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## LATE-SPROUTING BROCCOLI (*Brassica oleracea* var. *italica*)

Late-sprouting broccoli produces numerous small, stemmed florets, in comparison to standard heading broccoli, which forms a single central head. Also known as winter- or purple-sprouting broccoli, its florets, shoots, and young leaves are tender enough to be eaten raw, but are exemplary when lightly steamed, sautéed, stir-fried, or grilled. In order to succeed in growing, careful attention must be paid to the climate and timing of sowing.

### CLIMATE

As with other *Brassica*, late-sprouting broccoli performs best during cool weather. Hot weather can cause bead discoloration, distortions, and bitterness instead of the characteristic sweet flavor.

Late-sprouting broccoli requires vernalization to produce florets. Vernalization occurs when the plant is exposed to temperatures at or below 50°F/10°C for a period of time. In order to achieve full vernalization, it is important to choose the appropriate variety and planting date for your specific climate, especially for overwintering this crop. Typically, temperatures below 20°F/-7°C will seriously damage or kill the plants. In any location, it is best to trial small plots before expanding production.

**The Maritimes.** The Maritime Pacific Northwest, including British Columbia, is a favorable location for growing late-sprouting broccoli. Maritime climates generally have cool summers and mild winters with temperatures that will not winter-kill the plants but with plenty of cool nights to vernalize them. While only a few periods of very cold temperatures may occur, factors that can determine the extent of potential cold damage also include duration of cold, moisture, wind, and possibly other environmental conditions such as the number of freeze/thaw events.

**Mid-Atlantic.** Some growers have experienced success growing in the Mid-Atlantic — north of the Carolinas and south of New Jersey. Both 'Red Fire' and 'Santee' may be successfully overwintered in the Mid-Atlantic with little to no cold protection. Killing cold is common in many areas in this region, however, and planting within protective high or low tunnels can mitigate risk of crop damage.

**Northeast.** In the Northeast, adequate protection is required to successfully grow an overwintering crop of late-sprouting broccoli. However, 'Santee,' with its comparatively low vernalization requirement, can make a good late fall crop, either in the field or tunnel, depending on your situation.

**South.** Growing south of the Mid-Atlantic is not recommended, as it may be too difficult to achieve the vernalization requirement.

### SUCCESSION PLANTING

Each variety of sprouting broccoli can have its own vernalization requirement, which allows the grower to stagger harvests more easily with variety selection rather than planting dates for overwintering systems. Compounding the timing of sowing and variety selection will generate an even longer successive harvest plan through the winter months, but particularly in the late winter/early spring slots.

### TIMING AND VERNALIZATION

'Red Fire' is a true biennial and needs to be fully vernalized, which means it requires a cumulative 6–8 weeks of temperatures at or below 50°F/10°C.

'Santee' has been selected for a lower vernalization requirement than the average late-sprouting/purple-sprouting broccoli. It requires fewer cumulative hours of temperatures below 50°F/10°C to initiate vernalization.

Consult the table below to help select sowing and transplanting dates to achieve the vernalization requirement in your region. Test in small plots with multiple planting dates before expanding your operation.

**For fall harvests:** Fall harvests can be achieved with 'Santee' in any location where fall nights are sufficiently cool. Start seeds in mid to late spring and transplant in June to July for a late fall harvest. In shorter-season, northern climates, the harvest window may be shorter.

**For winter harvests:** Winter harvests are successful in areas where winters are mild and temperatures rarely fall below 32°F/0°C. Start seeds in late summer and transplant from September to February for harvest from January to April, depending on variety. Late-sprouting broccoli should be 60–75% of its full mature size prior to entering winter; plants are generally more cold-hardy when not full grown. Growth will resume in the spring.

Variety	Days to Maturity	Location	Sow/Harvest													
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec		
'Santee'	80–115	Cold areas														
		Mild areas														
'Red Fire'	140	Mild areas														



## SITE SELECTION

Sprouting broccoli will yield the best results when planted into a well-drained fertile soil high in organic matter with a pH of 6.0–7.5. Plants require a consistent supply of moisture through the growing season, so irrigate regularly. Ensure the plants receive full sun, as even part shade may slow maturity. Adequate nitrogen is necessary to keep the plants productive over a long season. If your soil is not high in fertility, side dressing may be needed.

## TRANSPLANTING

Three to four weeks before transplanting, sow 2–3 seeds per cell in 72-cell plug flats or 3–4 seeds per inch in 20-row flats, ¼–½ inches deep. Keep soil temperature over 75°F/24°C until germination. A seedling heat mat can aid in maintaining the correct temperature. After germination, reduce the air temperature to 60°F/16°C. Thin to 1 plant per cell after germination. Ensure good air circulation and light. If your timing demands that you sow during the heat of the summer, use shade cloth to help moderate temperatures in the greenhouse.

When seedlings are 4–6 inches tall, transplant outdoors 2 rows to a bed, 18 inches apart, in rows spaced 36 inches apart. Late sprouting broccoli prefers cooler growing temperatures, between 55–75°F/13–24°C, optimum being 60–70°F/16–21°C.

## DISEASES

To control disease, adhere strictly to a preventative program that includes long crop rotations with noncruciferous crops of at least 3 years; use clean starting mixes when sowing; and follow strict sanitation practices. Should disease occur in your crop, have an infected specimen tested to positively identify the disease.

A common disease is black rot, identified by yellow lesions on the leaves in its earliest stages. As the disease progresses, the affected leaves may die and

turn brown to black. Applications of copper fungicides may offer some control. Black rot can be seedborne; Johnny's stocks only seed lots that have been tested free of black rot in a sample of 30,000 seeds.

## PESTS

Insect pests common to any *Brassica* crop will affect broccoli, such as aphids, flea beetles, and cabbage worms. Prevent the occurrence of pests by plowing in or removing debris of previous *Brassica* plantings, and avoiding replanting in the same location. Exclude pests, such as flea beetles, with the use of fabric row covers, especially at the seedling stage (apply row covers immediately after transplanting seedlings). Should flea beetle populations cause heavy pressure, treat with pyrethrin or azadirachtin.

## HARVEST

Cut the first, central floret as soon as it forms to promote the development of secondary side shoots. This ensures a long harvest period of 2–5 weeks. If the central floret is allowed to grow, the overall yield of side shoots may be greatly diminished.

It is common practice to cut or break off the side shoots when they are 6–8 inches in length, leaving a few small leaves attached for an attractive bunch. Check the plants every 2–3 days for new side shoots during the rapid growth of spring. Generally, only secondary and tertiary side shoots are harvested; the stems that form thereafter are too thin for commercial sale, though still edible. Harvest when the beads are still tight. Hydrocool or place on ice as soon as possible after harvesting, to prevent the florets from appearing wilted from water loss.

## STORAGE

Ideal storage conditions are in a cool location, 32°F/0°C, with a relative humidity of 95–98% and good air circulation. Under these conditions, florets can remain in good condition for 10–14 days.