PRO HORT

Center for Urban Horticulture
University of Washington

Cooperative Extension
Washington State University

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Winter 1987

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.

Managing Landscape Problem Areas

Date : Thursday, January 29
Time : 9:00 a.m.-noon
Location : Center for Urban Horticulture

"New Construction Sites"
Thomas Berger, landscape architect, Thomas L. Berger and Associates

"Nitrogen-fixing Plants for Infertile Soils"
George Pinyuh, extension agent, Washington State University

"Plants for Wet, Poorly Drained Sites"
Dr. Barbara Smit-Spinks, professor, Center for Urban Horticulture

Bring your questions about these and other problem areas for an exchange of ideas with other landscape professionals.

Pesticides: Environmental Concerns, Safety, and Calibration

Date : Wednesday, February 25
Time : 9:00 a.m.–noon
Location : Center for Urban Horticulture
Instructor : James Ely

Update your knowledge of the environmental concerns associated with pesticide usage. Review safety procedures and calibration techniques. *This seminar qualifies for 3 hours of W.S.D.A. pesticide license recertification credit.*

Mr. Ely is a horticultural pest control consultant and former owner of A-1 Spray Service of Tacoma.

Efficient Landscape Maintenance Scheduling

Date : Tuesday, March 24
Time : 9:00 a.m.–noon
Location : Center for Urban Horticulture
Instructor : Bruce McCormack

Learn how proper scheduling can make your operation more efficient. Scheduling insures that horticultural tasks are completed at the proper time, helps to distribute the workload more evenly throughout the year, and results in greater productivity. The scheduling of both work activities and of manpower will be covered.

Bruce McCormack is president of Blue Ribbon Landscape Management, past president of the Washington State Nurserymen's Association, and an instructor of landscape business courses at Edmonds Community College.

OTHER EDUCATIONAL OPPORTUNITIES

South Seattle Community College Horticulture Courses—Winter 1987. Nursery Operations; Winter Plant I.D.; Landscape Design; Pruning; Plant Diseases; Landscape Seminar. Call 764–5336.

Edmonds Community College Horticulture Courses—Winter 1987. Soils; Conifers; Landscape Materials; Landscape Design; Plant Propagation; Pruning; Small Engine Repair; Tree Surgery; Japanese Gardens; Landscape Bidding & Estimating; Landscape Business; Greenhouse Studies. Call 771–1679.

Lake Washington Vocational Technical Institute. Training is offered in nursery and greenhouse operations. Call Don Marshall, 828–5621 or 828–3311.

Washington State Nurserymen's Association Annual Convention—January 8–10. Theme: "Back to the Roots." Location: Seattle Marriott, Sea-Tac. For more information call (206) 863–4482.

Turfgo Northwest plans to offer periodic seminars for their customers which will qualify for pesticide license recertification credit. Call 821–9867 for more information.

Home Garden Pest Control Series For homeowners and professionals who deal with residential landscape pest control problems. *Each session will qualify for 2 hours of W.S.D.A. pesticide license recertification credit.*

I. Urban Integrated Pest Management
Thursday, February 19, 7 to 9 p.m.

II. Pesticides for the Home Garden
Tuesday, February 24, 7 to 9 p.m.

III. Common Insect Pests
Thursday, February 26, 7 to 9 p.m.

IV. Weed Identification and Methods of Control
Tuesday, March 3, 7 to 9 p.m.

V. Common Diseases of Ornamentals and Fruit Trees
Thursday, March 5, 7 to 9 p.m.

Location: Center for Urban Horticulture

Registration Fees: $10.00 per individual session; $40.00 for complete series. See *Urban Horticulture Presents* for details.

ARTICLES

High Soil Temperatures in Urban Sites

Dr. Barbara Smit-Spinks
Center for Urban Horticulture
University of Washington

Tree roots in urban sites can be exposed to unusually high temperatures. A report this summer at the International Horticulture Congress by M. N. Dana and W. R. Graves from Purdue University examined the range of root zone temperatures of urban street, suburban street, urban nonstreet, and native woodland sites. Sites monitored were street level planting pits, raised planters, and roof-top planters. Temperatures were measured twice from June through October with a thermister probe.

Significant differences in temperatures were found among the sites. The temperatures of urban soils were typically several degrees higher than less urban soils. Urban soil temperatures may rise to lethal levels; high temperatures ranged from 34–37°C (93–99°F). In an extreme case, soil temperatures near a utility steam line ranged from 45.3–69.3°C (114–157°F).

In related work, root and shoot responses to elevated root zone temperatures were measured for *Acer rubrum, Cercis canadensis, Cercis chinensis*, and *Gleditsia triacanthos*. Temperatures between 22–32°C (72–90°F) were optimal for root extension, while 32°–40°C (90–104°F) resulted in a severe decline in root growth. *G. triacanthos* was more tolerant and root extension continued at temperatures several degrees higher than the other species. Decreases in shoot height, fresh weight, and root fresh weight were also evident at temperatures greater than 30°C (86°F). The provenance or source of the plants did not appear to affect root responses to temperature.

These studies illustrate the need to further describe the nature of urban plant environments. They also suggest that variability among species could be identified and used to provide plants more likely to thrive in urban sites.

W. R. Graves and M. N. Dana. 1986. Abstr. #533, 602. Hort. Sci. 21.

Soluble Salts

George Pinyuh
Cooperative Extension
Washington State University

One of the most common problems associated with growing plants in containers, particularly indoors, is the buildup of soluble salts in the growing medium. This situation often results in the tips and margins of leaves turning brown or black and dying. In severe cases it looks as though the leaves have been scorched. Plant wilting may also be associated with the leaf burn, even after the plant is watered and the soil is moist. Sometimes a whitish crust on the soil surface, on the rim of the pot, as well as on the plant stems will be evident.

Blame for these maladies tends to be placed on diseases, insects, or even low humidity, but the cause more often can be traced to the accumulation of soluble salts and other toxic substances, like fluoride, in the container soil. Sometimes underwatering or the tendency to allow the medium to dry out too much or too frequently is thought to be at fault; this may be part of the problem, but it's usually not the direct cause for the leaves burning.

If it's not insects, diseases or low humidity, but rather soluble salts, what are these salts and where do they come from? And more importantly, what can be done about it?

Most water supplies naturally contain a certain amount of dissolved salts in them and the use of such water consistently can lead to a buildup of these salts in the growing medium. Fertilizers which must be applied to provide the necessary mineral nutrients to plants also consist of salts; in addition, many water softeners use sodium chloride in the softening process, and when such water is applied to plants, the salts are included.

Fertilizing is frequently at fault, especially over-fertilizing. Plants in low light levels in homes just don't need as much in the way of nutrients as do those growing in high light intensities. Most indoor plants in Puget Sound houses are, by definition, growing under low light conditions, especially from November to March. In many cases where a plant is growing in less than 300 foot candles of light through the year it may only need fertilizing twice a year with, say, a fertilizer containing 20% nitrogen. A 10% nitrogen or less fertilizer will probably be needed more frequently.

Recently purchased larger, foliage plants that have been grown very rapidly in California or Florida with large amounts of fertilizers and lots of water, often high in salts, boron or fluoride, will begin to burn up once they are brought home. The usual reduction in irrigation leads to a higher concentration of salts in the soil. Even if the roots are not killed by the salts, the greater concentration of salt outside the roots prevents the water from moving into the plant. Sometimes the salt difference between the medium and the root cells is so great, water actually moves out of the plant into the medium. This, of course, can lead to root death, wilting, yellow leaves, burned foliage, and, if nothing is done about it, to the death of the whole plant.

Poorly drained potting soils are often at fault because they tend to prevent movement of water and dissolved salts through the pot. Even when excess salts are leached out with proper watering, if the bottom of the pot is allowed to sit in this water, it's pulled back up, salts and all, by capillary action and the salt concentration goes way up.

If enough water is not put on a plant each time it's irrigated, so excess salts can leach out, a salt layer often accumulates midway in the soil. This almost always happens when plants are in pots with no drain holes to allow excess water and leaching.

Consider the following to help deal with the salt problem:
1. Leach all newly purchased plants (especially larger ones) with plenty of warm water. Do this three times with half hour intervals between water applications; all water must be allowed to drain away. Repotting such plants in fresh soil is not a bad idea.

2. This leaching process should be carried out two to three times a year, especially on salt sensitive plants. Many palms, spider plants, dracaenas and avocados seem to be salt sensitive.

3. Except for cacti and succulents, keep the soil of most plants evenly moist. Don't allow them to dry to the point where the concentration of salts in the medium goes up.

4. Do not overfertilize.

5. Do not allow excess water to be pulled back up into the medium. Pour this away, or

elevate the bottom of the pot from the saucer so it never actually sits in water.

6. Do not use softened water to irrigate house plants or any plants, for that matter. Sodium can be removed by the use of 1 tablespoon of gypsum per 6 inch pot before leaching.

7. Fluoride, which also burns the leaves of many containerized plants, is not very leachable nor will it settle out or dissipate if the irrigation water is allowed to stand before use. It will not go off as a gas. Use rain or distilled water for very sensitive plants, or keep the pH of the medium up at 6.5 to help tie up the fluoride.

PRO HORT Editorial Staff:
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Lessons from Madrones

Dr. James R. Clark
Center for Urban Horticulture
University of Washington

The University of Washington campus is home to a fair number of madrone *(Arbutus menziesii)* trees. In the past several months I have made several observations about the species.

> A grove of large, old, established madrones along 15th Avenue N.E. has been in a declining state of vigor for several years—heavy leaf drop, stem and branch cankers, leaf necrosis, and branch dieback. Though this grove received minimal foot traffic, it was underplanted with summer-irrigated turf. No new madrone seedlings were ever seen; perhaps they were mowed off. Last year, though, a program to correct the decline was initiated. It consisted of two major components: 1) discontinuing mowing; and 2) halting summer irrigation under the trees. As a result, a large number of seedlings developed this year. Also, the decline of the existing trees has not worsened. Whether it will improve remains to be seen.

That madrones respond in this way is not surprising. In western Washington, near the northern limit of its range, the species prefers dry, exposed slopes. Throughout its range the species is subject to rather droughty summers. But more critical to this situation is a subtle arboricultural concept—mature trees established under one set of environmental conditions often do not respond well to a change in that environment. Thus, a madrone accustomed to dry summers will not always tolerate the introduction of summer irrigation, which can change soil temperature, aeration, and microbiology.

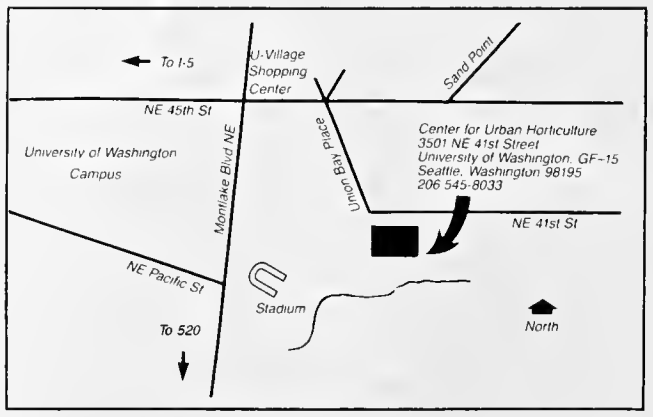
> Landscape management on campus occurs at all levels—intensive to "naturalized." In many bed (non-turf) areas, young madrones are growing. Undoubtedly seed-generated, these plants are uniformly vigorous with no evidence of the typical madrone problems; I marvel at the quality. And these young madrones occur in irrigated beds.

Why are these small plants so healthy? I could argue that the combination of turf and madrone is bad due to factors such as competition and allelopathy. Yet, I believe it is more related to the idea of an established environment. Seedlings that germinate and develop with irrigation seem to "adapt" to those cultural conditions and do well (What would happen to these trees if all summer irrigation was removed?). Seeing such trees only reinforces the positive qualities of madrone as a landscape plant.

> Why isn't madrone planted in the landscape to a greater degree? Small plants can be grown in containers. Young trees grow vigorously. The majority of problems seem to occur on older trees on disturbed sites.

I am told that madrone does not transplant well—meaning that trees die shortly after being moved. Is it a response to disturbance? Do they not regenerate a new root system? Is it the timing of planting? Does the culture in the nursery play a role? There are more good questions than adequate answers.

These observations about madrone offer insight into the character of tree growth and development in general—young plants of a given species are almost universally more responsive to changes in environment than are mature trees. This must be appreciated for the successful rentention of large plants during construction, site development, or transplanting.



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