COOPERATIVE EXTENSION SERVICE

UNIVERSITY OF KENTUCKY
College of Agriculture

West Kentucky Vegetable Growers Newsletter

VOLUME 1, ISSUE 2 AUGUST 2007

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

Special Topics of Interest:

Spider mite injury on eggplant.

PREHARVEST CUCUMBER BEETLE

Ric Bessin, Extension Entomologist

Most at-planting treatments for cucumber beetles have run their course and the first generation adults are beginning to emerge. While transmission of the bacterium that causes bacteria wilt remains a possibility with cucurbits that are susceptible to bacterial wilt, beetles causing direct damage to the developing rinds of the fruits are the primary concern. The adult beetles will often feed on the lower side of the fruits near where they rest on the ground.

Growers should continue to monitor for striped and spotted cucumber beetles before and during harvest. Growers may need to apply an insecticide to control the adults and attention should be given to achieving thorough coverage beneath the canopy and on the undersides of the fruits. Selection of insecticides will depend on the anticipated harvest date and the preharvest intervals of the various products. For a complete list of recommended products, check ID-36, Vegetable Production Guide for Commercial Growers.

SPIDER MITES ON VEGETABLES

Ric Bessin, Extension Entomologist

Two-spotted spider mite is a common pest of several vegetable crops during prolonged hot and dry periods. This pest rapidly builds in numbers during hot dry weather and some pesticides used to control insect pests may reduce the natural enemies that help to keep it below economic levels. Mites can injure tomatoes, beans, muskmelons, watermelons, and sweet corn. Infestations usually first occur at the edge of a field, typically near rank weed growth or dirt roads. There have been reports of high numbers this summer in some surrounding states.

Generally mites feed on the undersides of leaves. They use their sucking mouthparts to remove sap from plants, giving the upper leaf surface a speckled or mottled appearance. Leaves of mite-infested plants may turn yellow and dry up, and plants may lose vigor and die when infestations are severe. The undersides of affected leaves appear tan or yellow and have a crusty texture. Heavy infestations of the two-spotted spider mite produce fine webbing which may cover the entire plant. Mites can be identified by shaking leaves onto a sheet of white paper or by observing leaf areas with a hand lens. In hot dry weather, mites can cause plants to drop leaves in a few weeks. Fruit from severely infected plants are often unmarketable because defoliated plants tend to yield small, poor quality fruit.

The eight-legged female mites are yellow to dark green with two to four dark dorsal spots. At 1/60 of an inch, they are almost microscopic. Males are smaller with more pointed abdomens. The tiny, spherical, eggs are laid on the undersides of leaves, often under the webbing produced by the mites. Under optimum conditions of high temperature and low humidity, the life cycle may be completed in 7 days. Females can lay 200 eggs.

Two-Spotted Spider Mite

"Natural enemies of mites are present in and around fields and usually can keep mite populations low. Many insecticides used for control of insect pests severely reduce numbers of beneficial insects that keep mite populations in check. "

Natural enemies of mites are present in and around fields and usually can keep mite populations low. Many insecticides used for control of insect pests severely reduce numbers of beneficial insects that keep mite populations in check. Therefore, apply insecticides only as-needed, rather than at regularly scheduled intervals. When possible, select pesticides which will have the least impact on beneficial insects.

Destruction of weeds adjacent to and in fields should be done in the fall or early spring. Growers should manage weeds around fields carefully during the season. Grass should be mowed regularly. Spraying or mowing of weeds after growth has become rank may increase the movement of mites to cultivated plants.

Use of overhead-sprinkler irrigation may provide some short- term relief of mite infestations.

Miticides are available for some vegetable crops but should be used only where justified. As with aphids, mark infestations with flags, and check them again every 3 or 4 days. Mites can easily be moved to infested plants on clothing, so always examine infested areas last during inspections. If the infestation is not spreading, treatment will not be required. Because mite populations often are localized, spot spraying may be effective. If you spray only a portion of the field, spray a buffer zone of 100 to 200 feet beyond the mite infested area.

Resistance to pesticides has increased the difficulty of controlling of these pests. Because mites primarily occur on the undersides of leaves, applications of contact miticides need to be directed at both the lower and upper leaf surfaces. Mite eggs are resistant to some miticides, so repeated applications are often necessary to control infestations. Two applications spaced 5 to 7 days apart may be necessary with some miticides. See ID-36, 2006-2007 Vegetable Production Guide for Commercial Growers, for a complete list of available miticides.

Corn Earworm Trap Counts for July 13—July 20

Patty Lucas, Extension Specialist

UKREC-Princeton, KY		Jackson, TN	
Corn Earworm	6	Corn Earworm	0

Lexington, KY		Milan, TN	
Corn Earworm	2	Corn Earworm	0

Economic Threshold for Corn Earworm:
When tassels emerge and silks are still green, numbers of corn earworm moths captured in pheromone traps will determine the frequency of insecticide applications.

Weekly Trap Catch	Treatment Frequency
350 or more	Every 3 days
11 to 349	Every 4 days
5 to 10	Every 5 days

When corn earworm weekly counts are less than 5, frequency of insecticide applications will be determined by fall armyworm and European corn borer pheromone trap catches (which were 0 for all locations during July 13-20).

JULY LAB DIAGNOSTIC VEGETABLE HIGHLIGHTS

Julie Beale and Paul Bachi, Plant Disease Diagnosticians

On vegetable samples we have diagnosed Rhizoctonia Crown and Petiole Rot on rhubarb; Stewart's Wilt on sweet corn; Anthracnose on bean; Bacterial Wilt and Cucumber Mosaic Virus on cantaloupe; Root Knot Nematode on cucumber; Gummy Stem Blot on watermelon; Alternaria Leaf Spot on pumpkins; Pythium Root Rot on cabbage transplants; Bacterial Leaf Spot on pepper; Blossom End Rot, early Blight, Septoria Leaf Spot, Fusarium Wilt, Buckeye Rot, Bacterial Canker, Tomato Spotted Wilt Virus, Tobacco Mosaic Virus, and magnesium deficiency on tomato.

FUNGICIDE OPTIONS FOR MANAGEMENT OF POWDERY MILDEW ON CUCURBITS

Kenny Seebold, Extension Pathologist

We're starting to see quite a bit of powdery mildew crop up on cucurbit crops around Kentucky. Last month, we discussed downy mildew and its control. In this month's article, we'll take a look at options for management of powdery mildew on cucurbits.

Powdery mildew, caused by *Podosphaera xanthii*, affects most cucurbit crops and can be recognized easily by the presence of a talc-like growth, comprised of mycelia and conidia of the pathogen, on leaves and stems; it is possible to find signs of this disease on the upper and lower surfaces of a leaf. On leaves, chlorotic areas may be present on the surface opposite colonies of the powdery mildew fungus. As the disease progresses, blighting and defoliation can occur and can be severe under favorable conditions for the disease.

Powdery mildew often begins appearing on older leaves growing in shaded areas of the plant canopy or field. Warm and dry weather favors sporulation and spread of the pathogen, and high relative humidity promotes rapid infection. Symptoms appear between 3-7 days after infection.

Effective management of powdery mildew requires and integrated approach. Resistance to powdery mildew is available in some cucurbit crops, mainly cucumbers and melons; however, powdery mildew-resistant varieties of summer squash and pumpkins are available. Consult ID-36, the 2006-07 Vegetable Production Guide for Commercial Growers, for more information. Growers should employ practices that promote good airflow in the crop, such as increasing spacing between rows and plants, as this can limit the potential for infection by the pathogen.

Fungicides are an important option for management of powdery mildew on cucurbit crops. Timing of application is critical; sprays should be made on a 7 to 10-day interval, beginning at the first appearance of symptoms of powdery mildew. Below is a list of fungicides labeled in Kentucky for management of powdery mildew:

- Chlorothalonil (Bravo, Equus, etc.) 720SC: 2-3 pt/A; Dry flowable formulations are available - see label for rates.
- Fixed copper (Kocide, Cuprofix, etc.) - see label for rates.
- Quadris: 11-15.4 fl oz/A.
- Cabrio: 12-16 oz/A.
- Flint: 1.5-2 oz/A.
- Nova 40WP: 2.5-5 oz.
- Pristine: 12.5-18.5 oz/A.
- Procure 50WS: 4-8 oz/A.
- Sulfur: 2-35 lb/A (varies by product); phytotoxicity can occur if applied when air temperatures exceed 90°F
- Topsin M: 0.5 lb/A; other formulations are available - see label for rates.

Good coverage is critical for control, so make sure that adequate volumes and sprayer pressure are maintained. Systemic products such as Nova, Procure, and Topsin M are re-distributed in the plant after application, and will help provide good control of disease on hard-to-reach plant surfaces such as the undersides of leaves. Resistance management practices should be followed with products such as Quadris, Cabrio, Amistar, Pristine, Nova, and Topsin M. Do not make back-to-back applications of these products and rotate with products containing different modes of action. Resistance to the SBI (sterol-biosynthesis inhibitor) and QoI (strobilurins) classes of fungicides is common in KY, so make sure to rotate products in the spray program to avoid control failures. Each product has a limit on the number of applications that can be applied; consult the label for specific information.

Powdery Mildew on Cucurbits

Ten Steps Toward Organic Weed Control

Excerpt taken from an article written by Vern Grubinger, Vegetable and Berry Specialist, Vermont Extension
E-Mail: vernon.grubinger@uvm.edu

1) LOWER WEED PRESSURE by managing your weed seed bank to reduce the need for cultivation and hand hoeing.

- Thoroughly compost animal manures to kill off weed seeds, or avoid using manure altogether.
- Keep weeds from going to seed: cultivate solely for that purpose.
- Reduce weed influx by keeping alleys and field edges mowed or harrowed.
- Power wash tillage equipment after use in fields with a noxious weed problem.

2) DIVERSIFY ROTATIONS to keep a particular weed from proliferating.

- Try to alternate crops with different tillage requirements or time of planting.
- Include small grains or sod crops in the rotation if possible, to vary the habitat for weeds.

3) USE COVER CROPS because they compete with weeds while providing other benefits.

- Select species for rapid growth that starve weeds of light and nutrients.
- Sow at high rates, drill the seed and even irrigate if necessary to assure thick stands and rapid establishment of cover crops.
- Regular incorporation of cover crops enhances soil tilth, making cultivation easier. Since frequent cultivation can harm soil structure, it is important to compensate by adding clean organic residues whenever practical.

4) FEED THE CROP, NOT THE WEEDS by manipulating fertilizer placement and timing.

- Avoid pre-plant broadcasting of soluble nutrients that may be more readily utilized by fast-growing weeds than slow-growing crops, and may even stimulate weed germination.
- Apply fertilizer near the rows where it is more likely to be captured by the crop.
- When using expensive bagged organic fertilizers, band at low rates at planting or sidedress; rely on mid-season release of nutrients from compost and/or green manures for primary fertility.

5) PICK THE RIGHT TOOL FOR THE JOB.

- Blind, "over-the top" cultivation controls very small weeds, just germinated or emerged, before and sometimes after planting.
- Flex-tine cultivators (e.g. Lely weeder), or rotary hoes are excellent for shallow cultivation of the entire surface of the field.
- Shallow between-row cultivators such as basket-weeders, beet-hoes, or small sharp sweeps are used to cut off and uproot small weeds after the crop is up. These can get very close to the crop when it's small, without moving much soil into the row, and may be the only tools used on delicate crops like leafy greens.
- As vigorous crops grow, soil can be thrown into the row to bury in-row weeds using rolling cultivators (e.g. Lilliston), spyder wheels (e.g. Bezzerides), large sweeps or hilling disks. Some of these tools can be angled to pull soil away from the row when plants are small, and later turned around to throw soil back on the row during subsequent cultivations.

6) COMBINE TOOLS to cover the different zones in the field.

- Between-row, in-row, and wheel-track weeds must all be attacked.
- Watch out for narrow strips that are missed because they pass between too-few tools.
- Front-mounted or belly-mounted tools plus rear-mounted toolbars facilitate combinations that can assure complete coverage.

7) SET UP FOR SPEED to minimize cultivation time and expense.

- Perfectly straight rows and alert tractor drivers are essential
- Uniform row spacing across comparable crops enhances the utility of a cultivation set-up.
- Consider multiple-row units; gauge wheels are helpful on wide units or if fields aren't level.
- With frequently-used tractor-mounted cultivators, get them set just right and leave them on all season to avoid repeated mounting and adjustment.

8) TIMING IS EVERYTHING: get the weeds while they're small, before the field looks weedy.

- Very shallow cultivation of "white thread" weeds can minimize bringing up more weed seeds.
- Keep an eye on the weather and try not to get beat by the rain; if you do, be ready with the heavy artillery - more aggressive tools for bigger weeds, when you can get in.

9) CONSIDER STALE SEED BEDS OR STALE ROWS using flame-weeders.

- Prepare soil for planting, then use a flamer to kill very small weeds without disturbing the soil.
- One or two flamings are used, just before and/or after planting, but prior to crop emergence.
- Single burners flame just the crop row, multiple burner units cover a whole bed. Backpack, push-type and tractor-mount units are in use.

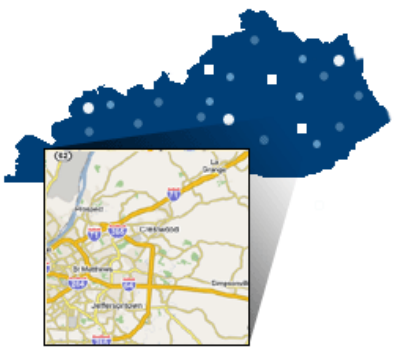
10) EXPERIMENT to fine-tune your weed management tactics.

- Start on a small scale with tools and techniques that are new to your farm.
- Identify your problem weeds and compare different combinations of rotations, cover crops, and cultivation tools for their effectiveness in providing control.
- Keep an eye our for new tools, or new ways to use old tools.
- Leave a "control" row or section untreated, so you can see the effectiveness of your tactics.

Tomato N & K Testing Service

The University of Kentucky Research and Education Center at Princeton offers a Tomato Plant Testing Service open Monday– Friday 8-5pm. Bring in your fresh samples to be tested for Nitrogen and Potassium and the results will be given to you in a timely manner. Samples should be taken from the top most first fully developed leaf with the petiole (where the whole leaf attaches to the main stem) and leaves intact. Collect 5-8 petioles per field. Please limit 5 different field samples per grower per week. The sample will act as a representation of the field as a whole.

KENTUCKY MARKET MAKER™



MarketMaker – A Great Tool for Direct Selling Produce (and Any Other Food Products)

Be sure you take a minute to register your farm on www.Market makerky. 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.

Weed Control in Row Middles

Gramoxone was sprayed in this row middle. You can see the distinct line where the application begins and ends.

"In tomato production, a recent herbicide has proven very effective in weed control in row middles. Matrix is labeled for use in potato and tomato for preemergence and postemergence control of grasses and broadleaves."

Joe Masabni, Fruit and Vegetable Specialist

By late July to mid August, vegetable harvest is at its peak in western Kentucky and growers are busy reaping the fruit of their labor they invested the past 3 months. Producers are not interested in weed management at a time when they are busy harvesting, packing, and selling. Producers don't want, and rightfully so, to invest any more capital in weed control in row middles. Besides, if producers have done a good job early on in the season, weed management should not be an issue now.
Of course, many producers may not have done a good job keeping the row middles weed free. Other producers are now planting their fall tomato crop or seeding their fall squash crop. This article is written to specifically help these growers.

Weed control in row middles, especially in plasticulture vegetable production, is necessary to facilitate pesticide spraying and harvesting. Herbicides are available for use in row middles that are proven safe and effective. Preemergence herbicides are effective against most annual grasses and broadleaves. Of course, no one herbicide or herbicide combination controls all weeds, especially difficult perennials such as johnsongrass and honeyvine milkweed. Therefore, even with the best spray mix selection and ideal spray coverage; weed escapes will grow and require additional postemergence application. Postemergence herbicides are also effective when properly applied. However, attention to preharvest interval (PHI) is important to avoid unnecessary residue or injury potential.

Two favorite postemergence herbicides among producers are Gramoxone and Roundup. Both are non-selective kill-all herbicides. Gramoxone is fast acting and injury is visible overnight, while Roundup controls both top growth and roots of weeds. However, both have weaknesses, with Gramoxone lacking any long-term residual control and Roundup potentially harmful to the crop, especially tomato, due to its systemic activity.

Personal experience with weed control in row middles has shown that the mixture of Aim, Poast, and COC is a competitive alternative to Gramoxone or Roundup. Aim is selective for broadleaves, while Poast is selective for grasses. The mixture is effective on most broadleaves and grasses without risk of systemic injury to the tomato or squash crop. What is appealing with this mixture is that weed death continues over a long period of time, whereas weed control with Gramoxone is fast but not long lasting. In other words, while weeds start to regrow within 10 days after Gramoxone application, weeds are still dying with Aim and Poast.

In squash, another mixture tested and proven useful is that of Roundup and Scythe. Like Gramoxone, Scythe is a kill-all contact herbicide, but, unlike Gramoxone, its label allows mixture with Roundup. Scythe is not as fast acting as Gramoxone, so the mixture allows both systemic control and top-burn of weeds.

In tomato production, a recent herbicide has proven very effective in weed control in row middles. Matrix is labeled for use in potato and tomato for preemergence and postemergence control of grasses and broadleaves. In row middles, it has proven very useful in our research when applied after transplanting as a directed spray to row middles when weeds are <2". Matrix can be tank-mixed with other labeled herbicides to broaden the weed control spectrum.

Producers are encouraged to read the information below and experiment with herbicide mixtures from the list below, while paying attention to following all label information.

Preemergence Herbicides for Squash

Command 3ME at 1-2 pt/A. For preemergence control of annual grasses and small-seeded broadleaves; weak control of pigweed.
Usage: For summer squash, most winter squash (see label for specific varieties), and processing pumpkins (except Jack-O-Lantern). Apply in rows middles between plastic. Do not use under plastic.

Curbit 3E at 3-4 pt/A. For preemergence control of annual grasses and broadleaves.

Usage: Do not use on wet or cloddy soils or before a heavy rain to avoid crop injury. Do not apply over or under hot caps, row covers, or plastic mulch. Do not apply broadcast to transplants. Do not incorporate. Clean cultivate and apply as a banded spray to soil between rows of plastic mulch.

Strategy 2.1E at 3-4 pt/A. For preemergence control of annual grasses and broadleaf weeds.
Usage: Apply to seeded crop prior to its emergence or as a banded spray between rows after crop emergence or transplanting. Rainfall (0.5") within 2 days is needed for activation. Do not incorporate. Crop injury may occur under cool temperatures that delay seedling emergence. Max. 1 application/year.

Preemergence Herbicides for Squash and Tomato

Sandea 75DF at 0.5-1 oz/A. For preemergence or postemergence weed control of broadleaf weeds and yellow nutsedge.
Squash Usage: Can be applied preplant under plastic mulch. Apply after final bed preparation and prior to laying plastic and transplant 7 days after application. Can also be applied 14 days post-transplanting.
Tomato Usage: Usage: For transplanted tomato: may be applied preplant under the plastic. Apply after final bed shaping but before installation of plastic. Transplant 7 days after plastic installation. As a post-transplant application, Sandea can also be applied over the top or as a directed spray or with shields, 14 days after plastic installation. Max. 2 applications/crop and 2 oz/A/season. See label for row middle applications and direct-seeded tomato.

Preemergence Herbicides for Tomato

Sencor 75DF at 0.3-1.3 lb/A. For preemergence and postemergence control of annual grasses and broadleaves.
Usage: Postemergence broadcast (0.3-0.6 lb/A) or postemergence directed (0.6-1.3 lb/A): apply when plants have recovered from transplant shock and new growth is evident (about 2 wk). Do not apply within 24 hr of other pesticides or within 3 days after cool, wet, or cloudy weather. Allow 14 days between applications. May be applied to plastic mulch row middles.

Devrinol 50DF at 2-4 lb/A. For preemergence control of annual grasses and broadleaf weeds.
Usage: Apply before transplanting and water-in or incorporate to a depth of 1-2". Can be applied on bareground row middles between beds of plastic 24 hrs prior to rain or if watered-in or incorporated. To avoid injury, do not replant with crops not specified on the label until 12 months if using the 4 lb rate.

Treflan HFP 4E at 1.25-1.5 pt/A. For preemergence control of annual grasses and broadleaf weeds.
Usage: Transplanted tomato: Apply and incorporate before transplanting or apply post-transplant as a directed spray to soil between rows and beneath plants and incorporate. See label for direct-seeded tomato.

Postemergence Herbicides for Squash and Tomato

Aim 1.9EW at 0.5-1.5 floz/A. For contact postemergence control of annual broadleaf weeds and suppression of annual grasses.
Usage: Can also be applied postemergence as a directed hooded application between crop rows. Use min. 10 gal water per acre and crop oil 1% v/v. Max. rate 6.1 fl.oz./A.

Gramoxone Max 3L at 1.3-2.7 pt/A. For non-selective contact kill of annual grasses and broadleaf weeds and top-kill of perennial weeds.
Usage: Apply preplant, preemergence, or before transplanting in min. 10 gal water per acre. Apply banded and avoid contact with foliage. Use higher rate for heavy weed infestations. Use non-ionic surfactant 0.25% v/v.

Poast 1.5E at 0.5-1.5 pt/A for squash and 0.5-2.5 pt/A for tomato. For postemergence control of actively growing grasses only.
Usage: Max. rate of 1.5 pt/application and 4.5 pt/season.

Roundup WeatherMax 5.5L at 16-22 floz/A. For non-selective postemergence control of annual and perennial grasses and broadleaf weeds.
Usage: Do not use in tomato row middles. For squash, spray in row middles before the vines start to run, using a shielded boom. Use only AMS 1-2% v/v. Min. 3 days before planting.

Scythe 4.2L at 1-10%/A. For non-selective contact control of annual grasses and broadleaf weeds.
Usage: Use in min. 10 gal water per acre if mixed with other herbicides or a min. 75 gal if used alone. Do not allow contact with crop foliage. Can be mixed with Roundup. See label for amount of Scythe to use depending on the desired spray volume.

Select 2E at 6-8 floz/A for squash and 6-16 floz/A for tomato. For selective postemergence of actively growing annual grasses and suppression of perennial grasses.
Usage: Add crop oil 1% v/v. Max. 8 floz/application. Min. 14 days interval between applications.

Postemergence Herbicides for Tomato

Matrix 25DF at 1-1.5 oz/A. For postemergence control of annual grasses and broadleaf weeds.
Usage: Apply postemergence to young actively growing weeds. Rainfall or irrigation is needed within 4 hrs but no later than 5 days for activation. Add non-ionic surfactant 0.25% v/v. Min. tomato size is cotyledon stage for postemergence application. Max. rate of 4 oz/A/season. See label for information on direct-seeded tomato.

Aim + Poast + COC applied to row middle. Grasses are still dying.

ADDITIONAL LABEL INFORMATION

Preemergence Herbicides for Squash and Tomato

	Squash			Squash Tomato	Tomato		
Product:	Command 3ME	Curbit 3E	Strategy 2.1E	Sandea 75DF	Sencor 75DF	Devrinol 50DF	Treflan HFP 4E
Active Ingredient:	clomazone	ethalflu-ralin	clomazone + ethalfluralin	Halosulfuron	metribuzin	napropa-mide	trifluralin
Formulation:	3 lb ai/gal	3 lb ai/gal	2.1 lb ai/gal	0.75 lb ai/lb	0.75 lb ai/lb	0.5 lb ai/lb	4 lb ai/gal
Manufacturer:	FMC	UAP	UAP-Loveland	Gowan	Bayer	United Phosphorus	various
Chemical Class:	Isoxazolidi-none	Dinitroani-line	Isoxazolidi-none + Dinitroani-line	Sulfonylurea	Triazine	Acetamide	Dinitroani-line
HRAC code	F3	K1	F3 + K1	B	C1	K3	K1
Risk of Resis-tance	Medium	Low	Medium	High	Medium	Low	Low
Re-entry Interval:	12 hr	24 hr	24 hr	12 hr	12 hr	12 hr	12 hr
Signal Word:	Caution	Danger	Caution	Caution	Caution	Caution	Caution
Restricted Use:	No	No	No	No	No	No	No
Pre-harvest Interval:				30 days	7 days		

Postemergence Herbicides for Squash and Tomato

Product:	Aim 1.9EW	Gramoxone Max 3L	Poast 1.5E	Roundup Weather-Max 5.5L	Scythe 4.2L	Select 2E	Matrix 25DF (Tomato only)
Active Ingredient:	carfentrazone	paraquat	sethoxy-dim	glyphosate	pelargonic acid	clethodim	rimsulfuron
Formulation:	1.9 lb ai/gal	3 lb ai/gal	1.5 lb ai/ gal	5.5 lb ai/gal	4.2 lb ai/gal	2 lb ai/gal	0.25 lb ai/lb
Manufacturer:	FMC	Syngenta	BASF	Monsanto	Dow Agro-Sciences	Valent	DuPont
Chemical Class:	Triazolinone	Bipyridil-ium	DIMs	Glycine	Other	DIMs	Sulfony-lurea
HRAC code	E	D	A	G	Z	A	B
Risk of Resis-tance	Medium	Medium	High	Low	Low	High	High
Re-entry Interval:	12 hr	12 hr	12 hr	12 hr	12 hr	24 hr	4 hr
Signal Word:	Caution	Poison	Warning	Caution	Warning	Warning	Caution
Restricted Use:	No	Yes	No	No	No	No	No
Pre-harvest Interval:	0 day		14 days			15 days	45 days

Updated Chemical Suppliers List

Counties	Supplier Names		
Caldwell	Agri-Chem (270) 365-7232	Akridge Farm Supply 55 Wyatt St Fredonia, KY 42411 (270) 545-3332	Thomas Casey Farm Supply (270) 365– 6920
Carlisle	Agri-Chem (270) 628-3311		
Christian	Southern States	Ag Chem	Security Seeds
Fulton	Speed Ag Service, LLC 345 St Rt 166W Hickman, KY 42050	Helena Chemical Co 3500 St Rt 1099 Hickman, KY 42050	
Graves	Mathis Farm Supply 5799 Shaw Rd Melber, KY 42069 (270) 674-5600		
Hancock	Hancock Co. Farm Supply (Southern States) 740 Madison St, PO Box 95 Hawesville, KY 42348 (270) 927-8024		
Lyon	Akridge Farm Supply 55 Wyatt St Fredonia, KY 42411 (270) 545-3332	Akridge Farm Supply 724 Fairview St Eddyville, KY 42038 (270) 388-2910	
Mason	Maysville Southern States 1325 Clyde T Barbour Pky Maysville, KY 41056 (606) 759-0330	May's Lick Mill 6538 US 68 May's Lick, KY 41055 (606) 763-6602	Other: Tractor Supply Co Lowe's Wal-Mart
McCracken	Lone Oak Farm Store 3312 Lone Oak Rd Paducah, KY 42003 (270) 554-1122	Paducah Ag Service 4955 Noble Rd Paducah, KY 42001 (270) 442- 3276	Phelps Farm and Home 424 South 3rd St Paducah, KY 42003 (270) 443-7565
Meade	Miles Farm Center Ekron, KY (270) 828-2822		
Oldham	Exterior Appearances 4203 West Hwy 146 La Grange, KY 40031 (502) 222-0165	Oak Valley Gardener 11946 West Hwy 42 Goshen, KY 40026 (502) 228-4117	Other: Southern States La Grange, KY 40031 (502) 222-1404 Feed & Seed Depot Crestwood, KY 40014 (502) 241-7886
Todd	Deerfield Supplies Elkton, KY (270) 265-2425		

University of Kentucky does not endorse any of the specific businesses or companies listed. This a partial list of chemical suppliers for Kentucky growers, to be expanded in future issues.

N & K Test Results for July

UK Research and Education Center's Field Tomatoes Tested 7/10/2007
Nitrogen Readings– 420, 480 @ Preharvest (Normal Range)
Potassium Readings– 5500, 6700 @ Preharvest (High Range)

Crittenden County Farmer's Field Tomatoes Tested 7/17/2007
Nitrogen Readings– 120, 110 @ 2nd Harvest (Low Range)
Potassium Readings– 3000, 2500 @ 2nd Harvest (Normal Range)

Crittenden County Farmer's Greenhouse Tomatoes Tested 7/24/2007
Nitrogen Readings– 500, 550 @ 2nd Harvest (Normal Range)
Potassium Readings– 3000, 2700 @ 2nd Harvest (Low Range)

Petiole Nitrate Sufficiency Levels for Drip Irrigated Tomatoes	
Greenhouse	**Fresh Sap Normal Range**
Vegetative Growth	700-900
Early Flower/ Fruit	600-800
Fruit Bulking	500-700
Preharvest	400-600
Field	**Fresh Sap Normal Range**
First Buds	1000-1200
First Open Flowers	600-800
Fruit 1-inch Diameter	400-600
Fruit 2-inch Diameter	400-600
First Harvest	300-400
Second Harvest	200-400

Petiole Potassium Sufficiency Levels for Tomatoes	
Greenhouse	**Fresh Sap Normal Range**
Transplant to Second Fruit Cluster	4500-5000
Second Cluster to Fifth Fruit Cluster	4000-5000
Harvest Season (Dec-June)	3500-4000
Field	
First Buds	3500-4000
First Open Flowers	3500-4000
First 1-inch Diameter	3000-3500
First 2-inch Diameter	3000-3500
First Harvest	2500-3000
Second Harvest	2000-2500

COOPERATIVE EXTENSION SERVICE

UNIVERSITY OF KENTUCKY
College of Agriculture

UPCOMING EVENTS

AUGUST 7– PUMPKIN PRODUCTION FIELD DAY @ 6PM PLEASANT VALLEY FARMS IN PRINCETON

AUGUST 21– PUMPKIN PRODUCTION FIELD DAY @ 6PM CHRISTIAN WAY FARM IN HOPKINSVILLE

AUGUST 29– TOMATO PRODUCTION FIELD DAY @ 6PM CREEKSIDE PRODUCE IN MARION

SEPTEMEBER 6– PUMPKIN PRODUCTION FIELD DAY @ 6PM DAVIS GREENHOUSES IN PRINCETON

CONTACT US OR YOUR COUNTY AGENT FOR DIRECTIONS OR ADDITIONAL INFORMATION.

For additional information, contact:
Courtney Flood
Fruit and Vegetable Extension Associate
UK Research and Education Center
1205 Hopkinsville St, PO Box 469
Princeton, KY 42445
(270) 365-7541 Ext.262