ROOTSTOCKS FOR LILACS

The varieties of common lilacs are generally propagated by cuttings or by budding or grafting on privet or lilac rootstocks. There are certain disadvantages in all of these methods of propagation. Propagation by hardwood cuttings is usually unproductive. Softwood cuttings are more successful, but these must be made during the busy season. In either case the resulting plants grow slowly and ordinarily require three years to attain a height of two feet.

Privet rootstocks are used extensively in the propagation of common lilacs, because budding or grafting can be done during the slack season and a marketable plant can be produced in two years. If, however, the privet rootstock is retained, the lilac will suffer from "graft blight." Twenty years ago Chester (1), working at the Arnold Arboretum, observed that lilac grafted on privet made good growth for several years. Symptoms of graft blight were evident, but had little effect until the plants were three to five years old. At that time the leaves became small, brittle, and chlorotic, and plant growth was retarded. If, however, the privet rootstock is used only as a temporary nurse root, the graft blight does not persist and a healthy plant is produced. By planting the grafts deep the scions of most lilac varieties will strike root and replace the privet rootstock. But too often the deep planting is delayed or is inadequate, so that the privet root survives and injures the lilac in later years.

Both the vulgaris lilac and villosa lilac have been used as rootstocks for the common hybrid lilacs. Shoots from the villosa rootstocks can be recognized and removed, but sucker growth from vulgaris rootstocks often cannot be readily differentiated from the grafted variety, and the rootstock growth may replace the grafted scion.

There are many advantages in growing the common lilacs on their own roots either by cuttings or by use of a nurse rootstock. There is no danger of graft blight, no possibility of the rootstock replacing the grafted variety, and the
erasing from the own rooted lilac is the best insurance against the ravages of the lilac borer. On the other hand, the profuse development of suckers from the root produces so many stems that regular pruning is necessary to promote vigorous growth and flowering of the main stems.

Several methods of propagation have been developed recently which should be of considerable value in the propagation of the common lilac. The Kerr method of grafting should permit the use of privet and other rootstocks with much less danger of the persistence of the nurse root. This method takes advantage of hormone polarity. The piece root is grafted upside down so that the root promoting hormone is accumulated at the graft union and stimulates rooting of the scion and suppresses growth of the nurse root. This method has been used in the propagation of Arnold Giant forsythia, a variety which is hard to root from cuttings, by Richard Fillmore (2) at the Arnold Arboretum.

Another method of lilac propagation which appears to be promising is the use of the tree lilac as a rootstock or nurse root for the common lilac. The tree lilac, Syringa amurensis japonica (Maxim.) in Japan grows to be a tree 30 feet tall. Although it is in the subgenus Ligustrina it is compatible in grafting with most species and varieties of the Euysyringa. The seedlings require two season's growth in New England before they are large enough to bud or graft. The tree lilac seedlings have been budded and grafted with various vulgaris varieties, with villosa hybrids, and with hybrids between vulgaris and laciniata. All have made good growth. The average growth of common lilacs budded on tree lilac has been about 18 inches the first year, although occasionally one-year whips have reached a height of nearly four feet. In most cases the bud union is very good with a subsequent slight overgrowth of the tree lilac rootstock. There have been reports that the tree lilac overgrows the common lilac scion (3), but to date the graft unions appear to be perfect in most cases. The white flowered varieties of common lilac budded on tree lilac have shown some evidence of incompatibility as indicated by the swelling of the stem at the bud union.

The tree lilac does not sucker from the root, and as a result the budded varieties develop a sturdy tree-like growth. The common lilacs on tree lilac rootstocks make rapid growth the first year, but subsequent growth is less rapid. A five year old "Congo" on tree lilac is less than six feet tall, but the plant is very sturdy. The trunk circumference, six inches above the bud union, is five and one-half inches. This specimen first bloomed in the spring of the fifth year, but others have bloomed in the third year. The villosa varieties on tree lilac usually bloom the second year.

While it may be too early to predict the ultimate success of the tree lilac as a rootstock the results to date are most promising. If a tree form of common lilac is not desired, the budded plants can be headed back to produce low lateral branches, or the graft union can be planted deep to force rooting from the scion. The use of the tree lilac as a nurse root would avoid all dangers of graft blight.
PLATE XIV

Fig. 1. One-year-old whip of *S. vulgaris* "Mrs. Marshall" on *S. amurensis japonica* rootstock. Fig. 2. One year's growth of an F₁ hybrid of *S. luciulata* × *S. vulgaris* budded on a tree lilac seedling. Many of these *Chinensis* hybrids make more growth in one year on lilac roots than they make in five years on their own roots. Fig. 3. "Congo" budded on tree lilac, flowering at the beginning of the fifth year. Fig. 4. A *Preston* hybrid lilac budded on tree lilac bloomed the second year and flowered fully the third year.
The use of tree lilac rootstocks appears to merit trial by commercial propagators. The Arnold Arboretum has a limited amount of seed for distribution to propagators who may be interested in testing the tree lilac as a rootstock for common lilacs.

Karl Sax

REFERENCES

