



Founded in 1875
Putting science to work for society

Dr. Abigail A. Maynard
Dr. David E. Hill
Department of Forestry and Horticulture
The Connecticut Agricultural Experiment Station
123 Huntington Street, P. O. Box 1106
New Haven, CT 06504

Phone: (203) 974-8516
Fax: (203) 974-8502
Email: Abigail.Maynard@po.state.ct.us
Website: www.ct.gov/caes

HOW TO GROW GLOBE ARTICHOKE IN CONNECTICUT

The globe artichoke (*Cynara scolymus*) is a member of the Composite family that is closely related to the thistle. The edible portion is the immature flower bud. The buds or “globes” are composed of fleshy flower bracts and the receptacle (heart) to which the bracts are attached. Unharvested buds develop into six-inch bluish-purple thistle-like flowers that can be grown for cut flowers.

Globe artichoke cultivation in the United States is largely confined to coastal California where cool summers and mild winters favor year-round production. Under these conditions, artichokes grown from root stocks produce continuously for four to five years. When grown from seed, the artichoke plant is a biennial, growing vegetatively the first year and producing edible flower buds the second year. This two-year cycle requires frost-free winters for survival. In Connecticut, survival of artichoke plants during harsh winters is virtually impossible. The growth cycle, however, can be shortened by vernalization (cool, moist treatment) of germinating seed or growing plants, and application of gibberellic acid (GA3) to young plants. These treatments initiate flower budding in five to six-month-old plants and permit production of artichokes in a single year. Thus, the globe artichoke may be grown as an annual plant in southern New England.

Cultivars. Three artichoke cultivars are available that can be grown from seed. Imperial Star is a cultivar designed for annual culture from seed and features low vernalization requirements to trigger bud formation (estimated to be less than 250 cumulative hours below

50°F). The buds of Imperial Star are thornless, glossy, and grayish-green in color. The bracts are slow to spread, an advantage if harvests are delayed. Green Globe and Green Globe Improved are the standard cultivars used commercially in California and require at least 500 hours of temperatures below 50°F for vernalization. Both are reliable cultivars, but some buds are thorny.

Vernalization. Vernalization is the metabolic process that causes a plant to change from a vegetative stage to a reproductive stage. This change may be initiated by subjecting the germinating seed or growing plant to a cool, moist treatment. There are two different levels of cold treatments, “induced” and “natural”. Either method can be used, but “induced” treatments are more effective for Green Globe and Green Globe Improved.

Induced vernalization is usually initiated in the first week of February. After soaking seeds in tap water at room temperature for two days to soften the seed coat, seeds are packed in moist unshredded sphagnum moss in an unsealed one-gallon plastic bag and refrigerated for four weeks at 36-40°F. The bags are examined weekly and moistened if necessary. In early March, four-week-old germinated seed with roots extending ¼ to ¾ inch are then transferred to one-quart containers and placed in a greenhouse, under grow lights, or in a sunny window. The media that we used was Promix BX.

“Natural” vernalization is begun in the first week of March. As before, presoaked seeds are

placed in an unsealed one-gallon plastic bag filled with moist unshredded sphagnum moss, but left at room temperature (65-70°F). After about ten days, germinated seeds are planted in one quart containers as before. In early April, the containers are transferred to a cold frame for early growth and vernalization until they are ready for transplanting at the four-leaf stage.

Fertilization. Soluble 20-20-20 fertilizer (1 tbs/gal) is added to the potted 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 pH of the soil should be about 6.5.

Field transplanting. Seedlings in the four-leaf stage are transferred to an outdoor cold frame for hardening before transplanting in the field. Seedlings are covered at night only on the threat of frost. In our trials, uncovered seedlings were inadvertently subjected to night temperatures as low as 29°F without apparent injury.

Seedlings are transplanted into the field in early to mid-May. Transplants are spaced two-feet apart in rows four-feet apart. Most container-grown transplants will have a prominent tap root curled at the bottom of each pot. When transplanting, after the root ball is removed from the pot, the tap root should be manually straightened, and the plant set in a hole deep enough to accommodate the length of the tap root. Usually, transplanted artichokes display very slow early growth. It is common for plants to sit ten to fourteen days with little noticeable growth. If the soil is dry, water can be placed in the transplant hole before covering the roots.

Mulching. Summer heat (80-90°F) may cause devernialization of unprotected plants. Immediately after transplanting, the soil can be mulched with four inches of an organic mulch (undecomposed leaves, grass clippings, straw) to cool the soil. Although it is necessary to mulch only within twelve inches of the plant to prevent devernialization, the remaining space between the rows can be mulched to control weeds.

Gibberellic acid treatment. Gibberellic acid (GA3) is a natural plant hormone produced by most herbaceous plants. Gibberellic acid can be purchased in many garden centers. Its use in artichoke culture initiates bud formation and speeds their development in barren plants.

Barren plants in late July through early August can be sprayed with 50 ppm GA3, directed to the center of the plant surrounding the growing tip. In our trials, treatment of barren plants was beneficial only for Green Globe and Green Globe Improved, which required extended low temperatures (less than 50°F) for vernalization. Barren plants of cultivars that require fewer hours of cold temperatures (Imperial Star) eventually produced buds as fall temperatures lowered.

Irrigation. Artichokes require about one-inch of water per week. This may be provided by overhead or drip irrigation. Moisture stress may cause a physiologic disorder called Black Tip. The tips of the affected bracts become dark brown or almost black, dry, and leathery. This disorder appears more frequently during sunny, warm, and windy days that increase the growth rate and causes periodic moisture stress.

Harvest. Buds are harvested when they have reached their maximum size, but not gotten tough and too far along in the floral development process. Generally, they should be picked when the lower bud bracts have just begun to separate. Once the top (primary) choke is cut, secondary chokes will develop.

Overwintering. Artichoke plants that were unproductive the first year despite vernalization or GA3 treatments can be dug and placed in two-gallon plastic pots and kept in a cool sunny window. The plants will not enlarge, but will maintain a relatively constant number of leaves. After replanting in the field around May 1, most of the plants should grow and produce buds in July. Attempts to overwinter barren plants in the field with various mulches were found to be generally unsuccessful. If not dug, plants should not be cut but left intact over the winter. Barren plants left in the field survived one very mild winter and produced an abundance of buds in June. However, this occurred in one winter out of twenty. If plants do not survive the winter, the dead plants should be removed.

Summary

Artichokes of commercial quality can be produced from annual culture in Connecticut by using vernalization to induce flower bud formation. Vernalization requires chilling of seeds or plants, followed by mulching of plants after transplanting to the field to prevent devernialization. Connecticut growers who have

produced artichokes from seed report that the advantages of freshness and taste appeal bring customers back for repeat sales. For home gardeners, artichokes not only supply a tasty meal but, if allowed to mature, provide a unique display of showy bluish-purple flowers.