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## BRUSSELS SPROUTS FACT SHEET

by Alvin R. Hamson, Extension Horticulturist

Brussels sprouts are so named because they were first cultivated in large quantities near Brussels, Belgium. This vegetable is generally considered a gourmet item. It is the aristocrat of the cabbage family, developing as miniature cabbages on tall stems. The small heads are delicately flavored if cared for and harvested properly. A 1/2 cup serving of cooked Brussels sprouts provides 80% of the daily recommended allowance of vitamin C, as well as significant amounts of vitamin A, thiamine, iron, potassium, phosphorous, and calcium. They are low in fat, carbohydrates, sodium, and calories. A three ounce cooked portion contains only 36 calories. Like all green vegetables, they are valuable to the body for bulk and fiber.

### Varieties

Varieties range in height from 18" to 3'; and in maturity from 80-120 days. The tall type has less crowded sprouts along the stems with more open growth and with smooth leaves. The dwarf type is more commonly grown in the United States. It is a compact plant with closely spaced sprouts with blistered, or puckered leaves. Practically all of the Brussels sprouts grown in the U.S. are hybrids of two main types: the Jade Cross hybrids and the Prince Marvel, or Captain Marvel hybrids. The Jade Cross hybrids are one of the best choices for home gardens in short-season areas. These hybrids produce an abundance of medium-sized oval sprouts on short plants. They are moderately early in production, with a maturity range of 95-100 days. The Captain Marvel and Prince Marvel hybrids are taller than the Jade Cross hybrids and their sprouts are more firm and round. The sprouts are well spaced on the stems with long petioles (leaf stems) that give better aeration, thus reducing bottom and center rots. The Marvel hybrids are more like the European types with better tolerance to cold weather conditions at harvest and with excellent sprout spacing for easy harvest.

Other hybrids include 'Oliver' which matures in 90 days, and 'Widgeon' which matures in 120 days. Oliver produces remarkably early sprouts that are flavorful, medium green, smooth, and very large.

Oliver plants are vigorous, easy to grow, and especially suited to diverse climates. Widgeon is a productive, cold-tolerant, late variety for mid-fall through winter harvest. The sprouts are smooth, medium-sized, dark green, and widely spaced on tall plants. Sprouts are delicious, especially after several frosts. This is one of the top quality English varieties which is now finding its way to the United States.

Before the widespread use of hybrids, commercial growers would harvest a field of Brussels sprouts 8-14 times. Harvest began with the removal of the petioles at the base of the stalk and then the sprouts were snapped from the stalks, starting at the base of the plant as they enlarged sufficiently for harvest. With the advent of the more uniformly maturing hybrids, sprouts were harvested mechanically. This is done by pulling the plant from the ground and using an expanding rotary-type knife to cut the sprouts off. In the home garden, sprouts may be harvested late in the season by pinching out the terminal bud (the center sprout at the top of the plant) about one month before anticipated heavy freezes. This encourages rapid development of the sprouts along the stem, particularly the upper sprouts. The sprouts are then harvested from the bottom of the stem up when they develop to about 1" in diameter. By removing the terminal bud in this manner, it is possible to harvest the European-type hybrids in one or two pickings and the American hybrids in not more than four or five pickings.

### Climate

Brussels sprouts need a long, cool growing season. Mature plants can withstand considerable freezing. Best quality sprouts are produced in the fall when there are bright, sunny days and cool nights. Brussels sprouts will withstand lower temperatures than almost any member of the cabbage family, with the possible exception of kale and collards. The sprouts become puffy and soft when they mature at temperatures above 80°F. They stop growing at temperatures below 52°F. Warm, sunny days and light frosts at night are ideal to produce tender, sweet sprouts.



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Many areas of Utah have climates well adapted to the production of Brussels sprouts. The only areas not well-suited for growing sprouts are the hot desert areas and perhaps some of the high mountain valleys which have extremely cold temperatures in the fall.

### Soils

Best yields and quality are obtained on soils of medium texture which have been fortified with liberal amounts of organic matter to provide good fertility, aeration, and water-holding capacity. They will grow well on sandy loam soils if adequate levels of irrigation and fertilizer are provided. They are not well-suited for growth on unusually heavy clay soils or on soils with poor drainage. All soils will be improved with the addition of manure or other organic matter. They should be well fertilized with a fertilizer at planting. Three pounds, or 6 cups, of a 10-20-0 fertilizer should be applied for each 100 square feet of soil at the time of planting. The fertilizer should be broadcast and worked in before planting so that it will remain in moist soil throughout the growing season. When fertilizing transplants, 2 tablespoons of fertilizer can be placed 4" to the side and 4-6" deep by each plant. For direct-seeded sprouts 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 ten feet of row. Several side dressings during the growing season of one cup of ammonium nitrate, or equivalent, for each ten feet of row will greatly enhance size and succulence of the sprouts. The nitrogen may be placed in irrigation furrows or sprinkled on the soil surface 6" to the side of the plants. This fertilizer should be watered in after application.

### Irrigation

Plants grow best with 1-1 1/2 inches of water per week. Furrow or trickle irrigation is best because it does not wash off insecticides which may be used to control insects. Fewer heavy waterings are better than frequent, light waterings.

### Growing Transplants

Transplants grow rapidly when started indoors from seed. They should be ready for transplanting in the garden in five weeks. The seed is sown in soilless mix and held at 70°F during germination. The plants are then grown in direct sun and kept at 60-70°F. A week before transplanting, the plants should be placed in a

sheltered area outside during the day to "harden off" and then returned indoors at night. This will help the plants 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 about mid-May to June 1st, depending on the number of days to maturity of the variety and the length of the growing season. It will take approximately four to five weeks to grow the plants to a proper size for transplanting, at which time the days to maturity can be calculated so that the first harvest occurs at about the time of the first light frost in the fall. This will allow approximately 30 days to complete the harvest with progressively heavier frosts. The sprouts will become damaged by temperatures below 20°F.

Several seeds can be sown 2-3 feet apart in the row and then thinned to one strong plant when they are 2" tall. With expensive hybrid seed used almost universally, it might be well to grow the transplants several inches apart in a relatively small area and then transplant the plants when they are about 5" tall to the desired locations. They should be spaced 2-3 feet apart in the garden when transplanted.

### Insect Control

Brussels sprouts are easy to grow in every respect *except* in the control of aphids. Aphids must be controlled by repeated applications of diazinon or malathion, starting when aphids appear and certainly before the heads of the sprouts begin to develop. If the aphids become embedded in the leaves of the sprouts, it will be impossible to control them. Green cabbage worms and cabbage loopers may feed on the sprouts and cause some damage to the leaves but this damage is usually minimal when compared to the damage aphids cause. The imported cabbage worm is a green worm which lays flat on the foliage; the cabbage looper is an inchworm that forms a loop as it walks on the leaves; and the green cabbage aphid is a tiny, green colored, round insect with sucking mouth parts. Aphids are primarily found on the undersurfaces of the leaves and especially on the small, undeveloped sprouts along the stem. Control measures for these pests are safe, and if just a few guidelines are followed there is no hazard from ingesting these insecticides. The cabbage worms and cabbage loopers 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

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the rate of 1 tsp/gallon of spray; or Thuricide®, which is a liquid, can be applied at the rate of 1 Tbl/gallon of spray. Either of these mixtures will cover approximately 15 large plants. One teaspoon of 50% wettable powder diazinon or one teaspoon of malathion liquid can be added to the *Bacillus* spray to control the green cabbage aphids. diazinon and malathion should be applied on 10-14 day intervals. The Dipel® and Thuricide® are safe to humans so Brussels sprouts can be eaten the same day they are sprayed with BT. Harvest should be delayed for at least seven days after diazinon or malathion have 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. Use of a spreader sticker will prevent the rapid washoff of the spores.

It is important to control flea beetles on direct-seeded Brussels sprouts. 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 Sevin® insecticide per gallon of spray. Control measures should begin 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 Brussels sprouts is the cabbage maggot. This is the larval stage of an adult insect which looks something like a small house fly but with black markings across its back. The maggot is controlled by mixing diazinon insecticide around the roots of the plants. This can be done by sprinkling 2 tablespoons of 5% diazinon granules into the area where the transplants will be grown and then working it into the soil before transplanting. Or, 1/2 tsp. 50% wettable powder diazinon can be mixed in one gallon of water and applied as a drench at the rate of 1/2 pint per plant when transplanting.

### Harvesting

Quality Brussels sprouts are firm, compact, and of a bright green color. Puffy sprouts are edible but are usually of poor flavor and quality. Sprouts from the garden should be picked when the lower sprouts on the stems are at least 1" in diameter. This may also correspond to the deterioration of the leaf petioles. When the leaf stems turn slightly yellow, break them from the stalk below the sprouts. The sprouts can then be picked by breaking them away from the stem. Do

not delay harvest of the sprouts or they may become tough and lose their delicate flavor. The sprouts are highly perishable and should be kept refrigerated or frozen to maintain high quality.

The sprouts can be stored for a month if refrigerated at 32°F directly after harvest. Immediate refrigeration will prevent moisture loss and yellowing of the leaves. The sprouts lose their green color rapidly if they are stored above 50°F.

Brussels sprouts may be prepared for freezing by trimming, washing, and blanching them. The blanching process is done by cooking the sprouts in a small amount of hot water or steam for three minutes, and then cooling them for three minutes in cold water. They can then be immediately placed in freezer bags or containers for freezing.

### Cooking and Serving

The nutritive value and quality is best preserved by cooking the sprouts in a minimal amount of water and using a short cooking time, just until they are crisp/tender. Short cooking times will also prevent the strong flavor and softness that will occur if the sprouts are overcooked. Let them cook without a cover for about 5 minutes and then cover and cook for about 5-10 minutes longer. Sprouts may be cooked with the lid on the pan if it is lifted several times to let the gases escape. This will help to maintain the green color of the sprouts.

Brussels sprouts may be served boiled, baked, steamed, lyonnaise, au gratin, a la brigoule, buttered, creole, or almondine. They may be used in casseroles, salads, or souffles. They are also good under one of the following sauces: hollandaise, mustard/cheese, bechamel, paprika, tomato, sour cream, or parmesan sauces. They may be prepared with chestnuts, celery, grapes, mushrooms, sweet potatoes, ham, squash, carrots, and tomatoes. Brussels sprouts are truly a versatile gourmet vegetable!





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