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Environmental
Horticulture

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Cucumbers, Melons and Squash

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Cucumbers

Environmental Preferences

LIGHT: Sunny.

SOIL: Well-drained;
moderate-high
organic matter.

FERTILITY: Rich.

pH: 5.5 to 7.0

TEMPERATURE: Hot (65 to 80°F).

MOISTURE: Keep moist, not waterlogged; mulch helps
maintain moisture.

Culture

PLANTING: Seed after danger of frost has passed and
soil has warmed, or use plants sown indoors in peat pots
three to four weeks prior to planting time.

SPACING: 12 to 18 inches by 48 to 72 inches in rows,
24 to 36 inches by 48 to 72 inches in hills (two to three
plants per hill); closer if trellised.

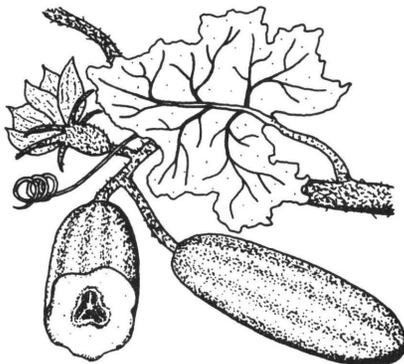
HARDINESS: Very tender annual.

FERTILIZER NEEDS: Heavy feeder; sidedress one
week after blossoming begins and again three weeks later
using 3 tablespoons 33-0-0 per 10-foot row.

Cultural Practices

Varieties include both the slicer or fresh salad type and
the pickle type (which can also be used fresh); vined,
dwarf-vined and bush varieties; all female or all-female
seedless (no pollination required); burpless; and, various
mixtures of these characteristics. Disease resistance is
available in many varieties.

Varieties of cucumber are being released that are



advertised as all female, or gynoecious types. On a normal
cucumber plant, the first 10 to 20 flowers are male, and
for every female flower, which will produce the fruit, 10
to 20 male flowers are produced. This indicated to plant
breeders that production could be increased greatly if
many more female flowers were produced. Some of the
new varieties produce plants that have only female
flowers, while others have a greater proportion of female
to male flowers. These plants tend to bear fruit earlier,
with a more concentrated set and better yields overall.
These require a pollen source, so seeds from a different
variety are included in the seed packet.

Parthenocarpic cucumbers are all female and are seedless
because the fruit is produced without being pollinated. If
this type of cuke is planted near others, pollination will
occur and seeds will form. This type is often grown in
greenhouses.

Burpless cucumbers are long and slender with a tender
skin. Through plant breeding, the bitterness associated
with the burp has been removed. Other causes of bitterness
in cucumbers include temperature variation of more than
20°F and storage of cucumbers near other ripening
vegetables.

Most varieties of cucumber vines spread from row to row.
Training on a trellis or fence along the edge of the garden
will reduce space needed and also lift the fruit off the soil.
If trellised, plant four to five seeds per foot in rows spaced
30 inches apart. Untrellised rows may need to be spaced
4 to 6 feet apart. When plants are 4 to 5 inches high, thin
so they are 9 to 12 inches apart. It may be better to plant
a second crop around July 1, which will have fewer
disease problems, than to try to continue harvesting an
early planting until frost.

There are many excellent bush varieties of cucumber now
available. Most of these produce well for the limited
amount of space and may be a desirable alternative in a
small garden if trellising is not possible.

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In order for the flower to develop into a fruit, pollen must be carried by bees from male flowers, on the same plant or on different plants, to the female flower, the one with the tiny swollen 'pickle' beneath the yellow petals. Poor cucumber set is common during rainy weather when bees are inactive. If pesticides are necessary, use them after sundown to avoid harming the bee population.

Plants respond to mulching with soil-warming, black plastic in the spring for earlier harvest. Organic materials are useful in the summer to retain moisture and keep the fruit clean in non-trellised plantings.

Working in the vines when leaves are wet may spread diseases. Wait until after morning dew or rain evaporates. Trellising gets leaves up off the ground so that they dry off faster. Also, if the vines are trellised, the gardener is less likely to step on the vines and there is no need to move the vines for weeding or other purposes, reducing the risk of damage. If vines are not trellised, avoid destroying blossoms or kinking vines by gently rolling the vines away rather than lifting them when searching for harvestable fruit.

There has been a significant increase in disease resistance in cucumber varieties in recent years. Try to select resistant varieties when possible.

Common Problems

DISEASES: Bacterial wilt (spread by cucumber beetles), mosaic, leaf spot, anthracnose, scab, powdery and downy mildews.

INSECTS: Cucumber beetles, aphids, flea beetles, pickleworms.

CULTURAL: Misshapen cucumbers (low fertility or poor pollination), failure to set fruit (too few bees for adequate pollination, no pollinating plants for gynocious hybrids, changes in temperature, too early and all flowers are still male).

Harvesting and Storage

DAYS TO MATURITY: 50 to 70 days.

HARVEST: From when cucumbers are about 2 inches long up to any size before they begin to turn yellow, about 15 days. Remove by turning cucumbers parallel to the vine and giving a quick snap. This prevents vine damage and results in a clean break. Cutting may be easier in some cases.

APPROXIMATE YIELDS: 8 to 10 pounds per 10-foot row.

AMOUNT TO RAISE: 10 to 15 pounds per person.

STORAGE: Medium cool (45 to 50°F) and moist (95% relative humidity) conditions.

PRESERVATION: Pickled.

Melons

Environmental Preferences

LIGHT: Sunny.

SOIL: Well-drained with moderate organic matter; sandy.

FERTILITY: Medium.

pH: 6.0 to 7.5

TEMPERATURE: Hot (70 to 85°F).

MOISTURE: Average.

Culture

PLANTING: Seed after all danger of frost is past and when soil warms. Begin transplants in peat pots three to four weeks before this time.

SPACING: 2 to 3 feet between bulbs in rows 5 to 7 feet for muskmelon; 6 to 8 feet between hills 7 feet apart for watermelon.

HARDINESS: Very tender annual.

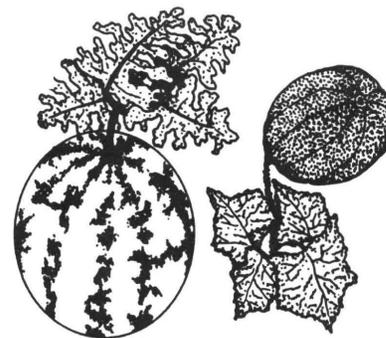
FERTILIZER NEEDS: Heavy feeder. Use a starter solution for transplants. Sidedressing with nitrogen may lower yield and/or quality. Late-maturing varieties, however, may need some sidedressing at fruit set.

Cultural Practices

Muskmelons and **watermelons** are warm-season crops requiring a long growing season of 80 to 100 days from seed to fruit. Most present varieties are not well suited to small gardens because of the space requirement. Newer bush varieties are available for use in small gardens.

Melons can be produced from transplants or planted directly. Those grown from transplants can be harvested as much as two weeks earlier than melons grown directly from seed, since the gardener must wait until danger of frost is past to plant. Plant or transplant muskmelon in rows 5 feet apart with hills spaced every 2 to 3 feet, two or three plants per hill. Watermelon hills should be 6 to 8 feet apart, and rows 7 to 10 feet apart if a path is desired between rows. Seed should be sown 1/2 to 1 inch deep after danger of frost has passed and soil is warmed.

Muskmelons and watermelons are well suited for growing on black plastic mulch. The black plastic absorbs heat readily, allowing the soil to warm quickly. It tends to keep the soil moisture level from fluctuating greatly. In addition, the mulch is very effective in controlling weeds, decreasing the labor necessary to care for melons.



Male and female flowers are separated on the same plant. Bees must carry pollen from flower to flower to insure good fruit. Use insecticides late in the evening to avoid killing bees.

Melon plants can be trained in rows for easy harvesting. Growing on a trellis allows closer spacing (rows 3 feet apart), but each trellised melon must be supported by a sling made of a material which dries quickly to prevent rot. Old nylon stockings, cheesecloth, and other net-like materials make good fruit slings. Very large watermelons probably should not be trellised at all, since the weight of the fruit, even if supported, would likely damage the vine.

The two most common types of melons are *Cucumis melo* var. *reticulatus* (netted muskmelons) and *C. melo* var. *inodorus* (winter melons). Netted muskmelons include what we commonly call "cantaloupes," but true cantaloupes or rock melons are *C. melo* var. *cantaloupensis* (not cultivated in the U.S.). Netted muskmelons have netted surfaces with vein tracts and green to deep salmon-orange flesh. Winter melons include casaba, crenshaw, and honeydew and have smooth or corrugated, non-netted surfaces without vein tracts and greenish white to orange or pink-tinted flesh. All forms of *C. melo* readily hybridize with each other. Watermelons (*Citrullus lanatus*) have green surfaces often with stripes and pink, red, or yellow flesh.

Common Problems

DISEASES: Bacterial wilt (spread by cucumber beetles), fusarium wilt, leaf spot, powdery and downy mildews, alternaria blight.

INSECTS: Cucumber beetles, squash vine borer, pickleworms, squash bug.

CULTURAL: Poor flavor and lack of sweetness due to poor fertility (low potassium, magnesium, or boron); cool temperatures; wet weather; poorly adapted variety; loss of leaves from disease; picking unripe melons. Poor pollination caused by wet, cool weather, lack of bee pollinators, and planting too close, resulting in excessive vegetative growth. A heavy rain when melons are ripening may cause some of the fruit to split open. Fruit in contact with soil may develop rotten spots or be damaged by insects on the bottom. Place a board or a couple of inches of light mulching material, such as sawdust or straw, beneath each fruit when it is nearly full-sized.

Harvesting and Storage

DAYS TO MATURITY: 70 to 130 days.

HARVEST: Muskmelons are harvested at full-slip; i.e., when the stem separates easily at the point of attachment. Honeydew, crenshaw, and casaba melons are cut off after they turn completely yellow. These melons will rot if left

on the ground for too long. For watermelons, become familiar with the variety being grown to determine the best stage for harvesting. The best indicator is a yellowish color on the underside where the melon touches the ground. A dead tendril or curl near the point where the fruit is attached to the vine is used by some as an indicator that the fruit is ready for harvest. You may also thump the fruit, listening for the dull sound of ripe fruit, rather than a more metallic sound; however, this technique takes some practice, and if you have just a few fruit, it is probably wise to include all of the above when making your decision.

APPROXIMATE YIELDS: 8 to 40 pounds per 10-foot row; more if trellised.

AMOUNT TO RAISE: 10 to 15 pounds per person.

STORAGE: Medium-cool (40 to 50°F), moist (80 to 85% relative humidity) conditions.

PRESERVATION: Cool, moist storage; may freeze muskmelon balls.

Squash

Environmental Preferences

LIGHT: Sunny.

SOIL: Well-drained.

FERTILITY: Medium-rich.

pH: 6.0 to 7.5

TEMPERATURE: Warm (65 to 75°F).

MOISTURE: Average.

Culture

PLANTING: Seed or transplant after danger of frost is past and soil has warmed.

SPACING: 3 to 4 feet by 4 to 6 feet for hills with two to three plants per hill; 2 to 3 feet by 3 to 5 feet for single plants.

HARDINESS: Very tender annual.

FERTILIZER NEEDS: Heavy feeder. Sidedress one week after blossoming begins with 3 tablespoons 33-0-0 per 10-foot row; repeat three weeks later.

Cultural Practices

Summer squash grows on nonvining bushes. There are many varieties having different fruit shapes and colors. The three main types include the yellow straight neck or crooked neck; the white, saucer shaped, scallop, or patty pan; and the oblong, green, gray or gold zucchini.



Winter squash is allowed to mature on the vine and develop a hard rind to permit winter storage, although with many varieties it can be picked early and used like summer squash. Cultural techniques are the same as for other squashes.

Winter squashes are generally categorized according to their fruit size. Small fruits (1 to 4 pounds, 80 to 100 days to harvest) include acorn types, butternut types, and some true winter squash types. Intermediate fruits (6 to 12 pounds, 110 days to harvest) include banana squash, Cushaw, Hubbard, and Sweet Meat varieties. Large fruits (15 to 40 pounds, 120 days to harvest) include Blue Hubbard, Boston Marrow, and Jumbo Pink Banana varieties. Jumbo fruits (50 to 100+ pounds, 120 days to harvest) are often called Jumbo Pumpkins and include Big Max and various Mammoth varieties. Some of the small-fruited types have been bred for bush or semi-vining growth habits.

Another winter squash, Spaghetti Squash or Vegetable Spaghetti, has gained in popularity in recent years. Its flesh, when steamed or baked, separates into spaghetti-like strands. The delicate flavor is unique combined with its firm yet tender texture making it useful as a low calorie, low starch pasta substitute. The plant vines vigorously and benefits from trellising. The large, oblong fruits turn yellow when fully ripe. Spaghetti Squash may be stored as a winter squash or cooked and frozen successfully.

Winter squash requires a long, warm growing season. Sow seeds after all danger of frost is past and the soil is thoroughly warmed. Plant them 1 inch deep (4 to 5 seeds per hill). Thin bush types to one plant every 3-4 feet. Leave the two best plants of semi-vining types every 4-6 feet, and the two best plants of vining types every 5-7 feet. Large-fruited vining types need plenty of room to sprawl and may take over small gardens.

Soil containing plenty of well-rotted compost or manure is ideal, although good crops may be grown in average soils, which have been adequately fertilized.

For extra early fruit, plant seeds in peat pots in greenhouses or hotbeds, and transplant about three weeks later after danger of frost. Older plants that have hardened off and stopped growth will not transplant well and should be discarded. Squashes are warm-season plants and do not do well until soil and air temperatures are above 60°F. Seed or transplants can be planted through clear, black,

or infrared transmissible (IRT) plastic mulches. Cover seed with 1 inch of soil.

Squash plants have separate male and female flowers on the same plant. Pollen must be transferred from the male flowers to the female by bees. Use insecticides late in the evening to prevent killing bees which use the pollen as food and will carry them back to the hive.

Common Problems

DISEASES: Powdery and downy mildews, blossom blight, bacterial wilt.

INSECTS: Cucumber beetles, squash vine borers, pickleworm.

CULTURAL: Blossom end rot from irregular moisture or calcium deficiency; failure to set fruit (see cucumber).

Harvesting and Storage

DAYS TO MATURITY: Summer squash: 50 to 65 days; winter squash: 80 to 140 days.

HARVEST: Harvest summer squash when immature, only about 6 to 8 inches long and 1 1/2 to 2 inches in diameter for elongated types, 3 to 4 inches in diameter for patty-pan types, and 4 to 7 inches long for yellow crooknecks. If the rind is too hard to be marked by the thumbnail, the fruit is too old. Remove old fruit to allow new fruit to develop.

Harvest winter squash when fruits turn a deep, solid color and the rind hard. Allow to ripen on the vine. Harvest after vine dries up before heavy frost. Cut the stem 2 to 3 inches from the vine as fruit without a stem tends not to store well.

APPROXIMATE YIELDS: 20 to 80 pounds per 10-foot row.

AMOUNT TO RAISE: 10 to 25 pounds per person.

STORAGE: Summer squash: cool (32 to 50°F), moist (90% relative humidity) conditions for 5 to 14 days.

Winter squash: warm (45 to 55°F), very dry (50 to 60% RH) conditions for 2 to 6 months.

PRESERVATION: Summer squash: cool, moist storage; may can as pickles or relishes; may freeze (quality may be poor on frozen squash).

Winter squash: usually kept in warm, dry storage, canned, or frozen.