Help for New Vegetable Gardeners

Kansans that are new to vegetable gardening often don’t know how much of each crop to plant. K-State Research and Extension has a publication that can help. The “Vegetable Garden Planning Guide” gives information on the size of planting needed per person and the average crop expected per 100 feet. Also included is a garden calendar highlighting suggested planting dates and expected harvest dates. Crop specific information is detailed including days to germinate, plants or seeds needed per 100 feet of row, depth of planting, spacing within the row and spacing between rows. You can find the publication at your local county extension office or online at: http://www.ksre.ksu.edu/library/hort2/mf315.pdf

If you don’t know the location of your county extension office, see http://www.ksre.ksu.edu/Map.aspx.

(WU)

Setting Out Tomatoes

Gardeners often try to get a jump on the season by planting tomatoes as early as possible. Though this can be successful, there are certain precautions that should be observed.

**Harden off plants:** Plants moved directly from a warm, moist greenhouse to the more exposed and cooler conditions outside may undergo transplant shock. Transplant shock causes plants to stop growing for a time. Plants can be acclimated to outside conditions by placing them outdoors in a
location protected from wind and full sunlight for a few days before transplanting. Another way to harden off plants is to transplant them and place a cardboard tent or wooden shingle to protect them from wind and sun for 2 to 3 days. The best conditions for transplanting is an overcast, still day.

**Protection from frost:** Tomatoes cannot tolerate frost. Though we are past the average date of the last frost in most of Kansas, watch the weather and cover the plants if frost threatens. A floating row cover or light sheets can be used for protection. Actually a floating row cover can be left on the plants for two to three weeks to increase the rate of growth and establishment.

**Adequate soil temperature:** Tomato roots do not do well until soil temperatures reach a fairly consistent 55 degrees F. Check the temperature at 2 inches deep during the late morning to get a good average temperature for the day. Plastic mulch can be used to warm soil more quickly than bare ground. Purple leaves are a sign of phosphorus deficiency due to too cool soils.

Other tips for getting tomato plants off to a fast start include:

1. Use small, stocky, dark green plants rather than tall, spindly ones. Smaller plants form roots rapidly and become established more quickly than those that are overgrown.

2. Though tomatoes can be planted slightly deeper than the cell-pack, do not bury plant deeply or lay the stem sideways. Though roots will form on the stems of tomatoes, this requires energy that would be better used for establishment and growth.

3. Use a transplant solution (starter solution) when transplanting to make sure roots are moist and nutrients are readily available.

4. Do not mulch until the plant is growing well. Mulching too early prevents soil from warming up. (WU)

**ORNAMENTALS**

**Preventing the Spread of Pine Wilt**

Pine sawyer beetles, *Monochamus caroliensis*, which emerge from dead trees and transport the pinewood nematode to healthy trees, perpetuate the pine wilt disease cycle. Trees killed by pine wilt disease are reservoirs for pinewood nematodes. The larvae of pine sawyer beetles overwinter as mature borer larvae. Currently, they are preparing to pupate within their pupal chambers. After a beetle emerges from its pupa, it remains in the pupal chamber briefly while its exoskeleton hardens. Pupae and beetles are inactive — an ideal time for dispersal-stage pinewood nematode larvae to invade the transport host.
To prevent this, destroy diseased trees by burning them by mid-May. Beetles begin to emerge in April and continue for about a month. Timely burning means destroying trees before current season beetles emerge. It is best to burn early, preferably by April 1 to get this chore out of the way. With the weather warming-up, other pressing needs may delay burning until beetles have emerged and it is too late. Do not neglect this yearly chore, especially in pine wilt disease-free areas of the state. (BB)

PESTS

In the Garden Cabbages and Cabbageworms

April is halfway through and avid gardeners are tending cool-season crops including cabbage, broccoli and cauliflower. Cabbages are a favorite garden crop because they are simple to plant and quick to grow. They are a wonderful food for humans — and cabbageworms.

The three most prevalent cabbageworms are imported cabbageworms, cabbage loopers and diamondback moth larvae. While all three occur in Kansas, imported cabbageworms and cabbage loopers are the most common. And because they are the largest, they are the most destructive.

Imported cabbageworms have a green velvety appearance and sometimes called green fuzzies. Cabbage loopers, which are green and hairless, are referred to as inchworms because of their looping/inching movements. The parents of imported cabbageworms and cabbage loopers are butterflies and moths, respectively. Most people are familiar with imported cabbageworm butterflies because they fly during the day. Few are familiar with cabbage looper moths because they fly in the dark of evening and early morning hours.

Overwintering as chrysalids, imported cabbageworm butterflies may appear during brief warm spells in February, but typically do not begin activities until mid-March. Cabbage loopers also overwinter in the pupal stage encased in flimsy, silken cocoons. Both survive winter protected beneath debris and litter.

These two pests differ in larvae appearance and life stages from larva to adult. Both imported cabbageworm butterflies and cabbage looper moths flit about and glue individual eggs to plant hosts. Imported cabbageworm eggs are primarily deposited on lower leaf surfaces, while cabbage loopers prefer to lay eggs on top. Imported cabbage worm eggs are yellow and somewhat elongated. Cabbage loopers eggs are white and more rounded.

Both species produce more than a single generation per year. Although not specifically documented for Kansas, the literature mentions that imported cabbageworms produce between
three and six generations per year with cabbage loopers producing three to four. In this newsletter we are addressing the impact of both species on cool season crops (spring and fall), but they are present throughout the summer, sustaining their populations on alternate hosts of plants and weeds as well as cultivated crops.

Beyond these differences, both cause similar damage. Direct feeding damage and fecal deposits render cabbage heads unmarketable. But washing away worms and fecal pellets may salvage them. The remaining head is safe and edible.

Vigilant gardeners can prevent severe damage by looking for the presence of white wings, the first hint of potential problems. When butterflies light, observe egg laying by examining that leaf for the presence of a newly deposited eggs. Holes appearing on the outer wrapper leaves indicate the presence of cabbageworms and the need to reduce populations before they begin moving to the developing head.

Numerous insecticidal products are registered for use against vegetable pests such as cabbageworms. They are rated both as nonorganic (synthetic insecticides) and organic (botanicals, spinosyns, bacillus thuringiensis, horticultural oils, horticultural soaps) products. Check local retail outlets for availability. (BB)

**What is that Buzzing? It is March Flies!**

We have received inquires from Wichita, Kan. regarding fairly large midge-like insects flying around people and crabapples (Malus spp.) in full-bloom. These are adult March Flies (Family: Bibionidae), and most are in the genera Bibio or Dilophus. One common morphological characteristic for identification is the presence, on the wings, of a very distinct yellow-brown stigma (spot) among the veins. March flies are in the same family and are closely related to love bugs. Female March flies dig holes in the soil in which they deposit approximately 200 to 300 eggs in a mass.

They die soon after laying eggs. Eggs hatch into larvae that are yellow in color with dark spiracles and a shiny brown head. Larvae live in moist habitats and feed on decaying organic matter and among plant roots. They may enter potatoes that are damaged by insects such as wireworms (click beetle larvae) or diseases. Adults are most active in spring and summer, and may be present in abundant numbers (as people have experienced). They are attracted to flowers and may be important pollinators, but they are also attracted to homes and people. (RC)
Sphinx Moth Pupas

This time of year gardeners may unearth strange looking objects and wonder what is in the earthen cell in their hand. Breaking it open, reveals a strange looking creature nearly 3-inches long. The tail end wiggles in their hand and a strange handle-like structure is evident.

This is the pupa of a sphinx moth. There are numerous species of sphinx moths in Kansas. They are sometimes referred to as hummingbird moths because of their size, ability to hover and long proboscis. If these are found in garden areas, they likely are the pupae of two closely related moths: the tomato hornworm moth or tobacco hornworm moth.

It is not possible to look at a pupa and identify it as either that of a tomato hornworm moth or tobacco hornworm moth. And at a glance, people may look at the moths and say they look the same. Yet they are notably different based on the number of pairs of yellow abdominal spots, and the distinctiveness of a pair of wavy lines on their hind wings.

When tomato hornworm and tobacco moths flights begin, we will address the subject of larvae with distinctive the distinctive horns on their tail ends. (BB)

Asian Lady Beetle: Just Let Them Be

This is the time of year when the Asian lady beetle, Harmonia axyridis, becomes active and is more noticeable to homeowners. The Asian lady beetle is a native of Asia and was introduced into the southeastern and southwestern portions of the United States to deal with aphids on pecan trees. However, it spread rapidly to other parts of the country. It is a tree-dwelling lady beetle, more so than the native species of lady beetles, and a very efficient predator of aphids and scales.

During the fall and early winter when weather is cooler, the Asian lady beetle starts congregating on the south side of buildings and enters homes. The beetle does this because in their homeland of China they inhabit tall cliffs to overwinter. There are few tall cliffs in Kansas, so the next best thing is a building.

Biology

The Asian lady beetle can be easily distinguished from other species of lady beetles by a pair of
white, oval markings directly behind the head, which forms a black M-shaped pattern. Adults are 1/4 inch long, 3/16 inch wide and yellow to dark-orange. In addition, the body is usually covered with 19 black spots. Adults can live up to three years. Female beetles lay yellow, oval-shaped eggs in clusters on the underside of leaves. Eggs hatch into red-orange and black larvae shaped like an alligator. Larvae are primarily found on plants feeding on soft-bodied insects such as aphids and scales. They eventually enter a pupal stage. Pupae can be seen attached to plant leaves. Adults emerge from the pupae and start feeding on aphids. Adults can be found on a wide-variety of trees including apple, maple, oak, pine, and poplar. There can be multiple generations per year.

The Asian lady beetle is a nuisance pest because adults tend to congregate and overwinter inside buildings in large numbers. The beetles release a pheromone that attracts more beetles to the same area. Although the beetles may bite, they do not physically harm humans nor can they breed or reproduce indoors. Beetles are attracted to lights and light-colored buildings, especially the south side where it is warm. They then work their way into buildings through cracks and crevices. Dark colored buildings generally have fewer problems with beetles. Adult beetles will feed on ripening fruit such as peaches, apples, and grapes creating shallow holes in the fruit. Large numbers of beetles feeding on fruit may cause substantial damage that the fruit is less appealing for consumption.

Management

Beetles may be prevented from entering homes by caulking or sealing cracks and crevices. Beetles already in homes can be physically removed by sweeping or vacuuming. Be sure to empty the vacuum bags afterward. Do not kill the beetles. Just release them outdoors underneath a shrub or tree away from the house. Commercially available indoor light traps can be used to deal with beetles indoors. The traps need to be placed near the center of a room and they are only effective at night in the absence of competing light. In addition, they work best when room temperatures are 75°F or higher.

If crushed, the beetles will emit a foul odor and leave a stain. The dust produced from an accumulation of dead Asian lady beetles behind wall voids may trigger allergies or asthma in people. Insecticides are not recommended for use indoors.

Homeowners who want to avoid dealing with overwintering beetles entering their homes can hire a pest management professional to treat the points of entry on the building exterior with a pyrethroid insecticide. The treatments need to be made in late September or early October before the beetles enter the building to overwinter. Beetles that are feeding on fruit can be “controlled” with insecticides labeled for use on fruit trees.

The beetle has been able to spread rapidly throughout portions of the United States because it was introduced into the country without its native natural enemies. However, populations may decline as cosmopolitan natural enemies start attacking them. For example, studies in North Carolina have demonstrated that up to 25 percent of the beetle populations are being parasitized by a tachinid fly. (RC)
My Oaks are Raining Worms

Eastern Kansas is receiving calls regarding tiny, white worms falling from oak trees. These worms are actually the larvae of the oak flower midge (Contarinina spp.). The larvae came from eggs that adult midges laid on the flower bracts of pin oak in early spring. Newly hatched larvae feed on the flower clusters and then move to the leaves as they unfurl. These insects to not feed on the leaves but drop to the ground in order to pupate. Adults emerge early the next spring to start the cycle all over again. The midges apparently cause no damage. (WU)

MISCELLANEOUS

Controlling Grassy Weeds in Broadleaf Plants

Most gardeners are familiar with herbicides that can be used to eliminate broadleaves (i.e. dandelions) from grasses (i.e. lawn). They may not be as familiar with herbicides that can take grasses out of broadleaf plants like shrubs. There are two major weed killer types that are used to kill grassy weeds in broadleaf plants. On the commercial side, the trade names for these products are Fusilade and Poast. Homeowner labeling is more diverse. I have seen Fusilade sold under the names of "Grass-B-Gon," and "Grass-No-More Over the Top Spray" and "Over the Top Grass Killer." Poast is sometimes sold to homeowners under the Poast label but I've seen it more commonly sold as "Hi-Yield Grass Killer" and "Monterey Grass Getter." There may be other trade names, too. Fortunately, you can identify the product by the common chemical name listed on the label. Fusilade's common chemical name is fluazifop, and Poast's is sethoxydim.

If you decide to use one of these products, read the label carefully. Often, a crop oil must be added to the spray solution for the herbicide to work well. Some grassy weeds are harder to control such as bromegrass and sandbur.

Though both these products can be used over the top of numerous broadleaf plants (including iris), there are some differences in labeling. For example, if you need to control grasses in strawberries, choose Poast because it has a seven-day waiting period before harvest. Fusilade cannot be used within one year of harvest. (WU)
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