



Starting Plants from Seeds

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Seeds are an inexpensive way to fill your garden with diverse, high-quality plants that may not be commercially propagated for sale in nurseries. It's a joy to watch a tiny sprout grow, flower and fruit, but starting plants from seed is not for the faint-hearted. It takes time, close attention and a great degree of care.

Starting plants from seeds requires the purchase of some basic supplies, but most can be obtained readily and at minimal expense. If you find you love starting plants from seed, you may want to invest in some equipment like lighting systems, humidity domes, capillary mats, misting systems and heating mats/cables that will increase your success.



Almost any container can be used to start plants from seeds as long as it has holes in the bottom to allow excess water to drain out. Small containers 1-2" in diameter are ideal for growing a single seedling, keeping its roots separate from other plants. Cell packs accommodate four, six, eight or more cells, with each cell providing enough room for a single seedling to get a solid start. Flats can accommodate a large number of seedlings, but the risk of damaging the roots when transplanting is high. Re-using containers is fine as long as they are washed in detergent before use and allowed to air dry. Some growers recommend disinfecting with a dilute bleach solution before re-using.

Soil provides a home for roots and a place to anchor plants. However, you will want to use a sterile seed-starting mix, preferably one that is specific to seed starting. Do not use soil from the garden.

Always use clean water when watering seedlings, but water directly out of the tap is too cold. Allow the water to stand for an hour or two before using so it will warm to room temperature and dissipate any chemical additives. Water seed containers gently from the bottom, use a mister, or utilize a watering can with a fine rose (a device like a cap with small holes) to avoid damaging tender plants. Seedlings need to be kept evenly moist and will not tolerate drying out or being oversaturated.

The majority of seeds prefer air temperatures between 65 and 80 degrees. For most seeds that will be started indoors, a constant 70-74 degree temperature should be maintained day and night. Seedlings are very fragile and the temperature of the soil, water and air is critical.

Seedlings need a good light source to grow into healthy, stocky plants. The sunlight generated on a windowsill is usually insufficient for proper growth, and it is worthwhile to invest in a lighting system to get seedlings off to a good start. Cool fluorescent bulbs set 1-2" above seedlings are best. Turn on the lights for 14-16 hours a day.

Seeds are young plant embryos encased in a protective seed coat. Some seeds may die within a few days, while many go dormant and survive for years waiting for just the right combination of moisture, heat and time to germinate. Very old or improperly stored seed may not germinate, so purchase seed from reputable dealers.

Your most reliable source for information is on the seed packet. Seed packets generally provide information on when to plant, how long it takes the seeds to germinate, the number of seeds capable of germinating, how far apart to space the seeds, and how long it takes the plant to mature. Every seed packet has an expiration date stamped on it.

Most seed packets contain more seed than you need for a single planting, but with special handling most seed can be kept in good condition for a year or more. Leave seeds in the original packet, fold over the open end and seal with tape. Several sealed packets can be stored in a jar with an airtight lid. Store seeds in a cool, dry place, away from drafts and sunlight, and preferably at temperatures between 40-50 degrees.

Before putting the seed-starting mix into the containers, it should be thoroughly damp. Gently tamp the containers so that

the seed-starting mix settles evenly in the container.

Many seeds, often those that are very small, require light to germinate. These seeds are simply pressed into the soil at planting. In general, small seeds are planted shallowly, while larger seeds more deeply. The seed packet is your most reliable source of information on depth of planting.

The most precise method of sowing seeds is to make a hole for each seed using a pencil or your finger. Insert the seed then press the starter mix back to refill the hole. Another method is to use a ruler to make a planting furrow and then place the seeds at the proper spacing in the furrow and refill the furrow with starter mix. Some gardeners prefer to broadcast the seed sparingly over the starter mix and layer more starter over the top to achieve the proper depth. This method will require some thinning of overcrowded seedlings.

Water begins the process of germination. Many seeds will germinate the minute they absorb water, other seeds will not begin until special conditions are met. The amount of time it takes for water to saturate the seed depends on the permeability of the seed coat, the size of the seed and the external environment, including temperature and humidity.

Once planted, seeds must never be allowed to dry out at any time.

Many plants look very similar when young, so labeling is important. Use indelible ink or pencil to label each row with the botanical and common name of the plant; and adding anticipated germination time and date of transplantation is also helpful.

Once the true leaves appear, the seedlings have used up their food reserves. At this time, begin to water the seedlings with a dilute (1/4-1/2 strength) application of fertilizer.

If seeds have been planted in their own pots, you need only repot when they have outgrown the space. If seeds have been planted in a communal flat, transplant seedlings when the first true leaves appear. Gently tease apart the roots and always handle seedlings by the leaves, never by the stem or the roots.

Some plants benefit from pinching the tops back to a branching set of leaves when they get too tall in proportion to their total growth.

A common mistake is to sow seeds too early and then attempt to hold the seedlings under poor environmental conditions. Time your sowings so seeds can germinate and grow to an appropriate planting size in time to set out at the last spring frost or in time to become established before the first fall frost.

Hardening off is a process of gradually decreasing temperature, water and humidity to prepare the seedling for the bright sun, strong winds and rain outdoors. This step is very important and can take up to two weeks. Start by setting the seedlings outside in a shady location for several hours a day, then over the next weeks gradually increase the exposure to sunlight and wind.

The fungus *Phytophthora* and *Pythium* cause a problem called damping off. It thrives in soil containing excess moisture and poor light and air circulation. The symptoms are seedlings that fall over as though cut down. Sprinkling shredded sphagnum moss on top of the soil mix to a depth of less than a half inch may cut down on fungal disease. Another fungus, *Rhizoctonia* produces a disease called wire stem that blocks normal cell processes and leads to collapse of the seedling. Infected plants should be removed and destroyed promptly.

Starting plants from seeds can be a challenge, but the gardener who successfully learns this skill will be rewarded by getting a jump on the season and having a diverse variety of plants to choose from.

A final thought: Seed packets contain general information that can be affected by many factors. Many gardeners find it helpful to keep a garden journal to track the individual results obtained in their garden. Keeping a garden journal also helps you to learn from your mistakes and celebrate your successes.

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