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New 7.5H



Seedless Watermelon Production

SEEDLESS WATERMELON PRODUCTION

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The seedless watermelon is now a reality. Seedless watermelons—sweet inside but without the numerous seeds found in conventional watermelons—are the ultimate in convenience food.

Seed Production

The obvious question asked about growing seedless watermelons is: "How does one obtain seed of a seedless watermelon?" Obviously you cannot save seed from a seedless watermelon. So, where do the seeds come from? Simply stated, the chromosome number (threadlike bodies within cells that contain the inheritance units called genes) of a normal watermelon plant is doubled by the use of the chemical colchicine. Doubling a normal (diploid) watermelon results in a tetraploid (having four sets of chromosomes) plant. When the tetraploid plant is bred back or pollinated by a diploid or normal plant, the resulting seed produces a triploid plant that is basically a "mule" of the plant kingdom and produces seedless watermelons. Seed of seedless varieties are available from most major seed companies.

General Climatic Requirements

Seedless watermelons are a warm-season crop, preferring relatively high temperatures for optimum growth. Daytime temperatures of 80° to 95° F. and night temperatures of 60° to 70° F. are best. When temperatures are lower, plant growth is slowed considerably. With favorable weather, seeded fields can produce ripe fruit in 85 to 100 days. When using transplants instead of seed, ripe melons can be produced in 65 to 75 days.

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Soil Types

Seedless watermelons can be produced successfully on almost any type of soil that is well-drained, warm and fertile. Deep sandy loams are preferable to light sands because of less moisture stress during dry periods and less leaching of nutrients during wet weather.

Land Preparation

Watermelons grow best on soils with a pH between 6.0 and 7.0. In East Texas where soil acidity may be below 5.5, adding lime to the soil to "sweeten" or raise the pH provides a more favorable condition for watermelon growth. A soil test determines pH and indicates the amount of lime to apply. To get desired results, broadcast the lime and disk it into the soil to a depth of 6 to 8 inches during the early fall. Prepare the seedbed well in advance of the planting season. Shred existing vegetation, disk and turn the soil to a depth of 7 to 8 inches. Redisking and shaping the beds should precede planting.

Fertilizing

In South Texas, apply 150 pounds per acre of 10-20-10 or 12-24-12 fertilizer just before or at planting time. In Central and East Texas, 200 pounds per acre of 10-20-20 or 400 pounds of 5-10-15 are recommended before planting. Apply the fertilizer in a deep furrow, then cover to a depth of 8 to 10 inches or chisel it in to a depth of 8 to 10 inches. Spacing between rows varies from 10 to 12 feet on South and West Texas irrigated land. In the Central and East Texas nonirrigated areas, row spacing ranges from 13 to 16 feet. A sidedressed application of ammonium nitrate or ammonium sulfate (20 to 30 pounds nitrogen per acre) is recommended when the vines begin to run. Some growers prefer to sidedress with about 150 pounds per acre of the complete fertilizer used for the preplant treatment. If heavy rains cause excessive fertilizer leaching or plants show a light green color, make a second sidedressing of fertilizer. Apply fertilizer 3 to 4 inches deep and 2 to 3 feet to each side of the plant row. If roots are being disturbed, move farther away from the plant row when applying fertilizer.

Windbreaks

Where winds are a problem, plant windbreaks during the fall so that overwintering stubble will provide some protection for the young plants and developing fruit in the spring. In South Texas, speltz, a type of strong-stemmed wheat, can be seeded on either side of the intended watermelon row. Seeded in early October with proper moisture, speltz grows to about 3 feet by January or February. Watermelons planted in rows running east and west receive the most protection since prevailing winds are southeast and northwest.

Since most Texas watermelon growers practice a 3- to 5-year crop rotation, preferably with a grass crop or pasture, land preparation in the fall may be done in strips. By leaving strips of weeds, grass and pasture stubble, erosion from wind and rain is reduced. Disk the area between rows when watermelon vines begin to run. At the same time, undercut the windbreaks to prevent competition but leave them standing to provide the needed protection.

Planting

Poor seed germination is the main problem with growing seedless watermelons. When direct seeding, the soil temperature should be a minimum of 70° F. at a depth of 4 inches. Soil temperatures below 70° F. will reduce germination and emergence. When growing transplants, use 1½- to 2-inch speedling cells or peat pellets. Soak the planting medium thoroughly and let drain 4 to 6 hours before sowing. Plant one or two seeds per cell or pellet. The greenhouse temperature should be 75° to 85° F. during the germination period. Do not allow the growing medium to become dry, but do not overwater during initial germination. Begin watering, as needed, after 10 to 15 percent of the seedlings have emerged. Plants should be ready for transplanting in 3 to 4 weeks. Transplants should have no more than three true leaves when set in the field. Use of older, larger transplants can cause slow, stunted growth and poor yields. In-row and between-row spacing varies depending on soil conditions, location and whether or not irrigation is available. Optimum yields have been obtained when final plant populations are between 1,633 plants per acre (48x80 inches) and 2,178 plants per acre (36x80 inches).

Pollination

The male and female flowers are born separately on the watermelon plant. Female flowers must be pollinated for fruit to set. Also, cross pollination must occur between a seedless and regular type watermelon for seedless fruit to be produced. This is best accomplished by planting a standard watermelon variety in the field along with the seedless variety. (For obvious reasons, the standard variety should not produce fruits similar in appearance to those of the seedless variety.) Approximately one-third of the plants in the field should be of the standard or "pollinator" variety. Because honeybees are the principal insects that pollinate watermelons, at least one strong colony for each 2 acres of melons is recommended to insure good fruit set. Pollination is a must, and poor or partial pollination may result in misshapen fruit and no seedless melons.

Most efficient pollination with bees occurs when hives are placed throughout the field 150 yards apart. The second most efficient placement would be around the edges of a field at 150-yard intervals. The third most efficient way is to position all hives on one side of the field. When placed on the downwind side, bees fly upwind to feed and return downwind loaded with pollen.

Weed Control and Cultivating

Mechanical cultivation and hand labor are still useful before watermelon plants have vined. However, chemicals, which control most broadleaved weeds and grasses from seed, are available at reasonable costs. When used properly, no damage to the germinating seed or growing plant occurs. Prefar[®], Treflan[®] and Dacthal[®] can be used for weed control in watermelons. Read the labels carefully to determine which herbicides are best suited for your use in controlling weeds.

Insect and Disease Control

Insects and diseases are a major factor in determining the success or failure of seedless watermelon production in Texas. Follow the recommended control practices found in B-1350 *Texas Guide for Controlling Insects on Commercial Vegetable Crops*. Seedless watermelons are subject to

the same diseases as seeded watermelons. Two of the more common diseases—downy mildew and Fusarium wilt—are shown in the photographs below. Consult your Extension



Downy mildew lesions



Discoloration of stems infected with Fusarium wilt fungus

office for the latest information on controlling these and other watermelon diseases. Read and follow all label directions concerning pesticide rates, time of application and safety precautions.

Irrigation

Six to 8 inches of water from timely rains or irrigations are generally needed to produce a good watermelon crop. One to four irrigations may be required, depending on spring rainfall. For melons grown on sandy soils, sprinkle irrigation is preferred. Apply 1 to 2 inches of water per acre on 12- to 16-day intervals. Avoid moisture stress if possible since fruit quality and yield can be greatly affected. Blossom-end rot and bottle-neck fruit are symptoms of moisture stress. Do not operate the sprinkler irrigation system between 7 and 11 a.m. during the fruit setting period as bees will be prevented from doing a good job of pollinating the open female flowers. Drip or furrow irrigation can also be used.

Harvesting

The lower side or "ground spot" of the fruit should be cream or yellowish colored. Thump fruit to check for ripeness, but the results will vary. Generally, a solid sound indicates ripeness while a sharp echoing sound indicates a greener fruit. The tendril, or "tail" which occurs in the axils (where the leaf attaches to the vine) of leaves along the stem, can be used as an indicator of ripeness. Experienced harvesters indicate that if the two tendrils nearest the fruit are dry, the seedless watermelon is ripe. It is important to note that the first few mature melons in the field may frequently contain small seeds. This condition is most prevalent under stressed conditions such as low soil moisture, insufficient fertilizer, temperature extremes or disease pressure which affect the normal plant development.

Each field of seedless watermelons actually produces three different types of watermelons—the regular seeded watermelons (from pollinator plants), the true seedless melons and a light green tetraploid melon that produces a very limited number of seed from which next year's planting can be made. Seed yields from these melons may be no greater than 6 to 10 pounds to the acre.

Handling

If harvested at optimum maturity, hybrid seedless watermelons have better shipping ability and longer shelf life than normal seeded varieties. Removing the field heat before shipping improves the shipping and shelf life of the seedless fruit.

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