University of California Cooperative Extension

Valley Landscape Views

Fresno, Tulare and Kings Counties

Issue # 3: Palm Tree Culture

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Newsletter Editors

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Palms in the Central Valley

Pam Geisel and Michelle Le Strange
UCCE Farm Advisors

Palms have become an important part of many valley landscapes. They add architectural and horticultural interests to homes, gardens and parks. They can be used in ways that define an area, create strong vertical elements in space, add texture, and rhythm to the landscape, and convey a tropical effect. They are effective in clumps with stems of differing heights or as single stemmed trees.

Palms can also be used in ways that create an identifiable logo for businesses. For example "In and Out Burger" uses two crossing palms as their logo and all of their establishments incorporate crossing palms into their landscapes. Beverly Hills is also noted for their palm-lined avenues. Palms are also being used extensively in parking lots, along streets and boulevards, in shopping centers and in hotels and patio gardens. They are great in containers and tubs, as accent specimens, planted near swimming pools and provide that bold and tropical look to any landscape. Because of their stateliness and large fronds, palms make excellent objects for night lighting, whether it is from above, below, backlit or silhouette.

Palms can be used badly in landscapes as well. Large palms planted in a small front garden where only the trunk can be seen out the front window is a bad use. Palms planted where the trunks are next to the roofline isn't good either. The fronds can harbor rodents and can abrade roof tiles when the wind blows. Palms planted where there is a great deal of soil compaction around the root zone is disaster waiting to happen. Palms are not terribly tolerant of heavily compacted soils, so it is important that auto and heavy foot traffic be avoided around the base of palms.

Using the wrong species of palm can be problematic as well. It is important to select species that are adapted to the climate. For example, architects are specifying planting Queen and/or King palms for valley landscapes. While they are lovely and for the most part tolerant of our climate, in very cold years such as the freeze of 1990, the tops can be killed. This leads to increased management costs because the dead palms must be removed and many years are lost in growing a tree that adds to the value of the landscape.

The bottom line for maximizing the good qualities of palms is to make sure that they match the scale of the landscape; i.e. use small palms in small landscapes and larger palms in larger scale landscapes. Also, keep them well groomed, properly fertilized and watered.

Palms offer great potential in valley landscapes. There are many kinds of palms with a wide range of growth habits suitable for any environment and landscape site. They are durable, long-lived and easy to care for. Even though the popularity of palms is increasing, their cultural needs and maintenance requirements are often unknown or misunderstood. We hope that the following articles will help you choose, plant, and maintain palm trees to show off their striking virtues in your landscapes.

Transplanting Palms

By Donald R. Hodel, UCCE Farm Advisor, Los Angeles County

(Adapted from Turf Tales, 1997)

Successful establishment of transplanted palms only requires that you follow a few simple rules. Because palms lack a woody taproot and they naturally initiate new roots from the trunk base or cut roots, palms of almost any size are easy to plant or transplant. The biggest limitation is the size and availability of equipment and labor to move larger bulky specimens.

The ideal time for transplanting is when the weather is warmer and conducive to root growth. Usually late spring until early fall are the most active periods for root growth. Supplemental irrigation will be required for all species until roots become established.

When transplanting palms from one site to another or digging field-grown plants in a nursery, it is important to select specimens with some visible trunk. These will be relatively tolerant of root disturbance and will re-establish more quickly. For species that have early underground stem development such as the palmetto palm (Sabal), Bismarck palm (Bismarckia), Latan palms (Latania), and shaving-brush palms (Rhopalostylis) and some fountain palms (Livistona species), it is especially important to limit transplanting to specimens with visible, above-ground stem.

In terms of root ball size, a good rule of thumb is to make sure the roots extend at least a shovel's width out from the stem. For multi-stemmed and large specimens such as the Senegal date palm (*Phoenix reclinata*), Mediterranean fan palm (*Chamaerops humilis*) and Mexican fan palm (*Washingtonia robusta*), the root ball should extend at least 2 feet out from the trunk. Generally, a larger root ball ensures a more successful and rapid reestablishment. However, you must balance this with the fact that palms with large root balls are more difficult and expensive to move due to their size and weight.

There is some controversy over how much leaf removal should occur when transplanting larger specimens. Ideally, it would be best to remove all leaves when transplanting palms to reduce water loss from transpiration. Although aesthetic considerations usually discourage this practice, you should remove all leaves from species that regenerate a new root system from the trunk base, such as Sabal palmetto. For species that resprout from cut roots, remove as much foliage as aesthetics will allow. At a minimum, remove the lower half of the crown and tie up the remaining leaves in the upper half of the crown with untreated, 4-ply, biodegradable twine. The twine will deteriorate naturally in several months to let the fronds unfold. Leaf removal is unnecessary when planting nursery grown container palms into the landscape.

Palms with exposed root balls should be transplanted immediately. If that is not possible, then shade the root ball, trunk and crown and keep them moist until planting. They can be temporarily heeled in moist mulch or soil to hold the palm until planting. Avoid heeling the root ball into compost that is still decomposing as the heat that is generated may kill roots.

Fig 2. Although not common, palms heeled in media with high levels of organic matter may sustain root injury from heat released during decomposition. (From Abiotic Disorders of Landscape plants) ANR Pub #3420

In preparing the planting hole, it is important not to plant too deeply since palms are quite sensitive to poor drainage. Make the hole the depth of the root ball and about 6 inches wider. The root ball should be at the same height it was prior to being dug for transplanting. If the soil drains slowly or if the water table is high, then provide subsurface drainage. Position the root ball in the new hole so the palm's most pleasing side addresses the main viewing perspective. Backfill with the same unamended soil excavated from the hole, being sure to tamp out air pockets thoroughly. Do not incorporate any soil amendments in the backfill soil.

For irrigation purposes, construct an irrigation berm 4-6 inches high around the root and planting hole. Apply a 3-4 inch layer of mulch around the base of the palm to encourage new root growth and suppress weeds. Irrigate thoroughly at planting to settle the soil around the root ball. Irrigation is probably the most critical factor affecting post-planting survival. Irrigate judiciously, keeping the root ball and soil evenly moist but not saturated.

Do not allow turf grass or weeds to encroach upon the trunk. Apply a slow-release fertilizer to the soil surface around the outside margins of the root ball 3 months after planting. They should contain a 3-1-3 or 3-1-2 ratio of nutrients and include magnesium and other micronutrients. Specially formulated palm fertilizers are available.

Care of Established Palms

(Adapted from "Arizona Landscape Palms", publication #AZ1021,by Elisabeth Davison, and John Begemen, Dept. of Plant Science, University of Arizona Cooperative Extension. Full text available on the web at: ag.arizona.edu/pubs/garden/az1021.pdf)

Once palms are planted in the landscape, they are relatively carefree and pest resistant. However, a certain amount of grooming and care is required to keep them looking their best. Irrigation and fertilization are also required with most species.

Palms should generally be separated from turf by a "plant free" area. When turf comes up directly to the trunk, it can open the trunk to wounds from string trimming or mowing around the base and from over irrigation. This plant free area prevents that from occurring. Maintain at least a 1-foot wide strip and apply a coarse organic mulch to that area.

Palms in turf should also be protected from sprinkler spray, for a couple of reasons. One is that the terminal bud may develop heart rot disease and the second is because salts from water evaporation may encrust on the trunk or leaves. Also, irrigation schedules for turf are not sufficient for palm establishment and tend to apply water too often for established palms. Palms should have their own schedule that will allow deeper watering to a 2-foot depth.

Fertilization

Palms look considerably better if they have adequate nutrients. Fertilizing established palms is one of the important ways to keeping them vigorous and attractive. Nitrogen is the most commonly deficient nutrient. When it is lacking, older fronds turn pale green to yellow. Many palms in certain soils also suffer from potassium deficiency (yellowing of older leaves including the midrib.) Some trees show magnesium deficiencies (yellow band on older leaves, with central vein green). In all cases preventative fertilization is best, since discolored leaves don't recover.

Lush green growth will result from using a "palm special" fertilizer that contains about 3 times as much nitrogen and potassium as phosphorous (a ratio of 3-1-3). Products should also contain magnesium and other micronutrients such as copper, iron, manganese, sulfur, and zinc. Apply these products to palms after their first summer of establishment by spreading it under the canopy yet avoiding the area next to the trunk. The ideal time is in mid-spring and again in summer. Water thoroughly to a 2 ft. depth.

Pruning Mature Palms Correctly

Pruning requirements of mature palms vary depending upon the species and the landscape situation. Foliage is produced only from the terminal bud in palms and as foliage matures it gradually turns brown and dies. The dead frond will eventually fall off if left alone. However, many people do not like to retain the dead foliage. They are often considered unsightly, provide a haven to rodents and there may be a fire hazard associated with them. On the other hand, there are those that appreciate the skirt of dead fronds and consider them a part of the tree's character.

In any case, pruning should be done with care and consideration. Never remove green foliage. Do not prune above the horizontal since this exposes the most tender of plant tissue and can lead to bud damage, disease, splitting or constriction of the trunk (pencil pointing or chicken heading). Palms should not look like carrots after pruning. Palms that have been pruned too high up tend to break in the high winds.

The ideal pruning of palms, both fan and feather species, is to clip the old fronds and leave the leaf bases until they are completely dried and easy to remove. Avoid skinning or shaving the trunks as it wounds the trunk and makes it easier for disease or insects to invade the tree. For Date palms, remove the flower and fruit stalk in June or July and again leave the leaf bases on until they are dry and easy to remove.

Nails or climbing spikes should never be used to climb palms. The wounds they make in the trunk are permanent. Always wear protective clothing when pruning and prune from above the frond and not below. Fatalities have occurred when pruning from below and the bundle of fronds landed on top of the worker.

Excessive Pruning "Chickenhead Syndrome"

Wrong

Correct

1. Common on many fan palms.
2. Too many leaves removed leads to loss photosynthetic capacity and root death.
3. Most severe on large heavily mature palms.
4. Do not prune past the horizontal.

Palms for Central Valley Landscape

By Pam Geisel and Michelle Le Strange

Palms are usually divided into two groups—the feather palms and the fan palms. Feather palms are distinguished by pinnate leaves and fan palms have, of course, palmate leaves. Most have similar cultural requirements but they may vary in their sensitivity to cold.

Feather Palms

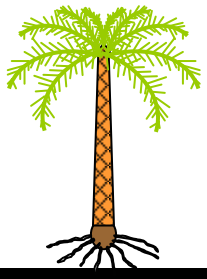
Common Name *Botanical*	**Description**	**Height**	**Comments**	**Form**
Queen Palm (*Syagrus romanzoffiana*)	Tall, graceful palm with prominent rings on smooth gray upright trunk	30-40 ft.	Best in tropical looking landscapes, near pools and courtyards. Medium to high water use. Sensitive to severe frosts.	
Pindo Palms *(Butia capitata)*	Gray-green arching fronds with a stocky trunk. Edible fruit.	10-20 ft.	Medium to high water use, best with deep infrequent irrigation. Slow growth rate.	
Chilean Wine Palm (*Jubaea chilensis*)	Massive columnar trunk with self-pruning foliage. Dense crown with handsome patterned bark.	Very slow to 50-80 ft.	Regular water, rare to find mature specimens because of slow growth. Should be used more. Especially suited to parks and large gardens.	
Canary Island Date Palm *(Phoenix canariensis)*	Large, wide spreading palm. Dark green leaves with orange midribs. Trunk is columnar in maturity. Can be grown in container. Crosshatch pattern on trunk.	Slow to 40-50 ft.	Excellent for large gardens, parks with medium water use. Fruit can be messy. Frequent pruning can become expensive.	
Date Palm *(Phoenix dactylifera)*	Rough textured trunk with feathery broad-spreading green gray foliage. Stiff and formal foliage but trunk is more graceful than Canary Island Palm.	Slow to 50-60 ft.	Too messy for pool or patio use. Remove side shoots to maintain single trunk.	
Senegal Date Palm *(Phoenix reclinata)*	Tall slender palm with graceful, feathery fronds. Bright green foliage. Striking with multiple trunks. Can experience damage when below mid-20's F.	Moderate 20-30 ft.	Striking for use as specimen planting. Looks best with multiple trunks in large-scale garden locations. Best with regular fertilizer and water.	
Majestic Palm **(***Ravenea rivularis)*	A very large (massive) palm, with a large, untidy crown.	Slow to 40 Ft.	Full sun and LOTS of water. A very fast grower if the water is kept up to it. Also likes a yearly dose of Epsom Salts, because it's not very efficient at taking up magnesium. If it doesn't get enough magnesium, the leaves take on a rather unhealthy yellow color.	
Pygmy Date Palm *(Phoenix roebelenii)*	A dwarf palm that develops a dense crown on a single trunk. Dark green foliage is elegant in containers.	Slow to 6-8 ft.	Regular irrigation and protection from severe cold. Requires moderate, regular irrigation. Useful for containers and small scale locations	

Fan Palms				
Common Name *Botanical*	**Description**	**Height**	**Comments**	**Form**
Mexican Blue Palm (*Brahea armata*)	Silvery-blue leaves in a graceful arch with erect columnar trunk. Robust at maturity.	Slow to 25-30 ft.	Very versatile palm useful as a landscape plant or container plant. Blue foliage is a nice contrast plant. Tolerant of a wide range of growing conditions.	
Guadalupe Fan Palm *(Brahea edulis)*	Robust handsome palm with bluish foliage but faster growing and fewer flower spikes.	Slow to moderate growth to 20-30 ft.	Can be used as specimen, in-group plantings or in containers. Widely adapted to a range of growing conditions. Favors deep, infrequent irrigation. Old leaves self-prune.	
Mediterranean Fan Palm *(Chamaerops humilis)*	Distinctive small-scale fan-shaped fronds with stiff blue-green leaves. They form a compact head and often multi-trunked stems.	Slow, clumping growth to 5-15 ft.	Useful in groupings or striking accent palm. Remove excess suckers for best look. Best in rich soil with ample water.	
Sonoran Palmetto *(Sabal uresana)*	A lovely fan palm native to Sonora Mexico. Attractive in youth with blue-green leaves. Fairly robust trunk at maturity.	Slow growing to 30-40 ft.	Useful as a specimen tree, along streets or in parks or large scale landscapes. Not very common. Best in well-drained soils but very cold hardy.	
Windmill Palm *(Trachcarpus fortunei)*	Compact head atop slender upright trunks that taper from the bottom and wider near the head. Trunk covered with stubs of old fronds and shaggy fibers.	Slow growth to 15-25 ft.	Often planted as multi-trunked specimens, in containers, or patios, atriums and paired plantings along drives or walkways. Best with regular irrigation and shaded from afternoon sun and reflected heat.	
California Fan Palm *(Washingtonia filifera)*	A robust palm with large erect foliage fans that have spiny petioles. Dead fronds may be retained all the way to ground if not pruned. Single trunks very heavy. Often hybridized with other Washingtonias; form may be variable.	Moderate to fast growth to 40-60 ft.	Heavy trunk can overwhelm small gardens. Most useful as street or park tree or a specimen in large-scale gardens.	
Mexican Fan Palm *(Washingtonia robusta)*	A tall, graceful palm with bright green leaves. Trunk is slender and tall. Sometimes called "sky duster palm".	Fast growth 40-100 ft.	Dead foliage often breaks loose on its own so can be a hazard if not removed often. Best with good soil and regular irrigation. Hybridizes with other Washingtonias so form may be variable.	

Some photos compliments of: Nancy Gravender, Master Gardener, Tulare County

Common Problems of Palms

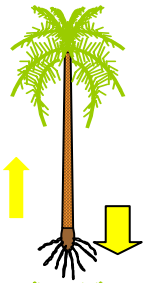
From presentation by Frank Wong
UCCE Specialist, Urban Plant Pathology
University of California, Riverside



Palm Tree Anatomy and Physiology

Palms are some of the largest monocots in the world, which means that they grow upwards from a single growing point at the crown of the tree. They have a fibrous dispersed root system that produces new roots from the base. That also means that they do not produce secondary cambium and that vascular bundles are distributed through the trunk and not just under the bark. That also means that they have unidirectional growth and that damaged trunks don't heal over. It is important to avoid damage to the trunk throughout the entire life of the palm. There are a number of problems and here we will review two nutritional disorders of palms

Magnesium (Mg) deficiency



- Older leaves appear yellow-often in broad bands or along leaf edges.
- Caused by low Mg in soil, leaching, excessive potassium (K) or calcium (Ca).
- Difficult to remedy. Apply $MgSo_4$, 1-2 kg/tree, 4-6 times per year.
- Incorporate dolomite or Mg in slow release fertilizers at the time of planting.
- Leaves will not recover but new growth should be normal.

Potassium (K) deficiency

- Yellow mottling of older leaves.
- Occurs in sandy soils where K is leached or where there is excess Ca, N or Mg to K ratios in the soil.
- Apply slow release fertilizers in 3N-1P-3K-1Mg ratio.

SOURCES OF INFORMATION

PUBLICATIONS FROM UC

Many of these items are available at no cost from local UCCE offices or can be downloaded from the world wide web at http://anrcatalog.ucdavis.edu *or from UC IPM at* http://www.ipm.ucdavis.edu

Free Publications

Sago Palms in the Landscape, #8039

Palm Trees for Landscapes in Tulare and Kings County, *by Nancy Gravender* Call (559) 685-3309 for a copy.

Fee Based Publications

Abiotic Disorders of Landscape Plants, #3420

Pests of Landscape Trees and Shrubs, #3359

Website Links

http://palms.ifas.ufl.edu/links.htm
http://www.texasgardencenter.com/links.htm
http://www.palms.org/
ag.Arizona.edu/pipermail/arid_gardener/2000-October/003191.html

INDUSTRY ORGANIZATIONS

International Palm Society

Northern CA Chapter, International Palm Society, c/o 1410 Mohr Court, Concord, CA 94518 U.S.A.

Southern CA Chapter, *THE PALM JOURNAL [of the Palm Society of Southern California],* http://www.palms.org/socal

UC Ornamental Horticulture Research & Information Center - *Includes access to:*
California Turfgrass Culture newsletter &
Better Turf through Agronomics newsletter
http://ohric.ucdavis.edu

Weather And Irrigation

CIMIS-CA Irrigation Management & Info System
www.cimis.water.ca.gov

UCIPM-weather, day degree modeling and CIMIS
www.ipm.ucdavis.edu

Center for Irrigation Technology-CIT at CSUFresno
http://cati.csufresno.edu/cit

Upcoming UCCE Meetings

Landscape Pest Management Seminars – 2003
UCCE-Tulare County, Ag Bldg Auditorium, Tulare
Thursday eves: Oct 30, Nov. 6, 13, & 20, 6:30 – 9:00 p.m.
2.5 hrs CE per seminar, (includes laws & regs)
For more information call, (559) 685-3303

Soccer Field Management – Nov. 20, 2003
7:30 a.m. – 4:00 p.m., $20.00, includes lunch
Reedley College Environmental Horticulture Dept.
5 hrs. CE Credit applied for.
For more information call, (559) 456-7554

GLOSSARY OF PALM TERMS

(From Palm Trees for Tulare & Kings County)

Bole – Trunk of a tree or palm
Bract – A leaf-like structure which subtends a flower stem or part thereof
Canopy - The cover of foliage
Clumping – Clustering, with several stems or trunks
Dentate - Toothed
Denticulate – Finely toothed
Frond – Leaf of a Palm or Fern
Leaf-base – Specialized expanded and sheathing part of the petiole where it joins the trunk
Leaf-spine – A term sometimes used to describe the spine-like basal leaflets of *Phoenix* leaves; but may also be used to refer to spines on leaves
Pinnate – Usually referring to leaves once divided with the divisions extending to the midrib
Shag – A term referring to the persistent, hanging, dead leaves of some palms for example the California Fan Palm or California Cotton Palm *(Washingtonia filifera)*.
Solitary – Describes a palm with a single stem or trunk
Spear-leaf – The erect, unopened newest leaf of a palm
Spine – A sharp, rigid projection

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A regional newsletter for the Green Industry

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U.S. Department of Agriculture, University of California, Fresno, Tulare & Kings Counties Cooperating