Three basic types of cucumbers are grown in the U.S.; slicing or fresh market types that are usually eaten uncooked; pickling types that are shorter and lighter in color than slicing cucumbers, normally used for processing into pickles; and the European burpless types, which are produced in greenhouse systems. This article will focus on production of the slicing/fresh market types.

**Site Selection and Temperatures**

Cucumbers can be grown on most soil types. However, they perform best in soils with good moisture holding capacity and water infiltration rates. Soil pH levels should be between 5.8 and 6.6. If pH levels are below 5.8, lime applications can be used to adjust the level into the optimum range.

Cucumbers are very sensitive to cold temperatures. They can be easily injured by frost, and growth will be slow at temperatures below 50°F. Optimum soil temperatures for germination and growth are between 70 and 80°F, with air temperatures between 70 and 85°F. Seeds or transplants should be planted after soil temperatures are above 60°F and when air temperatures remain above 50°F.

**Bare-Ground vs. Plasticulture Systems**

Slicing cucumbers are grown in both bare ground and raised bed, plasticulture systems. Bare ground systems have lower input costs, but earlier production and higher yields are usually seen in the plasticulture systems. Black plastic mulch over raised beds (Figure 1) results in higher soil temperatures early in the season, promoting rapid germination and earlier fruit development. In the warmer summer months, white-on-black plastic mulch is used to prevent the soil from over heating. Additional benefits of the plasticulture system include weed control, increased irrigation efficiency, especially with drip irrigation systems, and better fertilizer management. The disadvantages of these systems include the higher cost of production and the need to dispose of the plastic mulch at the end of the season.

Double cropping cucumbers following tomato, eggplant, or peppers, using the same beds, mulch, and irrigation system can spread production costs, including the costs of soil fumigation, over two crops, while not risking problems with mutual diseases and pests.

In either system, cucumbers can be direct seeded or grown from transplants. Starting with transplants can result in an earlier crop, but the added costs of purchasing or growing transplants may not always be economically justified.

**Plant Spacing**

Spacing recommendations for cucumbers vary somewhat among states and growing regions. For bare ground production, University of Florida-IFAS guidelines recommend planting on 48 to 60 inch rows, with a plant-to-plant, in-row spacing of 6 to 12 inches. The Cornell Extension guidelines recommend row spacings of 60 to 72 inches with in-row spacings of 10 to 15 inches, and the Midwest Production Guide recommends row spacings from 48 to 72 inches with in-row spacings of 15 to 18 inches. However, planting with 6 inch in-row spacing is not uncommon in the Midwest.

Plasticulture systems can be arranged with one or two rows per bed. For two row systems, a 10 to 18 inch spacing between rows is recommended with beds on 48 to 72 inch centers. Within rows, holes in the mulch are spaced every 8 to 10 inches, with one or two plants per hole.

**Fertilization**

Fertilizer application rates of nitrogen (N), phosphorus (P), and potassium (K) should be based on soil type and annual soil nutrient tests. Again, recommendations vary somewhat (Continued on page 2)
In addition to adequate soil moisture, proper fruit development requires adequate levels of pollination. Cucumber plants produce male and female flowers, and pollination requires the presence and activity of pollinators, mostly bees, to move pollen from the male to the female flowers. Multiple pollinator visits per flower are required to adequately pollinate the fruit, and good plant and pollinator management can be crucial for successful production.

Cucumber varieties differ in the types of flowers they produce. Standard cucumbers are monoecious, meaning that they produce both male and female flowers on the same plant, with male flowers producing pollen, and fruit developing only from female flowers (Figure 2). A majority of the flowers on these varieties are male. Some varieties are gynoecious, producing only female flowers. These varieties need to be planted near pollenizer varieties that produce male flowers because they do not produce any pollen of their own. Some varieties are “predominantly female”, producing mostly female flowers, and there are some experimental varieties that are hermaphroditic, where flowers have both male and female structures. The type and number of flowers present on a variety is important to consider, as special steps may be needed to ensure an adequate supply of pollen. If gynoecious or predominantly female varieties are planted, pollenizer plants with male flowers will need to be planted along with the production variety. Most seed companies will pre-package pollenizer varieties in the bag, eliminating the need to purchase a separate pollenizer variety.

It is also important to make sure that an adequate number of active pollinators (usually honey bees) are present during the pollination period. A typical recommendation is to provide one active honey bee hive per acre of cucumbers. However, declines in native bee populations has resulted in a recommended rate of two hives per acre in some areas.

Care must be taken to protect bees from nearby insecticide applications, and growers should coordinate activities with the bee keepers. It is best not to apply any insecticides during the pollination period. However, if an insecticide application is necessary, the time of application is very important in reducing bee exposure. Bees are present in cucumber plantings and pollinate most actively in the morning and early afternoon. So applications of any pesticides should be made late in the day, preferably near dusk.

Sources: