



## Roots of Change for the Better

By Dr. Edward F. Gilman, professor, University of Florida

### ROOTS IN NATURE

Perhaps one in a billion seeds becomes a mature tree. In the forest, rodents eat seeds, some are devoured by insects, some seeds rot, and some produce bad root systems. Roots on trees in nature result from seeds germinating on the forest floor. Root systems on mature trees have distinct characteristics that allow them to become large. They develop a spreading array of 6 to 12 large diameter roots growing more-or-less straight from the trunk.

We expect all trees we plant in a landscape to become large and produce benefits for everyone to enjoy. This makes it especially important that root systems have characteristics which allow them to grow to maturity. This process begins early in the first stage of propagation when the seed or rooted cutting forms its first roots.

### PROPAGATING LINERS

Most growers germinate seeds or stick cuttings directly in the field, in small containers, or in common trays of substrate. Trees in common trays must be carefully transplanted to a container of some type or planted into field soil. Root defects can form when a tap root is bent at planting. Bent tap roots are hard to correct and can negatively impact tree health and stability.

Trees propagated in containers have their challenges, but technology can help. Roots grow around the pot and down to the bottom naturally, or they are deflected there by container walls. This root form can result in tree instability and an abnormally deep root system not well suited for compacted soil in urban landscapes (figure 1).

New propagation techniques including pots of thin paper, Oasis® cubes, and others show promise



in producing quality root systems. Roots should be straight and may branch (figure 2) but should not be directed down or around the container wall. These defects can become a permanent part of the root system and hamper

### DON'T MISS!

The 14th Annual RPG Workshop on April 22nd in Zolfo Springs, FL. see page 7 for details

▲ **Figure 1.** Roots deflected down by container wall.



◀ Proper tree handling shown here lifts the weight of the tree by the basket and protects the tree trunk from compression or scraping.

# Handling Trees the Right Way

Essential to the success of any landscape project is that the trees added to the site thrive and flourish in their new permanent location. If you start with quality trees, but handle or plant them incorrectly, your investment is in danger. While there are many important steps in successful planting and establishment of trees proper handling is often least understood.

The first step in proper handling of trees begins at the nursery. Trees delivered from the nursery should be hardened-off, have properly sized root balls, and be properly loaded and tarped. Trees that are hardened-off and in the correct size root ball will have a solid root system that will transport to the job site with very little loosening. Occasionally root balls may loosen during transport

but this should not create a problem during planting or establishment. Trees should be tarped, with a tree tarp, or in a closed truck upon arrival to the jobsite in order to keep them in good condition prior to planting. The tree tarp should be large enough to completely cover the trees and should be made of material that allows for some airflow during transport (for cooling) yet provides protection against damaging wind. Trees should also be tightly tarped as loose tarps can flap in the wind during transport and cause significant leaf loss and possibly tree damage. Trees should be inspected upon arrival to ensure they were properly loaded and tarped and to ensure the trees arrive free of damage.

When trees arrive and are unloaded they should be lifted by the root ball, and never by the trunk. Strapping and lifting trees by the trunk is a process that is surprisingly common in the industry, however, it can lead to significant long term damage to trees. In this situation,

damage frequently occurs because the entire weight of the tree is being supported by the strap around that one location on the trees trunk. As this area becomes compressed it can cause long term damage to the trees cambium which could lead to death of the tree. When lifted properly by the ropes or straps on a trees root ball the weight of the trees is distributed evenly around the tree and the tree trunk is never strapped. Protective tools such as burlap padding and PVC pipe (cut in half, and placed on the side of the trunk where the straps might touch) can be used in addition to proper strapping to ensure little or no damage during lifting and moving of the tree. Finally, if trees are held at the job site prior to planting, it is important that they are stored upright in a shady spot, and they must be irrigated at least daily with 3-5 gallons per caliper inch until they can be planted.

Proper handling of trees is a topic that we demonstrate and teach annually at the RPG field day. Please come to one of our field days to learn more about this topic or contact one of the RPG Grower members if you have any questions.



## FL Forest Health Improvement Initiative

The Florida Division of Forestry recently announced the Florida Forest Health Improvement Initiative, a program aimed at improving the overall health of community forests. Funding will be used to provide grants to local governments, non-profit groups, and educational institutions, as much as \$24K each with no matching requirement. Approximately sixty percent of the available \$1,570,000 will be awarded for tree planting projects on public lands, emphasizing the concepts of Right Tree/Right Place and use of native species. The remaining funds will be awarded for remedial pruning to improve the health of existing publicly owned trees, treatments to improve tree stability and nutrient uptake, and a limited amount for removal of hazardous trees. Grant recipients will have to hire private vendors to provide trees and perform these treatments. For more information visit [www.fl-dof.com](http://www.fl-dof.com).

## What is Hardening-off?

Quality field-grown trees should be hardened-off, or cured, after harvesting. This hardening-off process lasts 3 to 4 weeks and it simply involves providing the tree with optimum irrigation during the few weeks after harvesting. After the tree is hardened off it is ready to ship to the landscape site. New roots that have begun to develop are ready to grow immediately into the landscape. This may sound like a simple idea but research has shown that hardened-off field grown

trees are a superior performer in the landscape. Research conducted continues to confirm that quality field grown trees outperform container grown trees in landscape settings. Research has shown that field grown trees use water more efficiently at planting, establish faster after planting, are more wind resistant than container grown trees, and when planted with container trees in a situation of limited water or irrigation will have dramatically higher survival rates. All of these results are from peer reviewed research that has been published in various trade journals.

## RPG and Grades & Standards

RPG members discussed at the membership meeting in November the challenges growers are facing with various understandings and interpretations of the *Florida Grades and Standards*. Growers agree that the *Grades and Standards* as they are published are not being adhered to by some inspectors and landscape contractors. As a result trees are being rejected at jobsites for quality and other issues beyond the *Grades and Standards* document. In many cases, additional parameters are being added based on opinions of inspectors or what was learned at an educational program instead of what the published *Grades and Standards* document states. This “changing” of what is expected of a graded tree becomes impossible to work with because we no longer have a standard but have a different guideline based on additional parameters. RPG is drafting a position paper regarding our support for the *Grades and Standards* document, as written, and our concerns with the latest trend of additional parameters being added

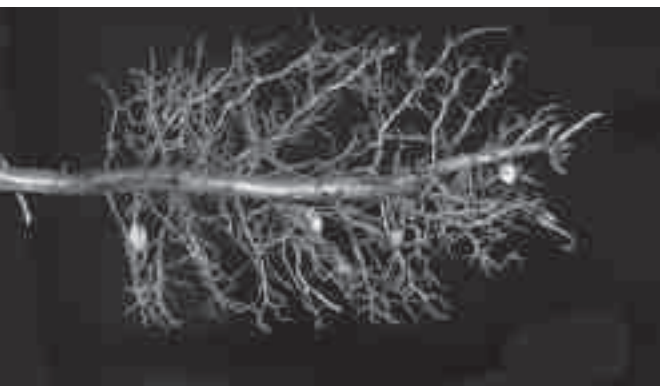
during field inspections. We will also be looking for various industry groups and associations to partner with us in this position paper.

## UF receives \$300K Commitment from Florida Arborists

The Florida Chapter of the International Society of Arboriculture (ISA) signed an agreement that pledges a \$300,000 gift to the University of Florida Foundation (UF) over the next 5 years. The money, paid in annual installments, will create an endowment called the Florida Chapter ISA Arboriculture Endowment Fund. The funds for this endowment will be generated by the “Trees Are Cool” specialty license plate sales managed by the Florida Chapter ISA. The chapter has scheduled a significant portion of the funds generated by the license plate to support the UF endowment. Norm Easey, Executive Director of the Florida Chapter ISA, stated, “The University of Florida IFAS faculty have generously supported the Florida Chapter ISA over the years; this is an opportunity to show our appreciation.” The chapter’s board of directors signed a gift agreement with the University of Florida Foundation to establish the fund in support of arboriculture research and education at UF/IFAS’ Department of Environmental Horticulture. Florida Chapter ISA President, Mike Robinson added, “It is our intent to eventually grow the fund sufficiently to endow a permanent Chair for Arboriculture at UF.” For more information visit [www.floridaisa.org](http://www.floridaisa.org).



Roots continued from page 1



▲ **Figure 2.** Quality liner root system with few deflected roots.

proper growth, or could doom the tree to early death. Once roots begin circling or diving down the side of the pot they should be removed entirely when shifting to larger sizes so retained root segments are oriented straight from the trunk. A look inside root balls we plant today shows that this is not happening with enough regularity.

#### ROOTS IN CONTAINER NURSERY

Root management continues in a container nursery that grows finished landscape trees. The goal is to produce a root system with straight roots from the trunk (figure 3), not deflected down or around the pot. If this does not occur, shaving off root ball periphery at each shift to a larger container appears to accomplish the same objective. Our research shows that if you manage irrigation carefully, caliper and height should not slow appreciably<sup>1</sup>. Some nurseries in Florida and California are practicing a version of this and learning how to use it. In addition, root flare should be at or close to the surface. If the root flare is just a couple inches beneath substrate surface, roots deflected by the container wall can girdle the stem.

#### ROOTS IN FIELD NURSERY

Roots pruned several times in the nursery grow denser with smaller diameter roots and fewer large roots (figure 4). This has been shown to increase digging survival and improve landscape performance<sup>2</sup>.



◀ **Figure 3.** Quality root ball grown in three-gallon container without root pruning.



▼ **Figure 4.** Quality field-grown root ball resulting from multiple root prunings.

Nurseries that routinely move trees from one field to another during production automatically prune roots. Quality nurseries that produce certain trees without moving them implement root pruning in place.

#### MANAGE ROOTS AT PLANTING

Treat root defects at planting including those wrapping or circling the trunk. Excavation and a pruning saw or clippers are needed to check for and treat defects at trunk. Roots matted against burlap on field grown trees should be removed at planting. A sharp digging spade can be used to remove all peripheral roots on

container grown trees; slicing the root ball radially is less effective<sup>3</sup>. If the root ball has no defects on the interior, this will help insure most circling and diving roots are removed from the root system. New roots will grow outward horizontal to soil surface to better stabilize trees.

1. Gilman, E.F., C. Harchick, and M. Paz. 2010. Root ball shaving improves root systems on seven tree species in containers. *J. Environ. Hort.* (In review)

2. Gilman, E.F. and P. Anderson. 2006. Root pruning and transplant success for Cathedral Oak® live oaks. *J. Environ. Hort.* 24: 13-17

3. Gilman, E.F., C. Harchick, and M. Paz. 2009. Pruning roots affects tree quality in container-grown oaks. *J. Environ. Hort.* 27: 7-11.

## Trees are Cool License Plates Available Now

With Florida's unique environment, extra attention must be paid to preserving our natural resources, especially our trees. By purchasing a TreesAreCool.com license plate you help underwrite programs that directly benefit the trees of Florida which help keep our state the uniquely beautiful place we all call home. Healthy trees benefit wildlife, increase property values and help cool and clean the air.

The Florida Chapter of the International Society of Arboriculture, a nonprofit organization, is committed to serving the needs of Florida's professional arborists and tree-care consumers. The TreesAreCool.com license plate revenues benefit our urban environment through tree research, the ongoing education of tree-care practitioners, and by providing public education programs about tree care and preservation.



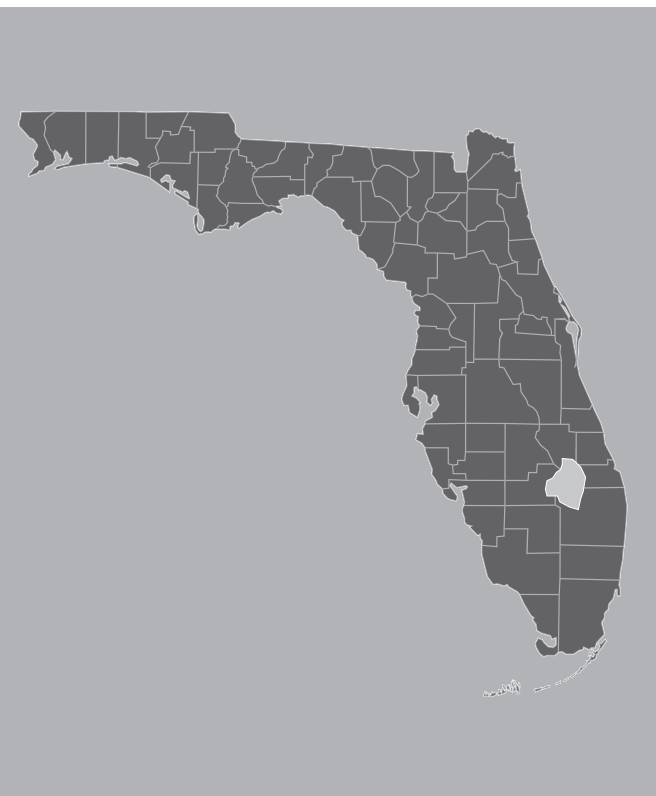
## THE SUSTAINABLE SITES INITIATIVE™

# Call for Pilot Projects

Positioning to be incorporated into USGBC Building Rating System of LEED in 2011, the Sustainable Sites Initiative ([www.sustainablesites.org](http://www.sustainablesites.org)) is an interdisciplinary effort by the American Society of Landscape Architects, the Lady Bird Johnson Wildflower Center and the United States Botanic Garden. It is established to create voluntary national guidelines and performance benchmarks for sustainable land design, construction and maintenance practices. The core message of the Sustainable Sites Initiative is any landscape—whether the site of a large subdivision, a shopping mall, a park, an office building, or even one home—holds the potential both to improve and to regenerate the natural benefits and services provided by ecosystems in their undeveloped state. These benefits—such as the supply and regulation of clean air and water, the provision of food and renewable resources, and the decomposition of waste, to name only a small handful—are essential to the health and well-being of humans and all other life on the planet.

The Sustainable Sites Initiative is seeking site and landscape projects as pilot projects for the Sustainable Sites Initiative Rating System. Accepted pilot projects will be the first projects to demonstrate their application of The Sustainable Sites Initiative: Guidelines and Performance Benchmarks 2009. A Call for Pilot Projects is currently open until February 15, 2010, which invites projects to apply to test these guidelines and performance benchmarks over a two-year period. Feedback from the pilot projects will be used to create a reference guide which will provide suggestions on how projects earned specific credits. Projects may only be submitted online through February 15, 2010. Note that pilot projects will be selected to ensure a broad range of project types, sizes, budgets, geographic diversity and phase of development. The minimum project size is 2,000 square feet.

For more information on the Pilot Program and the entry form, please visit the sustainable sites web site, <http://www.sustainablesites.org/pilot>. Every question must be completed (to the best of your knowledge) to be considered. For other questions or technical problems with the form, please contact: [pilot@sustainablesites.org](mailto:pilot@sustainablesites.org). The Sustainable Sites initiative will have a direct impact on the landscape and horticulture industry. The most effective means of having a voice in this process and subsequent rating system is to participate in the 2010 pilot projects. This is a rare opportunity for our industry to actively influence the Guidelines and Performance Benchmarks by participating in the 2010 pilot projects.




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## GROWER MEMBERS

### The Arbor Group LLC

407-235-8492 | Orlando  
cultivar live oak and magnolia,  
summer red maple, duraheat river  
birch, eagleston holly, bald cypress

### BE-MAC Farms

813-920-2247 | Odessa  
live oak, pine, sycamore, sweetgum,  
elm

### Bent Oak Farm

352-245-5429 | Ocala  
live oak, willow oak, red maple,  
chinese elm, southern magnolia,  
crape myrtle

### Cannon Trees, Inc.

352-279-9709 | Brooksville  
live oak, southern magnolia, bald  
cypress, ligustrum

### Champion Tree Farm

352-278-3321 | Gainesville  
live oak, southern magnolia, red  
maple, east palatka holly, crape  
myrtle

### Fish Branch Tree Farm, Inc.

863-735-2242 | Zolfo Springs  
Boardwalk, Cathedral, and Parkside  
live oak

### FMT Farms

352-799-6614 | Brooksville  
live oak, laurel oak, sycamore,  
sweetgum, crape myrtle, bald  
cypress, southern magnolia, maple

### Huntsman Tree Supplier

352-754-5295 | Brooksville  
live oak, laurel oak, southern  
magnolia, bald cypress, red maple,  
sweetgum, red cedar, winged elm,  
slash pine

### Marshall Tree Farm

800-786-1422 | Morriston  
live oak, southern magnolia,  
sweetbay magnolia, holly, chinese  
elm, winged elm, crape myrtle, slash  
pine, bald cypress, sweetgum

### Nature Coast Tree Corp.

386-935-9349 | Bell  
live oak, ligustrum, holly, southern  
magnolia

### Quality Trees & Shrubs

352-257-2080 | Leesburg  
live oak, southern magnolia

### SMR Farms

941-708-3322 | Bradenton  
large specimen live oak

### Snapper Creek Nursery

772-216-9993 | Fort Pierce  
live oak, laurel oak, crape myrtle,  
bald cypress, slash pine

### Southern Tree Growers

407-656-0216 | Winter Garden  
live oak, ligustrum, magnolia

### Spectrum Tree Farms, Inc.

800-753-1379 | Live Oak  
live oak, ligustrum, holly, crape  
myrtle, slash pine, bald cypress,  
southern magnolia

### Stewart's Tree Service

352-796-3426 | Brooksville  
live oak, laurel oak, southern  
magnolia, holly, ligustrum

### Tree Trends

352-427-2062 | Dunnellon  
live oak, holly, southern magnolia

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## SUPPORTING MEMBERS

### John Deere Landscapes

941-737-2305

### Urban Palmetto Nurseries

407-948-5981

### Walsh Brokerage

863-326-5639

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## ASSOCIATE MEMBERS

### Braun Horticulture

### Cherokee Manufacturing

### General Cordage

### Graco Fertilizer Company

### Grass Roots Nurseries

### Griffin Trees, Inc.

### Jack Siebenthaler

### Seaworld

### Treemart

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## WITH GREAT SADNESS

It is with great sadness that we tell you of the passing of Wallace Lee Eslick, President of General Cordage Inc. Wally passed away in October and is survived by his loving wife Rita and two children Thais and Joe. Wally loved his work, adored his customers and appreciated every minute of life. General Cordage has been an Associate Member and supporter of RPG for many years.



# RPG TimesLine

**April 22 | Zolfo Springs, FL**

14th Annual RPG Field Day,  
Fish Branch Tree Farm

For more information contact RPG  
at [www.rootsplusgrowers.org](http://www.rootsplusgrowers.org) or call  
352.528.3880

**June 13-15 | Key West, FL**

Trees Florida Conference & Trade  
Show, Casa Marina Resort

For more information visit  
[www.treesflorida.com](http://www.treesflorida.com)

**July 22-24 | Gainesville, FL**

Florida Chapter ASLA Annual  
Conference and EXPO, Hilton  
Hotel and Conference Center

For more information contact FC/  
ASLA at [www.flasla.org](http://www.flasla.org)

**August 19-22 | San Antonio, TX**

Nursery & Landscape EXPO 2010,  
Henry B. Gonzalez Convention  
Center

For more information visit  
[www.txnla.org](http://www.txnla.org)

**September 10-13 | Washington, DC**

ASLA Annual Meeting & EXPO,  
Walter E. Washington Convention  
Center

For more information contact ASLA  
at [www.asla.org](http://www.asla.org)

**September 23-25 | Orlando, FL**

The Landscape Show, Orange  
County Convention Center

For more information visit  
[www.fngla.org](http://www.fngla.org) or call 800.375.3642

**December 2-3 | Gainesville, FL**

10th Annual Great Southern Tree  
Conference, Hilton Hotel and  
Conference Center

For more information visit  
[www.fngla.org](http://www.fngla.org) or call 800.375.3642

# DON'T MISS! 14th Annual RPG Workshop

**TOPICS INCLUDE:**

- Grades and Standards
- Tree Root Systems
- Hardened-off trees
- Palm Tree Grading
- Palm Tree Nutrition
- Tree Planting Demonstration
- Tree Farm Tours

This demonstration style hands-on seminar is designed specifically for urban foresters, municipal tree inspectors, landscape architects, landscape contractors, and others in Florida's green industry.

**HANDS-ON** You are sure to come away from this workshop with a new understanding of quality trees and how to grow, select and plant them quickly and efficiently.

**GROWTH** This is a great opportunity for your employees to learn the latest in tree care, selection and production.

**QUALITY** Learning the most up-to-date planting recommendations will help ensure these quality trees remain a sustainable part of the landscape for a long time.



**April 22, 2010  
Zolfo Springs, FL**

To receive a brochure call  
**352-528-3880** or visit  
[www.rootsplusgrowers.org](http://www.rootsplusgrowers.org)

To register visit  
[www.floridaisa.org](http://www.floridaisa.org) or call  
**941-342-0153**

# RPG Cue Cards

## Tree Grading Cue Card

provided by Roots Plus Growers™

1 Look inside the crown of the tree at the trunk form.



2 Check branch arrangement.



3 Choose appropriate tree matrix type.

- Type 1 - spreading and rounded shapes.  
ex. live oak, dogwood, black olive, gumbo limbo
- Type 2 - pyramidal shapes.  
ex. river birch, bald cypress, cedar, pine
- Type 3 - columnar / upright shapes.  
ex. East Palmetto holly, schefflera, Italian cypress
- Type 4 - vase shapes.  
ex. crape-myrtle, buttonwood, ligustrum, redbud
- Type 5 - oval shapes.  
ex. red maple, podocarpus, tabebuia, dahoon holly

Refer to the matrix tables in the Grades and Standards when necessary to determine proper root ball size, container size, crown spread, and height.

4 Measure the caliper of the trunk.

Trunk caliper is measured 6 inches from the ground on trees up to and including 4 inches in caliper, and 12 inches above the ground for larger trees. Diameter at 4 1/2 feet (DBH) is not considered an appropriate measurement for nursery trees.

5 Grade the tree based on crown spread.

If the crown spread does not look proportional to the tree, use the matrix table you selected above along with the trunk caliper measurement to determine the crown spread for the tree. For this step select a grade based on crown spread only.

6 Grade the tree according to structural uniformity.



7 Make note of the lowest grade determined in steps 1, 2, 5, and 6.

The Roots Plus Growers Association has developed a pocket guide for tree planting to supplement the popular Tree Grading Cue Card. This 3x7" laminated Tree Planting Cue Card is intended to simplify the tree planting process by highlighting eight steps for successful transplanting.

Download a copy of each cue card at [rootsplusgrowers.org](http://rootsplusgrowers.org), or call 352-528-3880 to request yours today!

### Tarjeta Indicativa para Calificación de Árboles

Suministrada por "Roots Plus Growers™"

- Examine the form of the trunk and the shape of the crown.
- Examine the disposition of the branches.
- Selecciona la matriz del árbol apropiado.
  - Tip 1 - formas esparcidas y piramidales.
  - Tip 2 - árbol columna, copa de flor plana, copa, pino.
  - Tip 3 - formas de columna.
  - Tip 4 - copa de flor plana, copa de flor plana.
  - Tip 5 - copa de flor plana, copa de flor plana.
- Mide el diámetro del tronco.
- Clasifica el árbol con base en el diámetro de la copa.
- Clasifique el árbol según la uniformidad de su estructura.
- Tome nota del grado más bajo determinado en los pasos 1, 2, 5 y 6.

### Tree Planting Cue Card

provided by Roots Plus Growers™

- Start with a quality grade tree as specified in the Florida Grades & Standards for Nursery Stock.
  - Select trees with a quality trunk form, branch arrangement and canopy uniformity.
- Check for root system quality.
  - Field-grown (B&B) trees should be hardened-off or pre-dug at the nursery and their roots are visible through the burlap.
  - Trees should be sold in the rootball.
  - Check for field and/or shipping holes and cut them if present.
- Tree shipping and unloading.
  - Trees should be protected during shipping by a tarp or shippod in an enclosed truck.
  - Trees should never be lifted by the trunk. Lift using rootball straps or container handles.
  - On the job site, store trees upright. In the shade, and irrigate trees daily with 5 gallons per caliper inch applied directly to the rootball until planting.
  - Do not store trees on soil.
- Planting hole preparation.
  - Prepare the planting hole before you arrive as the rootball and slightly less than the depth of the rootball.
  - Dig the planting hole shallow in areas with well soil conditions and backfill to the edge of the rootball.
  - In no case should the 1/4" root emerging from the trunk be below the soil level.

### Tarjeta Indicativa para Plantación de Árboles

Suministrada por "Roots Plus Growers™"

- Emplece con árboles de calidad según lo especificado por los grados y estándares de la Florida para viveros, (Florida Grades & Standards).
  - Seleccione árboles con troncos bien formados, buena disposición de sus ramas y copa uniforme.
- Examine la calidad del sistema radicular.
  - Los árboles sembrados en el campo (Cosecha o buda de vivero en sano, B&B) por sus raíces en inglés (deben estar acostumbradas o ser empujadas) en el momento de la venta deben tener raíces que broten nuevas raíces y se hagan visibles a través del capullo.
  - Los árboles deben estar en el capullo.
  - Busque raíces esparcidas y/o circulares. Si existen, cótelas.
- Transporte y descarga de árboles.
  - Los árboles deben protegerse durante el transporte con una lona.
  - Nunca levante un árbol por el tronco. Levántelo usando las correas de soporte del capullo o los mangos del contenedor.
  - En el lugar de trabajo, almacene los árboles en posición vertical, a la sombra y regíelos con agua dos veces al día con 5 galones por pulgada de diámetro, aplicados directamente al capullo hasta que sea plantado.
  - No almacene árboles sobre superficies asfaltadas.
- Preparación del hoyo para la siembra.
  - Prepare el hoyo antes la siembra de 2 a 3 veces el ancho del capullo y un poco menor a la profundidad del mismo.
  - En áreas con tierra mala, hágalo en las áreas de suelo húmedo y rellenado hasta el borde del capullo.
  - El riego (sea la primera vez que brota del tronco debe estar por debajo del nivel del suelo).

Coming Soon!  
RPG Pruning Cue Card

English and Spanish cards available now!

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