



Figure 5: Tiny onion transplants inside low tunnel in December.



Figure 6: Freshly weeded carrot bed in early spring.

### Spring Maintenance

No irrigation is needed for carrots or onions until spring when the covers come off. Covers should be removed if weed pressure seems high or if springtime temperatures consistently hit mid-70's several days in a row. By rotating the location of the beds year after year, Steve reports they avoid heavy weed pressure triggered by growing the same crop continually in the same place. The tunnels don't seem to attract rodent problems as they are well secured and in the open field. Chickweed and occasionally overwintering grasses are typically the biggest problem at TSSF. If chickweed is particularly bad early in the season, the plastic covers are removed, the beds are weeded, and then the plastic covers are replaced with a lighter cover of row cover (19 weight) to avoid onion maggot in onions, in particular.

### Harvest:

Green topped carrots and onions are typically harvested starting in the middle May for their winter market. Tangerini Spring Street Farm sells the majority of their overwintered carrots and onions at the end of their winter market and in their farm store. Occasionally the onions and carrots will make it into the first week of their summer CSA in the beginning of June, though not often as they usually sell out before then! Overwintered carrots and onions are an easy, low-cost way to add high quality value to markets much earlier in the season than would otherwise be possible.



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## Overwintering Carrots and Onions

### Tangerini Spring Street Farm in Millis, MA



Figure 1: Greens for a pick-your-own CSA.

**Tangerini Spring Street Farm (TSSF)** has been growing in Millis, MA since 1994 and is a diverse vegetable, fruit, and animal farm which seeks to grow healthy, high quality produce in a way that enhances the land and the community around them. They have been overwintering carrots for many years and also have begun to experiment with overwintering onions. They have a unique pick-your-own winter greens CSA that draws a dedicated base of customers from the local community. Steve Chiarizio, TSSF's farm manager, oversees much of the overwinter growing and harvest.



Figure 2: Carrots with fresh green tops can add a lot of value to a winter or late spring CSA.

### Benefits of Overwintering Carrots and Onions

Carrots and early onions can really drive a winter or early spring CSA. People love them especially with marketable green tops in early spring. These crops require minimal maintenance in winter with no irrigation needed until spring. TSSF does both winter storage carrots as well as overwintered carrots and onions for harvest in the spring.

### Bed Prep

Choose the beds carefully on the farm in which you plant to plant your overwintering carrots and onion crops.

Consider a crop (such as lettuce) that will be out of the beds easily and completely before fall carrots and onion planting time. You might do one deep tillage pass to break up any compaction before applying any needed fertilizer. Any fertilizer must be applied all at once before planting carrots and onions as there is no way to fertilize during the growing season when the crop is under plastic. Steve uses Nature Safe Plant-Based Nitrogen Fertilizer and Krehers Chicken Manure Blend to add potassium and nitrogen among other nutrients for their needs at TSSF based on a yearly soil test.



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## Seeding

**Carrots for Overwintering:** variety used is Napoli, direct seeded, planted directly into bed on November 15th. It is critically important to plant late enough to avoid root development until spring and avoid triggering carrot flowering. Steve uses pelleted seed to avoid thinning the carrots in early spring and direct seeds their carrots at the closest spacing they can using a precision vacuum seeder: 4 rows with .7 inches between seeds in a row.

**Onions for Overwintering:** variety is Electric Red, seeds planted for transplants between August 24th - 30th into 128 cell trays in the greenhouse at 2 seeds/cell or sometimes 3 seeds per cell for sweet onions. On Nov 15th, transplants are planted out into low tunnels, and then covered. Onions are planted in 3 rows with 6 inches between transplants in a row, also the closest spacing they have on their transplanter.



Figure 3: Steve Chiarizio explaining the set up of the low tunnels for overwintering carrots (right) and onions (left).

## Building Low Tunnels

The tunnels are constructed 5 feet apart to leave room in between for snow to fall and accumulate. Ideally orient them lengthwise into the prevailing wind or in a place protected from wind to avoid the wind stripping off the plastic covers in the middle of winter.



Figure 4: Notice soil shoveled up on sides of the tunnels to secure plastic sheets in place.

Ensure hoops are strong and sunk deep in the soil. Ensure plastic is tight with no sagging. Pile soil up at the edges of the plastic (see picture) to firmly secure the plastic in place for the winter. Steve reports that they rarely see collapse using this method unless there is extra heavy winter snow fall such as with the winter of 2015. They use recycled/reused greenhouse plastic in 8' x 10' feet wide in 50' to 100' sections. The plastic sheets are removed in spring ideally when dry to keep them clean in storage and folded for reuse again the following fall.

