the rootball is about the size of a quarter, and are flatted in a soil mixture of equal parts peat, perlite and bark.

Cuttings taken in early summer can be planted directly out in beds. Care must be taken to provide the young plants with daily watering and shading from direct sunlight. The beds should be covered with hay or some other form of protection for the winter. Poison bait of some type should be placed at intervals under the hay. Rooted cuttings that have been flatted may be overwintered in cold frames covered with hay, or covered with poly or sash, using some form of rodent poison. Cuttings may be kept in a poly tent where the temperature doesn't go below freezing. An alpine house has also been used successfully for overwintering these cuttings. The hay or other winter protection should be removed early in the spring. Cold frames and alpine houses must be ventilated on sunny days, to obtain good air circulation.

Potentilla fruticosa cultivars grown successfully by Weston Nurseries using this method include: 'Arbuscula'; 'Gold Cup', 'Jackmannii'; 'Katherine Dykes', 'Klondyke', 'Longacre', 'Mandshurica', 'Maanelys' (syn. 'Moonlight'), 'Primrose Beauty', 'Tangerine'. A new cultivar from England, soon to be distributed in this country is *Potentilla fruticosa* 'Red Ace'.

PROPAGATING FRENCH HYBRID LILACS BY SOFTWOOD CUTTINGS

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Lilacs have been reproduced asexually for centuries. The methods used have varied greatly from continent to continent and from nursery to nursery. Many nurseries prefer to propagate their lilacs by root-grafting onto understocks of *Ligustrum*, or *Fraxinus*, while others prefer to propagate them from suckers, or divisions. At Cherry Hill Nurseries, Inc., located in the northeastern corner of Massachusetts, about 4 to 5 miles from the ocean, we have found that a softwood cutting procedure works well.

TIMING

The single most important factor in the success or failure in the rooting of softwood cuttings of French hybrid lilacs, is the time the cutting material is collected. In our latitude this operation begins around May 25 and continues until the end of June.

Although development of new growth varies from year to year, best results have been obtained between these dates.

CUTTING SELECTION

Only current season's growth is used. As growth rates vary among cultivars, the length of the cutting wood selected will vary. The collected cutting material is placed in 2 mil poly bags and is placed in a cool cellar to prevent the soft growth from heating in the bags. No additional moisture is added to the bags. An attempt is made to collect just enough cutting material for each day's propagation. We try to work with the freshest material possible.

CUTTING PREPARATION

Following collection, the new softwood cuttings are trimmed to 3 to 4 inches, depending upon the length of the internodes. The cuttings are stripped of all but two pairs of leaves and the very soft terminal growth is pinched out. Often the cutting material selected is so soft a terminal bud has not formed. In other cases, mainly where the growth is more firm and mature, the terminal bud is left. However, the two small underdeveloped leaves on either side of this terminal bud are removed. The cuttings are now ready for a hormone treatment.

HORMONE TREATMENT

Two hormone concentrations are used; Hormodin #2 and Hormo-Root B. Both are used in powder form, which is sprinkled out onto pieces of paper. Care is taken to see that the basal ends of the cuttings do not get too wet. If they are allowed to get too wet, too much hormone powder will stick to the basal ends and the cuttings will be killed. The hormone powders on the papers must be kept dry from day to day. Great damage can be done to these softwood cuttings by too strong a hormone powder. The growth is so soft it is easily killed by "overdosing." In general, we have found that the white cultivars require the longest time to root (2 to 3 months), while the darker colors are the quickest to root (1 to 2 months).

ROOTING MEDIUM

We have found that the best rooting medium for softwood cuttings of French hybrid lilacs is a 1:1 mixture of sand and perlite. The sand is a clean, washed sand, while the perlite is a coarse horticultural grade. The two ingredients are combined thoroughly on a volume basis. Mixing is a messy job due to the dryness of the perlite (a respirator helps); the medium is watered thoroughly for several days prior to sticking. Once the

medium is satisfactorily moist the cuttings are stuck approximately 2 inches apart in rows which are approximately 4 inches apart. Great care is taken to see that the cuttings are firmly watered in, which is difficult with this medium, as the perlite tends to "float" to the surface.

PROPAGATING STRUCTURES

One of the reasons for our success in rooting softwood cuttings of lilacs is the structure we root them in. After the cuttings have been stuck, we mist them to prevent wilting. The time clocks are set so that the cuttings receive 6 seconds of mist each 30 seconds.

In addition to misting, the cuttings receive additional humidity by covering the propagating structure with 4 mil, clear polyethylene plastic. This creates a very high humidity situation for the cuttings to root in. The plastic covering also causes a buildup of heat on a clear day. When this occurs we ventilate the house to reduce the heat buildup. We try to maintain an air temperature of approximately 100°F.

Root initiation begins with a 10-14 day period under these hot, humid conditions. After rooting, the cuttings are gradually hardened off by reducing the amount of misting until they are watered only as needed by hand (late August).

The cuttings remain in the rooting bench for the entire winter. They freeze solidly in the rooting medium, as there are no heating facilities in the propagating structures.

In the spring the bare-rooted cuttings are lined out in the field. They are planted 10 inches apart in the row, with 30 inches between rows. Their survival in the field depends on rain as we have no irrigation facilities.

At the end of the first season's growth the young plants are trimmed back to a height of 2 to 3 inches above the ground. This induces branching of the second year's growth and we have a well-branched, heavy liner at the end of the second growing season. In mid-September the 2-yr old liners are transplanted; the tops and the roots are pruned back, the plants set 30 inches apart in the row and allowed to grow for another 2 years. At this spacing they develop into well branched, well budded plants for the nursery trade.