

## Lab 1: Propagation I

In horticulture, propagation means making more plants. As you remember from earlier courses, reproduction can be sexual or asexual. In asexual reproduction, offspring are genetically identical to the parent individual, while sexual reproduction combines haploid gametes from two parents to form a new diploid organism different from the parents. Plants can be propagated sexually or asexually.

Seeds are usually the result of sexual reproduction. They contain the embryonic plant in a dormant state, which, under the right conditions will break dormancy and grow. Propagating plants from seed involved creating the right conditions for an appropriate length of time to encourage germination. The gardener may propagate plants by open pollination when genetic diversity in offspring is desired (or can be tolerated). Other seeds are the result of controlled pollination (hybridization) and contain much less genetic diversity than seeds resulting from open pollination.

Plants can also propagate asexually. This is especially useful when a number of genetically identical individuals are desired. Some plants, like strawberries naturally propagate in this manner, sending out runners that root wherever a node touches the ground. Many other plants can be induced to propagate in this manner, by burying a small section of stem, for example. When used to propagate plants, this technique is called layering.

A third method of plant propagation involves cuttings. This is similar to layering, but when cuttings are used, the parts to be propagated are completely removed from the plant. Cuttings may be taken from leaves, stems, or roots, depending on the type of plant, but the goal is usually to treat the cuttings in such a way that they develop into healthy plants. This usually involves maintaining constant humidity and

providing bottom heat. Often, synthetic rooting hormones, auxins, are used to encourage root growth. (see Figure 1) When using these hormones, remember that they are toxic to humans, and that a little goes a long way. Furthermore, the action of rooting hormones is inhibited by the action of flowering hormones, so make sure that any cuttings that you are rooting have all flower buds removed.



*Figure 1.* Rooted stem cuttings.

In today's lab, we will propagate several plants, some from seed and others from cuttings. You will have a data sheet for each of the plants you are propagating. Make sure to follow the instructions for each type of plant, and visit the greenhouse occasionally to check on the progress of your plants. Each student carry out all of the propagations described in the lab manual, and may want to try a few others as well.



### **Pansy Swiss Giant Mix**

Source: Ferry-Morse Seed Company

Pansies are a favorite cool season annual.

Packet text: Sow seeds in late winter, 8-10 weeks before planting outdoors. Where winters are mild sow in the summer for planting outdoors in the early fall. Spread moist grow mix even with the top of a shallow container. Sow seeds in shallow rows and cover to their thickness. Bottom water and place in a cool location, about 60°F. Keep moist, never allow to dry out. When 4 leaves develop, transplant to 2 1/4 inch pots. After danger of frost is past, set pots outside in a protected area to harden plants for 2-3 days. Then plant 12 inches apart in good garden soil and water well.

Notes:



### **Delphinium Magic Fountains**

Source: Ferry-Morse Seed Company

Delphiniums are cool-season biennials, and do not normally do well in southern Indiana. The best way to have success with these plants is to start them during the winter, and grow for first-season bloom.

Packet text: Perennial. Beautiful, bright colored, graceful spikes have quite a distinctive beauty. Colors range from white through many lovely shades of lavender and blue. Easy to grow. Perfect for beautiful cut flowers. Doesn't require staking. Excellent for small gardens and windy areas where tall types are damaged. 100 - 120 days to bloom. Grows best in sun or partial shade to a height of 30 - 36 inches.

Start indoors for early bloom. Sow seeds in shallow rows, and keep evenly moist. Thin or transplant when young plants have three or four leaves.

Notes:



Rubber Plant: *Ficus elastica*  
Source: UE greenhouse

Instructions: Using pruning shears, cut an 8-10 inch branch. Strip the lower leaves, and trim to 1 inch below a leaf node with a razor blade. Wound to expose cambium, dust with rooting hormone, and place in moist potting soil. Each student should make two or three cuttings so that they can be examined for root growth in several weeks.

Notes:



*Bougainvillea glabra*  
Source: UE greenhouse

Instructions: Using pruning shears, cut a 12-14 inch branch. Strip the lower leaves, and trim to 6-12 inch cuttings ending 1 inch below a leaf node with a razor blade. Wound to expose cambium, dust with rooting hormone, and place in moist potting soil. Each student should make two or three cuttings so that they can be examined for root growth in several weeks.

Notes:



*Mandevilla*

Source: UE greenhouse

Instructions: Using a razor blade, cut a 3-4 inch section with new growth. Strip any old leaves. Wound carefully to expose cambium, dust with rooting hormone, and place in moist potting soil.

Notes:



Hibiscus

Source: UE greenhouse

Instructions: Using pruning shears, cut a 6-8 inch branch. Strip the lower leaves, and trim to 1 inch below a leaf node with a razor blade. Wound to expose cambium, dust with rooting hormone, and place in moist potting soil.

Notes:

---