

# Edible Gardening Resources

## Helpful Websites

**UC Integrated Pest Management (IPM)** <http://ipm.ucanr.edu/PMG/menu.homegarden.html>

Provides practical information on pest management techniques and identification of a broad range of California pests.

- **Managing Vertebrate Pests** <http://ipm.ucanr.edu/PMG/menu.vertebrate.html>

**UC California Garden Web (Vegetables)** <http://cagardenweb.ucanr.edu/Vegetables/>

Designed by the UC Master Gardener Program to serve as a portal to organize and extend University of California research-based information about gardening to the public. The focus is on sustainable gardening practices, and a question and answer format is used to present solutions.

**UC Backyard Orchard** [http://homeorchard.ucanr.edu/The\\_Big\\_Picture/](http://homeorchard.ucanr.edu/The_Big_Picture/)

**UC Cooperative Extension Master Gardener Offices** - Local problem solving centers

Sacramento County: (916) 875-6913; website: <http://sacmg.ucanr.edu/>

Placer County: (530) 889-7388; website: <http://pcmg.ucanr.org/>

El Dorado County: (530) 621-5512; website: <http://mgeldorado.ucanr.edu/>

Nevada County: (530) 273-0919; website: <http://ncmg.ucanr.org/>

**Sustainable Urban Gardens** <http://www.sacgardens.org>

Detailed information about sustainable gardening, edible gardening, building raised beds, soil/compost/mulch, and many articles, including resources for Sacramento sustainable gardening.

**Eco-Friendly Landscape Design Plans for the New California Landscape**

<https://puddle-stompers.com/waterwonk/new-ca/>

Landscape plans, including edibles, 75 plant profiles with pictures of plants in each season, maintenance notes, water needs, and more.

**Peaceful Valley Farm & Garden Supply** <https://www.groworganic.com/>

Great source for organic gardening supplies. Website has a lot of information, including videos of growing tips. 125 Clydesdale Court, Grass Valley. Tel: (530) 272-4769

- **Fertilizer Solutions Chart** (Peaceful Valley Farm & Garden Supply)  
<https://cdn.shopify.com/s/files/1/0061/1391/9089/files/fertilizer-solution-chart.pdf?36422>

### **Drip Works** <https://www.dripworks.com>

Extensive catalog of drip irrigation products geared for home gardeners and professionals. An excellent resource for drip system kits, timers, assorted fittings, and accessories. Includes a library of videos to help you get started with your drip irrigation system.

### **Dave Wilson Nursery** <https://davewilson.com/home>

One of the nation's largest wholesale fruit growers. The website has information for home gardeners about backyard fruit tree basic, home fruit growing, selecting varieties suitable for your site, and videos demonstrating planting and pruning fruit trees, blueberries, and grapes.

- **Dave Wilson Fruit & Nut Harvest Chart**

<https://www.davewilson.com/home-gardens/growing-fruits-and-nuts/selecting-varieties-and-rootstocks/fruit-and-nut-harvest-chart>

### **California Rare Fruit Growers** <https://crfg.org>

The largest amateur non-profit fruit-growing organization in the world, where you can learn all about growing fruit in an environmentally responsible manner.

## **Helpful Publications**

### **University of California, Division of Agriculture and Natural Resources**

<https://anrcatalog.ucanr.edu/> Many free publications regarding agriculture, biotechnology, food safety, pests, soils, and more, including the publications listed below. At the website, click on "Free Publications" and search by publication title.

- **Vegetable Garden Basics**, Publication 8059
- **Fruit Trees: Training and Pruning Deciduous Trees**, Publication 8057
- **Biological Control and Natural Enemies**, Publication 74140
- **Weed Management for Organic Crops**, Publication 7250
- **Use of Graywater in Urban Landscapes in California**, Publication 8536

### **UC IPM Quick Tips Library** <http://ipm.ucanr.edu/QT/index.html#>

Quick Tips offer quick advice related to pests and environment-friendly gardening practices. Many are abbreviated versions of more detailed Pest Notes.

### **UC Cooperative Extension Sacramento County** Find links at <http://sacmg.ucanr.edu/Publications/>

#### **Environmental Horticulture Notes**

- EHN 11 – Sacramento Vegetable Planting Schedule
- EHN 15 – Landscaping with Herbs
- EHN 87 – Cover Cropping in Home Vegetable Gardens
- EHN 88 – Growing Blueberries in the Sacramento Region
- EHN 96 – Vegetable Gardening 101
- EHN 98 – Composting for the Home Gardener

## Garden Notes

- GN 127 – Growing Citrus in Sacramento
- GN 129 – Attracting Beneficial Insects
- GN 130 – Soil and Plant Tissue Laboratories
- GN 140 – Vegetable Container Planting Tips
- GN 147 – Tomatoes: Suggested Varieties for the Sacramento Area
- GN 154 – Soil Temperature Conditions for Vegetable Seed Germination
- GN 155 – Growing Edible Flowers in your Garden
- GN 164 – Home Vegetable Gardening Resources

## UC Master Gardeners of Sacramento County YouTube Channel:

[https://www.youtube.com/channel/UCIm9vPOH\\_UWg0Lwlp5vVNQ/videos](https://www.youtube.com/channel/UCIm9vPOH_UWg0Lwlp5vVNQ/videos)

Video library of gardening topics, including: composting, growing herbs and vegetables in containers, growing and pruning fruit trees, IPM for grapes and fruit trees, and much more.

## UC Master Gardeners of Placer County <http://pcmg.ucanr.org/>

- **Gardening Basics** [http://pcmg.ucanr.org/Gardening\\_Basics/](http://pcmg.ucanr.org/Gardening_Basics/)
- **Soil Testing Labs for Home Gardeners** <http://pcmg.ucanr.org/files/262734.pdf>

## Hazardous Waste Drop-Off Centers

- Sacramento County <https://wmr.saccounty.net/Pages/HHW-Dropoff-Centers.aspx>
- Placer County <https://www.wpwma.ca.gov/our-facility/area-hours-location/>

## Centers for Disease Control and Prevention (CDC)

<https://www.cdc.gov/healthywater/drinking/private/rainwater-collection.html>

Article concerning drinking water and rainwater collection; advises not to use rainwater on non-edible plants.

## Helpful Books

University of California, Division of Agriculture and Natural Resources: [anrcatalog.ucanr.edu](http://anrcatalog.ucanr.edu)

Many books, including those listed below. Type name of book or publication # in ANR search box.

- ***The Home Orchard: Growing Your Own Deciduous Fruit and Nut Trees***, Chuck Ingels, Pam Geisel, and Maxwell Norton, Publication #3485
- ***Pests of the Garden and Small Farm: A Grower's Guide to Using Less Pesticide*** (Third Edition), Mary Louise Flint, Publication #3332
- ***Natural Enemies Handbook: The Illustrated Guide to Biological Pest Control***, Mary Louise Flint and Steve H. Dreistadt, Publication #3386
- ***California Master Gardener Handbook*** (Second Edition), Dennis R. Pittenger, Publication #3382

## Other Recommended Books:

- ***Western Garden Book of Edibles***, 2010, Sunset Publishing Corporation
- ***Edible Landscaping***, Rosalind Creasy, 2010, Sierra Club Books
- ***The Edible Front Yard***, Ivette Soler, 2011, Timber Press
- ***The Beautiful Edible Garden***, Leslie Bennett and Stefani Bittner, 2013, Ten Speed Press
- ***Designing and Maintaining Your Edible Landscape Naturally***, Robert Kourik, 2005, Chelsea Green Publishing
- ***Seed to Seed – Seed Saving and Growing Techniques for Vegetable Gardeners***, Suzanne Ashworth, 2002, Seed Savers Exchange, Inc.
- ***Gardening with Less Water***, David A. Bainbridge, 2015, Storey Publishing
- ***Growing Vegetables in Drought, Desert & Dry Times: The Complete Guide to Organic Gardening without Wasting Water***, Maureen Gilmer, 2015, Sasquatch Books



## Environmental Horticulture Notes

EHN 96

### VEGETABLE GARDENING 101

Few experiences can match the pleasure of savoring homegrown vegetables, especially if you grow them from seeds or seedlings. The flavor and number of varieties that you can grow far exceeds what you can buy at a grocery store. If you follow the advice in this document, growing vegetables does not have to be time consuming or difficult. Experience really is the best teacher, and as your knowledge increases, so will the rewards of gardening.

#### SELECTING A SITE

You do not need a large space for your vegetable garden. If you choose to grow in containers, you do not even need a yard. However, the following elements are critical to grow good vegetables.

- **Sunshine** – Choose a site for your garden that gets at least 6 to 8 hours of full sunlight per day. Avoid shaded areas such as under trees or large shrubs or on the north side of tall buildings or fences.
- **Water** – The closer your garden is to a source of water, the better. Vegetables need a steady supply of water during growth, so be sure there is a handy and adequate water source near the site.
- **Good soil** – Something between clay (fine-textured, heavy soil) and sand (coarse-textured, light soil). Most vegetables need loose, crumbly soil that drains water well but still holds moisture, and loam (medium-textured soil) is ideal.

No soil is perfect, but fixing bad soil is not hard; very light or very heavy soils can be modified with organic amendments to increase their water-holding capacity or to improve drainage. Examples of organic amendments are hay, straw, peat moss, leaves, well-rotted manures, compost, sawdust, and pesticide-free lawn clippings. Additional nitrogen fertilizer may be needed when organic matter is used. Nitrogen is a vital ingredient of the decomposition process and a critical plant nutrient, but it cannot be both at the same time. As organic amendments decompose, they can tie up nitrogen that would otherwise be feeding your plants. If your amendment is not completely composted, you may need to add nitrogen fertilizer.

If your soil is less than ideal and does not drain well, you may want to consider planting in raised beds. If you plan to grow vegetables in containers, do not use garden soil; instead, fill the container with a high-quality potting mix.

#### PREPARING THE SOIL

Soil should be spaded or tilled when it is moist but not wet; it should be dry enough to crumble when pressed in your hand. If you turn the soil when it is too wet, it can destroy its structure, causing it to form large clods that later harden. Large dirt clods cause poor germination because seeds planted in or under them have little contact with the soil or may be buried too deeply. When your soil is sufficiently dry, loosen it to a depth of 6 to 10 inches and immediately break up large clods with a spading fork or rake to ensure that the soil is pulverized into pea-sized granules. Spread any fertilizer, manure, leaves, or compost and work that into the soil and then rake it smooth.

It is a good idea to test the soil every few years. This will provide needed information on soil pH and nutrients. The pH scale is a numerical chart used to indicate the relative acidity or alkalinity of a given substance. The scale is from 0 (extremely acid) to 14 (extremely alkaline); pH of 7 is the neutral point. Garden vegetables do the best in slightly to very slightly acid soil (pH of around 6).

Soil pH affects the availability of plant nutrients in the soil that are essential for plant growth and development. If the pH is too high or too low, plants will not be able to use the nutrients around them, no matter how naturally rich the soil is or how much fertilizer you add. Soils may be made less acidic (more alkaline) by raising the pH with additions of lime (calcium carbonate) or wood ashes. They may be made more acidic (less alkaline) by lowering the pH with additions of elemental sulfur or aluminum sulfate. Unless you test your soil, you will not know how much lime, sulfur, or fertilizer is needed.

Inexpensive do-it-yourself soil test kits, available at most garden centers or through mail-order catalogs, are quick and easy to use but provide only a rough estimate of your soil's condition (soil pH and nitrogen, phosphorus and potassium composition of the soil). A complete soil analysis at a laboratory is important, especially if you are breaking new ground for a garden plot. Contact the Sacramento County Master Gardener Office for a list of companies that provide soil testing services.

## **WHAT TO PLANT**

It is tempting to try growing a large variety of vegetables. A better approach might be to consider what you and your family like to eat. Then consider the space that you have available. Plant only as large a garden as you can easily maintain, as there is a time commitment (thinning, weed and pest control, irrigation, fertilization). A smaller, properly tended garden will be more productive and satisfying than a larger garden receiving minimal attention.

Be sure to plant varieties adapted to your growing area. Try some new plants on a trial basis, but always include varieties that have proven their success in your climate. You may want to grow more than one variety to determine which is best suited for your locality, microclimate, and individual taste. Consider such factors as disease resistance, maturity date, compactness of plants, and the size, shape, and color of the vegetable desired. If you have little space, it might be advisable to plant varieties that do not become too large, or to select varieties that can be grown vertically on trellises or wires.

## **SEEDS AND PLANTS**

You can grow many vegetables from seed, but you can also buy young plants from a nursery or garden center. If you sow seeds into the garden soil, you must wait for the ground to warm up enough to germinate the seed. Carrots and beans are two vegetables that require "direct seeding". With direct seeding, you place the seeds at the recommended depth (generally seeds should be covered to a depth equal to 2 to 4 times the diameter of the seed, but check out the seed packet for this information), water thoroughly, then wait for the plants to emerge.

Buy fresh seeds. Some seeds, such as onion, parsley, and parsnip, lose viability after about a year. Seeds of other vegetables are good for three years or more. Write the date of purchase on the seed packets and store any leftover seeds in a cool, dry place.

Vegetables produced by young plants are ready to harvest earlier than those grown from seed. The vegetables most commonly bought as young plants for transplanting are tomatoes, peppers, lettuce, broccoli, celery, cabbage, cauliflower, and eggplant. When purchasing seedlings, select short, stout, healthy plants that are not yet producing flowers, buds, or fruit. Roots should not be sticking out through the drainage holes.

Growing transplants from seed gives you a much wider universe of varieties to try. Starting vegetables indoors is not difficult, but it does require some time and attention. Seed packages provide information for planting the particular seed, but here are some guidelines to help you be successful.

- In general, sow seeds 6 to 8 weeks before the date you wish to set the plants in the garden. However, the sowing period may range from 4 to 18 weeks before transplanting, depending on the speed of germination, the rate of growth, and the cultural conditions provided. It is important to time seed sowing so that the seedlings are at the correct stage when it is time to transplant them into the garden.
- You can use a variety of containers, such as wooden or plastic flats or trays, small individual pots, and cell packs. If you are reusing old containers, be sure to wash them thoroughly and soak them in a solution of 1 part household bleach to 9 parts water. This procedure prevents most seedling diseases from occurring.

- Fill the pots with a light, porous seed-starting or potting mix. Do not use garden soil by itself to start seedlings as it is too heavy, not sterile, does not drain well, and shrinks from the sides of containers if allowed to dry out.
- Follow printed recommendations on the package for the suitable planting depth, and avoid planting seeds too deeply. Label each container with the plant's name and the date.
- After seeds are sown, moisten the planting mix thoroughly using a fine mist or spray; then set the container aside to drain. The soil should be moist but not wet. Ideally, seed flats should remain sufficiently moist during the germination period so that adding water is unnecessary. One way to maintain moisture is to slip the whole flat or pot into a clear plastic bag or cover it with clear plastic wrap after the initial watering. Be sure to remove the cover as soon as the first seedlings appear. Drain off water collected at the bottom of the planting tray so that seedlings are not sitting in water.
- After germination, move the flats to a bright, airy location that is kept at 55 to 60° at night and 65 to 70° during the day. Place them in a window facing south, if possible. If a large, bright window is not available, place the seedlings under fluorescent lights. Use two 40-watt, cool-white fluorescent tubes or special plant-growth lamps. Position the plants about 2 inches from the tubes and keep the lights on about 16 hours each day. As the seedlings grow, the lights should be raised accordingly. This will result in a more compact, healthier transplant to set out into the garden. Keep the soil evenly moist and do not allow seedlings to wilt. Regular fertilization with half-strength soluble plant fertilizer solution is recommended.
- If the plants have not been seeded in individual containers, they must be transplanted to give them proper growing space. The ideal time to transplant young seedlings is when the first true leaves develop above or between the cotyledon leaves (the cotyledons or seed leaves are the first leaves the seedling produces).
- In order to reduce transplanting shock, seedlings should be gradually conditioned to the outdoors for at least two weeks before being set into the garden. This "hardening off" process starts by gradually exposing the seedlings to the more harsh outside conditions. Set the plants out in a shady place on a warm day for 1 to 2 hours at first. Then gradually move the seedlings into sunlight, increasing the length of exposure each day until you are leaving them outdoors day and night. Bring them indoors whenever cold temperatures are predicted. Reduce the frequency of watering to slow growth, but do not allow plants to wilt. After several nights outdoors, plants should be ready to transplant into the garden.

### **GROWING IN CONTAINERS**

If you choose to grow vegetables in containers, use a half wine barrel or other large container that is large enough to accommodate the root system. Shallow-rooted crops are those whose main root system is in the top 1 to 2 feet of soil. Examples are cabbage, cauliflower, lettuce, celery, corn, onion, potato, and radish. Moderately deep-rooted crops are those that have the main root system in the top 1 to 4 feet of soil. Examples are snap bean, carrot, cucumber, eggplant, peas, pepper, and squash. Deep-rooted crops are those whose main root system is in the top 1 to 6 feet of soil. Examples are asparagus, globe artichoke, cantaloupe, pumpkin, tomato, and watermelon. (The maximum rooting depths given here are the potential rooting depths under ideal soil conditions.)

Ideally the container should be at least 18 to 24 inches wide and 12 to 16 inches deep with multiple drain holes. Fill the container with a good-quality potting mix (do not use garden soil), and install any necessary wire cages or other supports at planting time. Gardening in containers requires more frequent irrigation and fertilization.

### **TRELLISING AND STAKING**

Do not grow horizontally what you can grow vertically. Twining and vining crops such as tomato, squash, cucumber, melon, and pole beans use a great deal of space when allowed to grow along the ground. Trellises, stakes, and other supports minimize the ground space used and increase garden productivity. Support materials can be wooden structures, wooden or metal stakes, twine, wire cages, or a nearby wire fence.

**WHEN TO PLANT**

Timing is everything. Some crops like to mature in cool weather in the spring and fall (cool-season vegetables), but others prefer the warmth of summer (warm-season vegetables). The *Sacramento Vegetable Planting Schedule* (Environmental Horticulture Note 11) provides appropriate planting dates for commonly grown vegetables.

Cool-season vegetables grow best and produce the best quality crops when average daytime temperatures are 55° to 75° F, and they usually tolerate slight frost when mature. Examples include: artichoke, asparagus, beet, broccoli, cabbage, carrot, cauliflower, chard, lettuce, onion, parsnip, potato, radish, spinach, and turnip.

Warm-season vegetables require long, hot days and warm soil to mature. They grow best and produce the best quality crops when average daytime temperatures are 65° to 95° F, and they are intolerant of freezing temperatures. Examples include beans (lima and snap), corn, eggplant, melon, peppers, pumpkin, squash (summer and winter), and tomato. It is recommended that you not plant in the ground until the soil has had a chance to warm up. Seeds planted too early, when the soil is too cold for germination, may rot, and transplants may become stunted or die unless you provide cold protection to the plants. The average date of last frost in the Sacramento area is February 8 (record is April 7). The average date is based on extremes, so you should be prepared for the unusually late frost.

**IRRIGATION**

For optimal plant growth, the soil should remain evenly moist as plants mature. Try to avoid alternating wet and dry soil conditions. Although deep irrigation is preferable because it promotes deeper root growth, you may need to provide frequent, light irrigations for shallow-rooted crops such as lettuce or corn. As a general rule, water should be applied when the top 1 to 2 inches of the soil have dried out. Your watering schedule will vary according to your soil and weather conditions.

Overhead watering with a hose, watering can, or sprinkler is usually considered the least efficient irrigation method. Much of the water is lost through evaporation, and some will fall on soil away from the roots and provide moisture to weeds. Additionally, water that falls on the foliage may contribute to leaf diseases. The best results are usually obtained by using drip tape or soaker hoses, which slowly supply water directly to the plant roots with minimal loss through evaporation and little water contact with the foliage.

**MULCH**

Using a layer of organic mulch around plants helps conserve soil moisture and reduces the frequency of irrigation, and it also discourages the growth of weeds, which compete with your vegetables for water and nutrients. Examples of organic mulches that you can use are leaves, pesticide-free lawn clippings, fresh sawdust, fine wood shavings, pine needles, compost, hay, and chopped straw. However, be sure that adequate water is able to move through the mulch layer into the root zone of the plants. Matted leaves, for instance, can form an all but impervious layer. The ideal mulch is light and open enough to permit the passage of water and air.

Do not be too anxious to mulch in the spring. Give the soil an opportunity to warm up in direct sun, and then give the plants a chance to get growing before mulching.

**FERTILIZATION**

A good water and fertilizer schedule promotes healthy plants which yield better home grown vegetables. Healthy plants are less susceptible to, and tolerant of, insect damage and fungal diseases. Many gardens are over-fertilized or given the wrong ratios of the well-known trio: N-P-K (nitrogen-phosphorus-potassium). Example: fertilizing a tomato plant with high nitrogen lawn fertilizer produces vines galore but no tomatoes.

Vegetables grown in most California soils often require some fertilizer for best growth. In general, the plants will need nitrogen; however, some soils are low in available phosphorus and some are deficient in potassium. If you have tested your soil, you will know what nutrients are needed. You can either use organic forms (such as composted manures, cottonseed meal, bone meal, dried blood, and compost) or inorganic forms (chemical fertilizers) to supply needed nutrients.



Organic fertilizers are less caustic than inorganic fertilizers and, except for poultry manure, may be used with little possibility of damage to plants. The nutrients from organic fertilizers are rather slowly made available to plants. This may be an advantage where delayed release is desired to promote plant growth over an extended period.

Inorganic chemical fertilizers work quickly, and because of their concentration and solubility, they are somewhat caustic and must be used with care to avoid damage to roots or foliage. Often a combination of the two forms gives better results with vegetables than either used alone, particularly if phosphorus and potassium are required in addition to nitrogen.

Regardless of the type of fertilizer used, apply it by broadcasting it before preparing the seedbeds, or in bands at seeding time. Follow the directions on the fertilizer package—more than recommended is never better.

## COMPOSTING

Making a compost pile is an ideal way to recycle organic waste from your home and community. Composting turns kitchen garbage, garden residues, leaves, lawn clippings, weeds, wood products, and many other normally unused materials into a dark, sweet-smelling garden soil amendment. UC Publication 8037, *Compost in a Hurry*, has simple, straight-forward tips to help you generate useable compost in 2 to 3 weeks ([anrcatalog.ucanr.edu/pdf/8037.pdf](http://anrcatalog.ucanr.edu/pdf/8037.pdf)).

## PESTS AND DISEASES

Pests and diseases are ongoing problems for many vegetable gardeners. Although specific problems may require special solutions, there are some general principles you can follow.

- Protect young plants against some insects with row covers (lightweight sheets of permeable material similar to fabric). Row covers are also helpful to prevent damage from light frosts.
- To reduce fungal diseases, water the soil, not the leaves of plants. If you must use a sprinkler, do it early in the day so the leaves will dry by nightfall. If a plant does fall prey to a disease, remove it promptly and throw it in the trash; do not add diseased plants to your compost pile.
- Grow varieties that are listed as disease resistant. For example, diseases such as Fusarium wilt or Verticillium wilt cannot be controlled once they infect tomato plants, so selecting varieties resistant to these diseases is highly recommended. The seed packet or plant label will indicate any disease resistance.
- Keep your garden clean. A number of insects and diseases overwinter or spend part of their life cycle on plant debris. Discarding infected plant parts and spent plants and tilling or turning over the soil, especially in fall, can slow the spread of many pests.
- Pick larger insects and caterpillars by hand. Once you get over the “yuck” factor this is a safe and effective way to deal with limited infestations. While you are watering, weeding, and harvesting your crops, inspect plants for the first signs of damage. Try hosing off small pests, such as spider mites and aphids, with a jet of water from the hose. Use stronger measures only if your first efforts fail.
- Use insecticidal soap, which is available at most garden centers, to provide safe control of listed pests. Whatever pest control chemicals you use, read the label carefully and follow the directions to the letter. Never use any chemical that is not specifically labeled as safe for application to the crop you are growing. Be exact in following directions about the length of time you must wait between spraying and harvesting.
- Encourage natural controls. Chemical sprays often kill helpful insects along with pests, leaving the garden wide open for a new attack.
- By planting a diversity of flowering plants in your vegetable garden and protecting pollinators by avoiding the use of pesticides, your garden can support all kinds of pollinators, including honeybees, native bees, hummingbirds, and butterflies.
- Finally, make it a habit to change the location of crops each year. Rotating crops in the garden not only enhances soil fertility, but it can be effective against insect and disease pests that develop on a narrow range of vegetable plants. Moving crops to different sites isolates such pests from their food sources. This practice reduces the chances that soil borne insect and disease pests will gain a permanent foothold in

your garden. Backyard gardeners with limited space should at least avoid planting exactly the same crop or crops from the same family (see the chart below) year after year in the same part of the garden. For example, do not follow melons with cucumbers or squash, and do not plant peppers, eggplant, or potatoes where tomatoes grew the year before.

<b>Families of Vegetable Crops Grown in Home Gardens</b>			
<b>Scientific and Common Family Names and Vegetables in Those Families</b>			
<b>Amaryllidaceae</b> <b>(Onion Family)</b> chives garlic leek onion shallot  <b>Brassicaceae</b> <b>(Mustard Family)</b> arugula broccoli Brussels sprouts cabbage cauliflower Chinese cabbage collards horseradish kale kohlrabi mustard greens radish rutabaga turnip	<b>Chenopodiaceae</b> <b>(Goosefoot Family)</b> beet chard spinach  <b>Compositae</b> <b>(Composite Family)</b> endive globe artichoke Jerusalem artichoke lettuce  <b>Convolvulaceae</b> <b>(Morning Glory Family)</b> sweet potato	<b>Cucurbitaceae</b> <b>(Cucurbit Family)</b> chayote cucumber muskmelon pumpkin squash (summer and winter) watermelon  <b>Gramineae</b> <b>(Grass Family)</b> corn  <b>Leguminosae</b> <b>(Legume Family)</b> dry bean fava bean jicama lima bean pea snap bean soybean  <b>Liliaceae</b> <b>(Lily Family)</b> asparagus	<b>Malvaceae</b> <b>(Mallow Family)</b> okra  <b>Polygonaceae</b> <b>(Knotweed Family)</b> rhubarb  <b>Solanaceae</b> <b>(Nightshade Family)</b> eggplant pepper potato tomatillo tomato  <b>Umbelliferae</b> <b>(Parsley Family)</b> carrot celeriac celery Florence fennel parsley parsnip
Adapted from Family Relationships Table, Vegetable Research & Information Center, University of California Cooperative Extension			

## HARVESTING

This is what it is all about! To get the most out of your vegetables, harvest them when they are at the best stage for eating. Vegetables will be crisper and cooler if harvested in the early morning.

## KEEP A JOURNAL

Record what vegetable varieties you grew and indicate which vegetable crops and varieties did well or poorly. Record specific garden pest problems and when they occurred.

### WHAT YOU SHOULD KNOW ABOUT SELECTED VEGETABLES: A GUIDE FOR CULTIVATION IN THE SACRAMENTO AREA

The following chart provides general planting requirements for selected vegetables. This information is not intended to be a comprehensive reference source, and you will need to consult other vegetable gardening materials to obtain detailed information. The key to any successful garden is planning. Close attention should be paid to timing of planting and harvesting, variety selection, trellising, and other space-saving practices. In the Sacramento area, there are 3 to 4 seasons in which vegetables can be grown, yet many gardeners grow only summer crops. By planting a spring (cool-season) crop, followed by a summer (warm-season) crop, and finishing with a fall (cool-season) crop, you can get three crops from the same space. Careful attention to days to harvest for each crop will establish the ideal rotation.

Vegetable Crop (See footnotes for additional information)	Crop Type <sup>4</sup>	Planting Distance (In Inches)		Days to Harvest (approx.)
		Between Plants*	Between Rows*	
Asparagus <sup>3</sup>	C	12-18	36-48	2 years
Bean <sup>1, 2</sup> (bush)	W	3	18-30	45-65
(pole)		24	36-48	60-70
Beet <sup>1, 2</sup>	C	2	18	55-70
Broccoli, Broccoli Raab <sup>2, 3</sup>	C	12-24	24-36	60-110
Cabbage <sup>1, 3</sup>	C	24	36	65-120
Carrot <sup>1, 2</sup>	C	2	24	120-150
Cauliflower <sup>3</sup>	C	24	36	90-110
Celeriac, Celery <sup>1, 3</sup>	C	5	24	90-120
Corn <sup>2</sup>	W	12	36	65-95
Cucumber	W	24	48	50-75
Eggplant <sup>1, 3</sup>	W	18	36	60-80
Garlic <sup>1, 3</sup>	C	2-4	12-18	150-180
Jicama	W	10-12	40-42	150-210
Kohlrabi <sup>1</sup>	C	3	24	50-60
Leek <sup>1</sup>	C	2-4	12-18	80-150
Lettuce, head <sup>1, 2</sup>	C	12	24	70-90

Vegetable Crop (See footnotes for additional information)	Crop Type <sup>4</sup>	Planting Distance (In Inches)		Days to Harvest (approx.)
		Between Plants*	Between Rows*	
Lettuce, leaf <sup>1, 2</sup>	C	6	24	40-50
Melon	W	12	72	85-95
Okra	W	18	36	50-60
Onion, dry <sup>1</sup>	C	3	18	90-150
Onion, green <sup>1, 2, 3</sup>	C	1-2	12-18	50-60
Pepper <sup>1, 3</sup>	W	24	36	65-80
Potato <sup>3</sup>	C	12	30	90-120
Pumpkin	W	48	72	100-120
Radish <sup>1, 2</sup>	C	1	6	21-30
Soybean/Edamame <sup>1</sup>	W	3-4	24-36	85-100
Spinach <sup>1</sup>	C	3	18	40-50
Squash, summer <sup>1</sup>	W	24	48	50-60
Squash, winter <sup>1</sup>	W	24-48	72	85-110
Tomato <sup>1, 3</sup>	W	18-36	36-60	60-80
Turnip <sup>1</sup>	C	2	18	45-75
Watermelon	W	60	72	85-95

<sup>1</sup> This crop is suitable for a small garden if compact varieties are grown.

<sup>2</sup> This crop can be planted more than once per year for a continuous harvest.

<sup>3</sup> Transplants, shoots, or roots are used for field planting.

<sup>4</sup> C=Cool season; W=Warm season

\* Planting distances listed here are standards. Many crops can be spaced more closely for intense production.

Source: Vegetable Research & Information Center, University of California Cooperative Extension; *Vegetable Gardening* (Sunset Publishing Corp., 1998)



# Garden Notes

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## SOIL AND PLANT TISSUE LABORATORIES

**This document lists some commercial soil testing laboratories that provide services to the public for a fee. The list is neither comprehensive nor all-inclusive. No endorsement of any specific business is intended; neither is any criticism implied of similar laboratories not listed here.**

**Soil testing labs vary in the types of tests they offer and the recommendations they provide, if any. Please contact specific labs for the services they offer. These labs may or may not provide contaminant testing services.**

A&L Western Laboratories	1311 Woodland Avenue, Suite 1 Modesto, CA 95351	209-529-4080 <a href="http://www.al-labs-west.com">www.al-labs-west.com</a>
California Growers Laboratory, Inc.	4630 West Jennifer, Suite 104 Fresno, CA 93722	559-275-3377 <a href="http://www.cagrowlab.com">www.cagrowlab.com</a>
Control Laboratories	42 Hangar Way Watsonville, CA 95076	831-724-5422 <a href="http://www.controllabs.com">www.controllabs.com</a>
Dellavalle Laboratory, Inc.	1910 West McKinley, Suite 110 Fresno, CA 93728	800-228-9896 <a href="http://www.dellavallelab.com">www.dellavallelab.com</a>
Fruit Growers Laboratory, Inc.	563 East Lindo Avenue Chico, CA 95926	530-343-5818 <a href="http://www.fglinc.com">www.fglinc.com</a>
(Additional locations— Santa Paula, Visalia, San Luis Obispo)	2500 Stagecoach Road Stockton, CA 95215	209-942-0182 <a href="http://www.fglinc.com">www.fglinc.com</a>
Harmony Farm Supply & Nursery	3244 Gravenstein Highway North Sebastapol, CA 95472	707-823-9125 <a href="http://www.harmonyfarm.com">www.harmonyfarm.com</a>
	5400 Old Redwood Highway North Penngrove, CA 94951	707-665-6345 <a href="http://www.harmonyfarm.com">www.harmonyfarm.com</a>
JMLord, Inc.	4184 Knoll Drive Fresno, CA 93722	559-268-9755 <a href="http://www.jmlordinc.com">www.jmlordinc.com</a>
Peaceful Valley Farm & Garden Supply	125 Clydesdale Court Grass Valley, CA 95945	888-784-1722 <a href="http://www.groworganic.com">www.groworganic.com</a>
Perry Laboratory	424 Airport Boulevard Watsonville, CA 95076	831-722-7606 <a href="http://www.perrylaboratory.com">www.perrylaboratory.com</a>
Sunland Analytical Lab	11419 Sunrise Gold Circle, #10 Rancho Cordova, CA 95670	916-852-8557 <a href="http://www.sunland-analytical.com">www.sunland-analytical.com</a>
University of Massachusetts, Amherst Soil and Plant Tissue Testing Laboratory	203 Paige Laboratory, 161 Holdsworth Way Amherst, MA 01003	413-545-2311 <a href="http://soiltest.umass.edu">soiltest.umass.edu</a>
Waypoint Analytical	4741 E Hunter Avenue, Suite A Anaheim, CA 92807	714-282-8777 <a href="http://www.waypointanalytical.com">www.waypointanalytical.com</a>

November 2019, updated. Reviewed by Judy McClure, UCCE Sacramento County Master Gardener Program Coordinator.

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Agriculture • Nutrition, Family and Consumer Sciences • Master Food Preservers • 4-H Youth Development • Horticulture • Master Gardeners  
U. S. Department of Agriculture, University of California, and the Counties of Sacramento, Solano, and Yolo cooperating.



# Environmental Horticulture Notes

EHN 11

## SACRAMENTO VEGETABLE PLANTING SCHEDULE

	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEP	OCT	NOV	DEC
Asparagus	P											P
Beans, fava												
Beans, lima												
Beans, snap												
Beets												
Bok choy (pak choi)	P								P	P	P	P
Broccoli		P	P						P			
Broccoli rabe												
Brussels sprouts									P			
Cabbage		P							P			
Cabbage, Chinese		P										
Carrots												
Cauliflower		P	P						P			
Celeriac												
Celery						P	P		P	P	P	
Chard, Swiss												
Chives			P	P	P	P						
Collards												
Corn												
Cucumbers												
Eggplant				P	P	P						
Endive												
Fennel, Florence									P	P	P	
Garlic												
Jicama												
Kale		P								P	P	P
Kohlrabi										P	P	
Leeks		P	P	P		P						
Lettuce, head												
Lettuce, leaf									P	P	P	P
Melons												
Mustard												
Okra												
Start in sheltered area												
Direct seed in the garden												
Set out plants or transplants												
												P

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	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEP	OCT	NOV	DEC
Onion seeds										P		
Onion sets												
Parsley root												
Parsnips												
Peas									P	P	P	
Peppers					P	P						
Potatoes, sweet				P	P	P						
Potatoes, white												
Pumpkins												
Radicchio												
Radish												
Radish, daikon												
Rutabaga												
Shallots												
Soybean, edamame												
Spinach												
Squash, summer												
Squash, winter												
Tomatoes					P	P	P					
Turnips												
Watermelon												
Start in sheltered area												
Direct seed in the garden												
Set out plants or transplants												
												P

Based on information from the UC Davis Vegetable Research and Information Center ([vric.ucdavis.edu](http://vric.ucdavis.edu)) and UCCE Sacramento County Master Gardeners.

**SOURCES FOR VEGETABLE VARIETIES**

*California Master Gardener Handbook*, 2<sup>nd</sup> edition  
 Chapter 13, Home Vegetable Gardening, pages 337 to 414. Available at [anrcatalog.ucanr.edu](http://anrcatalog.ucanr.edu), ANR publication number 3382

Farmer Fred website—[farmerfred.com](http://farmerfred.com)  
 Tomato and pepper varieties

*The Sacramento Bee*, “Home and Garden” periodically lists local growers’ recommendations

*Sunset Western Garden Book*

*To simplify information, trade names of products and company names have been used. No endorsement of named products or companies is intended, nor is criticism implied of similar products or companies that are not mentioned.*



## COOL-SEASON VEGETABLES

Cool-season crops are grown for vegetative parts (roots, leaves, stems, and immature flowers). The food value of cool-season crops is generally higher than that of warm-season crops per pound. They grow best and produce the best quality crops when average daytime temperatures are 55°-75°F, and they usually tolerate slight frost when mature. In the hot Sacramento valley, most can be planted in late summer for winter gardens. Many are well adapted to small areas and large containers because their root systems are shallow to medium in depth.

Artichoke (perennial)	Chard, Swiss
Asian Greens	Fava bean
• Bok choy, pak choi	Garlic, leek, onion, shallot
• Chinese broccoli	Horseradish (perennial)
• Chinese cabbage	Kale and collards
• Mizuna	Kohlrabi
• Mustard	Lettuce
Asparagus (perennial)	Parsnip
Beet	Pea
Broccoli	Potato
Brussels sprouts	Radish
Cabbage	Rhubarb (perennial)
Carrot	Rutabaga
Cauliflower	Spinach
Celeriac and celery	Turnip

## WARM-SEASON VEGETABLES

Setting fruit is the objective of warm-season crops. These crops require long, hot days and warm soil to mature. They grow best and produce the best quality crops when average daytime temperatures are 65°-95°F, and they are intolerant of freezing temperatures. Early varieties need less total heat than later ones; late varieties need more heat to mature. Thus, early varieties are good for the home gardener who lives in an area with a short growing season or for a gardener who wishes to make two plantings.

Bean	Jicama
• Asian long bean	Melon
• Dry bean	Okra
• Lima bean	Peanut
• Snap bean	Pepper
• Soybean, edamame	Pumpkin
Corn	Squash (summer and winter)
Cowpea	Sweet potato
Cucumber	Tomatillo
Eggplant	Tomato
Jerusalem artichoke (perennial)	Watermelon



# Environmental Horticulture Notes

EHN 87

## COVER CROPPING IN HOME VEGETABLE GARDENS

### WHAT IS A COVER CROP?

A cover crop is a crop that is planted for the purpose of improving soil quality and nutrition, and/or for attracting beneficial insects. A cover crop that is planted in the fall and tilled under in the spring, or that is planted in the summer, is often referred to as a “green manure” crop.

### BENEFITS OF COVER CROPPING

- Addition of nitrogen
- Improved soil tilth and water penetration
- Addition of organic matter

### DRAWBACKS OF COVER CROPPING

- Cannot grow vegetable crops in that space
- Seed can be difficult to find
- Requires chopping and turning under

### SELECTING A COVER CROP

The choice of cover crop depends on the main benefit you are hoping to obtain from the cover crop. A primary benefit in a garden is the addition of nitrogen, in which case legumes would be used. For an upright cool-season cover crop that is easy to cut down in the spring, use bell beans or fava beans. The large, round, flat-seeded “horse bean” or fava bean plants are nearly identical to bell bean plants, but bell beans are usually planted as a cover crop because the seed is smaller and therefore less expensive. Of course, you can use fava beans as a cover crop, but remember that a fair amount of nitrogen (in proteins) will be removed when you harvest the seed, making less available for the succeeding crop.

For extra nitrogen, use a mix of bell beans, common vetch, and peas. The vetch and peas are trailing, so they need to be cut into small pieces before incorporation or they will wind around the tines on the rototiller. If your main interest is in building organic matter, use cereals, such as oats or barley, but remember that their incorporation will make nitrogen in the soil temporarily unavailable to the succeeding crop unless extra nitrogen is added. For both nitrogen and organic matter, use a mixture of legumes and cereals.

Cover crops are typically grown in the fall, but warm-season cover crops can be grown during the heat of summer. Warm-season legumes include soybeans and cowpeas (known as black-eyed peas); warm-season non-legumes include buckwheat and sudangrass. Warm-season cover crops are an excellent management tool for controlling weeds and providing a habitat and food for beneficial insects. For additional nitrogen in the summer, use soybeans or cowpeas. Buckwheat is a broadleaf plant that grows densely and quickly smothers summer weeds. It grows to maturity in 30 to 45 days, so more than one planting can be sown in one summer; it grows easily in almost any soil. Sudangrass is a fast-growing tall summer annual grass that provides significant organic matter and quickly smothers weeds.

### INOCULATING LEGUME SEEDS

Specialized bacteria on the roots of legumes take nitrogen from the atmosphere (78 percent N) and “fix” the nitrogen in nodules that the bacteria create on the roots. In order to ensure that this fixation occurs, and that maximum growth takes place, it is important to attach the bacteria to legume seeds before planting. So when purchasing seeds, also buy an “inoculant” that contains the bacteria in a peat moss base. Be sure to use an inoculant that is appropriate for the legume(s) to be planted. Different strains of the bacteria work only on specific plant species. For example, cowpeas, soybeans, and fava beans/vetch/peas each need a different inoculant. Use at a rate of at least 1 ounce per 10 pounds of seed. To help the inoculants adhere to the seed, mix 9 parts hot water (non-chlorinated) with 1 part corn syrup (10 percent solution), let cool, and add a small

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amount of this solution to the seeds. It is even advisable to inoculate peas and beans that are to be planted for the purpose of harvesting, such as snow peas and string beans.

Because the bacteria are alive, the inoculant should be kept in a cool, dry place and used prior to the expiration date on the package. If kept refrigerated, it may last a little beyond that date. Coat the seeds with inoculant immediately before planting; do not leave the inoculated seed in the sun prior to planting.

## **WHEN TO PLANT AND ROTOTILL THE COVER CROP**

Cool-season cover crops are usually planted from late September through late October. If the cover crop will be incorporated in late February or early March, such as for early tomato planting, sow the cover crop in September or early October. If it can be allowed to grow well into April, such as for planting corn, the cover crop will put on most of its growth in the spring, so it can be planted in late October. The cover crop is incorporated into the soil about 3 to 6 weeks before the spring crop is to be planted. Do not plant seeds into soil in which the cover crop has been freshly incorporated because soil-borne diseases, such as *Pythium* and damping-off, may be more infective and because soil nitrogen may be “tied up,” or unavailable.

Warm-season cover crops need to be planted after the soil has warmed to at least 60°F and the likelihood of frost has passed (usually May in the Sacramento area). They should be tilled or forked into the soil when flowering begins; for buckwheat, that is about 30 days after germination. Buckwheat can become a weed if allowed to go to seed, so cut it down soon after it starts flowering. The hollow stalks of buckwheat are easy to cut and dig back into the soil, and the residue decomposes quickly. Buckwheat also accumulates insoluble phosphorous and, when turned under, releases it into the soil in a plant-available form.

Larger species of both cool-season and warm-season cover crops should be clipped into small pieces before incorporating into the soil.

## **HOW TO PLANT**

A good seedbed should be prepared by rototilling and raking, however, if soil was rototilled in the spring, it may not be necessary to rototill again for a fall-planted cover crop. The seed can be scattered on the ground and then raked in, or planted in rows or on beds. The legumes and grasses discussed above should be planted about ½ to 1½ inches deep. After planting, sprinkle thoroughly and be sure to keep the top of the soil moist for up to a week to ensure that seeds receive continual moisture; however, the soil should be well drained. It helps to lightly cover the bed with leaves or straw to keep moisture in, but be sure not to introduce weed seeds. When weather is warm and/or windy, daily watering may be necessary. Use these seeding rates (per 100 square feet): bell beans, 5 ounces; cereals and bell bean/pea/vetch mix, 4 ounces; soybeans and cowpeas, 4 ounces; buckwheat, 4 ounces; sudangrass, 2 to 3 ounces.

## **IRRIGATION AND FERTILIZATION**

It is usually best to provide additional irrigation after germination, although it is not necessary to keep the top of the soil moist at all times. Remember that young plants need more frequent watering, whereas older plants need deeper watering. If there is little or no autumn or spring rainfall, weekly watering may be necessary. During the winter, no irrigation is necessary if rainfall is normal. Warm-season cover crops will need supplemental irrigation for survival and growth. A cereal cover crop usually benefits from nitrogen fertilizer (organic or chemical) at planting, but legumes and legume/cereal mixes should not be fertilized. If weeds are present, remove them or rototill them in early spring to prevent them from going to seed.

## **SOURCE OF SEED AND INOCULANTS**

Cover crop seed and inoculants are available at some retail nurseries in October each year; call around to see who carries them. Perhaps the largest selection can be found at Peaceful Valley Farm Supply, P.O. Box 2209, Grass Valley, CA 95945 (530) 272-4769; email: [contact@groworganic.com](mailto:contact@groworganic.com); website: [groworganic.com](http://groworganic.com).

# EDIBLES/MEDICINALS LOW WATER 2023 LIST

## PLANTS BY TYPE

CODE	BOTANICAL	COMMON	HEIGHT	WIDTH
<b>Trees</b>				
CER SIL	<i>Ceratonia siliqua</i>	Carob Tree	25-40'	25-40'
CYD OBL	<i>Cydonia oblonga</i>	Quince	12-15 ft.	9-12 ft.
ERI JAP	<i>Eriobotrya japonica</i>	Loquat	10-25 ft.	10-25 ft.
FEI SEL	<i>Feijoa sellowiana</i>	Pineapple Guava	12-25'	12-25'
FIC FGY	<i>Ficus carica</i> 'Little Miss Figgy'	Dwarf Edible Fig	4-6 ft.	3-4 ft.
LAU CUL	<i>Laurus nobilis</i> Culinary	Bay Laurel Culinary	20-30 ft.	10-20 ft.
OLE EUR	<i>Olea europaea</i>	Olive	20-30 ft.	20-30 ft.
PRO GLA	<i>Prosopis glandulosa</i> thornless 'AZT'	Thornless Honey Mesquit 'AZT'	35 ft.	40 ft.
PRO PUB	<i>Prosopis pubescens</i>	Screwbean Mesquite	12-30 ft.	25 ft.
PUN GRA	<i>Punica granatum</i>	Pomegranate	15-20 ft.	15-20 ft.
PUN GRA	<i>Punica granatum</i> 'Wonderful'	Pomegranate Wonderful	20 ft.	15 ft.
ZIZ JUJ	<i>Ziziphus jujuba</i>	Jujube, Chinese-Date, Tsao	15-30 ft.	15-25 ft.
<b>Shrubs</b>				
ALO TRI	<i>Aloysia triphylla</i>	Lemon Verbena	3-6', 6-12'	
MAH AQU	<i>Mahonia aquifolium</i> 'Compacta'	Dwarf Oregon Grape	2-2.5 ft.	2-3 ft.
MAH REP	<i>Mahonia repens</i>	Creeping Mahonia	1-3 ft.	2-3 ft.
MYR COM	<i>Myrtus com.</i> var. ' Compacta Variegated'	Variegated Common Myrtle	3-6'	3-6'
MYR COM	<i>Myrtus communis</i>	Common Myrtle	6 ft.	5 ft.
RIB SAN	<i>Ribes sanguineum</i>	Red Flowering Currant	6-12 ft.	7 ft.
RIB SPE	<i>Ribes speciosum</i>	Fuchsia-Flowering Gooseberry	6-10 ft.	3-8 ft.
ROS OFF	<i>Rosmarinus officinalis</i> 'Barbeque'	Barbeque Rosemary	2-4 ft.	1.5 ft.
ROS PLE	<i>Rosa californica</i> 'Plena'	Wild Rose	4-6 ft.	3-4 ft.
RUB PAR	<i>Rubus parviflorus</i>	Western Thimbleberry	3-6 ft.	3-6 ft.
RUB SPE	<i>Rubus spectabilis</i>	Salmonberry	2-12 ft.	2-12 ft.
RUB URS	<i>Rubus ursinus</i>	Blackberry	2-5 ft.	6 ft.
SAL API	<i>Salvia apiana</i>	White Sage	6 ft.	6 ft.
SAM CAE	<i>Sambucus mexicana</i>	Blue Elderberry	12-25'	12-25'
SIM CHI	<i>Simmondsia chinensis</i>	Joboba, Goatnut	3-7 ft.	4-7 ft.
VIT AGN	<i>Vitex agnus-castus</i>	Chaste Tree, Monk's Pepper Tree	20 ft.	20 ft.
YUC BAC	<i>Yucca baccata</i>	Blue Yucca	8 ft.	6 ft.
<b>Vines</b>				
VIT ROG	<i>Vitis x californica</i> 'Roger's Red'	Roger's Red Wild Grape	6-20 ft.	6-40 ft.
<b>Perennials</b>				

CODE	BOTANICAL	COMMON	HEIGHT	WIDTH
ACH HYB	Achillea hybrids	Yarrow Hybrids	1-3 ft.	1-3 ft.
CYN SCO	Cynara scolymus	Artichoke	4 ft.	6-8 ft.
LAV SPE	Lavandula species	Lavender varieties	1-5 ft.	1-5 ft.
NEP CAT	Nepeta cataria	Catnip Mint	0.5 ft.	2-3 ft.
TAN PAR	Tanacetum parthenium 'Aureum'	Golden Feverfew	1-2 ft.	1-2 ft.
THY LAN	Thymus pseudolanuginosus	Woolly Thyme	Under 1'	1-3'
THY PRA	Thymus praecox 'Coccineus'	Red Creeping Thyme	0.2-0.5 ft.	1 ft.
VER ARS	Verbascum bombycifereum 'Arctic Summer'	Silver Mullein	5 ft.	2 ft.
<b>Succulents</b>				
ALO ARB	Aloe arborescens	Tree Aloe, Torch Aloe, Candelabra PLant	6-10 ft.	6-10 ft.
ALO BAR	Aloe vera	Aloe Vera or Medicinal Aloe	2-3 ft.	2-3 ft.
POR AFR	Portulacaria afra	Elephant's Food	4-10 ft.	3-5 ft.
<b>Cacti</b>				
OPU CVS	Opuntia cvs.	Opuntia cultivars	2-25 ft,	2-15 ft.
OPU RIT	Opuntia santa-rita Tubac™	Purple Prickly Pear	4 ft.	6 ft.
<b>Palms</b>				
PHO DAC	Phoenix dactylifera	Desert Date Palm	80-100 ft.	25-40 ft.