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Seed Propagation

What gardener has not received the newest seed catalogs in the middle of winter and been filled with visions of the garden yet to come? (I realize that my eyes are bigger than my garden, but the colors and textures tantalize me to consider what new plant I can add to my collection!) Everyone has their favorites that they can count on year after year, but I like to challenge myself with an addition to my garden that is out of the ordinary. Arming yourself with the knowledge necessary to propagate new seedlings will ensure that you, too, will experience the enjoyment that those packets of seeds are sure to bring.

The first step prior to planting the seeds is to check the back of the seed packet. You will find useful information to aid in the success of your seed starting adventure, like when to plant outdoors. Long-season plants such as tomatoes and peppers need to be started weeks if not months before quick-growing plants such as annuals. (Count back from the time of your last frost or plant-out date.) Some plants can be transplanted a few times before being moved outdoors, but there are a number of vegetables, like cucumbers and corn that resent it, and will fail more often than not by being handled too much.

Proper treatment of seeds before planting will help speed germination. Soak seeds in warm water overnight or scratch the surface of the hard shell with coarse sandpaper to scarify. Again, the back of the seed packet will mention if scarification is necessary.

Seeding in pot-paks and/or flats is most convenient. Sterilize all "used" pots, flats, and tools with a 10% bleach mixture or all-purpose disinfectant such as Physan 20. Use only sterilized starting mixes to help prevent damp-off disease. Water the mix thoroughly before planting the seeds. For ease of handling, mix very fine seed with fine sand or milled sphagnum moss.

Scatter the seeds over the growing medium. Using a professional seed sower helps you to not over-seed very small seeds and will cut down on tedious thinning. Larger seeds can be placed into a hole made with a pencil or wooden dowel. Many gardeners sow several seeds per pot pack, and cut off the weakest seedlings at soil level once they have sprouted.

When starting in flats instead of pot paks, sow small seeds about 1/2" apart; large seeds 1" apart. Most small seeds don't need to be covered with soil. Cover other seed with a sifting of fine soil. Use a sprayer to mist thoroughly. (You do not want to dislodge the seeds by using a strong force of water.) Help reduce evaporation and maintain humidity by covering with a dome or plastic wrap. Capillary matting is also a great aid in providing a constant source of moisture.

Most seeds need darkness, moisture and heat to germinate. Keep them in a dark area unless the seed packet indicates light is necessary for germination. Seeds have enough food stored inside, so they need only water -- no fertilizer yet. **DO NOT LET THEM DRY OUT.** Most seeds germinate best at a constant temperature between 65° F to 75°F. For best results, use a heat cable or propagation heat mat. Propagation mats with a thermostat enable you to control the exact temperature of the seed starting mix. This ensures quick germination and gives you a higher germination rate than you would get if the temperature fluctuates constantly.

Depending on the type of plant, you may see sprouts in as soon as 2-3 days. Some herbs take several months, however. (I had all but given up on my Lavender; then one day, all 7 sprouted!) The important thing is, after you see most of the seeds have sprouted, the flats or pot paks need to be moved under fluorescent lights. Without lighting 3-4" above the seedlings, they will grow leggy, trying to reach for light. A light period of 16 hours produces satisfactory results. With newly germinated seedlings and rooted cuttings, prior to transplanting, a longer light period of up to 20 hours may be used with good results.

When seeds germinate, the first leaves to appear are the cotyledons or seed leaves. These are usually a pair of oval, fleshy leaves that bear no resemblance to the mature leaves of the plant. The conventional advice is that seedlings should not be pricked out or transplanted until the first true leaves appear. Large seedlings, such as cucumbers or squash, however, are large enough to handle before the true leaves develop. It is sound advice to plant these large seeds in individual containers to eliminate the need for transplanting.

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17979 State Route 536
Mt. Vernon, WA 98273
1-800-322-4707

Removing tiny seedlings from the sowing container into individual pots of potting soil can be a delicate business. As seedling stems are easily bruised, always handle seedlings by their seed leaves. To facilitate removal of the seedlings, use a miniature spade, a narrow flat-ended screwdriver, or a spoon to separate and ease out the seedlings, taking care not to damage the delicate roots. Where several seedlings are growing in a very small space, it is best to transplant a clump of seedlings and then snip off all but one or two. If seedlings seem sturdy enough, you can gently tease 2 or 3 seedlings apart, but any damage to the root system will make a weak plant.

Prior to transplanting, fill the clean new pots with pre-moistened potting soil. Using the end of a pencil, make a small hole in the center of each pot to accommodate the transplant. After easing the seedling out of the sowing tray, move directly into the new pot and firm potting soil around the delicate root system while still holding onto the seed leaves. Water the soil immediately with a gentle spray of lukewarm water. Set the pots out of direct sun and protect from wind for several days. It is not advisable to use a fertilizer at the time of transplanting, as feeder roots are invariably torn and more likely to be damaged by fertilizer salts. After about 2 weeks, commence fertilization with diluted (1/4 strength) liquid fertilizers.

There will likely be more seedlings to transplant than pots to accommodate them. As a very rough guide, figure on 50 transplants produced from a full size nursery flat. Seedlings such as half-hardy annuals, half-hardy perennials and many vegetables that are started indoors with heat should be gradually acclimated to the stronger light, winds and generally cooler night temperatures of the outdoors prior to planting out in their final locations. This conditioning is known as "hardening off" and traditionally takes from 7 to 10 days. The correct timing of plants for both hardening off and final site planting depends on the plant's genetic cold hardiness and climate factors for your particular garden.

When seedlings have reached an appropriate size, and the time is right for the individual plants to go outdoors in their final location, start the process of hardening off by placing pots or flats outdoors for several hours a day in a location with some morning sun and protection from winds. Return plants to the protection of an unheated porch, garage or greenhouse for the late afternoon and evening hours. Slowly increase the amount of time plants are left outdoors and increase the light they receive to the appropriate light levels over a period of 1 to 2 weeks, eventually leaving plants outdoors all night. At the end of this period, plants are fully ready to go into the garden.

Remember to protect plants from predicted hard frosts, freezing winds and heavy rains, which can damage seedlings. A useful aid in both growing cold-hardy seedlings and hardening off tender plants is a cold frame. (A cold frame is an unheated 4-walled structure with a glass or plastic roof.) Materials can be as inexpensive as discarded lumber and an old window sash, although Polycarbonate has proven to be a strong, lightweight and safe material that holds in heat and diffuses incoming light, making it a preferable choice for cold frames. During the day, the glass or plastic top should be raised for air circulation, but lowered at night to protect seedlings from frost and freezing winds.

By following these basic guidelines, you can look through those new seed catalogs and start contemplating the vision that will be your garden oasis!

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