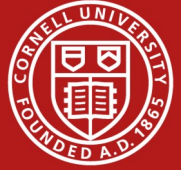


# Basics of Growing Carrots, Beets and Onions for Seed in the Northeast



By Crystal Stewart-Courtens

As a vegetable grower, I find growing biennial seed crops to be very fulfilling. There's something magical about watching these crops go through the second half of their life cycle, and seeing what those delicious storage structures turn into in their second season. Biennial seed production in the northeast is often more complicated than it is in other warmer parts of the country, because we cannot successfully overwinter plants, roots, or bulbs in the ground in zones 4 or 5 without winter protection such as heavy mulch or planting into a high tunnel. Many growers will find the best option to be digging the plants for the winter and placing them in storage.

Each of these biennial crops is treated somewhat differently, so we'll walk through growth, storage, and replanting crop by crop within this resource. Please note that this article focuses on carrots, beets, and onions, and does not explore biennial brassica production.

**Onions and shallots:** During the flowering year, grow 120-200 onions in order to maintain the line's integrity. In order to select 200 onions for seed stock, try to grow at least 300-400 so that you can select bulbs that are medium-large in size and have the traits typical of the variety. Considerations include shape, color uniformity, single centers, and being free of disease. The remainder of the onions can generally be used or sold as food, which makes it a little easier to grow more than enough for your planting stock and select carefully. Timing of growing onions for seed bulbs is identical to growing them for food due to their daylight sensitivity.

After curing, onions can be stored in a cool (room temperature), dry environment for a few months or they can immediately be moved to a cold (35-39 degree F) environment. In order to properly vernalize, they will need 6 weeks of cold storage before replanting. During the cold period, packing onions in sawdust or pine shavings will help keep them from getting too wet and growing surface mold. Packing them right-side-up will allow minor sprouting to happen without negatively affecting the plant (Figure 1).

Once the soil can be worked in early spring, you can replant the onions. If you are growing a storage onion, remove any onions which have sprouted excessively from the seed stock. Also remove any onions showing signs of decay. Replant onion bulbs so that about half of the bulb is out of the soil. Roots will immediately start to regrow, anchoring the bulb and accessing water and nutrients once more. Bulbs will regrow an entire set of leaves as well as flower stalk(s), and will need ample space for air movement to prevent disease. Plant bulbs 12 inches apart in-row and place rows between 18 and 24 inches apart. We've found 18 inches between rows to be sufficient, particularly if growing seed under cover.

Onions are never great competitors with weeds, but are even poorer competitors with this very wide plant spacing. Mulching around them with hay or straw not only controls weeds, it also helps moderate moisture, leading to a healthier seed crop. If your systems are better set up for mechanical weed control, uphold the minimum spacing recommended but go wider as needed for your equipment.

Finally, once the seed heads form onion plants become quite top-heavy and are prone to falling over. Prevent this by using floral netting about two feet above the ground to support the stems (Figure 2).



Figure 1: Selecting medium-large onions with typical shape and no disease or sprouting, then packing them upright in pine shavings for storage in a 36 degree cooler for two months. Image: Crystal Stewart-Courtens



Figure 2: Onions grown with straw mulch around bulbs and floral netting for seed head support. Image: Crystal Stewart-Courtens

### **Beets:**

Grow beet roots for seed crops during your last planting of beets for the season, with the goal of harvesting mature roots in the late fall. Beets are grown identically for food or for seed, and then heavily selected for after harvest. Like carrots and onions, 120-200 plants are needed to maintain the integrity of a line, so plan to grow 300-500 roots to allow for selection and storage losses.

Many vegetable growers will twist the tops off beets headed for long term storage, which is a fast and efficient way to remove all the leaves. However, this method can damage the growing point of the beet, which leads to multiple stems when it re-grows. Beet roots kept for seed should have tops carefully trimmed  $\frac{1}{2}$  inch from the crown, taking care not to damage the growing point.

Beets may be selected for shape, root smoothness, tail tapering, and internal color. You can remove a sliver from the beet to assess color, if concerned about this trait, and the cut will heal. Select medium to large roots for your seed stock. Pack selected roots into bins with sawdust, pine shavings, or sand and store them at 34-38 degrees F for the winter.



In the spring, replant with the growing point above ground, leaving two feet between plants in row and three feet between rows. This spacing seems extravagant, but beet flower stalks resemble small trees and good air circulation will ensure better pollination and reduce disease pressure. There will be extensive exposed ground around the beet roots, and it is recommended that you mulch this area with hay, straw, or another material to reduce weed pressure.

Beets, like onions, are top heavy in flower and may topple during heavy winds. Place a string around each side of the planting to hold plants upright, as in trellising tomatoes. Stakes every 20 feet will hold plants upright.



*From left to right: Natasha sorts beet roots for size, shape, and health before planting. Center: freshly mulched beet roots ready to grow for the next 3 months. Right: mature beet seed ready to be dried. Images: Crystal Stewart-Courtens and Natasha Field.*

### **Carrots:**

Grow carrot roots for seed crops during your last planting for the season, with the goal of harvesting fully mature roots in the late fall. Carrots are grown identically for food or for seed, and selections are made after harvest. Ultimately, you will need between 120 and 200 carrot roots replanted to maintain your variety, so plan to have at least 400 roots to choose from and ideally 200-250 entering storage. Complete a final selection at planting to remove any damaged or diseased roots.

Carrot roots are selected for color, shape, and flavor. If you need to assess internal color, the bottom  $\frac{1}{3}$  of the carrot may be removed for assessment. Leave 4-6 inches of carrot to replant. Trim tops to about a half inch from the crown in order to protect the growing point. Select medium to large carrots for seed stock. Place roots in sawdust, pine shavings, or sand and store at 33 to 38° F for the winter. Replant in the spring when the ground can be worked, taking care to leave the crown above the soil line. Roots can be replanted in a 12-inch grid, which allows ample space for the flower stalk to grow with good air circulation.

It should be noted that carrots are highly outcrossing and are readily pollinated by wild carrot, or Queen Anne's Lace, a common wild plant throughout the northeast. If your carrots will flower at the same time as Queen Anne's Lace, you may need to physically isolate your carrot seed using isolation cages. One popular technique to create an isolation cage is by putting insect netting or row cover over a caterpillar tunnel. Carrots will cross with wild carrot relatives at between a half a mile and two miles, depending on environmental conditions.



*Figure 3: A carrot field in Washington State showing row spacing in a hybrid carrot field. The lighter rows are male pollinator lines. Image: Dan Wyns, Bee Informed*

For more complete information about each of these crops, please see the following references. Note that most resources created by the Organic Seed Alliance are tailored to West Coast growers, and Northeast overwintering protocols will vary.

[Saving Seeds from Biennial Crops – Hudson Valley Seed Company](#)

[Carrot Seed Production: Quick Reference - Organic Seed Alliance](#)

[Onion Seed Production: Quick Reference- Organic Seed Alliance](#)

[Beet Seed Production: Quick Reference- Organic Seed Alliance](#)



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