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In This Issue

Insects, Mites, and Nematodes

- Winter Temperatures, Corn Flea Beetle Survival, and Potential for Stewart's Wilt

Weeds

- Burndown Madness

Plant Diseases

- Virus Diseases of Wheat

Agronomy Tips

- Gearing Up for Crop Diagnostics 2002
- Planter Maintenance and Stand Establishment

Insects, Mites, and Nematodes

Winter Temperatures, Corn Flea Beetle Survival, and Potential for Stewart's Wilt - (John Obermeyer, Rich Edwards, and Greg Shaner) -

- Corn flea beetle winter survival is expected to be *high* in most of Indiana
- *Moderate* survival is expected for extreme northern Indiana
- Corn flea beetle numbers were relatively low last season
- Corn flea beetles vector the bacteria that causes Stewart's wilt, which has two disease phases
- Management guidelines for low and high susceptible corn are given below

Winter temperatures have a direct impact on how well the corn flea beetle overwinters. This is especially important since this insect can vector and transmit the bacteria that cause Stewart's wilt. The risk of the disease correlates well with winter temperatures, because the bacteria survive in the gut of the overwintering beetle. Warm winter temperatures result in higher beetle survival, and greater potential for disease transmission. To determine the potential for corn flea beetle survival, add the average daily temperatures for the months of December, January, and February. If the sum is below 90,

overwintering winter survival is expected to be low; totals between 90 and 100 are moderate; and sums above 100 indicate that there is a high probability of beetle survival. To help one better gauge the potential for corn flea beetle activity in your area, and thus the potential severity of the disease in 2002, we have created the following state map. Thus, according to the temperature model, there is a high probability of corn flea beetle activity and subsequent disease throughout most of Indiana. Keep in mind however, that corn flea beetle numbers were relatively low throughout most of last season. Therefore, even high beetle survival may not equal high disease incidence this season.

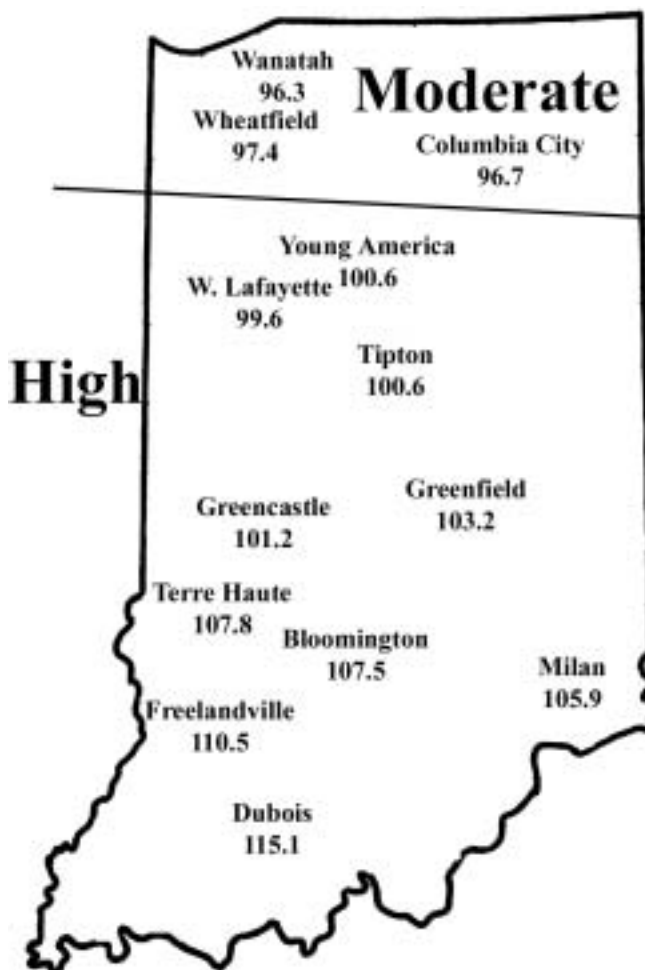
There are two phases of Stewart's disease: a wilt phase and a leaf blight phase. In the wilt phase, plants wilt rapidly, usually at an early stage of growth. Sweet corn hybrids are especially susceptible to wilting. Some dent corn inbreds, and occasional dent corn hybrids, and some popcorn lines are susceptible as well. Dent corn hybrids rarely wilt after growth stage V5. Leaves emerging from the whorl of infected plants are often the first to wilt. Internal tissues at the growing point are discolored or hollowed out. Faint green to yellow streaks containing corn flea beetle feeding marks are visible on one or more leaves. If stalks of wilted plants are cut, it



may be possible to see yellow, moist beads of bacterial ooze. The leaf blight phase can occur at any time during the growing season, but often does not appear until after tasseling. Lesions are long and narrow with pale green to yellow streaks and irregular or wavy-margins. Streaked areas die and become straw-colored. Severely infected leaves may die prematurely.

Management decisions should be made as early as possible and should be based on the corn's susceptibility to the disease and the number of beetles anticipated. *Low susceptibility* - pest managers should scout fields and apply a foliar rescue treatment if damage is severe, there are 5 or more beetles per plant, and seedlings are growing slowly (e.g., cool temperatures). *High susceptibility* - sample field edges (i.e., overwintering sites) before or immediately following planting to assess the potential for beetle movement into the field. A sweep net is an ideal sampling tool for this pest. If any beetles are discovered, an insecticide application is warranted. Three systemic soil insecticides that should give good control of flea beetle are available for use at planting. These include Counter CR, Furadan 4F, and Prescribe treated seed. Counter may cause inbred damage where post-grass sulfonylurea herbicides are used. Furadan may require re-tooling the planter for liquid application. Prescribe (and Gaucho Extra for inbred seed) must be applied to seed by commercial seed treaters. Prescribe is labeled for fleas beetle control through the 5th leaf stage. If a systemic soil insecticide is not an option, broadcasted foliar insecticides at corn spiking should provide 7 to 10 days of residual protection from beetle feeding. CAUTION: treatment of field edges and waterways for beetle control may be an off label application. Avoid movement of insecticides, including those bound on soil particles, into aquatic environments.

Expected Flea Beetle Survival



Weeds

Burndown Madness – (Glenn Nice and Tom Bauman)

If you are a no-tiller then you are probably considering your burndown options for this year.

Your burndown herbicides can be applied with your early pre-plant or separate. However it is important to have a clean slate for the planting season. Some of the products that you might want to consider for a burndown program this coming season are 2,4-D, glyphosate products, and paraquat in corn. Chlorimuron + thifensulfuron, glyphosate products, paraquate, and 2,4-D can also be used in soybean.

Glyphosate and paraquat can be applied almost any time before planting in the spring, however allow 7 to 10 days for glyphosate to do its job. It is not a good idea to mix the two, due to the antagonistic relationship between the two. The use of 1 pt 2,4-D ester can be applied 7 or more days before the planting of soybean where as other formulations require 30 days before planting, check the specific product label. Backdraft and Extreme can only be used before soybean due to the imazaquin and the imazethapyr components. Always read and follow pesticide labels.

Table 1. Burndown options for Corn and Soybean

2,4-D	Crop
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Amine 4 2,4-D	Corn/soybean
Barrage HF	Corn/soybean
Low Vol 4 Ester	Corn/soybean
Opti-amine	Corn/soybean
Phenoxy 088	Corn/soybean
Saber	Corn/soybean
Savage	Corn/soybean
Weedone 638	Corn/soybean

Glyphosate	Crop
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Backdraft + imazaquin	Soybean
Credit	Corn/soybean
Debit	Corn/soybean
Extreme + imazethapyr	Soybean
Glyphomax Plus	Corn/Soybean
Mirage	Corn/Soybean
Ranger	Corn/Soybean
Roundup Ultra Max	Corn/Soybean
Touchdown	

Table 1 (con't). Burndown options for Corn and Soybean

Paraquat	Crop
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Gramoxone Max	Corn/Soybean
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Chlorimuron + thifensulfuron	Crop
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Synchrony STS	Soybean
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The Indiana Weed Control Guidelines are now available on the Web at <http://www.btny.purdue.edu/Pubs/WS/WS-16.pdf>.

Plant Diseases

Virus Diseases of Wheat - (Gregory Shaner) -

- Some fields of wheat are now showing symptoms of virus infection

In the first issue of *Pest&Crop* I discussed the possibility that soilborne wheat mosaic or wheat spindle streak mosaic might show up in wheat fields this spring. A wheat sample from southwest Indiana that showed symptoms of these diseases was submitted recently to the Plant and Pest Diagnostic Laboratory. Leaves showed the pale green and yellow streaks characteristic of infection by *Soilborne wheat mosaic virus* or *Wheat spindle streak mosaic virus*. Based on visual

diagnosis, it was impossible to determine which virus was responsible. Both might have been involved. The fluctuating temperatures we have been experiencing are likely to promote symptom expression throughout the state. However, tip burn from recent very cold temperatures may obscure these symptoms for a time.

Crop rotation is often effective for reducing severity of diseases caused by soilborne pathogens. These two viruses persist in soil (in a common fungus), but crop rotation seems to be of limited value. Evidently the fungus that harbors these viruses (*Polymyxa graminis*) can persist for many years in the absence of wheat. The most effective control is the use of resistant varieties. Planting in the fall after the fly-free date can also reduce the chance of infection.

Agronomy Tips

Gearing Up for Crop Diagnostics 2002 - (Bob Nielsen) -

The 2002 crop season is rapidly approaching. For some, it has already begun with topdress fertilizing of wheat, pre-plant anhydrous application for corn, and general fieldwork as days become warmer and soils dry sufficiently for tillage operations. For those of us who regularly work with producers in diagnosing crop problems, now is a good time to gear up for the coming season by replenishing our minds with crop production knowledge that may have been flushed out over the winter months.

Good crop diagnostic skills begin with serious pre-season homework that reduces the chance of being caught by surprise when crop problems subsequently occur and that may allow you to better fearmonger (predict) about impending calamities. Take the time to refresh yourself on the basics of crop growth & development, current crop varieties, important insect and disease pests of crops in your geographic area, nutrient deficiencies, weed identification, herbicide modes of action, herbicide crop injury symptoms, and herbicide label restrictions. Become familiar with new pesticides, genetics and other emerging technologies. Pay special attention to those early season aspects of crop production since that is the part of the growing season that is approaching.

Sources of information are plentiful and you probably already have your personal library of useful crop production references. Take the time to pull them off the bookshelf and browse through their contents. A few of my favorite references include:

- **Modern Corn & Soybean Production**, a good all-purpose reference book available for ordering on the Web at <www.mcsp-pubs.com/>.
- Purdue's **Corn & Soybean Field Guide** (Extension publication ID-179), a widely popular pocket-sized crop diagnostic reference. Field guide copies are \$4 each.
- Purdue's **Crop Management CD Series**, including CD-AY-1 Corn Growth & Development and Diagnostics – Germination to Knee High; CD-AY-2 Corn Growth & Development and Diagnostics – Knee High to Maturity; and CD-AY-3 Broadleaf Weed Seedling Identification. Each of these titles is \$80 per copy.

- Purdue's **Field Crops Pest Management Manual** (IPM-1), a large notebook of all sorts of pest-related information on Indiana's major crops. The pest manual costs \$80.
- Purdue's **Seed Corn Pest Management Manual for the Midwest** (IPM-2) is a newly revised reference that aids in the identification, evaluation, and management of pest problems in seed corn fields. Purchase price is \$50.

(To order the Purdue Extension publications mentioned in this article, call Purdue Extension toll-free at (888) 398-4636 (EXT-INFO) and ask for the Media Distribution Center. Orders also may be placed online at <<http://www.agcom.purdue.edu/AgCom/mdc/distrib.html>>.)

Don't forget about the wealth of information available directly on the Web. You can search for and wade through the overwhelming amount of crop production information on the Web yourself with a search engine like <www.google.com>, or 'surf the Web' more efficiently by visiting one of the following sites that offer compilations of the best agricultural information that the Web offers.

- <www.kingcorn.org> - (Simply the World's Best Corn Site!)
- <www.kingcorn.org/cafe> - (Timely crop production information from throughout the Midwest)
- <www.kingcorn.org/news/index-cnn.html> - (Archive of my articles)
- <www.kingcorn.org/cgg6.htm> - (Compilation of useful crop production references and Web sites)
- <www.agry.purdue.edu/ext> - (Purdue Agronomy Extension)

The better prepared you become prior to the season, the better enabled you will be to diagnose those challenging crop problems that will most certainly arise as they always do every year.

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

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Planter Maintenance and Stand Establishment –
(Peter Thomison and Ed Lentz, Ohio State University) –

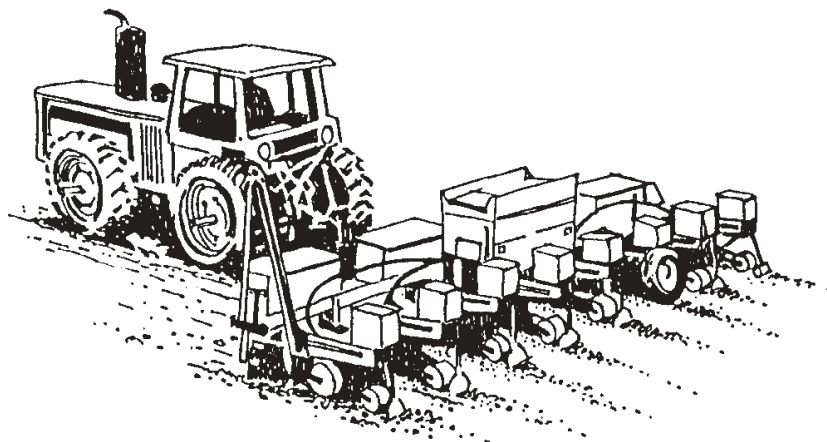
Uneven plant spacing and emergence can reduce yield potential. Seed should be spaced as uniformly as possible within the row to ensure maximum yields and optimal crop performance regardless of plant population and planting date. Corn plants next to a gap in the row may produce a larger ear or additional ears (if the hybrid has a prolific tendency), compensating to some extent for missing plants. Skips reduce yield in fields where the intended population is at or below the optimum, while doubles increase yield when populations are less than optimum. Reduced plant stands will yield better if plants are spaced uniformly than if there are large gaps in the row. As a general guideline, yields are reduced an additional 5 percent if there are gaps of 4 to 6 feet in the row and an additional 2 percent for gaps of 1 to 3 feet.

Uneven emergence affects crop performance because competition from larger, early-emerging plants decreases the yield from smaller, later-emerging plants. If the delay in emergence is less than two weeks, replanting increases yields less than 5 percent, regardless of the pattern of unevenness. However, if one-half or more of the plants in the stand emerge three weeks late or later, then replanting may increase yields up to 10 percent. Emergence delays of 10 days or more usually translate to growth stage differences of two leaves or more. When two plants differ by two leaves or more, the younger, smaller plant is more likely to be barren or produce nubbin ears. To decide whether to replant in this situation, growers should compare the expected economic return of the increased yield with both their replanting costs and the risk of emergence problems with the replanted stand.

To improve planter accuracy and enhance uniformity of emergence, consider the following:

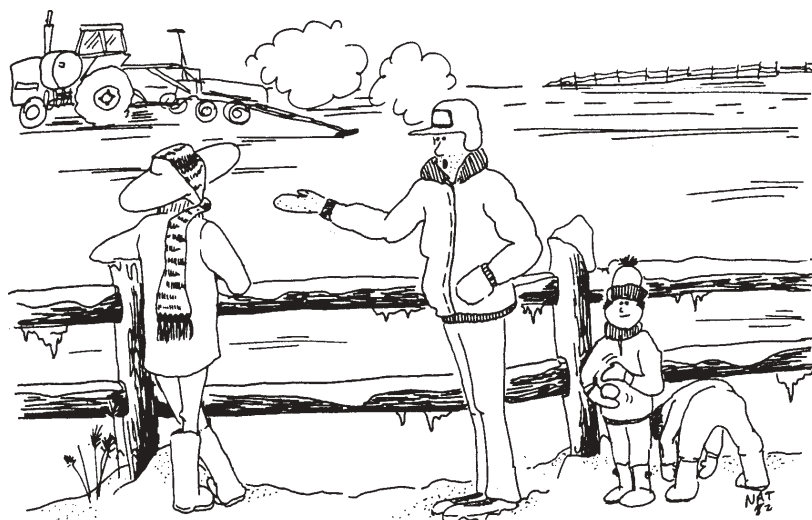
- Keep the planting speed within the range specified in the planter's manual.
- Match the seed grade with the planter plate.
- Check planters with finger pickups for wear on the back plate and brush (use a feeler gauge to check tension on the fingers, then tighten them correctly).
- Check for wear on double-disc openers and seed tubes.
- Make sure the sprocket settings on the planter transmission are correct.
- Check for worn chains, stiff chain links, and improper tire pressure.
- Make sure seed drop tubes are clean and clear of any obstructions.
- Clean seed tube sensors if a planter monitor is being used.
- Make sure coulters and disc openers are aligned.
- Match the air pressure to the weight of the seed being planted.

This article was taken from the Crop Observation and Recommendation Network March 11-March 25, 2002). For more information on planting uniformity, see Bob Nielsen's publication on the Web at: <http://www.agry.purdue.edu/ext/pubs/AGRY-91-01_v5.PDF>.



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Ol' Joe will go to any length to be the first in the country to plant corn!!

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