DO NOT FORGET!!!!!

Willie’s Farm Family Program at K-State Football’s Celebrate Agriculture Day

To Hodgeman County active farmers and ranchers:

We are excited to announce that K-State Athletics will host our first Celebrate Agriculture Day with K-State Football this fall. While our plans have been in the works for quite some time, the past couple of months have highlighted what we at Kansas State University have always known – the importance of the agriculture industry not only for our state and country, but also the world at large. Our history as Kansas State Agriculture College is something we recognize and celebrate.

Our designated Celebrate Agriculture game is November 7 against Texas Tech, and we are excited to honor one Willie’s Farm Family from each county!

The selected farm family from each county will receive two complimentary tickets to the game with the opportunity to purchase additional discounted tickets and be recognized with all county representatives during the game. The nominated family will receive more information on this program in a follow-up email in July.

Go Cats!

Information from Gene Taylor, Athletics Director K-State Athletics.

For those interested in this please send or drop off a 200 word essay to the Hodgeman County Extension Office, hg@listserv.ksu.edu, by June 29, 2020, to be placed in a drawing for this opportunity. Topic of the essay is “Why did I chose to be a farmer/rancher.”

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VIRTUAL OPEN CLASS FAIR ENTRIES

Virtual Open Class Fair Entries may be entered online at https://www.hodgeman.k-state.edu/county-fair/index.html. Instructions, Entry Examples and the Entry Form are on the website, https://www.hodgeman.k-state.edu/county-fair/index.html. If you are unable to enter from home, contact the Hodgeman County Extension Office at 620-357-8321, stop by the office or email us at hg@listserv.ksu.edu.

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Squash Vine Borer

If you have squash or related plants that suddenly wilt and die, you may have squash vine borer. This insect will bore into the stems of squash, zucchini, pumpkins and gourds. Zucchini squash are a favorite. Cucumbers and melons are usually not a target, although both can be affected by a disease that causes similar symptoms, known as bacterial wilt.

The adult of this insect is a clear-winged moth that resembles a wasp. The forewings are a dark metallic green but the rear wings are clear. The abdomen is orange...
with black spots. The larva is cream-colored and rather wrinkled. Adults emerge in the spring and lay eggs on or near susceptible plants. Eggs are deposited singly on the underside of the vines and are often concentrated at the base of the plants. Larva bore into the plant and feed for about a month as they move toward the base. Mature larva will exit the plant, burrow into the soil and pupate where they remain until the next year. Each plant can have numerous borers. If you suspect squash vine borer, split the stem of a collapsed plant near where it enters the ground. Infested plants will be hollowed out and mushy and may contain borers. Unfortunately, there isn't much you can do at this late stage. Control measures should center on prevention.

Suggested preventative controls would include crushing the dull red eggs before they hatch, excavating larvae from stems before they cause much damage or using insecticide applications. Applications should begin when the vines begin to run (too late for that) and reapplied every seven to 10 days through the end of June. Direct the spray at the crown of the plant and the base of runners. Chemicals used for borer control in gardens are permethrin (Eight Vegetable, Fruit & Flower Concentrate; Lawn, Garden, Pet and Livestock Insect Control; Lawn & Garden Insect Killer) or bifenthrin (Hi-Yield Bug Blaster II, Bug-B-Gon Insect Killer for Lawns & Gardens) applied as sprays or dusts. If plants wilt, look for the presence of holes and ooze. However, in extreme heat, these plants will temporarily wilt in the afternoon even if undamaged by this insect. (Ward Upham)

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Do Not Over-Fertilize Tomatoes

![Properly Fertilized Tomatoes](image)

Though tomatoes need to be fertilized to yield well, too much nitrogen can result in large plants with little to no fruit. Tomatoes should be fertilized before planting and sidedressed with a nitrogen fertilizer three times during the season.

The first sidedressing should go down one to two weeks before the first tomato ripens. The second should be applied two weeks after the first tomato ripens and the third one month after the second. Common sources of nitrogen-only fertilizers include nitrate of soda, urea, and ammonium sulfate. Blood meal is an organic fertilizer that contains primarily, but not exclusively, nitrogen. Use only one of the listed fertilizers and apply at the rate given below.

- Nitrate of soda (16-0-0): Apply 2/3 pound (1.5 cups) fertilizer per 30 feet of row.
- Blood Meal (12-1.5-.6): Apply 14 ounces (1.75 cups) fertilizer per 30 feet of row.
- Urea (46-0-0): Apply 4 ounces (½ cup) fertilizer per 30 feet of row.
- Ammonium Sulfate (21-0-0): Apply 0.5 pounds (1 cup) fertilizer per 30 feet of row.

If you cannot find the above materials, you can use a lawn fertilizer that is about 30 percent nitrogen (nitrogen is the first number in the set of three) and apply it at the rate of 1/3
pound (3/4 cup) per 30 feet of row. Do not use a fertilizer that contains a weed killer or weed preventer. (Ward Upham)

Hornworms on Tomatoes

Hornworms are the largest larval insect commonly seen in the garden. Though usually seen on tomato, they can also attack eggplant, pepper, and potato.

The larval stage of this insect is a 3 1/2- to 4-inch long pale green caterpillar with five pair of prolegs and a horn on the last segment. The two most common hornworms are the tobacco hornworm (seven diagonal white stripes and, most commonly, a red horn) and the tomato hornworm (v-shaped markings with a horn that is often blue or black).

The adult of the tobacco hornworm is the Carolina sphinx moth. The five-spotted hawk moth is the adult of the tomato hornworm. Both moths are stout-bodied, grayish-colored insects with a wing spread of 4 to 5 inches. The larva is the damaging stage and feeds on the leaves and stems of the tomato plant, leaving behind dark green or black droppings.

Though initially quite small with a body about the same size as its horn, these insects pass through four or five larval stages to reach full size in about a month. The coloration of this larva causes it to blend in with its surroundings and is often difficult to see despite its large size. It eventually will burrow into the soil to pupate. There are two generations a year.

This insect is parasitized by a number of insects. One of the most common is a small braconid wasp. Larva that hatch from wasp eggs laid on the hornworm feed on the inside of the hornworm until the wasp is ready to pupate. The cocoons appear as white projections protruding from the hornworm's body. If such projections are seen, leave the infected hornworms in the garden. The wasps will kill the hornworms when they emerge from the cocoons and will seek out other hornworms to parasitize.

Handpicking is an effective control in small gardens. Though large, these larvae are surprisingly difficult to see. Missing foliage is often the first clue that you have an interloper. Bt (Dipel, Thuricide), spinosad (Conserve; Colorado Potato Beetle Beater Conc; Captain Jack's Dead Bug Brew, Monterey Garden Insect Spray), cyfluthrin (BioAdvanced Vegetable & Garden Insect Spray) and other insecticides may also be used to control hornworms. Pay attention to the harvest interval. The harvest interval is the number of days between when the spray is applied and when the fruit can be harvested. (Ward Upham)

Squash Bugs

Squash bugs are the grey, shield-shaped bugs that feed on squash and pumpkin plants. If you have had problems with these insects in the past, you know that they are almost impossible to control when mature. This is because the squash bugs have a hard body that an insecticide has difficulty penetrating. Thus, spraying when the insects are
small is important. Look on the underside of the leaves for cluster of brick-red eggs
https://hnr.k-state.edu/extension/info-center/common-pest-problems/common-pest-
problem-new/Squash%20Bug.pdf and small green insects with black legs. These nymphs
will eventually become adults, which will lay eggs that will become the second generation.
The second generation is often huge and devastating. Therefore, it is important to control
as many squash bugs of the first generation as possible.

Because squash bugs feed by sucking juice from the plant, only insecticides that
directly contact the insect will work. General use insecticides such as permethrin (Bug-B-
Gon Multi-Purpose Garden Dust; Green Thumb Multipurpose Garden and Pet Dust; Bug-
No-More Yard and Garden Insect Spray; Eight Vegetable, Fruit and Flower Concentrate;
Garden and Farm Insect Control; Lawn & Garden Insect Killer), malathion, and
methoxychlor provide control if a direct application is made to young, soft-bodied squash
bugs. This means that you MUST spray or dust the underside of the leaves because this is
where the insects live. (Ward Upham)

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**Physiological Leaf Curl in Tomatoes**

Every year we have calls from gardeners who have tomato plants with leaves that
curl up. When tomato plants grow vigorously in mild, spring weather the top growth often
exceeds the root development. When the first few days of warm, dry summer weather hit,
the plant 'realizes' that it has a problem and needs to increase its root development. The
plant tries to reduce its leaf area by rolling leaves. The leaves curl along the length of the
leaf (leaflet) in an upward fashion. It is often accompanied by a thickening of the leaf
giving it a leathery texture. Interestingly, leaf roll is worse on some varieties than others.

Though rolling usually occurs during the spring to summer shift period, it may also
occur after a heavy cultivating or hoeing, a hard rain, waterlogged soil or any sudden
change in weather. This leaf roll is a temporary condition that goes away after a week or so
when the plant has a chance to acclimate, recover from injury, or the soil has a chance to
dry out. (Ward Upham)

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**Grub Control in Lawns**

If you plan on using a grub preventative on your lawn, the first half of July is a
good target date for most products. Preventatives are normally used on areas that have had
a history of grub problems.

Traditional grub insecticides such as Dylox or carbaryl (Sevin) are normally
applied in late July after grubs are present or as a rescue treatment once damage is seen.
Products that contain Merit (imidacloprid) are considered grub preventers. Actually, these
products do not prevent grubs, but rather kill grubs when they are quite small, and long
before they cause damage. Merit is safer to use around pets and humans than traditional
grub killers. Merit can be found in BioAdvanced Season-Long Grub Control, Bonide Grub Beater, Gordon’s Grub No-More and Hi-Yield Grub Free Zone II and III.

Another grub preventer with the trade name GrubEx contains chlorantraniliprole. Though this product is very effective, it is less water soluble than imidacloprid. It should be applied earlier, preferably April or May, but applications through June should still be effective. Remember, all grub products should be watered in soon after application. (Ward Upham)

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Controlling Yellow Nutsedge in Lawns

Yellow nutsedge is a relatively common problem in lawns, especially in wet years or in lawns with irrigation. Although sedges look much like a grass, they are different. Unlike grasses, sedges have triangular stems, and the leaves are three-ranked instead of two-ranked, which means the leaves come off the stems in three different directions. Yellow nutsedge is pale green to yellow and grows rapidly in the spring and early summer. Because of this rapid shoot growth, it sticks up above the rest of the lawn only a few days after mowing. This weed is a good indicator of poor drainage, but it can be introduced into well-drained sites through contaminated topsoil or nursery stock. As with many weeds, nutsedge is less competitive in a dense, healthy lawn than in an open, poor lawn.

Nutsedge is difficult to control culturally because it produces numerous tubers that give rise to new plants. Pulling nutsedge will increase the number of plants because dormant tubers are activated. However, it is possible to control nutsedge by pulling, but you must be persistent. If you are, eventually the nutsedge will die out though this will likely take more than one season.

If you were going to treat with an herbicide, it would be better to leave the nutsedge plants undisturbed so the herbicide can be maximally translocated to the roots, rhizomes, and tubers. Several herbicides are available for nutsedge control.

SedgeHammer and Hi-Yield Nutsedge & Horsetail Control contain halosulfuron and are effective and safe products. The SedgeHammer label says to apply after the nutsedge has reached the three- to eight-leaf stage. Waiting until this growth stage apparently results in improved translocation of the active ingredient to the underground tubers and rhizomes.

Products with sulfentrazone such as Bonide Sedge Ender, Ortho Nutsedge Killer and Spectracide Weed Stop for Lawns Plus Crabgrass Killer are also effective.

Research has shown that the first application should go down by June 21. If the initial spray is after June 21, mature daughter tubers may be stimulated to grow. (Ward Upham)

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Fundamentals of Using Soaps as Insecticides
Insecticidal soaps are classified as biorational or "reduced risk" insecticides and are used in certain situations because they leave minimal residues, are less toxic to humans, and are short-lived in the environment because they degrade rapidly. A soap is a substance derived from the activity of an alkali such as sodium (hard soap) or potassium (soft soap) hydroxide on a fat. In general, fats are a blend of particular fatty acid chain lengths. Soap is a general term for the salts of fatty acids. Soaps may be combined with fish, whale, vegetable, coconut, corn, linseed, or soybean oil. For example, "Green Soap" is a potassium/coconut oil soap that was used widely as a liquid hand soap in public restrooms. It is now available as a hand soap or shampoo, and has been shown to be effective, as an unlabeled insecticide, in controlling soft-bodied insects.

Commercially available insecticidal soaps containing the active ingredient, potassium salts of fatty acids, are used against a variety of soft-bodied insect and mite pests including aphids, scales, mealybugs, thrips, whiteflies, and the twospotted spider mite, *Tetranychus urticae*. The young life stages (nymphs, larvae, or crawlers) are most susceptible to soap applications. Soaps have minimal activity on beetles and other hard-bodied insects although this is not always the case as certain soaps have been shown to kill hard-bodied insects such as cockroaches. Soaps are effective only when insects or mites come into direct contact with wet spray residues. Dried residues on plant surfaces have minimal insect or mite activity as soap residues degrade rapidly; especially under sunlight (ultraviolet light).

The mode of action of soaps is still not well-documented; however, soaps may kill insect and mite pests in one of three ways. First, soaps may work when fatty acids penetrate through the insect's outer covering (cuticle) and dissolve or disrupt cell membranes. This interferes with cell integrity causing cells to leak and collapse, destroys respiratory functions, and results in dehydration and death of an insect or mite. Second, soaps may act as insect growth regulators interfering with cellular metabolism and the production of growth hormones during metamorphosis. Third, soaps may block the spiracles (breathing pores), which disrupts normal respiration.

There are a variety of fatty acids; however, only certain fatty acids have insecticidal properties, which is associated with the length of the carbon-based fatty acid chains. Most soaps with insect and mite activity are composed of long chain fatty acids (10 or 18-carbon chains) whereas shorter chain fatty acids (9-carbon chains or less) have herbicidal properties, so using materials that have short chain fatty acids can kill plants. For example, oleic acid, an 18-chain carbon fatty acid, that is present in olive oil and other vegetable oils, is very effective as an insecticidal soap.

Insecticidal soaps may directly and indirectly harm beneficial insects and mites. For example, one study showed that insecticidal soap was directly harmful to the predatory mite, *Phytoseiulus persimilis*. Another study reported that applying an insecticidal soap at a 4% application rate resulted in 80 to 99% mortality of the predatory mite, *Neoseiulus (=Amblyseius) cucumeris*.

There is a general misconception that any soap or laundry detergent can be used as an insecticide. This is not true. As already mentioned, only a few select soaps have insecticidal properties, but many common household soaps, laundry detergents, and
Dishwashing liquids, including Palmolive®, Dawn®, Ivory®, and Joy® (Figure 2), which are unlabeled insecticides, may have some activity on soft-bodied insects when applied at a 1% or 2% aqueous solution. However, reliability is less predictable than soaps (potassium salts of fatty acids) that are formulated and registered as insecticides.

Examples of various dishwashing liquids on insect and mite pests are provided below:

1) Palmolive®, Dawn®, Joy®, Ivory®, and Dove® reduced the numbers of sweet potato whitefly, *Bemisia tabaci*; green peach aphid, *Myzus persicae*; cabbage aphid, *Brevicoryne brassicae*; and twospotted spider mite on a variety of vegetable crops.

2) Dawn Ultra® dishwashing liquid was effective on the German cockroach, *Blattella germanica*, causing 100% mortality.

3) Ivory® liquid dishwashing soap applied at 0.4 to 3.0% concentrations controlled spider mites, aphids, and psyllids.

4) Ivory® liquid dishwashing soap at 1 and 2% concentrations was effective in controlling aphids, spider mites, psyllids, and thrips.

5) New Day® dishwashing detergent applied at 2.0 ml/L provided 95% mortality of silverleaf whitefly, *Bemisia argentifoli (=B. tabaci biotype B)*, nymphs.

6) Ivory® liquid dishwashing soap and Tide® detergent were effective in reducing populations of aphids; citrus red mite, *Phyllocoprutia oleivora*; psyllids; and greenhouse thrips, *Heliothrips haemorrhoidalis*, on landscape plants.

However, dishwashing liquids and laundry detergents are primarily designed to dissolve grease from dishes and clean clothes; not kill insects and mites. The type of fatty acid, length of the carbon-based fatty acid chain, and concentration in many laundry and dish soaps is not known. In addition, the insecticidal effectiveness of these products may be compromised by the presence of coloring agents or perfumes, which often times leads to inconsistent results. Certain laundry and dish soaps will precipitate or solidify in "hard" water, thus reducing their effectiveness. Furthermore, these materials may cause plant injury by dissolving the waxy cuticle on the leaf surface. Registered, commercially available insecticidal soaps are less likely to dissolve plant waxes than household cleaning products. Also, plants with pubescent (hairy) leaves may be more susceptible to injury from dishwashing liquids and detergents.

Dishwashing liquids and laundry detergents, like insecticidal soaps, lack any residual activity and thus more frequent applications are required. However, too many applications will harm certain plant types. Moreover, detergents are chemically different from soaps and may cause phytotoxicity (plant injury). In fact, many hand soaps are not necessarily pure fatty acids. Most importantly, these solutions are not registered insecticides. Soap companies do not intend for their products to be used as insecticides as they have not gone through the Environmental Protection Agency (EPA) registration process.
Although some dishwashing liquids and laundry soaps are active on insect and mite pests, they should not be used because they are not registered insecticides. Even more important is that a pest control company will generally stand behind a product when there is a problem. However, if a dish or laundry soap is used and plants are injured—there is no recourse. (Raymond Cloyd)

K-State Garden Hour: Upcoming Gardening Webinar Schedule
Submitted by Matthew McKernan

Join K-State Research and Extension for their successful new gardening series called "K-State Garden Hour." The free weekly series is every Wednesday from noon to 1 p.m. via Zoom.

This virtual series provides information on a variety of horticultural topics, as well as highlights educational topics related to plant selection, entomology, plant pathology and integrated pest management.

Whether you are new to gardening or have some experience, you're sure to learn something new. Discussions will be led by K-State Extension Professionals throughout the state. This event can include up to 1000 participants in the live session. Sessions will be recorded and posted online after each event.

The following are the featured presentation topics for the next two weeks:

• There are countless insects in a garden, but which are friendly and which are foe? Frannie will cover what insects you may want to know, in order to identify what is in your garden. Then, learn what you can do to discourage the pests in your garden.

Wednesday, July 1: "Weed Management in the Lawn & Garden," presented by Jesse Gilmore, Wildcat Extension District Horticulture Extension Agent
Every gardener wages war on weeds, which compete with desirable plants for water, nutrients, and sunlight. Is that struggle always necessary, and what are the different ways to keep weeds from appearing where you don't want them? Jesse will explain what defines a weed, how they grow, the hidden merits of weeds, and methods of keeping weeds in check.

To view more webinars in the series, visit our website. Each event has a separate registration page. You will need to click on and register for each webinar that you would like to attend. **You can preregister for each online webinar and access past webinars online.**

You can also find, promote and share each webinar on Facebook, via the Facebook Events. If you have any questions, please email our team at ksuemg@k-state.edu.

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**EPA Clears Up Confusion about Dicamba Products**

This year has certainly been challenging for producers! Dicamba is an herbicide that has been around for years in different formulations, but the newer products of Engenia, Extendimax and FeXapan have caused a stir of emotions. I personally get a headache just thinking about all the interesting changes that have occurred. Last week the Ninth Circuit Court of Appeals in San Francisco vacated the federal registrations for Engenia, Extendimax, and FeXapan creating lots of confusion for producers who planted dicamba-resistant soybeans and cotton. In response, the Environmental Protection Agency issued a cancellation order for these three products. It states that producers and commercial applicators who purchased these products prior to June 3 can apply them through July 31 according to the label directions, but no further distribution or sale of the products can occur. If you are a producer who is forced to look for alternative products to use for post-emergence weed control in these crops, then check out the June 5, Agronomy eUpdate for suggestions: [https://webapp.agron.ksu.edu/agr_social/article_new/federal-court-vacates-registration-of-some-dicamba-herbicide-labels-391-1](https://webapp.agron.ksu.edu/agr_social/article_new/federal-court-vacates-registration-of-some-dicamba-herbicide-labels-391-1)

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**Corn Leaf Diseases**

There are several leaf diseases that can infect corn in Kansas in any given year. They can all be controlled with some combination of hybrid selection, tillage management, crop rotation, planting dates, or foliar fungicides.

**Anthracnose leaf blight**

Recently there have been reports in eastern Kansas and Nebraska of Anthracnose leaf blight. This disease has been favored by rainfall and warm temperatures over the past few weeks. It is most likely to be a problem in fields where corn is planted into corn residue, as
the fungus that causes this disease survives on residue and can be rain-splashed onto lower leaves.
Symptoms of Anthracnose leaf blight are tan, irregular-shaped lesions on the lower leaves as early as V3 to V4 (Figure 1). Lesions may reach a half-inch in length, with a red, reddish-brown, or yellow-orange border. A fungicide spray at this time would not be profitable as the lower leaves have a low contribution to yield. There is no strong connection between early-season Anthracnose leaf blight and late-season Anthracnose stalk rot. Additionally, hybrids that are susceptible to one may not be susceptible to the other. Other than the selection of hybrids with resistance, producers can also help reduce this disease by using rotation or tillage to eliminate crop debris.

Figure 1. Anthracnose leaf blight. Photo courtesy of Allison Robertson, Iowa State University, https://cropprotectionnetwork.org/resources/articles/diseases/anthracnose-leaf-blight-of-corn.

**Common rust**
We have received some reports of common rust this season. This disease is typically less serious in Kansas than the other leaf diseases. Symptoms are small, round to elongated pustules that start out golden brown then turn darker later in the season (Figure 2). Common rust pustules commonly form on both sides of the leaf and are sparser than those of southern rust.
This disease can occur wherever corn is grown. Infection is favored by moderate temperatures (60 to 77 degrees) and high relative humidity (greater than 95 percent for at least six hours). Common rust is easily controlled by using resistant hybrids. Fungicides are not recommended for this disease alone since common rust causes only minimal yield loss.

Figure 2. Common rust on corn. Photo courtesy of Iowa State University, www.ent.iastate.edu/imagegal/plantpath/corn/comrust/0796.37comrust.html

Southern rust
Southern rust has been reported in south eastern United States in 2020, but not yet in Kansas. Stormy weather may move southern rust into Kansas within the next few weeks. Make sure to be out scouting for southern rust and if suspected, please send images to K-State extension professionals.

Southern rust pustules look similar to common rust, but there are usually a lot more of them and they occur only on the upper leaf surfaces (Figure 3). This often gives the upper leaves a dusty appearance. Southern rust does not overwinter in Kansas. Spores blow up from southern production areas in mid-to late-July. Warm, humid weather favors infection.

Resistant hybrids are the best choice for management. If susceptible hybrids are planted late, and disease conditions are favorable, applications of a systemic foliar fungicide may be warranted.

Figure 3. Southern rust on corn. Photo courtesy of University of Nebraska https://cropwatch.unl.edu/plantdisease/corn/southern-rust
Goss’s bacterial wilt
This disease is caused by a bacterial, not a fungal, infection. Symptoms are gray to light yellow stripes with wavy margins that follow the leaf veins (Figure 4). Within these lesions, dark green to black, water-soaked spots that take on the appearance of freckles usually appear and are an excellent diagnostic symptom.
This disease occurs primarily in northwest Kansas, northeast Colorado, and southwest Nebraska. It can be controlled with resistant hybrids and crop rotation.

Figure 4. Goss's wilt. Photo courtesy of University of Nebraska.

Gray leaf spot
Symptoms develop on the lowest leaves first and progress upward. The first symptoms are tiny lesions surrounded by a yellow halo. These eventually elongate into pale brown or gray rectangular lesions ranging from less than an inch to two inches in size (Figure 5). The entire leaves may become blighted.

Gray leaf spot survives in infested plant debris on the soil surface. In Kansas, initial infections occur in late June and early July. Cloudy weather accompanied by prolonged periods of leaf wetness and high humidity favor disease development.

Figure 5. Gray leaf spot on corn. Photo by Doug Jardine, K-State Research and Extension

Severe damage often occurs in low spots or in fields bordered by trees or streams where air circulation is poor.
To control gray leaf spot, producers can use a crop rotation that is long enough to eliminate corn debris. Producers can also till under the old corn debris. There are many hybrids available with at least partial resistance. Producers can also use foliar fungicides when the economic threshold is exceeded.

Application of a fungicide prior to full tasseling is not recommended as crop damage can occur prior to this stage of development.

**Northern corn leaf blight**

Symptoms are gray, elongated lesions 1 to 6 inches long (Figure 6). The lesions appear on the oldest leaves first, and progress upward. Lesions may become tan as they mature.

Northern corn leaf blight is most common in continuous corn where crop debris remains on the surface. Conditions that favor infection are temperatures of 65 to 80 degrees with extended periods of dew.

There are several hybrids with resistance to northern corn leaf blight. Producers can also help reduce this disease by using rotation or tillage to eliminate crop debris.

![Figure 6. Northern corn leaf blight. Photo courtesy of Iowa State University](www.ent.iastate.edu/imagegal/plantpath/corn/northleafblight/ncorn_leaf_blight_0796_02.html)

**Summary**

The following are leaf diseases that can occur in certain situations:

- **Continuous corn, with residue on the surface**: All
- **Continuous corn, no residue on the surface**: Common rust, southern rust
- **Rotated corn**: Common rust, southern rust

The following is a list of leaf diseases according to the time of year they typically occur in Kansas (from earliest to latest):

1. Anthracnose leaf blight (earliest in the season)
2. Gray leaf spot
3. Common rust
4. Northern corn leaf blight
5. Goss’s wilt
6. Southern rust (latest in the season)

Next is a list of leaf diseases according to how commonly they occur in Kansas (from most common to least common):

1. Common rust (most common)
2. Gray leaf spot
3. Southern rust
4. Anthracnose leaf blight
5. Goss’s wilt
6. Northern corn leaf blight (least common)

Last is a list of corn leaf diseases in order of the potential yield loss they typically cause under moderate to severe infections (in order of most severe to least severe):

1. Gray leaf spot (most severe yield loss)
2. Southern rust
3. Goss’s wilt
4. Anthracnose leaf blight
5. Northern corn leaf blight
6. Common rust (least severe yield loss)

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