ArborNotes

A NEWSLETTER OF THE ARBORETUM ASSOCIATES

UI'S CAMPUS ELM TREES—A DUTCH ELM DISEASE UPDATE

Since the first campus elm was discovered with Dutch elm disease in July 1990, the threat of this disease on the elm population in our area has been serious. To date 19 of 134 susceptible elms on campus have been removed due to the disease.

Many of the removed elms have been located in the Shattuck Arboretum where close planting of elms has contributed to the spread of the disease. Other lost elms have been located on the Administration Lawn and by the Music and Health Sciences Buildings. Fortunately, the highly valued 'Camperdown' elms that grace the landscape near the Administration Lawn have been spared the wrath of the chainsaw. However, several have been treated for serious infections.

Dutch elm disease is caused by a fungus and is spread by a bark beetle or through root grafts; it kills an elm by clogging its water conducting vessels causing it to wilt and eventually die. Unfortunately, no cure exists for the disease.

The campus crews have been busy over the past three years performing various integrated control measures for the Dutch elm disease program. These measures include insect and disease monitoring, lab culturing of possible infected wood, dead and diseased wood pruning, fungicide injecting, spraying, fertilizing, dead and diseased tree removing, and root severing by trenching.

Because of funding and staffing constraints, all measures cannot be performed on all elms. Thus, elms are placed in different levels of maintenance based on location, condition, historical value, memorial status, and species rarity.

One of the more intriguing control measures is injecting selected trees with a fungicide to prevent the spread of the fungus within the tree's water conducting vessels. The fungicide is injected through a series of holes drilled in the root flares of the tree. The largest elm injected so far had a diameter of 40 inches and required 80 injection sites, each 1/4 inch in diameter. Forty-eight gallons of fungicide were used. The entire operation for this one tree was completed in five hours by a two-person crew. It was quite a surgical display.

An excellent step in promoting the growth and stability of the elm population is the planting of hybrid elms that share desirable characteristics and are near-resistant to the disease. The new arboretum includes several of these hybrid elms, the 'Pioneer' elm and the 'Homestead' elm. It will be interesting to observe these specimens as they grow and mature from year to year.

Despite all the control efforts performed on the existing campus elms, some still succumb to the disease. However, without any program in place, things would be disastrous. It is estimated that by the late summer of 1995, as many as 68 elms would have been lost–quite an impact on the budget, aesthetics, and the beloved elm population. The blight also is ravaging elm trees elsewhere in Moscow.

The news of this disease and its threat to the elms have sparked community awareness not only to the value of the elms but to the value of all trees. With proper management techniques, many of the elms on campus will be preserved to old age as honored specimens. Trees off campus apparently will be less fortunate.

Story by David Rauk. David, a member of the International Society of Arboriculture, is Horticulturist, UI Facilities Management.

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the Arboretum Associates
University of Idaho
Arboretum and Botanical
Garden

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Illustrations by Anna
Fehrenbacher, Arboretum
Associates board member

PRUNING LANDSCAPE PLANTS

Beautiful landscapes are the product of good planning and careful plant maintenance. Since plants seldom grow to perfect or desired shape, pruning is often necessary to enhance their beauty. Pruning involves the removal of plant parts. If pruning is done properly, the aesthetic appearance of a plant is maintained as well as its defense mechanisms to keep pests from entering the wounds. On the other hand, improper pruning destroys plant beauty and defense systems.

WHY PRUNE?

Plants are pruned for a variety of reasons. Plants are pruned to maintain health and desired appearance. Dead, diseased, injured, pest infested, or rubbing branches should be removed. Pruning can influence flowering and ultimately fruiting. Old flowers and fruits can be unsightly and should be removed. Pruning is used to train plant growth or alter plant shape. Plants are also pruned to control their size. A general rule is that a plant that must be pruned back severely more than once every five years is in the wrong location. Rather than ruin the appearance of a plant because of regular severe pruning, replace the plant with one that grows to the desired size at maturity.

WHEN TO PRUNE–TIMING

Selecting the proper time to prune is important. In general, light pruning, including removal of small amounts of unwanted growth, injured or diseased plant parts, or dead branches, can be done year-round. Heavy pruning in late summer or early fall can stimulate new growth. If this growth fails to harden off before a heavy frost, the stem or branch can be killed. For this reason, deciduous plants should be pruned when they are dormant from late fall to early spring, but do not prune when the plant tissue is frozen. Most evergreens, both needleleaf and broadleaf species, are pruned just before or during spring growth, except for pine. Evergreens are pruned before spring growth so the new growth will cover pruning cuts. New growth of pines is pruned in early summer, just as the new needles have expanded to about half of their final length.

The time of flowering will also dictate when plants should be pruned. Plants that bloom in spring, like early flowering roses, forsythia, lilacs, crabapples, and viburnums, produce flowers on last year's wood. Pruning from late fall to early spring will eliminate flowers in the spring. On the other hand, plants that bloom in summer, including abelia, clethra, linden, and some species of spirea (particularly 'Anthony Waterer'), produce flowers on new wood. These plants can be pruned during the winter or early spring without reducing the number of flowers. In

general, plants that flower before June 1 should be pruned soon after flowering (within one or two months). Keep in mind that pruning immediately after flowering removes fruits for summer or fall. Plants that flower after May 31 should be pruned while the plant is dormant.

TYPES OF PRUNING CUTS

Plants respond to pruning in various ways, depending on the type of pruning cut used. The two basic types of pruning are heading cuts and thinning cuts. Heading is cutting plant stems or branches back to a bud or stub or cutting a large branch back to a small branch. Shearing is a type of heading in that foliage is indiscriminately removed from the plant. Heading can cause problems for plants, particularly since this type of cut can stimulate new and vigorous growth. This new growth may also lead to breaking or splitting during ice, snow, or wind storms. Even with these disadvantages, heading cuts are useful in some situations, particularly for pruning hedges.

Thinning is the removal of a branch at its point of origin or cutting a branch back to a lateral (side) branch that is at least one-third the size of the branch being removed. No branch stub remains on the plant. The advantages of thinning are that the plant retains it natural shape, light is more accessible to inner foliage, and vigorous shoot growth is usually not induced. For these reasons, thinning is usually the preferred method of pruning.

TOPPING TREES–DON'T DO IT

Heading back large branches of mature trees to leave large stubs, called "topping", is an unsatisfactory way to prune a tree. Several shoots or dense clusters of stems can develop at the end of each stub. These shoots can break off easily and be a hazard to you or your neighbors. Topped trees lose their natural form and are often ugly and grotesque. These trees are also much more susceptible to pest (disease or insect) attack since their natural defense against invasion has been damaged or destroyed.

Topping should not be used to reduce tree size. If the tree is too large for its intended use, remove it and plant a smaller species. You will be better off in the long run to plant and have a tree that fits its area. Be aware that unprofessional tree maintenance crews top trees because topping requires little skill, is quick, and less expensive to complete than making thinning cuts.

WOUND DRESSINGS ARE UNNECESSARY

Trees respond to wounds by forming barriers that restrict the spread of diseases or insects. Tree dressings, like asphalt emulsions or pruning paints, are only cosmetic. They fail to promote healing of a properly cut wound. In fact, these coverings may seal rot-causing organisms in the wound and ultimately cause decay. Therefore, these wound dressings are a waste of money and do the plant little good.

I have briefly covered some techniques and information about pruning in this article. You can obtain more detailed information about pruning landscape plants from the University of Idaho. Contact Connie King in the Publications division of the Agricultural Communications Department, and ask for CIS No. 766, Pruning Landscape Trees and Shrubs. This publication costs 45 cents. I have also produced a pruning videotape that describes the information presented above and much more. The videotape usually can be checked out from your county extension office (for Idaho residents), often for free, or it can be purchased from the Agricultural Communications Department ($39.95 plus $3.00 for handling and shipping).

Story by Robert R. Tripepi. Robert is associate professor of Plant Science at the University of Idaho.

USDA PLANT HARDINESS ZONE MAP

This map was adapted from the USDA, Agricultural Research Service, Miscellaneous Publication Number 1475, issued January 1990. For a complete zone hardiness map of the United States, contact the USDA, Agricultural Research Service, Washington D.C, 20002.

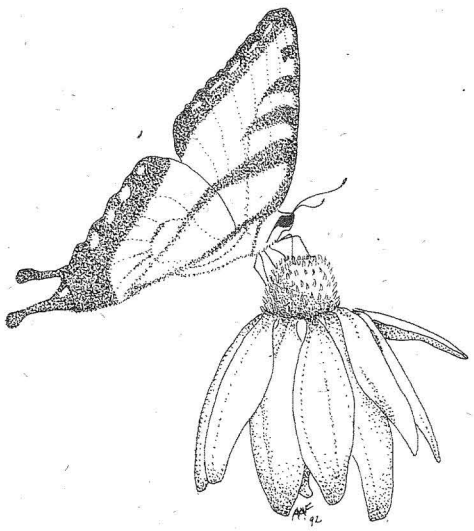
Not every plant can adapt to a range of environments. Gardeners have learned through experience where the great variety of landscape plants can grow. Over the years many schemes have been proposed to help gardeners locate those environments when they introduce new species, forms and cultivars. The pooling of many of these schemes culminated in the development of the widely used "Plant Hardiness Zone Map", under the supervision of Henry T. Skinner, the second director of the U.S. National Aboretum. The elements of the map are–

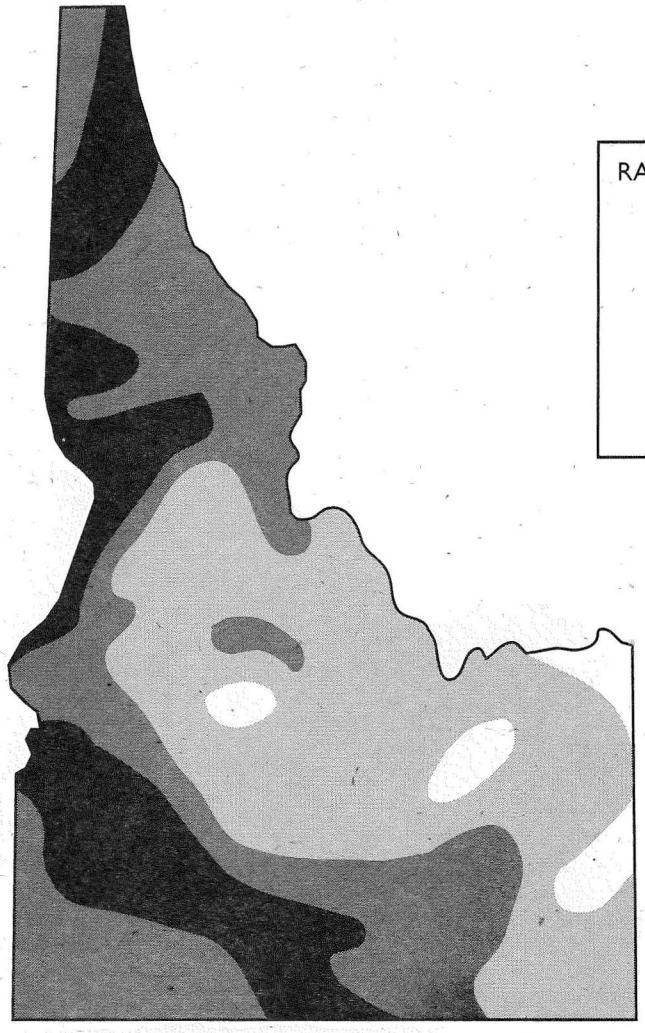
- Winter Hardiness.. Survival over winter was selected as the most critical criterion in their adaption in the environment.
- Classification. The zone ratings were intended to indicate excellent adaptability of the plants. Many plants may survive in warmer or colder zones.
- Interactions with other Environmental Factors. Wind, soil type, soil moisture, humidity, snow, and winter sunshine affect the adaptability of plants.
- Interactions With Cultural Factors. The way plants are placed in the landscape, how they are planted and their size and health can greatly influence satisfactory adaptability.
- In using the map to select a suitable environment for a landscape plant, today's gardeners should keep in mind the following:

  Stress Factors. Acid rain, gaseous and particulate pollution, security lighting, and toxic wastes, among others. Stress factors, have significantly increased the potential for unsatisfactory performance of landscape.

  New Plant Management Systems. New techniques of planting, transplanting, watering, fertilizing, and providing pest control have done much to increase the vigor of landscape plants. But used unwisely, these same measures can reduce plant hardiness.

Moscow, Idaho is generally considered USDA zone number 5.





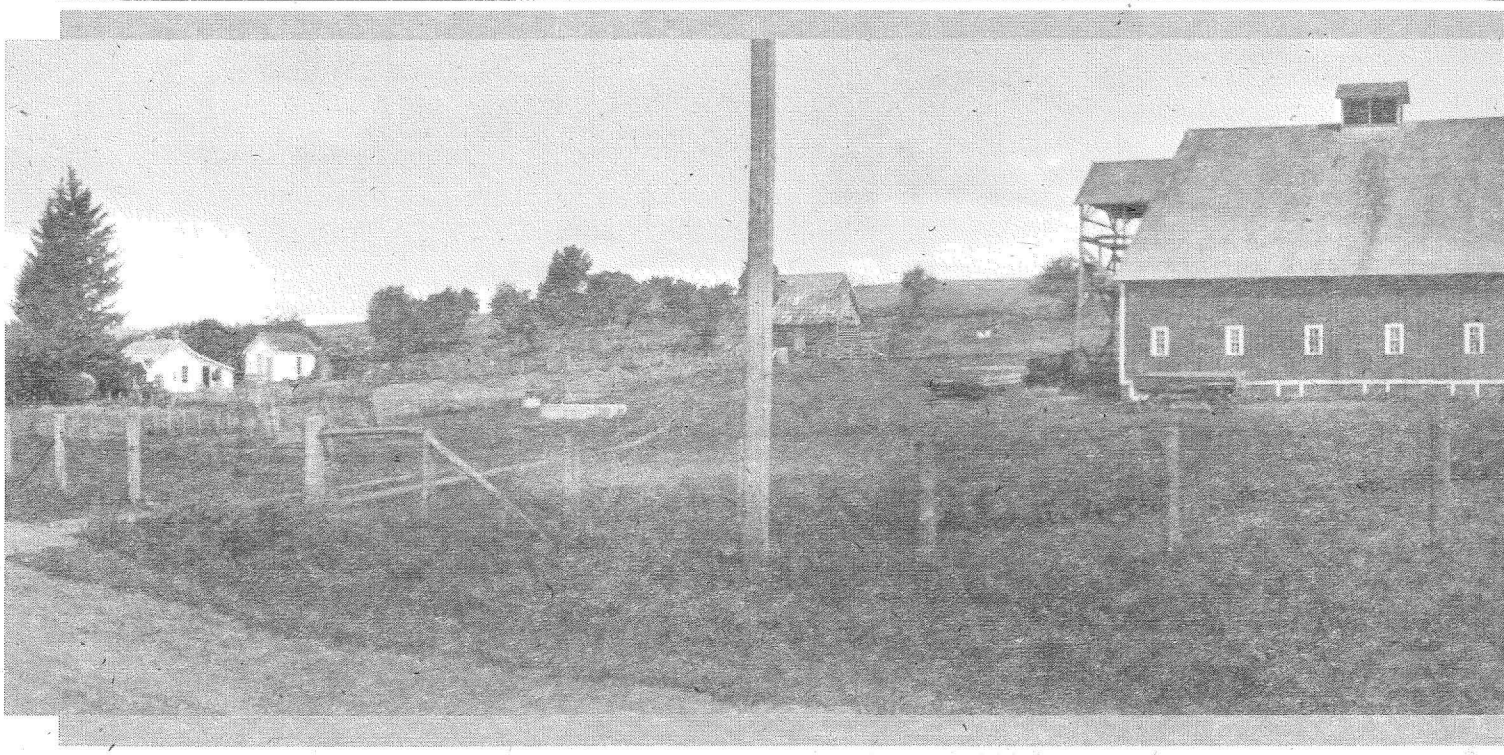
RANGE OF AVERAGE ANNUAL MINIMUM TEMPERATURES FOR EACH ZONE

- ZONE 3 -40° to -30°
- ZONE 4 -30° to -20°
- ZONE 5 -20° to -10°
- ZONE 6 -10° to 0°

Following are the names of representative plants listed under the coldest zones in which they normally succeed. Such plants may serve as useful indicators of the cultural possibilities of each zone. The temperatures indicate a range of average annual minimum temperatures for each zone.

Cold hardiness ratings for some woody plants:

Botanical and Common Name	***Zone***
Abeliophyllum distichum ("white forsythia")	5b
Acer platanoides (Norway maple)	4
Aesculus x carnea (red horsechestnut)	4
Arctostaphylos uva-ursi (bearberry)	2b
Aristolochia durior (Dutchman's pipe)	4b
Betula pendula (European white birch)	3
Carya illinoensis 'Major' (pecan)	5 (grows)
Carya illinoensis 'Major' (pecan)	6 (fruits)
Cercis chinensis (Chinese redbud)	6b
Chamaecyparis lawsoniana (Lawson cypress)	6b
Chamaecyparis pisifera (Sawara cypress)	5
Cornus alba (Tatarian dogwood)	3
Cornus kousa (Japanese dogwood)	5b
Cytisus x praecox (Warminister broom)	6
Elaeagnus multiflora (cherry elaeagnus)	5
Euonymus alatus (winged euonymus)	3b
Forsythia ovata (Korean forsythia)	4b
Forsythia suspensa (weeping forsythia)	5b
Ginkgo biloba (ginkgo, maidenhair tree)	5
Hibiscus syriacus (shrub althaea)	5b
Hypericum 'Hidcote' ('Hidcote' St. Johnswort)	6
Iberis sempervirens (evergreen candytuft)	5
Ilex crenata 'Convexa' (convexleaf Japanese holly)	6b
Ilex opaca (American holly)	5
Juniperus horizontalis (creeping juniper)	3
Koelreuteria paniculata (goldenrain tree)	6
Laburnum x watereri (Waterer laburnum)	5b
Mahonia aquifolium (Oregon hollygrape)	5b
Malus x arnoldiana (Arnold crabapple)	4
Metasequoia glyptostroboides (dawn redwood)	5b
Picea abies (Norway spruce)	3
Pieris japonica (Japanese andromeda)	6
Pinus mugo var. mughus (Mugo pine)	3
Pinus strobus (eastern white pine)	3b
Prunus x yedoensis (Yoshino cherry)	6
Rhododendron 'America' (hybrid rhododendron)	5
Rosa rugosa (rugosa rose)	3
Syringa vulgaris (common lilac)	3b
Ulmus americana (American elm)	2
Viburnum x burkwoodii (Burkwood viburnum)	5b
Zelkova serrata (Japanese zelkova)	5b



When John and the late Rowena Luedke purchased the farm at the southern end of UI's Arboretum and Botanical Garden in 1928, John made a series of photographs of their property during June, 1928. This panorama, scanned from John's original photographs, shows their conservative home, many outbuildings, and the Arboretum barn. This view up the Arboretum valley toward the north has a small image of UI's original "I" tank. The Luedkes, who sold the farm to Amil and May Fleiger about 1929, moved to Genesee where they farmed until retiring.

The Luedke home was replaced in 1935-36 by the Fleigers who subsequently gave the property to UI in 1960. Of the original buildings, only the 1908 vintage barn remains at the Arboretum.

We greatly appreciate access to the Luedke photographs courtesy of their daughters, Maurine Finney, Jean Magee, and Ann Ringe. Photographic scans by UI Media Services.

Arboretum brochure wins 1996 AABGA award

Our new University of Idaho Arboretum and Botanical Garden brochure, published by the Arboretum Associates late last year, is the 1996 Dorothy A. Hansell Publication Award winner among gardens with a budget of under $250,000. This award by the American Association of Botanic Gardens and Arboreta cites publication excellence in design, quality of production, readability, graphics, and for providing a positive image of the Arboretum.

Anna Fehrenbacher, Arboretum Associates Board member, oversaw development of the text. The brochure was produced by UI Printing and Design Services, with Beth Case as graphic designer and Cindy Snow as printer.

Arboretum Associates' 19th Annual Meeting

You are cordially invited to attend the 19th Annual Meeting of the UI Arboretum Associates Thursday, April 18, 1996, 7:30p.m. at the Community Center, Third and Jackson Streets, Moscow, ID.

After brief annual reports and election of new board members, Stephen Drown, Academic Chair, UI Department of Landscape Architecture, will present "Landscape Architecture: Recent Works and Trends."

After the program, several door prizes will be awarded. In addition to the grand prize of a gift certificate contributed by William Stookey, Stookeys' Feed & Garden, five quality lilacs will be given away. One 'Sensation' lilac (which has single, deep purple petals edged white) and four 'Krasavitsa Moskvy' ("Beauty of Moscow") lilacs will be presented. 'Krasavitsa Moskvy' is an exceptionally fine lilac which has very double, pale pink flowers; it is a product of Leonid Kolesnikov's noted lilac selection program in Moscow, Russia. Although the 'Sensation' lilac originated in Dirk Maarse's selection program at Aalsmeer, The Netherlands in 1938, it is only recently being distributed widely in the U.S.A.

Refreshments will be served.

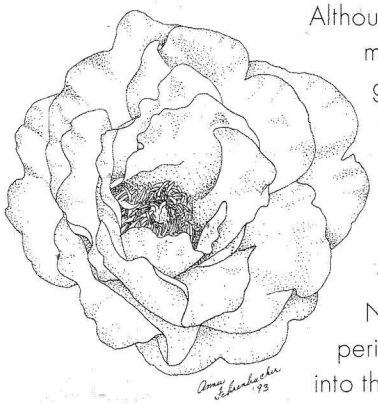
Students start the 1996 work season

Three UI students initiated the 1996 Arboretum work season when they spent the start of spring break cleaning up the spoils of winter. Daniel Harrington (junior, computer science), Jacob Leppert (senior, landscape horticulture), and Davon Sjostrom (junior, plant science), cleaned and removed snow fencing and signs, collected debris, filled road gullies, and started cutting sod rings in preparation for the planting season. The first of many new woody specimens were planted. By early April, they will be on a regular schedule of mowing, digging and planting.

Tidyman's Moscow Store Presents a Canoe to the Arboretum

The Arboretum has a new, 18' aluminum canoe to aid in maintenance at the two ponds. The canoe is a gift from the Moscow Tidyman's supermarket. Manager Tracy Turnbull's 1995 gift continues Tidyman's community service and enables us to return Helen and Larry Bobisud's borrowed service canoe. Thanks, Helen, Larry, and Tidyman's!

UI ARBORETUM SOILS AMONG REGION'S BEST



Although it is the plants at the UI Arboretum and Botanical Garden that receive most of the attention, their success is largely dependent on something that goes unnoticed by most arboretum visitors: the soils. Soil scientists know these soils as *Argixerolls* and *Haploxerolls* while farmers in the area may simply know them as some of the most productive soils in the Inland Northwest region. The inherent productivity of these soils is a major factor in the success of plants in the Arboretum and is closely related to the region's geological history.

Numerous glacial cycles have occurred over the past two million years, periodically causing sediment-laden meltwaters from large ice sheets to flow into the Columbia Basin of central Washington. As the meltwaters evaporated, silt-sized particles were carried eastward by the wind and deposited in what is now known as the Palouse region. Over the span of hundreds of thousands of years, as much as 200 feet of this silty material–known as loess–accumulated in the area creating a dune-like topography that can be seen today. As soils have formed in these wind-deposited materials, they have retained many of the desirable characteristics associated with the loess.

Soils of the Palouse region, including those of the Arboretum, contain an abundance of relatively fresh, unweathered mineral grains that were derived from the grinding action of glaciers passing over rock. The slow weathering of these minerals of the soil creates an optimal pH range for plant growth and assures an ample supply of nutrients such as calcium, magnesium, and potassium. This results in fairly high native fertility and eliminates the need for many soil amendments and fertilizers. The silt-sized particles that dominate these soils also have the ability to store large quantities of water that can be used for plant growth. When fully charged with water in the spring, a 5-ft. deep soil can store up to 12 inches of water for plant uptake. This allows many plants to survive the dry summers without irrigation.

Prior to cultivation, the Arboretum soils supported grassland vegetation. The native grasses annually produce large quantities of fine roots throughout the upper foot or two of soil. As these roots die, they are decomposed by soil microorganisms and converted to humus. Over the course of several hundreds of years, humus levels in these soils built up to create a thick, dark-colored layer of topsoil. Where this topsoil has not been removed or eroded away through human activity, it provides an excellent rooting medium for plants. The humus aids in the formation of stable soil aggregates and can increase the water-holding capability of the soil. It also helps maintain a supply of important nutrients such as nitrogen, phosphorus, and sulfur.

All of these properties contribute to the outstanding ability of the Arboretum soils to support plant growth. For more information about these soils or any other soils of the Palouse region, you can contact the Soil Science Division at the University of Idaho or the local Soil Conservation Service office.

Story by Paul McDaniel. Paul is assistant professor of Soil Science at the University of Idaho.

News from the Arboretum Director

Snowdrops, spring crocus, winter aconites (*Eranthis*), and spring heathers are beginning to flower at my home. At the Arboretum, buds burgeon on the ornamental cherries, red maples, shrub peonies and more. The robins and waxwings are cleaning up the last of the mountain ash and crabapple fruits; redwinged blackbirds are back establishing their territories at the ponds. Some migratory ducks and Canada geese are visiting daily. Spring is on the horizon, for one or two Columbian ground squirrels have emerged from their underground homes this week (2/17/96).

By early March, we will begin receiving and planting some 300 to 400 new shrubs and trees to fill gaps in established groves and start several new plantings of groves and commemorative trees. New commemorative trees will honor Lambert Erickson, Miriam & Judson Smith, Charles "Jack" Smiley, Melvin DeWitt, Ernie Fliger, and add a third tree for the Borah Peace Walk series. New groves to be started this spring will include eastern North American hawthorns to honor Constance and Robert Shreve, and mixed eastern North American hardwoods to honor Frank and Susie Post.

Winter, although harsh this year in Moscow, apparently did little damage in the UI Arboretum and Botanical Garden. A few limbs were broken by snow loads on some specimens. Most damage occurred during the rapid snow melts and accompanying rains: the road footpath was heavily eroded on steepest portions by running water washing the gravel downslope; there was some slumping of the steepest west slopes along the western common margin of the UI Golf Course. We will have to wait a while to see if the low temperatures and dry air damaged the flower buds on the ornamental cherries and forsythias. By surveys this week I could find no evidence that the increasing populations of montane voles had girdled any of our specimen plants at ground level. We greatly appreciate that most people are honoring our ongoing pleas to abstain from snow "play" in the Arboretum.

By current plans, 1996 will be a major year for installation of seven granite benches, scores of commemorative plaques, and the first public information labels on specimen plants. This spring, UI students in architecture and landscape architecture are participating in a contest to design an Arboretum kiosk for presentation of information, brochures, and newsletters to visitors. The kiosk is a special gift of Leonard Halland, UI alumnus and major benefactor.

Our pleasing new information and membership solicitation brochure has been distributed around Moscow at the Chamber of Commerce, UI Information desk at the North Campus Center, the Student Union, campus police substation, Palouse Empire Mall, and the UI Best Western. If you wish copies and cannot get them at any of those places, please call and I shall help you obtain one.

At the 85+ year-old, 14 acre remnant of the C.H. Shattuck Arboretum behind UI's Administration Building, we have some major clearing to complete. By a combination of pathogenic root fungi, saturated soils, and wind gusts, some 15 - 20 major trees were felled in the last two weeks. Fortunately, our greatest specimen beeches (*Fagus grandifolia*), incense cedars (*Calocedrus decurrens*), Canadian hemlocks (*Tsuga canadensis*), and our one surviving giant Sequoia (*Sequoiadendron giganteum*) apparently were not damaged.

Construction this summer will probably be concentrated on extensions of our effluent irrigation system and more slope stabilization with rock-filled gabions. Why not come for a visit to the Arboretum this year?

Richard J. Naskali, Arboretum Director
205 C. E. B., University of Idaho
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