
PALMS & CYCADS

TABLE OF CONTENTS

PALMS & CYCADS

PALMS

| | |
|--|----|
| How to Use the Grades and Standards for Palms | 3 |
| General Grade Standards | 3 |
| Glossary of Palm Terms | 4 |
| Structures of a Palm (Matrix A,B,C) | 5 |
| Lethal Yellowing of Palms | 8 |
| Ornamental Palms Susceptible to Lethal Yellowing | 9 |
| Minimum Root Ball Sizes for all Types of Field-Grown Palms | 10 |
| Specifying Sun- or Shade-Grown Palms | 11 |
| Types of Palms | 12 |
| Matrix A | |
| Single Trunk, Pinnate Palms | 13 |
| Matrix B | |
| Single Trunk, Palmate Palms | 18 |
| A Note about Transplanting Sabal Palms | 19 |
| Matrix C | |
| Clustering Palms | 24 |
| Suggested Method for Support of Palms without Nails | 27 |
| Examples of Improper Staking | 28 |
| Eliminating Factors of Palms | 29 |
| Index of Palms by Scientific Name Found in Florida Nurseries | 30 |
| Index of Palms by Common Name Found in Florida Nurseries | 32 |

CYCADS

| | |
|---|----|
| List of Most Commonly Sold Cycads | 34 |
| Cycad Root System Standards | 34 |
| Cycad Forms | 35 |
| Cycads | 36 |

| | |
|-------------------------------------|----|
| References for Palms & Cycads | 39 |
|-------------------------------------|----|

PALMS

HOW TO USE THE GRADES AND STANDARDS FOR PALMS

For the purposes of this manual, palms have been classified first into main categories based on normal habit: **single-trunked with pinnate leaves (A), single trunked with palmate leaves (B), or clustering types (C)**. Within the single -trunked categories, the palms are further designated as having **slender trunks (1), moderate trunks (2), or heavy trunks (3)**. Each of the palm species in Table 6, page 30, has been assigned to a Matrix type according to these specifications. (Table 7 on page 32 has the same information, by common names.) In addition, a mature height range (See the Glossary of Terms) has been defined for each single-trunked palm species. At mature height, the caliper specified in each Matrix class must be met.

Example. To determine the Grade of a royal palm, *Roystonea elata*:

Step 1. Turn to Table 7 on page 33 and find royal palm in the Table.

Step 2. Note the Matrix type to use for this species. (In this case, Matrix A-3)

Step 3. Note the Minimum Mature Height for this species. (18 - 20')

Step 4. Turn to matrix A on page 13. Matrix A describes the general requirements for a Florida Fancy grade, and defines the minimum caliper

range for each class in matrix A. Note that the Minimum Caliper for an A-3 class palm is 17".

Step 5. Use the Grading Form for Matrix A Palms on page 14 to grade individual palms:

Examine the palm against the list of eliminating factors on page 14. **ANY 'YES' RESPONSE ELIMINATES THE PALM.**

Eliminating factors are severe problems which greatly decrease the palm's chance for survival in the new site. Any one of these factors eliminates the palm from the Grades and Standards consideration. The palm is termed 'not gradable'.

If you answered 'NO' to all of the eliminating factors, proceed to Step 6.

Step 6. Examine the palm against the list of One-Grade Deductions on the Grading Form. For every positive response, reduce the grade by one: One grade deduction in this section makes the palm a Florida No. 1; two grade deductions make the palm a Florida No. 2; three or more deductions eliminates the palm.

GENERAL GRADE STANDARDS

1. **Florida Fancy:** An exceptionally healthy and vigorous palm that is perfectly formed and foliated (subject to the natural growth of the species).
2. **Florida No. 1:** a healthy and vigorous palm that is well formed and foliated (subject to the natural growth of the species).
3. **Florida No. 2:** A healthy palm that is fairly well formed with fair foliage quality (subject to the natural growth of the species).

GLOSSARY OF PALM TERMS

The following terms are important in setting grades and standards for palms. Those which also apply to cycads are indicated with an asterisk (*). The Cycad section begins on page 34.

Abrupt constriction: A point along the trunk having a noticeably smaller diameter than the diameter immediately above and below.

Boot: The dead leaf base or enlarged portion of the petiole remaining affixed to the trunk after the leaf has died, been broken, or cut off.

Caliper: The diameter of the palm trunk taken at the widest portion, measured between 1 foot and 3 feet from the soil line. There have been minimum height standards established in the tables that apply to these caliper measurements.

Chlorosis: A yellowing or bleaching of green color in the foliage which denotes a major or minor element deficiency, a physiological problem or the presence of plant pests.

Clear trunk (Figs. 1-3): A measurement from the soil line to a point in the canopy where the trunk caliper begins to taper abruptly. On many palms, this point will lie at the base of the petiole of the third or fourth youngest but fully expanded leaf.

Clear wood (Figs. 1-3): A measurement from the soil line to the highest point on the trunk free of persistent leaf bases. On palms with a crownshaft, the measure will be from the soil line to the base of the crownshaft. It should be noted that palms with very persistent leaf bases may not have clear wood.

Crownshaft: A conspicuous neck-like structure formed by tubular leaf bases on some palms with pinnately compound leaves.

Drooping leaf*: A leaf that hangs unnaturally, caused by a broken or severely bent petiole.

Excellent leaf*: A dark healthy leaf with a strong healthy petiole and completely free of damage, defects and deformities.

Extreme succulence: Soft, tender growth caused by over-fertilization, over-irrigation or overcrowding. The palm may not survive when transplanted.

Good leaf*: A medium green (but non-chlorotic) leaf with strong healthy petioles, but with some individual leaflets showing slight spotting, insect damage, burning or fraying at their tips, but not across more than 10% of the leaf surface.

Intermediate trunk (cluster type) (Fig.3): Clear trunk height half or more as tall as the main trunk or trunks.

Leaf count*: Restricted to leaves at least $\frac{3}{4}$ open and showing the full leaf character of the palm or cycad.

Main trunk(s) (cluster type) (Fig.3): Tallest trunk in the cluster. All other trunks at least three fourths of this height will be considered main trunks.

Mature height: The height range at which the species begins to exhibit mature trunk characteristics, and the minimum height at which caliper shall be considered in Grading.

Overall height (Figs. 1-3): Highest point in the canopy measured from the soil line to the natural position of the last fully expanded leaf. Unless specified differently in the contract, the term height, or height measurements specified, will be considered **overall** height.

Sagging leaf*: Leaf declined more than 15° from the perpendicular of the trunk, measured from the sinus (fan palm) or base of the lowest leaflet (pinnate palm).

Suckers (cluster type) (Fig. 3): Any stem which does not meet the height specifications of an intermediate or main trunk.

Young Palm: A palm old enough to have a woody trunk but of less than mature height as stated in the tables. By virtue of its immaturity, a young palm is entitled to a 20% reduction in caliper.

MATRIX A PALM

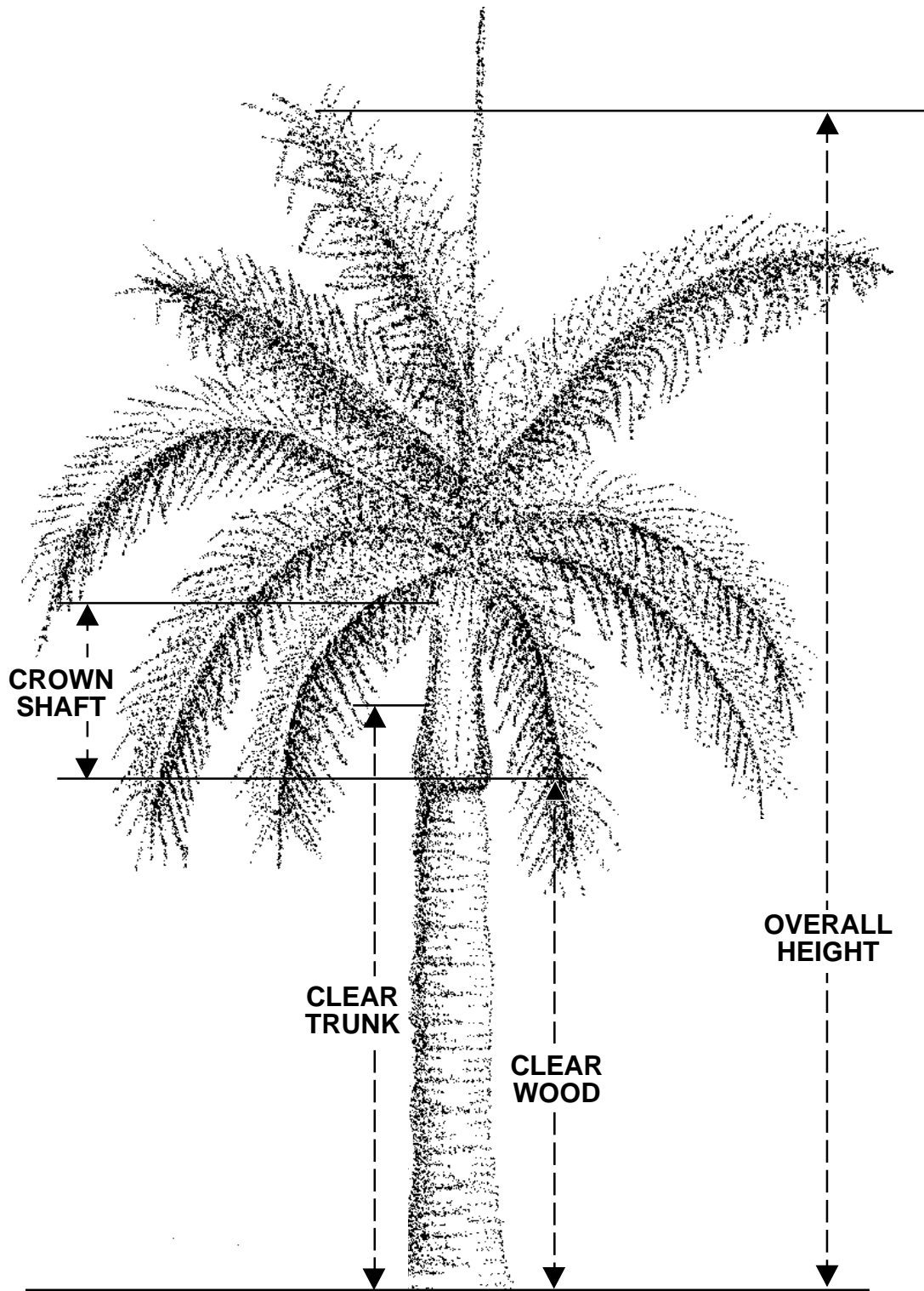


Fig. 1. SINGLE TRUNK, PINNATE ROYAL PALM (WITH CROWNSHAFT)

MATRIX B PALM

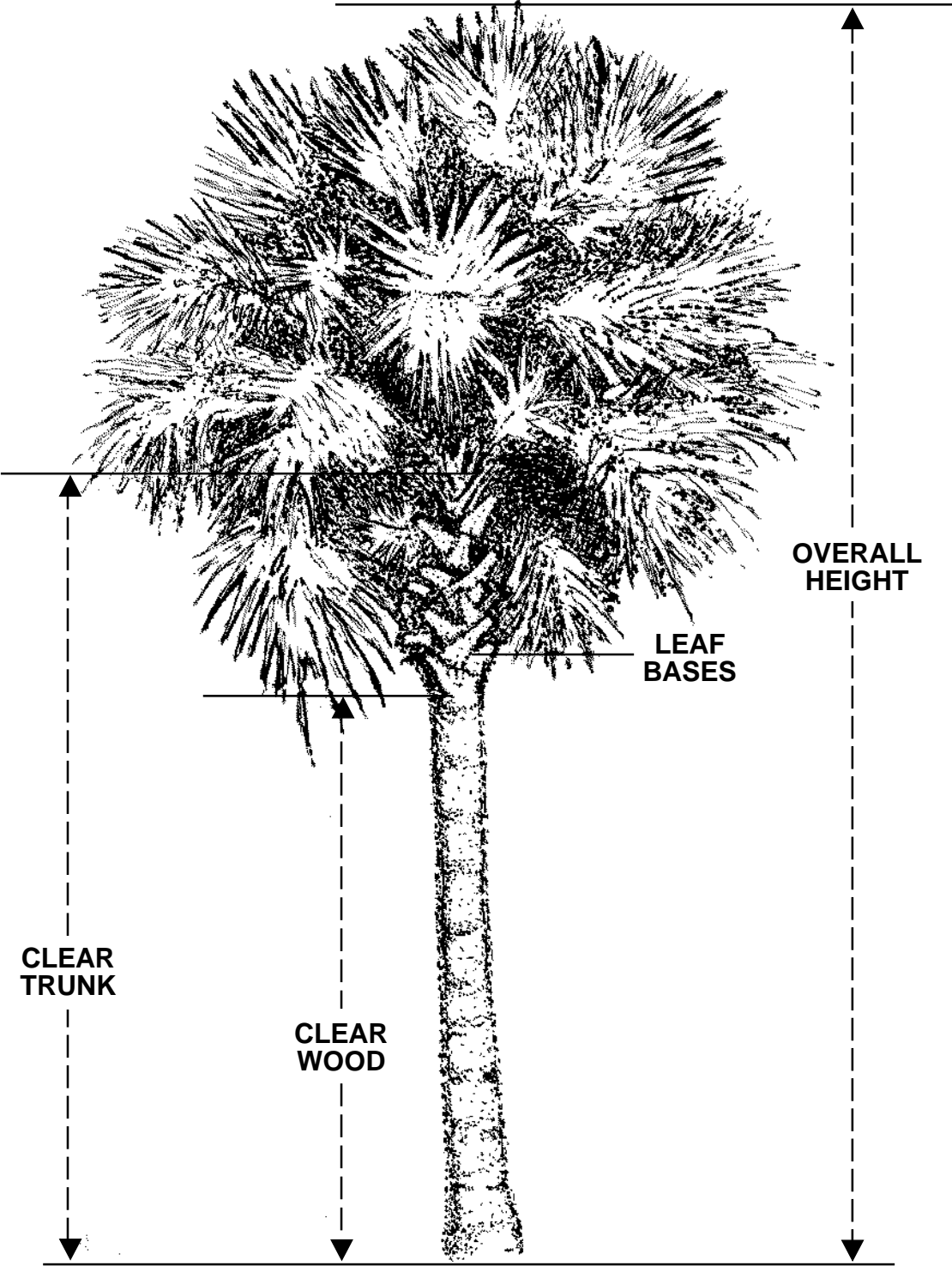
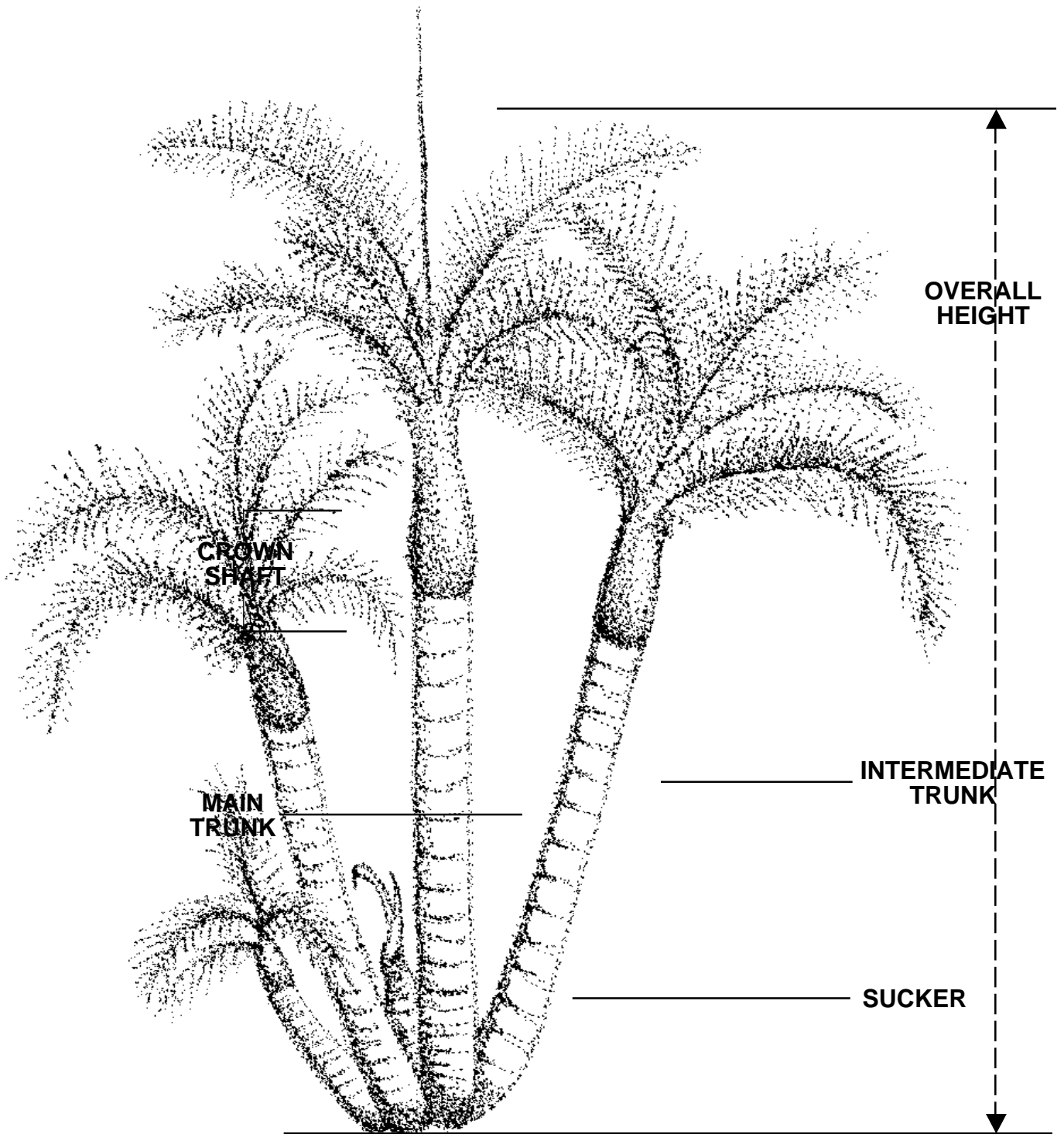


Fig. 2. SABAL PALM
(NO CROWN SHAFT)

MATRIX C PALM



**Fig. 3. CLUSTERING TYPE, PINNATE
ARECA PALM**

LETHAL YELLOWING OF PALMS

Lethal yellowing (LY) is an incurable disease of palms caused by a mycoplasma-like organism (MLO) vectored by a leafhopper bug, *Myndus crudus*. As of 1996, the disease organism is now resident or has been at least reported in Broward, Collier, Dade, Hendry, Lee, Martin, Monroe and Palm Beach counties. The most practical control within LY areas is to avoid production or landscape use of highly LY-susceptible palms, listed in Table 1, page 9. Lethal yellowing is a mandatory plant quarantine in the State of Florida. All host palms expressing disease symptoms in the nursery will be quarantined until infected material is removed, including any infected material in the nursery landscape or immediate environs.

In palms with a mature trunk, lethal yellowing can be controlled (although not cured) with continuous injections of tetracycline antibiotics. Unfortunately, such a program is not economically feasible.

Coconut varieties which are **resistant** to lethal yellowing are available in commercial quantities. Contractors should specify 'Malayan Dwarf' or 'Maypan' cultivars **grown from seed produced in a certified breeding program**.

As of this printing, 'Malayan Dwarf' and/or 'Maypan' seed is available from three sources only:

- 1) The Jamaican Coconut Industry Board
- 2) The Miami Coconut Seed Orchard (FDACS, Division of Forestry)
- 3) Hacienda Victoria, SACRAC S.A., Costa Rica

'Malayan Dwarf' coconuts come in three color forms: red (sometimes called gold), yellow and green. Red and yellow palms are fairly easy to discern by the color of their petioles. Green coconuts cannot be verified as true to any variety until the plants are mature (if then). Therefore, planting a yellow, red or bronze coconut fruit does not ensure the resulting palm will be true to variety or carry resistance to lethal yellowing. A breeding program is imperative to ensure the purchase of a resistant variety.

'Maypan' coconuts carry the coloration of their pollen parent, which will either be bronze or green.

It should be clarified that no coconut variety is immune to LY. Loss of some of the palms can be expected over the years, even with resistant varieties. However, the practice of field collecting nuts for propagation will lead to hybrids of uncertain parentage which may not be true to type and are potentially more susceptible to LY.

Table 1. A LIST OF ORNAMENTAL PALMS THAT ARE SUSCEPTIBLE TO LETHAL YELLOWING.

| Scientific Name | Common Name | Susceptibility |
|---|-------------------------------|----------------|
| <i>Arenga engleri</i> Becc. | sugar palm | moderate |
| <i>Borassus flabellifer</i> L. | Palmyra palm | moderate |
| <i>Caryota mitis</i> Lour. | fishtail palm | moderate |
| <i>Chrysalidocarpus cabadae</i> H.E. Moore | cabada palm | slight |
| <i>Cocos nucifera</i> L. *(Non-resistant cultivars: Jamaican /Atlantic Tall) | coconut palm | high* |
| <i>Corypha utan</i> Lam. | gebang palm | moderate |
| <i>Dictyosperma album</i> (Bory) H.A. Wendl. & Drude ex R. Scheff. | princess palm | moderate |
| <i>Hyophorbe verschaffeltii</i> H. A. Wendl. | spindle palm | slight |
| <i>Latania</i> spp. | latan palm | moderate |
| <i>Livistona chinensis</i> (Jacq.) R. Br. ex Mart. | Chinese fan palm | moderate |
| <i>Livistona rotundifolia</i> (Lam.) Mart. | footstool palm | moderate |
| <i>Phoenix canariensis</i> hort. ex Chabaud | Canary Island date | moderate |
| <i>Phoenix dactylifera</i> L. | date palm | high |
| <i>Phoenix reclinata</i> Jacq. | Senegal date palm | slight |
| <i>Pritchardia</i> spp. | Pritchardia palms/loulu palms | high |
| <i>Syagrus schizophylla</i> (Mart.) Glassm. | arikury palm | slight |
| <i>Trachycarpus fortunei</i> (Hook.) H. A. Wendl. | windmill palm | moderate |
| <i>Veitchia merrillii</i> (Becc.) H. E. Moore | Christmas palm | high |
| <i>Veitchia montgomeryana</i> H. E. Moore | Montgomery palm | slight |

* Malayan Dwarf varieties, and Maypan hybrid coconuts are SLIGHTLY susceptible to LY.

EXAMPLES OF LETHAL YELLOWING



Cocos nucifera



Veitchia merrillii

Table 2. MINIMUM ROOT BALL SIZE FOR ALL TYPES OF FIELD-GROWN PALMS¹

| Overall Height | Width of Ball ² | Depth of Ball |
|----------------|----------------------------|---------------|
| < 15 ft. | 8" | 12" |
| 15-25 ft. | 10" | 18" |
| 26-30 ft. | 12" | 24" |
| > 30 ft. | 14" | 24" |

¹ For field-grown palms established on shallow soils or collected specimens peeled from rock, or near immovable obstructions, which cannot meet the minimum requirements, increasing the minimum width or depth of the root ball by 25% is an acceptable alternative. Where it is impossible to increase the width or depth, root pruning is necessary.

² Width shall be a partial radius measured from the base of the trunk in single trunked palms, or from the base of the stem farthest from the center of the cluster in clustering palms to the edge of the ball.

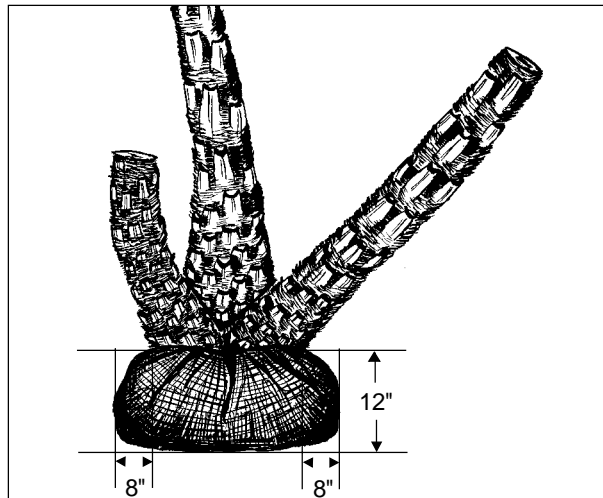


Fig 4. Measuring the width and depth of a root ball.

ROOT PRUNING OF PALMS

Root pruning adds an insurance policy on transplant success, particularly with species that are difficult to transplant. Root pruning is accomplished by cutting the roots *inside of* the root ball area, causing branching behind the cut and within the root ball. The root-pruning process is not complete until the cut roots have re-branched, which is normally 4-8 weeks.



Fig 5. Palm with improper root ball.



Fig 6. Palm properly balled and burlapped.

Palm root balls must be wrapped or secured to preserve the integrity of the root ball during transport. Acceptable methods are burlap or Lenomesh secured with twine or pin nails, and plastic stretch wrap. Any non-biodegradable material, such as Lenomesh and plastic stretch wrap, must be 100% removed prior to planting. Wire baskets, which are not truly biodegradable, do allow palm roots to continue growth and would be an exception to this rule.

Palms dug from marl or other heavy soils that adhere to the root mass have proven to be successfully transplanted without burlap if handled in a proper and timely fashion so as to keep the root mass moist and avoid cracking of the root ball.

Containerized palms: roots mass shall fill the container size specified. If circling roots have displaced most of the soil in the root container, then the circling root mass needs to be cut as shown.



Fig 7. Cutting the circling roots of a containerized palm.

SPECIFYING SUN- OR SHADE-GROWN PALMS

There are more than 3,000 taxonomic species of palms. Many species are under-story plants in their natural habitats and simply will not tolerate full sun. Conversely, other species will not survive in dense shade. The palms in this manual, for the most part, fall somewhere in between. They can fit low- light interior situations when properly grown and acclimatized, or they can be grown to handle a full sun landscape.

A palm that is grown in shaded conditions – including overcrowded conditions caused by improper spacing– develops differently than the same species of palm grown in full sun. Leaves are greener in the shade. The leaf petiole becomes elongated making the crown open and less dense. Shade-grown palms often make a better appearance on first inspection.

For an interiorscape design, or a shady job site, a shade-grown palm is exactly what you want. But

a palm that has developed in shaded conditions is poorly adapted to survive a full - sun installation. It will normally show signs of severe shock of most leaves within the first few weeks. At best, with proper root pruning by the grower and a proper water regime by the installer, the new growth will develop with shorter petioles, destroying the symmetry of the crown. At worst, the shade-grown leaves will burn, causing severe stress (followed by disease, and even death in some cases) before new sun leaves can be produced.

When selecting palms for planting in full sun, look for densely foliated palms with short petioles, and avoid succulent growth. In multiple-trunked palms look for an abundance of canes or suckers in various stages of growth. Overcrowded shaded specimens will have few new suckers emerging due to a lack of light.

TYPES OF PALMS

| | |
|---|---------|
| A. PINNATE — SINGLE TRUNK | Page 13 |
| A-1. SLENDER TRUNK (5" - 9" caliper) | Page 15 |
| A-2. MODERATE TRUNK (10" - 16" caliper) | Page 16 |
| A-3. HEAVY TRUNK (> 17" caliper) | Page 17 |
| B. PALMATE — SINGLE TRUNK | Page 18 |
| B-1. SLENDER TRUNK (3" - 8" caliper) | Page 21 |
| B-2. MODERATE TRUNK (9" - 16" caliper) | Page 22 |
| B-3. HEAVY TRUNK (> 17" caliper) | Page 23 |
| C. CLUSTERING — MULTI - TRUNK | Page 24 |
| C. ALL TYPES | Page 26 |

**MATRIX A
SINGLE TRUNK, PINNATE PALMS**

Definition: Those pinnate-leaved palms which normally do not sucker. *Single-trunked* palms which are intentionally grown as, or specified as, doubles, triples or multi-stemmed are graded as individual single-trunked palms, but no deduction should be taken for any resulting bend in the trunk

Table 3.

| Minimum Caliper at Mature Height for Matrix A Palms | | |
|--|-----------------------|---------|
| A-1 | slender trunk | 5"-9" |
| A-2 | moderate trunk | 10"-16" |
| A-3 | heavy trunk | 17" |
| Some examples of Matrix A palms: | | |
| <i>Archontophoenix</i> spp. | king, piccabeen palms | A-2 |
| <i>Carpenteria acuminata</i> | carpenteria palm | A-2 |
| <i>Dictyosperma album</i> | hurricane palm | A-2 |
| <i>Heterospathe elata</i> | princess palm | A-1 |
| <i>Neodypsis lastelliana</i> | teddy bear palm | A-1 |
| <i>Phoenix rupicola</i> | cliff date palm | A-2 |
| <i>Phoenix roebelenii</i> | pygmy date palm | A-1 |
| <i>Ptychosperma elegans</i> | solitaire palm | A-1 |
| <i>Roystonea regia</i> | Cuban royal palm | A-3 |
| <i>Syagrus schizophylla</i> | arikury palm | A-1 |
| <i>Wodyetia bifurcata</i> | foxtail palm | A-2 |

**MATRIX A
SINGLE TRUNK, PALMATE PALMS**

Florida Fancy:

1. Trunk specifications:
 - a. Mature palms must meet or exceed the caliper specifications for the class (See Matrix A, Table 3).
 - b. Well formed, with no abrupt changes in caliper unless typical of the normal growth of the species.
 - c. No holes, cavities, gouges, depressed areas or other defects.
 - d. Petioles cut clean and symmetrically at the trunk on any old leaf-bases remaining.

2. Fronds and leaves:
 - a. Heavy, dense canopy with all petioles in ascending position.
 - b. 75% Excellent leaves.
 - c. No live insects or symptoms of plant disease.
 - d. No extreme succulence.

Use the grading form on the next page to determine the grade of an individual Matrix A palm.

**GRADING FORM
MATRIX A PALMS**

Plant # _____ **Species:** _____ **Height:** _____

ELIMINATING FACTORS:

The following are **unacceptable conditions** and render the specimen **NOT gradable**, regardless of the remainder of the palm attributes:

| | YES | NO |
|---|------------|-----------|
| 1. General, overall chlorosis. | _____ | _____ |
| 2. Bacterial or fungal crown rots. | _____ | _____ |
| 3. Wood or crownshaft boring insects or damage. | _____ | _____ |
| 4. Holes, cavities or gouges exceeding 1/4" deep and either 1" wide or 3" long. | _____ | _____ |
| 5. Root ball under-size by 10% or more. | _____ | _____ |
| 6. Palms improperly staked using nails in trunk. | _____ | _____ |
| 7. In mature palms, caliper less than specified for class. | _____ | _____ |

TOTAL 'YES' RESPONSES:

(One or more 'YES' responses disqualifies palm)

ONE-GRADE DEDUCTIONS:

| | YES | NO |
|--|------------|-----------|
| a. Abrupt changes in caliper not typical of the species. | _____ | _____ |
| b. For each, hole, cavity, gouge or depression, less than 1" wide or 3" long or 1/2" deep. | _____ | _____ |
| c. Live insects or insect damage. | _____ | _____ |
| d. Leaf spots exceeding 10% of leaf surface. | _____ | _____ |
| e. Chlorosis exceeding 10% of leaf surface (excluding the oldest leaf). | _____ | _____ |
| f. Crooked or bent trunk, unless typical of the species or specified by contract. | _____ | _____ |
| g. Extreme succulence. | _____ | _____ |
| h. Root ball under-size, but not by more than 30%. | _____ | _____ |

TOTAL 'YES' RESPONSES:

- 0 'YES' responses = FLORIDA FANCY _____
- 1 'YES' response = FLORIDA NO. 1
- 2 'YES' responses = FLORIDA NO. 2
- 3 'YES' responses or more = NOT GRADABLE

GRADE:

**MATRIX A-1
SINGLE TRUNK, PINNATE PALMS
SLENDER TRUNKS**



Florida Fancy

A-1 Example: *Phoenix robelenii*
Common name: **pygmy date palm**



Florida No. 1



Florida No. 2

MATRIX A-2
SINGLE TRUNK, PINNATE PALMS
MODERATE TRUNKS



Florida Fancy

A-2 Example: *Wodyetia bifurcata*
Common name: **foxtail palm**



Florida No. 1



Florida No. 2

**MATRIX A-3
SINGLE TRUNK, PINNATE PALMS
HEAVY TRUNKS**



A-3 Example: *Roystonea regia*
Common name: **Cuban royal palm**

Florida Fancy



Florida No. 1



Florida No. 2

MATRIX B

SINGLE TRUNK, PALMATE PALMS

Definition: Those palmate-leaved palms which normally do not sucker. Single-trunked palms which are intentionally grown as, or specified as, doubles, triples or multi-stemmed palms are graded as individual single-trunked palms, but no deduction shall be taken for the resulting bend in the trunk.

Table 4.

| Minimum Caliper at mature height for Matrix B Palms | | |
|--|----------------------|---------|
| B-1 | slender trunk | 3-8" |
| B-1 | moderate trunk | 9-16" |
| B-3 | heavy trunk | 17+" |
| Some examples of Matrix B palms: | | |
| <i>Bismarckia nobilis</i> | Bismarck palm | B-3 |
| <i>Coccothrinax spp.</i> | various thatch palms | B-1 |
| <i>Latania spp.</i> | various | B-2 |
| <i>Licuala grandis</i> | palas palm | B-1 |
| <i>Livistona spp.</i> | various | B-2,B-3 |
| <i>Sabal spp.</i> | various | B-2,B-3 |
| <i>Thrinax spp.</i> | thatch palms | B-1 |
| <i>Trachycarpus fortunei</i> | windmill palm | B-1 |
| <i>Washingtonia spp.</i> | various | B-3 |

Florida Fancy:

1. Trunk specifications:
 - a. Meets or exceeds the caliper specifications for the species. (See Table 4)
 - b. Well formed, with no abrupt changes in caliper unless typical of the normal growth of the species.
 - c. No holes, cavities, gouges, depressed areas or other defects.
 - d. Petioles cut clean and symmetrically at the trunk on any old leaf bases remaining.

2. Fronds and leaves¹:
 - a. Heavy, dense canopy with all petioles in ascending position.
 - b. 75% excellent leaves.
 - c. No live insects or symptoms of plant disease.
 - d. No chlorosis (excluding oldest leaf).
 - e. No extreme succulence.

1 A NOTE ABOUT TRANSPLANTING SABAL PALMS

Sabal palms (*Sabal palmetto*) are the most widely planted palms in the southeastern United States. Virtually all are dug as mature specimens from natural stands because their slow growth rate makes nursery production uneconomical. Survival rates for transplanted sabal palms are often low. In sabal palms virtually no cut roots survive, regardless of length. Thus, transplanted sabal palms have virtually no functional root system for the first six to eight months after transplanting, while new roots develop from the root initiation zone at the base of the trunk.

The standard procedure for transplanting collected sabal palms has been to remove the lower two-thirds of the leaves and tie the remaining leaves into a tight bundle around the bud to reduce transpiration. The remaining leaves typically become desiccated and die within one to two months, and the palm may appear to be dead. If the palm survives, new green leaves will

eventually emerge from within the canopy of dead foliage.

Research has demonstrated that the survival rate for sabal palms transported and transplanted without leaves averages 33 percent higher than those transplanted with one-third of their leaves remaining. Leaf removal, prior to transport, also appears to reduce losses attributed to palm weevils after transplant. Thus, complete leaf removal appears to be the best method for transplanting sabal palms, which lose all of their roots in the transplant operation. An alternative to this would be to root prune sabals several months prior to digging the palms, although the extra labor costs involved make this impractical in most situations.

As sabal palms regenerate their entire root system, they may be exempted from both the foliage and minimum root ball requirements.



Fig 8. Sabal Palm
(complete leaf removal prior to transplanting)

**GRADING FORM
MATRIX B PALMS**

Plant # _____ Species: _____ Height: _____

ELIMINATING FACTORS:

The following are **unacceptable conditions** and render the specimen **NOT gradable**, regardless of the remainder of the palms attributes:

| | YES | NO |
|---|------------|-----------|
| 1. General, overall chlorosis. | _____ | _____ |
| 2. Bacterial or fungal crown rots. | _____ | _____ |
| 3. Wood or crownshaft boring insects or damage. | _____ | _____ |
| 4. Holes, cavities, or gouges exceeding 1" wide, or 3" long, or 1/2" deep. | _____ | _____ |
| 5. Undersize root ball. | _____ | _____ |
| 6. Palms improperly staked using nails in trunk. | _____ | _____ |
| 7. In mature palms, caliper less than specified for class. | _____ | _____ |

TOTAL 'YES' RESPONSES:

(One or more 'YES' responses disqualifies palm)

ONE-GRADE DEDUCTIONS:

- a. Abrupt changes in caliper not typical of the species.
- b. For each, hole, cavity, gouge or depression; less than 1" wide or 3" long, or 1/2" deep.
- c. Live insects or insect damage.
- d. Leaf spots exceeding 10% of leaf surface.
- e. Chlorosis exceeding 10% of leaf surface (excluding the oldest leaf).
- f. Ragged or torn boots, or scarring of trunk caused by tearing off boots prematurely.
- g. Crooked or bent trunk.
- h. Extreme succulence.

YES **NO**

| | | |
|--|-------|-------|
| | _____ | _____ |
| | _____ | _____ |
| | _____ | _____ |
| | _____ | _____ |
| | _____ | _____ |
| | _____ | _____ |
| | _____ | _____ |

TOTAL 'YES' RESPONSES:

- 0 'YES' responses = FLORIDA FANCY
- 1 'YES' response = FLORIDA NO. 1
- 2 'YES' responses = FLORIDA NO. 2
- 3+ 'YES' responses or more = NOT GRADABLE

GRADE:

**MATRIX B-1
SINGLE TRUNK, PALMATE PALMS
SLENDER TRUNKS**



B-1 Example: *Trachycarpus fortunei*
Common name: **windmill palm**

Florida Fancy



Florida No. 1



Florida No. 2

**MATRIX B-2
SINGLE TRUNK, PINNATE PALMS
MODERATE TRUNKS**



A-1 Example: *Livistona decipiens*
Common name: **ribbon fan palm**

Florida Fancy



Florida No. 1



Florida No. 2

**MATRIX B-3
SINGLE TRUNK, PALMATE PALMS
HEAVY TRUNKS**



A-1 Example: *Washingtonia robusta*
Common name: **Washington palm**

Florida Fancy



Florida No. 1



Florida No. 2

MATRIX C

CLUSTERING PALMS

Definition: Those palm species which normally sucker from the base, forming larger and larger colonies with age. Includes both pinnate- and palmate-leaved species.

Table 5.

| | |
|-----------------------------------|--------------------------|
| Some examples of Matrix C palms: | |
| <i>Acoelorrhaphe wrightii</i> | paurotis palm |
| <i>Caryota mitis</i> | clustering fishtail palm |
| <i>Chamaedorea spp.</i> | various |
| <i>Chamaerops humilis</i> | European fan palm |
| <i>Chrysalidocarpus lutescens</i> | areca palm |
| <i>Phoenix reclinata</i> | Senegal date palm |
| <i>Ptychosperma macarthurii</i> | Macarthur palm |
| <i>Rhapis excelsa</i> | lady palm |

Florida Fancy:

1. Trunk specifications:
 - a. Cluster is well-balanced and symmetrical.
 - b. The number of main trunks is proportional to the number of intermediate trunks, unless otherwise specified.
 - c. No holes, cavities, gouges, depressed areas or other defects.
 - d. Petioles cut clean and symmetrically at the trunk on any old leaf bases remaining.
2. Fronds and leaves:
 - a. Heavy, dense canopy with all petioles in ascending position.
 - b. 75% Excellent leaves.
 - c. No live insects or symptoms of plant disease.
 - d. No chlorosis.
 - e. No extreme succulence.

Note: If specifications call for clustered palms with no stems of intermediate height, then that should not be a downgrading factor.

GRADING FORM MATRIX C PALMS

Plant # _____ Species: _____ Height: _____

ELIMINATING FACTORS:

The following are **unacceptable conditions** and render the specimen **NOT gradable**, regardless of the remainder of the palms attributes:

| | YES | NO |
|--|------------|-----------|
| 1. General, overall chlorosis. | _____ | _____ |
| 2. Bacterial or fungal crown rots. | _____ | _____ |
| 3. Wood or crownshaft boring insects or damage. | _____ | _____ |
| 4. Holes, cavities or gouges exceeding 1" wide, or 3" long, or 1/2" deep. | _____ | _____ |
| 5. Undersize root ball. | _____ | _____ |

TOTAL 'YES' RESPONSES:

(One or more 'YES' responses disqualifies palm)

ONE-GRADE DEDUCTIONS:

| | YES | NO |
|--|------------|-----------|
| a. Cluster not balanced or symmetrical. | _____ | _____ |
| b. Number of main trunks not proportional to the total number of intermediate trunks. | _____ | _____ |
| c. For each mechanical scrape, hole, cavity, gouge or depression in a main or intermediate trunk; < 1"wide, or 3" long or 1/2" deep. | _____ | _____ |
| d. Live insects or insect damage. | _____ | _____ |
| e. Leaf spots, >10% of leaf surface. | _____ | _____ |
| f. Chlorosis (excluding the oldest leaves). | _____ | _____ |
| g. Ragged or torn boots, or scarring of main or intermediate trunks caused by tearing off boots prematurely. | _____ | _____ |
| h. Crooked or bent trunk or trunks which make the cluster unsymmetrical. | _____ | _____ |
| i. Extreme succulence. | _____ | _____ |

TOTAL 'YES' RESPONSES:

0 'YES' responses = FLORIDA FANCY

1 'YES' response = FLORIDA NO. 1

2 'YES' responses = FLORIDA NO. 2

3+ 'YES' responses or more = NOT GRADABLE

GRADE:

**MATRIX C
CLUSTERING PALMS**



Florida Fancy

A-1 Example: *Chrysalidocarpus lutescens*
Common name: **areca palm**



Florida No. 1



Florida No. 2

SUGGESTED METHOD FOR SUPPORT OF PALMS WITHOUT NAILS

Transplanted palms may require support to maintain an erect position until growth begins. This is because the root ball is too small to hold up the plant.

Using wires and cables or driving nails and spikes into the trunk may create permanent damage to the trunk. **Spikes and nails are prohibited in all palm grades.** If a palm tree must be supported, the following is suggested:

1. You will need at least three tree supports. Tree supports should be two feet longer than actually needed. Saw off the extra two feet at an angle and save the short blocks.
2. Pad the trunk of the palm with a thick layer of burlap. String may be used to secure the burlap to the trunk.
3. Three short blocks are spaced evenly around the burlap layer and held in place with wire bands.
4. Each long support is nailed to a short block. The nail should not penetrate the trunk through the short block.

Other methods of supporting the palm may be acceptable, so long as the trunk (weight) is properly supported, and individual trunks are not cut or pierced.

Examples of Proper Staking



Cocos nucifera
correctly staked



Phoenix canariensis
correctly staked

EXAMPLES OF IMPROPER STAKING



Coconut palm
with nails driven directly
into the trunk.



Royal palm
improperly supported using
string and wire.



Sabal palm
with nails driven directly
into the palm trunk.



Large royal palm
improperly supported.
Note damage on trunk sustained during planting.

ELIMINATING FACTORS OF PALMS



Queen palm with undersized root ball.



Metamasius hemipterus weevil damage on young royal palm.



Queen palm with frizzle top, a manganese deficiency.



Royal palm with constricted crown shaft caused by nutritional deficiency.



Palm trunk damaged by lightning.



Coconut palm with mechanical damage.

**Table 6. MASTER LIST OF PALMS BY SCIENTIFIC NAME
FOUND IN FLORIDA NURSERIES.**

| Scientific Name | Common Name | Hardiness Zone* | Matrix Type | Minimum Mature Height ¹ |
|---|---------------------------------------|--------------------|----------------|---------------------------------------|
| <i>Acoelorrhaphe wrightii</i> (Griseb. & H.A. Wendl.) H.A. Wendl. ex Becc. | Everglades palm, paurotis palm | C,S | C | NA |
| <i>Allagoptera arenaria</i> (Gomes) Kuntze | seashore palm | S | C | NA |
| <i>Archontophoenix alexandrae</i> (F.J. Muell.) H.A. Wendl. & Drude | Alexandra palm, king palm | S | A-2 | 16 - 18' |
| <i>Arenga englerii</i> Becc. | dwarf sugar palm | C,S | C | NA |
| <i>Bismarckia nobilis</i> Hildebr. & H.A. Wendl. | Bismarck palm | S | B-3 | 10 - 12' |
| <i>Butia capitata</i> (Mart.) Becc. | pindo palm, jelly palm | C,N,S | A-3 | 8 - 10 ¹² |
| <i>Carpentaria acuminata</i> (H.A. Wendl. & Drude) Becc. | carpentaria palm | S | A-2 | 14 - 16' |
| <i>Caryota mitis</i> Lour. | fishtail palm | S | C | NA |
| <i>Caryota urens</i> L. | toddy fishtail palm | S | A-3 | 16 - 18' |
| <i>Chamaedorea cataractarum</i> Mart. | cat palm | S | C | NA |
| <i>Chamaedorea erumpens</i> H.E. Moore | dwarf cluster palm, bamboo palm | S | C | NA |
| <i>Chamaedorea seifrizii</i> Burret | bamboo palm, reed palm | S | C | NA |
| <i>Chamaerops humilis</i> L. | European fan palm | C,N,S | C | NA |
| <i>Chrysalidocarpus cabadae</i> H.E. Moore | cabada palm | S | C | NA |
| <i>Chrysalidocarpus lutescens</i> (Bory) H.A. Wendl. | areca palm, butterfly palm | S | C | NA |
| <i>Chrysalidocarpus madagascariensis</i> Becc. var. <i>lucubensis</i> (Becc.) Jumelle & Perrier | lucubensis palm | S | A-1 | 10 - 12' |
| <i>Coccothrinax alta</i> (Cook.) Becc. | coccothrinax | S | B-1 | 8 - 10' |
| <i>Coccothrinax argentata</i> (Jacq.) L.H. Bailey | silver palm | S | B-1 | 4 - 6' |
| <i>Coccothrinax crinita</i> Becc. | old man palm | S | B-1 | 4 - 6 ¹² |
| <i>Coccothrinax miraguama</i> (Kunth) Becc. | miraguama palm | S | B-1 | 6 - 8' |
| <i>Cocos nucifera</i> L. 'Malayan Dwarf' | coconut palm cultivar | S | A-2 | 18 - 20' |
| <i>Cocos nucifera</i> L. 'Maypan' | coconut palm cultivar | S | A-3 | 20 - 22' |
| <i>Dictyosperma album</i> (Bory) H.A. Wendl. & Drude ex R. Scheff. | hurricane palm, princess palm | S | A-2 | 12 - 14' |
| <i>Heterospathe elata</i> Scheffer | sagisi palm | S | A-1 | 12 - 14 ¹² |
| <i>Hyophorbe lagenicaulis</i> (L.H. Bailey) H.E. Moore | bottle palm | S | A-3 | 8 - 10 ¹² |
| <i>Hyophorbe verschaffeltii</i> H.A. Wendl. | spindle palm | S | A-2 | 10 - 12 ¹² |
| <i>Latania loddigesii</i> Mart. | blue latan palm | S | B-2 | 10 - 12' |
| <i>Latania lontaroides</i> (Gaertn.) H.E. Moore | red latan palm | S | B-2 | 10 - 12' |
| <i>Licuala grandis</i> H.A. Wendl. | licuala palm, palas palm | S | B-1 | 6 - 8 ¹² |
| <i>Licuala spinosa</i> Thunb. | spiny licuala | S | C | NA |
| <i>Livistona chinensis</i> (Jacq.) R. Br. ex Mart. | Chinese fan palm | C,S | B-3 | 10 - 12 ¹² |
| <i>Livistona decipiens</i> Becc. | ribbon fan palm | C,S | B-2 | 10 - 12 ¹² |
| <i>Livistona rotundifolia</i> (Lam.) Mart. | roundleaf livistona footstool palm | S | B-2 | 10 - 12 ¹² |
| <i>Neodypsis decaryi</i> Jumelle | triangle palm | S | A-3 | 14 - 16' |
| <i>Neodypsis lastelliana</i> Baillon | teddy bear palm | S | A-1 | 12 - 14' |
| <i>Phoenix canariensis hort.</i> ex Chabaud | Canary Island date | C,N,S | A-3 | 12 - 14' |
| <i>Phoenix dactylifera</i> L. | date palm | C,S | C | NA |
| <i>Phoenix reclinata</i> Jacq. | Senegal date palm | C,S | C | NA |
| <i>Phoenix roebelenii</i> O'Brien | pygmy date palm | S | A-1 | 4 - 6' |
| <i>Phoenix rupicola</i> Anderson | cliff date palm | C,S | A-2 | 10 - 12 ¹² |

**Table 6. MASTER LIST OF PALMS BY SCIENTIFIC NAME
FOUND IN FLORIDA NURSERIES (continued).**

| Scientific Name | Common Name | Hardiness Zone* | Matrix Type | Minimum Mature Height ¹ |
|--|---|-----------------|-------------|------------------------------------|
| <i>Pritchardia</i> spp. | Pritchardia palms | | | |
| | loulou palms | S | B-2 | 10 - 12' |
| <i>Pseudophoenix sargentii</i> H.A. Wendl. & Sargent | buccaneer palm, cherry palm | S | A-3 | 12 - 14' |
| <i>Ptychosperma elegans</i> (R. Br.) Bl. | solitaire palm, Alexander palm | S | A-1 | 10 - 12' |
| <i>Ptychosperma macarthurii</i> (H.A. Wendl.) Nichols. | Macarthur palm | S | C | NA |
| <i>Ravenea rivularis</i> Jumelle & Perrier | majesty palm | S | A-3 | 12 - 14' |
| <i>Rhapidophyllum hystrix</i> (Pursh) H.A. Wendl. & Drude | needle palm | C,N,S | C | NA |
| <i>Rhapis excelsa</i> (Thunb.) Henry | lady palm | C,S | C | NA |
| <i>Rhapis humilis</i> Bl. | slender lady palm | C,S | C | NA |
| <i>Roystonea elata</i> (Bartram) F. Harper | Florida royal palm | S | A-3 | 18 - 20' |
| <i>Roystonea regia</i> (Kunth) Cook | Cuban royal palm | S | A-3 | 18 - 20' |
| <i>Sabal causiarum</i> (Cook) Becc. | Puerto Rican hat palm | S | B-3 | 12 - 14' |
| <i>Sabal palmetto</i> (Walter) Lodd. ex Schult. & Schult. | cabbage palmetto, sabal palm - booted | C,N,S | B-3 | 8 - 10' CT ² |
| <i>Sabal palmetto</i> (Walter) Lodd. ex Schult. & Schult. | cabbage palmetto, sabal palm - cleaned | C,N,S | B-2 | 8 - 10' CT |
| <i>Serenoa repens</i> (Bartr.) Small | saw palmetto | C,N,S | C | NA |
| <i>Syagrus romanzoffiana</i> (Cham.) Glassm. | queen palm, cocos plumosa | C,S | A-3 | 16 - 18' |
| <i>Syagrus schizophylla</i> (Mart.) Glassm. | arikury palm | C,S | A-1 | 6 - 8' ² |
| <i>Thrinax morrisii</i> Wendl. | key thatch palm | S | B-1 | 6 - 8' |
| <i>Thrinax radiata</i> Lodd. ex Schult. & Schult. | Florida thatch palm | S | B-1 | 6 - 8' |
| <i>Trachycarpus fortunei</i> (Hook.) H.A. Wendl. | windmill palm | C,N,S | B-1 | 4 - 6' |
| <i>Veitchia mcdanielsii</i> H.E. Moore | sunshine palm | S | A-2 | 14 - 16' |
| <i>Veitchia merrilli</i> (Becc.) H.E. Moore | Manilla palm, adonidia, Christmas palm | S | A-1 | 8 - 10' |
| <i>Veitchia montgomeryana</i> H.E. Moore | Montgomery palm | S | A-2 | 14 - 16' |
| <i>Veitchia winin</i> H.E. Moore | Winin palm | S | A-2 | 14 - 16' |
| <i>Washingtonia filifera</i> (Lind. ex Andre) H.A. Wendl. | desert fan palm | C,N,S | B-3 | 12 - 14' |
| <i>Washingtonia robusta</i> H.A. Wendl. | Washington palm | C,N,S | B-3 | 12 - 14' |
| <i>Wodyetia bifurcata</i> A.K. Irvine | foxtail palm | S | A-2 | 14 - 16' |
| <i>Zombia antillarum</i> (Descour. ex Jackson) L.H. Bailey | zombie palm | S | C | NA |

*C = central Florida, N = north Florida, S = south Florida

¹ The minimum overall height (in feet) at which caliper shall be a factor in grade. Exception: *Sabal palmetto* measurements are for Clear Trunk (CT).

² Caliper measurement in this species includes persistent leaf bases but not extended petioles.

**Table 7. MASTER LIST OF PALMS BY COMMON NAME
FOUND IN FLORIDA NURSERIES.**

| Common Name | Scientific Name | Hardiness Zone* | Matrix Type | Minimum Mature Height ¹ |
|-------------------------------|-----------------------------------|-----------------|-------------|------------------------------------|
| adonidia palm | <i>Veitchia merrilli</i> | S | A-1 | 8 - 10' |
| Alexander palm | <i>Ptychosperma elegans</i> | S | A-1 | 10 - 12' |
| Alexandra palm | <i>Archontophoenix alexandrae</i> | S | A-2 | 16 - 18' |
| areca palm | <i>Chrysalidocarpus lutescens</i> | S | C | N/A |
| arikury palm | <i>Syagrus schizophylla</i> | C,S | A-1 | 6 - 8' ² |
| bamboo palm | <i>Chamaedorea seifrizii</i> | S | C | N/A |
| Bismarck palm | <i>Bismarckia nobilis</i> | S | B-2 | 10 - 12' ² |
| blue latan palm | <i>Latania loddigesii</i> | S | B-2 | 10 - 12' ² |
| bottle palm | <i>Hyophorbe lagenicaulis</i> | S | A-3 | 8 - 10' ² |
| buccaneer palm | <i>Pseudophoenix sargentii</i> | S | A-2 | 12 - 14' |
| butterfly palm | <i>Chrysalidocarpus lutescens</i> | S | C | N/A |
| cabada palm | <i>Chrysalidocarpus cabadae</i> | S | C | N/A |
| cabbage palmetto-booted | <i>Sabal palmetto</i> | C,N,S | B-3 | 8 - 10'CT ² |
| cabbage palmetto-clean | <i>Sabal palmetto</i> | C,N,S | B-2 | 8 - 10'CT |
| Canary Island date palm | <i>Phoenix canariensis</i> | C,N,S | A-3 | 12 - 14' |
| carpentaria palm | <i>Carpentaria acuminata</i> | S | A-2 | 14 - 16' |
| cat palm | <i>Chamaedorea cataractarum</i> | S | C | N/A |
| cherry palm | <i>Pseudophoenix sargentii</i> | S | A-2 | 12 - 14' |
| Chinese fan palm | <i>Livistona chinensis</i> | C,S | B-3 | 10 - 12' ² |
| Christmas palm | <i>Veitchia merrilli</i> | S | A-1 | 8 - 10' |
| cliff date palm | <i>Phoenix rupicola</i> | C,S | A-2 | 10 - 12' ² |
| coconut palm, 'Malayan Dwarf' | <i>Cocos nucifera</i> | S | A-2 | 18 - 20' |
| coconut palm, 'Maypan' | <i>Cocos nucifera</i> | S | A-3 | 20 - 22' |
| cocos plumosa | <i>Syagrus romanzoffianum</i> | C,S | A-2 | 16 - 18' |
| Cuban royal palm | <i>Roystonea regia</i> | S | A-3 | 18 - 20' |
| date palm | <i>Phoenix dactylifera</i> | C,S | C | NA |
| date palm, pygmy | <i>Phoenix roebelenii</i> | S | A-1 | 4 - 6' |
| date palm, Senegal | <i>Phoenix reclinata</i> | C,S | C | N/A |
| desert fan palm | <i>Washingtonia filifera</i> | C,N,S | B-3 | 12 - 14' |
| dwarf cluster palm | <i>Chamaedorea erumpens</i> | S | C | N/A |
| European fan palm | <i>Chamaerops humilis</i> | C,N,S | C | N/A |
| Everglades palm | <i>Acoelorrhaphe wrightii</i> | C,S | C | N/A |
| fan palm, Chinese | <i>Livistona chinensis</i> | C,S | B-3 | 10 - 12' ² |
| fan palm, desert | <i>Washingtonia filifera</i> | C,N,S | B-3 | 12 - 14' |
| fan palm, European | <i>Chamaerops humilis</i> | C,N,S | C | N/A |
| fishtail palm | <i>Caryotamitis</i> | S | C | N/A |
| fishtail palm, toddy | <i>Caryota urens</i> | S | A-3 | 16 - 18' |
| Florida royal palm | <i>Roystonea elata</i> | S | A-3 | 18 - 20' |
| Florida thatch palm | <i>Thrinax radiata</i> | S | B-1 | 6 - 8' |
| footstool palm | <i>Livistona rotundifolia</i> | S | B-2 | 10 - 12' |
| foxtail palm | <i>Wodyetia bifurcata</i> | S | A-2 | 14 - 16' |
| hurricane palm | <i>Dictyosperma album</i> | S | A-2 | 12 - 14' |
| jelly palm | <i>Butia capitata</i> | C,N,S | B-3 | 8 - 10' ² |
| key thatch palm | <i>Thrinax morrisii</i> | S | B-1 | 6 - 8' |
| king palm, Alexandra | <i>Archontophoenix alexandrae</i> | S | A-2 | 16 - 18' |
| lady palm | <i>Rhapis excelsa</i> | C,S | C | N/A |
| lady palm, slender | <i>Rhapis humilis</i> | C,S | C | N/A |
| latan palm, blue | <i>Latania loddigesii</i> | S | B-2 | 10 - 12' |
| latan palm, red | <i>Latania lontaroides</i> | S | B-2 | 10 - 12' |
| licuala palm | <i>Licuala grandis</i> | S | B-1 | 6 - 8' ² |
| licuala, spiny | <i>Licuala spinosa</i> | S | C | N/A |
| loulou palms | <i>Pritchardia</i> spp. | S | B-2 | 10 - 12' ² |
| Macarthur palm | <i>Ptychosperma macarthurii</i> | S | C | N/A |
| majesty palm | <i>Ravenea rivularis</i> | S | A-3 | 12 - 14' |
| Manilla palm | <i>Veitchia merrilli</i> | S | A-1 | 8 - 10' |
| Miraguama palm | <i>Coccothrinax miraguama</i> | S | B-1 | 6 - 8' |

**Table 7. MASTER LIST OF PALMS BY COMMON NAME
FOUND IN FLORIDA NURSERIES (continued).**

| Common Name | Scientific Name | Hardiness Zone* | Matrix Type | Minimum Mature Height ¹ |
|--------------------------|---------------------------------|-----------------|-------------|------------------------------------|
| Montgomery palm | <i>Veitchia montgomeryana</i> | S | A-2 | 14 - 16' |
| needle palm | <i>Rhapidophyllum hystrix</i> | C,N,S | C | N/A |
| old man palm | <i>Coccothrinax crinita</i> | S | B-1 | 4 - 6' ² |
| palas palm | <i>Licuala grandis</i> | S | B-1 | 6 - 8' |
| palmetto, cabbage-booted | <i>Sabal palmetto</i> | C,N,S | B-3 | 8 - 10'CT ² |
| palmetto, cabbage-clean | <i>Sabal palmetto</i> | C,N,S | B-2 | 8 - 10'CT |
| palmetto, saw | <i>Serenoa repens</i> | C,N,S | C | N/A |
| paurotis palm | <i>Acoelorrhaphe wrightii</i> | C,S | C | N/A |
| pindo palm | <i>Butia capitata</i> | C,N,S | A-3 | 10 - 12' ² |
| princess palm | <i>Dictyosperma album</i> | S | A-2 | 12 - 14' |
| Pritchardia palm | <i>Pritchardia</i> spp. | S | B-2 | 10 - 12' |
| Puerto Rican hat palm | <i>Sabal caustarum</i> | S | B- 3 | 12 - 14' |
| pygmy date palm | <i>Phoenix roebelenii</i> | S | A-1 | 4 - 6' |
| queen palm | <i>Syagrus romanzoffiana</i> | C,S | A-2 | 16 - 18' |
| red latan palm | <i>Latania lontaroides</i> | S | B-2 | 10 - 12' |
| ribbon fan palm | <i>Livistona decipiens</i> | S | B-2 | 10 - 12' |
| roundleaf livistona | <i>Livistona rotundifolia</i> | S | B-2 | 10 - 12' |
| royal palm, Cuban | <i>Roystonea regia</i> | S | A-3 | 18 - 20' |
| royal palm, Florida | <i>Roystonea elata</i> | S | A-3 | 18 - 20' |
| sabal palm-booted | <i>Sabal palmetto</i> | C,N,S | B-3 | 8 - 10'CT ² |
| sabal palm-clean | <i>Sabal palmetto</i> | C,N,S | B-2 | 8 - 10'CT |
| sagisi palm | <i>Heterospathe elata</i> | S | A-1 | 12 - 14' ² |
| saw palmetto | <i>Serenoa repens</i> | C,N,S | C | N/A |
| seashore palm | <i>Allagoptera arenaria</i> | S | C | N/A |
| Senegal date palm | <i>Phoenix reclinata</i> | C,S | C | N/A |
| silver palm | <i>Coccothrinax argentata</i> | S | B-1 | 4 - 6' |
| slender lady palm | <i>Rhapis humilis</i> | C,S | C | N/A |
| solitaire palm | <i>Ptychosperma elegans</i> | S | A-1 | 10 - 12' |
| spindle palm | <i>Hyophorbe verschaffeltii</i> | S | A-2 | 10 - 12' ² |
| spiny licuala | <i>Licuala spinosa</i> | S | C | N/A |
| sunshine palm | <i>Veitchia mcdanielsii</i> | S | A-2 | 14 - 16' |
| teddy bear palm | <i>Neodypsis lastelliana</i> | S | A-1 | 12 - 14' |
| thatch palm, Florida | <i>Thrinax radiata</i> | S | B-1 | 6 - 8' |
| thatch palm, key | <i>Thrinax morrisii</i> | S | B-1 | 6 - 8' |
| toddy fishtail palm | <i>Caryota urens</i> | S | A-3 | 16 - 18' |
| triangle palm | <i>Neodypsis decaryi</i> | S | A-3 | 16 - 18' |
| Washington palm | <i>Washingtonia robusta</i> | C,N,S | B-3 | 12 - 14' |
| windmill palm | <i>Trachycarpus fortunei</i> | C,N,S | B-1 | 4 - 6' |
| Winin palm | <i>Veitchia winin</i> | S | A-2 | 14 - 16' |
| zombie palm | <i>Zombia antillarum</i> | S | C | N/A |

*C = central Florida, N = north Florida, S = south Florida

¹ The minimum overall height (in feet) at which caliper shall be a factor in grade. Exception: Sabal palmetto measurements are for Clear Trunk (CT).

² Caliper measurement in this species includes persistent leaf bases, but not extended petioles.

CYCADS

Cycads are an ancient group of non-flowering, cone-bearing plants often compared but unrelated to palms. Previously, only a few species

have been used in Florida landscapes, but now additional species are widely grown.

CYCADS MOST COMMONLY ENCOUNTERED IN FLORIDA NURSERIES

| | | | |
|------------------|--|-------------------|--|
| Ceratozamia | <i>Ceratozamia mexicana</i> Brongn. | coontie | <i>Zamia pumila</i> L. (= <i>Zamia floridana</i>) |
| queen sago | <i>Cycas circinalis</i> L. | Dominican coontie | <i>Zamia pumila</i> L. ssp. <i>pygmaea</i> (Sims) Eckenw. (<i>Zamia domingensis</i>) |
| king sago | <i>Cycas revoluta</i> Thunb. | | |
| sago | <i>Cycas taiwaniana</i> Carruth. | cardboard-palm | <i>Zamia furfuracea</i> L.f.in Ait |
| Mexican-chestnut | <i>Dioon edule</i> Lindl. | | |
| spiny dioon | <i>Dioon spinulosum</i> Dyer | | |

CYCAD ROOT SYSTEM STANDARDS APPLICABLE TO ALL CYCADS IN GRADES FLORIDA FANCY THROUGH FLORIDA NO. 2

1. Container grown:
 - a. Shall be sturdily established in container.
 - b. Shall not be excessively rootbound.
 - c. Shall have no large roots growing out of container.
2. Balled and burlapped (B&B):
 - a. Roots must be sturdily established in ball that has been tightly wrapped and securely tied with twine or wire, or pinned. Fabric containers used in the field are acceptable alternatives.
 - b. Root ball must contain sufficient soil for continued growth without resulting shock. It is recommended that all cycads be root-pruned 2-3 months before digging.
 - c. If the cycad is dug from marl or other heavy soil that adheres to the root mass without shattering, burlapping can be omitted provided that moistened material is used to cover the ball, the roots are not exposed to wind or sun, and the cycad is planted within 24 hours of being dug.

Florida Fancy:

1. Trunk(s):
 - a. No holes, cavities, gouges, depressed areas or other defects not characteristic of the species.
2. Fronds or Leaves:
 - a. Heavy, dense foliage with ascending leaves 80° or more on each side of the vertical (Fig. 9); leaves symmetrically encircling the trunk.
 - b. Container grown, 1-3 gallon size (larger sizes to have proportionally greater number of leaves):
 - (1) *Cycas*, *Zamia pumila*, *Z. pumila* ssp. *pygmaea*: minimum of 10 or more excellent leaves.
 - (2) *Zamia furfuracea*, *Ceratozamia*, *Dioon*: minimum of 8 or more excellent leaves.
 - c. Field grown, landscape size:
 - (1) *Cycas*, *Zamia pumila*, *Z. pumila* ssp. *pygmaea*: minimum of 16 or more excellent leaves.
 - (2) *Zamia furfuracea*, *Ceratozamia*, *Dioon*: minimum of 10 or more excellent leaves.
 - d. No chlorosis.
 - e. No drooping or sagging leaves.

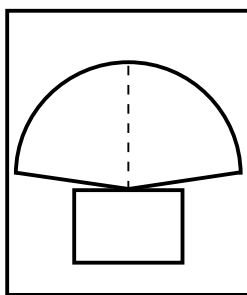
Florida No. 1:

1. Trunk(s):
 - a. No holes, cavities, gouges, depressed areas or other defects not characteristic of the species.
2. Fronds or Leaves:
 - a. Heavy, dense foliage with ascending leaves 50° or more on each side of the vertical (Fig. 9) after any damaged leaves have been removed; leaves symmetrically encircling the trunk.
 - b. Container grown, 1-3 gallon size (larger sizes to have proportionally greater number of leaves):
 - (1) *Cycas*, *Zamia pumila*, *Z. pumila* ssp. *pygmaea*: minimum of 8 or more excellent leaves.
 - 2) *Zamia furfuracea*, *Ceratozamia*, *Dioon*: minimum of 5 or more excellent leaves.
- c. Field grown, landscape size:
 - (1) *Cycas*, *Zamia pumila*, *Z. pumila* ssp. *pygmaea*: minimum of 12 or more excellent leaves.
 - (2) *Zamia furfuracea*, *Ceratozamia*, *Dioon*: minimum of 8 or more excellent leaves.
- d. No chlorosis.
- e. No drooping or sagging leaves.

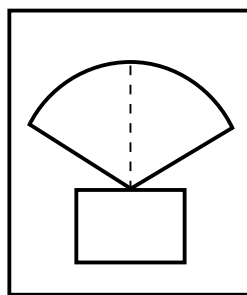
Florida No. 2:

1. Trunk(s):
 - a. Fairly well-formed (if showing). No defects that would affect the viability of the plant.
2. Fronds or Leaves:
 - a. Fairly dense foliage with leaves 30° or more on each side of the vertical (Fig. 9) after any damaged leaves have been removed.
 - b. Container grown, 1-3 gallon size (larger sizes to have proportionally greater number of leaves):
 - (1) *Cycas*, *Zamia pumila*, *Z. pumila* ssp. *pygmaea*: minimum of 8 leaves, 4 excellent, the balance good.
 - 2) *Zamia furfuracea*, *Ceratozamia*, *Dioon*: minimum of 5 leaves, 3 excellent, the balance good.
- c. Field grown, landscape size:
 - (1) *Cycas*, *Zamia pumila*, *Z. pumila* ssp. *pygmaea*: minimum of 12 leaves, 6 excellent, the balance good.
 - (2) *Zamia furfuracea*, *Ceratozamia*, *Dioon*: minimum of 8 leaves, 4 excellent, the balance good.
- d. No chlorosis.
- e. No drooping or sagging leaves.

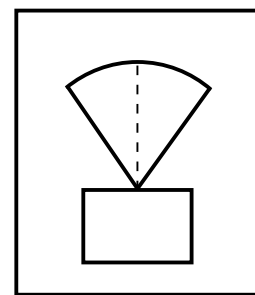
Fig 9. Cycad Forms



Florida Fancy



Florida No. 1



Florida No. 2

Field grown or container grown 6-gallon size or larger:

A Florida Fancy cycad is approximately 80° on each side of the vertical.

A Florida No. 1 is approximately 50° on each side of the vertical.

A Florida No. 2 is approximately 30° on each side of the vertical.

CYCADS



Florida Fancy

Example: *Cycas revoluta* Thunb.
Common name: **king sago**



Florida No. 1



Florida No. 2

CYCADS

Example: *Zamia furfuracea* L.f. in Ait.
Common name: **cardboard-palm**



Florida Fancy



Florida No. 1



Florida No. 2

CYCADS



Florida Fancy

Example: *Zamia pumila* L.
Common name: **coontie**



Florida No. 1



Florida No. 2

REFERENCES FOR PALMS & CYCADS

- Broschat, Timothy K. and Alan W. Meerow. 1991. Betrock's reference guide to Florida landscape plants. Betrock Information Systems, Inc. 427 pp.
- Brummitt, R. K. and C. E. Powell. 1992. Authors of plant names. Royal Botanic Gardens, Kew, Great Britain. 732 pp.
- Burch, Derek, Daniel B. Ward, and David W. Hall. 1988. Checklist of the woody cultivated plants of Florida. Extension Sale Publication SP-33. Institute of Food and Agricultural Sciences, University of Florida, Gainesville, FL. 80 pp.
- Everett, Thomas H. 1982. The New York Botanical Garden illustrated encyclopedia of horticulture, 10 vols. Garland Publishing, Inc., New York, NY. 3596 pp.
- Godfrey, Robert K. 1988. Trees, shrubs and woody vines of northern Florida and adjacent Georgia and Alabama. University of Georgia Press, Athens, GA. 734 pp.
- Hodel, Donald R. 1992. *Chamaedorea* palms, the species and their cultivation. The International Palm Society. Allen Press, Lawrence, KS. 338 pp.
- Huxley, Anthony (ed.) 1992. The new Royal Horticultural Society dictionary of gardening, 4 vols. The Stockton Press, New York, NY. 3353 pp.
- Jones, David L. 1993. Cycads of the world. Smithsonian Institution Press, Washington. 312 pp.
- Jones, David L. 1995. Palms of the world. Smithsonian Institution Press, Washington. 410 pp.
- Kartesz, John T. 1994. A synonymized checklist of the vascular flora of the United States, Canada, and Greenland. 2nd edition. Timber Press, Portland, OR. 2 vols. 622 & 816 pp.
- Mabberley, D. J. 1989. The plant-book. Cambridge University Press, Cambridge. 706 pp.
- Staff of Liberty Hyde Bailey Hortorium. 1976. Hortus third. MacMillan Publishing Co., Inc., New York, NY. 1290 pp.
- Uhl, Natalie W. and John Dransfield. 1987. Genera palmarum, a classification of palms based on the work of Harold E. Moore, Jr. The L.H. Bailey Hortorium and the International Palm Society, Allen Press, Lawrence, KS. 610 pp.
- United States Department of Agriculture, Soil Conservation Service. 1982. National list of scientific plant names, 2 vols. SCS-TP-159. 416 + 438 pp.