



Green Industry News

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CALENDAR OF EVENTS

MGGA Bus Trip to Longwood Gardens

October 2, 2001

MGGA Conference on Nutrient Management

October 26, 2001

Advanced Landscape Plant IPM PHC Short Course

January 7-11, 2002

Details begin on page 8

The Ups and Downs of Leyland Cypress

Bob Stewart

Not many plants become horticultural phenomena, but it seems the Leyland cypress is rapidly achieving such a status, and it's doing it quickly. The Leyland cypress was featured on the cover of the October 1984 American Nurseryman magazine and the photo description read, "The plant is used extensively in Europe but is not common in the U.S." Seventeen years later the Leyland cypress is one of the most commonly used woody landscape plants in the U.S.

Although they are a bit overused, I think Leyland cypress is a good landscape plant. Dr. Michael Dirr, in his book, *Manual of Woody Landscape Plants*, describes Leyland cypress as "Magnificent, noble, needle evergreen forming a columnar to pyramidal outline." I

agree, Leyland cypress develops into a very attractive evergreen. Add to that its very rapid growth rate, three to five feet of new growth per year when young, and this is a great evergreen tree.

The rapid growth rate and relatively low cost has pushed Leyland cypress into a stereotype as strictly a plant used as a screen or hedge. Many home gardeners, and some landscapers, look upon Leyland cypress as nothing more than a living fence, and they provide about that level of maintenance, little to none. I think Leyland cypress deserves more than this, and when these plants are used as a formal accent in groupings, they can be a magnificent addition to a landscape.

On the upside, Leyland cypress is an attractive, fast growing evergreen that can add a significant

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element to a home or commercial landscape. It can also, when necessary, provide a relatively inexpensive screening plant.

On the downside, I'll provide a quote from Dr. Austin Hagan, Extension Plant Pathologist and Professor, Auburn University. Dr. Austin writes, "Leyland cypress has been widely touted in recent years as the fast growing, pest-free, do-it-all tree for southern landscapes. It has gotten a reputation as a low maintenance tree but Leyland cypress is not. The problem is that this tree has often been over-planted on sites where it's not well adapted or maintained. Such trees, when exposed to prolonged drought or extreme cold, are predisposed to attack by stress-induced plant diseases. The net result is that Leyland cypress in landscapes across the South are dropping like flies."

Unfortunately, even here in Maryland there have been reports of Leylands dropping like flies. I visited a landscape a few years ago in Calvert County where eighty Leyland cypress trees were planted in a straight line across the back property line. They were in their fourth year and more than sixty were dead. They began to show branch yellowing the year before which spread to the point where many of the plants were gone. The cause of this Leyland cypress problem was Seridium Canker.

There are four things that will kill Leyland cypress relatively quickly. The first is planting in poorly drained soils. Leyland cypress requires a well drained soil. If they are placed in poorly drained planting pits their roots will rot quickly when the pits fill with water, and the plants will turn brown and die. The second killer of Leyland cypress is planting too late in the growing season. These plants are a bit slow to produce new fibrous roots. If planted in hot weather, these plants, especially if they're large plants, often can't grow new feeder roots fast enough to offset transpiration losses and they dry out, turn brown and die. The third and fourth killers are the canker diseases.

Seridium canker and Botryosphaeria canker are the two main diseases of Leyland cypress. Cankers

diseases are infections of plant stems. The fungus invades the stem and destroys the vascular tissue. Once the vascular tissue has been destroyed the plant is unable to move carbohydrates and water up and down within the tree. Eventually all growth out beyond the canker dries up and dies. If the canker is in a branch, the diseased branch can be pruned out. If the canker is in the main trunk, the plant is lost.

Both Seridium and Botryosphaeria cankers primarily strike plants under stress, and for the Leyland cypress the two main stresses are drought and transplant shock. The first sign of a canker problem is individual branches, or sometimes the entire tree, turning a pale green to grey, then yellow, and finally brown. Cankers appear as cracks or sunken areas in the bark. Often resin from the tree oozes out of the canker resulting in the canker area being wet and sticky.

Infected branches should be pruned out immediately when found. The cutting blades of pruning equipment should be disinfected between each cut by using alcohol or diluted bleach solution. If the canker is in the main trunk the tree is lost and should be removed as soon as possible.

Prevention is the key to dealing with canker diseases of Leyland cypress and the avoidance of drought stress is the primary prevention method. Leyland cypress trees should be irrigated on a regular basis during periods of drought. Although they may not display drought symptoms during the drought, they will stress and become susceptible to fungal infections, the symptoms of which will show up the following year.

I like Leyland cypress and I think they are a valuable landscape plant. However, we are quickly learning that they have their problems, and anyone in the landscape industry installing or maintaining these trees should know a little about both their ups and their downs.

Bob Stewart is an Extension Educator with Maryland Cooperative Extension in Prince George's and Anne Arundel Counties.

Stepables
Ginny Rosenkranz

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Attending conferences with trade shows is always a great idea, even if it generates a lot of extra paper that needs to be filed. This year, the Ohio Florist Association sponsored their annual Short Course in Columbus, Ohio, and it was complete with a huge trade show for the greenhouse and floral industries. One of the more unusual booths was sponsored by 'Stepables'® (sold by Under a Foot Plant Co.), a creatively packaged way to sell some of the shortest groundcover plants available. The marketing department has created a clever outline cutout of a dancing person (the 'Happy Guy') holding the sign 'Stepables'®, and literature that gives many ideas on the planting of the small, often slow growing groundcovers. The plants are well labeled with the Latin name, the cultivar, and the common name. A brief description of the plants and their growth habit is listed along with the size, shape, color and time of plant bloom. The growth rate is listed as moderate, slow or fast grower, and the amount of sun and or shade the plant requires is also given. The USDA cold tolerate zone is listed, and an actual map is included in the literature, but not the newest American Horticultural Society Plant Heat Zone Map numbers. As the plants are to be planted in-between rock, brick, cement pavers and other heat absorbing material, it is a shame that they neglected to add that particular information. If the plant is dormant in the winter, that information is also included. Because the plants are to be planted in and around walkways, the amount of traffic that they can bear is also given consideration. An outline of a footprint is the symbol for a plant that will be able to endure light traffic, while a grey footprint indicates plants that will take moderate traffic, and a black footprint identifies plants that can grow despite heavy foot traffic. The section on care and maintenance is excellent, encouraging landscape contractors to assess the planting site for sun, shade, dry and moist soil. Information on soil drainage is given as well as excellent information on planting the plants to fill

in small areas or odd sized areas. An important safety disclaimer is also included to remind all the new owners of the 'Stepables'® that the plants are not skid resistant, and care should be used when walking on the plants.

For more information, go to their website at www.STEPABLES.com. The website is well designed, with much of the same written information as the handouts, but also includes color photos of the groundcovers themselves. The only note of caution to mention is that many of the low growing perennials are very closely related to some weed species. Good landscape contractors should always know just what they are planting!

Ginny Rosenkranz is an Extension Educator with Maryland Cooperative Extension in Worcester, Wicomico and Somerset counties.

Fall Webworms

Stanton Gill



Fall webworms started their activity back in late June. Nest building was the activity for the first generation of the season and the web nests tend to be at the tips of branches. First generation activity was

Fall webworm larvae

reported at around 600 degree-days. The caterpillars are mostly white with small black spots and long white hairs projecting from the body.

In late August to early September the 2nd generation will be starting. In past years this has been around 1200 degree-days. This 2nd generation is what is really noticeable as whole branches become completely engulfed in webbing from the caterpillars as they expand the nest. In some years it looks like someone has decorated the tree with spider webs in preparation for Halloween.

Fall webworm can be found on a wide range of landscape trees including mimosa, elm, zelkovia, ash, crabapple, sweetgum, and walnut, just to name a few. Unsightly webs can be pruned out. Early instar larvae can be controlled with applications of *Bacillus thuringiensis*.



Webbing on cherry in August



Mimosa covered with fall webworm webs in September

Two new low risk pesticides will kill later instars (larger caterpillars). The first product is Conserve. This product has been used successfully on later instar caterpillars of eastern tent caterpillar and gypsy moth. The other product that can be used on late instar larvae is Confirm (originally produced by Rohm and Haas which was recently bought out by Dow Agro Science). Keep in mind that fall webworm has lots of predators and parasites so select a material for control such as Bt, Conserve or Confirm.

Stanton Gill is a Regional Specialist with Maryland Cooperative Extension at the Central Maryland Research and Education Center in Ellicott City, Maryland.

Barley Straw As An Alternative Method of Algae Control

Bryan Butler, Dr. Daniel E. Terlizzi,
and Dr. Drew Ferrier

The use of barley straw to control algae growth in fresh water systems is a fairly new development. In 1990 a British farmer dropped a bale of barley straw off of a wagon. It fell into a pond where there was a severe algae problem. Over time the algae went away and did not return that season. The farmer brought this to the attention of a researcher interested in controlling pond

algae, which is a serious problem in the U.K. Anecdotal testimonies are numerous, yet hard data is difficult to find in North America, because very little research has been done in the U.S. Currently the University of Maryland Cooperative Extension Service in cooperation with Sea Grant and a number of other organizations have begun to look more closely at the potential efficacy of barley straw in municipal reservoirs, farm ponds, aquaculture systems and recreational bodies of water to control algae.

The purpose of this article is to summarize the existing literature on barley straw for algae control and apply this information to fresh water impoundments in Maryland. Over the past five years volunteer cooperators have used straw bales in impoundments, especially farm ponds, for algae control. Although based on limited anecdotal information mostly passed by word of mouth, it was relatively inexpensive and appeared to be safe. In most cases (over 90%), barley straw users have reported reductions in algal problems. There are a few reports where it was not effective. It is impossible to know why some applications did not work, but a number of problems have come to light through years of trial and error. These issues will be discussed later.

Nature of Algae Problems in Maryland

Algal growth during the spring and summer in farm ponds, lakes and municipal reservoirs can pose a number of problems. The algae that grows in ponds used for irrigation can clog pumps, block filters, cause odor problems, and is generally considered to be very unsightly. These algae blooms seem to be more severe in bodies of water that have high levels of nutrients such as Nitrogen and Phosphorus that can be associated with runoff from production fields.

In ponds, lakes, and reservoirs, different species of algae bloom in all seasons of the year that cause management concerns. Some of the greatest challenges the managers face come in the cooler months. The management of the watershed has the potential to have long term impact on bodies of water. For example, nutrients and sediment can be washed into the water

when the land is opened up by logging or development. Subsequently, the different species of algae that proliferate due to the increased nutrient loading can cause taste and odor problems with the potable water supply that are very difficult to manage. Even though the best way to keep the nutrients out of the water is good watershed management, forests and riparian buffer strips take time to get to a size that will protect the water. Thus as long as the high nutrient levels are present, the algal blooms will have to be controlled.

Control Options

The control of algae with mechanical or chemical means can be very costly and ineffective. The use of some chemicals may limit or restrict the use of the water for irrigation. Chemical control also often removes the higher plants as well as the algae. Mechanical control is only effective with filamentous forms, and the issues of decomposing algae and disposal can be a problem. Colorants, dyes which absorb light necessary for algae growth, may be an environmentally sound method of suppressing algae, yet they are expensive, and often the colors are not aesthetically acceptable. Chemical treatments such as Elemental Copper, Copper Sulfate, Potassium Permanganate, and Diquat can lead to a number of problems. When applied directly to water, these materials present even more of a chance for non-target exposure than in land-based applications. Some of these materials kill vascular plants, thus when the chemical has moved out of the system the algae can recolonize faster due to a lack of competition from the higher plants. This leads to a situation where multiple chemical applications are required to suppress the algae and in turn presents an even greater risk to non-target organisms. Chlorination and filtering water from reservoirs can take care of many algae species but *Synura* and *Anabena spp.* can present unique problems. These algae release an oil when chlorinated that causes major taste and odor problems in the potable water supply. Many bodies of water are managed for multiple use and therefore a great deal of consideration must be given before a method of

algae control is selected. Appropriate control methods must factor in the size, use and location of the body of water. The best management plans frequently use combinations of mechanical, chemical, and biological methods or use an integrated approach to pond management.

How To Use Barley Straw

How the straw works is still unknown; the active ingredient appears to be some type of phenolic compound. When barley straw is applied to a pond, it generally takes 6-8 weeks for the straw to become effective at water temperatures below 50°F. When the water temperatures are 68°F or above, it only takes 1-2 weeks for the treatment to become effective. Once active the straw will remain effective for about six months. The straw does not kill the algae that is already present. Rather, it prevents the growth of new algal cells, similar to the way a pre-emergent herbicide functions. The anti-algal activity is only produced when the straw is decomposing in a well-oxygenated environment. Thus if the straw is sitting on the bottom of the pond it will not work. The amount of straw needed is based on the surface area of the pond. The volume of water seems to make no difference in the performance of the straw. As a rule of thumb 200-300 pounds of barley straw (approximately 6 bales) per acre of surface area will provide good activity against the algae. Higher rates have been shown to provide better algae control if the problem is severe. However, too much straw can deoxygenate the water. Once the water is cleared of algae the lowest rates should provide adequate maintenance control. It is best if the straw is applied loose so that water can move freely through it. A simple cage works well. Floats like empty 2 liter bottles can be attached to the cage to keep it at the surface for maximum efficiency. It is also better to use multiple cages rather than one large one. A problem that has been experienced by some is keeping the straw in the container. Sometimes barley straw is chopped more finely than other types of straw. These smaller pieces tend to float out and sink, and control is

reduced. The key is surface area - maximizing the exposure of the straw to the water while retaining it in the cage.

Another method of application is to stake the “cages” around the edge of the pond. This method has proven very effective when the strings of the bale are cut and the straw is wrapped in bird netting, fishnet or chicken wire, then tied to the stake with a length of twine that holds the straw at the surface. This prevents the bale from sitting on the bottom and going anaerobic.

With regard to timing, apply the straw in the fall or early spring. This will give the straw a chance to rot and get ahead of the spring/summer algae blooms that cause most of the problems for irrigation ponds. So far there have been no negative side effects recorded. There have, however, been observations of increased invertebrate populations and improvement of gill development in fish from ponds where barley straw is applied.

Barley Straw and Aquaculture

Barley straw could be used to provide algae control in aquaculture ponds. The steady control of algal growth from the barley straw could help to reduce problems with dissolved oxygen associated with excessive algae. The control of *cyanobacteria* that causes off flavors in fish is an expensive problem in the production of catfish, and could be a major benefit of barley straw use.

The 100,000 acres of catfish ponds in Mississippi can have a severe problem with algae including *Oscillatoria*, *Anabena* and *Microcystis spp.* One of the cyanobacteria that causes the problems with off flavor in catfish has been controlled with barley straw in the U.K., so there appears to be promise for control here in the U.S.

Bryan Butler is an Extension Educator with Maryland Cooperative Extension for Carroll County. Dr. Daniel E. Terlizzi is a Water Quality Specialist, Sea Grant Extension. Dr. Drew Ferrier is an Assistant Professor of Biology at Hood College.

Production / Postproduction Factors For Aconitum

Thomas M. Blessington, David L. Clement, and Susan
M. Tater

Introduction

- C Scientific name: *Aconitum napellus*
- C Common names:
Monkshood, helmet-flower,
turk's cap, aconite,
wolfsbane
- C Native to Europe, Asia, and
America
- C Used in perennial borders
and grown as a long lasting cut flower
- C Tall and slender herbaceous perennial which
flowers in the summer
- C The upper petaloid sepals form a hood or helmet
- C The leaves are 2-3 inch wide and the roots are
tuberous



Growth and Development

- C Tubers should be planted just below the substrate
surface
- C Substrate should be well drained
- C Plants flower in 68 days when tuberous roots are
cold treated at 36EF for 10 weeks and then at
28EF for 15 weeks
- C As storage increases, inflorescence length
increases, but the number of buds decreases
- C Inflorescence weight increased with storage of 18
weeks
- C Maximum tuber weight and number is achieved
with a 16 hour photoperiod
- C Prefer cooler temperatures
- C Night temperatures below 70EF often increases
quality
- C Grow well in full sun
- C Substrate should be kept moist

- C Two layers of netting are required to support
flowering stems
- C Total production time requires 5-6 months from
dormant tubers
- C Apply up to 200 ppm N of 20-10-20 soluble
fertilizer with each watering

Propagation

- C Grown from division using tubers and seed
- C Tubers are produced in cycles, tubers one year,
flowers the next
- C Collect fresh seeds and immediately sow
- C Seeds become dormant when allowed to ripen
- C Place seed flat beds in temperatures of 65-70EF
- C Rooting substrate temperature should not drop
below 16EF
- C After germination grow at 45-55EF
- C Flowers are produced 2-3 years after planting

Disorders

- C Common problems
 - Flower abortion occurs when light levels are
low
- C Diseases
 - Crown rot, caused by *Sclerotinia sclerotiorum*,
S. rolfsii, and *Sclerotium delphinii*
 - Causes yellow leaves, wilting, basal stem
rot, and black streaks in the stem and root
tissue, often in later stages causes die back
 - Stem rot, *Sclerotinia sclerotiorum*,
Pellicularia filamentosa and *Botrytis* sp.
 - Discard infested substrate and replace with
fresh substrate, or steam pasteurized
 - Mildew, caused by *Plasmopora pygmaea*,
Erysiphe polygoni
 - Wilt, caused by *Verticillium albo-artum*,
Cephalosporium
 - Wilting and blackening of foliage
 - Discard infected substrate
 - Bacterial leaf spot, *Pseudomonas delphinii*

- Root rot, *Phymatotrichum omnivorum*
- Rust, *Puccinia recondita*, *Uromyces lycoctoni*
- Leaf and stem smut, *Urocystis carcinodes*, *U. sorosporioides*
- Mosaic virus

C Pests

- Aphids and Thrips
- Four-lined plant bug (*Poecilocapsus lineatus*)
 - @ Dark, depressed spots in the leaves are produced
- Larkspur leaf miner (*Phytomyza delphinivora*)
 - @ Tan to brown blotches in the leaves caused by the larvae
 - @ Remove and discard infected leaves
- Cyclamen mite (*Steneotarsonemus pallidus*)
 - @ Deforms the leaves and flowers

Consumer Care

- C Fertilize with 20-10-20 at up to 100 ppm N once a month
- C Stems should be harvested when there are 1-3 flowers open on the raceme
- C Flowers are long lasting and do not need preservatives, but they will last 7-10 days in preservatives
- C Recut stems upon arrival
- C Avoid extremes in temperature
- C Store at temperatures of 45-60EF
- C Temperatures less than 45EF may result in chilling damage resulting in blackening of the foliage
- C Flowers are sensitive to ethylene
- C Water uptake of the flowers decreases with time
- C Varieties and Cultivars:
 - Various species and cultivars vary in their date of flowering, height, and quality

Thomas Blessington and David Clement are regional specialists and Susan Tater is a technician at the Central Maryland Research and Education Center, University of Maryland, in Ellicott City, Maryland.

Calendar of Events

October 2, 2001

MGGA Bus Trip to Longwood Gardens and several growing operations along the route

Location: Buses will leave from Behnke's Nursery in Beltsville and Valley View Farms in Cockeysville

Contact: Hank Doong, 301-937-4166

October 26, 2001

MGGA Nutrient Management Seminar

Location: Patuxent Wildlife Visitor Center

Contact: Hank Doong, 301-937-4166

January 7-11, 2002

Advanced Landscape Plant IPM PHC Short Course

Course emphasis will be on the principles and practices of integrated pest management in landscape plantings based on sound pest identification and life history information.

Lectures topics include:

- IPM and PHC Principles and Practices
- Program Implementation
- Monitoring Technology
- Soil Program Diagnosis
- Biological Control
- Biorational Pesticides
- Adult Insect Identification
- Immature insect Identification
- Disease Management
- Business Aspects of IPM

Laboratory work will include microscopic examination of key landscape insect pests and beneficials. Each student will receive a general pest collection, scale insect pest collection, plant damage collection and nine publications included in the registration fee.

Location: University of Maryland, College Park

Contact: Debbie Wilhoit, 301-405-3913

For a registration form, go to

<http://www.pest.umd.edu/events/events.html>

NEW BOOK
**Diseases of Woody Ornamentals and
Trees in Nurseries**

Edited by Ronald K. Jones and D. Michael
Benson

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make you aware of local problems, and an
explanation of the role of plant diagnostic clinics in
assisting nurseries in disease diagnosis.

2001; 8 1/2" x 11" softcover; 482 pages; 160 color
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