not long term kill. One application plus a closed crop canopy should eliminate competition until harvest. Then thistle will recover if nothing else is done. 2,4-D, dicamba, primisulfuron, chorimuron, metsulfuron, sulfometuron, tribenuron and low doses of clopyralid.

Selective herbicides which provide shoot kill and substantial kill underground. Full doses of clopyralid in most grass crops and glyphosate used in conjunction with genetically altered glyphosate tolerant crops are the only herbicides that have proved consistent at this level in Purdue trials..

Long residual herbicides for total vegetation control. Chlorsulfuron, sulfometuron, metsulfuron, picloram, imazapyr.

Example Systems for Control

Soybeans (moldboard plow or chisel plow with secondary tillage). Postemergence applications of glyphosate ROUNDUP only on glyphosate resistant when Canada thistle is 8 to 12 inches tall. Retreat if thistle recovers.

Corn (moldboard plow or chisel plow with secondary tillage). Postemergence applications of clopyralid when Canada thistle is 8 to 12 inches tall. High cost of herbicide makes spot treatment using clopyralid STINGER attractive.

Postemergence applications of glyphosate ROUNDUP when Canada thistle is 8 to 12 inches tall only on glyphosate resistant corn cultivars.

Soybeans no-till. Burndown (postemergence) of emerged vegetation with paraquat GRAMOXONE or glyphosate —> planting genetically altered glyphosate ROUNDUP tolerant soybeans —> postemergence applications of glyphosate ROUNDUP when Canada thistle is 8 to 12 inches tall. Retreat if thistle recovers. We prefer paraquat over glyphosate for burndown at planting because quick recovery of the Canada thistle results in the selective glyphosate application at an earlier stage of soybean development.

Corn no-till. Burndown (postemergence) of emerged vegetation with paraquat GRAMOXONE or glyphosate plus a soil residual herbicide for annual grasses and broadleaves —> planting —>postemergence applications of clopyralid when Canada thistle is 8 to 12 inches tall. We prefer paraquat over glyphosate for burndown at planting because quick recovery of the Canada thistle results in the selective clopyralid application at an earlier stage of corn development. High cost of herbicide makes spot treatment using clopyralid STINGER attractive.

Glyphosate resistant corn cultivars are now available and when coupled with glyphosate ROUNDUP provides an effective program. Postemergence applications of glyphosate ROUNDUP when Canada thistle is 8 to 12 inches tall **only** on glyphosate resistant corn cultivars.

Between crop, or spot treatment, or directed under established trees. Apply glyphosate at a minimum of 1.0 qts./acre to rapidly growing thistle shoots 8 to 12 inches tall (fall regrowth, regrowth following mowing or contact herbicide, emerged spring growth). Repeat the herbicide application any time Canada thistle recovers and reaches this same stage of growth. Two or three consecutive applications spread over two or three years will be needed. Damage to trees will result if spray comes in contact with leaves or green bark.

Permanent grass pasture. Postemergence applications of clopyralid when Canada thistle is 8 to 12 inches tall. Retreat when thistle recovers. High cost of herbicide makes and damage to legumes makes spot treatment using clopyralid STINGER the most practical approach. Two or three applications sequenced over two or more growing seasons should be anticipated.

Leaf Blotches of Wheat – (*Gregory Shaner*) -

• Recent wet weather will give these diseases a boost

Leaf blotches are wet weather diseases. Until recently, the spring has been dry and cool. During the first week of April, daytime temperatures were in the 40s or low 50s, and nighttime temperatures were dropping to near freezing or below. This changed abruptly about a week ago. Suddenly, it felt more like summer than spring, with hot days and warm, muggy nights.

In Indiana, two different fungi – *Septoria tritici* and *Stagonospora nodorum* – cause leaf blotch of wheat. Both fungi like wet weather. Splashing raindrops disperse the spores that cause infection, and prolonged periods of leaf wetness are necessary for the spores to infect.

Septoria and *Stagonospora* survive between wheat crops in wheat residue. Primary infection probably occurs in the fall, but these infections don't progress to the point of producing visible lesions until the spring. Infection by both fungi results in dead spots on the leaves. At first, the spots are isolated and have discrete borders, but as the number of infections increases, large, irregular dead areas (leaf blotch) develop. Fruiting bodies of the fungi develop in these dead spots. The fruiting bodies (pycnidia — tiny, flask-shaped structures embedded in the leaf with an opening just beneath the leaf stomate) contain spores that are dispersed when water drops strike them.

Both *Septoria* leaf blotch and *Stagonospora* leaf blotch are polycyclic diseases. This refers to the fact that severity (the percentage of leaf area showing blotch symptoms) increases during the growing season as the result of repeated cycles of infection. Lesions on lower leaves that develop early in the spring are the source of spores that cause infection on upper leaves.

The warm, wet weather we have been having for the past few days has given these diseases a start. Leaves that are partially or fully expanded at this time are likely being infected.

Does this mean we will have an epidemic of leaf blotch of wheat? Not necessarily. This depends on weather during the rest of April and the first half of May. If we have two or three more periods of warm wet weather, especially with prolonged periods of rainfall that keep foliage more or less wet for a couple of days, then leaf blotch may become severe. Conversely, if the next 5 to 6 weeks are dry, or characterized by brief rain showers followed by clear, dry weather, then the disease that is now becoming established on lower leaves will not progress to upper leaves.

Cooler temperatures favor *Septoria* leaf blotch over *Stagonospora* blotch. At this time of year it is more likely to find *Septoria tritici* than *Stagonospora nodorum*, but both fungi are present. If wet weather persists into early May, when temperatures are higher, *Stagonospora* is the more aggressive pathogen and it will quickly predominate on upper leaves. If April remains cool, but rainy, *Septoria* can move up to the flag leaves. The record high temperatures this week may give *Stagonospora* a head start.

There are differences in the symptoms produced by these two fungi, but sometimes the differences are subtle and reliable diagnosis is only possible by examining infected tissue under the microscope. The classical symptom of *Septoria* blotch is a reddish brown lesion with tiny dark spots in the center (these are the pycnidia). Except on the lowest leaves, lesions caused by *Septoria* tend to be straight-sided. The classical *Stagonospora* lesion is lens-shaped, tan at the edges with a dark center. Although *Stagonospora* also produces pycnidia, they are not as dark as those produced by *Septoria*, so usually cannot be seen as black specks in the lesion unless the tissue is viewed under a microscope. Even an experienced diagnostician can be fooled by lesion appearance. A lesion that looks like *Septoria* will prove to be *Stagonospora* (or vice versa) when spores are examined under the microscope. Because of the similarity of symptoms, because both diseases are favored by similar weather conditions, and because both diseases may be found on the same plant or even the same leaf, the disease complex is often referred to as leaf blotch, as though it were a single disease.

At this time, there is no reason to be especially concerned about an epidemic of either *Septoria* or *Stagonospora* blotch. But, it would be a good idea to scout fields during the next week to see if lesions are appearing on young leaves of wheat. I will be monitoring wheat plots near Lafayette and in southern Indiana, but would appreciate hearing from others about fields that appear to have leaf blotch in them.

Soybean Seed Quality and Planting Date – (*Ellsworth P. Christmas*) -

- Calibrate drills and planters to obtain proper seeding rates when using poor quality seed lots
- Do not plant poor quality soybean seed into cold/wet soils

In the February 21, 2001 issue of the *Pest&Crop*, I indicated that most soybean seed produced in Indiana in 2000 was of good quality. I also indicated that soybean seed produced last year in western Illinois, Iowa and Nebraska was of very poor quality. I have since received a number of inquiries from producers that have received their soybean seed for this year with germination guarantees below 90%. Some seed companies are labeling some of their seed lots with germination guarantees of 80 and 85%. The average germination on seed lots offered for sale in Indiana is running about 89% as of this date. However, as the season progresses, expect to see the average germination of seed offered for sale in Indiana to decline as lower quality seed lots are offered for sale.

As a result of this wide range in germination of soybean seed being offered for sale for the 2001 growing season, it is very important that you check the seed tags of each seed lot that you plant to determine the germination percentage and seed size. Drills and planters should be adjusted for each seed lot to assure an adequate plant population. In 2000 I walked a number of drilled soybean fields with stands of 100,000 to 125,000 plants per acre. This same problem can occur this year if care is not taken at planting time to assure that the proper number of viable seeds are being planted.

Purdue recommends seeding rates of 200,000, 165,000, and 130,000 seeds per acre for 7.5, 15, and 30 inch rows respectively. This is equivalent to 3, 4.7, and 7.4 seeds per foot of row. These recommendations are based on seed with a minimum germination of 90%. To adjust these seeding rates for germination levels less than 90%, divide the planned seeding rate (either seeds per acre or seeds per foot of row) by the percent germination given on the tag, expressed as a decimal. For example if the planned seeding rate is 200,000 seeds per acre and the seed tag gives the germination at 80%, divide the 200,000 by .80 to give the correct seeding rate for this seed lot of 250,000 seeds per acre. This is equivalent to 3.75 seeds per foot of row with a 7.5 inch row spacing (3 divided by .80). The table below gives the adjustments in seeding rate for three levels of germination less than 90% and for the four most common row widths.

Usually seed lots with low germination also have reduced vigor as determined by either a cold germination test or an accelerated aging test. Every effort should be used to reduce the stresses when planting soybean seed with poor germination and possibly poor vigor. The stresses to avoid that are most important are wet and/or cold soils. Therefore, if you are planting soybeans into cold and/or wet seedbeds do not use seed lots with poor germination. Plant the good quality seed lots first leaving the poor quality seed lots for later in the planting season when soil conditions are more ideal.

One last word of caution, since the poor germination is most likely the result of hot, dry conditions at harvest last fall, these seed lots are very fragile and should be handled with care to prevent further damage. Seed treatment will not improve these poor quality seed lots, but may protect the seed from soil pathogens if the seed is planted into cold/wet soils.

Seeding rate adjustments for varying levels of germination

	Percent germination as given on the seed tag			
Row Width	**90% or better**	**85%**	**80%**	**75%**
	Seeds per acre (Seeds per foot of row)			
7.5 inch	200,000 (3.0)	235,000 (3.5)	250,000 (3.75)	267,000 (4.0)
10 inch	165,000 (3.4)	194,000 (4.0)	206,000 (4.25)	220,000 (4.53)
15 inch	144,000 (4.7)	169,000 (5.53)	180,000 (5.88)	192,000 (6.27)
30 inch	130,000 (7.4)	153,000 (8.71)	163,000 (9.25)	173,000 (9.87)

• • P&C • •

Soybeans After Soybeans in 2001 – (*Tony J. Vyn*) –

The March 30 USDA report (based on the March 1 survey) confirmed the rumors of another increase in Indiana's intended soybean acreage. If these planting intentions are realized for 2001, soybean acreage will increase 3% to 5.8 million acres, while corn acreage will decline 4% to 5.5 million acres

Thus, despite all the concerns related to more disease pressure with soybeans after soybeans, and the additional challenge of variable seed quality for 2001, it seems that many farmers expect economic rewards from additional soybean plantings. But before all those mini and bulk soybean bags are actually opened, farmers may want to consider these agronomic comments:

1. If farmers with a current 50% corn and 50% soybean acreage split increase their soybean acreage in 2001, they will need to plant soybeans after soybeans at least two years in a row to get back to a 50% corn 50% soybean rotation in 2003. Dr. Paul Porter, agronomist from the University of Minnesota, has called attention to the fact that a 1200 acre farmer who increases soybean acreage from a normal 600 acres to 900 acres in 2001 will still be forced to plant 300 acres of soybeans after soybeans in 2002. Thus, any change in a rotation can never be considered just a single year phenomenon. The decision to grow soybeans after soybeans in 2001 really means growing soybeans after soybeans 2 years in a row on most Indiana farms.
2. Most economic calculations of yield loss with second year soybeans assume a 10% yield reduction. However, the actual yield reduction may be much higher. Three factors will affect the relative yields of soybeans after soybeans, versus soybeans after corn. These factors are variety, weather-related stress, and overall field productivity. Continuous soybeans in a long-term experiment at the Agronomy Research Farm have actually yielded from 13% to 24% lower than soybeans after corn in each of the last 4 years despite selection of superior disease tolerant varieties and a 26-year historical yield reduction of only 9% with continuous soybeans. Long-term rotation experiments involving soybeans in Minnesota and elsewhere also suggest that the percent yield reductions for soybeans after soybeans are greater when soybean yields are under 40 bu/ac versus over 60 bu/ac.
3. If farmers insist on planting soybeans after soybeans, they should use the no-till system. Long-term tillage research experience indicates that, even on dark prairie silty clay soils, no-till soybean yields after soybeans are consistently equal to, or superior to, those after chisel plowing. No-till is not recommended for corn after corn on fine-textured soils, but is recommended for soybeans after soybeans. The no-till practice is essential for both economic and environmental reasons. Soil erosion risk increases with soybeans after soybeans, and residue retention on the surface is even more critical to lower soil losses. Deep or intensive tillage operations will not mitigate the disease risks that increase when soybeans follow soybeans.
4. Farmers should be prepared to scout their fields for disease symptoms more frequently when soybeans follow soybeans. Soil borne diseases that could increase in severity will include phytophthora, pythium, sudden death syndrome, soybean cyst nematode, and white mold.
5. If planting intentions are already firm for 2001, farmers should reconsider their crop rotations in planning for their 2002 crop mix. Soybeans are generally more responsive to longer rotation systems than corn. Corn after corn involves fewer risks than soybeans after soybeans, and soybean yields are often 5% higher when planted every third year in rotation versus every second year. Perhaps farmers should think more seriously about planting winter wheat on some of this year's second-year soybean acres.

In summary, increased soybean acreage involves increased risk. These risks have been discussed repeatedly by agronomists like Dr. Christmas (see his *Pest&Crop* article in the winter of 2000) and by plant pathologists like Dr. Shaner. Some of that risk can be reduced by good management, but the actual profitability of soybeans following soybeans is more dependent on the occurrence of, and timing of, stresses that soybean plants will face this growing season. There are good agronomic reasons for reversing the seemingly perpetual increase in Indiana's soybean acreage.

• • P&C • •

Starter Fertilizer Additives (Fact or Fiction) – (*Greg Willoughby, Crop Diagnostic Training and Research Center*)

Continuing our discussion from last week on starter fertilizer, there are products available that are reported to enhance crop growth, increase yield, and / or improve grain quality (oil, protein, etc). We must ask the question "Are these products snake-oils or are they legitimate?" I'm going down a road less traveled so keep tempers in check and bare with the discussion, please.

Research on this question falls in two categories. First corporate research substantiates the product claims (of course if it did not then why would they have a product). I am not saying that the research is not accurate or good but that just simply why would you market a product if your research showed no affect. I am confident these companies have these "non- enhancing" products sitting on their back selves labeled "it was worth a try." Secondly, University research shows conflicting reports. Now why is this? Well, first of all look at the University mission of research. We are asked to evaluate products that often times never make it to the shelves for the producer. So, (in the big picture) University research mirrors the company product development in a lot of instances. Also we try different rates of the product showing some no responses and others with responses. Now the central question of "Why does University research show inconsistent results to the company claims?" Good question with no good answer! The best example I can give is on a recent study over the past three years. I was asked by a company to do some of these product evaluations. Over three years our results were inconsistent. Now why is this? Here is a crude synopsis of the study.

	Yield (bu/ac)		
Treatment	**1997**	**1999**	**2000**
No fertilizer	121	85	169
19-17-0	115	90	169
Product "A"	136	95	170

In 1997, with overall decent conditions (early cold & wet) we saw around 20 bu / ac yield difference for one product. In 1999 with less than favorable growing conditions (dry spells) we saw an average of 5 bu / ac increase with the same additive. In 2000 there were no differences (excellent year). Now, does this mean things are getting worse for the same product...No, of course not, but it does say that variability in growing conditions can largely affect the results. The best example is to look at the difference in starter fertilizer responses above (and refer to discussion last week). In a lot of situations we may not see results or only see them in certain soil or growing conditions. It is our job to point out that one may not always see results in every case and this needs to be kept in mind. Also the magnitude of the results need to be offset with current commodity prices vs. the impact the additive might make (A crystal ball would be nice).

In summary, I want to draw two points. First these additives have their places and do have an impact under certain conditions. Is it all the time, probably not, but does starter fertilizer in and of itself always have an effect, no. Secondly are there things that react similar to the discussions above? The answer is yes and we can make the same argument for insecticides, fungicides, seed coatings, etc. Does this mean we should not use them, no but it does mean that we should always evaluate technologies and use those that have given positive results. Small strip trials on a farm is a great way of evaluating these new technologies to find out what works for each individuals operation.

Bug Scout

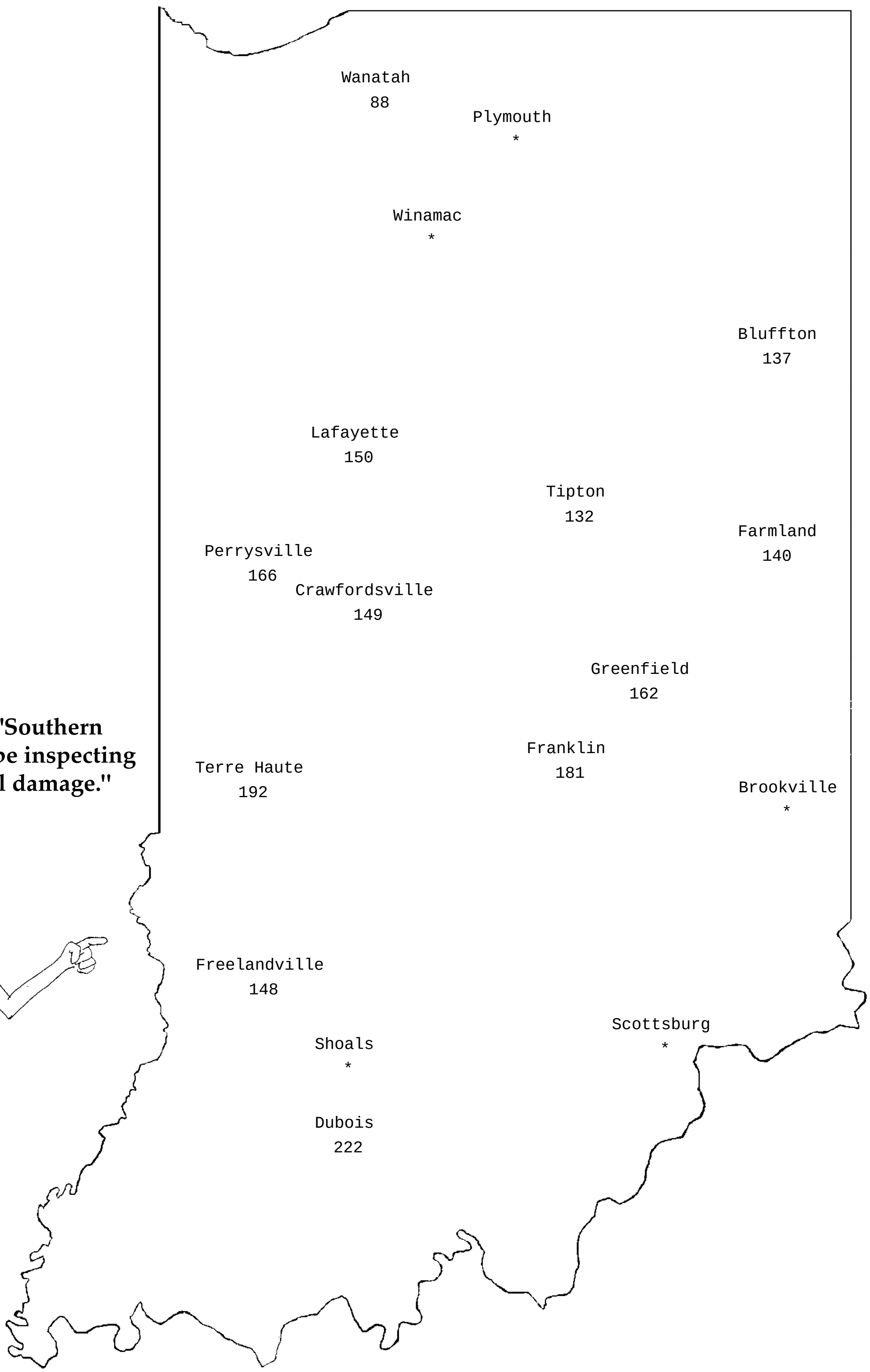
"Is this your alternate nitrogen source?"

Weather Update

Temperature Accumulations from Jan. 1 to April 11, 2001

MAP KEY
Location HU48

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



Bug Scout says, "Southern Indiana should be inspecting alfalfa for weevil damage."

4" Bare Soil Temperatures 4/12/01

Location	Max.	Min.
Waterford Mills	57	54
Wanatah	66	57
Columbia City	60	50
Bluffton	59	55
W Laf Agro	63	56
Tipton	61	59
Farmland	66	55
Perrysville	64	60
Crawfordsville	65	61
Trafalgar	65	58
Liberty	69	60
Terre Haute	62	56
Vincennes	65	59
Oolitic	64	61
Dubois	77	62

Pest&Crop
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