

ROOTING UNDER PLASTIC

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We at the Rhode Island Nurseries have been propagating our softwoods under polyethylene for the last three years and previous to that for two years, on a somewhat experimental basis.

I would like to start by trying to tell you how our propagating beds are prepared. Each bed is six feet wide and up to 100 feet long, of course the length does not matter. We use 8 or 10 inch boards for the sides of the bed. Of course, a 1" x 2" furring raised to about 10 inches is much cheaper and will do practically as well.

It is important to thoroughly prepare the soil in your bed. I prefer a Rotohoe to a tiller as the mechanical hoe will not pulverize the soil as much as the tiller will, which means less compaction after watering. Of course, a digging fork and a strong back will do a good job also. Next, the bed is raked as level as possible and the soil is pressed down with a wooden tamper or a roller. At night the prepared bed is covered with tar paper or discarded plastic to protect it against rain or digging by animals.

Soft cuttings six to ten inches long, depending on the variety, are inserted into the soil. We probably use a different method than most people, the men doing the sticking sit on a plank placed across the frame and use a footboard. A pointed steel dibble about one quarter inch thick and eight inches long is used to make the hole for the cutting and to tighten it at the base with a slanting movement. When a four foot section of the bed has been completed, the cuttings are watered in, although one might call it flooding, and are then given temporary protection from wilting by a four by six foot shade covered with burlap which is kept damp. When four of these sections (16 ft) have been filled, we begin covering that much of the bed with plastic.

A shallow trench is dug just outside the ends and sides of the bed and the shades with the burlap are removed. Next four 2 x 2 pieces of lumber, two feet long are spaced four feet apart in the center of the bed and are driven eight inches into the soil. A 1 x 2 inch furring 16 feet long is then nailed on top of these supports forming a ridgepole for the plastic through the center of the bed. This 16 inch high center has proved to be the best height for providing the correct humidity in our locality. All sharp corners are padded to prevent tearing of the plastic, which is unrolled over the structure. One side of the plastic is laid in the trench, covered with soil, and tamped down by foot. Next the plastic is pulled tight across the frame and fastened with soil in the other trench. Since plastic traps heat, specially constructed 7 foot shades with laths one quarter inch apart are used. The extra foot of the 7 foot shade allows enough additional length so that the shades protrude 6 inches beyond the edges of the bed. We use either wooden runners or "T" shaped iron stakes on which to place our shades. They are high enough so they are 2 inches above the ridgepole. The overhang of the shades also provides shade for those cuttings near the edges of the bed. This procedure continues until the frame is filled.

The plastic used in covering these cuttings is 4 mils in thickness and comes in rolls of 100 feet long and 10½ feet wide. It is used only one year.

Through experience one learns to group the cuttings of these varieties that root in the same length of time. If this is impossible because of small numbers of certain varieties, the bed can be sectioned off by bringing the plastic down into the soil to form a wall, thereby separating the varieties which take different lengths of time to root. If one propagates a large number of varieties, be sure to keep the slow rooting and fast rooting varieties separate. For instance, *Magnolia* and some of the *Viburnum* varieties just would not be practical to stick with fast rooting *Deutzia*, *Weigela* and *Hydrangea* varieties.

Once the frames are closed, the plastic covers should not be removed for at least two and one half to three weeks. If at the end of this time, it is discovered that the tops of the cuttings are dry, you can be sure that they were not watered sufficiently when originally inserted. After the cuttings begin to root, I recommend that you give them air by opening part of the flap on one side of the plastic covering and letting it hang down. This allows the air to circulate without drying the cuttings too much although it starts the hardening off process. After two or three days the plastic is rolled up on this side and tucked between the lath shade and its supporting runners or stakes. At this time additional watering is necessary. I should caution you that fungus might set in at this particular stage of development if they do not get sufficient air in the bed.

The plastic is removed entirely after about one week or ten days. The shades are kept on for another two weeks and then gradually removed when the cuttings are really hardened off. I, for myself, believe propagation under plastic is cheaper than under glass in cold frames or mist. Of course, sashes are not used anymore but just for comparison, what a terrific drudgery it used to be to root softwood cuttings.

I can highly recommend winter propagation in a plastic house built to the University of Kentucky specifications, especially for anyone with little capital. An outside layer of 4 mil. and an inside layer of 1½ mil. plastic with a two inch air space between is advisable. A sufficient number of ventilators should be included to control the heat in the early Spring. Even on a bright January day, temperatures in a house of this type may rise to 95 degrees, which, of course, would force excessive top growth.

Heating can be done in a house of 52 x 12 feet with a two pot kerosene space heater, which gives about 80,000 B.T.U.'s and would keep the house at 70 degrees when the outside temperature is zero. With a heater like that the temperature should be kept high in order to keep the sand at 60 degrees. *Taxus*, *Juniperus*, *Ilex*, *Thuja*, and *Chamaecyparis* cuttings are grown successfully plus the seed of *Pieris*, *Azalea*, and *Rhododendron*.

A word of caution is in order, since special care should be taken to keep the rooting medium moist. Sand tends to dry out quite rapidly near the sides of the plastic.

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MODERATOR WARNER: Thank you, Martin. We have next Mr. Robert Eshleman, Jr. of Bloomsburg, Pennsylvania, to talk on "Planting Through Plastics." Mr. Eshleman.

Mr. Eshleman read his prepared paper on the use of plastics for rooting hardwood cuttings, and for growing potted plants. (Applause)

PLANTING THROUGH PLASTICS

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This system works well for me when I need only 500 to 1000 plants of a variety of flowering shrub, produced quickly, with little labor or expense.

The principle of using plastic to plant through is much like any other mulch but with many features that are far superior to the average material used for mulching. By plastic I am referring to sheets .002 to .004 inches in thickness and preferably black in color.

The plastic is waterproof except where it is punctured to insert the cutting or plant. Rain enters at these points and spreads under the plastic. It cannot leave except through the foliage of the plant. The plastic maintains a uniform soil moisture content even through dry spells. This makes the perfect environment for rooting hardwood cuttings.

The plastic acts as a greenhouse to help retain heat in the soil. This is very beneficial for root growth in the early spring.

The plastic makes an effective weed control barrier, and if black plastic is used, many weed seeds will fail to sprout at all. This enables one to plant out small cuttings that would ordinarily be engulfed by weeds or which would require a great deal of labor to keep clean.

The plastic keeps the rain from packing the soil surface so that good aeration is maintained and cultivation is unnecessary. The plants hold the plastic down so that the mulch stays in place.

In order to give you some idea of how we use this technique in our operation I will describe the general procedure in detail. Prepare the beds for planting in the usual manner for the type of plant being raised, adding all soil amendments and rotovating them in. Do this preparation the fall before, if possible, to be able to make earlier spring plantings.

Spread the plastic over the bed and anchor the edges with soil until the bed is planted. The width of plastic is optional and would depend on the width of bed use. If shading is to be used, 4½ foot plastic on a 4 foot bed works well. For hardwood cuttings of flowering shrubs shading is not ordinarily used which allows you to make the beds much wider.

I have tried this system of planting through plastic with two types of plants, i.e., hardwood cuttings (*Weigela rosea*, *Forsythia spectabilis*, *Spiraea prunifolia*, etc.) and with potted plants (*Pyracantha coccinea lalandi*, *Cotoneaster divaricata*, etc.)