

The demand by landscapers for good, dependable, attractive ground covers is growing daily, and the breeders and propagators are years behind. Hopefully this gap will be filled with quality as well as quantity. Not enough has been done to breed better ground cover plants. University and commercial plantsmen must begin a concentrated selection program to introduce new clones into the nursery trade.

Ground covers can be used where grass will not survive. We must do more to educate the public to the beauty and usefulness of this class of plants.

MODERATOR CUNNINGHAM: Thank you, Prof. Giles. Our next speaker is another professor and our new Award of Merit winner, Prof. Harvey Gray; he is going to tell us about some propagation trials with ground covers.

PROPAGATION OF SELECTED GROUND COVERS

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This report summarizes my efforts over the past 7 months and discusses 16 different ground covers. The bulk of the plants observed are at Planting Fields Arboretum, Oyster Bay, New York. Mr. William Cunningham, Waldron, Indiana supplied plants for observation, and Mr. James Cross, Cutchogue, New York supplied data on bearberry production.

Ajuga reptans 'Burgandy Glow', Carpet Bugle. This plant develops stolons which produce rooted plantlets at the stolon terminals. The plantlets are well developed in July and August. These small plants develop well when potted in Cornell mix in peat pots and placed in a coldframe for growth and winter protection. A 40 to 50% shade is most helpful to these plants at all stages of growth.

Arctostaphylos uva-ursi Bearberry. This is a procumbent plant developing very few roots. In past years I have rooted this plant with varying degrees of success. The following statement is based on data from Jim Cross: "Small cuttings taken well back in from the long terminals of plants growing on the dunes of Eastern Long Island produce the best plants. Cuttings taken from plants growing on the mid-island pine barrens are less satisfactory. Cuttings stuck in sand early in March, carried at 65°F and treated with ½ Hormodin #3 and ½ Benlate produced 98.9% well-rooted cuttings.

Convallaria majalis, Lilyofthevalley. This is a strong rhizome-developing plant. Valley pips, available in the trade, develop on the terminals of these rhizomes. Observation indicates that if the rhizome terminals are removed from a 2 or 3 yr bed in October and replanted, a fine cover will develop, even under Norway maples. This plant appears to do best in a shady area where the soil is made loose with organic matter.

Euonymus fortunei. *Euonymus* is a free rooting plant. The purpose of including this plant here is to call attention to how IBA affects rooting and growth. Cuttings made in July, treated with and without IBA powder reacted as follows:

No IBA	0.3% IBA	0.6% IBA
Good roots no root-shoot stunting	Root and shoot stunting	Severe root and shoot stunting

Fragaria (Hybrids) Strawberry. This excellent ground cover, growing in the sun, produces vigorous stolons. Most stoloniferous plants are affected by apical dominance; the buds on the stolons of strawberry are not affected. When the strawberry plants are used in an ornamental landscape planting, it would be wise to set plants closer than for berry production.

Hedera helix English ivy. The rooting of this plant is a simple matter. More concern should be given to the free branching forms. There are two varieties at Planting Fields Arboretum which make a very dense cover in short order. To propagate these varieties one may cut second year runners midway between nodes with the developing shoot growths as one would in making leaf-bud cuttings. When the cuttings are to be grown on, it would be wise to stick or set the cuttings in peat pots, using a sand-peat mixture.

Iberis sempervirens Candytuft. This is an attractive ground cover. When planting in the landscape it would be wise to use 2 yr potted plants. Set the plants fairly close together for good ground coverage. The best cutting rooting percentage was obtained from firm wood taken in late July. IBA powder 0.3% produced the best results.

Lonicera japonica 'Halliana' Hall's honeysuckle. This is an ideal ground cover for roadside slopes. Cuttings made in June from current season growths produce fine plants by August. The nodes of ground-running stems root on moist fertile soil. The runners may be severed between the nodes and planted as leaf-bud cuttings when roots have formed. Cuttings may be potted in peat pots to grow on under shade.

For anyone seeking a less man-hour production procedure, seedage could be the answer. A proven procedure is outlined here.

1. Collect berries and clean in October-November.
2. Prepare flats with Cornell Mix and sow seed to the depth of 1 inch.

3. Stack flats out-of-doors in a sheltered, shaded area.
4. Cover stack securely with polyethylene film.
5. Bring flats into the greenhouse for germination in March.
6. Transplant seedlings to 3 inch peat or plastic pots.
7. Plants started by either seeds or cuttings require one growing season to reach the size for planting out.

Pachysandra terminalis, Japanese spurge. July cuttings stuck in sand under burlap shade make good roots in 6 to 8 weeks. At this time they may be planted in the landscape or put in peat pots for spring planting. Producing plants from rhizome cuttings can be very rewarding. The procedure is as follows:

1. Lift a 2 yr bed of stock plants in early May.
2. Cut the rhizomes into sections about 2 inches long.
3. Insert the cuttings horizontally to the depth of 1 inch in a bed of sandy loam enriched with a liberal amount of peat moss. Shade the bed with burlap.
4. Plants will be ready for fall planting or potting for spring use.

Phlox stolonifera, Spreading phlox. Phlox is propagated by offsets on the stolons. The stolon offsets are well-rooted in September and may be removed from the stolons and planted. I used equal parts of sandy soil and peat moss in the peat pots.

Rosa wichuriana 'Max Graf'. Various times and treatments in the summer resulted in failure. I plan to make hardwood cuttings this winter. The following procedure will be followed:

1. Make 6 inch cuttings in January.
2. Tie cuttings in bundles of 25 and soak in Fermate fungicide for 10 min.
3. Place the wet cuttings in a polyethylene bag. Tie the bag tightly and hold at 60°F until callus has formed.
4. After callus has formed, hold the cuttings at 40°F until April planting time.

Sarcococca hookeriana var. *humilis*. This is an excellent broadleaved evergreen growing to the height of 12 to 15 inches. This plant does poorly in the bright summer sun. *Sarcococca*, as *pachysandra*, spreads by underground rhizomes. Cuttings taken from the shoots developed from the rhizome terminals, taken from September to December, and treated with Hormodin #3, root well in equal parts peatmoss and medium perlite at 70°F bottom heat under polyethylene 2 mil. Rhizome cuttings, made in July, sprout readily when set horizontally in a perlite-peatmoss mixture. When the rhizome sprouts are well formed they are ready for 2¼ inch peat pots.

Sedum acre Stonecrop. The ground hugging stems root readily when contact is made with moist soils. Cuttings root readily throughout the summer.

Skimmia japonica 'Nana' Skimmia. This broadleaved evergreen, growing to 15 inches, is dioecious. It may be propagated either by seeds or cuttings. The dwarf form is best propagated by cuttings in order to maintain the dwarf form and the red-fruiting plants. This implies the need for a few staminate plants in a grouping. I have rooted cuttings from July through to the following May. The rooting takes place in 4 weeks in a peat-perlite mix at 70°F bottom heat. Treating the cuttings with synthetic hormones have proven to check normal root development.

Tiarella cordifolia, Foamflower. The foamflower is a beautiful ground cover for under conifers and broadleaved trees. They appear to react favorably to the annual fall of the tree foliage. The plant is stoloniferous, producing a number of well-rooted plantlets by early October. At that time the young plants should be lifted and potted in a peat-perlite mix and placed in a shaded, winter-protected coldframe.

Vinca minor, Running myrtle. I have found over the years that myrtle cuttings are not too successful. Stock plants grown under light shade in nursery rows appear to be the preferred means of production. A loamy soil with high organic matter content and good fertility produces good runners. Rooted and sprouted runners, when dug, grow into good plants for direct ground cover or peat pot planting.

MODERATOR CUNNINGHAM: Thank you, Harvey. Our next paper is by Peter Orum and is entitled, "Containerization vs Bed Production".