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## **How to Grow Personal-Size Seedless Watermelons in Connecticut**

Four classes of watermelons are available in supermarkets. Traditional seeded watermelons have been a major part of the market for many years and weigh 18-35 pounds. Large seedless watermelons have been available since 1988 and usually weigh 15-25 pounds. Seedless icebox-size melons, generally weighing 7-12 pounds, have been available for about 10 years. The newest melons on the marketplace are seedless miniature “personal-size” watermelons, weighing 3-7 pounds. Personal-size watermelons first became widely available in markets in 2003. They offer an attractive alternative for small families or consumers with limited refrigerator space. Beside their smaller size, they also have a thin rind which reduces waste. Researchers have also found that lycopene and beta-carotene contents are high in personal-size watermelons. Lycopene, an antioxidant, has been linked to the possible prevention of cancer and heart disease.

Seedless watermelons are triploid (3X), which causes them to be sterile and seedless. In general, early growth of triploid plants is slower than that of diploid plants. However, triploid plant size eventually exceeds that of standard diploid plant as seed development in fruit of seeded varieties

inhibits further flowering and fruit set. Because seedless types do not put energy into seed production, the flesh is often sweeter than seeded types. With proper care, seedless watermelons have a longer shelf life than seeded melons. This may be due to deterioration of flesh around the seeds, which are absent in seedless melons.



Although production of seedless watermelons is similar to production of seeded (diploid) melons, some differences exist. Since triploid watermelon seed is more difficult to germinate and become established in the field, transplants are commonly used. Hybrid triploid watermelon plants do not produce sufficient viable pollen to induce fruit set and development. Therefore, pollen from normal diploid

seeded watermelon varieties must be provided.

**Cultivars.** There are several fruit characteristics to consider when choosing a variety. First are the color and the appearance of the fruit. This is a cosmetic characteristic and has little effect on taste. However, harvesting is easier if the seedless cultivar has a different color or appearance than the seeded pollinating variety. Size is another factor to consider. All cultivars tested in our trials were classified as personal-size in the 3-7 pound range. However, some produced a greater percentage of fruit in the 3-7 pound range. Sweetness of the fruit (Brix or total soluble sugars), seedlessness, lycopene content, and seed germination are other factors to consider. Lastly, the total yield is an important consideration, especially for commercial enterprises.

Taking all factors into consideration from our variety trials, it appears that Miniput, Vanessa, Mielheart, Wonder and Extazy provide abundant marketable fruit. Of these cultivars, Miniput is the sweetest and Extazy has the greatest lycopene content. The pollinator, Side Kick, provided an excellent supply of pollen throughout the growing season and its distinctive miniature fruit made harvesting easier.

**Growing Transplants.** Germination of triploid watermelon seed is inhibited at temperatures below 80°F. In addition, seedcoats of triploid watermelons are thicker than seedcoats of normal watermelon seed. The thicker seedcoats tend to adhere to the cotyledons during emergence, damaging the cotyledons or delaying their emergence. Because of the strict temperature requirements and the emergence problems associated with the thickened seedcoats, a uniform stand of triploid melons by direct seeding is difficult to achieve. The use

transplants will ensure a full field with little or no spaces where there are no plants. Personal-size watermelon cultivars and the pollinator cultivar are both seeded in the last week of April. The seed should be oriented with the pointed end up to virtually eliminate the problem of the seedcoat adhering to the cotyledons. Watermelons need more oxygen during germination than many other seeds so a light potting mix should be utilized. The planting medium should be kept moist but overwatering must be avoided. Our seedlings were grown in Promix BX (Premier, Red Hill PA) in 3x3x3-inch Jiffystrips and placed in a greenhouse maintained at 75-90F. One or two seeds are placed in each cell. After germination, plants are thinned to one per cell. Seedlings can also be grown under grow lights or in a sunny window.

**Fertilization.** Soluble 20-20-20 fertilizer (1 tbs/gal) is added to the seedlings about ten days before transplanting. The field soil is fertilized with 10-10-10 at a rate of 1300 lb/A before transplanting. The optimum pH of the soil is about 6.5.

**Field transplanting.** At least a week before transplanting in the field, seedlings are transferred to an outdoor cold frame for hardening. In mid-June, seedlings are transplanted two feet apart in rows five feet apart. Seedless watermelons are very sensitive to cold injury so earlier transplanting is not recommended. To produce seedless watermelons, one third of the field population should be planted with a pollinator. This can be achieved in two ways: every third row or every third plant within the row. Planting pollinators in the guard (outside) rows and then every third row in the plot provide optimum coverage and facilitates planting if mechanical planters are used. Harvesting is also easier,

especially if the seedless fruit and fruit from the pollinator vary little in size and color.

**Pollination.** Home gardeners often notice that the earliest watermelon blossoms do not set fruit. The first flowers developing on the vines are male or pollen-bearing flowers. Only the female, or pistillate, flowers are capable of developing into fruit. Honey bees are the most effective pollinators of watermelon blossoms. Pollen from the pollinizer variety is carried to the triploid blossoms by the honey bees. A minimum of six honey bee visits per flower is required for normal fruit development of seeded varieties. For triploid fruit development, this many, and perhaps more, visits are required. Every effort should be made to protect the bees during the flowering period to ensure high quality fruit. In large commercial plantings, at least one beehive/acre is beneficial.

**Mulches.** Watermelons prefer warmer soil temperatures. Plastic mulches raise the soil temperature an average of 6-12°F, whereas organic mulches such as compost, leaves, hay, or grass clippings lower the soil temperature 10-18°F (Hill et al. 1982). Thus, plastic mulches are preferable to organic mulches for crops that prefer warm soil temperatures. Clear plastic creates a mini greenhouse which favors the growth of weeds, which compete with the watermelon plants for water and nutrients. Black plastic is preferable to clear plastic because weeds are not able to germinate and grow under black plastic. The warming effect of black plastic mulch compared to unamended soil is more evident early in the season. In our studies, the warmed soil beneath the black plastic mulch encouraged early plant growth. The plants growing in plots amended with plastic mulch grew larger and appeared to produce a greater number of flowers compared to plants growing in

unamended plots. Black plastic mulch also affords good weed control. Young watermelon plants do not have to compete with weeds early in the growing season and this contributes to their larger size early in the season. The only detriment to black plastic mulch is water stress that may develop if the plastic is laid when the soil is dry. Plastic should be laid after a rain or irrigation. Holes can also be punched in the plastic after a rain to drain puddles on the plastic and to allow water to penetrate into the soil beneath the plastic.

**Irrigation.** Watermelons should never be allowed to develop water stress because of their high water requirement. Yields will be greatly reduced if they develop water stress during fruit formation. Water stress increases the incidence of blossom-end rot which results in poorly shaped, bottle-neck fruit. Irrigation may be needed during stand establishment and fruit development.

**Common Problems.** Cucumber beetles attack watermelon plants. Apply a suggested insecticide for control. Floating row covers can be used to exclude early-season pests. These covers should be removed when the plants start to bloom, to allow pollinating insects to reach the flowers. Other potential problems in watermelon plantings include aphids, Fusarium wilt, anthracnose, and alternaria leaf spot. Contact the Experiment Station for pest identification and control recommendations.

**Harvesting.** Some experience is required to harvest watermelons at their peak of perfection. The time of harvest is critical because watermelons do not continue to ripen after they have been removed from the vine. The following indicators denote full maturity: (1) light green, curly tendrils on the stem near the point of attachment of the melon usually turn brown and dry; (2) the



surface color of the fruit turns dull; (3) the skin becomes resistant to penetration by the thumbnail and is rough to the touch; and (4) the ground spot (where it lies on the soil) turns from light green to a yellowish color. With maturities ranging from 75-85 days, watermelons are usually harvested from early to late September in Connecticut.

### **Summary**

Watermelon is truly one of summertime's sweetest treats. It is fun to eat and nutritious as well. Watermelon is a tender, warm-season fruit that can be grown in the Northeast by using transplants and mulching with black plastic. Successful growing of seedless watermelons requires knowledge of triploid seed germination and transplant processes. Triploid watermelon seed is more difficult to germinate and establish in the field. A pollinizer variety must be planted in the field with triploid melons. Once established in the field, cultivation is similar to that of seeded varieties. Production of personal-sized seedless watermelons offers a new opportunity for commercial growers and backyard gardeners alike.