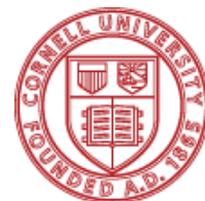




It's Time for Broccoli

By Mike Nuckols, Commercial Horticulture Educator



When I lived in rural Alaska, I routinely grew broccoli heads that were the size of a basketball. When adequately watered and fed, these tasty flower buds were an easy crop to grow in the cool summers and abundant sunshine. Since moving to New York State, I've continued to grow broccoli, but find it to be a more challenging crop to grow well due to heat, humidity, and insect pests. Those perfect and huge heads of broccoli that western growers routinely supply to supermarkets are elusive on the East Coast – but not impossible.



In New York State, less than 800 acres of broccoli is grown on small-scale diversified vegetable farms, typically using organic methods. Conversely, California and Arizona grow about 120,000 acres of broccoli using primarily conventional methods (synthetic fertilizers and pesticides). The U.S. also imports significant amounts from the state of Guanajuato in central Mexico (70% of that nation's 98,000 acres). As you might have guessed, most of the broccoli in your local supermarket has traveled across the continent. Fortunately, the Eastern Broccoli Project (www.easternbroccoli.org) is working to develop better broccoli varieties and methods for eastern growers. As part of this team, Cornell University hopes to develop a \$100 million broccoli industry in the Eastern United States. Researchers have already developed a number of promising new varieties that they hope to offer to the public in coming years.



Broccoli is rarely sown directly in the garden and more typically grown as transplants. Broccoli starts can be planted in April and May for a spring crop and in late June through August for a fall crop. Each planting time offers advantages and disadvantages. Spring-planted broccoli that is harvested in July and early August tends to have very high cull rates due to abnormalities caused by heat stress. Even a few days of hot and dry weather in summer can quickly stunt the growth of broccoli, resulting in small and sometimes bitter heads. Conversely, pests can build-up on other brassicas through the growing season, making it more difficult to establish transplants in July and early August.

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Regardless of planting time, routine and even watering throughout the growing season is a must. Broccoli is a heavy feeder and requires considerable nitrogen – 150 pounds/acre total. Broccoli has the greatest need for nitrogen at 40 to 60 days after transplanting. Nitrogen fertilizers, to include organic sources such as feather meal, are best applied as a side-dressing 30-days after transplanting. Heavily fertilization upon transplanting is discouraged as the young plants cannot take up much nitrogen, resulting in soil losses due to leaching.

Weed control is another concern. Organic growers should consider planting broccoli after a legume cover crop, both to ensure a stale seed bed and to add nitrogen to the soil. Between row tillage can control many weeds early in the season. Controlling weeds within the row (between broccoli plants) is more difficult. On larger acreage, mechanical weeders equipped with rotating fingers are an option to replace hand-cultivation. Mulching broccoli plants is another good option.

Pests are a serious challenge to growers, especially those using organic methods. Flea beetles feed upon even the smallest plants and can stunt their growth. Cabbage root maggots feed upon broccoli roots and can cause a sudden decline near flowering. One control method for both is to place mesh insect netting over the crop immediately upon planting.

Swede Midge is barely visible to the naked eye, but is quickly becoming a major pest for eastern broccoli growers. The insect feeds on the tender flower buds when they first emerge. This early damage results in unmarketable and misshapen heads. Swede midge can travel on transplants; growers must inspect plants carefully, particularly if purchased from outside sources. Cornell strongly recommends a three-year crop rotation (not only broccoli but all other brassicas) to minimize damage from this pest. Crops should be rotated no less than 600 feet away.

Numerous conventional pesticides are labeled for use on broccoli. *Surround*, a fine kaolin clay that coats leaves and deters insects, is an option for organic growers. One method is to turn transplants upside down and dip them in Surround immediately before transplanting and then spray again after each heavy rain event.

After harvest, broccoli plants (and all other brassicas) should immediately be tilled under or removed to the compost pile. Leaving plants in place allows pests to continue their life cycle.

Few want to purchase or eat pale and limp broccoli. Unfortunately, broccoli wilts quickly upon cutting. To preventing wilting, broccoli must be cut during the



'Purple Sprouting' broccoli

cooler part of the day and immediately placed on ice. Once cooled to 32F, it should be kept refrigerated with 95% relative humidity.

Today, there are more broccoli varieties than ever. For market-sized heads (about 4"), *Batavia* is a hybrid variety that does well when planted early. *Belstar* is suitable for later in the summer. *Emerald Crown* and *Millennium* (which produces single large heads) are great options. If you prefer open-pollinated varieties, consider *Calabrese* and *Waltham 29*. *De Cicco* is an open-pollinated, heirloom variety that is suitable for continuous harvest of smaller heads (sprouts) throughout the summer. Finally, *Purple Sprouting* is a beautiful heirloom variety that is extremely cold hardy, allowing both early and late plantings.

Individuals with specific growing questions can contact the author at msn62@cornell.edu.

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