



**Center for Urban Horticulture
University of Washington**

Vol. 6, No. 2

**Cooperative Extension
Washington State University**

Spring 1988

LANDSCAPE MAINTENANCE SEMINARS

*... for the landscape
professional*

Cooperating: Center for Urban Horticulture, University of Washington; Cooperative Extension Service, Washington State University; Edmonds Community College; South Seattle Community College.

Plant Growth Regulators— Can They Cut Maintenance Costs?

Date : Wednesday, April 27
Time : 9 a.m. to 12 noon
Location : Center for Urban
Horticulture

Chemical plant growth regulators have long been used in fruit production and the greenhouse industry. But they can also help landscape managers by inhibiting the growth of trees, hedges, and lawns; suppressing watersprouts; or eliminating messy fruits.

- "What Are Growth Regulators?"
Dr. H. B. Tukey, director, Center for Urban Horticulture
- "Landscape Uses, Application Methods, Safety"
Dr. James Clark, professor, Center for Urban Horticulture
- "Tree Growth Regulators—Our Experience"
John Goodfellow, system forester, Puget Sound Power and Light Company
- "Growth Regulators on Turf and Ornamentals in the Northwest"
Thomas Hoffman, technical representative, PBI Gordon Corp.

This seminar qualifies for 3 hours of WSDA pesticide license recertification credit.

Coping with the Drought

Date : Thursday, May 19
Time : 9 a.m. to 12 noon
Location : Center for Urban
Horticulture

Irrigation water will likely be in short supply again this summer. Water shortages impact plant selection as well as irrigation, pruning, fertilizing, and many other horticultural practices. How can you help landscape plants survive the drought?

- "Understanding Drought Stress"
Dr. Barbara Smit, horticultural physiologist, Center for Urban Horticulture
- "Landscape Management on a Tight Water Budget"
George Pinyuh, extension agent, Washington State University Cooperative Extension
- "Drip Irrigation"
Van Hubbard, irrigation specialist, Universal Sales

Artistic Pruning

Date : Monday, June 13
Time : 9 a.m. to 12 noon
Location : Center for Urban
Horticulture
Instructor : Randy Smith

Design special plant specimens through artistic pruning. Techniques for developing and maintaining oriental style plants, traditional European topiary, and new experimental plant art forms will be explained and demonstrated.

Mr. Smith is cultural care manager at Iseli Nursery Inc., Boring, Oregon. He presented "Plant Design Through Selective Pruning" at the 1987 Ornamentals Northwest Seminars in Portland and wrote "Conifers: The Artist's Medium," for the *American Conifer Society Bulletin* (Fall 1987).

Parking

Free parking will be available for those attending Pro Hort seminars. Please park in parking lot if space is available.

OTHER EDUCATIONAL RESOURCES

Weed and Herbicide Seminar in Bellingham. Dr. Stott Howard—Washington State University weed scientist—and Catherine Hovanic of the Washington State Noxious Weed Control Board will speak on Saturday, May 14, 9 a.m. to 4 p.m., at Bellingham Vocational Technical Institute. This seminar qualifies for 6 hours of WSDA pesticide license recertification credit. The registration fee is \$25 before May 5 and \$30 after. For details, call Van Bobbitt, Center for Urban Horticulture, 545-8033.

South Seattle Community College Horticulture Courses—Spring 1988. Evening Courses and Workshops: Weed ID and Management, Irrigation Design, Landscape Design III, Rock Garden Plants, Shade Gardening, Small-Scale Greenhouses. Daytime Courses: Garden Center Management, Spring Plant ID, Spring Maintenance, Soils and Plant Nutrition, Turfgrass Culture, Small Business Management for Horticulture. 764-5336.

Edmonds Community College Horticulture Courses—Spring 1988. Evening Courses: Container Gardening, Herbs, Turf. Daytime Courses: Plant Diseases, Spring Plant ID, Annuals and Perennials, Sprinkler Repair and Installation, Landscape Maintenance Design, Native Plants, Greenhouse and Nursery Studies, Landscape Studies. 771-1679.

Lake Washington Vocational Technical Institute Horticulture Courses—Spring 1988. Pacific Northwest Plants, Houseplant ID and Culture, Interiorscaping Know-How, Pruning Techniques, Edible Landscaping, Landscape Design. 828-5627.

International Society of Arboriculture—Annual Conference and Trade Show. August 14-17, Vancouver, B.C. For more information, see the next issue of *Pro Hort* or call (217) 328-2032.

ARTICLES

Ground Covers

George Pinyuh
Cooperative Extension
Washington State University

Although turfgrass is the most commonly used ground cover plant in the world, it may not always be the best choice. The high maintenance usually necessary to keep a lawn looking good may not be appropriate for all homeowners. Mowing, watering, dethatching, weed control, and fertilizing are some of the procedures that must be attended to regularly—too regularly for some people—in order to have a quality lawn.

In some cases, the site is simply not appropriate for grass. A steep bank of turf is very difficult to deal with. Mowing it can be nearly impossible and extremely treacherous.

Many homes are built in wooded areas where growing turf usually becomes an exercise in futility. In such a setting, a lawn often consists of more moss than grass. Most turfgrasses simply do not tolerate much shade. They establish poorly, and the lawn becomes thinner and thinner, which allows shade tolerant weeds to invade.

What then are some alternatives for covering up expanses of ground? Actually there are an enormous number of so-called ground cover plants—plants which, because of their size and habit of growth, will spread out and cover the soil. Some of them do it quickly, too, especially if initial attention is given to site preparation and follow-up care.

Heavy clay and sandy soils should be prepared to receive a ground cover in much the same way an area is prepared for a lawn. Tilling in a couple of inches in organic matter, plus a complete fertilizer like 10-20-20, will provide a soil environment which can help ensure a rapid and healthy establishment. Obviously, the quicker the plant spreads, the quicker will be the desired effect. Closer spacing of plants also results in more rapid establishment. Quick coverage will reduce soil erosion and the need for maintenance.

Kinnikinnick, *Arctostaphylos uva-ursi*, is a low growing native evergreen shrub which is ideal for sunny, sandy areas. One plant may eventually spread out to 15 feet, but since it's a fairly slow spreader, it would be appropriate to space them no more than two feet apart.

A close relative, *Arctostaphylos media*, is also a good ground cover, though it often humps up to two feet. This one, perhaps because of hybrid vigor, seems to spread more rapidly. Both of them, however, are good covers for slopes.

Another west coast native is *Ceanothus gloriosus*, a low growing member of the California lilac family. This shrub is a quite rapid spreader, but it too needs full sun and fast drainage. Because it's not as hardy as some others, it should be planted only in the milder parts of our area, near the ocean, Sound, or other large body of water. It should do well within the limits of most cities where the climate is moderated somewhat.

Evergreen strawberry, *Fragaria chiloensis*, makes a superb low, thick ground cover in sun or shade. This Pacific Coast native flowers like the domestic strawberry, though it seldom sets much fruit. This plant, usually available in flats or small pots, should be planted 6 to 12 inches apart for quick cover.

Two excellent shrubs for carpeting large woodland areas are *Gaultheria shallon* and *Mahonia nervosa*. Both of these are natives and supremely adapted to our climate. Neither of them, however, can be called ground-hugging plants, although the more sun they get, the lower they stay. Under the right conditions, both spread fairly rapidly by underground stems.

Bunchberry, *Cornus canadensis*, is a remarkable native dogwood that only grows nine inches high. It produces showy, white-bracted flowers very much like those of the tree dogwoods, but smaller. Bunchberry spreads rather slowly by underground stems, and in a shady area, it can make a beautiful ground cover.

In the same vein is twinflower, *Linnaea borealis*. Small, somewhat evergreen leaves topped by pink, bell-shaped flowers distinguish this spreading native woodlander. It's an extremely attractive small-scale ground cover for the shade.

Many plants introduced from other areas of the world make good ground covers, too. Some worthy of investigation include the very low growing junipers, some which have excellent blue or silver foliage; *Hypericum calycinum*, a rapid spreader for sun or shade that is good for erosion control; *Ajuga reptans*, for sun or part shade; sweet woodruff, a fast one for shady areas; *Cotoneaster dammeri*, a low growing shrub for sunny,

droughty soils; *Epimedium* spp., which grow well under trees; *Hedera helix*, a fast, invasive cover that's available in a variety of leaf forms; *Pachysandra terminalis*, only for shady areas with plenty of moisture; *Vinca minor*, also for moist shade; and sedums and thymes for sunny, dry areas.

Plant Palette: Mahonia 'Arthur Menzies'

Timothy Hohn
Center for Urban Horticulture
University of Washington

We are fortunate to have an equitable winter climate in the Puget Sound Basin which allows the cultivation of many interesting winter plants. One that merits particular attention came to the Washington Park Arboretum in 1961 with a batch of *Mahonia lomariifolia* seeds from the Strybing Arboretum in San Francisco. Out of these germinating seeds arose a very suspicious looking mahonia compared to the other, normal appearing *M. lomariifolia*. As it turns out, Joe Witt, then curator of plant collections, determined that the one, unusual mahonia was the product of an accidental cross between *M. lomariifolia* and *M. bealei*.

The new hybrid was christened *Mahonia* 'Arthur Menzies,' in honor of the garden where the seed was collected. Possessing a pleasing balance of character from both parents, *M. 'Arthur Menzies'* is a striking landscape subject—particularly in winter when it is in full bloom. Attaining the stature of a large shrub, or even a small tree, Arboretum plants are between 8 and 15 feet tall after 20 to 25 years of growth. The foliage is evergreen, pinnately compound, alternate, and 20 inches long by 8 to 10 inches wide. There are usually 7-8 pairs of opposite leaflets which are blue-green above, yellow-green below, toothed, and leathery in texture. As you might expect from this description, the leaves are much like those of *M. bealei* in appearance. Also, the leaves are clustered toward the end of the stems, giving the plant a parasol-like appearance.

M. 'Arthur Menzies' has faintly scented yellow flowers (RHS color fan yellow group 5A) which are densely born on clusters (7-9) of upright racemes, 6-10 inches long, in late December through January. The length of the yellow inflorescences and the time of flowering reflect the *M. lomariifolia* parentage while the intensity of color and flower abundance that of *M. bealei*. These features make *Mahonia* 'Arthur Menzies' a particularly interesting landscape plant. Large, purple, grape-like fruits are often produced by July and persist through the summer.

Propagation of this mahonia is relatively simple by leaf bud cuttings. Trimmed leaf bud cuttings treated with a root hormone and placed under mist in late June or July have rooted in 6–8 weeks. It is possible to produce 1½ to 2 foot plants in one growing season in containers.

Arboretum plants of *M. 'Arthur Menzies'* have proved to be very hardy. In 1964, 11°F reduced all *M. lomariifolia* to mush but left our original hybrid untouched. During the exceptionally cold winters of 1983–84 and 1985–86, flower bud damage was observed on those plants growing in the open, completely exposed to the sky. Other plants, growing in the shade of large trees, were unscathed. There have not been any observed pest or disease problems, including black stem rust, so this hybrid could be shipped interstate as is done with *M. aquifolium*.

Recommended sites for *Mahonia 'Arthur Menzies'* are those with partial shade and slightly acid soil. Plants in the Arboretum grow equally well on heavy clay and sandy loam. Moderate summer irrigation is advised although established plants give some indication of being relatively drought tolerant. If used in a small garden, this plant should be considered a focal point or specimen plant. It works well in larger landscapes as a grouping in front of a wall or other masonry, as well as the foreground of fine-textured trees and shrubs. Small,

rounded or horizontally branched shrubs make good companions along with a ground cover of Japanese painted fern (*Athyrium goeringianum* 'Pictum'), blue-leaved *Hosta sieboldiana*, or *Bergenia cordifolia*.

Propagules are available to nurseries and botanical institutions simply by contacting me by phone or letter. Members of the public should contact the Arboretum Foundation, c/o Washington Park Arboretum, XD-10, University of Washington, Seattle, WA 98195, to request that this plant be propagated and made available for sale.

REFERENCES

Van Klaveren, Richard. 1976. "Propagation techniques for *Mahonia 'Arthur Menzies'*." Combined Proceedings of the International Plant Propagators Society vol. 26.

Witt, J. A. 1967. "*Mahonia 'Arthur Menzies'*." Arboretum Bulletin 30:1.

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Trees to Avoid in the Northwest

Dr. James Clark
Center for Urban Horticulture
University of Washington

Monkey puzzle tree (*Araucaria araucana*)

Reasons to avoid: Has potential for enormous growth and may outscale any landscape. Has large branches with sharp foliage and pineapple-like fruit that can fall and hurt people or property.

Flame narrowleaf ash (*Fraxinus oxycarpa* 'Flame')

Reasons to avoid: Although this medium size shade tree would seem to be an excellent street tree due to its form, pest resistance and fall color, it develops poor crown structure as it matures. Branches emerge at narrow angles, making it difficult to prune on a remedial basis. The tree is left with weak limb attachments.

Thornless common honeylocust (*Gleditsia triacanthos* var. *inermis*)

Reasons to avoid: Although this magnificent, reliable street and urban tree performs well in the eastern U.S., it does marginally well in the Pacific Northwest. It is susceptible to the midge pod gall for which there is no effective control. It often appears stunted and small, and suffers from crown dieback.

Western white pine (*Pinus monticola*)

Reasons to avoid: This magnificent addition to the landscape has soft-textured, blue-green foliage and is relatively fast-growing. It is also susceptible to white pine blister rust (*Cronartium ribicola*), which causes branch dieback and eventual death.

Eastern white pine (*Pinus strobus*)

Reasons to avoid: This magnificent addition to the landscape has soft-textured, blue-green foliage and is relatively fast-growing. It is also susceptible to white pine blister rust (*Cronartium ribicola*), which causes branch dieback and eventual death.

Weeping cherry (*Prunus subhirtella* 'Autumnalis' and *P. s.* 'Pendula')

Reasons to avoid: Although commonly planted, they are susceptible to brown rot (*Monilinia* spp.), which affects flowers, fruit, small branches and leaves. The control program, which requires multiple spray applications, is not practical for the average homeowner to carry out. Instead, use more resistant cherry varieties, such as *P. ser-rulata* 'Kwanzan.'

Bradford pear (*Pyrus calleryana* 'Bradford')

Reasons to avoid: Although this medium-

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Group Rates:

Firms/institutions sending two or more employees per seminar. The rates are:

2–5 employees. . . . \$10.50/person 6 or more employees. . . . \$ 9.50/person

To qualify for group rates: (1) firm's registration must be received at least one week in advance; (2) all registrants must be from the same firm; and (3) total registration fee must be paid with one check or purchase order.

Firms using purchase orders must make prior registration arrangements.

Make checks payable to the University of Washington; no bank cards.

Portion of fees may cover refreshments and speakers' expenses.

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Mail payment and registration to: Urban Horticulture Program, University of Washington, GF-15, Seattle, WA 98195

For more information please call 545-8033.

sized shade tree would seem to be an excellent street tree due to its form, pest resistance and fall color, it develops poor crown structure as it matures. Narrow branch angles make it difficult to prune on a remedial basis. The tree is left with weak limb attachments.

□ **Siberian elm**
(*Ulmus pumila*)

Reasons to avoid: Although this tree is tolerant of drought, heat and poor soils, it has weak wood that forms weak attachments and creates a crown that frequently loses branches and dies back. It's susceptible to annual elm leaf beetle damage. It's a prolific seed producer and is therefore a litter problem.

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Root Development in Urban Soils

Dr. Barbara Smit
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Urban planting sites are often compacted due to poor soils, traffic patterns, and construction practices. The bulk density of soil in tree pits in Washington, D.C., was found to range from 1.7 g/cc to 2.2 g/cc (this compares to the bulk density of brick of 1.4–2.3 g/cc).

Compaction affects root growth through mechanical impedance and restriction of oxygen and water availability. These factors affect root morphology and distribution in the soil profile. Roots grown in compacted and/or low oxygen environments are thicker, shorter, and oftentimes more branched. They tend to be distributed mainly in the upper portion of the soil. In one study, 70% of the total root length of *Gleditsia triacanthos* var. *inermis* seedlings was found in the upper 12 cm of the compacted soil compared to 40% or less in noncompacted soil. In fact, roots which were placed at lower levels at planting time grew upward toward

the soil surface before proliferating. Overall root development was restricted by more than 50% in the compacted, low oxygen soils as compared to normal sites.

There are several implications from these data for the planting and care of landscape trees. If the planting site cannot be improved to provide a more favorable root environment, trees should be planted at a shallow depth in compacted soils to encourage rapid establishment. A wider planting hole should be dug to allow adequate space for the root system since it is restricted in its vertical development. Cultural practices around the tree base (e.g., turf care) should be modified to minimize damage to the shallow root system. And foot traffic around these trees should be restricted whenever possible. Finally, trees that are known to develop shallow root systems may be more successful under these conditions. Hopefully, further research will better characterize the limitations of urban sites and aid us in developing better criteria for plant selection and care.

Adapted in part from Gilman et al. 1987, *Journal of Environmental Horticulture* 5:33–37.

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