

# Nursery and Landscape Notes



Spring 2008

Welcome to the spring 2008 edition of our new nursery and landscape newsletter for Louisiana's green industry professionals. The LSU AgCenter has reinitiated this communication effort to keep you updated on current research, extension programs and related events/activities. This is our third edition since our "re-launch," and the newsletter is now coming to all wholesale growers, landscape contractors and horticulturists in Louisiana on a quarterly basis. Your comments, suggestions, questions, etc. are welcomed and very much appreciated.

## Upcoming Events

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|------------|--|
| May 9      | <b>Gardener's Night Out With Norman Winter</b><br>Hammond Research Station<br>Hammond, La.                     |
| May 15     | <b>Landscape Horticulture Field Day</b><br>Hammond Research Station<br>Hammond, La.                            |
| May 30     | <b>Nursery and Landscape Golf Shootout</b><br>LSU Golf Course<br>Baton Rouge, La.                              |
| June 2-4   | <b>Midsouth Greenhouse, Landscape and Retail Conference</b><br>Eagle Ridge Conference Center<br>Raymond, Miss. |
| June 12-13 | <b>LNLA CNLP Review and Exam</b><br>Ira Nelson Horticulture Center<br>Lafayette, LA                            |
| July 15-17 | <b>Landscape Management Short Course</b><br>Baton Rouge/ Hammond, La.  |

## Downy Mildew

Don Ferrin, Assistant Professor (Plant Pathology), Department of Plant Pathology and Crop Physiology

The downy mildews are currently a major problem for the ornamental and vegetable industries alike. These are a group of diseases caused by Oomycetes (the "water molds") that occur on a wide range of ornamental plants, including bedding plants (such as snapdragons, impatiens, salvia and coleus) and floriculture crops. Each of the downy mildew pathogens, which include species of *Peronospora*, *Bremia* and *Plasmospora*, tends to be restricted to closely related plants within a specific plant family. Because they are obligate parasites, they must have a living plant host in order to grow and reproduce. However, they can survive in soil or plant debris for several years in the absence of a susceptible host.

Symptoms of these diseases include chlorotic and necrotic spots that are visible on the upper surface of the leaves. When viewed from beneath, these lesions may be angular in appearance when they are delimited by the leaf veins. As implied by the name, a sign of the disease is the "downy" white to gray to purple growth of the pathogen on the underside of the leaves as it reproduces. Infected leaves often fall from the plant. The pathogen may also develop systemically within infected plants causing stunting and leaf distortion.

The current combination of mild days and cool nights are ideal for the development of most downy mildews,

particularly during periods of rain as these pathogens need free water on the plant in order to cause infection. They also need a relative humidity above 85 percent to reproduce. Because they sporulate so prolifically and develop so quickly under these conditions, these diseases can be extremely difficult to control, especially on susceptible cultivars. It is extremely important that susceptible crops be monitored on a regular basis so that action can be taken at the first sign of disease and thereby prevent these diseases from getting out of hand.

Because they are not true fungi (remember they are "water molds" like *Phytophthora* and *Pythium*), many of the fungicides commonly used for disease control in the ornamental industry are not effective against them. Of the fungicides currently available, Aliette, Stature and Heritage all provide excellent control of downy mildews when used preventatively. Mancozeb-based products also give very good control, as do copper-based fungicides, but the copper fungicides can be phytotoxic to some plants. The evaluation of fungicides for downy mildew control was recently given a high priority for funding for the next two years at the Ornamental Horticulture Workshop of the IR-4 Project. Several promising fungicides are currently being evaluated and cyazofamid, which does an excellent job of controlling downy mildew on cucurbits, was recently registered for use on ornamentals under the trade name Segway.

## Fire Blight

### In This Issue

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- ◇ Difficult Weeds for Hand Removal

Don Ferrin, Assistant Professor (Plant Pathology), Department of Plant Pathology and Crop Physiology

Fire blight is a common and troublesome disease of certain rosaceous plants in the pome fruit subgroup. These include apples, crabapples, pears (both fruiting and ornamental), quince, loquat, mayhaws, hawthorn, India hawthorn, Cotoneaster, Pyracantha and others. This disease is caused by the bacterium *Erwinia amylovora*, which overwinters in cankers from previous infections. The same conditions that stimulate the renewed growth of the host plants also stimulate the initiation of growth of the bacteria, which is first evident by the presence of a watery exudates coming from plant tissues that were infected during the previous season. This exudate contains both actively growing bacteria

and sugar that attracts a variety of insects.

The bacteria can then be dispersed to nearby blossoms or tender young shoot tips by splashing rain or insects, especially honeybees, where they enter the plant through wounds or natural openings, such as nectarhodes. Disease develops most rapidly during periods of humid or rainy weather when temperatures range from 55 degrees at night to 75-85 degrees during the day.

Infected flowers and flower stems wilt and turn black or brown. The bacteria then move from the infected flowers into twigs and branches causing small shoots to wilt and form the characteristic "shepherd's crook" at the ends of the infected shoots. These eventually die and turn black, but the dead, blackened leaves remain attached to branches throughout

the season, giving the tree the scorched appearance that gives the disease its name. As the bacteria move from the infected blossoms into the adjacent woody tissues, the wood develops reddish streaks beneath the bark. Growth of the bacteria can be quite extensive in susceptible hosts and can extend a considerable distance from the edge of obviously diseased tissues.

Management of fire blight requires a program that combines various disease management practices because no one practice is sufficient to control this disease when used alone. In areas where fire blight is common, choose only resistant varieties when establishing new plantings, but remember that resistance is not the same as immunity, and disease can still develop on these varieties. Once the plants are established, employ cultural practices that promote a vigorous plant to reduce the damage caused by this disease. Over-fertilization and over-watering, however, tend to promote lush, succulent growth that is quite susceptible to disease. The natural resistance of the plants can be further enhanced by applications of fosetyl aluminum (Aliette) or a phosphite fungicide. Careful pruning to remove infected branches also will help reduce the amount of inoculum present in the spring. This practice includes cutting back far enough into healthy tissue to insure that infected tissues are removed completely and the frequent cleaning and disinfection of cutting tools using a 10 percent bleach solution (or other suitable disinfectant) to prevent the accidental spread of the bacteria. A weak solution of a copper fungicide may be applied during the bloom period to reduce infection of the flowers, but such applications must be made every 4-5 days during the bloom period to be even moderately successful. Alternatively, streptomycin sulfate may be used, but repeated use of this antibiotic will eventually lead to the development of resistance in the pathogen population.



Burden Conference Center

## Landscape Management Short Course Scheduled for July in Baton Rouge

The LSU AgCenter, cooperation with the Baton Rouge Landscape Association will present a landscape management short course this summer. This event has been requested by the green industry and will be an attempt to provide intermediate-level horticulture instruction on a wider range of landscape horticulture practices. The first day will be held on campus in Baton Rouge, day 2 will be held at Burden Center in Baton Rouge, and day 3 will conclude the short course with an overview of landscape horticulture research at the Hammond Research Station. The registration fee is \$200 (early bird deadline of June 15th) with late registration being \$225.

### Registration Form

Name

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Business (if applicable)

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Address

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City, State, Zip Code

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List of Attendees

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Return completed registration form (\$200/person, with check or money order made payable to Baton Rouge Landscape Association) to Amy Blanchard, School of Plant, Environmental and Soil Sciences, 155 J C Miller Hall, Baton Rouge, LA 70803. For additional information on this program contact Allen Owings (985.543.4125; e-mail aowings@agcenter.lsu.edu) or Jeff Kuehny (225.578.1043; e-mail jkuehny@agcenter.lsu.edu).

### TUESDAY JULY 15 – HORTICULTURE HILL FARM TEACHING FACILITY, LSU CAMPUS, BATON ROUGE

8:00 a.m. – Registration  
 8:30 a.m. – Introduction and Short Course Overview – Allen Owings  
 9:00 a.m. – ID and Use of Plants for the Landscape (walking tour) – Bob Mirabello  
 12:00 p.m. – Lunch (provided)  
 1:00 p.m. – New Plant Identification and Use Website – Neil Odenwald and Tom Pope  
 2:00 p.m. – Overview of Plant Material: Practices and Management – Bob Mirabello  
 2:30 p.m. – Break  
 3:00 p.m. – Media, Soil, Amendments and Mulch – Ed Bush  
 4:30 p.m. – Adjourn  
 5:30 p.m. – Dinner and Reception at Lod Cook Conference Center/Hotel

### WEDNESDAY JULY 16 – BURDEN CENTER, ESSEN LANE, BATON ROUGE

8:00 a.m. – Turfgrass ID/Use/Culture (outdoor session) – Jeff Beasley and Tom Koske  
 11:00 a.m. – Landscape Plant Evaluations (outdoor session) – Allen Owings  
 12:00 p.m. – Lunch (provided)  
 1:00 p.m. – Top 10 Landscape Disease Issues and Their Control – Don Ferrn  
 2:00 p.m. – Top 10 Landscape Insect Issues and Their Control – Dale Pollet  
 3:00 p.m. – Top 10 Landscape Weed Issues and Their Control – Ron Strahan  
 4:30 p.m. – Adjourn

### THURSDAY JULY 17 – HAMMOND RESEARCH STATION, HAMMOND

9:00 a.m. – Welcome – Regina Bracy  
 9:15 a.m. – Overview of Landscape Research Efforts – Allen Owings, Regina Bracy, Dick Parish  
 12:00 p.m. – Adjourn

## Nursery Crop Outlook for 2008

Allen Owings, Professor (Horticulture), Hammond Research Station and Roger Hinson, Professor, Department of Agricultural Economics and Agribusiness

USDA/ERS reported in *Floriculture and Nursery Crops Yearbook* (Dec. 2007) that value of production of greenhouse and nursery crops had increased from \$12.4 billion in 1997 to an estimated value of \$16.8 billion for 2006, for an average growth rate of about 3.6 percent. This was considerably lower than estimated growth rates for the 1980s and 1990s, and the estimated change from 2005 to 2006 was only 0.3 percent. Changes in the larger economy in terms of income growth and rising interest rates impacts probably have been responsible for these declines. The demand for plants and flowers as ornaments depends on consumer discretionary income and consumer preferences, and to levels of other household expenses. Energy costs in particular probably have affected sales of ornamental plants and added to the cost structure of growers in production and transportation.

In 2006, an important factor in the economy was declining growth rates (in some cases actual declines) in prices of residential housing. This trend continued and might have been more pronounced in 2007, and early in 2008 there are few signs of abatement. Forecasts of recession are common. In this environment, reduced growth rates for expenditures on nursery and floriculture products should be expected. Our outlook a year ago was that it "might be expected that sales at the national level again would increase in the range of 2 to 3 percent." That apparently did not happen. Further, economic reports and declines in consumer confidence as measured by polls suggest that consumers might lower spending. The National Gardening Association, however, reported in 2006 "Homeowners spent a record \$44.7 billion ... to hire lawn care and landscape maintenance

services, landscape installation and construction services, tree care services, and landscape design services. Thirty percent of all households nationwide, or an estimated 34.5 million households, currently hire

at least one type of lawn and landscape service. And the market for residential lawn and landscape services has increased at a compound annual growth rate of more than 10 percent a year for the past five years." In addition, lawn and garden participation rates have not declined. So, factors that suggest market weakness are evident, but there are other pieces of evidence that any decline in expenditures on gardening may be moderate. Overall, conservative planning based on the expectation that sales level as measured by dollars would be no higher than 2007 seems to be appropriate.

### Louisiana Situation And Outlook

Production and sales of nursery-grown ornamentals have significantly increased over the past five years. The farm-gate value of wholesale production is \$120-\$125 million with an additional \$75-\$100 million in plant inventory. Some growers feel these values are underreported. Total sales for 2007 were up slightly from 2006 figures. Nursery crop sales in 2005 suffered because of Katrina (\$11 million) and Rita (\$5 million) hurricane-related losses but have rebounded. The Louisiana nursery industry, along with growers from Texas to Florida, are slightly ahead of

national trends in wholesale productions sales. The extended drought in portions of the southeastern United States in 2007 hurt out-of-state sales for Louisiana nursery producers.



Woody ornamentals account for the vast majority of the wholesale farm-gate value of commercial nursery crops in Louisiana. The LSU AgCenter estimates wholesale sales of woody ornamental in Louisiana of about \$75 annually. The prediction is for a continued increase for the next three to five years. Container production acreage has increased significantly in the last five years, while acreage in field production has been stagnant or decreased slightly. The major container crops are azaleas, hollies, crape myrtles, Indian hawthorns, groundcovers and shade/flowering tree species. The number of acres in bigger container sizes is up significantly. Adequate inventory in 1-gallon and 3-gallon woody ornamental material was in extreme short supply for the spring 2007 season but should be slightly improved for the spring 2008 season. In addition, shortages of high quality larger container trees exist at the wholesale level in Louisiana.

Floriculture/bedding plants typically represent about 30 percent of Louisiana's nursery crop production. At the wholesale level, about 40 percent of bedding plant/floriculture crop sales occur in late winter and early spring. Floricultural crop and bedding plant production (includes poinsettias, hibiscus, garden mums, lantana, impatiens, petunias and periwinkles) has experienced little growth in Louisiana in the past three to five years. Profit margins in floriculture crop production are shrinking due to energy price increases, transportation cost, fertilizer expenses and other factors.

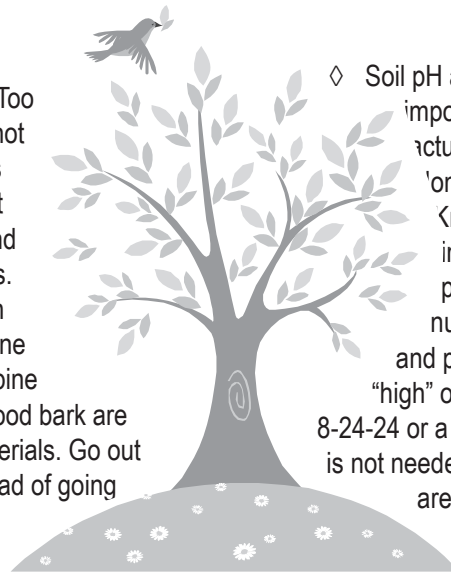
Foliage plant production in Louisiana has slowed. Most foliage sold at the retail level now is imported from Florida or brought in from Florida by wholesale growers and brokers. Some of these imports are grown in Louisiana for several months prior to wholesale sale. Interest in wholesale production of tropical plants, however, has increased recently in Louisiana. Although this category could fall into the floriculture/bedding plant category, outdoor tropical plants such as gingers, cannas, etc. have increased sales potential. Many greenhouse growers have profitable markets for these products.

Fruit/nut tree production is stable in Louisiana at the wholesale level. A slight increase has occurred in the last several years. Container citrus production has rebounded from 2005 when damages occurred via hurricanes Katrina and Rita. Availability of container grown improved pecan cultivars is significantly below market demand, and opportunities to grow these cultivars for wholesale or retail sales are considerable. Also, many new fruit cultivars could be grown to increase market potential. Citrus, figs, pecans, peaches, muscadines, blueberries, apples and pears represented the vast majority of wholesale production of container grown fruit and nut trees.

## Keys to Successful Tree Planting

Allen Owings, Professor (Horticulture),  
Hammond Research Station

- ◇ Planting the root balls at the proper depth. This is at the grade at which they were growing in the container or slightly above this grade. The top of the root ball should be at the same level or slightly higher than the soil grade. Do not cover the lower trunk with soil.
- ◇ Hole width needs to be considered. The width of the planting hole should be 2-3 times wider than the tree's root ball. This allows for lateral root development and expansion. Remember that tree roots desire to grow out from the planting hole. The planting hole should be no deeper than the root ball of the tree going into the planting hole. Make the sides of the hole rough instead of smooth – this is especially important in clay-type soils.
- ◇ Avoid planting root-bound plants. If trees are overgrown in the container, cut the encircling roots enough to encourage outward root growth and prevention of future circling. This even helps when the trees are not necessarily overgrown in the container.
- ◇ Mulch properly. Too much mulch or not enough mulch is common. Do not pile mulch around the base of trees. Mulch to a depth of 3-4 inches. Pine straw, cypress, pine bark and hardwood bark are good mulch materials. Go out with mulch instead of going up with mulch.
- ◇ Do not amend the backfill soil. Backfill soil is the soil removed from the planting hole. The current recommendation is to return the soil that came from the planting hole back into the planting hole. Do not amend backfill soil with pine bark, compost or similar materials. A change in the soil texture from the planting hole to the surrounding soil will occur and water from the surrounding soil migrates to the planting hole and saturation of the root system occurs ("soup bowl" effect).
- ◇ Water properly. Newly planted trees need to be sufficiently watered-in. This eliminates air pockets in the soil that dry out the root system. Apply water at the edge of the original root ball and outward. Do not apply water next to the main stems.
- ◇ Do not prune significantly at planting. The only pruning of shoot growth that should be done at planting is to remove any dead, broken branches, suckers, etc. Leave some branches on the lower part of the trunk for a year or so - this encourages trunk development. Excessive pruning of shoots at planting can also promote additional shoot growth at a time when root growth is desired.
- ◇ Soil pH and nutrient content is important. How many of us actually have a soil analysis done prior to planting? Knowing your soil pH is important. A soil test also provides status of other nutrients. If potassium and phosphorus readings are "high" on a soil test fertilizing with 8-24-24 or a similar material probably is not needed but if these values are "low" fertilization would probably be of value.



## Amaryllis Production and Culture Considerations

Jeff Kuehny, Professor (Horticulture), School of Plant, Environmental and Soil Science



Amaryllis species and hybrids (Amaryllidaceae family, genus *Hippeastrum*), grown from bulbs, have long been a favorite flowering plant in U.S. homes. What Americans have called an amaryllis for many years is actually a *Hippeastrum*. These plants are native to the tropical areas of Brazil where they are considered more of an evergreen perennial. The flowering bulbs belonging to the genus *Amaryllis* are native to South Africa and vary from *Hippeastrum* by differences in their inflorescence. These are not used commercially as *Hippeastrum*.

In subtropical climates (USDA Hardiness Zones 7b through 8) *Hippeastrum* bulbs flower naturally during April and May. Foliage matures and slowly fades during the summer. In the autumn the bulbs go dormant (whether this is true dormancy is a subject of debate) until emergence of leaves and usually two buds per bulb each spring. Dormancy can be imposed by harvesting the bulbs, shipping temperatures, storage temperatures or

drought. Most of the *Hippeastrum* grown commercially for forcing are hybrids but there are numerous species and hybrids that should be reconsidered for their use as both flowering pot plants and landscape plants. Some of these bulbs have been grown in Southern landscapes for years and are often referred to as the "Lily of the South."

*Hippeastrum x johnsonii*, often referred to as Saint Joseph's lily in the South, has a bright red flower that has a thin white stripe down the center of each petal. A close relative is the 'Voodoo Lily' (Naughty Lady), which has a broader white stripe and recurved petals. Many of the more popular hybrids used as flowering potted plants will also do well in the landscape. These plants require a well-drained soil and full sun for best growth. If you decide that *Hippeastrum* won't work for your customers as landscape plants, consider growing them as potted plants. Their popularity, especially as an alternative Christmas holiday pot plant, has steadily increased.

The sale of *Hippeastrum* bulbs for forcing occurs in late August and early September. The bulbs can be marketed as "dry bulbs" to be potted in soil or gravel by homeowners or sold in ready-to-plant kits where the bulb, pot and soil are sold in a decorative box. The plants can also be sold as a finished flowering pot plant for use in the home, office or in a large commercial interior display. Whether the plants are sold as flowering pot plants or as a dormant bulb to be forced, they have a high dollar value.

### Bulb forcing

*Hippeastrum* bulbs are planted in pots in October through January for production as potted plants. There is simultaneous emergence of four leaves and a 12-inch flowering stalk. The average forcing time to market stage is three to five weeks.

Bulb grades for commercial use are 20/22, 22/24, 26/28, 30/32 and 32/up centimeters in circumference. Flowering is regulated by bulb size (diameter or circumference and not by weight) with a minimum size of 20 centimeters (8 inches) in circumference.

The environments for bulb production and storage vary between growers and by the country in which they are produced. Bulbs produced in the Netherlands, Israel, South Africa and Brazil are harvested at different times of the year resulting in storage times and temperatures that vary. These differences in harvesting have had a positive impact by providing a greater availability of bulbs at reduced prices. These differences, however, have also increased the variability in growth and flowering during forcing. Because these bulbs are brought out of storage for forcing or for sale as a dormant bulb, emergence and flowering may be highly variable.

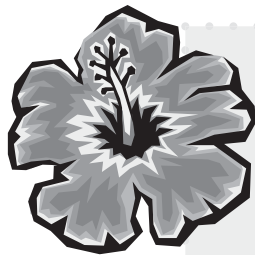
Growers should pay careful attention to where the bulbs originated and the storage conditions they were exposed to before they were delivered. If bulbs are going to be stored prior to forcing, the storage temperature should not exceed 48 degrees, and they should not be stored for more than 15 weeks. The minimum storage temperature is 41 degrees, which causes more rapid emergence and flowering. Different varieties will respond differently to storage times and temperatures.

High temperatures during forcing (77-86 degrees) hasten development and elongation of the leaves and increase growth of bulbs, but may prevent flowering. Low temperatures (54-63 degrees) cause the leaves to unfold and elongate slowly and bulbs are slow to enlarge with little floral development. Temperatures of 63-75 degrees induce intermediate vegetative growth and bulb enlargement and optimum flower emergence. Research has found that there is no effect of day length on growth and flowering.

## Ball FloraPlant/Ball Seed/PanAmerican Seed Trial Results – 2007

Allen Owings, Professor (Horticulture),  
Hammond Research Station

The LSU AgCenter works with several companies supplying bedding plants seed and plugs each year to evaluate performance of new plants being offered to greenhouse growers, landscapers and garden centers. Seed from PanAmerican Seed and Ball Seed were received in early 2007, were sown in germination media, transplanted into 606 cell-pack liners and planted in full sun landscape trials at Burden Center, a LSU AgCenter agricultural experiment station in Baton Rouge (USDA hardiness zone 8B, AHS heat zone 8). Ball FloraPlant vegetative liners were received and potted into 1801 cell packs and grown on for approximately 3-4 weeks in the greenhouse. Most of these plants were also grown at the Hammond Research Station in Hammond, La. (same climate zones as Baton Rouge location). Beds were 5-foot wide and raised approximately 6-8 inches above native soil. Native soil is an Oliver silt loam soil. Pine bark top-dressing was used in the raised beds on top of the native soil. Beds were located in full sun and received supplemental overhead irrigation via spray stakes as needed to prevent stress. Most plants were spaced 12-18 inches apart (somewhat dependent on the specific cultivar) with 18-24 single plant replicates per cultivar. Plants were fertilized at planting (mid-April for most cultivars) at the rate of 1 pound nitrogen per 1,000 square feet bed area with Sta-Green Nursery Special 12-6-6. Fertilizer was applied again in mid-summer at the rate of one-half pound nitrogen per 1,000 square feet bed area with Sta-Green Nursery Special 12-6-6. Hand weeding and Amaze pre-emergent granular herbicide (at the recommended rate) were used for weed control. Plants were not pruned or pinched during the study. Fungicides and insecticides were not applied.



### Pan American Seed

- ◇ Top performers – Limon Talinum, Shock Wave Petunias, Luna Rose Hibiscus
- ◇ Above-average performers – Royal Tapestry Alternanthera, Baby Duck Yellow Petunia, Blue Arrows Juncus, Javelin Juncus, Easy Wave Mystic Pink Petunia, Pacifica Halo Mix Vinca
- ◇ Average performers – Chocolate Mint Coleus, Dreams Rose Morn Petunia, Carpet Pink Improved Petunia
- ◇ Below-average performers – Vista Rose Salvia
- ◇ Super Elfin Impatiens and Fanciful Stardust Mix Impatiens were sent for inclusion but were not included in 2007 trials.

### Ball Seed

- ◇ Above-average performers – Titan Pure White Vinca, Profusion Knee High White Zinnia, Profusion Knee High Cherry Zinnia
- ◇ Average performers – Solcito Zinnia
- ◇ Radiance Rudbeckia was not evaluated in 2007 because of seed availability shortages. Potpourri Dark Purple Lavender was sent for inclusion but not included in 2007 trials at the LSU AgCenter.

### Ball FloraPlant

- ◇ Top performers – Magilla Purple Perilla, Rio series Purslane, Lucky Pot of Gold Lantana
- ◇ Above-average performers – Landmark Rose Improved Lantana, Torch series Gaillardia
- ◇ Average performers – Angelmist series Angelonias, Suncatcher Petunias, Madeira Argyranthemum, Double Wave Blue Velvet Petunia, Aztec Red Velvet and Aztec Violet Verbena, Cabaret Calibrachoa
- ◇ Below-average performers – Waterfall Azure Mist Lobelia, Abunda Giant White Bacopa
- ◇ Geraniums submitted for evaluation were not included in 2007 trials, and Fanfare Trailing Impatiens were not included due to a lack of shade for the trial plants.



## Weeds That Are Difficult for Hand Removal

Ron Strahan, Assistant Professor (Weed Science), School of Plant, Environmental and Soil Sciences

Have you noticed there are some weeds that are just very difficult to keep out with hand removal? Hand-removal of weeds is a necessary practice in association with pre-emergence herbicides for effective weed management. However, there are weeds infesting nursery crops and landscapes that nurserymen and landscapers expend a lot of energy and labor only to see the same plants reinfest within days. These weeds may have tender branches and stems that snap off or have an underground structure that is left in the growing media when hand removal is attempted.

**Oxalis** (*Oxalis* spp.) germinating from seed in container and field grown plants are not difficult to control with pre-emergence herbicides like isoxaben (Gallery), pendimethalin (Pre-M, Pendulum, others), prodiamine (Barricade, Regalkade, and others), isoxaben + trifluralin (Snapshot). Once oxalis is allowed to germinate and produce tubers, however, they are almost impossible to remove by hand because the tubers break off and only the shoots are removed.

### Nutsedge

(*Cyperus* spp.) are grass-like plants that rank among the worst weeds in the world. Nutsedge produces underground tubers that break off and remain in the soil when laborers attempt hand pulling. The most common types are yellow and purple nutsedge. Yellow nutsedge is probably more common in container crops because the plant prefers high moisture areas. The good news is that the pre-emergence herbicide



Purple nutsedge.

metolachlor (Pennant) is effective in suppressing the plant prior to emergence. Bentazon (Basagran) provides good post-emergence control and is labeled for use in a few nursery crops. Herbicides such as halosulfuron (Sedgehammer), sulfosulfuron (Certainty, and imazaquin (Image) can be used in some landscape situations.

### Spurges

(*Chamaesyce*, *Euphorbia* spp.) are difficult to manage in container nurseries because of heavy seed production and the inability to successfully remove by hand. Plants often break at the stem when pulled, leaving the root and several buds or a single stem available for potential reestablishment. Most pre-emergence herbicides work well on spurge. The problem, however, usually is in the frequency of the application because spurge control starts breaking 4 to 6 weeks after pre-emergence herbicides are applied.

Herbicides that work well include pendimethalin, prodiamine, oryzalin (Surflan) and isoxaben + trifluralin. My best treatment in research conducted in 2007 was isoxaben+metolachlor.

### Common Bermuda grass

(*Cynodon dactylon*) is the most common perennial grass infesting nurseries and landscapes. The plant has both rhizomes and stolons that remain in the soil after the shoots are hand-removed. Bermuda grass recovers very quickly and is able to reinfest the area. Pre-emergence

herbicides are not effective. Several selective post-emergence herbicides can be used in nurseries and landscapes that will suppress Bermuda grass including fluazifop (Fusilade, Ornamec), sethoxydim (Vantage) and clethodim (Envoy).



Torpedo grass.

**Torpedo grass** (*Panicum repens*) is the most invasive perennial grass infesting landscapes and turfgrass in southern portions of Louisiana. So far, I have not had any reports of torpedo grass infesting nursery

crops. That's good news because there is really no good answer for torpedo grass management in landscapes. Most herbicides that severely injure Bermuda grass only slightly injure torpedo grass. Torpedo grass has extensive rhizomes that contain high levels of carbohydrate reserves that allow the plant to recover from most herbicide applications and attempts at hand removal. The plant reproduces vegetatively because seeds produced by the plant are not viable. Unlike Bermuda grass, there are no good selective options for torpedo grass removal in landscape beds. Glyphosate (Roundup and others) is currently the most effective herbicide on the plant. Consider wiping highly concentrated glyphosate solutions in sensitive areas. We will be initiating research at the Hammond Research Station this summer to investigate methods for torpedo grass management in landscape beds. I will keep you posted.

**Florida Betony** (*Stachys floridana*) is a square-stemmed perennial weed native to Florida that is a serious problem in landscape in Louisiana during the fall and spring. In fact, we rank this plant in the top five invasive weeds of landscapes in the state. What makes this weed

such a problem is its ability to overtake flowerbeds and field grown nursery plants in a short time and the lack of good control options. There may be more common weed problems like nutsedge but Florida betony is more difficult to remove once established.



Florida Betony.

Although the plant does produce seed and rhizomes, the weed mainly reproduces by tubers. The tubers resemble the rattle on a rattlesnake's tail, hence the nickname "rattlesnake weed." Hand-pulling only removes the shoots, leaving the rhizome and tubers. Betony is easily spread from flowerbed to flowerbed when landscape plants are shared or purchased from commercial growers that produce their plants in areas where the weed infests. We see this weed most often in the fall and spring. It goes nearly dormant during hot weather and is not noticed as much in the landscape during the summer. I am flooded with calls from landscape maintenance companies and homeowners concerning controlling Florida betony this time of the year. There are no pre-emergence herbicide options, and weed barrier fabrics have not been effective. Glyphosate provides some control of the weed so wipe with highly concentrated solutions in sensitive areas.

If you remember from my last article, I have been evaluating several herbicides for winter weed management in landscape beds, including Preen/Treflan (trifluralin),

Amaze (oryzalin + benefin), Snapshot, Pendulum and one organic pre-emergence herbicide, corn gluten. I included corn gluten because I get many questions about organic alternatives to traditional herbicides. Preen, Amaze, Snapshot and Pendulum all provided at least 95 percent common chickweed and creeping bedstraw control 75 days after treatment. Corn gluten provided about 30 percent common chickweed control and 20 percent creeping bedstraw control. Corn gluten worked well for the first 30 days, but control broke down fairly quickly thereafter. Initially, it was very easy to distinguish the corn gluten plots from the untreated plots because of how well the corn gluten worked. If your clients insist on going organic, corn gluten may be worth a try on a limited basis. The product provided some temporary weed suppression but more frequent applications will be necessary to keep clients satisfied.

## Your LSU AgCenter and Southern University AgCenter County Agents/Area Agents Doing Horticulture Work

J. B. Anders	St. Tammany	985.875.2635	janders@agcenter.lsu.edu
Rusty Batty	St. Tammany	985.875.2635	rbatty@agcenter.lsu.edu
Sandra Benjamin	Tangipahoa	985.748.9381	sbenjamin@agctr.lsu.edu
Karen Blackburn	Orleans	504.838.1170	kblackburn@agctr.lsu.edu
Miles Brashier	WBR/Pt Coupee/Iberville	225.638.5533	mbrashier@agcenter.lsu.edu
Rafash Brew	North Central Area	318.368.9935	rbrew@agcenter.lsu.edu
Andre Brock	West Feliciana	225.635.3614	abrock@agcenter.lsu.edu
Annie Coco	Tangi/Wash./St. Tam.	985.748.9381	acoco@agcenter.lsu.edu
Denyse Cummins	Northwest Area	318.698.0010	dcummins@agcenter.lsu.edu
Bobby Fletcher, Jr.	Lafourche/Terre/St. Mary	985.446.1316	bhfletcher@agcenter.lsu.edu
Stuart Gauthier	Lafayette/Vermilion	337.291.7090	sgauthier@agcenter.lsu.edu
Henry Harrison	Washington	985.839.7855	hharrison@agcenter.lsu.edu
Brent Jeansonne	Jefferson	504.838.1170	kblackburn@agcenter.lsu.edu
Ron Nichols	St. Landry	337.948.0561	rnichols@agcenter.lsu.edu
Gerald Roberts	St. Landry/Evangeline	337.948.0561	groberts@agcenter.lsu.edu
Chris Robichaux	St. Martin/Iberia	337.332.2181	crobichaux@agcenter.lsu.edu
Rene Schmit	St. Charles	985.785.4473	rschmit@agcenter.lsu.edu
Kenny Sharpe	Livingston	225.686.3020	ksharpe@agcenter.lsu.edu
Carlos Smith	Avoyelles	318.253.7526	csmith@agcenter.lsu.edu
Robert Trawick	EBR	225.389.3055	rtrawick@agcenter.lsu.edu
Robert Turley	Calcasieu	337.475.8812	rturley@agcenter.lsu.edu
Terry Washington	Rapides	318.767.3968	twashington@agcenter.lsu.edu
Alan Vaughn	Plaquemines/St. Bernard	504.433.3664	avaughn@agcenter.lsu.edu

## Your LSU AgCenter Nursery/Landscape/Floriculture/Turfgrass Professors

Jeff Beasley	SPESS	Turfgrass Research	225.578.1029	jbeasley@agcenter.lsu.edu
Regina Bracy	HRS	Administration	985.543.4125	rbracy@agcenter.lsu.edu
Ed Bush	SPESS	Nursery Research	225.578.1044	ebush@agcenter.lsu.edu
Yan Chen	HRS	Landscape Research	985.543.4125	yachen@agcenter.lsu.edu
Dan Gill	SPESS	Consumer Extension	225.578.2222	dgill@agcenter.lsu.edu
Pat Hegwood	BURDEN	Administration	225.763.3990	chegwood@agcenter.lsu.edu
Tom Koske	SPESS	Turfgrass Extension	225.578.2222	tkoske@agcenter.lsu.edu
Jeff Kuehny	SPESS	Floriculture Research	225.578.1043	jkuehny@agcenter.lsu.edu
Allen Owings	HRS	Commercial Extension	985.543.4125	aowings@agcenter.lsu.edu
Bob Souvestre	SPESS	Master Gardeners	225.578.2222	bsouvestre@agcenter.lsu.edu

HRS = Hammond Research Station;

SPESS = School of Plant, Environmental and Soil Sciences;

BURDEN = Burden Center

## Your LSU AgCenter "Allied Field" Professors

Hallie Dozier	RNR	Urban Forestry	225.578.7219	<a href="mailto:hdozier@agcenter.lsu.edu">hdozier@agcenter.lsu.edu</a>
Don Ferrin	PPCP	Plant Pathology	225.578.8537	<a href="mailto:dferrin@agcenter.lsu.edu">dferrin@agcenter.lsu.edu</a>
Roger Hinson	AEAB	Ag Economics	225.578.2753	<a href="mailto:rhinson@agcenter.lsu.edu">rhinson@agcenter.lsu.edu</a>
Dick Parish	HRS	Ag Engineering	985.543.4125	<a href="mailto:dparish@agctr.lsu.edu">dparish@agctr.lsu.edu</a>
Dale Pollet	ENT	Entomology	225.578.2370	<a href="mailto:dpollet@agcenter.lsu.edu">dpollet@agcenter.lsu.edu</a>
Ron Strahan	SPESS	Weed Science	225.578.4070	<a href="mailto:rstrahan@agcenter.lsu.edu">rstrahan@agcenter.lsu.edu</a>

RNR = Renewable Natural Resources;

PPCP = Plant Pathology and Crop Physiology;

AEAB = Agricultural Economics and AgriBusiness;

HRS = Hammond Research Station'

ENT = Entomology

LSU AgCenter  
Hammond Research Station  
21549 Old Covington Highway  
Hammond, LA 70403

# *Nursery and Landscape Notes*

Spring 2008



Issued in furtherance of Cooperative Extension work, Acts of Congress of May 8 and June 30, 1914, in cooperation with the United States Department of Agriculture. The Louisiana Cooperative Extension Service provides equal opportunities in programs and employment.

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Louisiana State University Agricultural Center  
William B. Richardson, Chancellor

Louisiana Agricultural Experiment Station  
David J. Boethel, Vice Chancellor and Director

Louisiana Cooperative Extension Service  
Paul D. Coreil, Vice Chancellor and Director

Allen D. Owings, Professor (Horticulture)  
Hammond Research Station

Office Phone: 985.543.4125  
Cell Phone 225.603.8096

Office Fax: 985.543.4124  
E-mail: [aowings@agcenter.lsu.edu](mailto:aowings@agcenter.lsu.edu)