VEGETABLES

Setting Out Tomatoes Early

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, especially this year with the abnormally cool spring.

**Adequate soil temperature:** Tomato roots do not do well until soil temperatures reach a fairly consistent 55 degrees F. Use a soil thermometer to check the temperature at 2 inches deep during the late morning to get a good average temperature for the day. Most soil temperatures in Kansas now are in the 40's. Plastic mulch can be used to warm soil more quickly than bare ground. Purple leaves are a sign of phosphorus deficiency due to cool soils.

**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.

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 the plant deeply or lay the stem sideways unless the plant is very leggy. 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. (Ward Upham)

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/bookstore/pubs/mf315.pdf

Another, more in-depth publication titled the “Kansas Garden Guide” is also available. This 77-page booklet has sections on planning a garden, composting, improving soil, seeding and planting, garden care, watering, planting gardens for fall production, insect and disease control, container gardening, season extension and harvesting and storing. This is followed by an extensive section on how to grow specific vegetables and herbs. You may order the print publication at http://www.ksre.ksu.edu/bookstore/Item.aspx?catId=534&pubId=8219

This web page also provides a link to a free PDF copy of the same publication.

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

FRUIT

Growing Blueberries

Though blueberries are not native to Kansas, we can grow them at least in the eastern half of the state. However, just because we can grow them doesn’t mean they are easy. The key is good preparation. Blueberries are related to azaleas...
and rhododendrons and therefore require an acid pH (between 4.8 to 5.2 is best) and do not have root hairs. The lack of root hairs means we must do a good job of watering, and mulching is very important.

It is best to start a year ahead of time to allow for pH adjustment, weed control and the addition of organic matter. The first step is always a soil test so that you know how much the pH needs to be dropped.

<table>
<thead>
<tr>
<th>pH</th>
<th>Peat Moss/100 square feet</th>
<th>Sulfur</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 5.5</td>
<td>2 cu ft</td>
<td>--</td>
</tr>
<tr>
<td>5.5 - 6.0</td>
<td>2 cu ft</td>
<td>2 cups</td>
</tr>
<tr>
<td>6.1 - 6.5</td>
<td>2 cu ft</td>
<td>3 cups</td>
</tr>
<tr>
<td>&gt; 6.5</td>
<td>4 cu ft</td>
<td>4 cups</td>
</tr>
</tbody>
</table>

Do not use aluminum sulfate to correct a high pH as excessive levels of aluminum can be toxic to blueberries. For each 0.5 movement up the pH scale from 6.5, add an additional 2 cups of sulfur. Sulfur can be applied as a dust, but the pelletized sulfur is much easier to spread. Only the row should be treated and the row width should be 5 feet. Blueberries are normally spaced about 5 feet within the row. Sulfur takes time to react and so this should be done so that there is as much time as possible between applying sulfur and planting.

Blueberries will bear more if you have more than one variety. Recommended varieties vary but you may want to try Bluecrop as it is very adaptable. Patriot also seems to do well. You may want to try some other varieties depending on the descriptions you read.

Blueberries should be mulched. Sawdust is the traditional material but straw, hay and wood chips can be used to good effect. Mulch to a depth of about 3 inches.

Irrigation is also a must. Soils should be kept moist but never waterlogged. Adding peat moss to the planting row will elevate the planting bed enough that standing water should not be an issue. However, an elevated bed will dry out more quickly, so there must be a way to add water. Trickle irrigation works well for blueberries. Try watering twice a week during the summer with enough water to wet the soil 8 inches deep. Watering once a week may be enough during the cooler weather of spring and fall.

As you can guess, there is more to growing blueberries than can be included in a short article. Dr. Art Gaus from the University of Missouri shared with me an instruction sheet on how to grow blueberries more than 20 years ago. It is still excellent information on blueberry culture. You can access it by going to: [http://www.hfrr.ksu.edu/doc3091.ashx](http://www.hfrr.ksu.edu/doc3091.ashx) (Ward Upham)

**Fertilizing Blueberries**

Blueberries are sensitive to excess levels of fertilizer. Do not go over the recommended amount.

**Year of Planting:** Apply fertilizer according to soil test and work into the soil before planting. Every six weeks thereafter apply a high nitrogen fertilizer such as a 27-3-3, 29-5-4, 30-3-3 or
something similar. Though recommended for lawns, these fertilizers will also work well for blueberries as long as they do not contain weed killers or crabgrass preventers. Apply 1 teaspoon per plant within a circle within 12 inches of the plant. Do not apply fertilizer past August 15. Urea (46-0-0) may be substituted for the fertilizer recommended above but cut the amount to a rounded ½ teaspoon per plant.

**Second Year:** Double the rates recommended above and increase the area treated to within 18 inches of the plant. Apply the first application when the new growth appears in the spring and continue every six weeks but not after August 15.

**Third Year and Following:** - Apply 1/3 cup of the fertilizer recommended above within three feet of each plant when growth begins in the spring. Bushes should produce 6 to 12 inches of new growth each year. If less than this is produced or if you wish larger plants, apply 1/4 cup of fertilizer every 6 weeks. Do not apply fertilizer after August 15. (Ward Upham)

**Fertilizing Strawberries and Brambles**

![Image of strawberries and brambles]

Most garden soils in Kansas have adequate levels of all nutrients other than nitrogen if the area has been fertilized in the past. However, it is recommended that a soil test be done to be sure of the nutrient needs of your fruit planting. If the soil test recommends phosphorus and potassium, use a 10-10-10 fertilizer instead of what is recommended below but triple the rate. For example, instead of ½ cup per 10 feet of row, use 1.5 cups per 10 feet of row.

**Strawberries (June-Bearing):** June-bearing strawberries are not fertilized in early spring as this can make the berries soft and more prone to rot. Fertilize at renovation and again in late August to early September. In most cases, strawberries need primarily nitrogen, so the recommendations are for a high nitrogen fertilizer such as a 27-3-3, 29-5-4, 30-3-3 or something similar. Though recommended for lawns, these fertilizers will also work well for strawberries as long as they do not contain weed killers or crabgrass preventers. Apply ½ cup for every 10 feet of row. Note: For more information on renovating strawberries, see [http://www.hfrr.ksu.edu/doc3732.ashx](http://www.hfrr.ksu.edu/doc3732.ashx)

**Strawberries (Everbearing or Day-Neutral):** Fertilize in the spring as growth starts and again in early August. Use the rates recommended for June-bearing strawberries. Everbearing (day-neutral) strawberries are not renovated.

**Brambles (Blackberries and Raspberries):** In most cases, brambles need primarily nitrogen, so use a high nitrogen fertilizer such as a 27-3-3, 29-5-4, 30-3-3 or something similar unless a soil test directs otherwise. Though recommended for lawns, these fertilizers will also work well as long as they do not contain weed killers or crabgrass preventers. Apply ½ cup for every 10 feet of row. Fertilize in spring as growth begins. (Ward Upham)
Field Bindweed Control

Field bindweed is difficult to control, especially for homeowners, but there are options.

**Home Vegetable Gardens:** Weed control requires taking the treated portion of the garden out of production for a time.

**Solarization** - Solarization uses the energy from the sun to produce heat that pasteurizes the soil.

Follow these steps to solarize a garden area:

1. Select the hottest time of year to solarize, usually mid-June to mid-August in Kansas.

2. Work the soil deeply, and smooth the surface so the clear plastic will make uniform contact with the soil.

3. Water well. Moisture encourages seed to germinate and existing bindweed to grow so plants can be killed by the heat. The water also helps conduct the heat deeper into the soil.

4. Spread clear polyethylene film over the area. Seal the edges and seams with soil to prevent air from circulating under the plastic. One mil film is most effective at creating heat, but is likely to be torn apart by Kansas winds. Film that is 4 mil thick is more likely to last.

5. Leave the plastic in place for 4 to 6 weeks. The longer time is more effective.

6. Remove the plastic after 6 weeks. If you leave it in place longer, it may become brittle from exposure to ultraviolet radiation and be difficult to remove. You can plant the next day.

**Glyphosate** - Glyphosate is sold under a wide variety of names, the most common being Roundup. Take the garden out of production when treating.

1. Glyphosate is a non-selective herbicide that will kill whatever it hits but is inactivated when it contacts the soil.

2. Glyphosate is most effective when applied to bindweed that is at or beyond full bloom. You can treat earlier but don't skip the late summer to fall application.

3. Do not apply to bindweed that is under moisture stress or not growing well.

**Turf:** Selective herbicides are available. An herbicide with the trade name of Drive (quinclorac)
has, until recently, only been available to commercial applicators. However, there is now Drive packaged for homeowners and is available from Monterey Lawn and Garden (www.montereylawngarden.com). There are also homeowner combination herbicides that contain Drive such as Ortho Weed-B-Gon Max + Crabgrass Control and Bayer All-in-One Lawn Weed and Crabgrass Killer.

Commercial applicators can also use Drive (quinclorac) as well as Q4 (contains quinclorac). Products with Drive work about as well as glyphosate but are selective.

Note that lawns treated with Drive should not use clippings in compost or as mulch as Drive is very stable on grass clippings. We recommend clippings be returned to the lawn anyway but if they are bagged, they should be discarded. Do not apply products with Drive over exposed roots of trees and ornamentals. It would be best to avoid spraying beneath the canopy of any trees to avoid possible damage. If there are plans to convert a section of lawn to a vegetable garden, do not use Drive on that area. Eggplants can be damaged if planted within 12 months of areas treated with Drive, and tomatoes can be damaged if planted within 24 months.

Shrub Beds: Use a spray of glyphosate between plants. Use a shield if spraying near plants to keep spray from contacting green plant material. Remember, glyphosate will hurt your shrubs if it contacts green tissue.

It is possible to control field bindweed by pulling, but you must be extremely persistent. I remember reading a study from the 1940s that found that bindweed produces enough energy to start strengthening the roots when it reached the six-leaf stage. So, if pulling, never allow plants to produce more than six leaves. (Ward Upham)

Contributors: Ward Upham, Extension Associate

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The web version includes color images that illustrate subjects discussed. To subscribe to this newsletter electronically, send an e-mail message to cdipman@ksu.edu or wupham@ksu.edu listing your e-mail address in the message.

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