Cucumis sativus

Cucumber belongs to the Cucurbitaceae family, along with squash, pumpkins, melons, and gourds. Cucumbers are warm-season, herbaceous annuals. The growth habit of individual plants may either be determinate (shoot tip ends in a flower) with a bushy growth habit or indeterminate (shoot tips grow continuously with flowers in leaf axils) with a prostrate and spreading growth habit.

Leaves and stems are covered with numerous spines. Cucumber leaves are triangular with rounded lobes, the middle lobe being longer than those on either side. A wasp-shaped cucumber in which the middle section of the fruit is narrower than the ends occurs from late pollination or low soil potassium levels.

Contrary to popular opinion, cucumbers will not cross-pollinate with other members of the vine crop family. Cross-pollination is not the cause of bitter, tasteless, or off-flavor cucumbers. Bitter cucumbers sometimes are produced during a cool growing season. The cucumber plant produces cucurbitacin, a chemical that causes bitterness and makes cucumbers difficult for some people to digest. When cucumbers are allowed to fully mature, cucurbitacin becomes concentrated in the skin and may be removed by simply peeling the cucumber before use. ‘Burpless’ cultivars have genetically lower levels of cucurbitacin.

Culture

Cucumbers require 50 to 70 days of warm weather to reach harvest. Cucumbers like a loose, well-drained soil with plenty of organic matter. Seed may be planted in early June after the soil has warmed. Seed germinates at a minimum temperature of 68°F. Optimum soil temperature range for germination: 60 to 75°F. Temperatures above 90°F or below 60°F will slow growth and cause bitterness. Days to emergence: 4 to 9. Plant seeds ½ to 1 inch deep, and thin the seedlings to one plant every 8 to 12 inches in the row. Cucumbers can be started indoors in peat pots in early May and transplanted into the garden in early June after the soil has warmed. Vine crops cannot tolerate root disturbances and do not normally transplant well. Seedlings should be hardened off before planting, by reducing water slightly and gradually exposing them to outside temperatures and sunlight. You can buy or mix your own sterile potting mix for starting transplants. The mix should include peat, sphagnum or compost to retain moisture; vermiculite or perlite for aeration; and mineral and nutrient sources to encourage growth after the first roots form. Seeds sown in pots need a minimum growing temperature of 60°F until the seedlings are planted out. If you use transplants plant them carefully in warm soil 8 to 12 inches apart. Cucumbers can be trellised to save garden space.

On a normal cucumber plant, the first yellow flowers that appear on the plant are male, and have no potential to bear fruit. They wither and drop from the plant after blooming. This is a normal occurrence early in the growing season. Subsequent flowers are both male and female. Some of the new varieties produce plants have only female flowers, while others have a greater proportion of female to male flowers. Genetics, day length and temperature determine which types of flowers are produced.

You can lengthen the growing season by protecting plants from late spring frosts and early fall frosts. There are a variety of ways to prolong the growing season, including planting on a southern slope, creating a warmer microclimate using floating row covers, dark plastic mulch to warm the soil, clear plastic tunnels, cold frames, or using windbreaks to shield plants.

Seed Specifications

| Minimum germination standard: 80%. Usual seed life: 3 years. Approximately 25 to 30 seeds per gram, 28 grams per ounce. |
Cultivar Selection

Cucumbers range in size from the tiny gherkins, less than 1” long, to large cylindrical or serpent-like fruits, 20” long. Choose cultivars resistant to two or more diseases. Cucumber cultivars may be classified as pickling, slicing, greenhouse, or gherkin. Slicing cultivars are long and tapered with smooth, glossy green skin and a few white spines. Some slicers are burpless types. Pickling cucumbers tend to be blunt, angular, warty, and light green with black or white spines. Greenhouse cultivars are seedless slicing types, which do not require insect pollination. They have thin, dark green skin and milder flavor than field-grown slicing cucumbers. Gherkins are Cucumis anguria, a different species from common cucumber. They are small, oval, prickly, and primarily pickled. Quality cucumbers normally are green, but there also are white-yellow fruited types. Most overmature cucumbers turn yellow to orange or white

Irrigation

Cucumber is a shallow-rooted crop and requires frequent watering. All vine crops require supplemental irrigation of 1 inch of water every week in order to assure a constant supply of moisture, particularly during bloom and fruit development. Moisture stress can reduce crop yields. If leaves begin to wilt midday, plants are moisture stressed. Plants that wilt intermittently may produce smaller yields, while plants that wilt frequently or that wilt too long die due to irreversible cell damage.

Drip irrigation works particularly well with black plastic mulch. When irrigating vine crops, it is important to keep water away from the crown of the plant as even a few hours of crown wetness can damage the root system. Water in the morning or early afternoon so the foliage dries by evening. This helps prevent the spread of leaf diseases.

Fertility

Cucumbers prefer a soil pH between 6.0 and 6.8; adding lime in SE Wisconsin should not be necessary. Vine crops require low nitrogen and high potassium and phosphorus for good fruit development. At planting time, apply one pound per 10-foot row (or 1 to 2 tablespoons per hill) of a complete fertilizer such as 10-10-10 or similar analysis. One week after blossoming begins, side-dress with 4 tablespoons of 21-0-0 (ammonium sulfate) or 20-10-10 for each 10 foot of row; or feed every ten to 14 days with a liquid feed such as ‘Miracle Grow’ as the fruits begin to develop. Reduce watering and feeding as fruits ripen.

Harvest

Pick cucumbers at any stage of development. Cucumbers usually are eaten when immature. The best size depends upon the use and variety. They may be picked when they are no more than 2 inches long for pickles, 4 to 6 inches long for dills, and 6 to 8 inches for slicing varieties. A cucumber is of highest quality when it is uniformly green, firm, and crisp. The large Burpless cucumbers should be 1 to 1 ½ inches in diameter and up to 10 inches long. Some varieties can grow considerably larger. Harvest will typically begin a few days to 12 days after pollination. Harvest three times a week when fruit is growing rapidly to sustain plant productivity. Oversize fruit left on the vine will prevent subsequent fruit from developing. Cucumbers can be stored for up to two weeks at 40°F and relative humidity of 85 to 95%.

Pests

Key pests include two species of cucumber beetles; striped and spotted. The striped cucumber beetle is more serious in Wisconsin. Cucumber beetles are a problem on vine crops because they transmit the bacterial wilt organism. The striped cucumber beetle is 1/5 inch long and yellow-green in color with three black stripes running the length of its body. Spotted cucumber beetles are yellow-green with 12 black spots on their backs. Non-chemical control can be achieved in small plantings by covering the plants with floating row covers to keep the beetles out. Make sure you uncover flowering plants to allow the bees to enter and pollinate the plants. If bacterial wilt infections have already occurred, remove the diseased plants immediately to prevent the spread of the disease while insects are present. For more information, consult University of Wisconsin - Extension publication A2088, Managing Insects in the Home Vegetable Garden.

Diseases

Cucumbers are susceptible to many of the common vine diseases, such as Bacterial wilt, Alternaria blight, angular leaf spot, mosaic, Fusarium wilt, powdery mildew, scab, and stem anthracnose. Common control measures include crop rotation, field sanitation, and fungicide applications. Many diseases can be eliminated or reduced by avoiding overhead watering. Where disease is a known problem, choose resistant varieties. Remove plant refuse and control insect pests. Consult University of Wisconsin - Extension for disease specifics.