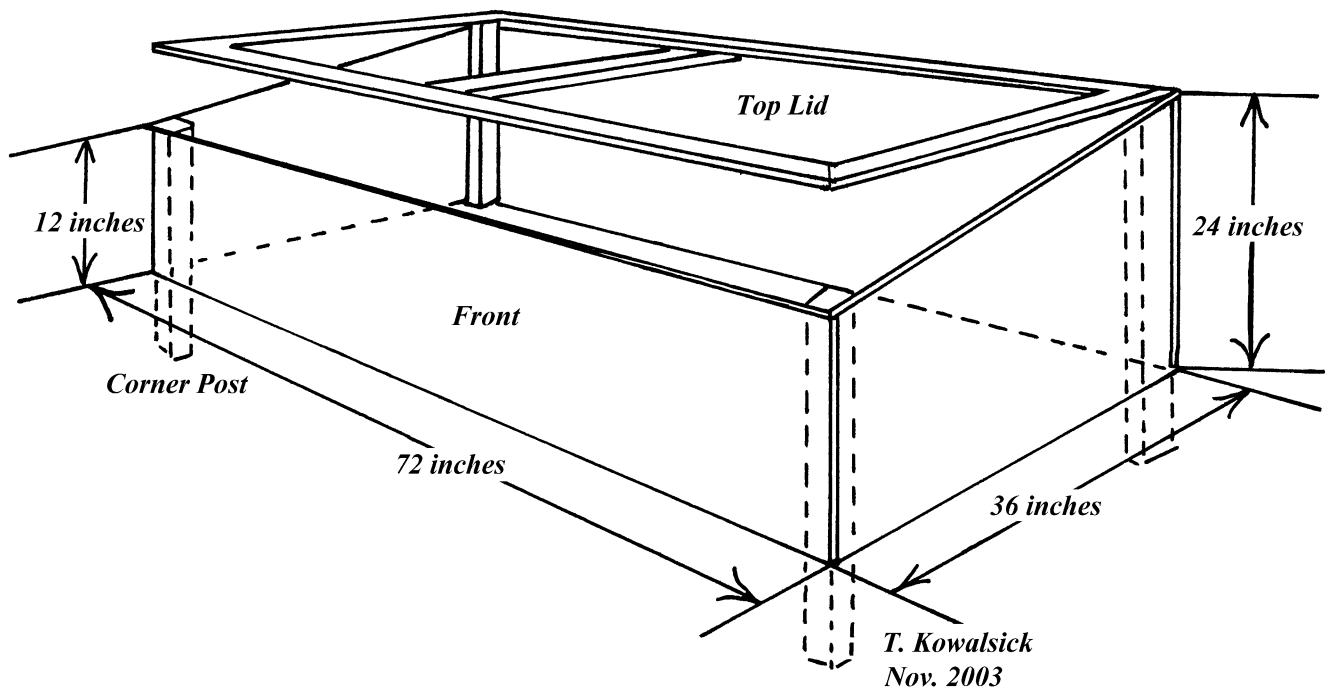




## COLD FRAMES AND HOTBEDS



Cold frames and hotbeds are miniature greenhouses that utilize the sun's energy for heat. They are useful as season extenders, for propagating cuttings, for starting vegetable and flower transplants, etc. In the case of hotbeds, the sun's energy is supplemented by heating cables or fresh manure. These structures have movable sashes or lids, which can be hinged to allow for easy opening and closing. The lid will allow access to the plants inside and be the source of ventilation and temperature control.

During the day the sun's energy is transmitted through the lid and stored in the soil floor of the frame. At night, heat loss from the soil is slowed by the cold frame. Insulating the inside walls and covering the lid at night with old blankets can further reduce heat loss. A hotbed, in addition to slowing heat loss, would be able to replenish some of this lost heat due to its additional heat source.

Depending on your needs cold frames and hotbeds can be very simple or quite elaborate. Sizes can vary also. The back should always be higher than the front to allow as much sunlight as possible to enter the frame. Although the frame can be built to any size, a 3-foot wide by 6-foot long structure is convenient for home gardeners. Wood such as redwood or cypress will last a long time but is fairly expensive. Other woods such as pine, spruce or oak are less expensive but will need replacing more frequently. You can make the front, back and sides for a 3 foot by 6 foot frame from a standard 4 foot by 8 foot sheet of plywood also. In this case the

front, side and back pieces would be slightly smaller than indicated on the illustration on the front page. Using stainless steel or galvanized screws instead of nails will allow you to take the frame apart so it can be stored for the winter thus increasing its useful life.

Automatic vent controllers are reasonably priced and these will open the lid on the cold frame to maintain a preset temperature inside. These can be very advantageous since temperature control during the day can be one of the more difficult problems to overcome when growing plants in a cold frame or hotbed. Old wooden storm windows with glass panes were often used as lids for cold frames. You can also use polyethylene film or acrylic plastic sheets as the glazing material, which would be incorporated onto a wood frame. Acrylic is a more permanent material having a life span of 10-15 years. It is usually available at home centers or hardware stores. A 1/8-inch thick material should be sufficient.

Location of the frame is very important. It should be constructed in an area free of any shade and built facing directly south. A site with a slight slope will allow rainwater to run away from the frame lessening the problem of water accumulating inside. It should also be conveniently located. Consider having a source of water nearby so that plants inside can be easily watered. Many times plants may have to be brought indoors when very cold temperatures are expected so locating it near your home can be advantageous. If you are using heat cables, a nearby source of electricity will be needed. Some people choose to locate the frame against the home so that the back is actually “made” of the foundation wall of the home.

A cold frame structure is simply placed over a cleared area of soil. Soil can be mounded against the base of the structure to prevent heat loss and wind from entering. A hotbed, on the other hand, will be located over a bed of fresh manure and soil. Usually a hole slightly wider and longer than the dimensions of the frame is dug to a depth of approximately 3 feet. Fill the hole with 24-30 inches of fresh manure and top this with 6-12” of topsoil. The frame is then placed over this manure bed.

Plastic-covered waterproof heating cables are available from greenhouse suppliers and electric-supply houses. You may also be able to find suitable cables in gardening supply catalogs. These cables are flexible and easy to install and will function well for five years or more when used properly. It is very important to use cables intended for this purpose and to install the heating cables correctly. Read and follow all of the installation instructions. If the hotbed is used for growing plants that are in containers or flats the cable can be placed in the middle of a 2-inch layer of sand. The sand is then covered with a wire mesh with holes no greater than 1 inch. The plant containers are placed on top of the wire mesh. If you are actually planting seedlings directly into soil in the frame then the cable will need to be placed deeper in the soil. In this case dig out the topsoil to a depth of 8 inches and store the soil nearby. Level the bottom of the hole and lay the cable at the bottom making sure that none of the cable crosses itself. Cover the cable with 1- to 2-inches of sand and then place the same type of wire mesh mentioned above on top. Now backfill with the topsoil you stored and amend it if necessary (i.e. limestone, fertilizer, etc.) You are now ready to plant directly in this soil.

For those interested in more details on installing heating cables as well as diagrams, material lists and suppliers for constructing cold frames and hotbeds an excellent reference is *Greenhouses for Homeowners and Gardeners*, NRAES #137. Contact our office for the current price and for ordering instructions.

Resource: *Greenhouses for Homeowners and Gardeners*, NRAES-137, Natural Resource, Agriculture, and Engineering Service (NRAES), Ithaca, NY. 2000.

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