

be clean with no soil particles, and the container (basket) in which the clippings are caught must be very clean with no fertilizers apparent and they must be properly handled all the way to the laboratory. Likewise, the same advice is applicable for soil tests. The soil test will also be a good means of determining micronutrient deficiency provided you take into account the soil reaction - whether the soil is acidic or alkaline.

There is no question that on sand profiles micronutrients will be limiting if not supplied. For this reason, we have tried to develop a formulated fertilizer that supplies extremely small amounts of micronutrients with each application and can essentially be used every time a putting green or sand-based sports field is fertilized. This fertilizer formulation has proved very successful for practitioners in the Pacific Northwest for approximately 5 years at this point and we feel it is doing a good job on sand root zones with no deficiencies ever having been observed under this program.

In conclusion, we must keep reminding ourselves that there are 16 nutrients that are required for plant growth, three of these being available from air and water, N, P and K from fertilizers, calcium and magnesium are available from liming materials and sulfur is available from any number of sources including elemental sulfur materials. The other 7 considered to be micronutrients must be supplied in very small amounts where required and on a frequency that the plant does not become deficient.

## THE EXTENSION LINE

*Bob Mugaas of the University of Minnesota Extension Service is a regular contributor to Hole Hotes. As Hennepin County Extension Agent, Mr. Mugaas compiles various articles related to the golf field for our information. Bob is an excellent source for answers to many questions on horticultural problems. He may be reached at 612/542-1420. Written requests should be sent to:*

**Bob Mugaas**  
Minnesota Extension Service-Hennepin County  
701 Decatur Ave. N.  
Suite 105  
Minneapolis, MN 55427

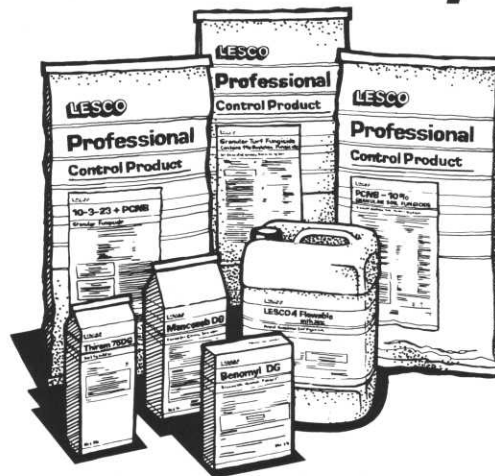
This month's articles cover Perennials, Oak Wilt, and Purple Loosestrife.

## PERENNIALS

by **Don Selinger**  
Plant Materials Committee  
Minnesota Nursery and Landscape Association

Perennials that provide us with color throughout the better part of the summer have been gaining rapidly in popularity. In many respects they combine the flowering attributes of annuals with the benefit of not having to replant each year. This is especially true of those that are reliably hardy, relatively maintenance free and will tolerate or thrive under the hot, dry conditions we have been ex-

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perencing the last few years.

**MOONBEAM COREOPSIS** (*C. verticillata* 'Moonbeam'), **PURPLE CONEFLOWER** (*Echinacea purpurea* 'Bright Star') and **BLACK EYED SUSAN** (*RUDBECKIA fulgida* 'Goldstrum') are three that have been gaining in popularity because they do satisfy the criteria mentioned. They can provide a bold display of color by planting them in mass or they are attractive enough to use as individual specimens.

**COREOPSIS MOONBEAM** forms a very attractive clump with finely textured foliage that is covered in summer with creamy yellow daisy-like flowers. Various cultivars of Coreopsis (Tickseed) have long been used in the perennial garden to provide summer color and as a good source of cut flowers. Most of the cultivars of Coreopsis used as a cut flower possess a deeper golden yellow and have their blooms borne on stems of 18 to 24 inches that are ideal for cutting. While the other cultivars are superior as a cut flower, Moonbeam is unsurpassed for use as a landscape plant. Besides having a paler yellow flower, Moonbeam forms a more compact plant of up to 18 inches with almost fern-like foliage that lends itself to landscape use and makes an attractive plant whether it is in or out of flower. Moonbeam will do well in sun or light shade and in any well drained soil. It is relatively insect and disease free and will tolerate the heat and drought quite well.

**PURPLE CONEFLOWER** is a member of the sunflower family that is native to much of the eastern United States including Minnesota. Several cultivars are available, with Bright Star being the more common one. Bright Star produces an abundance of blooms of deep rosy-purple with a maroon cone-like center that remains attractive even after the flower fades. The flowers are produced on plants of 2 1/2' to 3' from midsummer until frost. In addition to making an attractive landscape plant it can also be used as a cut flower, either fresh or dried. Being a native of prairie conditions Purple Coneflower will withstand heat and drought extremely well and does not have any serious insect or disease problems. It does require full sun and will do well in most any well-drained soil.

**BLACK EYED SUSAN** (*Rudbeckia*) is a very common native of the prairie in a good part of the United States. The cultivar Goldstrum was selected for the deep yellow flowers, up to 3 to 4 inches in diameter, that are set off by a deep bronze black cone in the center. The flowers, which are also good for cutting, are produced freely during August and September on an attractive plant of 2 to 2-1/2 feet. It will also withstand the heat and dry conditions that are common to the prairie and does best in full sun to light shade. Insects and diseases are generally not a problem.

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## OAK WILT

The Minnesota Department of Agriculture has recently published two excellent publications relating to Oak Wilt control and prevention: "Oak Wilt Control and Prevention on Construction Sites" and "Root Graft Barriers for Oak Wilt Control."

Both of these articles are available at no cost by contacting: Minnesota Department of Agriculture, Oak Wilt Control Program, Plant Industry Division, 90 West Plato Blvd., St. Paul, MN 55107; Telephone: (612) 296-3349.

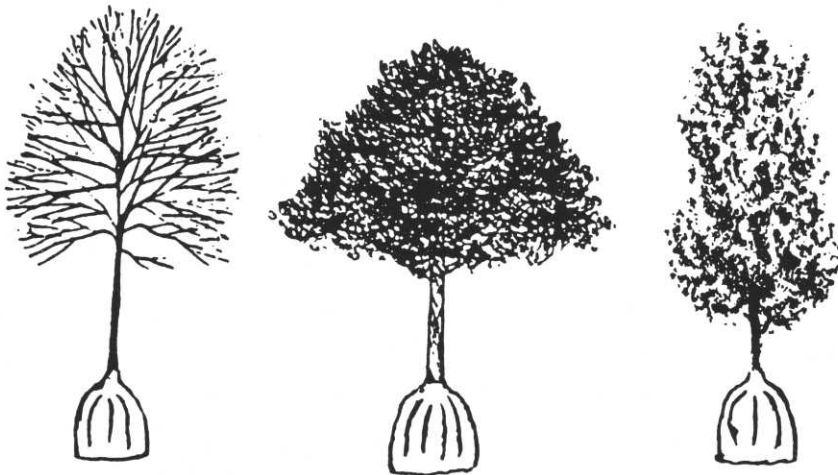
The following summary and flow chart are adapted from the fact sheet "Oak Wilt Control and Prevention on Construction Sites."

### SUMMARY

Oak Wilt is the most serious shade tree disease in Minnesota. A Department of Natural Resources (DNR) survey of oak wilt shows the nearly all infections are associated with construction. If your development sites are currently free of oak wilt, prevention is easy and involves only minor modifications in construction practices. Once oak wilt is established in an area, control is necessary. Obviously, there are costs involved with this work. But the alternative costs of doing nothing (decline in property

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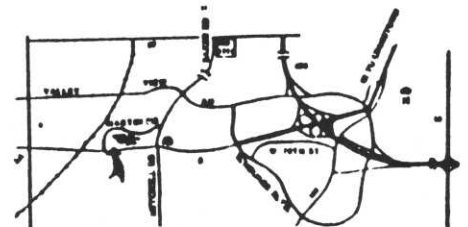
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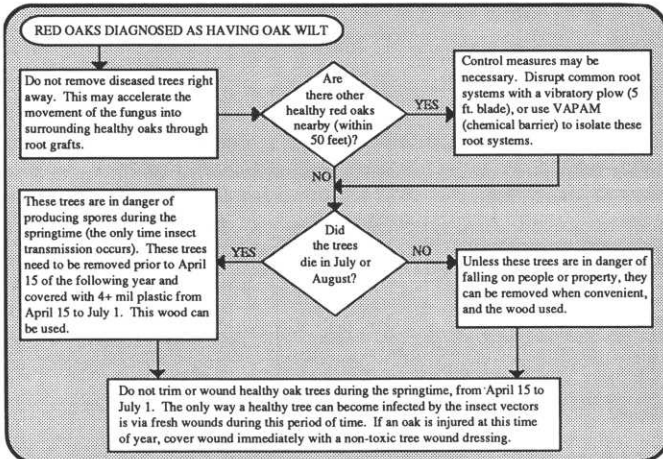
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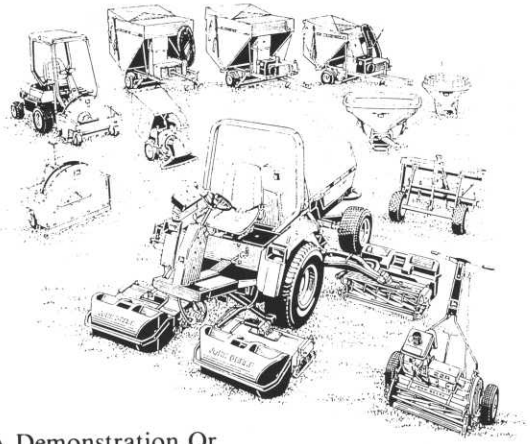
### LANDSCAPE PRODUCTS FOR THE QUALITY CONTRACTOR

value, tree removal, skeptical buyers, potential liability problems, etc.) may be far more expensive.

The Departments of Agriculture and Natural Resources can help you determine whether oak wilt exists on your development sites. An aerial inventory of oak wilt in 45 townships north of the Twin Cities (the area hardest hit by oak wilt) was completed last year. Computer generated maps of oak wilt infections in this area (down to map size of 40 acres) are available (May, 1989). For these maps or other information on oak wilt and its' control, please contact the MDA or the DNR.



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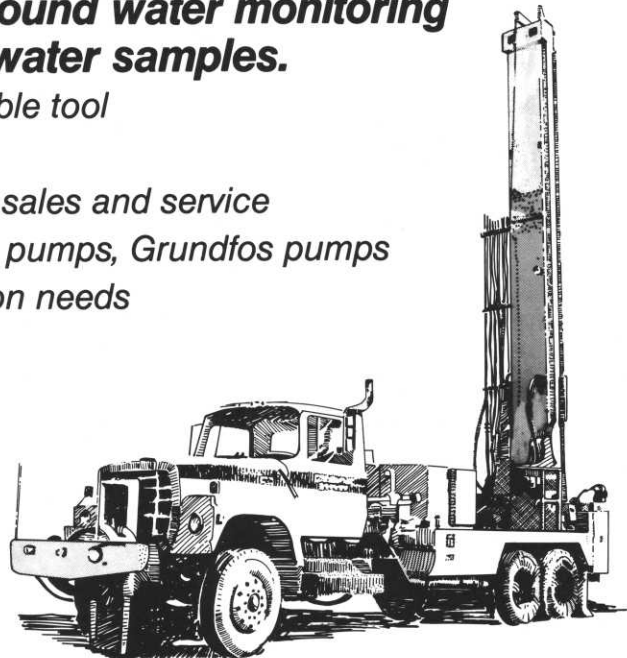
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## PURPLE LOOSESTRIFE

*This summer we have received a number of calls relating to the status and control of Purple Loosestrife (Lythrum salicaria). The following information is adapted from literature prepared by the Department of Natural Resources' Purple Loosestrife Program. In addition, they have published an excellent color brochure to aid in the identification of purple loosestrife. There is also color pictures of loosestrife look-alikes so that accurate identification can be made. The brochure can be obtained by writing to:*

**Minnesota Department of Natural Resources  
Purple Loosestrife Program  
Ecological Services Section  
Division of Fish and Wildlife  
Box 25  
500 Lafayette Road  
St. Paul, MN 55155**

or contacting your regional DNR office:

MN Dept. of Natural Resources  
2115 Birchmont Beach Road NE  
Bemidji, MN 56601

MN Dept. of Natural Resources  
1201 East Highway 2  
Grand Rapids, MN 55744

MN Dept. of Natural Resources  
Box 756  
Highway 15 South  
New Ulm, MN 56073

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424 Front Street  
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MN Dept. of Natural Resources  
1200 Warner Road  
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There are three species of loosestrife, or LYTHRUM, of interest to horticulturists: Purple Loosestrife, (Lythrum salicaria) and wand lythrum (Lythrum virgatum) are of European origin; winged loosestrife (Lythrum alatum) is native to Minnesota but is relatively uncommon. It is typically found in undisturbed marshes, meadows and prairies.

Growers have grown and sold both European species (L. salicaria and L. virgatum) and many hybrids and cultivars throughout North America. Garden Lythrum in North America have parentage of one, two, or in some cases all three Lythrum species. Some hybrids and cultivars of L. virgatum do produce seed. According to taxonomists, identification of Lythrum hybrids and cultivars is very difficult if not impossible.

The widespread distribution of escaped or naturalized Lythrum has produced some startling examples of nature out of balance. Purple loosestrife is a phenomenally prolific exotic when not kept in check by its natural European predators. In Minnesota, it has spread to over 800 sites, blocking drainage ditches, clogging marshes, and degrading habitat used by waterfowl, songbirds, furbearers and other animals and plants. Over 20,000 acres of wetlands are now covered with loosestrife.

In 1987, the species Lythrum salicaria was designated a noxious weed by the commissioner of agriculture. The



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noxious weed law and 1987 legislation prohibit the sale and transport of *Lythrum salicaria* (purple loosestrife) in Minnesota.

In November of 1988, Commissioner of Agriculture Jim Nichols deemed purple loosestrife (Latin names *Lythrum salicaria* and *Lythrum virgatum* and any combination thereof) to be a noxious weed as defined in Minnesota Statutes 1987, section 18.171, subdivision 5. This new order supercedes the 1987 commissioner's order; therefore, the sale of ALL these plants is now prohibited.

Illegal *Lythrum* plants have many horticultural names:

Plants of *L. virgatum*  
parentage:

Rose Queen  
The Rocket  
Morden Pink  
Morden Rose  
Dropmore Purple  
Columbia Pink

Plants of *L. salicaria*  
parentage:

The Beacon  
Fire Candle  
Bightness  
Lady Sackville  
Mr. Robert, Robert's  
Roseum Superbum  
Happy  
Atropurpureum  
var. Tomentosum  
Purple Sprire

According to Minnesota Statutes, 1975, it is the duty of the occupant of privately owned land (or, if unoccupied, the owner) or the person in charge of public land to control or destroy noxious weeds to prevent their spread.

**[18.182] Penalty for the Sale of Purple Loosestrife:** *A person who sells purple loosestrife, Lythrum salicaria, is guilty of a misdemeanor.*

**[86.78] Control of Purple Loosestrife:**  
Subdivision 1. Definition: *For the purpose of this section, "purple loosestrife" means Lythrum salicaria.*

Subdivision 2. Establishment of Control Program: *The commissioner of natural resources shall coordinate a control program to curb the growth of purple loosestrife. The commissioners of agriculture and transportation must aid and cooperate with the commissioner of natural resources to establish, implement and enforce the control program.*

**[Purple Loosestrife]**

*\$50,000 is appropriate from the general fund to the commissioner of agriculture, to be available until June 30, 1989, for the eradication of purple*

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*loosestrife (Lythrum salicaria) on farm land where the farmer is required to eradicate the purple loosestrife because of the noxious weed law.*

**[18.191] Destruction of Noxious Weeds**

This section now provides that effective July 1, 1989, an owner of non-federal lands underlying public waters or wetlands is not required to control purple loosestrife below the ordinary high water level of the water or wetland. The commissioner of natural resources is responsible for the control on public waters and wetlands unless they are owned or managed by the federal government. This section also provides that DNR employees or those under contract with the DNR may cross private land to get to public waters or wetlands to control the purple loosestrife. Landowners may assume responsibility for controlling loosestrife on their protected waters if they notify the DNR in writing.



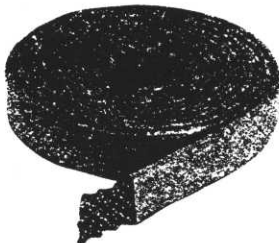
**OFF THE TOP  
OF MY HEAD**

**GREG HUBBARD, CGCS  
Editorial Chairman**

In an earlier issue, I suggested that we all take some time off during the busy golf season to relieve work related stress and to re-acquaint ourselves with our families. For once, I finally took some of my own advice and took a little visit to the PGA Championship held this last August at Kemper Lakes near Chicago. By showing my GCSAA membership card, my wife and I were each given complimentary passes for each day of play which also included special tent privileges for food and refreshments. As evidenced by the TV telecast, we were treated to an outstanding golf course in superb condition and, of course, were eyeball to eyeball with the best golfers in the world. A thrilling finish topped off a very enjoyable visit and I returned to work a much happier soldier with my batteries fully recharged.

Besides the actual tournament, I was struck by the enor-

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