Crop Spacing

Giving each plant enough space to grow is a very important way to ensure that each plant has enough light, nutrients, and water. The measurements shown on this chart are the common distances that individual plants are spaced from one another. Many of the smaller crops are planted so that there is more space between rows than there is between plants in the row. This makes weeding easier and provides space for leaves to spread. Larger crops are planted with an equal amount of space around each plant. Planting in beds can follow a number of space efficient patterns as shown in example below. When direct seeding, sow seeds twice as thickly as you want them to come up.

Ex. 1: Large Crop - Cabbage – 18” in all directions

**Cabbage Spacing**
18” in all directions

Ex. 2: Small Crop - Carrots – 3 inches in the row, 18 inches between rows

**Carrot Spacing**
3” in the row, 18” between rows
<table>
<thead>
<tr>
<th>Crop</th>
<th>Inches Between Plants in a Row</th>
<th>Inches Between Rows</th>
<th>Direct Seed</th>
<th>Transplant</th>
<th>Weeks Between Plantings for a Continuous Harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Artichoke</td>
<td>60</td>
<td>60</td>
<td>√</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>Asparagus</td>
<td>12</td>
<td>12</td>
<td>√</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>Beans, dry</td>
<td>6</td>
<td>6</td>
<td>√</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>Beans, snap</td>
<td>6</td>
<td>18</td>
<td>√</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Beans, fava</td>
<td>6</td>
<td>18</td>
<td>√</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>Beets</td>
<td>4</td>
<td>8</td>
<td>√</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Broccoli/Cauliflower/Cabbage</td>
<td>18</td>
<td>18</td>
<td></td>
<td>3/2/2006</td>
<td></td>
</tr>
<tr>
<td>Brussels Sprouts</td>
<td>24</td>
<td>18</td>
<td>√</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>Carrots</td>
<td>3</td>
<td>8</td>
<td>√</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Celery</td>
<td>12</td>
<td>12</td>
<td>√</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Chard</td>
<td>15</td>
<td>15</td>
<td>√</td>
<td>1 spring, 1 fall</td>
<td></td>
</tr>
<tr>
<td>Sweet Corn / Grain Corn</td>
<td>15</td>
<td>15</td>
<td>√</td>
<td>1 / n/a</td>
<td></td>
</tr>
<tr>
<td>Cucumbers</td>
<td>18</td>
<td>18</td>
<td></td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>Garlic</td>
<td>4</td>
<td>8</td>
<td>√</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>Kale/Collards</td>
<td>15</td>
<td>15</td>
<td>√</td>
<td>1 spring, 1 fall</td>
<td></td>
</tr>
<tr>
<td>Lettuce, heads</td>
<td>12</td>
<td>12</td>
<td>√</td>
<td>3-Feb</td>
<td></td>
</tr>
<tr>
<td>Lettuce, baby leaf</td>
<td>3</td>
<td>6</td>
<td>√</td>
<td>4-Feb</td>
<td></td>
</tr>
<tr>
<td>Melons</td>
<td>15</td>
<td>15</td>
<td>√</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Onions, regular</td>
<td>6</td>
<td>10</td>
<td>√</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>Onions, green</td>
<td>3</td>
<td>6</td>
<td>√</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Parsnips</td>
<td>4</td>
<td>10</td>
<td>√</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Peas</td>
<td>3</td>
<td>18</td>
<td>√</td>
<td>4-Mar</td>
<td></td>
</tr>
<tr>
<td>Peppers</td>
<td>20</td>
<td>20</td>
<td>√</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>Potatoes</td>
<td>10</td>
<td>18</td>
<td>√</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>Pumpkins/Winter Squash</td>
<td>24</td>
<td>36</td>
<td>√</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>Radishes, Cilantro</td>
<td>2</td>
<td>6</td>
<td>√</td>
<td>2-Jan</td>
<td></td>
</tr>
<tr>
<td>Spinach</td>
<td>4</td>
<td>6</td>
<td>√</td>
<td>4-Feb</td>
<td></td>
</tr>
<tr>
<td>Summer Squash/Zucchini</td>
<td>24</td>
<td>24</td>
<td>√</td>
<td>Twice in summer</td>
<td></td>
</tr>
<tr>
<td>Sunflowers (for seed)</td>
<td>18</td>
<td>24</td>
<td>√</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>Tomatoes</td>
<td>30</td>
<td>30</td>
<td>√</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>Wheat</td>
<td>5</td>
<td>5</td>
<td>√</td>
<td>n/a</td>
<td></td>
</tr>
</tbody>
</table>
Recommended Crop Varieties

**Crop Varieties:** Different named strains of a particular crop are known in gardening as varieties (e.g. “Red Sails” Lettuce, or “Bartlett” Pear). There are dozens, even hundreds of varieties of each crop. The variety you choose can make all the difference in how the crop fares in your climate and soil, and at what time of year it will grow. Asking your neighbors what varieties have worked well for them is probably the best way to choose, but the following information should help you when you’re flipping through seed catalogues:

**Suit Your Tastes:** Varieties differ in appearance, flavor, uniformity, drought tolerance, heat tolerance, disease tolerance, etc. Decide which of these traits are most important to you.

**Early or Late Varieties:** If a variety is described as early it means that the crop will mature in a shorter amount of time. “Early” varieties usually will not keep as long in the ground and may not yield as much. “Main-season” or “Late” varieties take longer to mature but they often yield better and keep well in the ground for a longer harvest period. “Storage” varieties take the longest to grow but keep well for an extended harvest period. These are usually the best varieties for a winter garden. One way to get an extended harvest is to plant early, late, and storage varieties at the same time.

**Hybrid or “F1” Seeds:** In gardening, “hybrid” can mean two things. For perennials it usually means that the plant was bred by crossing two different species of the same genus. For annual or biennial plants it usually means something different. It is a type of seed saving that inbreeds two distinct parent varieties and then crosses them to create the “F1” generation of seeds. This seed usually expresses the best features of both parents, making for a particularly high yielding or uniform crop. The downside is that if you save the seed from this crop, the next generation of plants will express all the traits of the parent strains (both favorable and not), and will often not produce well. Hybrid seed is also expensive, and may grow poorly if the growing conditions aren’t optimal. Sometimes choosing an “F1” variety is the only way to get great results with a particular crop, so it may be worth giving them a try. Hybridization is not a type of Genetic Engineering. Seeds that are not F1 Hybrids are referred to as Open Pollinated. For more information on the importance of preserving native food seeds, see www.nativeharvest.com.

Experiment with some new varieties each year to find what works best for you.
Recommended Seed Catalogues

Key: OG: certified organic  OP: open pollinated seed  F1: Hybrid seed

Fedco Seeds
P.O. Box 520
Waterville ME 04703
(202) 873-7333
www.fedcoseeds.com
Cooperatively owned, good prices on OP and F1 seed; some OG

Johnny’s Selected Seeds
955 Benton Avenue
Winslow ME 04901
(800) 854-2580
www.Johnnyseeds.com
User-friendly catalogue, best selection of F1 seeds; some OG

Native Seeds/SEARCH
526 N. 4th Ave.
Tucson, AZ 85705
(520) 622-5561
www.nativeseeds.org
Source for indigenous varieties from the Americas, all OP

Peaceful Valley Farm Supply
P.O. Box 2209
Grass Valley, CA 95945
(888) 784-1722
www.groworganic.com
Good prices on bulk OG, OP seed, various suppliers, no pictures

Seeds of Change
PO Box 15700
Santa Fe, NM 87592
(888) 762-7333
www.seedsofchange.com
great selection of heirloom/traditional seeds, all OG, OP

Seeds Saver’s Exchange
3094 North Winn rd
Decorah, IA 52101
(563) 382-5990
www.seedsavers.org
Source for rare and heirloom seeds, all OP

Territorial Seed Co.
PO Box 158
Cottage Grove, OR 97424
(888) 657-3131
www.territorialseed.com
Many good varieties for our region
Plant Health & Garden Pests

Keeping Plants Healthy: Vigorous plants have fewer problems. Before combating pests, we should be sure that all the basic needs of our crops are being met.

1. Proper Climatic Conditions: Crops have differing needs for sun and warmth and thrive at different times of the year. A plant that is grown out of season or in a region that is too hot or cold will struggle. See the “Planting Calendar” page for more information.

2. Favorable Soil Conditions: Plants need a loose soil to grow in so that they can breath freely and their roots can spread deeply. (See Breaking Ground section)

3. Nutrients: Make sure crops have enough nutrients and that the fertilizing is balanced. Excess nitrogen attracts pests. (See Soil Fertility section)

4. Water: Make sure you are watering deep enough each time you water, and irrigate only after the soil becomes dry below 2 inches (See Irrigation section).

Don’t Stress Your Plants: Once you have met the basic needs of your crops, you must be mindful of the many ways that a crop plant can be stressed. Any one of these stresses is likely to reduce yields and attract pests.

1. Stunting in the Flat: When growing seedlings in flats or pots, your plants have limited access to water, nutrients, and space. Leaving seedlings in the pot too long will stunt the plants growth, and they may not recover. Be sure to plant the seedlings soon after they reach the 2 true-leaf stage (two full leaves). See the “Seed Sowing & Transplanting” section for more information. Also be sure that the potting mix you are using is fertile enough for vegetable crops. If you know that you’re not going to be able to transplant in time, prevent stunting by watering the seedlings with fish emulsion diluted 10 to 1 with water.

2. Transplant Shock: See the “Seed Sowing & Transplanting” section to find out how to avoid this.

3. Improper Spacing: When plants are babies it is easy to plant them to close together. When they begin to grow, however, they will be competing with each other for light, nutrients, and water. See the section on “Crop Spacing” to avoid these problems.

4. Weed Competition: Most weeds grow faster than most crops. If weeds are not removed, they will shade out the crop. It’s easiest to remove weeds when they are small (See Weeding section).

5. Frost Damage: Frost sensitive plants should not be outside unprotected while there is still a risk of frosts. See the “Planting Calendar” to find out what plants are frost sensitive, and see the section on “Season Extension” to find out how to provide some extra protection.

6. Air Flow: Not enough airflow can cause mold problems in the field and in flats or pots. Avoid these problems by spacing plants correctly and by watering infrequently (see Irrigation section).
**Helping Stressed Plants:** If your plants do get stressed, here are a few ways to help them out:

1. **Compost Teas:** Thoroughly mix a handful of finished compost into a 5-gallon bucket filled with water, wait a few hours, mix again, then water your plants with the mixture of teh tea. The best compost tea is “brewed” by keeping it mixed with air for a number of days.

2. **Fermented Nettle Tea:** This is a powerful plant medicine. Gather a full bucket of stinging nettles in the spring before they have flowered (wear gloves!), chop the plants up, and fill the bucket with water. Cover it and let it sit for a couple weeks in a warm place until the leaves have fermented away, then strain out the stems. This one stinks, so wear rubber gloves. Dilute the ferment 10 to 1 in water and then water ailing plants with it.

3. **Horsetail Tea:** Gather the stems of the “bottlebrush” horsetail plant (equisetum arvense) into a pot, chop it finely, cover with water, boil for twenty minutes, then strain. Use this tea diluted 20 to 1 in water to prevent mold problems on strawberries or tomatoes.

4. **Foliar Sprays:** Plants are able to absorb some nutrients through their leaves. Any of the previous “teas” can be filtered and applied to the leaves with a garden sprayer. Do this in the early morning so the leaves have plenty of time to dry. Organic foliar fertilizers are also commercially available.

**When the Pests Come Anyway:** A certain amount of pest damage is inevitable. This is even true of the healthiest gardens. What you need to ask yourself is at what point the damage becomes a problem. For instance, a chard leaf riddled with holes can be unappetizing but a broccoli leaf riddled with holes doesn’t matter because we don’t eat the leaves of the broccoli plant. At maturity, snap beans can have 70% of their leaves eaten before yields are reduced. Damage to the young plants, however, will reduce harvest yields. When you’ve done all you can to prevent problems, and the level of pest damage is still too great, then it is time to treat the problem directly.
1. Physical Controls: Physically blocking the pest’s access to the crop
   a) Fencing the pest out (deer, dogs)
   b) Using row covers to block the pest (carrot rust fly, flea beetles)
   c) Picking or trapping the pest (slugs, gophers)

2. Biological Controls: Using other plants and animals to halt pests
   a) Companion Planting – Certain crops have a beneficial effect on other crops (broccoli & strawberries). Some crops repel the pests of other crops (leeks & carrots).
   b) Insectary Crops – There are many “beneficial” insects that prey on garden pests. We can encourage these insects by growing plants that offer them food and habitat (flowering cilantro & buckwheat, or blue-blossom & toyon). This form of control is referred to as Integrated Pest Management.
   c) Using chickens and ducks to feed on snails and slugs.
   d) Importing “Beneficial” Insects – While it is possible to buy beneficial insects and release them in your garden (i.e. Ladybugs in a can), they will not survive very long in your garden unless there is habitat for them. Grow “insectary” crops and these insects will come on their own.

3. Chemical Controls: Deterring or killing the pest with the least toxic chemical
   a) “Organic” Pesticides – There are many non-toxic pesticides available (e.g. neem oil, Bt), but they are not usually pest specific. This means that they often kill the good bugs along with the bad bugs.
   b) Pheromone Traps – Used in orchards, these traps confuse pests or attract them to sticky paper.

Tips for Slugs & Snails: The best way to rid your garden of slug and snail problems is to remove their habitat. These pests like to live in thick weeds, mulches, and in cracks between bricks, boards, or stones. If you can’t remove this habitat, you’ll need to be particularly vigilant about handpicking these pests. In a smaller garden you can try laying down boards around your beds. The slugs will crawl under in the morning, making it easier to gather them up for removal. It also helps to keep any lawn around your garden beds mowed low. Ducks eat a lot of slugs and chickens eat a lot of snails, but these animals may also eat your crop plants. “Sluggo” is non-toxic snail/slug killer that is safe around pets and wildlife. These pellets can be spread immediately around your crop plants.

Additional Resources:
“Carrots Love Tomatoes: Secrets of Companion Planting for Successful Gardening” by Louise Riotte
Irrigation

California has what’s known as a “Mediterranean” climate. It rains in the winter and is dry all summer. For this reason, most agriculture in California is dependant on irrigation. This page briefly describes irrigation principles and three irrigation systems.

Irrigation Principles:
1. **Water deeply and infrequently:** Proper irrigation keeps the soil evenly moist throughout the rooting zone. If irrigation is too shallow, the plant’s roots will stop growing down. This means the plant will be more drought-prone and have less access to nutrients. The actual amount of water you’ll need to add and how often you’ll need to irrigate depends on the texture of your soil and on climatic conditions like cloud cover, day length, and wind. The best way to make sure you’re irrigating properly is to dig with a shovel into your garden bed and see how deeply the water has soaked in. There should not be any dry layers of soil in the top 12 inches of soil. Let the surface of the soil dry out between watering to reduce problems with mold and fungus. As a rough guideline, irrigate no more than once a week on the coast and twice a week inland. Make sure to water slowly enough that water doesn’t pool on the surface, as this can create crusts and can displace sprouting seeds. Watering a garden by hand is possible, but it takes much longer than most people realize for the water to soak in deeply enough. Using some form of irrigation system is generally much easier.

2. **Getting Pressure:** Most irrigation systems require water pressure. Drip irrigation requires 10 pounds per square inch (PSI), while sprinkler irrigation requires at least 20 PSI. To measure your PSI, use a water pressure gauge. If you are irrigating from a municipal water supply, you will likely have plenty of pressure to irrigate. If not, you will need to generate this pressure. One PSI is gained by raising water 2.3 feet, so to get 10 PSI you can either fill a water tank that is 23 feet higher than your garden, or you can pump water into a pressure tank. Because both of these methods are costly, you may decide that watering by hand is your best option. Hand watering can be done through a hose with as little as 2 PSI which you can get by catching rainwater from your roof in a tank with an outlet that is 4.6 feet higher than your garden.

3. **Mildew-sensitive crops:** There are some crops that are susceptible to leaf molds, especially on the coast. To keep these plants healthy it is best to water without getting the leaves wet (either with drip irrigation or by hand). These crops include tomatoes, potatoes, and the entire squash family (zucchini, pumpkins, cucumbers, melons).
Sprinkler Irrigation: This method is often easier than drip irrigation, but it is not as water efficient. Any kind of sprinkler will work well as long as it thoroughly reaches the entire garden bed. It is better to overlap sprinklers or water some pathway space than it is to miss a part of the garden bed. To conserve water, the best times to water are in the early morning and in the evening. If your site is windy, then the early morning is usually best. Once you have figured out how long it takes for your sprinkler to thoroughly water your garden bed, you can put the sprinkler on a timer. This method is not recommended for mildew sensitive crops.

Drip Irrigation: This method is the most water-efficient way to irrigate, but it may cost more to set up. It is a great way to irrigate perennials and transplanted crops, but is not capable of watering a germinating seedbed. You can get around this problem by hand-watering until the plants have all germinated, and then start using the drip lines. The most common kinds of drip irrigation are T-tape and soaker hoses. They work similarly, each irrigating a 6-8 inch swath on either side of the line, but soaker hoses have a longer lifespan than T-tape.

If you have more than 10 PSI coming from your water source, you will need to use a pressure reducer. An in-line filter is also recommended to keep the drip lines from clogging. Both of these are available at local nurseries. Drip lines are usually supplied water through ¾ inch black poly (plastic) piping. There are various ways to attach the drip line to the poly pipe (ask at the nursery). The pictures below gives two basic drip irrigation layouts.

Dry Farming: In certain soils, some crops can be grown without any irrigation at all. This is possible in two types of soils: those with a shallow water table throughout the growing season, and those with deep silt and clay-rich soils. The first type is found on floodplains just off the river’s edge. Many crops can be grown without irrigation in this special condition. The second are usually floodplain soils away from the river (like much of the Arcata and Eel River bottom). Winter squash and potatoes can be grown without irrigation on these soils if they are planted while the soil is thoroughly moist and the surface is kept mulched or dust mulched (see section on Weeds).

Additional Resources:
“Drip Irrigation for Every Landscape and All Climates: Helping Your Garden Flourish, While Conserving Water!” by Robert Kourik and Heidi Schmidt

Dripworks, Inc.: www.dripworksusa.com
Weeds

A weed is any plant growing where you don’t want it to grow. Most garden weeds grow faster than crop plants, so they compete with your crops for light, space, water, and nutrients. Unchecked, weeds will smother your crops.

**Weed Control Without Chemicals:** The golden rule of weeding is “get ‘em while their young”. Baby weeds are much easier to pull or hoe and you don’t have to worry about them dropping seed. A mixture of the following techniques will lead to easy weed control.

1. **Hand Pulling:** In smaller gardens it is easy enough to reach down and pull all of the weeds in your garden by hand. Be sure that you are removing the root crown of the weed plant when you pull so it doesn’t re-grow. A useful way to make sure you aren’t leaving baby weeds behind is to run your fingers through the surface soil and “rake” it around. In larger gardens, hand pulling is the most thorough way to remove weeds growing close to your crop plants.

2. **Cultivation:** In garden language, this is the practice of scratching the soil surface to remove weeds and break up crusts. This is done using hand tools that dig into the top inch of soil and separate weeds from their roots. Cultivating can usually be done while standing and is much faster than hand pulling weeds. It cannot, however, get weeds growing right next to your crops. Cultivation must be done while the crops are young because there needs to be enough space for the tools to get between the plants.

3. **Mulching:** Using mulches is an easy way to smother weeds and it also retains soil moisture and can help topsoil form. In coastal areas, however, mulches are the perfect habitat for snails and slugs that will eat your crops. For this reason, you should avoid using mulches on or next to most crops. It is okay to mulch crops that these pests usually leave alone, such as garlic, onions, potatoes, and most woody plants.

   a. **Types of Mulch:** For vegetable crops and most fruit trees the best mulching materials are straw and deciduous leaves. For berries and other acid loving crops the best mulching materials are conifer leaves and wood shavings. Avoid redwood products because they contain compounds that slow plant growth. In order to smother weeds, the mulch layer needs to be at least two inches thick after settling. When you’re first applying it, this is typically a four-inch layer.

   b. **Sheet Mulching:** This technique uses a thick, multi-layered mulch to smother weeds around perennial crops. Weed only the area immediately around the plant stem, apply a ¼-inch layer of compost, lay down 2-3 overlapping sheets of brown, tape-free cardboard in an 18 inch ring around the stem, then cover it with a six-inch layer of straw. Make sure the mulch is not touching the plant stem. This mulch will usually keep weeds down for the better part of a year and will leave behind some nice topsoil.

**The Ideal Weed Management Strategy:** There’s a saying that “One year’s weeds make seven years seeds”. If a weed plant is allowed to drop seeds, some of those seeds will sprout next year, some the following year, and some in the few years after that. Because of this, the best way to deal with weeds in your garden is to never let any of them make seed. This is easier said than done, but if you are successful you can almost eliminate weed problems in your garden after a few years.
Perennial Crops

Tree Crops: What fruits will produce reliably depends on where you plan to grow them. This information is generalized because every place is different and microclimates can have a big impact. The best way to choose what to plant is to see what grows well for your neighbors.

1. Coastal: apples, pears, some plums (Beauty, prune-types), Frost peach, Desert King fig, Meyer lemon

2. Inland (lower elevations): apples, pears, plums, cherries, figs, peaches, nectarines, walnuts, hazelnuts, maybe pomegranates and Meyer lemons

3. Inland (higher elevations): apples, pears, walnuts, maybe plums, peaches, and cherries

Planting Trees: The ideal site for tree crops will have good drainage, deep soil, good solar exposure, and protection from strong winds.

a. Spacing
   - Full size trees – as close as 10’ apart
   - Semi-dwarf trees – as close as 6’ apart
   - Dwarf trees – as close as 4’ apart

b. Planting Method
   - Plant bare root trees while they are dormant in mid winter.
   - Loosen the soil in a three foot circle to two feet deep, then dig a hole large enough to put the tree roots in without bending them.
   - Mix a small amount of compost, phosphate, and maybe lime into the soil you’ve dug out.
   - Consider planting in wire cages if there are a lot of gophers in your area.
   - Plant the tree so all roots are covered, but the graft line is a few inches above the ground; pack the soil as you fill the hole so there are no air pockets.
   - The soil level around the tree when the planting is done must not be lower than ground level. If your soil is rocky, you will need some extra topsoil to fill the hole with.
   - In poorly drained areas, consider making three foot wide mounds to plant your trees into.
   - Water immediately if it’s not raining.
   - Sheet mulch a 3-foot diameter circle around each tree. Avoid redwood mulches.

c. Aftercare
   - Fencing: Deer & elk love to eat fruit trees!
   - Watering: Irrigate deeply a few times the first summer after planting. Depending on your soil, established trees may need to be watered deeply two or three times each summer in inland areas and once on the coast.
   - Pruning: Pruning is different for each crop. In general, prune trees to establish a few strong branches. Remove crossing and crowded branches. Cut back all new vertical growth by 2/3 each winter when trees are dormant.
   - Pest control: Control fungal infections and scale with Sulfur powders.
Berries: Most berries do well here: strawberries, blueberries, raspberries, boysenberries, tayberries, ollalieberries, etc. Berries like full sun and good drainage, though blueberries and some blackberries do well in poorly drained soils. Berries respond well to thick, acid mulches and lots of phosphorus. Inland, try June-bearing strawberry varieties and look for heat tolerant blueberries.

1. Cane-berries: Trellis the plants and cut out dead canes each winter. You can spread raspberries by transplanting the shoots that pop up near the “mother” plants.

2. Vining Berries: Trellis the plants and cut out dead vines each winter. Bury the ends of the stems to make daughter plants.

3. Strawberries: They are productive for 2-3 years, you can keep a patch productive by letting some of the runners root and then removing the “mother” plants.

Perennial Herbs and Flowers: Many do well here. Tender perennials may not survive the winter without protection.

1. Herbs: Rule of thumb - each time the plant is about to flower, cut the new growth at least 2/3 back. Fertilize only modestly.

2. Flowers: Rule of thumb – cut off all old flowers, supply ample phosphorus and some nitrogen.

Additional References:

“Pruning Made Easy: A Gardener’s Visual Guide to When & How to Prune Everything, From Flowers to Trees”, by Lewis Hill

Lavender, a great aromatic perennial for your garden.

Herb gardens are important for producing teas and herbs that make us healthy.

Strawberries in rows with weed barrier to reduce weeds and retain moisture. Remay is the white fabric in the aisles used to keep the berries from freezing throughout the winter.
Garden Tools

Clean soil off your tools after each use. Once a year, scrub the entire tool with a wire brush, then coat bare-wood and metal surfaces with linseed oil. Keep hoe edges sharp with a file, and sharpen cutting tools with a whetstone.

Spading Fork – *for loosening soil*

Digging Fork – *broader tines for harvesting roots*

Manure Fork – *for mulching or turning compost*

Bow Rake – *for finishing a garden bed*

Four Tine Cultivator – *for weeding and breaking crusts.*

Pointed Shovel – *for digging holes*
Furrowing Hoe – opens furrows to place seed into the ground

Hand seeder – helps you sow small seeds

Lettuce knife – for harvesting or for hand weeding

Hand Claw – use for tough hand weeding or compacted soils

Pruning Shears – use to prune woody stems up to 3/4” diameter

Garden Shears – use for harvesting or light pruning
Square Shovel – for scooping

Spade – a flat shovel for edging beds and digging up plants

Standard Hoe – for breaking soil clods

Stirrup Hoe – for cultivating young–medium weeds

McCloud - for building beds and grubbing the top layer of turf

Trapezoid Hoe – for cultivating young weeds

Grubbing Hoe – for scraping turf or removing tough roots
Crops only grow well when it is warm enough. This page will discuss alternative methods of raising temperatures which would encourage a longer growing season for coastal gardens.

**Get an Earlier Start on Outdoor Crops:** The best way to get a jump on the season is to raise seedlings in pots or flats in a warm place so that they’re already a few inches tall when outside conditions become suitable for planting. Temperatures in the springtime (March – May) can vary quite a bit, so when you transplant or sow crops (especially warm-season crops) outside in the spring it is a good idea to give them some protection from the cold. The easiest way to do this is to lay down a “floating row cover” over the garden bed. This is a lightweight polypropylene fabric that lets a majority of light through and is water permeable. This row cover acts like a miniature greenhouse, raising temperatures under the fabric by a couple of degrees. This fabric also provides some frost protection (2-6 degrees F depending on the thickness of the fabric). The fabric can be laid directly over the plants or you can use 10-gauge wire hoops spaced every 3-5 feet to support it. Weigh down the edges of the fabric with large rocks or scoops of soil spaced every few feet to keep it from blowing away. Remove the fabric half-way through the crop’s growth cycle or as soon as temperatures are warm enough. Using row covers in this way can give harvests 2-4 weeks earlier than an uncovered outdoor planting.

**Get a Later Harvest from Outdoor Crops:** Row-covers can also be used to help certain crops keep growing or hold their quality later into fall or early winter. Lay the fabric over beds of lettuce and spinach in late September or early October and leave them on until the crop is harvested.

**Summer Greenhouse Crops:** In coastal areas, there’s just not enough summer heat to grow crops like tomatoes, peppers, basil, and melons. These crops will only do well in a greenhouse. No matter what type of greenhouse you use, make sure it’s well ventilated. It is best if you can remove the end walls or the sidewalls during the summer months. Water these crops with drip irrigation to avoid excess humidity. See the “Irrigation” and “Coastal Tomatoes” pages for more information.

**Winter Greenhouse Crops:** The lower elevation parts of Humboldt County have a mild enough climate that means you can grow a number of crops all the way through winter in an un-heated greenhouse. See the page on “Winter Gardening”. You can also plant spring or summer crops extra-early in an un-heated greenhouse. This can give you harvests 1-2 months earlier than an outdoor planting could. For the winter months, put the end walls and sidewalls back up. Only a minimal amount of ventilation is needed during this time.
### Winter Gardening in Coastal & Low-Elevation Humboldt

**Table VII - Winter Garden Crop Time Table**

Sow seeds during the shaded times. When transplanting seedlings, shift dates three weeks right.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Broccoli, Cauliflower</td>
<td>early</td>
<td>late</td>
<td>early</td>
<td>late</td>
<td>early</td>
<td>late</td>
<td>early</td>
<td>late</td>
<td>early</td>
</tr>
<tr>
<td>Cabbage (storage), Brussels Sprouts</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carrots (storage), Parsnips, Beets</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kale, Chard</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Head Lettuce</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baby Lettuce, Spinach - Outdoors</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baby Lettuce, Spinach - Greenhouse</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leeks</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Green Onions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turnips, Rutabagas</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mustard Greens</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daikon Radish</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Greenhouse Dill, Cilantro, Radish</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fava Beans</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Garlic</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Winter Cover Crops</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Key:** The dates in light grey are when seeds should be sown. The dates in darker grey are when these crops will be harvested. A crop that is sown at date 1 can be harvested at date 1.

**Winter Tips:** Grow cover crops in any space that isn’t cropped over the winter. Keep off the garden soil as much as possible. Apply a straw mulch around crops once they are big enough that slugs won’t eat them. Starting in October, use floating row covers over outdoor lettuce, spinach, carrots, radish, cilantro, & dill.

**Rainbow Chard**

Harvest Fava Beans next May / June

Harvest Garlic next June / July

Till in Cover Crops in March or April
Potatoes, Garlic, & Onions

Potatoes: Potatoes produce more calories per area than most other crops, and they grow in any temperate climate. They are typically planted between mid-March and mid-May for an August/September harvest.

1. What to Plant: Potatoes are planted by placing a piece of potato in the ground. The “eye” of the potato sprouts into a new plant that can produce up to 3 lbs of potatoes. It is best to plant “Certified Seed Potato” that can be purchased from local nurseries in the spring. This certification guarantees that the produce is free of most diseases. Conventional potatoes from the store should not be used because they’re often treated with anti-sprouting agents. Medium-small “seed” potatoes are ideal because you don’t need to cut them. Larger potatoes should be cut into two to three pieces so that each piece has at least two “eyes”. Before planting a potato that has been cut you must wait a full day so that the cut scabs over. You can speed this process by dipping the “seed” potato into wood ash.

2. How to Plant Them: Potatoes form along a stem that grows straight up from the “seed”. In order to get a lot of potatoes we need to bury the stem as it grows (a buried stem makes potatoes, while the above ground stem just makes leaves). This burying is called hilling. In order to have soil to hill with, plant the potatoes into a furrow or hole 6-10 inches deep, in rows at least 24 inches apart. Space the “seed” potatoes 10-12 inches apart, and cover them with no more than 4 inches of soil. Once the stems have grown 8 inches tall, bury the bottom four inches. Repeat this process until the plants begin to flower.

3. Harvesting Potatoes: The potatoes are done growing when the plants flower. If you harvest them they will have thin skins good for fresh eating (new potatoes). To get potatoes that will store well, wait until the plants turn brown and die. By this time the potatoes will have thicker skins.

Garlic: Garlic is typically planted in October or November and harvested the following July. It can be planted in the early spring, but will usually yield less. There are many varieties of garlic, but the main distinction is between hard-neck and soft-neck types. Hard-neck varieties are the gourmet choice, with large and easy to peel cloves. Soft-necks varieties are chosen for their shelf life, and can be stored store longer into the winter.
1. What to Plant: No matter what variety you choose, you should look for “Certified Seed Garlic”. It can be found in the fall at most local nurseries and is certified to be free of disease. Garlic is planted by selecting only the largest cloves from the biggest bulbs. The size of the bulb you will harvest is proportional to the size of the clove you plant. Plant these cloves 2 inches deep and at least 4 inches apart. Make sure to plant the cloves pointy side up. The easiest way to keep weeds down and maintain soft soil is to lay down a thick mulch of rice straw right after planting. The garlic will come up through it, but most weeds won’t.

2. Harvesting Garlic: Hard-neck: In early summer, the garlic plants will send up a flower stalk. Break this off as soon as you see it. Shortly after this, the lower leaves will begin to yellow. When a third of the leaves have yellowed it is time to dig the bulbs. Soft-neck: These varieties don't produce a flower stalk. Dig them up when half the leaves have yellowed.

3. Curing Garlic: Garlic is good fresh, but if you want it to keep more than a month it needs to be cured. Curing is the process of letting the leaves pull moisture from the bulb as they dry out. Less water in the bulb means it will store longer before sprouting. To cure garlic, lay the whole plant on a screen table or on slats of wood raised off the ground in a dark, dry place with good airflow. Leave it here, turning occasionally, until the leaves and stem are fully brown, then cut off the stems and peel away the dirty skins.

Onions: Most onion seed is sown in February because the seedlings take a really long time to grow. They are ready for transplanting by mid April. Onions must be transplanted by the end of May in order to make good bulbs because they are sensitive to the changes in day length. Plant onions 6-10 inches apart, and keep them well watered and weeded throughout their growth. Stop watering as soon as the first flower stalks start to appear, and dig the bulbs a week later. Onions are cured using the same method used for garlic, as described above.
Coastal Tomatoes

While it is possible to grow certain tomato varieties outside on the coast (especially in sheltered, south facing spots), the most reliable way is in a greenhouse. In the cool, humid air of the coast, tomatoes are particularly susceptible to problems of leaf molds and leaf curl. The leaf molds usually begin as yellow spots on the leaves that spread and turn brown, moving to all the leaves of the plant. They may also form grey mold spots on the stems. Leaf curl is caused by low temperatures and wet soils. By following the guidelines below you should be able to avoid these problems and grow many varieties of tomatoes, both large and small. Indeterminate (tall-vine) varieties are best for the greenhouse because they can be trained up a trellis. You may also have more success with “parthenocarpic” varieties (those that set fruit without pollination). Space the plants at least 30 inches apart.

**Irrigation:** One of the most important strategies for good coastal tomatoes is to keep the leaves and stems dry. To water the plants, use drip irrigation lines buried 3 or 4 inches deep. Tomatoes should be watered deeply and infrequently. During the first half of their growth they should be watered only every other week (more in sandy soils). When the plants have begun to set fruit, you should water even less. In clay or silt-rich soils you can cut off water completely once the first fruits turn red.

**Trellising:** Indeterminate tomatoes can grow vines up to six feet tall. These vines need to be trellised to a fence of some kind or supported on a string hung from the top of the greenhouse. Tie the vines loosely and be extra careful around the flower branches.

**Pruning:** Tomatoes want to grow thickly. If their growth is unchecked, all the vines and leaves block airflow and lead to leaf molds. Pruning the tomato plants avoids this problem and also helps the plant concentrate on fruiting. Vine tomatoes should be pruned so that there are only two actively growing branches (leaders) from which new stems form. The growth tips form at every corner where a leaf meets the stem (axial buds). When the plant is about 1 foot tall, choose the two sturdiest branches and remove all others with a pair of garden shears. Scan up and down the remaining stems to ensure that the only new stem growth is at the tips of the two main branches. Because the plants grow vigorously, this must be done at least three times during their growth to assure proper ventilation at the base of the plant. Leaves that touch the ground should also be removed.
Greenhouse Ventilation: Stagnant, humid air is what the leaf molds thrive in. Pruning allows air to flow through the plant’s leaves, but the greenhouse has to first let the moving air in. To maximize airflow in the greenhouse, remove the end walls or the side walls during the summer months. Take advantage of the summer wind on the coast that comes predominately from the north-west by orienting the open ends of your greenhouse parallel to this. If your greenhouse still feels stagnant and humid, use a fan.

Outdoor Tomatoes: If you want to try growing tomatoes outdoors on the coast, choose determinate (bush) varieties like Stupice, Siberia, or San Francisco Fog. Space the plants at least 30 inches apart and stake them up with tomatoes cages. Prune plants to three growth tips.

Illustration V - Greenhouse Orientation

Trellising for tomatoes in the greenhouse.

Ventilation on the sidewalls of the greenhouse increase ventilation decreasing the potential for leaf molds to develop.
Saving your own crop seeds allows you to breed crops that are adapted to your soil and climate. This also allows you to select crops for their flavor, holding ability, and many other traits of your choosing. After saving seed yourself for just a few years you will probably notice an improvement over purchased seed of the same variety. Saving your own seed is also an important way to preserve traditional crop varieties, local heirlooms, and other rare seeds. Proper seed saving takes some planning. The following is a breakdown of some of the things you’ll need to keep in mind.

**Maintaining a Healthy Strain:** Every individual plant has unique DNA. A crop variety is healthy when there is a lot of variation in that DNA pool. This variation allows a population of plants to overcome waves of diseases, pests, or year-to-year climate changes. Every time we save seed we must maintain that genetic variation. We do this by always saving seed from no less than ten individual plants.

**Selecting for Success:** Because you want ten individuals to save seed from, you should probably grow at least 20. This will allow you to select the individuals that best meet your expectations, and remove the others before they cross-pollinate. It is up to you to decide what characteristics of the crop are most important to maintain. You can select for flavor, appearance, earliness, storage ability, etc., but it is always important to select first for vigor. The healthiest plants should always be preserved.

**“Cross-Contamination”:** We have to know what plants will cross with each other to ensure that the seed we save is able to grow into the crop we want. For example, say you wanted to save seed from your favorite carrot variety “Scarlet Nantes”. The species name for carrot is “Daucus carota”. It turns out that the common weed “Queen Anne’s Lace” is also Daucus carota. Plants of the same species will cross-pollinate with each other, giving you seed that won’t grow into the plant you were hoping for. “Scarlet Nantes” carrot will also cross with any other variety of carrot. Another example is Broccoli (Brassica oleraceae). Cabbage, Cauliflower, and Brussel’s Sprouts are also “Brassica oleraceae”, so all of these crops will cross-pollinate and you could end up with who-knows-what vegetable.
How Plants are Pollinated:
Plants of the same species can only cross with each other if the pollen from one plant makes it to the other plant. How far that pollen will travel is determined by the means of pollination the plant uses. Plants like corn and wheat are wind-pollinated, so their pollen can travel more than a mile. Plants like squash and carrots are insect-pollinated, so their pollen can travel a mile at most. The plants that are the easiest to save seed from are those that are self-pollinated. Their pollen travels only from one part of the flower to another part on the same plant so cross-contamination is unlikely. Beans, tomatoes, and lettuce are pollinated this way.

Isolation by Distance: If there aren’t a lot of gardeners in your area it may be easy to get enough distance between your variety and others of the same species. Do this by growing only one variety of a crop at a time.

Isolation in Time: Plants can only cross-pollinate if they are flowering at the same time. You may be able to avoid cross-contamination by planting your crop on a slightly different schedule than your neighbors. You can also use this method to save seeds from multiple varieties of the same species over the course of one growing season.

Pollen Screens: In areas where there are just too many other gardens to guarantee isolation you can erect a very fine cloth screen around your crop during the flowering period.

Hand Pollination: This is a labor-intensive method for making crosses that just wouldn’t work with the other methods described above. It is commonly used for squash family crops because there are so many varieties of the same species and their pollen travels quite far. Refer to the reference material for more information.

Processing the Seed: Gathering and cleaning seed requires different steps for different crops. Refer to a seed-saving handbook for more information.

Additional References:
“Seed to Seed” by Suzanne Ashworth

Bumble bees are very important pollinators.
Pollen ready for transport.
Grains & Dry Beans

Grains, Beans, and Oil crops provide us with most of the calories and much of the protein we eat, but few gardeners grow these crops. They are inexpensive foods to buy and take more effort to process, but anyone seeking a higher level of self-reliance could make the effort to raise these crops. Grains and beans can be used to feed livestock and are also good for the soil. Grain stalks provide abundant material for composting or mulching, and beans produce their own nitrogen fertilizer.

Grains: The cereal grains Corn, Wheat, Oats, Barley, Sorghum, and Rye all grow well inland. The non-cereal grains Amaranth, Buckwheat, and Quinoa also do well. On the coast, Oats, Buckwheat, and Quinoa do best, but the others can be grown.

All grains prefer a fertile soil with ample nitrogen. They are usually direct seeded, but can also be transplanted. While it is possible to dry-farm summer grain crops on some soils, most gardeners will need to irrigate. Winter grain crops should do well without irrigation.

While growing these crops is much like growing vegetable crops, harvesting and processing them requires some additional steps. All grains must be threshed to loosen them from the chaff, which is the process of removing the grain from its protective husk. They are then winnowed to separate out the chaff. Finally, many grains must be beaten to remove the hull from around the seed, and then winnowed a second time. There are hull-less varieties of some grains that alleviate these last steps.

1. Summer Grains: Any of the grains listed above can be planted between mid May and early June for a September or October harvest.

2. Winter Grains: Wheat, Oats, Barley, and Rye can be planted in September or October for a harvest in July.

Dry Beans: Dry beans are a great source of protein and many grow well in our region. Which varieties will do well in your garden is a matter of trial and error. Several types of beans, including soybeans, don’t like the cool temperatures on the coast. Some beans, like lima beans or groundnuts, require a longer warm season than Humboldt County can provide.

Most beans are warm season, frost-sensitive plants. They are typically planted between mid May and mid June for a September or October harvest. A notable exception is the Fava bean. This crop likes cool weather and is usually planted in October for a harvest in June (fresh) or July (dry).

Beans prefer a soil with ample phosphorus and sulfur, but they provide their own nitrogen fertilizer by “fixing” it from the air. To maximize “nitrogen fixation” it is best to inoculate the seeds before planting. Seed inoculants for the more common beans and peas are available at most nurseries. Dry beans can be threshed by laying the pods out on a tarp and stomping on them. You can then separate out the chaff by running them first through a screen with holes slightly larger than the bean and then through one with holes slightly smaller than the bean.

Additional References:
“Small-Scale Grain Raising” by Gene Logsdon
Selling Your Produce

If you really get into gardening, and you’re growing more than enough for friends and family, there are a few ways you can start selling your produce.

Farmers’ Markets: There are several farmers’ markets in Humboldt and Del Norte Counties, and it’s often pretty easy to start selling your produce at one of them. Each market is different: some are large, some are small; hobby growers staff some, while others are made up of professional farmers. The North Coast Growers Association operates markets in Eureka, Arcata, and McKinleyville, and there are independent markets in Garberville, Fortuna, Willow Creek, Crescent City, and Brookings. Visit the market yourself to see if it will be worth your time and effort.

Roadside Stands: If you live along a busy enough route, and you have enough to offer, you may be able to get people to stop at a roadside stand. It’s nice that people come right to you, but you may have to spend a lot of time sitting there, or opt for an honesty system of sales. These stands are allowed on most agriculturally zoned lands, with a fairly minimal amount of paperwork. Contact your County’s Planning Department to make sure it is okay.

Restaurants and Grocery Stores: If your quality is pretty high and you can guarantee regular amounts of produce at a regular schedule, you may be able to convince some local restaurants or grocers to use your produce. These can be profitable outlets, but they will hold you to high standards and expect deliveries at a definite time.
Native Edibles for Your Garden

The use of native edible plants can act as both a source of traditional local foods as well as provide your garden with a wind block, wildlife habitat, pollination sources, and integrated pest management (as described in the Plant Health and Pest Control Section of this book).

It is best to plant the native plants along the perimeter of the garden so you are not directly competing with your garden crops. They require very little watering and maintenance and are important for providing nutritious foods for you and wildlife visitors.

For more information about native plants that would best suit your garden needs, contact the North Coast Chapter of the California Native Plant Society. Below is a list of a few plants that will provide you with native foods and not over compete with your crops.

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Env. Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Groundcovers</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vine Tea or Yerba Buena</td>
<td>Satureja douglasii</td>
<td>S, Sh, M,</td>
</tr>
<tr>
<td>Beach Strawberry</td>
<td>Fragaria chiloensis</td>
<td>S, M, D</td>
</tr>
<tr>
<td>Wood Strawberry</td>
<td>Fragaria vesca</td>
<td>S, M, D</td>
</tr>
<tr>
<td><strong>Shrubs</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evergreen Huckleberry</td>
<td>Vaccinium ovatum</td>
<td>S, Sh, M,</td>
</tr>
<tr>
<td>Red Huckleberry</td>
<td>Vaccinium parvifolium</td>
<td>Sh, M</td>
</tr>
<tr>
<td>Black-cap Raspberry</td>
<td>Rubus leucodermis</td>
<td>S, Sh, M,</td>
</tr>
<tr>
<td>Toyon</td>
<td>Heteromeles arbutifolia</td>
<td>M, S</td>
</tr>
<tr>
<td>Spice Bush</td>
<td>Calycanthus occidentalis</td>
<td>S</td>
</tr>
<tr>
<td>Red-flowering Currant</td>
<td>Ribes sanguinium</td>
<td>S, Sh, M, D</td>
</tr>
<tr>
<td>Manzanita</td>
<td>Arctostaphylos columbiana</td>
<td>S, D</td>
</tr>
<tr>
<td><strong>Trees</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tan Oak</td>
<td>Lithoarpus densiflora</td>
<td>S, D</td>
</tr>
<tr>
<td>Oregon Crab Apple</td>
<td>Malus fusca</td>
<td>S, Sh, M</td>
</tr>
<tr>
<td><strong>Bulbs</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tiger Lily</td>
<td>Lilium pardalinum</td>
<td>S, Sh, M</td>
</tr>
<tr>
<td>Indian Potatoes</td>
<td>Triteleia laxa</td>
<td>S, D</td>
</tr>
<tr>
<td>Wild Onion</td>
<td>Allium bolanderi</td>
<td>S, D</td>
</tr>
<tr>
<td>Brodiaea californica</td>
<td>Brodiaea</td>
<td>S, D</td>
</tr>
<tr>
<td>Blue Dicks</td>
<td>Dicholostemma capitatum</td>
<td>S, D</td>
</tr>
</tbody>
</table>

Keys: S - Full Sun, Sh - Shade, M - Moist, D - Dry