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## PROPAGATION OF HYBRID LILACS

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### PROPAGATION BY GRAFTING

The production of lilac has been our major specialty since 1935. We graft 120,000 to 150,000 each year. In brief, our method of propagating hybrid lilac is to bench graft the lilac scion on green ash root pieces. We use a whip graft and secure the graft with grafting thread. The completed grafts are packed in poly bags, then placed in refrigerated storage, kept at a temperature of 31 to 35°F until we are ready to plant them directly to rows in the field.

Over the years we have made many experiments, 500 to 1000 grafts per trial, to test out a method and repeated it 2 years or more to double check the results. Like a good gambler we play the percentages learned from these experiments. Late years the stands of our lilac grafts have been quite consistant ranging from 70 to 90% per variety.

To raise this percentage closer to the 100% goal, we must look to the men handling the grafting knife. The sign of a good craftsman is a graft with a perfect contact the entire length of the cut, the cambium layers matching and in contact along at least one side.

It is ironic that this fall we dug the only poor crop we have had in the past 30 years. A number of things conspired to cause the poor results. We were not able to complete our field plantings until June 20th that year because of continuous rains. Because of wet ground the field planting crew did not or could not plant the grafts to the usual depth. Because of the late planting the grafts did not make their usual growth. The shallow planting depth plus an open winter with extremely cold weather resulted in winter-kill of many of the weaker plants.

Grafting lilac scions on green ash (*Fraxinus pennsylvanica*) root stocks might be called a form of layering. We are taking a stem section from above ground, attaching a nurse root, and placing the union deep into the soil. The nurse root will, if a good graft is made, feed the stem until it starts to put out its own roots. When this happens the lilac scion rejects the nurse root. On a few white varieties a small percentage of the nurse roots persist.

One year old green ash seedlings are cheaper to produce than privet; in three trials, ash gave the best stands. Two and 3 year old ash seedlings do as well but the fibrous roots make it more difficult to wind the graft.

Grafts packed in poly bags, gave an average increase of 17% over those packed in boxes with moist shavings, sawdust, or peat and eliminated the time of separating grafts from the packing material. The buds should remain dormant; we consider this important. Storing completed grafts in refrigerated storage until planting makes this possible. We feel the graft can be more firmly bound with thread and that tape prohibits roots from emerging at the base of the scion where they are most apt to develop first. Our test runs have proven this true.

Planting is done with a 2-row mechanical transplanter. From past experience we found lilac grafts should not be planted until the ground is warm enough for corn planting. After the grafts are set in the trench, they are cultivated — almost covering the graft.

An irrigation system is good insurance. One good soaking after planting forces the grafts into an early quick start. The grafts are cut back in the fall to force more canes. At 2 years the plants are mostly 18 to 24 inch and after 3 years mostly 2-3 and 3-4 ft. A shaker digger on a D2 caterpillar with 3 ft clearance takes most of the hard work out of harvesting. Our 3 yr lilacs are 100% own root.

The grafting of lilac is essential to filling out our yearly work schedule, keeping our key employees profitably employed with inside work from January 15 to March 15 — a time of year there is not much else we can do in Minnesota.

We feel that proper tilth of the soil is very important in producing well rooted quality lilacs. In preparing a field we plow under two green manure crops; a crop of corn and a crop of sorghum-sudan grass both when about 4 to 5 ft high.

### PROPAGATING BY ROOT SUCKERS

Carl Orndorff reported to this Society in 1974 excellent results propagating *Syringa vulgaris* by piece-root cuttings. Prompted by his presentation, this past year we saved all the roots from plants discarded and roots broken in the grading process. These were cut into 3 to 4 inch pieces, some 15,000, and lined out this past May in a coarse sand bed which was kept moist and fertilized periodically.

From this first years trial nine varieties resulted in a good percentage of plants to line out, seventeen varieties produced none or too few plants to make it worthwhile. My conclusion is that this method has its limitations as to quantities and varieties, but is worthwhile to supplement other methods. From our experience this first year it would seem that a piece-root must have a growth bud visible in order to develop into a new plant.

Root suckers had been our method of propagating the common purple lilac because they always put out so many root suckers. This characteristic has given lilac in general a bad name as many people remember a single old common purple lilac taking over an area 20 ft across, and presume all lilacs are alike.

I have been wondering, if continuing to use root suckers would result in succeeding generations producing plants with more and more tendency to put out root suckers? My son says no, that all characteristics of that particular clone will remain the same.

### PROPAGATING BY SOFTWOOD CUTTINGS

This past spring, for the first time, we tried propagating lilac by softwood cuttings, in coarse sand, under a white poly

covered tunnel and intermittent mist. We were quite pleased with the results. Some 7700 cuttings of 22 varieties were stuck. Most varieties rooted 66 to 86%. The first batch was taken May 5 to 7 just as the bloom was starting to open; the second was taken May 18 to 20 at the tail end of the blooming season. With four varieties we made numerous trial tests with the following results:

| <u>Syringa vulgaris</u><br>cultivars | No hormone             |                       |      | IBA<br>1666 ppm |
|--------------------------------------|------------------------|-----------------------|------|-----------------|
|                                      | Short tips<br>3-4 inch | Long cuttings<br>tips | base |                 |
| 'Monge'                              | 72%                    | 83%                   | 66%  | 84%             |
| 'Madame Antoine Buchner'             | 45%                    | 51%                   | 62%  |                 |
|                                      |                        | IBA Quick Dip (ppm)   |      |                 |
|                                      | No hormone             | 1660                  | 2500 | 5000            |
| 'Paul Thirion'                       | 78%                    | 77%                   | 86%  |                 |
| 'Ellen Willmott'                     | 20%                    | 22%                   | 26%  | 37%             |

Many others had large callus but no roots. If I understand correctly this means a stronger IBA solution should have been used. These tests indicate the stronger treatments produced better rooting, and that all three types of cuttings will root reasonably well.

I have gone through the *IPPS Proceedings* and *The Plant Propagator* and asked for advice in regard to the best time to take cuttings of hybrid lilac. Four sources related the timing to condition and size of the cuttings, i.e. when new growth has reached a length of 4 to 6 inches and before stems become hard and woody. Four associated the timing to time of bloom — three recommended taking cuttings when blooms first begin to open and the other one shortly after blooming. Four used the condition of the buds, i.e. taken before terminal bud is visible, when terminal bud is unfolding, as soon as terminal buds are formed.

Robert Nuss, Penn State, stated "the narrow period of time cuttings will root appears to be related to flowering and subsequent bud set." Roy Nordine reported fair to good results taking cuttings in the Chicago area from June 12 to July 11. In a letter to me in 1956 he wrote that Dr. Chadwick had learned on a trip to Europe that greenwood cuttings taken late in summer when the flower buds were being formed for the next season, gave much better results than those taken at an earlier date. Last year, Ray Halward at Hamilton, Ontario reported his best rooting, a commendable 80%, from the last week in June until second week in July. Henry Chase of Chase, Alabama, in a phone call said that they have stuck greenwood cuttings in August with good rooting in 4 to 5 weeks and even had 75 to 80% rooting on hardwood cuttings stuck in coldframes in the winter.

Conclusions — Although most consider the short period in the spring the only time to take cuttings, you may, if you are a good propagator and have the knowhow, have success at later dates.

## PROPAGATION OF *CLEMATIS*

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Clematis propagation in the United Kingdom is generally carried out by the use of cuttings, grafting, seed, or division of roots. My company only uses three methods, that of propagation from cuttings, seed and division; species are generally the only ones produced from seed. Seed is acquired from plants growing in our garden. Quite a number of species do not come true from seed and produce variations, these variations are acceptable in general commerce. The species which are produced from seed are as follows; *Clematis afoliata*, *C. campaniflora*, *C. hirsutissima* var. *scottii* (syn. *C. douglassii* var. *scottii*), *C. fargesii* var. *soulei*, *C. flammula*, *C. integrifolia* 'Rosea' *C. integrifolia* 'Olgae', *C. viorna*. *C. vitalba* and *C. viticella*. The herbaceous types are produced from divisions. Selected clones of the above species are increased from cuttings, however, in most cases they prove to be difficult. *Afoliata* can also be propagated by layering on a commercial scale. All other species and cultivars are reproduced from cuttings.

**Stock Plants.** Stock plants are only used for new species or cultivars and other clones which are very difficult to root from cuttings. In general stock plants produce cutting material which is too large for the type of commercial production methods that I use.

**Cutting Material.** Cutting material is harvested from young plants 6 weeks after the plant has been potted in a 7 cm pot, this material is strong and healthy and is the ideal juvenile material, producing the right size of cutting for production requirements.

**Method of Taking Cutting Material.** Cutting material is removed from young plants using a new, one-sided razor blade per variety. A new blade is used to prevent unapparent disease infection being passed from one variety to another. Cuttings are placed inside a container which is lined with a Captan soaked cloth. The position where the young plants are cut to give the cutting material varies from cultivar to cultivar. Generally, two fully matured nodes with correctly formed leaves remain, dis-