Planting Common Crops for Late Fall or Spring Harvest

Spinach and kale are perhaps the hardiest of the winter greens as their leaves can withstand temperatures around 20º F without injury and experience only minimal damage during harder freezes. Other crops, such as lettuce and swiss chard, can generally survive winter conditions under plastic covers, but many of their leaves will be damaged by hard frosts. Still, covering them with low tunnels allows them to be harvested later in the fall than they could be otherwise, and they will typically rebound quickly in the spring. This guide walks through specific considerations for several crops that can be overwintered successfully.

Spinach

Winter is a great time to grow spinach because high summer temperatures cause the plant to produce seeds and become bitter. Spinach seeds can be planted directly in the ground or planted in trays and then transplanted, but the seeds may not germinate (come up) at room temperature and higher. Direct seeding is quite simple, but some additional weeding may be required while waiting for the seeds to start growing. Many varieties of spinach are available as seeds, and descriptions from catalogues or seed packages should state whether they are better for winter or summer growing. Commercial spinach seed is often coated with chemical fungicides, so seed labeled as "treated" should probably be avoided if students will be doing the planting. Ideally, all spinach should be planted by the end of September, although early October plantings can also succeed. When planted at the beginning of September, some spinach may be ready for a December harvest, while spinach planted later in the month will need to winter over for a harvest in the spring. When planting directly in the garden, seeds should be placed half an inch deep and one inch apart in rows that are spaced four inches apart. Leaves can be cut uniformly at the base, or students can cut or break off individual leaves while allowing others to regrow for a future harvest.

Mixed greens are the New Hampshire Harvest of the Month crop for May, which is good timing for season extension. Spinach recipes and lesson plans relating to math, science, health, and literacy can be found here.[1]

---

[1] NH Harvest of the Month: Mixed Greens
https://www.nhharvestofthemonth.org/may-mixed-greens.html

Kale

Unlike spinach, which is ready to be harvested after about one month under summer conditions, kale requires at least two months to be picked at full size, although the leaves can be eaten when they are small. It can be planted directly in the ground, but you'll probably want to do so by the middle of August for a winter harvest. The plants will get large, so you'll want to space them about a foot apart, but you might plant seeds slightly closer than that and later remove crowded plants in case some do not come up. Alternatively, kale can be started in trays inside a greenhouse or under supplemental lighting and transplanted by students in September. If you have plants you started in the spring, you can cover them with the tunnel for additional harvests in the late fall or early the next spring.

Kale is the New Hampshire Harvest of the Month crop for October, so recipes and lesson plans relating to science, literacy, and social studies can be found on their website.[2] To ensure you have plenty of kale in October, you'll probably need to have planted in the spring, or certainly by the beginning of August.

Lettuce

Low tunnels can be used to extend the lettuce harvest into the late fall, and hardy varieties can survive the winter and get off to a quick start in the spring. Hard frosts are likely to damage some leaves, so full sized lettuces like butterheads are likely to be disappointing. Instead, consider small varieties such as the Salinova series and many of the small red leaf types. Winter Density, a mini romane-type that is available from a number of seed companies, is well suited for overwintering. Head lettuce can be started in trays and transplanted if greenhouse space is available, but a classroom windowsill will not provide enough light. Mixtures of seeds that are used for growing mesclun mix may overwinter if they are allowed to get established first, but dead leaves might make them difficult to harvest.

Onions

If the correct steps are taken, onions can withstand winter conditions quite well, but onions are almost always transplanted rather than seeded directly in the ground. Onions are biennial plants, which means that they grow leaves and form a bulb in their first year of life, and after a winter has occurred, they flower and produce seeds (Fig. 1). Once onions flower, the bulb is no longer desirable for eating. Onion varieties differ in their propensity to flower, and two varieties that are acceptable for winter growing are Bridger and Gatekeeper. You can find a more complete list of appropriate varieties and read about best practices for overwintering onions from Becky Sideman at the University of New Hampshire.[3] Onions are typically planted in seed trays in a greenhouse or under lights because young plants are very small. This needs to take place at the beginning of

[2] NH Harvest of the Month: Kale. https://www.nhharvestofthemonth.org/october-kale.html

[3] Research Report: Overwintering Onions, 2014-15. Becky Sideman. https://extension.unh.edu/resources/files/Resource005477_Rep7652.pdf

September in order for the onions to be transplanted in early October. Because the transplants are small and fragile, this may not be the best activity for younger grades.

Fig 1. Overwintered onions at University of New Hampshire that are flowering, which is undesirable. This can be avoided by choosing the correct varieties.

Carrots

Like onions, carrots are a biennial; they form roots in their first season and, if not harvested, produce flowers in their second season. Carrots are very winter hardy and will even store adequately in the ground with no covering at all, but they may flower without developing completely in the spring. This is a common problem, especially when they are planted too late. The trick is to plant in late August or early September so that the roots can begin sizing up. Carrot seeds take about two weeks to come up, and they should be planted less than half an inch deep and about three quarters of an inch apart.

Carrot recipes are available from the April New Hampshire Harvest of the Month page.[4]

Sprouting Broccoli

Traditional broccoli forms one large cluster of flowers, the head that we eat, in the center of the plant. After that, plants are typically discarded. Sprouting broccoli plants form many small heads that can be cut individually while other heads take their places. Sprouting broccoli can be red or green in color and harvested over the course of a month or longer. The seeds need to be planted at the end of August or beginning of September, and they can be seeded directly in the garden or planted indoors in trays before moving to field if a greenhouse is available. Starting them on a windowsill will probably not provide enough light. More can be read about sprouting broccoli,

[4] NH Harvest if the Month: Carrots
https://www.nhharvestofthemonth.org/april-carrots.html

including where seeds can be purchased and which varieties perform well from Becky Sideman at University of New Hampshire.[5]

Summary

What follows is a summary of when each crop can be planted and when it will be ready to harvest. Generally speaking, it is better to plant earlier rather than later.

Planting Time of Year	Crops	Harvest Time
Late August - Early September	Carrots (seeded directly in garden)	The following spring
	Sprouting broccoli (seeded directly or transplanted)	Between March and May of the next year
	Lettuce for a fall harvest (seeded directly or transplanted)	September-October, depending on type
	Spinach for fall harvest (seeded directly)	September-October
	Kale (direct seed or transplant)	The next spring
	Onions (transplant)	The next spring
Mid-late September	Lettuce	Late fall or the next spring
	Spinach	Late fall or the next spring

[5] Winter Sprouting Broccali: A new crop for high tunnels? Clifton Martin and Becky Sideman. https://extension.unh.edu/resources/files/Resource002708_Rep3997.pdf