

ROOT PIECES AS A MEANS OF PROPAGATION

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Propagation by root pieces is not obsolete as long as it is economically viable. In spite of the many changes and developments in plant propagation during the last half century, the propagation by root pieces is still a practical and profitable method for certain types of plants.

Reasons for using this method of propagation include: less labor may be involved; the work load may be distributed to periods of reduced demand; less time and space in the propagating facilities, or even none, may be required; and lower crop rollover time may be necessary. For these and other lesser reasons, well managed nurseries still continue using piece root propagation for certain crops.

The source of the root materials is from the growing fields after the crops have been removed. Occasionally, small quantities are dug with a sharpened spade from growing plants in the nursery. All roots are dug in late October and November.

For root recovery until the 1950's, the empty fields were plowed to a shallow depth with a turn plow. This was followed with loosening and collecting with a spring-tooth harrow. This practice was discontinued with the introduction of the spring-trip, solid-shank cultivator. These shanks are equipped with long, narrow, bull-tongue type shovels. This is a one-tool-operation that does less damage to the roots. Depending on the type of roots, the type of soil, and the amount of soil moisture, from two to four passes with the cultivator are normally necessary. The roots are transported at frequent intervals to the propagating facility to avoid dehydration.

There are optional ways of handling the roots from this point. For root masses with many fibrous feeder roots, storage may be outdoors in recessed cold frames until early spring planting. For heavy, fleshy roots with little or no feeder roots, the direct sticking in pots and dormant storage in cool greenhouses during the winter season; then a period of active growing during the spring and early summer; followed by mid-summer planting in the field is an expedient method. There are slight variations on these methods which are of minor importance.

For several decades, one nursery I know has planted annually 4,000 to 7,000 root masses of *Forsythia* × *intermedia* cultivars with or without sprouts. The root masses were pruned to under 4 in. so as to pass through the planter shoe. Any root sprouts present were pruned to 4 to 6 in. These prepared root masses were healed-in using

a perlite mulch in large deep nursery flats. This perlite was salvaged from the propagating bench medium after renewal. These flats were stored in recessed, unheated cold frames from November until field planting time in the spring. Two layers of roll lath shading covered the frames from November until mid-March. A single covering was retained from mid-March until planting time in April or May. If planted early, these forsythia made heavy two-to-three and, frequently, three-to-four feet landscape grade plants by October.

Additional deciduous shrubs still grown efficiently by this system are *Acanthopanax sieboldianus* [syn. *A. pentaphyllum*], *Symphoricarpos* × *chenaultii*, 'Hancock', *Hypericum calycinum*, and *Liriope* species. With the advent of indoor intermittent mist propagation and negative pressure ventilation, some deciduous shrubs grown from root pieces are converted to softwood summer cuttings. This conversion produces heavier, faster growing plants and reduces production time by one year. *Aronia*, *Clethra*, *Comptonia*, *Euonymus*, *Spiraea*, and *Viburnum* are grown by this changed method of propagation.

The second method of direct sticking in pots is employed for heavy, fleshy roots with little or no feeder roots. These fleshy roots are cut about 4 in. long. Carefully observe polarity until potted. Three-inch clay pots are used with a soil-peat-perlite mixture. These are plunged, pot to pot, in a salvaged perlite mulch. At least one in. or more of perlite is desirable under the pots. One-half to one in. of perlite mulch should be above the rim of the pot after settling by watering. These are carried moist, but not extremely wet, from December through February. A night temperature of 32 to 40°F is best during this period. With day temperatures of over 70°F the house should be ventilated. Starting in early March, feed monthly with a 20-20-20 soluble plant food. As the growing season warms up, carry a slightly higher moisture level in the mulch. Stabilizing of the moisture level by the capillary action between the perlite mulch and the potting soil stimulates and stabilizes the steady, rapid growth.

Plastic pots are a poor second choice. Do not use peat pots or light soilless mixtures. The use of any of these materials inhibits the capillary action and impedes rapid growth. If used, the plants will not have sufficient size and vigor for mid-summer planting in the fields. The use of light soilless mixtures is hazardous for summer planting unless irrigation can be supplied every 5 to 7 days. Such is not the case with a soil-peat-perlite mixture.

This second method is highly suitable for cultivars of lilac (*Syringa vulgaris*) and flowering quince (*Chaenomeles* spp.). Two-year lilacs, grown from root cuttings, are equivalent to four-year-old plants propagated by softwood cuttings. Lilacs grown from root cuttings are nearly 100% successful in the propagating beds as well as in the growing fields. Success with softwood cuttings of lilac are

rarely reported. Favorable performance may be expected from the flowering quince. Saleable plants are more shapely and fully branched, and are produced more quickly than softwood cutting-grown plants.

The development of piece root cutting-grown lilacs exceeds that of lilacs grafted on *Syringa*, *Ligustrum*, or *Fraxinus* understocks. These root produced plants are not associated with the problems of grafted lilac. These problems include short useful life expectancy, understock incompatibility, constant sprouting of the understock, and the inability of grafted lilac to regenerate following an attack of lilac borers.

Field soil should be prepared in advance of the late July and August planting time. Delay planting until there is a heavy rain of over 1 in. preferably over 1½ in. As soon as the rain has settled, and mud does not clog the planter shoe, set the plants in the field. Two to three days after planting, overspray with Surflan pre-emergent weed killer and cultivate in lightly. This will be effective for the remainder of the growing season. For the balance of the season, the plants will make a relatively small amount of top growth, but an abundance of root growth. The following spring, these will make an extra-early start. With seasonal rainfalls during the summer months, there will be substantial secondary growth.

Prior to propagation of softwood cuttings under intermittent mist, some small flowering trees were grown by root cuttings rather than by grafting. Some were by direct sticking in pots, while others were in propagating beds to be potted after rooting. This has, for the most part, been curtailed due to slow production growth and to branching trees that are difficult to structure. These include *Amelanchier*, *Cotinus*, *Malus*, *Prunus*, and *Pyrus*.

Propagation by root pieces is not limited to woody plants as may be assumed from all that has been stated so far. Many herbaceous perennial plants may be propagated by the methods outlined. *Papaver* may be propagated during their summer dormancy by fleshy piece roots directly potted in a soil-peat-perlite mixture or stuck in the propagating bed medium for rooting and later potting. Be sure to stick vertically and observe polarity.

Many fleshy rooted herbaceous perennials can be propagated by 1 in. pieces during their winter dormancy. In November or early December, nursery flats are filled with a soil-peat-perlite mix, and the root pieces broadcast on the surface, covered with about ¾ in. deep perlite. These are carried in a cool greenhouse during the winter season. As the spring season approaches, new feeder roots penetrate into the soil and foliage develops. Individual potting is usually made in late April and during May. Grown in this manner are *Anemone* × *hybrida*, *Dicentra eximia*, *D. spectabilis*, *Phlox paniculata*, and *Stokesia laevis*.

Growing from piece roots is historically one of our older

methods of vegetative propagation. Old is often interpreted as being obsolete. Obsolete is defined as "of a discarded or outmoded type; out of date." It is freely admitted that some root piece propagation has been replaced with more modern methods. It is doubtful that any of those assembled here today will see tissue culture propagation substituted for the rapid and vigorous piece root propagation of hybrid lilacs.

Please note these observations have been made for the U.S. mid-Atlantic states.

EASTERN REGION QUESTION BOX

The Question Box Session was convened on Thursday at 4:45 p.m. and again on Friday at 10:40 a.m. Both sessions were combined and presented here as one. Bruce Briggs and Ralph Shugert served as moderators.

MODERATOR SHUGERT: Question for Robert Gouveia. How often and how do you change media in your sunken beds? It seems that it would be quite difficult to do. From our experience, sunken beds like yours are great for ground heat effects but pose some problems when either treating the medium or changing it.

ROBERT GOUVEIA: It is pure sand and we change it every two years. We just wheelbarrow it in and out. We are thinking of adding perlite to the medium. We do not treat it chemically but simply remove the top 1 to 2 in. of sand at the end of the first season.

MODERATOR SHUGERT: Question for Gary Koller. Why should the horticulture industry concentrate on providing dwarf and slow growing cultivars to customers who typically prefer quick establishment and immediate impact. Homeowner "life expectancy" dictates results in 3 to 5 years. How can your "dreamscapes" be provided at a cost which is not prohibitive?

GARY KOLLER: Most homeowners do want quick establishing plants, however, I do see a growing pool of landscape designers and architects who realize that when they put in these rapidly growing plants the quality of their design deteriorates rapidly because they can not afford to provide the horticultural maintenance or find people to provide that maintenance. Therefore they are thinking of transferring some of those dollars from maintenance costs into plant costs and put less into maintenance over the long term. These landscape architects are trying to create effects that last over time, and are the people who are looking for these new plants. It will take some education on our part to convince the homeowners to transfer some maintenance costs to plant costs.