



## How to Get Great Germination Every Time!

Nature germinates huge numbers of seeds every year with no fuss at all. You can do the same. Be sure to use fresh seed, take the time to prepare containers or garden beds and read all seed packet instructions carefully. Start now, and your garden will be a showcase in a matter of weeks.

### Prepare the Soil

Particularly in cold-winter areas, the biggest mistake a gardener can make is starting the garden too early, when the soil is still wet. Before preparing the soil in spring, squeeze a handful of soil into a ball and drop it. If it breaks apart, it is sufficiently dry. If not, wait a week and try again. Use a rake to pulverize clods and create a fairly smooth surface. Soil need not be flour-fine; marble-sized particles are okay. Seeds germinate best in loose, well-drained soil that has enough decayed organic matter help it hold moisture evenly. Because organic matter breaks down continuously, regular additions of compost or other good organic material are necessary. Turn several inches into the top 8 inches of your garden soil.

#### TIPS FOR SUCCESSFUL INDOOR GERMINATION

1. Use a purchased mix rather than garden soil for indoor seed starting.
2. Provide bottom heat if ambient temperature is less than 75°F.
3. Place a cover over sown seeds to maintain even moisture. Remove it as soon as germination occurs.
4. Test leftover seed before using it. Place 10 seeds between layers of moist paper towels. If fewer than 7 germinate after a week, buy new seed.

#### Plant at the Right Time: Some Like it Hot (and others do not)

The majority of seeds germinate most quickly and successfully when the when both day and night time temperatures have 50 to 55°F (10 to 13°C °).

In all US climate zones except the very warm areas, long season heat loving tomatoes, peppers and eggplants must be started early indoors so they have enough room to grow, mature and fruit when you plant them outside.

Members of the cabbage family like broccoli, cauliflower, and long growing vegetables like leeks and perennial herbs like oregano and thyme may also be started indoors to get a head

start of the season. Consult the seed packets to see if this is recommended.



Seeds sown thickly in flats can be transplanted into individual pots.

Be sure to use a good quality seed starting mix in your the seed trays. After sowing, according to package directions, keep the seed starting trays warm for best results. You can purchase a heat mat designed specifically for this purpose, or place seedling trays on top of a refrigerator, hot water heater, radiator, or other warm surface. Make sure they are moved into right light as soon as germination occurs.

**Spring – Sow these seeds directly into the garden bed:**

**Vegetables and Herbs:** Arugula, Beets, Broccoli Raab, Carrots, Chard, Chervil, Cilantro, Dill, Fennel (bulbing), Kohlrabi, Kale, Lettuce, Mache, Scallions, Pak Choi, Parsley, Parsnips, Peas, Radishes, Spinach, Salad Greens, Spinach, Tatsoi, Turnips.

**Flowers:** Alyssum, Bells of Ireland, Calendula, Cornflowers, Larkspur, Nigella, Poppies, Stock, Sweet Peas.

**Start Indoors for a Head Start:**

**Vegetables and Herbs:** Basil, Broccoli, Cabbage, Celeriac, Eggplant, Leeks, Peppers, Perennial Herbs, Tomatoes.

**Flowers:** Columbine, Delphinium, Feverfew, Foxglove, Globe Amaranth, Heliotrope, Hollyhock, Nicotiana, Pansies, Perennial Flowers, Portulaca, Snapdragons, Stock.

**Early Summer – Sow directly into garden bed when nights stay above 50°F (10°C):**

**Vegetables** beans, beets, carrots, chard, corn, cucumbers, melons, pak choi, okra, oregano, pumpkins, salad greens, scallions, summer squash, including zucchini, winter, savory squash, including zucchini, melons and watermelon.

**HERBS** basil, oregano, marjoram, chamomile, sage, thyme

**Flowers:** Cardinal Climber, Cleome, Cosmos, Four O’Clocks, Marigolds, Morning Glories, Nasturtiums, Nicotiana, Nigella, Salvia, Sunflowers, Tithonia, Zinnias.

**Sow in Mid-Summer-Early Fall for 2<sup>nd</sup> (or in mild climates, overwintering) Crops:**

**Vegetables and Herbs:** Arugula, Beets, Broccoli, Broccoli Raab, Brussels Sprouts, Cabbage, Carrots, Chard, Chervil, Cilantro, Fennel (bulbing), Kale, Kohlrabi, Leeks, Lettuce, Mache, Pak Choi, Peas, Radishes, Salad Greens, Scallions, Spinach, Tatsoi, Turnips.

**Flowers:** Alyssum, Calendula, Cornflowers, Foxglove, Larkspur, Nigella, Pansies, Snapdragons, Stock, (mild winters only) Sweet Peas.



Vermiculite absorbs and holds water and won't form a crust, making it an ideal seed topping.

**Sow Right**

Seed packets offer detailed instructions about depth of planting and seed spacing and give you good tips on how to be successful. The following are general guidelines:

- Depth of Planting: Large seeds such as beans and squash should be planted 1 to 2 inches deep, while small seeds need only a light covering of soil.
- Spacing: Pay close attention to spacing instructions, especially when sowing directly in the garden. Small seeds like lettuce and carrots should be no closer than 1 inch apart.
- Very small Seeds: Mix tiny, dust-like seeds with sand at about a 4 to 1 ratio to avoid planting them too closely.



A soaker hose will keep these tender lettuce seedlings from drying out.

**Keep Soil Moist**

Germination is all about water. In order for plant cells to start multiplying the dried seed must absorb several times its volume of water, causing the embryo to enlarge and the seed coat to burst open. If moisture is inconsistent, the developing embryo will be stressed. Too much water can cause seeds to rot, particularly when soil is cold. Check

your germinating seeds frequently, especially if they are exposed to wind or sun, and try these tips for keeping the soil consistently moist:

- Temporary cover: Place row cover over the seed tray or garden planting bed. Some gardeners use burlap. Check beneath the covering daily and mist the soil if it begins to dry. Remove the covering as soon as you see tiny stems pushing up from the soil.
- Retain moisture: Cover the row with a material that absorbs and holds moisture, such as vermiculite, potting mix, or sieved compost.

### Provide Enough Light

All seedlings require ample light immediately following germination. When starting seeds indoors there are several options:

- Sunny window: A south-facing window will suffice if you start seeds in April, when the days are relatively long. Move the seedlings outdoors on warm days, and in again at night, to prepare them for outdoor living.
- Lights: Very early spring seed starting growing requires the aid of fluorescent shop lights or grow lights. Suspend them on chains, raising them as the seedlings grow. Keep them on for at least 12-16 hours a day.

### A Word About "Thinning" & Why It's so Important



Radishes germinate very quickly. Sow seeds no closer than 1 inch apart.

Sowing seed too closely is a common new seed gardener's mistake ... we've all done it! Pulling out the tender seedlings you have successfully germinated is not easy, but you'll get more produce from carefully spaced robust plants than from a crowd that is forced to compete for water, nutrients, and sun. Seed packet backs always provide you with *both* instructions on how far apart to sow seeds *and* then how far apart to thin them so that the remaining plant has room to grow properly for optimum growth and production. Be sure to consult them!

In the event that your seedlings germinate in an intimate bunch, here are a couple of pointers:

- Root Vegetables: Beets and radishes are particularly finicky about having enough personal space. Thin radishes to stand about 1 inch apart. Beet seedlings should be at least 2 inches apart initially. Baby beets can be harvested and eaten (the greens too!) so that the remaining seedlings stand about 4 inches apart.
- Carrots and turnips are also candidates for thinning. Wait until the seedlings are about 2 inches tall and then ruthlessly eliminate those that are excessively close to neighbors, giving the roots the room they need to develop. For the least amount of disturbance, thin with scissors.



Carrot seeds can take 2 weeks or more to germinate, and must be kept moist but not soggy.



Carrot seeds can take 2 weeks or more to germinate, and must be kept moist but not soggy.

- Leaf Vegetables: Lettuce, spinach, arugula, chard, and other greens may also need thinning. In this case you have a choice. You can use the thinnings in salads, or transplant them to another part of your garden. To transplant, lift an entire clump, gently teasing the roots apart. Replant a single seedling, and move the others.

- Fruiting Vegetables: It is for good reason that zucchini seed packages instruct you to thin seedlings to 2-3 plants per hill: Crowding reduces air circulation, making your plants more susceptible to disease.