

Louisiana

Nursery & Landscape
Magazine



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for the Landscape**

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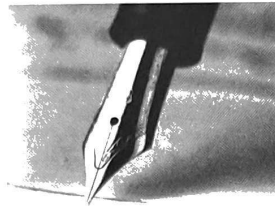
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P R E S I D E N T ' S M E S S A G E

by Pat Newman, Folsom Nursery

It is my hope that the spring and summer of 2003 has been a busy and profitable one and that the year will prove to be a successful one for each of you.

The Louisiana Nursery and Landscape Association has another busy agenda for 2003 and 2004 which I believe will be beneficial to our "green industry". Here is an update of projects completed and those we are currently working on for this year.

☞ ***A Guide For Louisiana Gardening*** - This publication, a color booklet of trees, plants groundcover, perennials, etc. that are conducive to Louisiana's growing conditions, should serve as an excellent resource for the grower, landscaper, retailer and consumer. LNLA published this booklet with part of a grant we received from the Louisiana Department of Agriculture and Forestry to be used for promoting agriculture crops not subsidized by the USDA. This can be updated and reprinted with monies from the sale of this booklet. LNLA has plenty available for its members.

☞ ***The Economic Impact Study of the "green industry"*** in Louisiana and its importance to Louisiana agriculture is about to be published. This is an update from 1995 and the growth of our industry and increase in its importance is remarkable.

☞ LNLA continued its promotion of education and scholarship by **awarding five \$1,000.00 scholarships** at the Gulf States Horticultural Expo to ornamental horticultural students attending universities in Louisiana.

☞ LNLA will again **sponsor gardening programs on Louisiana Public Broadcasting** throughout Louisiana in 2003 and 2004.

☞ LNLA has helped **sponsor locally produced garden shows in Baton Rouge, Lake Charles, and Abbeville** and will be a sponsor for the American Society of Landscape Architect's national convention to be held in New Orleans in October 2003.

■ **PRESIDENT'S MESSAGE**

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PRESIDENT'S MESSAGE

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- ☞ LNLA continues to provide *research grants* for those projects we feel will benefit our industry.
- ☞ LNLA financially *supports a position in the Horticulture Department* at LSU for which LNLA receives part of this position's time to be devoted to LNLA projects, on going programs and the compiling and printing of the LNLA magazine and other materials.
- ☞ LNLA is *providing \$57,500.00 to help LSU develop its new woody ornamental research center* at Burden Center in Baton Rouge.
- ☞ Presently two members of the LNLA board of directors are serving on the advisory committee for the *master plan of restructuring the Hammond Research Station* into an education & research center and permanent gardens and landscapes center for the people of Louisiana. The "green industry" will play a major role in its development.
- ☞ LNLA and Louisiana will be the *host state for the 2004 Gulf South Horticulture Expo* in Mobile.
- ☞ LNLA plans to help host the *Grower's "Open Houses"* in the Forest Hill and Folsom areas in the fall of 2003 if invited to do so.

Your LNLA Board is comprised of individuals who are dedicated, visionary, and hard working for the whole "green industry". We are blessed to have them willing to volunteer their time to serve, promote and represent our industry. However, the more involved you become by giving us input as to ideas, research, concerns and ways we can better serve, the stronger our organization will become. There is strength in numbers, you are important to LNLA and to a vital and ever growing industry. We need to hear from you individually and collectively as to your vision for our industry. Take time to matter.

Those of you receiving this magazine play a vital role in Louisiana's green industry. We need and appreciate your support. If you are not an LNLA member, please consider joining today.

Remember, "You in some way touch peoples lives every day! Whether it be aesthetically, environmentally, or recreationally." No other industry can make that claim.

It is my privilege and pleasure to serve as your LNLA President for 2003. ☼

Pat Newman

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By Brian Burton

We begin by welcoming our readers to **Louisiana Hardscaping Forum**©*, a regular column designed to keep you informed and up-to-date with regard to our rapidly evolving and growing industry. In the future months we will be covering a wide range of hardscaping activities, previewing new products and techniques, visiting sites to view “work in progress” and interviewing leading experts in the field.

** Hardscaping refers to the man-made “non-plant” elements of your design and construction, which provide permanent definition, style and space. Hardscaping components can include retaining walls, walkways, patios, decks, aquascapes, irrigation and erosion control fixtures, fencing, lighting, signage, recreational fixtures, water features and sculpture.*

Quality of Space is Important

There’s a good reason for the noticeable increase in consumer interest and enthusiasm in hardscaping. The baby boom generation is slowing down and increasingly value and protect their precious time at home. Personal space - and the quality of that space, has become more and more important. In our society this trend is pronounced. We invest twice as much on our “built environment” and hardscaping as we did just 20 years ago — and it shows!

Hardscaping Adds Value

When taken as a whole, professional hardscaping is an excellent investment. In fact, it has been

documented by actual research studies that **properly installed professional landscaping and hardscaping can add seven to nine percent to the value of residential and commercial property!**

Hardscaping as Art and Science

As we all know—hardscaping is an art and a science - as well as a recognized and valued professional specialty.

Frederick Law Olmsted, (1822-1930), one of the most famous landscape architects, (responsible for the design of Central Park in New York), described designing landscapes as being similar in many ways to painting. Instead of paint however, the “medium” we use are materials, like stone, pavers, lights, trees, plants, herbs, flowers, and many other elements that appeal to our imagination - as well as all of our senses.

Olmsted, who is generally acknowledged as the “father” of landscape architecture, also knew as early as 1850 a fact that most other professionals did not understand. Olmsted came to the conclusion that humans simply do not function very well without landscaping! And he was entirely correct

It is essential to our health and well-being. By the end of his career he also recognized that the public and many others in the construction field generally took the

tremendous benefits of landscaping for granted.

Landscaping plays a unique role in establishing a sense of local identity and culture in both private and public places. In its stimulation and enhancement of sights, sounds, and textures it holds the ability to create unique and special places.

Establishing and molding a place of identity in our modern urban sites invariably begins by making that place distinct, creating a sense of purpose within the local history and cultural attitudes.

■ FORUM

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Performance Criteria of Hardscaping Design

Community Enhancement: Urban hardscapes should encourage the building and maintenance of better and stronger communities.

Sensory Stimulation: Hardscaping can improve our everyday sense of well-being and experiences. Landscapes should be safe, restorative places constructed with beauty and variety.

Functional Performance: Designs should balance cars and people and respond to the realities of infrastructure necessities.

Economic Performance: Designs should be built with high-quality materials and recognize long-term maintenance costs.

Ecological Performance: Designs should consider all elements of human health and safety, air and water quality, wildlife habitat, and the urban forest.

Ornamental Gingers For The Landscape

By Jeff Kuehny, Associate Professor (Horticulture) LSA AgCenter

The plants we know as gingers are monocots and most are classified in the Zingiberaceae family, which has more than 1000 species. The lore surrounding the culinary, aromatic and medicinal uses of ginger is extensive and spans hundreds, if not thousands, of years. Gingers also have commercial importance as cut flower, landscape and potted plants, but considering the sheer number of species and the cultural significance of gingers, this is obviously a group of plants that is underexploited in the landscape.

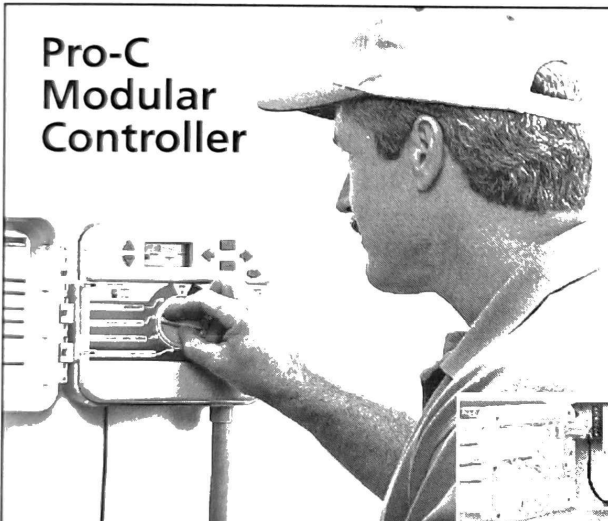
The genera of the more common flowering gingers in the Zingiberaceae family include *Alpinia*, *Curcuma*, *Etilingera*, *Globba*, *Hedychium*, *Kaempferia*, *Siphonichilus* and *Zingiber*. The genera of the ginger in the Costaceae family have also been considered

part of the Zingiberaceae family, however the two families remain separate. The most common genera of flowering gingers in the Costaceae family are *Costus* and *Monocostus*.

Many ginger species originated in tropical regions of Asia, mainly in Southeast Asia. A smaller number of the Zingiberaceae family are found in Africa, north Australia and Madagascar. The genus *Renealmia* is the only ginger in the Zingiberaceae family native to the Americas. The genus *Costus* is native to tropical America.

Most gingers are herbaceous perennials with either aromatic, short, thickened or long, thin rhizomes.

■ **ORNAMENTAL GINGERS** – continued on page 9



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■ FORUM

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Hardscaping Enhances Status and Value

Successful hardscaping often involves bringing a sense of order to the site, enhancing the natural surroundings and existing buildings. In the past, designs were traditionally utilitarian, a place to park the car, a pathway leading to the door.

However, more and more homeowners today are looking at their backyards and site fixtures as an extension of the home. In today's world, with so many houses looking virtually identical, the backyard and exterior areas often represents the unique signature and personal statement of the home and the homeowner.

Hardscaping design and construction, in addition to reflecting the owner's personal style and taste has a direct and measurable impact on both the real and perceived status of the home or commercial property.

Design Elements of Hardscaping

The following list describes some of the essential elements of hardscaping design:

Theme: The development of a theme is an essential element of professional hardscaping. Where practical and possible, the design should repeat or reinforce the architectural style of the property.

Scale and Functionality: Effective designs work more effectively when coordinated with both the scale and function of the property and buildings. In some cases, this may mean emphasizing certain features or spaces, which make the property stand out from its neighbors. In other instances, a design may serve to detract your attention from less desirable features of the property.

Vantage Point: Designs should always consider the vantage point when developing an over-all approach. As a rule of thumb, consider yourself invited guest arriving at the home for a first time visit with the owner and his family. Consider the vantage point when arriving at the residence.

Color: Color plays an extremely important role in today's designs. However, it requires concentration to ensure that the primary colors displayed in the façade (and plants surrounding the home) are coordinated effectively with the other elements. It is also important that the colors chosen do not "overpower" the installation.

Focal Points: In almost every case, the main entrance of the residence will be the primary focal point. The treatment of this area often sets the tone for the entire design. [Occasionally residential properties, along lakefronts or scenic locations, will be orientated towards the rear or side entrance and will require a different ap-

proach. In other instances the property owner may indicate otherwise for reasons of privacy or security].

Texture: Minor differences in texture are usually magnified in hardscaping. For this reason there are occasions when you may want to consider a "mock-up" to determine the effectiveness of textures and colors.

Light and shadow: These components literally change with the time of day and the season. This is one area where careful inspection of the property at different times of the day, can assist in planning.

Safety: Water features such as pools and ponds or rapid changes in grade should be considered during the design stage. In many cases, there are more attractive alternatives to fencing or barriers that can be effectively incorporated into designs. ❁

About the Author: Brian Burton is a member of the Society of Environmental Graphic Design and a regular contributor to many of the nations leading trade publications. Brian also assists the non-profit organization America in Bloom and the Green Roofs for Healthy Cities coalition in promoting the benefits of our industry to the general public. To contact Brian email him at bburton@landscapeforum.ca or visit www.bba.on.ca

ORNA-MENTAL GINGERS

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Some of these ginger rhizomes, such as those in the genus *Curcuma* and *Globba*, have tuberous storage vessels attached by a modified underground stem that have been termed t-roots or milk sacs.

The plant structure of gingers is very diverse and therefore there are many variations in the type of leaves, inflorescences and plant shapes. In general leaves are basal or along the stem, sometimes having a petiole, and may be arranged alternately or oppositely in rows or whorled and strap-like. Inflorescence are terminal, many with bracts and some without. The inflorescences have flowers which are produced on bracts (which can last for 4 weeks or longer) and often have a condensed headlike or conelike appearance. The true flowers of most gingers last one day.

Most genera prefer a well drained soil high in organic matter. Although most soils high in organic matter have a naturally low pH, some gingers (*Kaempferia* and *Curcuma*) prefer a neutral soil pH or a pH of 7. Gingers can be planted from a rhizome or from a potted plant. Gingers are similar to caladiums in that they will not emerge until the soil temperatures reach 70 °F and greater. Emergence or bloom begins during the last week of April or first week of May and continues into the first week of June. *Curcuma elata*, *Kaempferia rotunda* and the *Hedychiiums* are some of the first ginger to emerge with the *Costus* being some of the last to emerge. After emergence a granular or slow release fertilizer should be applied for optimum growth. Most gingers will continue to bloom throughout the summer and into the fall. As day length decreases (less than 12 hrs) and temperatures decrease, flowering will cease and the plants will go dormant. This usually begins to occur in Baton Rouge around late October or early November. For those areas that are in USDA Hardiness Zone 7 or lower, plants can be stored dry during the winter and forced again when the soil temperatures begin to reach 70 °F or greater.

GINGERS USED IN THE LANDSCAPE

Zingiber

Most everyone is familiar with *Zingiber officinale*, the common culinary ginger. This species is hardy to Zone 8 and is grown primarily in India, Hawaii and Jamaica. *Z. officinale* grows well in medium to full sun and should be harvested when the rhizome is 2 years old.

Alpinia

Alpinia zerumbet, also known as shell ginger or pink porcelain lily, is a common landscape plant for full sun or part shade, grown in the South to USDA Zone 7b. This ginger has a white to pink inflorescence with fragrant flowers subtended by a bracteole. These ginger flower on mature stems that are more than one year old. Three variegated forms are available: waimailo has yellow variegation and reaches a height of four feet; chinese beauty has dark-green leaves and light-green variegation; variegata has dark-green leaves yellow variegation.

■ **ORNA-MENTAL GINGERS** — continued on page 10



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■ GINGERS

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Costus

The spiral gingers of the genus *Costus* can be grown in the landscape to USDA Zone 8. The *Costus* are native to Central and South America, Africa and Southeast Asia. Most *Costus* prefer partial sun for best growth and flowering. *C. amazonicus* has variegated leaves with broad bands of white and has an inflorescence with yellow to red flowers. This is a short *Costus* (up to 3 feet) and is hardy to Zone 9 and greater. *C. barbatus*, sometimes called “red tower” ginger, has a stem that spirals up from the ground and leaves that have a thick pubescence on the underside. The inflorescence is quite large at 7 to 13 inches with a cone of deep red bracts and large yellow flowers. This species blooms April through November and is very appealing to humming birds. *C. curvibracteatus* is low growing (2 feet) and hardy to Zone 10 and higher. It has small reddish orange inflorescences. *C. speciosus* grows up to 10 feet in height with thick, succulent stems and leaves and is hardy to Zone 9. The leaves have small hairs on the upper surface and are pubescent beneath. The white flowers are crepelike (commonly called “crepe ginger”) and emerge from a cone of green/purple bracts that have a spiny tip. There is also a variegated form of *speciosus*. *C. spicatus* has a spiraling stem that reaches 6 to 7 feet in height with medium green, 10 inch long leaves. The terminal inflorescence is composed of pink to red bracts with bright orange flow-

ers. This species will grow well in Zone 8 or greater.

Curcuma

Curcuma species are only recently beginning to gain popularity as landscape plants in the U.S. Ranging in height from 1 to 8 feet, most species are hardy to USDA Zone 8 and are dormant in the cooler months. *Curcuma* species are native to drought-prone areas of tropical Asia and Australia. Most of these gingers must be grown in full sun for best growth and bloom. They are commonly called hidden ginger or surprise gingers because the inflorescence may emerge within the foliage or it may emerge prior to the foliage. The inflorescence of some of the *Curcuma* (*C. cordata* for example) can be 1 foot long or greater within the foliage but do not remain hidden. The inflorescence is a dense spike of many colored bracts, tightly whorled around the stem and subtended by small tubular flowers. The flowers last only one day, but bloom continually during the 4 to 6 week longevity of the inflorescence. *Curcuma* can be divided into two groups: spring bloomers and summer bloomers. Spring bloomers, *C. elata* being the most common, bloom before or while foliage first appears, have inflorescences on separate stalks, and bloom in early May. Summer bloomers have a central inflorescence that rises from the center of the plant and is surrounded by leaves. These *Curcuma* bloom from midsummer to early fall. Inflorescence can vary from white, pink, red, yellow or purple. The summer bloomers most commonly used as landscape plants are *C. alismatifolia*, *C. gracillima*, *C.*

cordata, *C. roscoeana* and other *Curcuma* hybrids.

Etlingera

Of the approximately 57 species of *Etlingera*, only *E. elatior* is currently used as a cutflower and as a landscape plant. This species is evergreen in the tropics and known for its inflorescence with deep pink or bright red bracts, which is best described as a torch (thus the common name torch ginger). It is hardy to Zone 10 and therefore must be dug each winter or grown in a container and will flower only after one year of growth.

Globba

Globba are hardy to USDA Zone 8, with a natural dormancy. There are approximately 70 species, all of which grow best in part to full shade. Most *Globba* species reach a maximum height of two feet and are grown for their attractive foliage and showy inflorescence. The most common is *G. winittii* ‘Dancing Ladies’, named for its inflorescence that are 4 to 6-inches long and pendent, that evoke dancers in the eyes of imaginative observers. The unusual inflorescence is composed of a pendent spike of mauve bracts subtended by slender yellow flowers. *Globba winittii* ‘White Dragon’ has white bracts and a 6 to 8-inches long inflorescence. *Globba bulbifera* has a hairy underside of the leaf and yellow bracts. Small bulbils are borne on the inflorescence as it ages. These bulbils fall to the ground and a new plant will often emerge.

■ ORNAMENTAL GINGERS

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GINGERS

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Hedychium

The *Hedychium* gingers are commonly referred to as ginger lilies, garland lilies, or butterfly gingers. The flowers are borne in terminal clusters at the end of a long cane and are often fragrant (many attract butterflies and moths). Many of the approximately 40 species are hardy into USDA Zone 7; they are native to tropical Asia, areas of Himalayan range, and Madagascar.

The most common are *H. coccineum* (orange bottle brush), *H. coronarium* (butterfly lily, garland flower, white ginger), and *H. gardneranum* (Kahili ginger). These ginger will reach a height of 5 to 6 feet and prefer to be planted at the edge of a shady area. If planted in full sun these gingers will appear wilted and may sunburn during the heat of the day. This is not deleterious to their growth, and some can be a bit invasive. There are many new hybrids that include wonderful new flowers colors, variegated foliage (Dr. Moy) and some are as short as 2 feet in height.

Kaempferia

Kaempferia are commonly called peacock gingers because the purple and/or silver patterns of their leaves resemble those of *Calatheas* (members of Marantaceae family) or the feather of a peacock. Best in shade, *Kaempferia* reach a maximum height of two feet. These tropical Asian natives have a natural dormancy and are hardy into USDA

Zone 8. These gingers are used in the landscape for their attractive foliage as the flowers of *Kaempferia* are small, ranging in color from purple to white to orange, with a longevity of approximately 1 day. Commonly used in the landscape are *K. gilbertii*, *K. parviflora*, *K. pulchra* and *K. rotunda*. These ginger have been touted as a replacement for the often poor performing hosta in the south.

Siphonichilus

Siphonochilus species, which reach a height of about 18 inches, are slow growers. Native to South and East Africa, they have a natural dormancy and are hardy to USDA Zone 7. This genus grows best in partial sun. *Siphonochilus decora* has wide rippled leaves with yellow flowers borne on a long spike. One flower per spike blooms every day during the bloom period. Longevity per flower is about 12 hours; however, blooming of one spike will occur for 4 weeks or longer. *S. kirkii* is similar to *S. decora* but has larger rose-lavender flowers.

All of the aforementioned gingers have been planted in the landscape at Burden Center, Baton Rouge, LA (USDA Hardiness Zone 8). Three years of data indicate that most all of these ginger are hardy to Zone 8 in the landscape. Overwintering is also linked to good mulching and a well drained soil to prevent root rot.

GINGERS USED FOR CUT FLOWER PRODUCTION

As mentioned earlier, but not all, of the gingers that grow in the landscape make great cut flowers. Most of the inflorescences have a

postharvest longevity of up to 4 weeks or greater. Production of gingers for cut flowers takes place primarily in Central America and northern South America, and in the West Indies (Jamaica, Puerto Rico). Rhizomes and cut flowers also are produced in Southeast Asia, Indonesia, India, East Africa and Hawaii.

Often referred to as red ginger, *Alpinia purpurata* is the most common ginger used for cut flower production but is hardy to only USDA Zone 9 or greater. Jungle King, a red ginger, and Eileen McDonal, a pink ginger, are the important named cultivars; they reach a height of 6 to 8 feet.

Shell ginger (*Alpinia zerumbet*) received its popular name because its pink bracts resemble shells. Hardy into USDA Zone 7, it reaches a height of about 9 feet. *A. zerumbet* 'Variegata' is the variegated form with pale yellow stripes in the leaves. This cultivar is used for its foliage.

The *Costus* species most often used for cut flowers include *C. lasius*, *C. pictus*, *C. pulverulentus*, *C. speciosus*, *C. spicatus*, and *C. stenophyllus*. Most *Costus* are hardy to USDA Zone 8.

Torch ginger (*Etilingera elatior*) is also referred to as Philippine waxflower. It is grown in red and pink forms for its inflorescence. The large, green leaves of torch ginger have maroon undersides. There are other *Etilingera* species that are gaining popular-

■ ORNAMENTAL GINGERS

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My Favorite Native Plants

Margie Y. Jenkins, Owner, Jenkins Farm & Nursery, Amite, LA

CALLICARPA americana: American Beautyberry, French Mulberry – A rather coarse 3' to 8' tall, open shrub from throughout the S.E. Light lavender-pink flowers on new growth in late May into June. Fruit about ¼" in diameter, fleshy, usually magenta, occasionally white, and loved by birds and squirrels. Zones 7-11.

CHIONANTHUS virginicus: Fringe Tree, Grancy Greybeard, Old Man's Beard – Billowy white fragrant flowers in mid-Spring. Large shrub or small tree to about 30'. They are male and female; the male trees usually giving a better show of flowers. The female plants are quite ornamental with the seeds looking somewhat like green grapes during the summer and turning dark blue in early fall. They are relished by the birds. Leaves turn yellow in the fall before falling fairly early. Found throughout the S.E. Zones 5-9.

CLIFTONIA monophylla: Black Titi, Buckwheat Tree - A small nearly evergreen tree to about 24'. Fragrant white flowers, in racemes at the ends of the previous year's twigs, opening in spring before new leaves appear. Fruit small winged drupe. Grows in acid shrub tree bogs or wet woodlands along stream courses and in flat woods depressions. Native S. Central and S.E. Ga., Fla. Panhandle, S. Ala, S.E. Miss., S.E. La. Zones 7-9.

CRATAEGUS marshallii: Parsley Hawthorn – A small tree with thorny branches and thin scaly bark to about 25'. White clustered flowers appearing in March and April. Fruit 1/3 inch long, red, ripening in October and persisting on tree after leaves have been shed. Native from Va. to Fla. and W. to Tex. Zones 6-9.

Cyrilla racemiflora: Titi, Swamp Cyrilla – A small tree or large shrub with nearly evergreen leaves. Very attractive in bloom with white flowers about ¼ inch long in spreading to drooping racemes in June. Good fall color. Considered a good honey plant. Native from Va. to Fla. and W. to Tex. Zones 6-9.

EUONYMUS americanus: Strawberry Bush, Wahoo – Deciduous or weakly evergreen shrub with green stems. Flowers tiny, in axil of leaf and resting on the blade; fruit a capsule about 1 inch in diameter, roughened, reddish when mature, cracking open and exposing 4 to 5 red seeds. Grows in low woodlands and swamp forest throughout the S.E. Zones 5-9.

FOTHERGILLA major: Witch alder-A deciduous flowering shrub to about 6' to 10' with fragrant white bottle-brush like flowers. Summer foliage is a leathery dark blue-green. Not affected by diseases or insects. Fall color ranges from yellow to orange and scarlet; often with all colors present. Indigenous to the Allegheny Mountains from northern N.C. to Tenn. to northern Ala. Zones 4-8.

HALESIA diptera: Two-winged Silverbell-Beautiful small 20 to 30' rounded tree. White bell-shaped one inch long flower in clusters of 3 to 6, blooming from March to April. The winged corky fruit dangle from the branches. Grows in rich woods and stream banks from S.C. and Tenn. to Fla. and W. to Tex.. There is the variety *Magniflora* that grows in one area in Fla. that have much larger flowers. Zones 5-9.

HYDRANGEA quercifolia: Oakleaf Hydrangea- A large coarse textured shrub with exfoliating bark and large oak-shaped, 3-7 lobed, 3 to 8" long, deep green deciduous leaves. White showy flowers borne in 4 to 12" long, 3 to 4" wide erect panicles. As flowers age, they change from white to purplish pink and finally brown. Fall color can be quite spectacular, changing to shades of red, orangish brown and purple. Habit is upright, little branched and irregular. Best in afternoon shade, moist, well-drained soil. Native to a wide area of the S.E. U.S. Zones 5-9.

ILEX verticillata: Winterberry, Black Alder- Oval to broad-rounded, deciduous shrub with dense twiggy branches; tens to sucker and form large multi-stemmed

■ FAVORITE PLANTS

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clumps growing 6' to 10' high. Foliage is a deep green in the summer with brilliant red berries in the fall and winter. Grows over a wide area of the S.E. and will tolerate wet soil. Zones 3-9.

ILLICIUM floridanum: Starbush, Star Anise, Stinkbush- An evergreen shrub or small under-story tree to about 10'. Glossy dark green leaves that emit a somewhat anise-like odor when crushed. Flowers 1 1/2" wide, dark red with many strap-shaped petals, ill-scented; fruit 1 1/4" in diameter, greenish. Dry fruit is many lobed "star shaped". A great plant for the shade. Grows in moist, wooded ravines from S.W. Ga., and the inner Fla. Panhandle from the Ochlochonee River westward, throughout the coastal plain of Ala. Westward to S.E. La. Zones 7-9.

ILLICIUM parviflorum: Ocala Anise, Small Anise Tree — An large evergreen shrub with handsome olive green foliage that provides slightly different color than the lustrous dark green of many broadleaf evergreens. Rich sassafras smell to crushed leaves which are held very upright. A great screening plant that will grow to about 15' tall. No disease or pest problems. Small yellow flowers about 1/2" wide appear in May-June and go virtually unnoticed and no undesirable odor. Will tolerate extremely moist soils and does well in dry situations. The best *Illicium* for sun and shade. Coastal Plains, Ga. to Fla. Zones 7-9

ITEA VIRGINICA: Virginia Willow, Sweetspire- A small shrub valued for fragrant flowers and its ability to grow in wet places. Leaves 2 to 3 inches long, deciduous; flowers tiny, less than 1/4" long in drooping racemes 4" long. 'Henry's Garnet' has brilliant reddish purple fall color and up to 6" long flowers; both fall color and flower superior to the species. 'Sarah Eve' was discovered in Florida by Nancy Bissent who named the plant for her daughter. Sepals and pedicles of flower are pink, but the petals are white. Fall color not that great, but it is more evergreen. Flowers much

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■ ORNAMENTAL GINGERS

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ity as cut flowers in colors that vary from white, red and black, native from Sri Lanka to New Guinea. The ginger in the *Etlingera* family are hardy only to Zone 9 or greater and grow to a height of 8 to 10 feet.

The inflorescence of *Globba winittii* has reflexed bracts that are pink to yellow or white with a slender, curved, yellow corolla. They are native to Southeast Asia and have a postharvest longevity of up to a month. Although *G. winittii* has a very long postharvest longevity, forms are only recently becoming popular in the cut flower market.

Zingiber spectabile is not as popular in the cut flower market; however, it is one of few hardy *Zingiber* species (most are hardy to Zone 10). This Malaysia native has yellow bracts turning scarlet. ❁

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■ FAVORITE PLANTS

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earlier than other cultivars. Grows in wooded swamps of the floodplains and along streams. Native from New Jersey, S. to Florida and westward to E. Texas. Zones 7-9.

Magnolia ashei: Ashe Magnolia—Smaller and more shrub-like than the *Magnolia macrophylla* Cowcumber. Large creamy white flowers, purple-stained at base and a pleasing fragrance. A spectacular ornamental which should be planted in well-drained soil and in protected places as winds soon riddle the large fragile leaves. Native to Fla. Zones 6-9.

Magnolia virginiana var. *australis*: Evergreen Sweet Bay—A large tree with smooth dark gray bark; leaves 5" to 8" long by 2" to 4" wide, dark green above and silky white below. White flowers 2" to 4" wide and highly fragrant occurring from the last half of April to June. Grows along moist branch bottoms from the Carolinas S. to Fla. and W. to E. Tex. Zones 6-9.

NEVIUSIA alabamensis: Alabama Snow-wreath—An upright, deciduous shrub with showy white flowers in early spring. Grows to about 3' to 6' with an equal spread. Reminds one of *spirea*. Found in 1857 by W.S. Wyman growing on a cliff face along the Black Warrior River. New populations have been discovered in Ala., Ark., Tenn., Miss., and Ga. Zones 4-8.

PHLOX carolina: Carolina Phlox—Usually found in the wild in thin, well-drained, open woods from N.C. to Mo., and S. to Fla., and W. to Tex. 'Miss Lingard' is a named cultivar and one of the earliest perennial border phlox to bloom. It has a very long flowering period. It produces large heads of pure white, fragrant flowers that make excellent cut flowers. Re-blooms several times when spent flowers are removed. Not susceptible to mildew. Zones 3-9.

PINUS glabra: Spruce Pie, Cedar, Turkey Pine—Medium to large tree. Bark is very different from other pines, a dark gray, hard and tight, not breaking up into large plates as is the case with other pines. Make

a great screen where a very large screen is desired, limbing to the ground. Needles short and small cones. Coastal Plain, S.C. to Fla., W. to S. Ms. and S. E. La. Zone 8.

PINUS palustris: Long leaf Pine—A large tree with bark that breaks up into irregular thin scales; buds silvery white, ½' to ¾' in diameter. The young stems, before the needles have appeared, resemble large candles. For the first several years, the stem of the seedling elongates relatively very little, looking somewhat like a dense turf of grass. Once stem elongation commences, growth in height is relatively rapid. Valued for its straw. Native to the Coastal Plain, S.E. Va. To Fla., W. to E. Tex. Zones 7-10.

TAXODIUM ascendens: Pondcypress—Smaller growing than *Baldcypress* and producing less knees. Foliage is slender bright green, needle-shaped, and rich brown in winter. Bark is light brown and deeply furrowed. *Pondcypress* is always found around landlocked bodies of water whereas *Baldcypress* is indigenous to running water. Adapts to moist, acids soils, upland soils, full sun and extremely wind firm. Native to S.E.U.S. Va. To Fla. and W. to S.E. La. Zones 4-9.

VIBURNUM obovatum: Small Viburnum, Walter's Viburnum—A densely twiggy, upright ascending, large shrub or small tree. Habit is rather wild and spreading, reminding one of a native *yaupon*. The small leaves turn bronze-purple in fall and winter and persist into the new year during mild winters. Small winters flowers 1 ¾" to 2 ¼" in diameter cymes open with emerging leaves. Fruits are ¼" to 1/3" diameter, first red, then turning to a shiny black. There are several selections that have been made. 'Densa' is in the trade and is a compact small shrub. Adapts to wet soils in the wild. S.C. to Fla. and Ala. Zones 6-9.

ZENOBIA pulverulenta: Dusty Zenobia—'Woodlander's Blue'—Powdery blue foliage during the growing season. Pretty panicles of pristine white bell shaped flowers at the end of branches in mid to late spring. Bright shade to full sun. Beautiful fall color of brilliant orange and red in autumn if in full sun. Acidic, somewhat moist, but well-drained soil. Native N.C. to Fla. Zones 5-9. ❁

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Alkalinity, pH, and Nursery Crop Production

James Altland, Ph.D., North Willamette Research and Extension Center, Oregon State University

The previous article I wrote for the LNLA Quarterly focused on weed control. In my biased opinion you can never talk too much about weed control, however, in the interest of variety, I have decided to change the topic this time. Therefore I will focus on water quality, plant nutrition, and related issues.

This article will address the often confused issue of pH, alkalinity, and how each is related to the other. This article will explain the significance of each term, and how they might affect irrigation and soil monitoring decisions in the nursery. My goal for this article is to explain fundamentally what pH and alkalinity are and how they

affect plant nutrition. This will lead into next month's article that will address how fertilizer, lime, and other materials added to soils/containers affect pH (and thus plant nutrition).

So what is pH?

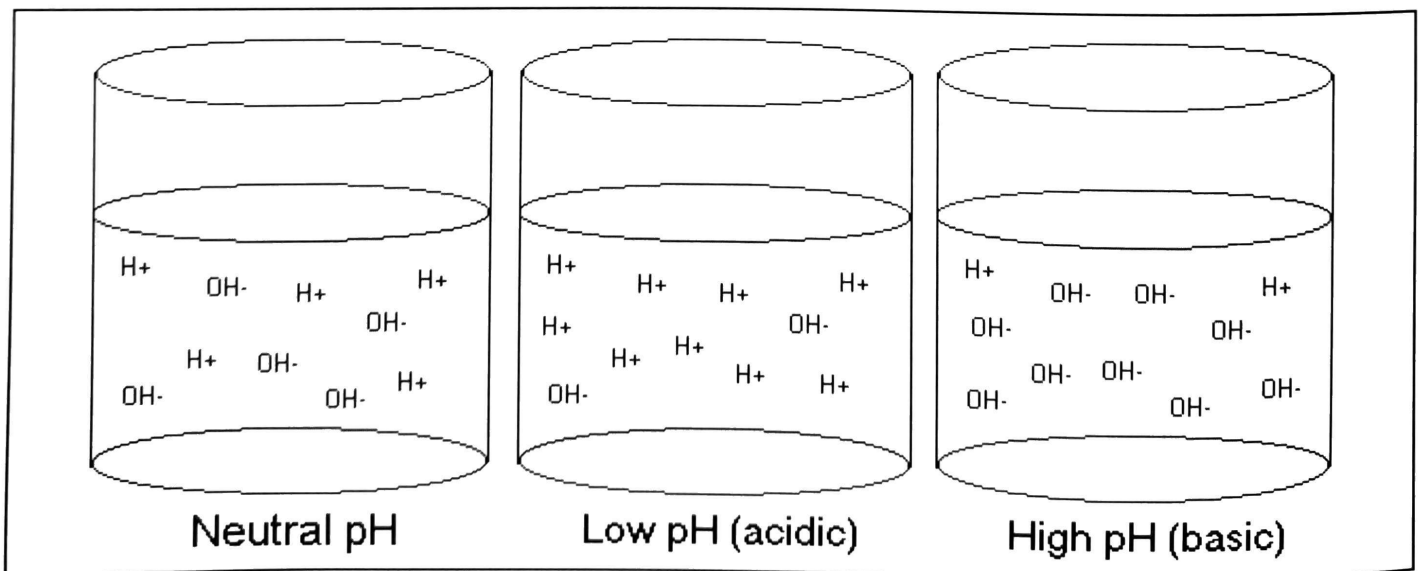
In scientific terms, pH is the negative logarithm of the hydrogen ion concentration in a solution. In plain English, pH is a measure of a solution's acidity. Water pH is measured on a scale of 1 to 14, where 1 = very acidic, 7 = neutral, and 14 = very basic.

Now for the nitty-gritty on pH. The chemical notation for water is H_2O , however, water does not exist solely as H_2O . Rather, water fluctuates between H_2O and hydrogen (H^+) and hydroxyl (OH^-) ions.

Imagine a glass full of water, within that glass there will be some H_2O molecules, along with some H^+ and OH^- ions. In pure water, there is an equal balance between the amount of H^+ and OH^- ions, and the pH is 7 (neutral). If something is added to the water that causes there to be more H^+ ions, then the solution becomes acidic (pH drops below 7). The greater the H^+ ion concentration, the more acidic the solution, and the lower the pH (< 7). Likewise, if something is added to the water that causes the solution to shift to a higher concentration of OH^- ions and a lower concentration H^+ ions, then the solution becomes basic (pH greater than 7).

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NURSERY GROWER UPDATE

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Why does pH matter?

When we talk about the pH of soil (or container media), we are really talking about pH of the water within the soil, in other words, the **soil solution**.

Soil or container pH affects the solubility of nutrients. For example, iron (Fe) is soluble when pH is between 4.0 and 6.0, but as pH rises above 6.5, Fe becomes insoluble. Plants can only absorb nutrients that are dissolved in soil solution; they cannot absorb nutrients that are part of the solid

soil phase. Consequently, Fe chlorosis (a condition caused by insufficient Fe available for plant uptake) is often caused by high pH, which results in Fe dropping out of solution and becoming unavailable. Often, Fe chlorosis occurs when Fe is present in sufficient quantity, but soil pH is too high (> 7) and thus Fe is not available for plant uptake. An important point to remember, **soil solution pH affects nutrient solubility**, and therefore affects nutrient availability to plants.

For growing most nursery crops, field soil pH should be between 5.5 and 6.5. Field soils are often called mineral soils because

they are made from fine particles of eroded mineral rocks. Many mineral soils, especially silts and clays, have high levels of aluminum (Al). In fact, clays are composed of aluminosilicate layers. Aluminum is toxic to plants, even at low levels. As pH of mineral soils drops below 5.5, Al becomes increasingly soluble and available for plant uptake. This is the primary reason pH of mineral soils (field soils) should not drop below 5.

For containers, pH in the range of 5 to 6 has been the rule of

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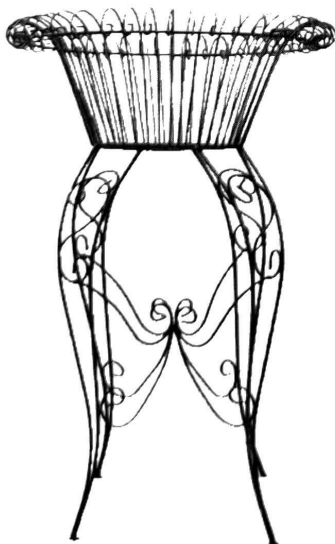
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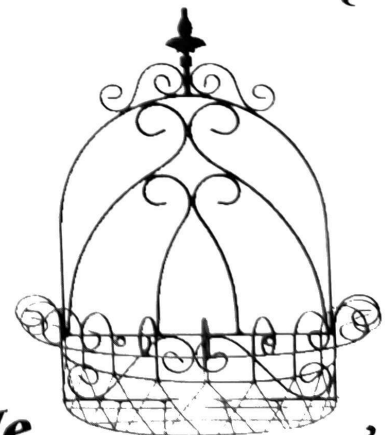
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■ ALKALINITY

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thumb; however, some will argue that pH as low at 4.5 is acceptable, and in some crops desirable. In containers, most growers use soil-less media (media without mineral soil) composed primarily of organic components (bark, peat, etc.) Organic container components inherently cause low container pH. And because mineral soils are not present in containers, Al toxicity is not a concern. Other minerals such as Fe, manganese (Mn) and zinc (Zn) can become toxic at low pH, so until experience tells you otherwise, try to maintain container pH between 5 and 6.

What is alkalinity?

Alkalinity is the bicarbonate level of a solution. Be careful not to confuse the terms alkaline and alkalinity; *alkaline* is an adjective that describes the high pH of a solution, while *alkalinity* is a noun which refers to the bicarbonate level of a solution.

Alkalinity is determined by measuring the concentration of carbonates (CO_3^{2-}), and bicarbonates (HCO_3^-) in solution. Other chemicals can contribute to alkalinity, however, bicarbonates and carbonates are the primary components and many labs will only measure these two variables to determine alkalinity.

Alkalinity is also referred to as water's buffering capacity. This is because water (or soil water) with



High alkalinity in irrigation water can raise soil or container pH to undesirable levels. Alkalinity in irrigation water should be monitored twice a year.

high alkalinity has the ability to buffer (or resist change) to acidity. Irrigation water with high alkalinity will tend to raise the pH of soil or container solution over time.

So what should I be concerned with?

There are two places in a nursery production system to monitor pH and/or alkalinity: 1) water coming from the irrigation system, and 2) soil or container pH.

When analyzing irrigation water, pH is of little consequence. Irrigation pH will have little-to-no effect on soil or container water pH. Alkalinity (or bicarbonate level) of irrigation water is of far greater concern. High alkalinity will cause soil/container pH to rise. If analysis of irrigation water reveals high levels of alkalinity, it might be necessary to inject acid into the irrigation system to neutralize the bicarbonates. Alkalinity in irrigation water can have a large impact on soil/container pH. Alkalinity in irrigation water should be below 200 ppm (3.3 meq/L).

Analyze irrigation water for alkalinity at least twice a year. Alkalinity can be determined on the farm with “do-it-yourself” kits. However, due to infrequency of sampling and affordable cost for laboratory analysis (\$12/sample), I recommend having samples analyzed professionally by a lab.

We are primarily interested in soil pH, as this is what affects nutrient availability. Soil pH is the bottom line, and is the value most critical to plant growth. However, remember that irrigation water alkalinity greatly affects soil/container pH, so it is advisable to monitor it as well.

How do I determine soil pH?

Soil pH should be determined by a soil testing lab. Most labs determine pH by mixing equal parts distilled water and soil and measuring the pH of the slurry as it's being stirred (different labs vary in their technique).

In addition to soil pH, most labs will also determine a “lime requirement”. Two soils with the same pH may require different quantities of lime to raise the pH. This is because the soils may have different alkalinity (buffering capacity, or the ability to resist change in pH), and other chemical and physical properties. While you may be able to determine soil pH with some test kits, it is unlikely you will be able to calculate

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the lime requirement to change the pH. The lab will provide a detailed laboratory analysis of pH and buffer capacity, from which the lab can provide a specific and accurate lime requirement. Test soils for pH and lime requirement at least once a year.

How do I determine container pH?

In containers, the most common method to determine pH is to analyze the water that flows from the bottom of the container. This method is commonly called a “pour-through” method. This procedure is easy, the equipment is affordable, and it should be performed bi-weekly; thus I recommend growers learn this method and conduct their own analysis. Below are step-by-step instructions on how to measure container pH using the pour-through method:

- ❶ Irrigate plants thoroughly, and then wait 1 hour. This will allow containers to drain, and will also allow the container solution to come into equilibrium with container salts. While waiting, calibrate your pH meter so it is ready to use.
- ❷ One hour after irrigation has finished, place the container in a clean and dry saucer. Be careful not to tilt the container, always hold it straight and upright.



To facilitate the pour-through test, place the container in a saucer (elevated with a piece of pvc pipe) prior to adding the 200 ml of water.

- ❸ For a one gallon container, pour approximately 200 ml (7 oz.) of distilled water.
- ❹ Wait 10 minutes for water to drain from drainage holes at the bottom of the container.
- ❺ Pour water from saucer into a container or jar, and then measure pH. pH should be measured immediately after the sample is collected.

This procedure should be performed on several random samples from throughout the container yard.

For large containers, irrigate and wait one hour, then tilt the container on its side and collect the water as it seeps from the drainage holes. The pH of that water is comparable to that which is col-

lected from a traditional pour-through.

This process should be performed every two weeks. Record results so you can track changes in pH over time. Results will vary slightly from one grower to another, and by using different pH meters, so try to assign the task to a single individual and be consistent with equipment used.

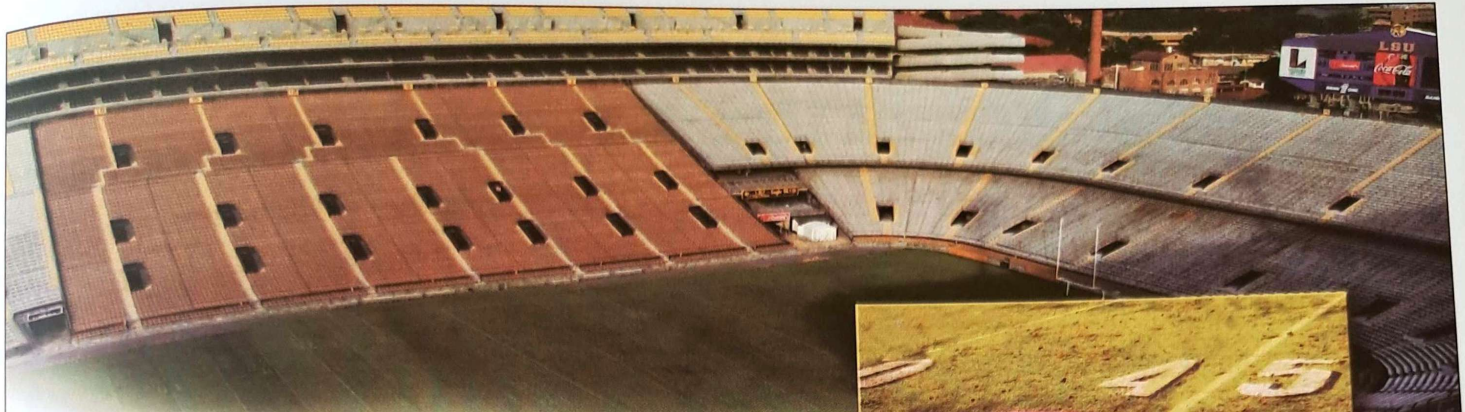
Summary

There are two important points to remember. First, soil or container pH affects the solubility of nutrients, and thus should be monitored to ensure optimum pH for crop growth is maintained. Second, alkalinity of irrigation water (if high) will cause soil or container pH to rise, and thus alkalinity of irrigation water should also be monitored.

Monitor container pH bi-weekly, soil pH yearly, and monitor irrigation alkalinity at least twice a year. Keep detailed records of your analyses to track trends and hone your fertilization/irrigation practices.

If you would like assistance with any of these procedures, contact myself or your local extension office. ☼

Dr. James Altland is a nursery crop extension specialist at the North Willamette Research and Extension Center. He can be reached by email at James.Altland@oregonstate.edu or by calling (503) 678-1264.

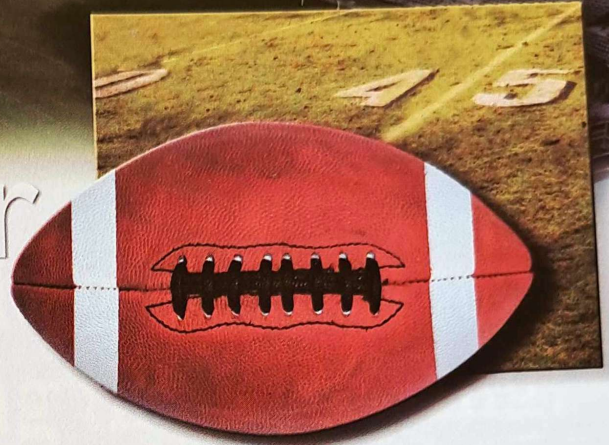


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