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Broccoli

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Broccoli is a cool season vegetable that may be grown early in the spring or late in the fall. It has superior nutritive value. A ½ cup serving of broccoli, eaten fresh or cooked, has only 32 calories and more vitamin C than an orange! It is also a good source of vitamins A, B, calcium, phosphorous, and iron. It has 1,670 milligrams of dietary fiber per 3½ ounce portion, which is twice as much fiber as an equivalent amount of celery. Consuming broccoli and other members of the cabbage family has been shown to reduce the risk of cancer.

Modern broccoli produces large, dome-shaped, blue/green heads of immature florets on plants that grow 2–2 ½ feet tall. After the central head is picked, small-to-medium sized side shoots develop.

Varieties

Since interest in broccoli has greatly increased in northern areas of the nation, seedsmen have been developing seed suited for these areas of the country. Some of these new hybrids include Vantage, Bonanza, Embassy, Pirate, Brigadeer, and Galaxy.

The recently developed hybrids are the best varieties available to home gardeners. An early maturing hybrid of exceptionally fine quality is the Packman Hybrid which matures in 50 days. Green Comet hybrid matures in 55 days, and Premium Crop hybrid, which produces large heads of superb quality, matures in 65 days. Paragon hybrid not only produces fine central heads and side shoots but also develops unusually tender stems which may be peeled and eaten along with the immature florets. It matures in 75 days.

Varieties are also being developed for commercial producers so that broccoli may be mechanically harvested. Hybrid qualifies would include: 1) heads which mature at the same time, 2) heads of uniform height, and 3) heads and stalk Oust below the head) with few or no attached leaves. These requirements are of interest for the home gardener primarily in that a main harvest would occur at one rime. The main harvest of central heads may be preserved by freezing. Side shoots which develop later will be available for fresh use throughout the summer. They will produce large amounts of quality broccoli, especially if repeated nitrogen applications and adequate irrigations are made to keep the side shoots growing until a hard frost occurs in the fall.

Climate

Broccoli produces the best yields and quality under cool conditions with mean temperatures of 60-70ºF. When average temperatures surpass 70ºF, yields and quality are considerably reduced. Broccoli can be damaged by a sudden heat wave or a sudden freeze.

Transplants that have been “hardened” and set out in early spring for late spring harvest are not seriously damaged at temperatures down to 28ºF. If colder temperatures are expected, the plants may be protected by covering them with hotcaps, newspaper, plastic gallon jugs with bottoms cut out and tops removed, row covers, etc. If it is planted too late in the spring, hot days just before harvest will cause the florets to turn brown or open prematurely. In the fall, when plants have produced buds, even a light frost causes considerable damage.

Growing Transplants

Broccoli transplants grow rapidly from seed when started indoors. They should be ready for transplanting in the garden in 5 weeks. The seed is sown in a soilless mix and held at 70ºF during germination. It is then grown in direct sun and kept at 60–70ºF. A week before transplanting, the plants should be “hardened off.” This is done by placing the plants outside in a sheltered area during the day and then placing them indoors at night. This will help them to withstand the unfavorable conditions which occur at the time of transplanting.

To Seed Outdoors for a Fall Crop

Sow the seeds in a well prepared row 85–100 days before the average first hard frost in the fall. This timing is calculated by allowing five weeks to grow the broccoli to the transplant stage and then allowing 50–75 days for final maturation. The difference in maturity time depends on the variety selected.

Several seeds can be sown 18" apart and when the seedlings are 2" tall, they may be thinned to one strong plant at each spacing. If expensive hybrid seed is used, it might be well to grow the transplants in a relatively small row with seeds spaced several inches apart and then transplanted to the desired locations when the plants are approximately 5" tall.

Soils

Best yields and quality are obtained on heavily fertilized, well-drained soils. Broccoli may be grown well on a variety of soil types, but unusually heavy clay or very light sandy soils should be avoided. Broccoli plants thrive with liberal amounts of fertilizer with plenty of nitrogen, and relatively large amounts of irrigation water. Due to the relatively small size of most home gardens, it is fairly easy to maintain a high level of soil fertility.

Three pounds, or 6 cups, of a 10-20-0 fertilizer should be applied for each 100 square feet of soil. The fertilizer should be broadcast and worked in before planting so that it will remain in moist soil throughout the growing season. If the fertilizer is used for transplants, 2 tablespoons of the mixed fertilizer can be placed 4" to the side and 4-6" deep by each plant.

For direct-seeded broccoli for fall harvest, the fertilizer may be banded 3-4" deep, and 3" to the side of the row at the rate of one cup per 10 feet of row. Well-rotted manure or compost made from lawn clippings, leaves, and other organic materials is of value in supplying nutrients and in improving the texture of the soil. If one or two bushels of manure are to be applied to each 100 sq ft, 2 pounds of treble super phosphate should be added in place of the 10-20-0 fertilizer application.

Broccoli will continue to grow well if given several side dressings of one cup ammonium nitrate, or equivalent, for each 10 feet of row. Place the nitrogen in irrigation furrows, or 6 inches to the side of the plants. This will stimulate continuous growth of side shoots after the central heads are harvested.

Irrigation

Broccoli grows best if given 1–1½" of water each week. Furrow irrigation is best because it does not wash off insecticides used to control worms. Fewer heavy waterings are better than frequent light waterings.

Insect Control

Insects are the nemesis of most broccoli growers. It is usually unsettling to observe green cabbage worms, cabbage loopers, or aphids embedded in the heads of broccoli. It is not difficult to control all of the insects that infest broccoli. The control measures are safe, and if just a few guidelines are followed, there is no hazard from ingesting insecticides used to control insects in broccoli. The common insects that infest broccoli are the imported cabbage worm which is a green worm that lays flat on the broccoli, the cabbage looper which is an inchworm that forms a loop as it walks on the leaves of the broccoli, and the green cabbage aphid which is a small, round, green insect with sucking mouth parts. These first two insects can be controlled by periodic applications of Bacillus thuringiensis (BT), which is a bacterial spore. This spore is sold under the trade names Dipel® and Thuricide®. Dipel® is applied at the rate of 1 tsp/gallon of spray; or Thuricide®, which is a liquid, may be applied at the rate of 1 Tbl/gallon of spray to cover approximately 15 large plants. One teaspoon of 50% wettable powder Diazinon® can be added to the Bacillus spray to control the green cabbage aphids.

Diazinon® should be applied on a 10-14 day interval. The Dipel® and Thuricide® are safe to humans so broccoli can be eaten the same day it is sprayed with BT. However, harvest should be delayed for at least five days after Diazinon® has been applied. The BT sprays are effective for at least one week if they are not washed off by a heavy dew, rainfall, or sprinkler irrigation. If a spreader/sticker is used, it will prevent the rapid washoff of the BT spores.

It is important to control flea beetles on direct-seeded broccoli. These are small, black beetles which feed on the young seedlings just as they emerge. These beetles can be controlled by a spray made of two teaspoons of 50% wettable powder Sevin® insecticide per gallon of spray. It is important to control this insect just as soon as the plants emerge or serious damage can occur within a few hours.

One other insect which is usually not present but sometimes infests broccoli is the cabbage maggot. This is the larval stage of a lazy, adult insect that looks something like a small house fly. The maggot is controlled by mixing Diazinon® insecticide around the roots of the broccoli. This can be done by sprinkling two tablespoons of 5% Diazinon® granules into 5 feet of row where the seed or transplants will be grown, and then working it into the soil before transplanting. Or, ½ tsp 50% wettable powder Diazinon® can be mixed in one gallon of water and applied as a drench in transplanting water at the rate of ½ pint per plant.

Harvesting

The broccoli heads should be cut with stems 8–10" long when the head is still compact and before the flower buds show any yellow color. The tender stems can be peeled and eaten raw or cooked. When mature, the central heads may be 6 to 12 inches across. Over maturity causes the stems to be tough. Broccoli can be stored for a week in the refrigerator. Longer storage causes the leaves to discolor, the buds to drop, and the stem tissue to deteriorate and roughen. It should be consumed or cooled immediately after harvest as it has one of the highest respiration rates of all vegetables.

Excess amounts of broccoli may be frozen by cutting the stems to desired size, blanching in hot water or steam for 3 minutes, cooling in cold water for 3 minutes, and then placing in freezer bags for freezing. Broccoli is easily damaged in the refrigerator when stored with fruit which emits trace amounts of ethylene.

Cooking/Serving

The nutritive value is best preserved by cooking with a minimal amount of water and with a short cooking time, just until the stems are crisp/tender. Short cooking times will also prevent the strong flavor that vegetables of the cabbage family exhibit when overcooked. To prepare for cooking, broccoli should be washed and the main stem trimmed slightly. The entire stalk is edible. Make lengthwise cuts in stem pieces larger than ½" in diameter so that they will cook as rapidly as the florets. Broccoli may be cooked in a saucepan with a small amount of lightly salted water. It should be cooked with the cover off for the first five minutes and then cooked covered until crisp/tender, about 5–10 minutes more. It may also be cooked covered during the entire cooking period if the lid is lifted three or four times to permit gases to escape, thus protecting the green color.

For a vegetable so nutritious and delicious, broccoli can be surprisingly versatile in the way that it is served. For example: broccoli on toast with cheese sauce; raw as an hors d'oeuvre with a cocktail dip; small raw florets added to a tossed green salad; broccoli marinated in vinegar and oil and added to fresh greens; boiled broccoli with a Creole sauce; broccoli with lemon sauce; broccoli and ham casserole; broccoli au gratin; broccoli over sliced poultry; par boiled stalks sauteed in olive oil with sliced onions and minced garlic; broccoli with egg sauce or hard boiled egg slices; broccoli with vinaigrette dressing; broccoli with tomato sauce and grated Parmesan cheese; broccoli with sour cream sauce; and cream of broccoli soup. Undoubtedly, there are other interesting uses of broccoli for the creative cook.

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