Planting outdoors I: Sowing seed

"Sow as soon as the ground is workable," reads the back of a packet of spinach seeds. The snow has just melted and it's still cold outside but look around: some wild plants and weeds are already greening the landscape. Now is the time to start thinking about sowing some hardy seed outdoors – and hopefully you remembered to prepare a bed for them last fall!

Planting dates

Most planting directions are based on the average frost date. Average frost date refers to the expected dates of the last killing frost (-2°C) in the spring and the first frost (0°C) in the fall for a geographic location. The difference between the two average frost dates determines the average number of frost-free days during the growing season (see Figure 1 at the end of this factsheet).

The ability of each vegetable to withstand cool temperatures and frost is known as the 'hardiness' or 'frost tolerance' of the crop. These factors determine when a vegetable can be direct-seeded outdoors and when transplants can be moved outdoors (Table 1).

Once you determine your local average frost date, you can use the Spring Vegetables Planting Dates worksheet (found in Activity 1 below) to chart the approximate earliest and latest dates for a spring planting of each crop and the average length to harvest for each crop. This is particularly important if you wish to make maximum use of garden space by following one crop with another as soon as the first harvest is complete (succession planting).

TABLE 1. PLANTING DATES FOR VEGETABLES BY FROST TOLERANCE OF EACH CROP

				CROPS SUITABLE FOR SUCCESSION		
30-40 days (4-6 weeks) before last frost	**15-30 days (2-4 weeks) before last frost**	**On last frost date**	**10-15 days (1-2 weeks) after last frost**	**Mid-June**	**Early/mid-July**	**Late July**
Broccoli* Brussels Sprouts* Cabbage* Carrot Leek* Lettuce* Onion Parsley Peas Radish Rutabaga/ Turnip Spinach	Beans Beet Cauliflower* Chard, Swiss Dill Parsnip Potato	Celery* Cucumber Eggplant* Pumpkin* Squash, summer* Squash, winter Sweet corn Tomato*	Cucumber* Melon* Pepper*	Beans Cabbage* Carrot Sweet corn Lettuce*	Beets Broccoli* Cauliflower* Lettuce* Kale*	Beets Broccoli* Lettuce* Peas Spinach

Soil temperature

Soil temperature has an effect on the speed of seed germination. In the spring, soil is often cold, and the seeds of some plants rot before they have a chance to sprout. Table 2 gives optimum soil temperatures for germination and days to emergence.

TABLE 2: CROP EMERGENCE

Crop	Days to emergence	Optimum soil temp. (°C)
Beans	5-10	18-29
Beets	7-10	10-29
Broccoli	3-10	10-29
Cabbage	4-10	10-29
Carrots	12-18	10-29
Cauliflower	4-10	10-29
Celery	9-21	10-18
Corn, sweet	5-8	18-29
Cucumber	6-10	18-29
Eggplant	6-10	18-29
Lettuce	6-8	10-18
Melons	6-8	18-29
Onion	7-10	18-29
Parsnip	10-14	10-29
Parsley	15-21	10-29
Peas	6-10	10-18
Pepper	9-14	18-29
Radish	3-6	10-18
Spinach	7-12	10-18
Squash	4-6	18-29
Swiss chard	7-10	18-29
Tomato	6-12	18-29
Turnip	4-8	10-18

Bean seed is large, making it easy to handle for even spacing in the furrow. © Desiree Jans, Dalhousie..

Planting depth

Optimum planting depth depends on a number of factors, such as the size of the seed, the type of soil, and the season of the year. As a general rule, vegetable and flower seeds should be covered about two to three times their lateral diameter or width. There are exceptions, however, so read the packet directions. Some seeds require light for germination and should not be covered at all.

If garden soil is quite sandy or has a high content of organic matter, seeds may be planted deeper since young seedlings will emerge quite easily. However, if the garden soil is heavy with a high silt and/or clay content, the seeds should be covered only one to two times their diameter. In such soils, it may be helpful to apply a band of sand, fine compost, or vermiculite, 10 cm (4") wide and 0.6 cm (1/4") thick, along the row after seeds are planted. This will help retain soil moisture and reduce surface crusting.

When planting for fall harvest in midsummer, the soil will be warm and dry. Therefore, you should cover the seeds five to six times their diameter. They may also need to be watered each day to promote germination. A shallow mulch of compost or shading of the area may help to keep the soil cooler, especially when planting cool-weather crops in summer. Also, seed that requires a lower germination temperature may benefit from being kept in the refrigerator for two weeks before planting, or from pre-sprouting indoors on a damp paper towel.

Row planting

A string stretched between stakes provides a guide for nice, straight rows. Use a hoe handle, a special furrow hoe, or a garden rake to make a furrow of the appropriate depth for the seed being planted. Sow seed thinly; it may help to mix very small seed with coarse sand to distribute the seeds more evenly. Draw soil over the seed, removing stones and large clods. Firming the soil so it is in direct contact with the seeds improves uptake of soil moisture by the seed, hastening germination. Water in the seeds, and when plants have grown to 10 to 15 cm (4-6") tall, thin them according to seed packet instructions to provide adequate room for growth.

Broadcast planting

Crops of spinach, beet, lettuce, and carrot are especially suited to broadcast planting. Sow seed evenly over a wide row or bed, and then rake it in, firming soil over the seeds. Thin young plants.

Hill planting

Larger vegetables such as melons, squash, corn, and cucumbers may be planted in hills. The advantage of hill planting is that the soil is warmer and better drained, hastening germination in cool wet situations.

Mound the soil into a hill, 30 cm (12") or so in diameter, at the recommended spacing. Plant four to six seeds per hill, firming the soil well. Thin the seedlings to three to five plants per hill.

Activity 1

Calculate spring planting and harvest dates.

Select four of the direct-seeded vegetables in the following Spring Vegetables Planting Dates worksheet. Use local frost dates, planting dates from Table 1 above, and time to maturity (found in the 'Specific crops' section of this web site) to calculate planting (P) and harvest (H) dates. Mark 'P' or 'H' in the appropriate squares.

To find the average frost dates in your area check with local gardeners and plant nurseries or visit one of these websites:
www.almanac.com/content/frost-chart-canada OR www.veseys.com/ca/en/learn/reference/frost/canada

Activity 2

Make a seed tape.

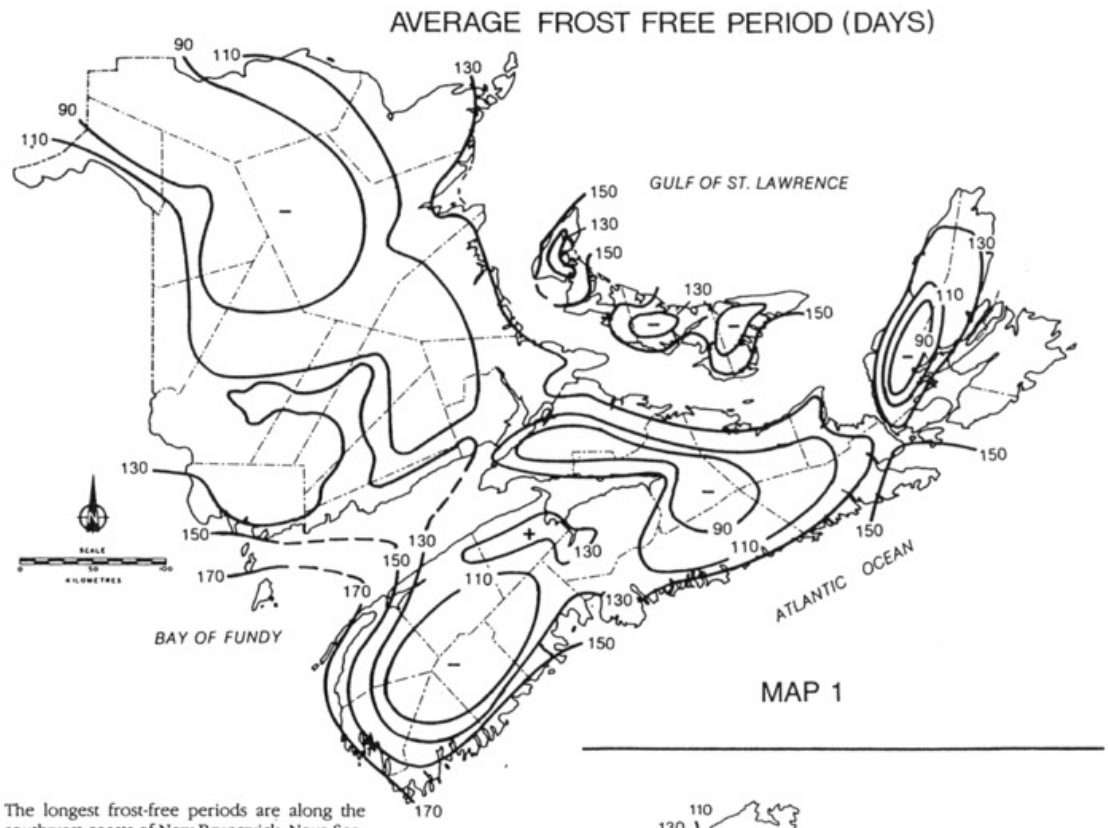
Most garden stores and seed catalogues offer seed tapes. Seed tape has precisely spaced seeds enclosed in an organic, water-soluble material. When planted, the tape dissolves and the seeds germinate normally. Seed tapes are especially convenient for tiny, hard-to-handle seeds, and they also allow uniform emergence while reducing overcrowding. However, tapes are much more expensive per seed.

To make your own seed tape, you will need:

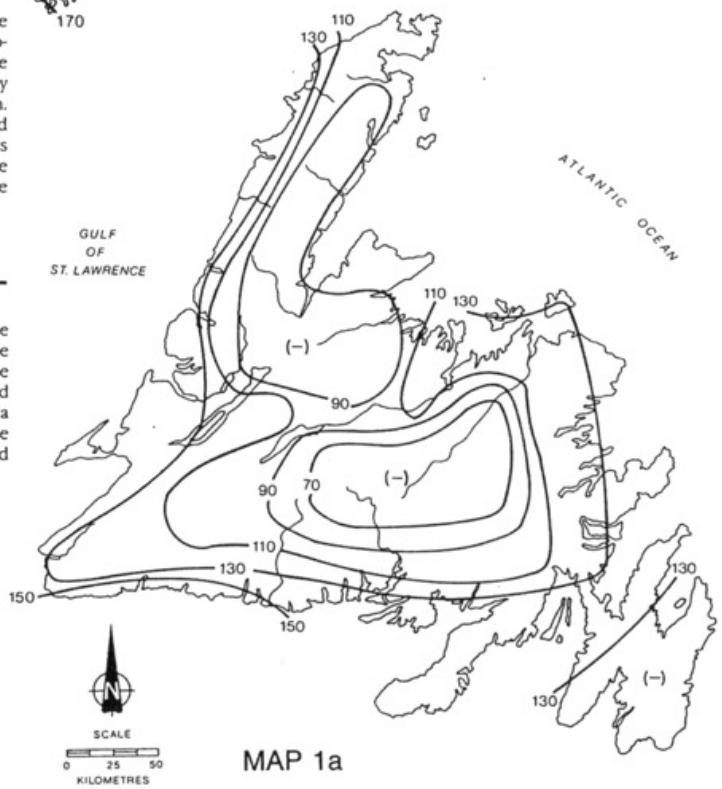
- paper towels, cut into strips of 3 inches x 12 inches
- white glue, ruler, and pencil
- small seeds: lettuce, carrot, etc.

With ruler and pencil draw small dots every one inch in the center of the paper towel strip. Place a drop of glue on each dot. Place one seed on each drop of glue. Allow glue to dry completely before storing strips. At the appropriate date, plant seed tapes in the garden.

FIGURE 1. AVERAGE FROST FREE PERIOD IN ATLANTIC CANADA. ©APASCC 1992.



The longest frost-free periods are along the southwest coasts of New Brunswick, Nova Scotia and Prince Edward Island. The frost-free period decreases rapidly with distance away from the moderating influence of the ocean. The coastal area along the Northumberland Strait has a frost-free period of about 130 days very near the water. Inland areas and the higher elevations have the shortest frost-free periods.



The longest frost-free period is along the south coast from Burgeo to Cape Ray. The next shortest frost-free period is along the south, west and east coasts. Inland areas and the eastern part of the Northern Peninsula have the next shortest frost-free period. The interior of the province has a frost-free period of only 70 days.

SPRING VEGETABLE PLANTING DATES WORKSHEET

Instructions: Write the date of your average last spring frost in the space above the 00 column. From there, fill in the dates before that frost, to the left of the 00 column, each 10 days prior to the last. For example if your average last frost date is May 15, write May 15 above 00, then write May 5 above the column marked 10 to the left of the 00 column, April 25 in the next column to the left, etc. Then to the right of the 00 column, write May 25, June 6, June 16, etc. Also make note of the first fall frost date so you will know the dates of the end of harvest for tender crops. (*USE TRANSPLANTS)

DATE																										
Days	60	50	40	30	20	10	00	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190
Beans, bush																										
Beans, pole																										
Beans, wax																										
Beets																										
Broccoli*																										
Brussels sprouts																										
Cabbage*																										
Cantaloupe																										
Carrot																										
Chard, Swiss																										
Chinese Cabbage*																										
Cucumber																										
Eggplant*																										
Leek																										
Lettuce, Bibb																										
Lettuce, Leaf																										
Onion (seed)																										
Parsnip																										
Peas, garden																										
Peppers*																										
Potato																										
Pumpkin																										
Radish																										
Rutabaga																										
Spinach																										
Summer Squash																										
Sweet corn																										
Tomato*																										
Turnip																										
Watermelon																										
Winter Squash																										

References: Atlantic Provinces Agricultural Services Coordinating Committee (APASCC). 1992. Home Vegetable Gardening. Prepared by the Advisory Committees on Vegetable Crops. Published by authority of the Atlantic Provinces Agricultural Services Coordinating Committee.