Scheduling Vegetable Plantings for Continuous Harvest

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Market gardeners try to schedule their planting so they can offer customers a continuous supply of fresh flowers, herbs, and vegetables throughout the growing season. This publication helps growers plan planting times and succession planting.

Contents

Photo by Edwin Remsberg, USDA/CSREES.

The best approach to planning for a continuous harvest is to keep good production records from previous growing seasons and to compare notes with other local growers. You also can find information in seed catalogs and Extension bulletins. You need to know, or be able to estimate:

- appropriate planting dates
- number of days to harvest
- length of harvest from first to last pickings

These factors are affected by several things. Weather, for example, is a major variable. Appropriate planting dates are commonly scheduled around the average annual frost-free date in the spring and the average annual first-freeze date in the fall. You can get these dates for your area from your local Extension agent or garden store. You can find a USA Frost Zone map online at *www.avant-gardening.com/zone.htm*.

Weather has a large influence on timing because of its effect on seedling establishment and crop growth. For example, peas planted at the first possible planting date in the spring and then again two weeks later will usually mature only one week apart. Germination conditions at the time of the second planting will likely be much better, and the young plants will grow faster as the days lengthen, slowly catching up with the first crop. This same process happens in reverse for fall crops. Even a couple of days' difference in midsummer planting dates can lead to a harvest date difference of two, or even three, weeks. (Ogden, 1992.)

Two ways to extend the harvest period for some crops are: 1) to plant varieties with a different number of days to maturity at the same time; and 2) to plant the same variety multiple times in succession.

Sweet corn often is grown in successive plantings to prolong the harvest season. A good way to stagger sweet corn plantings is to wait until one crop is 1 to 2 inches tall before planting the next. Sweet corn tends to emerge more slowly in cool soil (50–55°F) than in warm soil (68–77°F). Standard sweet corn varieties are better for early spring plantings than the super-sweet varieties, since the super-sweet varieties won't perform as well in cool soil. Sowing sweet corn about one week before the average frost-free date is a rule of thumb for the

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very earliest plantings. On the tail end of the planting season, make your last planting about 80 days before the average first fall frost date. In addition to sequential plantings, you can plant varieties that require different lengths of time to reach maturity. For example, some sweet corn varieties are bred to mature in 70 days, while others require 100 days.

Planting in accordance with optimum soil temperature is another common way to schedule plantings. The table below, **Soil Temperature Germination Ranges for Select Vegetables**, provides a quick summary.

Soil Temperature Germination Ranges for Select Vegetables

TEMP (° F)	*PLANT*
45–85	cabbage, kale, broccoli, collards (germinate well at 85, seedlings prefer 45–65)
35–80	lettuce and most salad greens (at more than 80, germination rate drops 50%)
35–75	spinach (optimum 68)
50–85	onions (optimum 75)
45–95	radishes (optimum 85)
50–85	beets, Swiss chard (optimum 85)
60–85	beans, snap and dry (optimum 80)
70–85	beans, lima (optimum 85)
40–75	peas (optimum 75)
60–95	corn (optimum 95)
65–82	tomatoes (optimum 80)
60–95	peppers (optimum 85)
65–100	cucumbers, melons, squash (optimum 80–95)

From: Market News, March 1995.

Related ATTRA Publications

Community Supported Agriculture (CSA)

Market Gardening: A Start-up Guide

Insects and diseases are another major factor that can affect production scheduling. In the humid southeast, tomato growers often plant both spring and fall tomato crops because the early plants succumb to disease in midsummer. A market gardener in North Carolina reports that she sets out tomatoes three times during the growing season. She also notes that squash vine borer is so bad in summer squash that she only gets about two weeks of harvest from each planting.

Abundance draws customers at farmers markets. Photo courtesy Jim Lukens, SSAWG.

Once you have a framework of *possible* planting dates, you can work out your personal plan for successive plantings. The **Succession Planting** chart, on the next page, can be used as a template and adapted for your location.

A beneficial outcome of the Community Supported Agriculture movement, with its heavy emphasis on multiple crops and a continuous supply of customer favorites throughout the season, is the development of record-keeping and crop-planning systems geared to direct market farmers. A few of these can be found through the resources listed below. You can find many others in the ATTRA publication *Community Supported Agriculture (CSA).*

The ATTRA publication *Market Gardening: A Start-up Guide* also provides ideas and resources for vegetable planning and record-keeping. You can find these publications at the website, *www.attra.ncat.org/attra-pub*, or order a free printed copy by calling 800-346-9140.

Succession Planting

CROP	seed to flat, planned	seed to flat, actual	plant to field, planned	plant to field, actual	esti-mated days to harvest	actual days to harvest	length of harvest	interval between plantings	comments
arugula					30			2 weeks	best in cool weather
beans, bush					60			2 weeks	summer
beans, lima					65			*	summer
beans, pole					60-70			*	summer
beets					40-70			2 weeks	spring & fall
broccoli					60-70 f.t.			2 weeks	spring & fall
cabbage					70-80 f.t.			3 weeks	spring & fall
carrots					85-95			3 weeks	spring & fall
cauliflower					50-65 f.t.			2 weeks	spring & fall
collards					60-100			*	fall
corn, sweet					70-100			2 weeks	summer
cucumbers					60			4-5 weeks	summer
edamame					70			*	summer
eggplants					65 f.t.			8 weeks	summer
kale					40-50			2 weeks	spring & fall
kohlrabi					50-60			2 weeks	spring & fall
lettuce, head					70-85			2 weeks	spring & fall
lettuce, leaf					40-50			2 weeks	best in cool weather
muskmelons					80-90			2 weeks	summer
okra					70			*	summer
onions, dry					90-120 f.t.			*	
onions, green					85			2-3 weeks	
greens					30-60			2 weeks	best in cool weather
peas					55-70			*	spring & fall
peas, southern					65			*	summer
peppers					60-70 f.t.			*	summer
potatoes					90			*	spring & fall
pumpkins					90-120			*	summer
radishes					25-30			2 weeks	best in cool weather
radishes, daikon					60-75			*	spring & fall
spinach					50-60			2 weeks	spring & fall
squash, summer					45-60			4-8 weeks	summer
squash, winter					90-120			*	summer
tomatoes					65-90 f.t.			2	summer
turnips					35-40			2 weeks	best in cool weather

Reference:

Ogden, Shepherd. 1992. Step by Step Organic Gardening. Harper Collins Publishers. p. 113-114.

Resources:

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Jauron, Richard. 2007. Planting and Harvest Times for Garden Vegetables. Iowa State University Extension Service. 2 p. Online at *www.extension.iastate.edu/Publications/PM534.pdf*

Anon. 2008. Recommended planting dates by month and week. Southern Exposure Seed Exchange Catalog. 1 p.

Evans, Erv. 1999. Growing a Fall Vegetable Garden. North Carolina State University Cooperative Extension. 3 p. Online at *www.ces.ncsu.edu/depts/hort/hil/hil-8001.html*

Hume, Ed. Fall and Winter Vegetable Planting Guide. Online at *www.humeseeds.com/falwint.htm*

Gruver, Joel. Crop Scheduling for Continuous Harvest/Planning Spreadsheets for CSA and Farmers' Markets. Growing Small Farms: Farm Planning and Record Keeping. *www.ces.ncsu.edu/chatham/ag/SustAg/farmrecords.html*

Hitt, Alex. 2007. Organic Vegetable Production & Marketing in the South. Southern Sustainable Agriculture Working Group. CD-ROM (Word only).
This new resource follows Alex and Betsy Hitt's system, including soil building, pest management, planting, and much more. The section on record keeping includes the questions Alex asks when he plans for continuous harvest. Available for $15 plus $7.50 shipping from: Southern SAWG, c/o Buckingham Business Services. P.O. Box 22. Hillsborough, NC 27278, www.ssawg.org

Teaching Direct Marketing and Small Farm Viability: Resources for Instructors. Center for Agroecology & Sustainable Food Systems. University of Santa Cruz.
Designed to be placed in a one-inch, three-ring binder so that sections can be easily removed and copied for class use. Available from CASFS for $30.00 (tax and binder included) plus $4.00 shipping. CAFS, UC Santa Cruz. 1156 High St., Santa Cruz, CA 95064, 831-459-3240. Or download free of charge from:
http://casfs.ucsc.edu/publications/index.html

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