CORN

EARLY-SEASON CORN INJURY DURING COOL WET CONDITIONS

by James R. Martin, Extension Weed Scientist

A substantial number of acres have been planted to corn in portions of western Kentucky where soil conditions have turned cool and wet. These environmental conditions tend to slow the metabolism and emergence of corn plants and allow more exposure time of corn seed and emerging seedlings to herbicides in soil solution. Prolonged exposure to certain herbicides can lead to injury.

The following is a brief discussion of some of the herbicides and symptoms associated with early-season corn injury during cool wet soil conditions:

Chloroacetamide/Oxyacetamide Herbicides: Chloroacetamide herbicides are widely used for weed management in corn. Examples of herbicides in this class of chemistry are acetochlor (Degree, Harness, TopNotch, Degree Xtra, FieldMaster, Ful Time, Harness Xtra, or Keystone); alachlor (Micro-Tech, Partner, or Bullet); dimethenamid-P (Outlook or Guardsman Max); and S-metolachlor (Dual II Magnum, Cinch, Bicep II Magnum, Cinch Atz, or Lumax). Flufenacet (Define, Axiom, or Epic) is classified as an oxyacetamide and is similar to chloroacetamide herbicides.

Although all of these herbicides can injure corn, acetochlor and S-metolachlor tend to have a greater potential to cause injury compared with alachlor, dimethenamid-P, or flufenacet. All S-metolachlor products with the Roman numeral “II” included in the trade name and all acetochlor products are formulated with a safener to limit the risk of corn injury.

Symptoms of corn injury from chloroacetamide and oxyacetamide herbicides include malformed and stunted seedlings with twisted leaves that do not unroll properly. Plants that are severely injured may eventually die because leaves cannot unroll.

Synthetic-Auxin Herbicides. Products containing 2,4-D and dicamba (Banvel, Clarity, Oracle, or Sterling) are often referred to as synthetic-auxin or growth-regulator herbicides. They can be used as a part of a burndown weed control program in no-tillage corn. Their activity is based primarily on foliar uptake in emerged weeds; however, they have limited soil-residual activity that can sometimes result in corn injury.

Corn injury from synthetic-auxin herbicides occurs during seed germination and resembles symptoms associated with chloroacetamide and oxyacetamide herbicides. Synthetic-auxin herbicides often cause abnormalities of both shoots and roots of corn plants; whereas, chloroacetamide and oxyacetamide herbicides tend to affect only the shoot growth.

Products containing 2,4-D generally should not be used during the period from 7 to 14 days prior to planting until 3 to 5 days after planting and before corn emerges. Products containing dicamba may injure corn if seed is planted less than 1.5 inches below the surface.

Isoxaflutole: Injury from products containing isoxaflutole (Balance Pro or Epic) is seldom an issue in Kentucky but has occurred when soil conditions were cold and wet and weather was cloudy for several days following planting. Corn injury symptoms associated with isoxaflutole range from minor yellowing or complete bleaching of plants to significant stand loss. Isoxaflutole does not directly affect roots but may indirectly limit root growth by inhibiting photosynthetic activity of plants. Injury from isoxaflutole...
is usually short lived but can cause yield loss if corn stands are reduced.

**Pendimethalin:** Preemergence applications of pendimethalin (Prowl) can result in significant injury where corn seed are exposed to the herbicide. This typically occurs when corn is planted shallow (less than 1.5 inches deep) or when the seed furrow is not completely closed or sealed. Injured corn plants have stunted roots with swollen tips. Corn stands can be reduced in severe cases. Surviving plants are usually stunted and may turn purple, particularly during prolonged cool soil conditions after plant emergence.

**Flumetsulam:** Extended cold wet conditions (soil temperature below 50°F and excessive rainfall with wet soil conditions) increases the chance of injury from flumetsulam (Python) during germination and early development of corn. Injury symptoms caused by flumetsulam are similar to those caused by other ALS-inhibiting herbicides and include yellowing of leaves and/or stunted shoots and a reduced root system.

## SOYBEAN

**EARLY PREPLANT APPLICATIONS OF 2,4-D IN NO-TILL SOYBEANS**  
by James R. Martin, Extension Weed Scientist

The increasing presence of certain broadleaf weeds has rekindled the interest in using 2,4-D in early preplant burndown treatments in soybeans. This herbicide is relatively inexpensive and enhances the control of marestail, prickly lettuce, and dandelion when used in approved burndown combinations.

Burndown applications of 2,4-D control weeds primarily through foliar uptake in emerged plants, however, it has limited soil-residual activity that can injure soybeans. Early-season soybean injury from 2,4-D occurs as swollen stems and roots. Leaves tend to be malformed and elongated and in severe cases plants will die.

In order to limit the risk of crop injury from 2,4-D, consult the product label for specific recommendations and precautions. Be aware that some 2,4-D products are not labeled for preplant applications in soybeans. As a general rule, ester formulations of 2,4-D are preferred because of the less restrictive waiting periods relative to those associated with amine formulations.

The importance of waiting after application is to allow time for the herbicide to dissipate before planting soybeans. The length of waiting period will depend on a number factors including rate and formulation of herbicide.

When applying ester formulations of 2,4-D, delay planting soybeans 7 days for rates up to 0.5 lb ae/A and 30 days for rates greater than 0.5 lb ae/A up to 1 lb ae/A. Consult the product label for specific rates and restrictions. The following table shows a few examples of different products and waiting period for planting no-till soybeans.

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>WAITING PERIOD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7 Days</td>
</tr>
<tr>
<td>Salvo (5 lb ae/gal)</td>
<td>12.8 oz/A</td>
</tr>
<tr>
<td>Weedone LV 4 EC (3.84 lb ae/gal)</td>
<td>1 pt/A</td>
</tr>
<tr>
<td>Weedone LV6 (5.4 lb ae/gal)</td>
<td>0.67 pt/A</td>
</tr>
<tr>
<td>Weedone 638 (2.8 lb ae/gal)</td>
<td>1.33 pt/A</td>
</tr>
</tbody>
</table>

There is always a risk of crop injury, consequently, growers who are not willing to accept this risk of injury are advised to not use 2,4-D in early preplant applications.

## WHEAT

**WATCHING ARMYWORM FLIGHT**  
by Doug Johnson

A number of individuals have ask about (True) armyworm populations for this spring. It appears that memory of our outbreak of two years ago lingers.

Armyworm moth flight has begun for the year. If you check your Kentucky Pest news you will note that a small number of moths were caught near the third week of March. Trap catch appears to be on the rise this week. How does this compare to the normal?

Visit the IPM website at: [http://www.uky.edu/Agriculture/IPM/ipm.htm](http://www.uky.edu/Agriculture/IPM/ipm.htm) and select “Pheromone Traps” from the left side navigation bar, this will take you to our historic insect flight data. Select “True Armyworm” from the insects listed. On these pages you will find flight data for several years as obtained from pheromone-baited traps. On the bottom of the “True Armyworm” page you will see a graphic representation of the average capture for the last five years. This is the average of two traps for each date. Both of these traps are on the UK - College of Ag. farm in Princeton, KY. Note that we are in the 14th week of the year.

The trap counts recorded today on the UK-REC were 1 and 60 for an average of 31. If you look at the Five year average counts you will see that it is about 100. If you check the data for 2001 (the outbreak year) you will find that the peak catch came on what is roughly equivalent to next Friday (04/11/04) with a counts of 398 & 28 for an average of 213. It appears we are below both of those marks.

However, the story is not completely told yet. During the out break of 2001 on the peak moth capture date of April 13th, 302 Day Degrees had accumulated. As of this writing
259 Day Degrees have accumulated. The predicted accumulation for next week is for a total of 312 by Friday 4/11/04. This indicates that Friday April 11th, 2003, will represent about the same calender date and Degree Day accumulation as the peak capture date of the 2001 outbreak.

So we need to keep a careful watch on the moth flights for the next two weeks to see if they increase to the levels of 2001. Moth capture is not a guaranteed indicator of pest outbreak but is certainly worth watching.

IF we see significant increase in moth capture you should certainly start checking for armyworms in your small grains and pastures (though you should do this anyway!!). Normally, we expect peak armyworm feeding to be about four weeks after peak moth flight. If moth capture takes a big up-turn start watching for the worms about two weeks after peak moth flight. You’ll want to discover them well before peak feeding.

Remember armyworm populations (and all insects) are not governed by calender date but by temperature. So it is the Day Degree accumulation that is most important. To see a write up on this go to KPN #918, May 29, 2001. We would expect peak worm feeding about 239 DD after peak moth flight. But, once again that is too late. You need to be checking your fields well before this event.

**Fruit**

**Apple Scab and Pear Fire Blight Alerts**
by John Hartman

Kentucky apple growers will need to be aware that on April 6 and 7, just before bloom for most apples, rainfall was prolonged enough for moderate to severe apple scab infection to occur. Eradicant and protectant fungicides, if used in a timely way, can be used to prevent symptoms from developing from these infections and to protect apples from new infections. With trees in full bloom at the start of the recent rain, pears in many orchards were exposed to fire blight primary (blossom) infections. Flowering crabapples and flowering pears were also in bloom and could develop fire blight from last week’s infection event.

**Lawn & Turf**

**Ticks Are Out**
by Mike Potter

Few outdoor encounters are as disconcerting as finding an attached tick. Besides their repulsive appearance, ticks inflict bites that cause itching and irritation. A small percentage may also transmit diseases affecting people, pets and farm animals. This column will help you answer some of the more common questions about ticks and the diseases they may transmit.

**Q: Where do ticks come from and how can I avoid them?**

**A:** Ticks thrive in woods, uncut fields and brush. They climb onto lower portions of vegetation and attach to a suitable host passing by. To reduce tick encounters, follow these precautions:

1. Don’t walk through uncut fields, brush, and overgrown areas, especially during April-July. Walk in the center of mowed trails to avoid brushing up against vegetation. When hiking or camping in tick-infested areas, wear light-colored clothing and long pants tucked into boots or socks, and consider using tick repellent.

2. Inspect family and pets after being in tick-prone areas. Ticks often attach at the waist, armpit, neck and scalp, but can attach virtually anywhere. Promptly remove any ticks, using the method discussed below.

3. Keep grass and shrubs trimmed, and clear overgrown vegetation from edges of your property. Ticks and their wild hosts will not normally infest areas that are well maintained. Treating the lawn with insecticides is of little benefit since mowed areas are not normally infested. If insecticides are used, treatment should be concentrated mainly along borders and fences, and between overgrown areas and the lawn. A good way to confirm if ticks are present is to drag a white flannel cloth or sheet through suspected areas. Ticks will attach and be visible against the white background.

Insecticide sprays containing pyrethroids (e.g., Bayer Advanced Home/Garden™ Multi-Insect Killer, Spectracide Triazicide™, Ortho Home Defense System™) or carbaryl (Sevin) are effective. Such products are sold at hardware/lawn and garden shops. For better wetting and coverage of vegetation, it’s often best to purchase these products as concentrates, so that they can be diluted and applied with a pump up sprayer, hose end sprayer, etc. A single application during late-April/May, or when ticks are detected, is often all that’s required.

4. Free-roaming pets are more likely to become infested than if confined. Ticks on pets can be controlled or prevented using sprays, spot-ons, and insecticide-impregnated collars. See your veterinarian for appropriate products.

**Q: What's the best way to remove an attached tick?**

**A:** Using a tweezers, grasp the tick as close to the skin as possible and pull it straight out with gentle even pressure. Petroleum jelly, hot matches and other "folk" methods of removal should be avoided. Wash the bite area, apply antiseptic and cover with a band-aid. Attached ticks should be removed promptly to reduce the chance of infection and disease transmission.

**Q: Some clients use the terms "deer tick" or “turkey mite” ... what are they referring to?**

**A:** These terms are often used when referring to immature (larval) lone star ticks, a common tick throughout much of Kentucky. A person who walks through infested vegetation may find hundreds of the tiny ticks (about the size of the period at the end of this sentence) crawling on them.
Unattached larvae can be removed by bathing or showering. However, once ticks are attached, removal is difficult, and their bite can be very irritating. The lone star tick is not considered to be a vector of Lyme disease, although it can transmit Rocky Mountain spotted fever.

Q: Should I be concerned about getting Lyme Disease or Rocky Mountain Spotted Fever?

A: Each year about 20 to 40 cases of Lyme disease/Rocky Mountain spotted fever are reported statewide. Some of these victims may have been infected while traveling out-of-state. In Kentucky, probably tens of thousands of people are bitten by ticks each year; so the likelihood of contracting a disease is very low. In most cases, a tick must be attached for at least 18 to 24 hours for infection to occur. One cannot become infected simply by having a tick crawl over the skin or clothing. Concerned callers should be informed of the early symptoms of tick-borne disease, so they will know whether to seek medical attention.

Q: What are the symptoms of Lyme disease?

A: Lyme disease is difficult to diagnose clinically because early symptoms mimic the flu, e.g., fatigue, headache, fever, or swollen glands, pain or stiffness in the neck, muscles or joints. The most definitive early symptom is a gradually expanding, circular or oval-shaped red rash, often (but not always) at the site of the bite. This rash only develops in about 70% of infected individuals, however, and may be overlooked. Persons who experience any of the above symptoms after being bitten by a tick, or after spending time in an area where ticks are abundant, should see a physician immediately. In the earliest stages, Lyme disease can be successfully treated with antibiotics.

The mechanism by which Lyme disease is transmitted in Kentucky is unclear. The primary tick vector, *Ixodes scapularis*, has rarely been found here, although several of the ticks were found last November while surveying deer herds in southeastern (McCreary Co.) Kentucky. It's likely that more will be found in the future.

Q: What are the symptoms of Rocky Mountain spotted fever?

A: Symptoms of RMSF are flu-like, accompanied by headaches and a very high fever (104-106 degrees F), two to 12 days after being bitten by a tick. The most characteristic sign of RMSF is a rash that appears on about the second to fifth day on wrists and ankles, later spreading to other parts of the body. When promptly diagnosed, RMSF can be successfully treated with antibiotics. In the absence of treatment, victims may die. In most cases, the tick must be attached for at least a day for infection to occur.

(For further information on this topic, see ENT-35, *Ticks & Disease In Kentucky*).

Q: How important is Rocky Mountain spotted fever?

A: Rocky Mountain spotted fever (RMSF) has not received the media attention of Lyme disease, but it is potentially more serious. Each year there are about 10 to 30 cases reported statewide. The primary vector of RMSF is the American dog tick, although lone star ticks can also transmit the disease pathogen.

Symptoms of RMSF are flu-like, accompanied by headaches and a very high fever (104-106 degrees F), two to 12 days after being bitten by a tick. The most characteristic sign of RMSF is a rash that appears on about the second to fifth day on wrists and ankles, later spreading to other parts of the body. When promptly diagnosed, RMSF can be successfully treated with antibiotics. In the absence of treatment, victims may die. In most cases, the tick must be attached for at least a day for infection to occur.

(For further information on this topic, see ENT-35, *Ticks & Disease In Kentucky*).

**SHADE TREES & ORNAMENTALS**

**POWDERY MILDEW RESISTANT PHLOX**

by John Hartman

Phlox (*Phlox paniculata, Phlox spp.*) is a favorite perennial for Kentucky gardens, but is often disappointing to grow because of devastation caused by powdery mildew disease. Powdery mildew, caused by the fungus *Erysiphe cichoracearum*, covers the leaves with white fungal growth late in the season and weakens affected plants. Under our warm, humid growing conditions in Kentucky, powdery mildew can be quite severe on susceptible Phlox. Kentucky gardeners will want to plant powdery mildew resistant cultivars.

There are some powdery mildew resistant Phlox cultivars available in the trade. Phlox disease evaluations were made recently in Arkansas (E. Taylor, et. al.) and North Carolina (R. Bir, et. al.) and published in the 2002 proceedings of the Southern Nursery Association Research Conference. The following cultivars were evaluated for powdery mildew resistance in one or both of these tests. Cultivars designated with an asterisk (*) were included in both tests. Highly resistant cultivars are not immune to powdery mildew, so expect to see a little disease should those be chosen for the garden. Susceptible cultivars would need to be sprayed regularly with fungicides to keep them looking good.


**INSECT TRAP COUNTS**

**UKREC, Princeton KY**

March 28-April 4
Black Cutworm ........................................ 1
True Armyworm .......................................... 31

NOTE: Trade names are used to simplify the information presented in this newsletter. No endorsement by the Cooperative Extension Service is intended, nor is criticism implied of similar products that are not named.