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Growing plants from seed

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Quick Facts

- Some annuals are best seeded directly in the garden in spring.
- Cold frames allow starting some plants as much as six weeks earlier than planting-out time.
- Plants should not be started indoors too soon since they may become crowded and spindly before they can be planted safely outdoors.
- Plants grown early indoors or in cold frames need to be exposed to the outdoors gradually to avoid shock.

Before seeding, the garden area should be spaded 6 to 10 inches deep. Thoroughly mix in coarse peat, compost or aged manure if the soil is too heavy (clay type) or too sandy. Use 3 cubic yards of organic matter per 1,000 square feet or enough to cover at a depth of 1 inch.

The organic matter will help keep the soil from becoming too compact and also will hold moisture needed for seed germination. The surface of the area to be seeded should be raked smooth and remove or break down clods larger than the size of a pea. Plant seeds in rows and cover with a fine soil to the required depth indicated on the seed packet. Mark the seeded rows with identifying labels.

Use good, viable seed. Seed from last year's garden rarely results in the flower colors desired because of interbreeding of varieties. Old seed, unless carefully stored in a cool, dry location, often will germinate poorly. It is usually more satisfactory to buy fresh, new seed when growing garden annuals and vegetables. Most seed packets are dated using phrases such as "Packed for (Year)."

Sow seed directly in the garden for the simplest way to start plants. It is usually safe to sow the seed outdoors when trees are beginning to produce leaves. (See Table 1 for list of plants.)

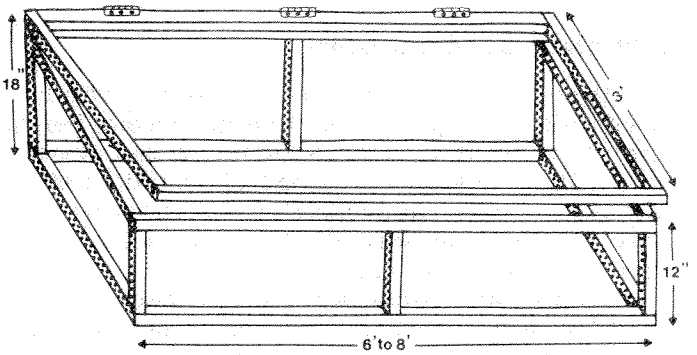

Figure 1: A simple cold frame made with 2-inch x 2-inch lumber. Cover hinged lid and sides with transluscent (clear) polyethylene plastic. For better insulation against cold, cover both sides and leave an airspace between plastic. An 8-foot frame requires 10 pieces 2 inches x 2 inches, each 8 feet long.

Keep the seedbed moist at all times. When seedlings appear thin plants to one-half the height the plants are supposed to attain, except for tall, spike-like annuals such as snapdragons, larkspur and foxglove. These should be thinned to a spacing of about one-fourth the plant height for a fuller, more showy effect.

Cold Frames

For an early start, seed may be sown in a cold frame and transplanted later into the garden (see Figure 1). Seed may be started as much as six weeks earlier than outdoors.

The cold frame should be located on the south side of a garage or dwelling. The cold frame, if constructed with a tight-fitting lid, will hold sufficient heat from the sun to keep seed and seedlings warm at night. On warm, sunny days (50° F or higher) prop the lid open to prevent buildup of excessive heat. Close the lid in the late afternoon to trap enough heat for cold evenings.

If temperatures get below 20° F an outdoor-type electric light may be placed in the box to produce enough heat to keep plants from freezing. Insulated drop cords are suitable for this purpose. One 60-watt incandescent bulb for every 12 cubic feet of cold frame space usually is sufficient.

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Electric heating cables are available at most garden supply stores.

As the season progresses, gradually expose the plants to longer periods of outside temperatures as long as the air temperature does not go below 50° F. Treated in this way, they develop into sturdier plants that are better able to adapt to fully-exposed garden conditions at transplant time. This is particularly true of the hardy annuals and biennials that prefer to develop in cooler temperatures such as petunia, ageratum, lobelia, verbena, cabbage, broccoli and lettuce. Table 1 can be used to determine when seed should be started in the cold frame.

Starting Seed Indoors

If space is available near a sunny window, seeds may be started four to eight weeks before the plant-out date in a particular area (average last killing frost date). Table 1 gives indoor starting times of various seeds. Starting too early usually results in spindly plants due to lack of sufficient light and crowding.

Almost any container with drainage holes in the bottom will work for planting. Paper milk cartons cut in half, Styrofoam cups, tin cans, plastic trays and pots are common containers used. For convenience at planting time, however, a person may wish to start plants in the plastic trays and pots available at garden supply centers.

A rich, well-drained soil must be used. Potting soils made for African violets and other house plants usually are suitable and they do not have weed seeds in them. They are, however, more expensive than the soil mixes that can be made at home. If soil from the yard is used, it should be top soil that is well-drained and not high in clay.

Frequently, the best soils are found around established shrubs and trees. Add sphagnum peat and sharp sand to the soil in a ratio of about one-half volume of each, and thoroughly mixed.

To kill weed seed and some damaging soil fungi, the soil mix can be placed in shallow trays or baking pans in an oven for 45 minutes at 250° F. For best results, the soil should be moist.

After the soil has cooled, containers may be filled firmly, but not packed, allowing about three-fourths inch from the soil surface to the rim of the container. Seeds can be placed on the soil surface and soil sifted (using a piece of window screen or old flour sifter) over the seed to the depth indicated on the seed packet.

If compartmentalized trays or individual peat pots are used, two or three seeds can be placed in each pot. The seeds should not be covered too deeply as this may reduce or prevent seed germination. As a general rule, cover no more than four times the diameter of the seed.

Apply a fine spray of water to avoid washing the seed, causing them to float to the soil surface. (Household window sprayers are suitable). The containers then can be covered with plastic sheets or panes of glass and placed in a cool room (60°-65° F) away from direct sunlight until germination.

When seeds germinate, they may be moved gradually (over two or three days) into brighter light. When the seedlings have developed the first true leaves (the leaves above the cotyledons or "seed leaves") they should be thinned to one plant per container if using partitioned trays or peat pots. Tweezers should be used to pinch off unwanted seedlings rather than pulling them to avoid disturbance of the remaining seedling.

If seeds were planted in larger containers, they will need to be transplanted into individual peat pots or other small containers. An alternative is to thin the seedlings so that they are spread about 1½ to 2 inches apart and leave them in the larger containers. This method, however, makes inefficient use of seed and space.

Water seedlings carefully. Small containers used for starting plants dry out quickly. On the other hand, soil kept soaking wet will inhibit seedling growth and may kill the plants.

About one week prior to planting-out time gradually subject seedlings to longer periods of outdoor exposure unless temperatures are below 50° F. At the same time, watering can be reduced to minimum as long as plants do not wilt. This will help the plants adjust to full exposure without undergoing undue shock at planting time.

Table 1: Starting times for seeds grown indoors and in cold frames.

Plant name	Number of weeks to start seed before average frost-free date.	
	In cold frame	Indoors
Ageratum	6	8
*Amaranthus (summer poinsettia)	4	6
*Batchelor's button	4	4
Broccoli	6	4a
Cabbage	6	4a
*Calendula	4	4
*California poppy	4	4
Calliopsis	4	6
Cauliflower	6	4a
China Aster	4	6
*Cosmos	4	4
Dahlia	6	8
Dimorphotheca (African daisy)	4	4
*Gaillardia	4	4
*Gomphrena	4	4
Larkspur	4	6
Lettuce (head & semi-head)	6	4a
Lobelia	6	8
*Marigold	4b	4
*Morning glory	4	4
*Nasturtium	4b	4
Pepper	4b	6
Petunia	6	8
Phlox (annual)	4	6
*Poppy (Shirley)	4	4
Salvia	4	6
*Scabiosa	4	4
Snapdragon	6	8
Statice	4	6
*Strawflower	4	4
*Sweet alyssum (lobularia)	4	6
Tomato	4b	6
Verbena	6	8
Vinca (annual)	4	6
*Zinnia	4	4

*(*Denotes plants best suited for direct seeding in garden two weeks prior to the average frost-free date.)*
aShould be kept in coolest room. Best at 55° to 60°F
bIf outside temperatures are below 20°F at night, delay planting or use artificial heat to keep temperatures above 50°F in cold frame.