

If mere glass strikes you as a pitiful barrier against winter's fury, go underground and build a pit greenhouse. Resembling a root cellar with a glass top, the pit greenhouse combines the warmth of the sun with the insulating protection of the subsoil to create a friendly climate for plants.

A pit greenhouse is a structure half above ground and half below ground. In some ways, it could be considered a walk-in cold frame because it doesn't depend on artificial sources of heat to keep plants from freezing, except, on occasion, in cold climates. Dig to a depth of at least four feet, so the floor is well below the frost line. Then construct walls of concrete block or fieldstone. Finally, attach the glass roof and gable ends. If possible, the glassed-in section should face south; in winter, the sun never leaves the southern hemisphere. Cover the north roof with shingles. To aid drainage, spread a layer of stones or rough gravel a foot deep over the floor.

Thorough insulation is the key to a successful pit greenhouse. The sun is the primary source of heat, so you must be sure to keep trapped heat in and cold out. A good way to insulate the glass section is to place a layer of plastic film over the sash, so a dead-air space is created. Or attach bubble plastic (used for shipping fragile items) directly to glass. Doors should fit tightly and be insulated. The roof and gable ends are generally double constructed with ample insulating material between.

If--in spite of all your precautions to conserve heat--supplemental heat is needed, put incandescent bulbs under the benches. Or use small electric heaters with blowers and automatic thermostats.

Remember, though, that the pit greenhouse is decidedly cool and not suitable for heat-loving plants. Reserve the space for primroses, camellias, rhododendrons, azaleas, and hardy bulbs, such as tulips, daffodils, and hyacinths. Or specialize in the unending varieties of geraniums. The pit is an excellent place to grow cool-season vegetables, such as lettuce, chard, beets, or carrots. Certain annuals, such as petunias, chrysanthemums, and sweet peas, are also excellent candidates for pit growing.

Good air circulation is essential for robust plant growth. Install small fans at both ends to maintain the flow of air. The glass sash should be hinged to the ridge so panels can be propped open, allowing fresh air to enter and overheated air to escape.

Light, too, is crucial, especially during the winter months when sunny days are often the exception rather than the rule. Fluorescent fixtures can be installed directly over benches for supplemental lighting. If seedlings or cuttings are planned, fluorescent lighting will encourage the development of healthy roots.

Because the pit is usually unheated, maintaining temperatures above the freezing mark on cold nights may require extra effort. Keep quilts, canvas, and extra plastic on reserve, so glass can be quickly covered. A backup electric heater can be a plant-saver when temperatures and high winds are especially brutal.

