

## When's the Right Time to Plant Vegetables? Check Soil Temperature.

There are tables and charts in books and info and maps on seed packets that tell you the right date to plant those seeds. That generic information is all based on last average frost date; but the real date for the last frost can vary widely from year to year. In our wildly changing climate, how can a calendar date predict that extra early spring in March, or the extremely late and wet April? A better method to know for sure the best time to put seeds in soil is to test soil temperature.

Soil temperature is not the same as air temperature. The air can change fast with a late winter storm or sunny day. Soil temperatures change slower because of the mass of the soil and moisture content. A sunny day will warm a dark surface faster than one well mulched with light colored hay. That is one reason why we mulch heavily to prevent frost heave in perennials, to keep that soil temperature constant.

The reason soil temperature is a more accurate way of knowing when to plant seeds is that the seed itself knows when to break dormancy based on temperature. Those yellow pear tomato seeds dropped last fall will wait until the soil gets above 70° F before it puts out a root. Keep in mind that is 70° soil temperature, so that rare warm March day doesn't fool the seed. But that is also why we start flats where temperatures are warmer, and even use a heating mat to keep the soil in the pots warmer for fast germination.

Taking the soil's temperature is a much more accurate way to know when to plant, and helps assure better germination and healthier, more viable plants. Plant too early, in too cold soil and the seed will sit and wait - maybe rot or be eaten, be slow to germinate and prone to poor growth and disease. Give it the optimum temperature and the seedlings emerge quickly and rapidly grow in size and strength.

How to take the soil's temperature:

You can purchase a dedicated soil temperature thermometer, or use a reliable digital one with a 4-6 inch probe and use just for testing soils.

Temperature readings need to be taken on three consecutive mornings at the same time, usually mid-day (between 10 a.m.-12 p.m.). Insert the probe to a depth of 2 inches for seeds or 4-6 inches for transplants.

Use the chart to know when to plant seed (measured at the two-inch depth) or set out transplants (measured at the 4-6 inch depth). Of course, there might still be a late freeze, so be ready to cover the bed if necessary. Note: sprouted beans cannot take a frost. If we get a late frost, replant beans if necessary.

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## Temperature Chart:

Gives minimum temperature to plant and optimum temperature to plant, with a viable range.

Soil temp. for crop	Min. temp.	Optimum temp.	Temp. range
beets	45	85	40-95
carrots	45	80	40-95
lettuce	45	75	35-85
parsley	45	75	40-90
radish	45	85	40-95
spinach	45	70	35-85
asparagus	50	75	60-85
peas	50	75	40-85
turnip	50	85	40-105
cabbage	55	85	40-105
cauliflower	55	80	40-100
corn	55	95	50-105
Swiss chard	55	85	40-95
onion	60	75	35-95
celery	65	70	40-85
cucumber	65	95	50-105
pepper	65	85	60-95
cantaloupe	68	90	60-100
squash	70	95	60-100
tomato	70	85	50-95
beans	72	80	60-95
watermelon	72	95	60-105
okra	74	95	60-105
eggplant	75	85	60-95
muskmelon	75	90	60-100
pumpkin	75	90	60-100

UW Extension maintains several soil temperature data sites where you can access soil temperature history. The closest to us is Arlington: [http://www.soils.wisc.edu/uwex\\_agwx/awon/daily\\_soil](http://www.soils.wisc.edu/uwex_agwx/awon/daily_soil).

But be sure to test the temperature in your own garden before you plant. Site location can affect soil temperature greatly.

### Sources:

Texas AgriLife Extension Master Gardener, Smith County: <http://easttexasgardening.tamu.edu/tips/veggie/soiltemp.html>

Univ. of Nebraska Neb Guide, UNL Extension Service: <http://www.ianrpubs.unl.edu/live/g2122/build/g2122.pdf>

Colorado State Univ. Extension Garden Notes: <http://cmg.colostate.edu/gardennotes/720.pdf>

The Iowa Gardener Newsletter:

<http://www.theiowagardener.com/Soil%20Temperatures%20for%20Planting%20Seeds.html>

Gardeners Supply Company, Gardeners Tips:

<http://www.gardeners.com/When-to-Plant/warmenuflp,default,pg.html>

Weekend Gardener Monthly Web Magazine:

<http://www.weekendgardener.net/vegetable-gardening-tips/soil-temperature-030803.htm>