



Seasonal Planting

Guidance for Growing Vegetables
Grades 6-8

Master Gardeners

The University of California Cooperative Extension (UCCE) Master Gardener Program (MGP) is an educational program designed to teach and effectively extend information to address home gardening and non-commercial horticulture needs in California.

UCCE is the outreach arm of UC's division of Agriculture and Natural Resources (ANR). Master Gardener volunteers (MG volunteers) promote the application of basic environmentally appropriate horticultural practices through UCCE-organized educational programs that transfer research-based knowledge and information.



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UCCE Master Gardener Program

Learning Goal

Student gardeners will learn the basics of determining the best season to plant specific vegetable crops and strategies to grow a maximum yield during each season.

Why is This Important?

Timing is everything! Determining the right time to start seeds and plant outdoors can make the difference between an abundant vegetable harvest or disappointing results.



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Understand What You Are Growing: What is a Vegetable?

- Botanically, fruits and vegetables are classified depending on **which part of the plant** they come from.
- A **fruit** develops from the flower of a plant, while the other parts of the plant are categorized as **vegetative**.
- Fruit contains seeds, while vegetables can consist of roots, tubers, stems and leaves.
- However, from a culinary and grocery store point of view, many “fruits” are considered vegetables. These include tomatoes, cucumbers, pumpkins and zucchini.



Vegetables are Actually Various Plant Parts !

- Some are **fruits** such as tomatoes and peppers.
- Some are **stems** such as celery.
- Some are **leaves** such as spinach and kale.
- Some are **lateral buds** such as Brussels sprouts.
- Some are a massive **flowering structure in bud stage** such as broccoli.
- Some are the **root** such as sweet potato.
- Some are an **underground storage stem** such as white potato.

UCCE Master Gardener Program of Riverside County



Time Your Planting Based on Seasonal Temperature

- Most vegetables are classified as cool season or warm season crops based on the temperature range in which they grow best and produce the best-quality crops.
- Planting a particular vegetable should be timed so that it grows and matures when temperatures are ideal for it to produce a high-quality crop.



Cool Season Vegetable Crops

- Cool season vegetables grow best when average temperatures are 55 to 75 degrees and they usually tolerate slight frost when mature.
- Some of these crops, such as broccoli, celery, carrot, lettuce, onion will **bolt** if temperatures are too warm as the plant is maturing.
- Cool season vegetable crops generally have shallower root systems and show more dramatic response to nitrogen and phosphorous fertilization.



Cool Season Vegetable Produce

- The food value of cool-season vegetables is usually higher per pound and per square foot than that of warm season vegetables.
- This is because the edible parts of the plant are the vegetative parts, such as roots, stems, leaves, and immature flower parts rather than the [fruit](#).



Warm Season Vegetable Crops

- Warm season vegetables require long, hot days and warm soil to mature.
- Warm season vegetables grow best and produce the best quality crops when average temperatures are 65 to 95 degrees.
- Warm season vegetables are not tolerant of prolonged freezing temperatures. It is important to know the first and last dates of frost for your garden. The California Garden Web provides a [chart](#) of approximate frost dates.



Warm Season Vegetable Produce

- The food value of warm-season vegetables is usually lower per pound and per square foot because the [fruit](#) of the plant is eaten, not the other vegetative parts.



Timing Your Planting: Grow Three Seasons of Crops

- Most areas of California have three or four growing seasons.
- By planting a spring crop, a summer crop and a fall crop, a gardener can get three crops from the same space.
- Careful attention to [days to maturity](#) for each crop establishes the ideal rotation of crops.



Increase Your Amount of Produce Within Each Season

Use one or more of these [successional gardening](#) strategies to increase your garden's produce capacity within a growing season.

- Companion Planting
- Intercropping
- Staggered Planting



Companion Planting

- **Companion Planting** is planting two crops in the same place at the same time. Normally one crop matures first and is harvested before the other.
- Radishes or onions and carrots are a good example for this growing technique.



Companion Planting Can Also Help With Pest Management

- Companion planting can support the practice of [Integrated Pest Management \(IPM\)](#) by growing certain flowering plants with vegetables.
- The flowers increase floral and nectar sources for beneficial insects.
- The [beneficial insects](#) in turn support pollination of the vegetable plants and provide biological control of [pest insects](#).

CA Master Gardener Handbook pg. 224



Intercropping

- **Intercropping** involves planting early maturing crops between the rows of late maturing crops to increase production in a small area.
- For example, beans, radishes, green onions, spinach and leaf lettuce can be planted between rows of tomatoes, peppers, cabbage or corn.
- Proper spacing to accommodate growth within and between rows is extremely important.



Staggered Planting

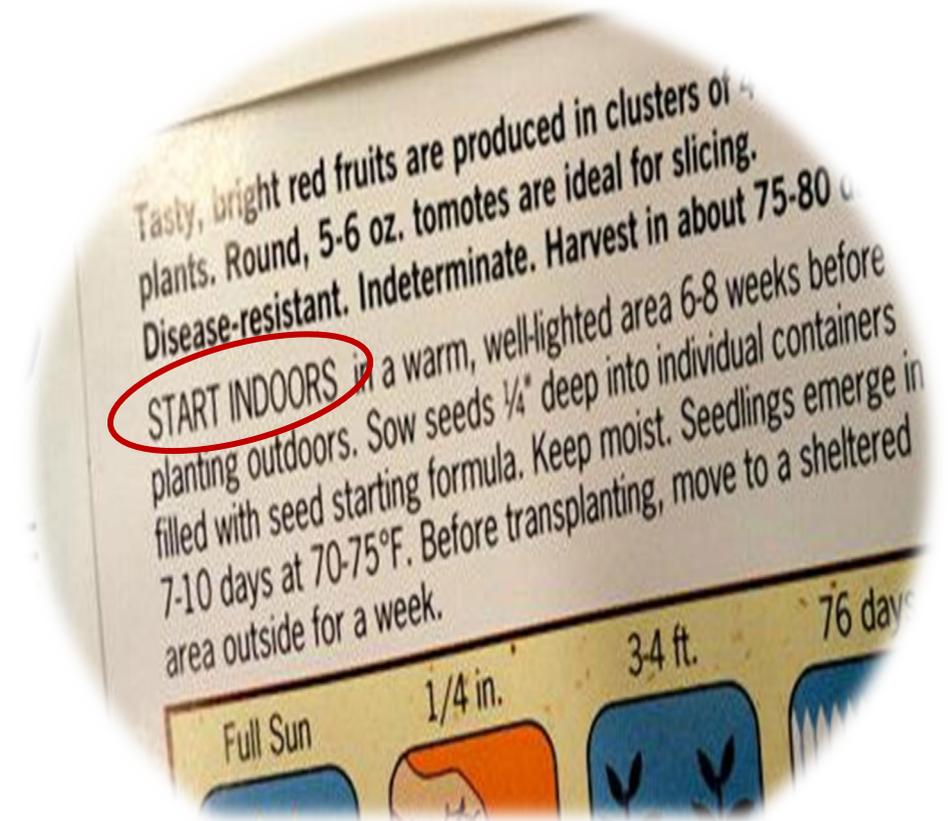
- **Staggered Planting** is sowing seed of a given crop at 1-2-week intervals to produce a continuous supply of vegetables. Instead of maturing all at once, a new crop will be ready as the earlier one finishes.
- Ideal crops for staggered planting include Asian greens, beets, bush beans, carrots, cucumber, leaf lettuce, radishes, kohlrabi, and summer squash.



Expand the Growing Season: Start Plants Indoors

Starting your vegetables indoors early can give your garden a jumpstart on seasonal planting.

- Start plants indoors 6-8 weeks prior to the date you want to plant the garden.
- It is much more cost efficient to buy a packet of seeds than several sets of seedling transplants from the nursery .
- It also allows you to grow [seedlings](#) of varieties that may be difficult to find in the nursery as transplants.
- NOTE: Some vegetables do not transplant well as should be planted as seed directly into the garden bed. These include carrots, radishes, corn and potatoes.



Know the Specific Variety

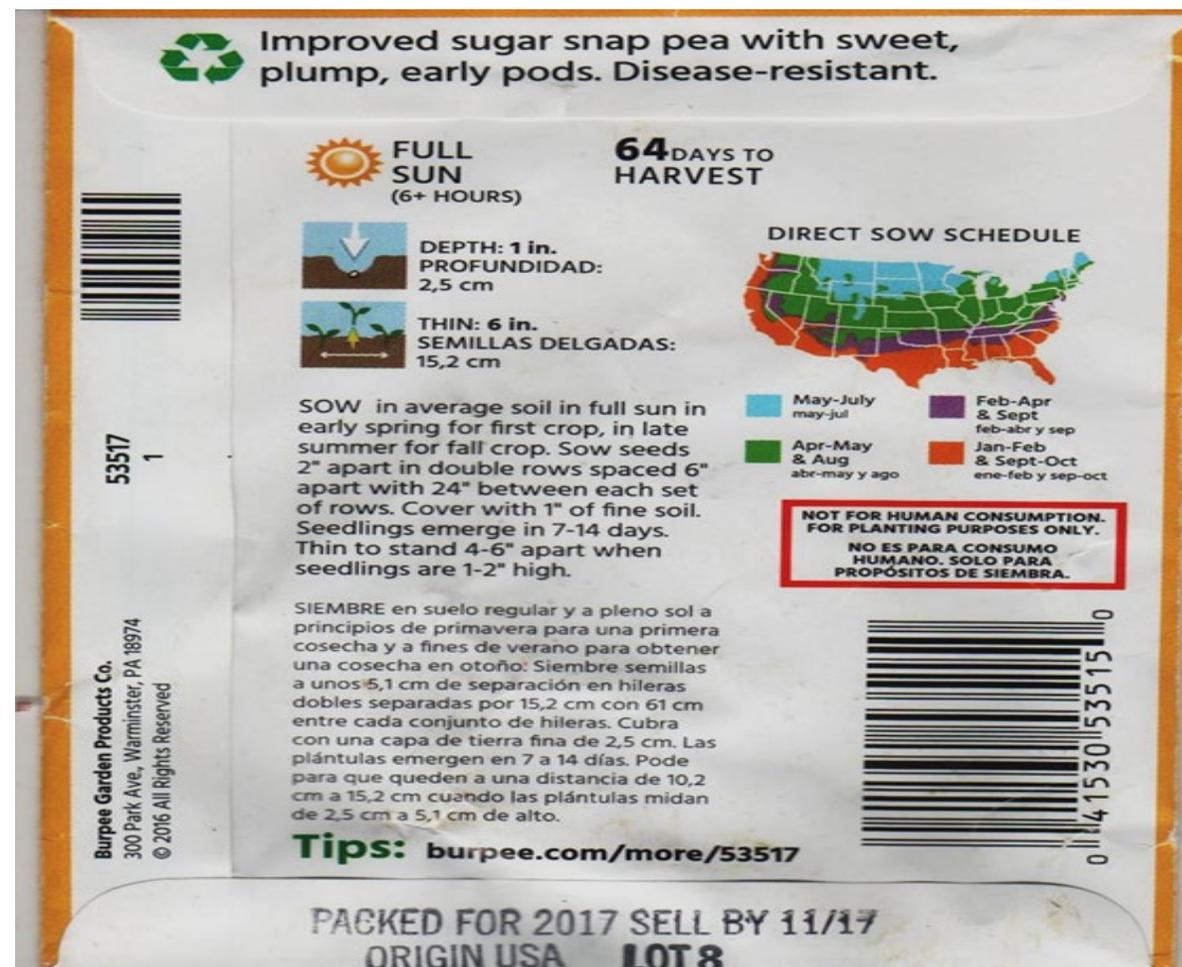
- Whether purchasing seeds or transplants always note the specific crop variety or [cultivar](#). Pay careful attention to the description of the plant's characteristics.
- Avoid generic (not-specific) or unlabeled transplants since characteristics can vary widely with different varieties of the same crop.



What Varieties Should You Plant?

When choosing vegetable varieties consider such factors as:

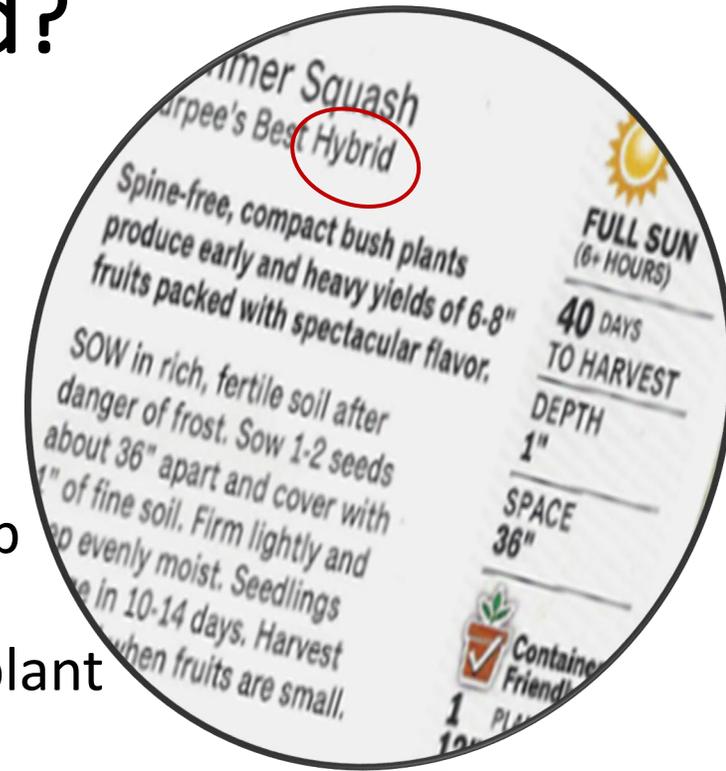
- What grows well in your area/[climate zone](#)
- Recommended planting dates
- Maturity date
- Disease Resistance
- Flavor
- Size of plant



Hybrids or Open-Pollinated?

Vegetable varieties are sometimes described as being either a hybrid (F1) or an open-pollinated type.

- Neither is better than the other for home and school gardening production.
- Seed for a hybrid variety is the result of a cross between two crop varieties. The resulting seed produces uniform, more vigorous, disease-resistant plants. However, seed collected from a hybrid plant will not necessarily produce plants like the parent.
- Open-pollinated varieties can produce seed that reproduce plants just like the parent plant. Heirloom vegetable varieties are defined as those known to have been in cultivation for at least 50 years and are open-pollinated in origin.



Video: [Succession Planting](#)



Check For Understanding



- Describe a characteristic of a cool season crop.
- Describe a characteristic of a warm season crop.
- How many growing seasons are possible in California?
- For ideal rotation of crops, what growing information should you pay close attention to?
- Name a succession strategy a gardener can use to increase the amount of produce grown within a season.
- Describe how you can jumpstart or lengthen a growing season.
- What can you learn from reading a plant label or seed packet?



Application Activity

Plan a vegetable garden bed implementing one or more succession planting strategies.

- Use the [Master Gardener Planting Calendar](#) for guidance on recommended planting dates to guide your selection of vegetables to grow.
- The [California Garden Web](#) also provides planting guidance and in-depth information on various vegetables.
- The [Sonoma County Master Gardeners](#) and the [Companion Planting Guide](#) provides information on compatible and incompatible plants.

Extension Activity



Watch the [Master Gardener Video](#) to learn how to integrate companion planting and intercropping gardening strategies by growing a *Three Sisters* warm-season vegetable garden.

- Additional information, activities and guidance on growing a Three Sisters Garden is available at [Ag in the Classroom](#).

Next Generation Science Standards

LS2.A: Interdependent Relationships in Ecosystems

- Organisms, and populations of organisms, are dependent on their environmental interactions both with other living things and with nonliving factors. (MS-LS2-1)

Career Technical Education Standards

Plant and Soil Science Pathway

G3.0 Understand plant physiology and growth principles.

- G3.4 Research the factors that influence plant growth, including water, nutrients, light, soil, air, and climate.

Career Technical Education Standards

Ornamental Horticultural Pathway

F2.0 Summarize plant physiology and growth principles.

- F2.4 Experiment with the factors that influence plant growth, including water, nutrients, light, soil, air, and climate.
- F2.6 Explore the factors that affect plant growth.

Resources

- California Master Gardener Handbook, Second Edition, Pettinger, 2015
- [The California Garden Web](#); UC ANR
- [Botanical Definition of the Term Fruit](#); www.healthline.com
- [Companion Planting](#); fpconservatory.org
- [Agriculture Literacy Matrix Curriculum Matrix](#); National Agriculture in the Classroom
- [Planting and Storing Table 14.2](#); California Master Gardener Handbook

Resources Continued

- [Vegetable Planting and Storing Table](#); California Garden Web, UC ANR
- [Vegetable Gardening Handbook for Beginners](#) ; UC Master Gardeners of Contra Costa County
- [Year-Round Food Gardening: Companion Planting](#); UC Master Gardeners of Sonoma County
- [What Am I Eating?](#)
- Videos: K-State Research and Extension; UC Master Gardeners of Santa Clara County
- Images: Burpee; Creative Commons; Stock Images; kiddie.com; Unsplash; UCANR

Gardening Questions?

- Email or Call the UCCE Master Gardeners of Riverside County
- Email Helpline
 - anrmgriverside@ucanr.edu
- [Riverside Master Gardeners Website](#)
- E-mail: mgschoolgardens@gmail.com



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