



West Kentucky Vegetable Growers

Newsletter

VOLUME 1, ISSUE 4

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Special Topics of

Interest:

- Silverleaf Whitefly on Squash
- U.S. Drought Monitor– Kentucky
- Growing Fall Vegetables
- Winter Cover Crops
- Irrigating Fall Crops For Frost Protection
- Pumpkin Growers with Pumpkins for Sale in KY
- Upcoming Events

Courtney Flood, Fruit & Vegetable Extension Associate, Editor
Dr. Joe Masabni, Fruit & Vegetable Extension Specialist, Editor

SILVERLEAF WHITEFLY ON SQUASH

Timothy Coolong, Extension Horticulturist and Ric Bessin, Extension Entomologist

Recent samples to the diagnostic lab and squash plants at the UK Horticulture and Spindletop farms have shown evidence of silverleaf whitefly damage. Silverleaf whitefly, *Bemisia argentifolli*, is a relatively new pest to Kentucky. Although they have been a problem for growers in southern regions of the U.S. for several years, outbreaks in Kentucky had been relatively uncommon. Silverleaf whitefly is a common pest of greenhouse plants throughout the year and, in the past, has been a relatively uncommon pest of cultivated plants in the field in Kentucky. Because it is unable to overwinter in Kentucky, it is more likely to be a problem of plants in greenhouse, high tunnels, on transplants shipped from southern regions, or in the field in mid-summer and fall. Hot, dry weather during the summer can favor rapid buildup of the silverleaf whitefly on wild and cultivated hosts outside of the greenhouse.



Though the silverleaf whitefly and its more common relative, the greenhouse whitefly, are both small (about 1/8th inch) and similar in appearance there are some key differences. Silverleaf whiteflies tend to have more yellowish body

and position their wings closer to the sides of their bodies whereas the more common greenhouse whiteflies are generally paler in color and tend to hold their wings flat on their backs. Typically the wings of the silverleaf whitefly do not touch; a small portion of the yellow abdomen is visible between the wings.

The silverleaf whitefly have a very wide range of hosts including: tomato, pepper, squash, bean, lettuce, eggplant, broccoli, cabbage, potato and watermelon. When silverleaf whitefly immature stages feed on squash leaves, their saliva introduces toxins into the plant that can have a dramatic effect on leaves. Developing leaves of affected plants can take on a silvery appearance starting from the leaf veins and moving outward. The leaves on which the immature stages are feeding may not develop symptoms. During heavy outbreaks entire plants can take on a silver appearance in just a few days. The upper epidermis separates from the lower cells causing the white appearance. Affected plants can be stunted resulting in reduced yields and fruit quality. Unfortunately, small numbers of silverleaf whitefly can cause silvering of small squash transplants. However,



“Chemical control of whiteflies can be difficult as the adults and immature stage occur on the undersides of leaves, particularly older leaves, making spray coverage difficult.”

once the whiteflies are controlled, the leaves and plants will begin to recover. Damage to younger plants maybe more severe to plants closer to harvest.

There are a number of predaceous insects that feed on silverleaf whitefly and one commercial parasitoid wasp, *Eretmocerus emericus*, that has been used successfully in greenhouses.



Chemical control of whiteflies can be difficult as the adults and immature stage occur on the undersides of leaves, particularly older leaves, making spray coverage difficult. Insecticides listed for whitefly control in ID-36, Vegetable Production Guide for Commercial Growers, can be effective against silverleaf whitefly. ID-36 is available online at <http://www.ca.uky.edu/agc/pubs/id/id36/id36-04.pdf>.

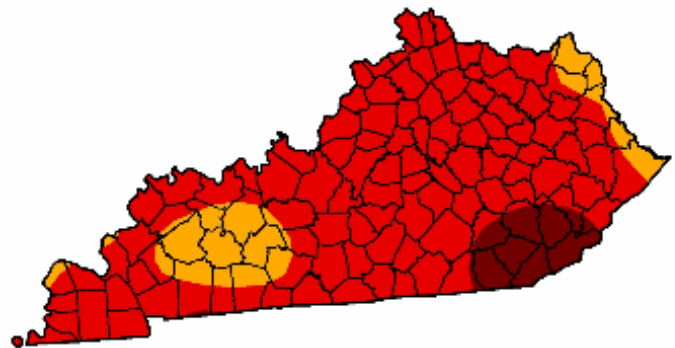
U.S. Drought Monitor

Kentucky

September 25, 2007
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.0	100.0	100.0	100.0	87.3	7.6
Last Week (09/18/2007 map)	0.0	100.0	100.0	100.0	70.7	7.6
3 Months Ago (07/03/2007 map)	1.4	98.6	85.7	61.4	6.4	0.0
Start of Calendar Year (01/02/2007 map)	51.5	48.5	0.0	0.0	0.0	0.0
Start of Water Year (10/03/2006 map)	100.0	0.0	0.0	0.0	0.0	0.0
One Year Ago (09/26/2006 map)	100.0	0.0	0.0	0.0	0.0	0.0



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements

<http://drought.unl.edu/dm>



Released Thursday, September 27, 2007

Author: David Miskus, JAWF/CPC/NOAA

Growing Fall Vegetables

Excerpt taken from:

<http://www.veggiegardeningtips.com/growing-fall-vegetables/>

Many cool-weather vegetables normally planted in spring grow and produce better in the fall, since they mature as the weather cools. When wet weather causes a delay in planting early spring vegetables (past a time when they can be expected to mature before hot weather destroys them), a fall crop provides a second opportunity. Warm-season vegetables planted in midsummer for fall harvest require additional time to mature as the weather cools in September and October. Choose planting dates in midsummer that allow these vegetables to mature before frost. Fall vegetables will grow rapidly at first and gradually slow as the days become shorter and colder. Some problems that you may encounter include: extreme heat, drought, difficulty in seed germination, insects, diseases and weeds. You'll be happy to discover that destructive insects won't be as numerous, nor create as much of a problem as they can during the summer. The most common fall insect pest is aphids, which fortunately won't cause much of a problem to the growth or production of healthy plants. You will also struggle less with weed control because the weeds will germinate less frequently and grow slower than they do during the warmer growing seasons. However, successful fall crops require close attention and considerable care from planting to harvest.

The following is a list of fast growing, cold hardy crops that are ideal for fall vegetable crops:

- **Kale** - Nutritious leafy greens on productive plants that over-winter easily even in cold climates.
- **Collards** - Another leafy green similar to kale but with larger, stronger flavored leaves.
- **Lettuce** - Plant varieties bred especially for growing during the fall season or in cold frames.
- **Spinach** - Not as easy to grow as kale and collards, but these leafy greens will also over-winter.
- **Beet** - "Half-hardy" vegetables, not as tough as broccoli or Chinese cabbage, but can withstand light frosts and cooler temperatures
- **Turnips** - Here's a quick maturing root crop that's productive and easy to grow.
- **Rutabagas** - Larger and sweeter than turnips, plant earlier in the summer for fall harvests.
- **Broccoli** - Popular, productive and much easier to grow from transplant than cauliflower.
- **Onion** - Fall is also a good time to plant onion seed. They are slow-growing and won't be ready to harvest this fall, but by planting seed in warm soil, they will continue to grow. Onions overwinter in the soil when temperatures do not get extremely cold.
- **Cauliflower** - Finicky grower from transplant, planting must be timed well in order to develop large heads.
- **Radish** - Will be a tender crop under cool temperatures and moist soil conditions.
- **Carrot** - Plant late summer, tolerant to light frosts.
- **Mustard** - Spicy hot leaves, this is a very fast growing vegetable.
- **Cabbage** - Grow from transplants or start seeds indoors under lights.
- **Brussels sprouts** - Start seed in early summer or purchase transplants.



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Be sure you take a minute to register your farm on www.Marketmakerky.com. Buyers from Kentucky and neighboring states are using this free directory to find farm products of all kinds. Registration of your business is very simple and you don't need to be a computer whiz to be included. Your county extension office can help you with any questions or contact Bob Perry at UK (859-257-8890) for specific help.

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Winter Cover Crops for Kentucky Gardens and Fields

Monroe Rasnake, Extension Soils and Crops Specialist; Winston Dunwell, Extension Vegetables and Ornamentals Specialist; and Leslie Weston, Vegetable Research and Teaching

Cover crops have long been used to reduce soil erosion, add organic matter to improve the soil, and provide some winter and early spring grazing. With the development of no-till cropping systems, cover crops were recognized for their ability to provide moisture-conserving residues as well as nitrogen for the succeeding crop. Cover crops take up and hold nutrients, especially nitrogen, that were not used by the previous crop. Because they remove water from the soil, they may reduce the risk of nutrients and pesticides moving through the soil. Cover crops may reduce weed problems and the need for herbicides by competing with them for space and nutrients and by providing a mulch to cover the soil surface.

Many plants have the potential to provide winter cover, but have not been tested in Kentucky to determine their effectiveness and how they should be used. Some may be better for holding nutrients, while others are more effective in suppressing weeds or controlling erosion. However, some have proven effective and should be used until others can be evaluated. The following describes those suitable for use in Kentucky and how they should be managed to provide good winter cover.

Small Grains

Wheat, rye, barley, triticale, and oats are very effective winter cover crops. They also can be harvested as forage, straw, or grain, or left in the field to provide mulch and organic matter. When planted early enough in the fall, they provide good winter cover and take up nutrients left in the soil from the summer crop. Each small grain crop has its advantages and disadvantages.

Rye is perhaps the best overall small grain cover crop. It can be seeded from August in northern and eastern Kentucky through mid-November in western Kentucky. Extremely winter-hardy varieties, such as Aroostook, should be considered if late planting is necessary. Rye germinates quickly, grows fast, and provides good winter cover if not planted too late. Early planting is important for soil protection and uptake of nutrients left over from the previous crop. Rye is effective in suppressing weeds. It resumes growth early in the spring and may produce too much top growth if not killed soon enough. For seeding as a cover crop, use 2 bu/a and up to 3 bu/a if the rye is to be grazed. 3-4 lbs of seed/ 1000 sq ft at a depth of 1-2" should be used.

Wheat is also an excellent cover crop. It is easier to manage and more versatile than the other small grains. It can be seeded from mid-September to mid-November; however, plantings made after mid-October may not provide good winter cover and weed suppression. If it might be harvested as grain, plant after October 10 to avoid Hessian fly. Earlier planting is necessary when fall grazing, nutrient uptake, or winter cover are the main goals. Use 2 bu/a of seed at a depth of 1-2" when planting as a cover crop. With no-till planting, a herbicide may be needed to control weeds. Wheat does not grow as quickly in the spring as rye and is not as likely to cause problems with too much top growth.

Oats can be used as a winter cover crop, but are not as effective as the other small grains. Overall biomass or mulch produced is generally lower than with rye or wheat. Oats are more subject to winter-kill and start growing later in the spring. When planting in the fall, be sure to use a winter variety. Plant 2½ bu/a of seed in September or October. Oats can be used as forage or grain, but yields may be less than with other small grains. Spring oats may be used as a cover crop by planting in early March. They can also be planted in early fall and allowed to grow until killed by cold weather. The residue will continue to protect the soil until spring, but nutrients may be lost and weed suppression will be reduced.

Barley can be used to provide winter cover and mulch for a succeeding no-till crop; however, it is susceptible to winter injury and barley yellow dwarf disease. Plant 2½ bu of seed/ a in late September for winter cover and silage production. Barley is the earliest maturing small grain, which is an advantage when double cropping with soybeans or corn silage.

Triticale has been used mainly for silage in Kentucky and has the potential for high silage yields. Plant 2 bu/ a in early October.

Seeding and Managing Small Grains

Small grains are usually drilled or broadcast on clean-tilled soil and covered to about one inch. A corrugated roller (cultipacker) or other device can be used to firm the soil and press the seed in. Small grains can be planted without tillage with a no-till drill or simply broadcast on the soil surface when there is sufficient cover or residue from a previous crop. In gardens or small areas, shallow tillage with a rototiller can be used to cover seed. If intended only for a cover crop, do not add nitrogen fertilizer. If it is to be used as a forage or grain, nitrogen can be applied in late winter. A rye cover crop should be killed—by a herbicide or tillage—by mid-April to prevent excessive top growth. If small grains grow too tall in the spring, it may be helpful to mow them before tilling or no-till planting.

Grasses

Annual ryegrass can be used as a winter cover crop in Kentucky, although it may winter-kill in some years. When planted in August or September, it usually produces good top growth before cold weather. This will help it survive better, but even if it does winter-kill, it will still protect the soil. Annual ryegrass has the advantage of a dense, leafy growth that provides good cover which can be tilled easily if not allowed to mature in the spring. It is also effective in suppressing weeds. Plant in mid-August through September, use 20-25 lbs/a of seed, and cover the seed about ½" deep. Ryegrass germinates quickly and will provide good cover before winter. It can be grazed or cut for hay in late April or early May. If given time, it will produce seed and can volunteer the following fall. This trait causes it to become a weed problem in some cropping systems, especially those including wheat.

Perennial ryegrass is very effective in suppressing weeds and can also be used as a winter cover crop. It can survive over winter and will need to be killed in the spring. Use about the same seeding rate as annual ryegrass.

Tall fescue can be used as a winter cover crop even though it is not an annual grass. It can be seeded mid-August through September and can provide a good ground cover before winter. Broadcast 20-30 lbs/a of seed on clean-tilled soil. Use a corrugated roller (cultipacker) to firm the soil and press in the seed. The seed should be covered no more than ½-inch deep. Fescue can be grazed or cut for hay in early May. If it is to be used for hay or grazing, 50-80 lbs of nitrogen should be applied in February or early March to increase yield and quality. It can be killed with a herbicide or tillage in the spring before planting a summer crop.

Legumes

Legumes, such as clovers and vetches, have the added advantage of being able to use or “fix” nitrogen from the air for themselves and following crops. They are able to do this because of nitrogen-fixing bacteria that live in nodules (knots) on the plant roots. The plant provides food and shelter for the bacteria that supply nitrogen for the plant. When the roots die, nitrogen is released and becomes available to other plants. Legume seed should be inoculated with the proper nitrogen-fixing bacteria. If nitrogen is available in the soil, legumes will take it up rather than fixing their own; thus, they are best when used on soils low in nitrogen.

Hairy vetch is probably the most reliable and most productive winter legume cover crop adapted to Kentucky. It is easy to establish and is winter hardy throughout the state. It has the disadvantage of producing a significant percentage of hard seed that do not germinate the first year, but will often germinate later. This can create problems with hairy vetch volunteering into future crops. To provide good winter cover, plant hairy vetch in late August or early September, using 20-30 lbs/a of seed, and cover about 1-inch deep. Hairy vetch should be allowed to grow until May to obtain optimum nitrogen fixation. Killing the plant before seed matures reduces the chance of problems with volunteer plants. It can be killed by tillage or herbicides for no-till planting. Hairy vetch can be difficult to kill early in the spring, although glyphosate or gramoxone with a small amount of dicamba can be effective. Check current herbicide labels before use. Hairy vetch has been used for no-till planting of fresh market tomatoes with excellent results.

Bigflower vetch is very similar in growth habit and management to hairy vetch. It also has the same potential of hard seed volunteering into later crops. It has the advantage of earlier spring growth so the summer crop can be planted earlier. However, total growth and nitrogen fixation are less than with hairy vetch. Also, bigflower vetch seed may not be available in some areas.

Crimson clover is a winter annual clover often used in the southern United States as a cover crop and forage. Because Kentucky is on the northern fringe of its adaptation, it is subject to winter-kill here; however, it will survive most years in southern and western Kentucky. Growth and nitrogen fixation are less than with the vetches, but crimson clover is less likely to be a weedy volunteer in future crops. It should be planted in late August or early September at a rate of 20 to 25 pounds of seed per acre. Inoculate seed with the proper inoculant, and cover to a depth of ½ inch. Use a grain drill or broadcast the seed, and firm the soil with a corrugated roller (cultipacker). Crimson clover can be grazed or cut for hay at bud-to-early-bloom stage—usually early May. It can be killed with a herbicide or tillage before planting the summer crop.

Austrian Winter Pea (AWP) can also be used as a winter cover crop. Southern varieties are subject to winter-kill in Kentucky, so Canadian varieties should be used where possible. If used in highly erodible areas, AWP should be mixed with a small grain or planted early enough to produce good cover before cold weather. It can be killed or tilled under for planting a summer crop in late April or early May. Plant 30 pounds per acre with small grains, or 50 to 70 pounds alone. AWP should be planted from mid-September to mid-October. Seed should be planted 1-inch deep. Austrian winter pea can be cut for hay or silage when in full bloom or when the small grain is ready.

Mixtures– Legumes & Small Grains

All legumes can be seeded with a small grain, if desired. This improves the soil cover, which is especially important on highly erodible fields, and improves the chances for winter survival of at least one crop. When using a mixture, reduce the seeding rate of each by 1/2. Plant with a drill that has grain and legume boxes, or broadcast and cultipack.

Other Crops

Other crops may be used for winter cover in certain situations and for specific purposes. If cover is needed for more than one season, legumes, such as alfalfa, sweet clover, red clover, sericea lespedeza, and crown vetch, could be used. Canola and winter rape are mustard-type plants that provide good cover and may be suitable in some situations. In addition, many weedy species, such as henbit and chickweed, serve effectively as winter cover in some cropping systems. It is not suggested that these weed species be planted, but when they occur naturally they can be left until time to prepare the land for the next crop.

Sudangrass or sorghum-sudangrass hybrids are warm-season annual crops that can provide effective winter cover if seeded early enough. This generally means seeding no later than early September in Kentucky. They will be killed by the first hard freeze, but the residue should remain all winter. Sorghums are known to suppress weeds, especially small seeded broadleaves and annual grasses. See [*Producing Summer Annual Grasses for Emergency or Supplemental Forage \(AGR-88\)*](#) for more information on these grasses.

Potential Problems Linked to Cover Crops

Plant disease and insect problems can be increased by the use of cover crops. The principle of good rotation in which grasses are alternated with legume crops should help to avoid this problem. Some cover crops may have a detrimental effect on following crops through a process called allelopathy, which compounds released by the cover crop act as natural herbicides that can injure the next crop. Small seeded crops are more susceptible to allelopathy. It is seldom a problem with larger seeded field or horticulture crops, or with transplanted vegetables. It can be avoided in gardens by turning under the cover crop well in advance of planting vegetables or by killing it with a herbicide four to six weeks before planting the next crop. If wet weather delays spring tillage, too much top growth may be produced by the cover crop. This is more likely to be a problem with crops such as rye that tend to start growth early in the spring and to grow quickly. It may be best to avoid these crops for garden use. If heavy cover crops are plowed down in cool, wet conditions, they may release toxins or tie up nutrients as they decompose. Under these conditions, more time is needed for decomposition to take place before seeding crops. Cover crops may also become a weed problem by volunteer seeding where or when they are not wanted; vetches and annual ryegrass have this tendency. It is usually not a serious problem and can be handled through normal weed control practices in most cases. Always use high quality seed to ensure good stands and reduce the risk of introducing weeds. Check the susceptibility of cover crops to herbicides that may have been used on the preceding crop.

IRRIGATING FALL CROPS FOR FROST PROTECTION

(Adapted from NC State, Vermont Extension, Georgia Extension, and Ohio State Extension)

Since most all of us have been irrigating just about non-stop since April, why stop now? Protecting late season vegetable crops from that first frost or two can prolong harvest for days or weeks, and increase profits. An effective method of frost protection late in the growing season is overhead irrigation. Generally overhead irrigation is only used to save a crop that may otherwise freeze-out. ***To extend a season intentionally use row covers, etc, with irrigation only as a last resort to save the crop.***

Irrigation can protect against frost because heat lost from the crop to the environment is replaced by heat that is released when the applied water changes to ice. Specifically, as 1 gram of water freezes, 80 calories of heat energy are released. As long as ice is being formed, this 'latent heat of fusion' will provide heat.

There are some risks involved with sprinkler irrigating to protect against frost. The first and most important is that if the irrigation rate is not adequate, the damage incurred will be more severe than if no protection had been provided. An inadequate irrigation rate means that too little water is being applied to freeze at a rate which will provide enough heat to protect the crop. The situation is made complex by another property of water, evaporative cooling. As 1 gram of water evaporates, 600 calories of heat energy are absorbed from the surrounding environment. When compared to the 80 calories released by freezing, it becomes apparent that more than 7 ½ times more water must be freezing than evaporating to provide a net heating effect. Otherwise, the process of evaporation will take heat from the crop. An ice-covered plant will cool below the temperature of a comparable dry plant if freezing stops and evaporation begins. Since wind promotes evaporative cooling, wind speeds above 5 mph limit the success of irrigation for frost protection. Secondly, with overhead irrigation, ice buildup can cause plant breakage; and thirdly, over-watering can cause waterlogged soils and nutrient leaching problems. Lastly, at present, most systems are of fixed-rate design. They can only be turned on and off, and no variability exists for the irrigation rate. Thus, most systems are designed for the worst possible case. This means excess water is applied in most frosts, further increasing the problems of too much water on the crop.

If the capacity of the irrigation system is not sufficient to provide protection under the extreme conditions expected during the night, the system should NOT be turned on. In general, no system will provide protection in wind speeds greater than 5 mph for tree crops, 10 mph for low growing crops. A backup power source is essential. Once started, irrigation must continue until the ice is melting and loose. This usually occurs soon after the morning sun hits the trees. A power failure can be devastating due to the evaporative cooling effect.

Timely and complete coverage of the crop is required. The distance between sprinklers should be no more than 60 percent of the wetted diameter; place sprinklers no more than 50 percent of the sprinkler radius from the edge of the field. The nozzles should make at least one revolution per minute and should apply 0.12 to 0.15 inch of water per hour. Start sprinklers before the temperature drops to 32 degrees F (say 34 degrees F) and continue irrigating until the temperature rises and the ice begins to melt or until the wet-bulb temperature rises above 32 degrees F.

For more on frost protection by overhead watering visit <http://ohioline.osu.edu/b672/pdf/Irrigation.pdf>.

Name of Grower that has Pumpkins For Sale	County	Phone Number	
Mike Williams	Caldwell	270-625-0490	
Hank Cayce	Caldwell	270-365-2132	
Arnold O'Reilly	Breckinridge	270-547-8107	
Paul Sizemore	Owsley	606-464-9986	
Tim Britt	Barren	270-646-2547	
Orbin Rudd	Menifee	606-768-6137	
Fairview Produce Auction	Christian	270-885-4843	For Pricing Info see- http://www.uky.edu/Ag/NewCrops/auctions.html
David Weaver- The Country Barn	Christian	270-887-0053	
Larry Burton- Bearwallow Farm	Pulaski	606-871-7745	
Billy Burton	Pulaski	606-871-7648	
Mark Turner	Ohio	270-278-2032	Cell (270) 791-1836
Stewart Curry	Ohio	270-278-5513	Cell (270) 929-3253
Gary Cunningham	Hickman	270-254-0328	
Kevin Trunnell	Daviess	270-929-6415	

This list will continue to be updated.

University of Kentucky does not endorse any of the specific growers, businesses, or companies listed. This a partial list of pumpkin suppliers for Kentucky, to be expanded in future issues. This list is also available on the internet at <http://www.uky.edu/Ag/Horticulture/> and <http://www.uky.edu/Ag/NewCrops/>.

UPCOMING EVENTS

DECEMBER 6- ORGANIC VEGETABLE PRODUCTION WORKSHOP @ UK RESEARCH & EDUCATION CENTER 1-5PM

JANUARY 7 & 8- KY FRUIT & VEGETABLE CONFERENCE & TRADE SHOW @ LEXINGTON

[CONTACT US](#) OR YOUR COUNTY AGENT FOR DIRECTIONS OR ADDITIONAL INFORMATION.

COOPERATIVE EXTENSION SERVICE



UNIVERSITY OF KENTUCKY
College of Agriculture

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