LESSON 5
Seeding and Planting

Annual plants, which are more common in a home edible garden, can be started from seeds directly in the garden, or grown from seedlings purchased at a nursery or sprouted at home. Different plants have different needs for germinating and planting, but typically seeds need moist soil, some warmth, and some light. Some seeds prefer to be planted only once (in the place where they will eventually be harvested) and others are more resilient during transplanting and can be planted in seeding trays and then transplanted into your garden. In this lesson we will discuss different types of seeds you might buy or obtain for your garden, and then how to use them best.

Learning Objectives

1. Know the characteristics of a variety of seeds.
2. Understand how to start seeds and transplant them to the garden.
3. Understand how to direct seed to the garden and thin when necessary.
4. Know the benefits of pollinators and ways to attract them.

Materials Needed

- **several seed packets of different seeds;**
- **potting mix;**
- **compost;**
- **seed tray/egg cartons.**

Seed Types

For store-bought seeds, which are most common for home gardeners, you can get reliable organic seeds from a variety of seed companies, such as Seed Savers and Johnny's Selected Seeds, as well as from local nurseries. You can also buy seedlings (aka starts, small plants for transplanting) at the garden store if you miss the best seeding time or prefer not to start your own seeds.

Hybrid seeds are seeds that have been carefully bred by the seed companies for particular characteristics, such as disease resistance (seeds will be marked as hybrid). If you're buying seeds for planting late in the season for that crop, disease resistance is more important, because there will be more disease around threatening the plants. Therefore, spending a bit more on hybrid seeds often pays off. If you're buying seeds for planting early in the season for that crop, you will typically do fine buying less expensive non-hybrid seeds.

Heirloom seeds are those that come from an old variety of the vegetable that has been maintained through open pollination over time. This means that the plants are pollinated by bees, birds, wind, etc, rather than by people, but also that random cross-pollination is prevented, to maintain vegetable characteristics in the next year. Heirlooms are often more colorful and diverse than the normal varieties you see in the store, and can have different and interesting flavors.

It is also possible to save seeds from your prior year's plants and plant those, or save seeds and create a seed library where you can trade with your friends and neighbors for variety. Since the pollination of plants from which you save seed was uncontrolled (it was done by bees/birds/etc rather than at a seed-production company), the plants resulting from those seeds may have traits that differ from their parents- some plants produce more similar offspring than others. Seed saving is becoming a common practice among home gardeners, because you can choose the traits you like and you don't have to buy seeds repeatedly. For more on saving seeds, see www.seedsave.org or www.seedsavers.org.

Seed Starting and Transplanting Basics

To start seeds you will need to make a potting mix and use smaller, potentially recycled planting trays or containers in which to plant. Consult a resource such as **www.thegardenhelper.com/vegtips.html** for seeding and transplanting details for particular plants.

1. *Potting mix:* When starting seeds to be transplanted, regular garden soil is too heavy. Instead, a potting mix might include the following components;
   a. Peat moss and/or coconut coir (fibers) give body and hold moisture well.
   b. Sterilized sand gives structure.
   c. Perlite and/or vermiculite can add good drainage and absorbancy.
   d. Compost provides nutrients.

An example of a good mix would be equal parts peat moss and perlite mixed with two parts compost (fully composted).

2. *Planting:* Plants can be seeded in trays or pots indoors for warmth 6 - 8 weeks before transplanting depending on the seeds and conditions. Seedlings can then be transplanted into the garden. Most garden vegetables can be started this way.
   a. Seeding medium (potting mix) should be light and moist (see #1 above).
   b. Containers should have good drainage and either separate cells (as in a seed tray) or have space to plant seeds far enough apart to avoid tangling of roots.
   c. Seeds should be planted at a depth 2-4 times the seed diameter; not too deep for small seeds. Seed packets will give specific directions. For more details on how to read a seed packet **see: www.veggiegardener.com/how-to-read-seed-packet/.**
   d. Seeds should have indirect light before sprouting. Then place in a south-facing window or give fluorescent light.
   e. Label your seed tray with the plant you are growing and the date it was planted. Tongue depressors and popsicle sticks work well for this task. You may also include the anticipated harvest date on the label, knowing that it will vary based on the conditions noted above.

ACTIVITY 1

Together with a few classmates, carefully read a seed packet to make sure you understand the directions. Pay attention to the plant description and the use-by date when choosing seeds. Often seeds last longer than indicated, but highest germination will likely happen before that date.

3. *Transplanting:* Once seedlings have formed their first true leaves (not the cotyledon leaves that appear first out of a seed), they can be transplanted.
   a. Gently loosen seedlings with surrounding soil from container – tip the seedling out of the tray, or if you must pull use stems, not leaves – and plant in holes with same depth as sprouting container.
   b. Plant seedlings 1-2 inches apart depending on size of the seedlings.
   c. Gently tamp down soil around seedlings and moisten thoroughly.

Direct Seeding and Thinning

1. Some vegetable crops are better to direct seed into the place you will be cultivating them. Examples are melons, squash, carrots, beets, radish and potatoes.

    a. Follow instructions from the seed packet, a gardening reference (e.grodale.com), or the gardener from whom you got the seeds regarding spacing of seeds. You can also experiment with closer spacing and more thinning after germination. Especially with older seeds, you can plant seeds thicker than suggested because more of the seeds won't germinate.
    b. To *drill* seeds, plant each in a small hole and cover.
    c. To *broadcast* seeds, sprinkle seeds over the soil and lightly cover.
    d. To *furrow* seeds, dig a shallow furrow, drop in a line of seeds and fill the furrow.

2. Furrowed seeds will typically be thinned.hin out plants once seedlings have grown their second or third true leaf after the cotyledons, or seed leaves. Thinning just means pulling some seedlings out to give enough space for each plant to get sufficient nutrients, light, and water.

Pollinators

Fruiting plants will only produce fruit if their flowers are pollinated. Each flower is potentially a fruit if it is pollinated, and typically pollen must be transported to the flower from another tree or another part of the tree, depending on the species. Pollinators are the organisms that bring pollen from one flower to another, which allows fruit to form. Pollinators include bees, butterflies and sometimes birds. If you have fruiting plants, it's good to invite bees to the garden by planting perennials that attract pollinators. A variety of flowers around the garden, especially in dense patches, attract bees and butterflies. See the appendix "California Native Plants that Attract Butterflies" and **http://nature.berkeley.edu/urbanbeegardens/list.html** for plant recommendations. You can make your flowers work double-duty by choosing varieties that attract pollinators and also predatory insects to control pests (more on this in Lesson 7).

ACTIVITY 2
If feasible, mix a seed-starting medium and seed a tray with seeds for practice.

References

1. Anderson, Es. 1998.
   Regional Parks Botanic Garden, East Bay Regional Parks.
   "California Native Plants that Attract Butterflies."
   Available at: **www.nativeplants.org**
   A list of plants and the butterflies they attract.

2. The Garden Helper.
   "Vegetable Planting Guides and Growing Tips."
   Available at: **www.thegardenhelper.com/vegtips.html**
   An easy-to-use table of tips for planting and growing particular vegetable crops.

3. International Seed Saving Institute.
   Available at: **www.seedsave.org**
   Research and promotion of seed saving; seed saving instructions.

4. Rodale.
Available at: **www.rodale.com**
A sustainability-focused online magazine with many resources on food and sustainable living.

5. Seed Savers Exchange.
Available at: **www.seedsavers.org**
A source for heirloom seed varieties.

6. UC Berkeley Urban Bee Gardens.
"Gardening for Bees."
Available at: **http://nature.berkeley.edu/urbanbeegardens/list.html**
A recommended plant list for attracting bees to the garden.

7. Veggie Gardener.
"How to read a seed packet"
Available at: **www.veggiegardener.com/how-to-read-seed-packet**
A break-down of a typical seed packet to understand the components.