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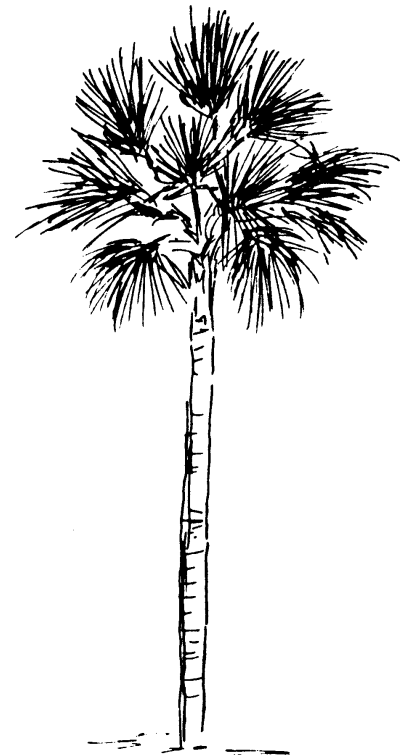
ARIZONA LANDSCAPE PALMS



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COLLEGE OF AGRICULTURE
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This information has been reviewed by university faculty.

ag.arizona.edu/pubs/garden/az1121.pdf



The luxuriant tropical appearance and stately silhouette of palms add much to the Arizona landscape. Few other plants are as striking in low and mid elevation gardens. Although winter frosts and low humidity limit the choices somewhat, a good number of palms are available, ranging from the dwarf Mediterranean Fan palm to the massive Canary Island Date palm. Several of the palms described in this publication are unavailable or nearly so in Arizona. They have been included because they have the potential to broaden the landscape versatility of this important plant group. In time they may become more available as a result of consumer demand or the risky and expensive process of introduction by the nursery industry.

Landscape Use

Palms are planted in groves, clumps or as single specimens for accent or background planting. They are used around public buildings, in parks, along avenues, near swimming pools and patios and in the garden wherever a bold effect or suggestion of the tropics is desired. The large-growing palms provide a dramatic feeling of space. In an architectural sense, they serve to define large spaces and to create strong vertical accents and skyline silhouettes. These qualities have a unifying effect in massive building complexes and large-scale plantings. The smaller growing palm species are equally valuable in the home landscape, providing shade, shelter and tropical ambiance.

Palms often are planted in straight, formal rows along roads and drives. Another interesting effect can be achieved by making a group or clump planting of several palms of the same species in varying heights and spacings. Such natural groupings make striking features for entrances, pool plantings and gardens in general. The slow growing and dwarf species can be planted under other trees and in tubs or planters where they remain effective for years.

Which to choose? One of the important considerations in selecting a palm is to choose an adapted species that will mature to a reasonable size for the location. Otherwise, the pretty little palm brought from the nursery in a 5-gallon container may grow one day into a monster that overpowers house and garden. Analyze the planting site for vertical space, avoiding roof overhangs. It is a serious mistake to plant tall-growing palms under power lines. In addition, all palms need a certain amount of care and grooming. Some fast-growing species require more attention than others. Your choice should reflect how much time, effort, and expense you are willing to devote to maintenance.

Adaptation

Palms generally can be grown below the 4000 ft level in Arizona. However, microclimate may make the difference between success and failure in a given location. Frost pockets, where nighttime cold air tends to collect, should be avoided, especially for the tender species. Palms are most sensitive to cold as small plants. As a tree approaches maturity, it withstands low temperatures with less injury. However, few of the tropical and subtropical palms grown in southern Florida and southern California can tolerate the winter freezes that occur even in the mildest sections of Arizona. On the other hand, the desert's high summer temperatures and low humidity eliminate other palm species, notably those from humid coastal climates. Shelter from strong winds can sometimes be provided by hills, buildings, or groups of other trees.

One palm species, California Fan Palm (*Washingtonia filifera*) is native to the oases and canyons of Arizona and California. Other palms may be grown in the greatest variety in the landscapes of Yuma, Phoenix and neighboring areas. As the elevation increases, the number of adapted species generally tend to decrease. The hardiest types such as California Fan, Mediterranean Fan, Windmill Fan, Canary Island Date, and Mexican Blue can be grown in such communities as Kingman, Globe, Nogales and Douglas. During severe winters even these hardy species, especially young plants, may freeze out.

Planting Palms

Small Containerized Palms:

The best time for planting palms is during warm weather when root growth is most active. Soil temperatures above 65° F aid root establishment. This generally includes the period from April through September. The preferred time is late spring to early summer.

A fertile, well-drained soil will promote luxuriant growth. One of the most important requirements is that the planting site be well-drained. Caliche, hardpan, compacted soil layers, or abrupt changes in soil texture prevent good soil drainage and aeration. The result is constantly wet, saturated soil in the planting pit and almost certain death of transplanted palms.

To test for drainage, fill the hole with water. Allow to drain, and fill a second time. If the second filling does not drain out within 24 hours, alternate provisions must be made for drainage. If necessary, dig a chimney down to a porous strata to permit excess irrigation water to drain from the hole.

Do not amend the backfill with manure or organic material. This will eventually result in the palm sinking into the hole. Sand at more than 1/3 total volume is acceptable, if the soil is extremely heavy.

Dig the planting hole as deep as the root ball and 2 feet wider on each side. Set the crown of the containerized palm at the original soil level so that soil temperatures, water and aeration are conducive to root expansion. Do not cover the crown or young trunk with soil. New roots will emerge both above and below the rootball. Settle the backfill soil with a water from a hose.

Water thoroughly at planting time. Make a berm above grade (about 2 feet out from the trunk) so that slow soak from hose or bubbler can gradually fill it and saturate the root zone. Palms that are set out in warm weather will probably need to be watered every day for the first 2 weeks after planting. Check the soil moisture content in the root ball to determine this, since the container soil will often dry out faster than the surrounding backfill soil. The goal at this stage is to keep the root ball moist but not constantly soggy wet.

As roots begin to grow out and draw moisture from a greater volume of soil, irrigations can be spaced further apart.

- **Bubbler Irrigating:** every day for the first 2 weeks gradually increasing the interval to every 7 days for the remainder of the first growing season, depending on soil type (*see below*).
- **Drip Irrigating:** with 4 emitters spaced 1.5 – 2 feet from the trunk, and 8 emitters spaced 4 feet from the trunk. Daily to start, then gradually increase the time between irrigations according to the soil type.

In both cases, the timing and frequency of irrigations will depend on how well the soil holds water. Sandy soils will drain quickly and need more frequent applications than clay soils. Always water to a depth of 2 ft. Check with a probe, long screwdriver or piece of rebar to see if the soil is soft to that depth. A layer of mulch spread 2–4" over the irrigated zone will help to reduce soil temperatures and conserve water so that less frequent applications are necessary.

Large Pre-dug Palms:

Large landscape palms are usually dug from established groves or landscape plantings. They must be handled gently and with care in all phases of the transplanting operation. Rough handling or bumping can damage the terminal bud and kill the tree. Once dug from the original location, palms should not be left lying out in the hot sun for long periods of time either at the digging site or at the planting site. The root ball should be kept moist, and the trunk securely braced in transit. One way to accomplish this is to cover the root ball with damp burlap. Do not use plastic for this purpose, since it will trap heat.

Dug palms regenerate some roots from the cut ends, but other new roots develop from the root crown. In some

species, increased root regeneration has been measured with longer cut stubs in larger root balls. Root regeneration depends on adequate water and oxygen. At times the root ball may be deeper than it is wide. In general, larger root balls make for better establishment in less than perfect conditions.

Water of dug palms is stored in the trunk and lost through the leaves. For this reason, up to half of older living fronds may be removed for transport. The remaining fronds are tied together over the tender bud with a biodegradable twine to protect it from drying and sun scald. (On some species the bud may be actually splinted to protect it from breaking.) Depending on the time of year the palm is planted, the fronds should be left tied around the bud for 2 to 3 months. In arid climates, the chance of the twine actually rotting is slim. When new growth begins to bulge out below the point at which the fronds are tied, the rope may be cut to gradually release the foliage. Leave the old fronds in place for a month more to protect the bud and new leaves.

The planting hole for large pre-dug palms should be only as deep as the root ball and should drain in 24 hours as discussed above. Backfill need not be amended. Loosen the soil 3 feet beyond each side of the root ball to encourage lateral root growth.

Large pre-dug palms should be planted at their original planting depth. Planting too deeply may cause root suffocation due to restricted oxygen, nutritional deficiencies, root rot disease and frequently loss of the palm.

Don't plant the crowns deep simply to ensure that the trees don't fall over.

Large palms may be braced when installed with at least three 2x4 lumber braces (at 45° from the ground) against 1 ft lengths of 2x4 that are vertically strapped or banded around the trunk.



Protect the trunk with nylon, burlap, or other suitable material where the one foot lengths of 2x4 are secured. Do not nail these vertical pieces into the trunk. Supports can be removed when fronds are untied.

Water large palms immediately as discussed above. Daily irrigations to a depth of 2 ft may gradually be reduced to once a week during the first warm season. Allow for differences in soil texture: clay soils will need watering less often than sandy soils. Bubbler or soaker irrigation into a built-up well should wet an area 2 feet beyond the root ball. As discussed above, drip emitters should be spaced at 2 feet and at 4 feet beyond the trunk.

Care of Established Palms

Palms in Turf

Palms are often planted in turf areas. To look their best, they should be separated from the turf by a small mulched area that prevents the grass from growing right up against the trunk. Weed-whip and mower wounds on palm trunks are permanent and provide an entrance for diseases and insects. Palms in turf should also be protected from sprinkler spray, both because the terminal bud may develop a heart rot disease and because salts from water evaporation can encrust on the trunk or leaves. Because irrigation schedules for turf are not adequate for palm establishment, the trees should be on their own schedule that will allow deeper watering to the 2' depth.

Irrigation

Deep watering on a periodical basis is crucial for landscape palms in the desert. Native palms grow at oases; they are not "drought tolerant." To some extent growth rate can be regulated by watering practices. In general trees growing in sandy soils need irrigation more frequently than those planted in clay soil. Roots of established palms should be encouraged to extend 4 feet beyond the trunk by spacing drip emitters in a circle at the 4 ft distance. Established palms of most species do well with slow irrigation to a 2 ft depth every couple weeks in summer and the same amount every four to six weeks in winter.

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. In Arizona landscapes, nitrogen is the most commonly deficient nutrient; when it is lacking, older fronds turn pale green or yellow. Many palms in certain soils also suffer from potassium deficiency (yellowing of older leaves, including midrib). Some trees show Magnesium deficiencies (yellow band on older leaves, with central vein remaining green). In all cases preventative fertilization is best, since the 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 (the first and third numbers on the bag are approximately 3 times the middle number), plus Mg and micronutrients. Look for a product that supplies 10-20% N, 5%P, and 10-20% K (roughly equal to N), and also includes 1-3% Mg, .5% Mn,

.5% Fe, and S, Zn, Cu, and B (micronutrients that are often lacking). Apply this product to palms after their first establishment summer, following directions on the label for the tree's size. Spread the product under the canopy (avoiding the area next to the trunk) in mid spring and again in early summer. Water thoroughly to the 2 ft depth

Pruning

The pruning requirements of palms vary from species to species. As new foliage is produced from the terminal bud at the top of the crown, the lower and older leaves (fronds) gradually turn brown and die. If left alone, these eventually fall off, some sooner than others. Pruning of palms can keep them looking tidy, but pruning too high up or too close on the trunk can cause damage, disease, water uptake problems, or trunk constriction.

In some cases, old dead leaves persist for a long time to form a thatch or "shag" or "skirt" which may be considered attractive in large scale situations. A thatch of dry leaves is left on the Fan Palms by those who feel that this is part of the character of the trees. Those who consider the dead leaves objectionable have them removed each year.

In any case, green leaves should not be removed. Do not prune up beyond the horizontal since this exposes tender tissues and may lead to disease, bud damage, splitting or constriction of the trunk (called "pencil pointing"). Palms that have been pruned too close often break in winds. Typically the leaf bases are allowed to stay until they are completely dry, thus easier to cut off. The old leaf bases on California and Mexican Fan palms or Mediterranean Fans can be cut off with a sharp linoleum knife. Shaving or skinning trunks is unnecessary and may cause wounds that allow entry of insects or disease.

Another group of palms lose leaves almost as soon as they begin to age. Some develop a smooth trunk that shows a pattern of ring-like scars where old leaves were once attached. Some people think the Date Palms need considerable grooming to look good; others like the full round head. The correct technique is to remove yellow or brown leaves and flower/fruit stalks in June or July. Leaf bases may be left on until they are easier to remove. Do not remove green leaves. Do not prune up beyond the horizontal since this leads to bud damage, disease, or "pencil pointing" of the trunk. Palms should not look like carrots.

In parts of Arizona where palms are marginally cold-hardy, the foliage may be injured by low winter temperatures. Lower and outer leaves usually show the most extensive injury. Trees that have been over-pruned tend to be vulnerable. Damaged fronds can be removed in the spring in the annual trimming. Some species have messy flower or fruit stalks that can be cut off close to the trunk. If annual pruning is scheduled for after flower stalks have emerged, both stalks and brown fronds can be removed in a single operation.

Nails or spikes should not be used to climb palms. Wounds in the trunk are permanent. In all cases, gloves, goggles, and head protection should be worn. Engage the services of a certified arborist for big palms.

Diseases and Insect Pests

Texas Root Rot (*Phymatotrichum omnivorum*)

All palms are resistant to Texas root rot and may be planted in soils infested with the fungus. However, palms growing in infested soil should not be transplanted to non-infested areas, as their roots may harbor and spread the fungus.

Giant Palm borer (*Dinapate wrighti*)

A large beetle whose larvae or grubs live inside the trunks of both *Phoenix* and *Washingtonia* palms.

Symptoms: Round holes in the trunks, about the size of a quarter, indicate where the adult beetle has exited after 3 to 9 years of feeding on the trunk tissue. Many grubs feeding inside a palm can weaken the trunk to the point that it may snap off in a high wind.

Treatment: None reported to date. Avoid buying trees with the visible exit holes. Proper planting and care to ensure good health and vigor, and the ability to resist the insect, is the best way to aid your trees. The number of holes will give in indication as to the degree of infestation.

Diamond Scale

(*Sphaerodothus neowashingtonia*)

Affects *Washingtonia* fan palms.

Symptoms: Appearance of black, diamond-shaped fruiting structures (several centimeters in length) that appear on leaf blades and petioles. Spores are large and black and often in such abundance that leaves appear to be covered with sooty mold. Leaves turn yellow, droop, and eventually die.

Treatment: No effective treatment reported at this time. Removal of infected foliage and use of a protective fungicide may help.

Palm Flower Caterpillars — Palm Budworms

(*Litoprosopus coachella*)

The adult stage of this insect is a tan moth with two black eyes on each hind wing. The larva is a 1-inch pink-to-greenish caterpillar that feeds on the flowers of some fan palms. While the injury is not serious, it may predispose the tree to infection by palm bud rot.

Palm flower caterpillars are not especially noticeable until the maturing larvae drop to the ground beneath the tree. At this time they may become a litter nuisance in the landscape or in buildings to which they migrate in search of shelter.

Treatment: Remove flower stalks before they are fully expanded. Contact a Cooperative Extension office, if necessary, for chemical control recommendations.

Lightning Injury

Lightning may injure or kill palms.

Symptoms: Overnight collapse of the crown foliage or shattering and charring of the terminal bud on large palms following severe thunderstorms may be due to lightning. In some cases the only apparent damage is a thin, jagged groove and strip of shattered bark extending down the trunk. If the bud or upper trunk is damaged extensively, the tree will probably die. The sudden collapse of leaves is sometimes incorrectly diagnosed as a symptom of bud rot.

Treatment: Little can be done for a lightning-struck palm other than routine irrigation. The full extent of injury is not always obvious immediately after a lightning strike occurs. Damage that at first seems superficial may later prove to be serious or lethal. Within a period of several weeks, it is usually clear whether the tree will recover.

Root-knot nematode

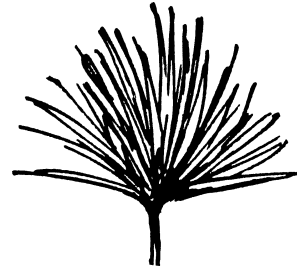
Root-knot nematodes, *Meloidogyne* species, infect roots of many different plants and have been reported on many different kinds of palms. The nematodes invade the roots, especially small feeder roots, and disrupt the movement of nutrients and water. Small roots are often killed. Root-knot nematode infection often can be easily recognized by the swellings on the roots of many host plants, but in palms these symptoms may not be noticeable since swellings are very small. Root-knot nematodes are most active in warm, moist, sandy soils that are also the best conditions for root growth of many palm species. Severe infections result in decline of the entire tree. Newly emerging fronds may be small and bunched. There is no known resistance in palms. Once introduced into soils, root-knot nematode is impossible to eradicate. Prevent disease by planting only vigorous plants with healthy root systems. If replanting an infested site, soil can be fumigated by a licensed pest control applicator prior to planting with a fumigant such as metam sodium.

Palms for Arizona

It is convenient to distinguish two groups of palms on the basis of leaf form. Palms with pinnate leaves are called “feather palms.”

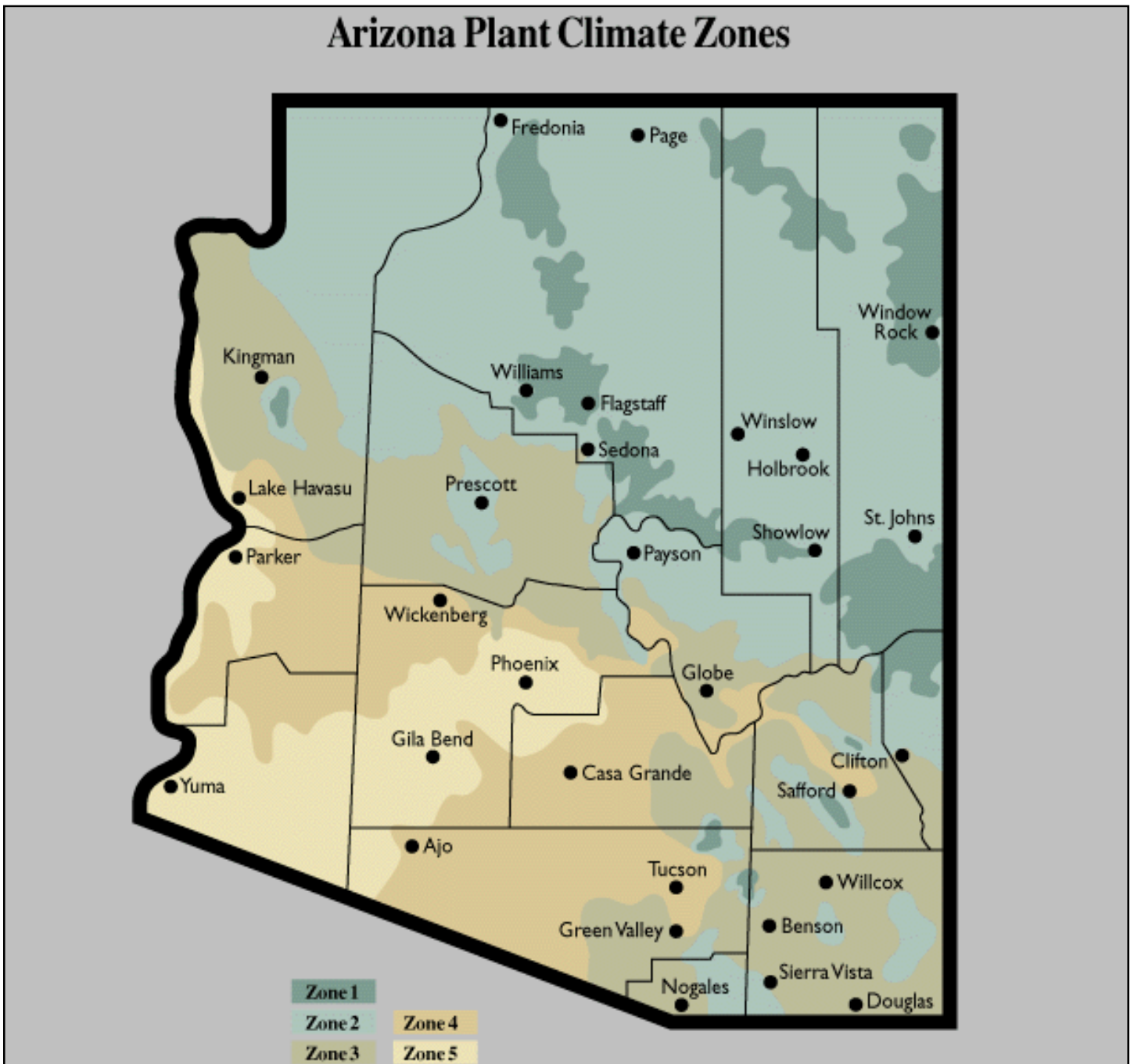


Those with palmate leaves are commonly known as “fan” palms.



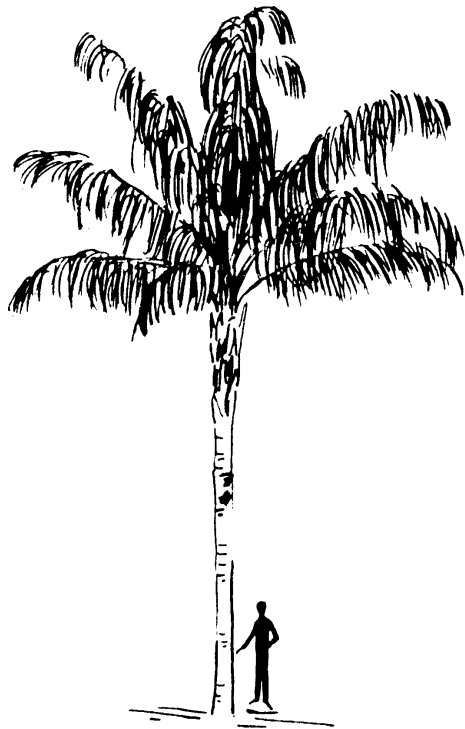
The following species are grouped accordingly.

See the map below to evaluate a species for your area. For further information, see *Arizona Plant Climate Zones* (Arizona Cooperative Extension publication AZ1169).



Feather Palms

Common Name: **Queen Palm**
Scientific Name: *Syagrus romanzoffianum*



Description: This tall, graceful palm displays a luxurious head of arching 10- to 15-foot fronds. Prominent rings develop on the smooth gray, upright trunk. The bright-green, feathery leaves form long, papery filaments with exposure to wind and temperature extremes.

Landscape Use: The Queen Palm creates a lush, tropical effect for pools, home gardens or courtyards of large buildings. It makes a showy appearance both as a single specimen or clumped in groups.

Foliage: Evergreen

Climate Zone: (4), 5

Height: 30'-40'

Light Exposure: Part shade to full sun

Spread: 15'-30'

Water Use: Medium to high

Growth Rate: Moderate to fast

Trunk Width: 1.5-2'

Cultural Requirements: This palm responds well to nitrogen fertilizer, extra iron and ample water. Planting in protected areas helps to reduce wind damage.

Problems: Sensitivity to cold generally limits use to below 2500 feet in elevation. Fronds may develop iron chlorosis or Manganese deficiency. Susceptibility is shown to spider mites, root knot nematodes, and bud rot. Possible damage in high winds.

Common Name: **Pindo Palm**
Scientific Name: *Butia capitata*



Description: A crown of gray-green fronds strongly recurved, create a graceful cascading effect for this feather palm. The stocky trunk becomes patterned with the stubs of old leaf bases. Females bear large clusters of edible fruits with a pineapple-like flavor.

Landscape Use: Pindo Palm is excellent as a low, bushy specimen for containers, tubs or gardens. It is attractive when interplanted among tall, slender palms.

Foliage: Evergreen

Climate Zone: (4), 5

Height: 10'-20'

Light Exposure: Part shade, full or reflected sun

Spread: 5'-15'

Water Use: Medium to high

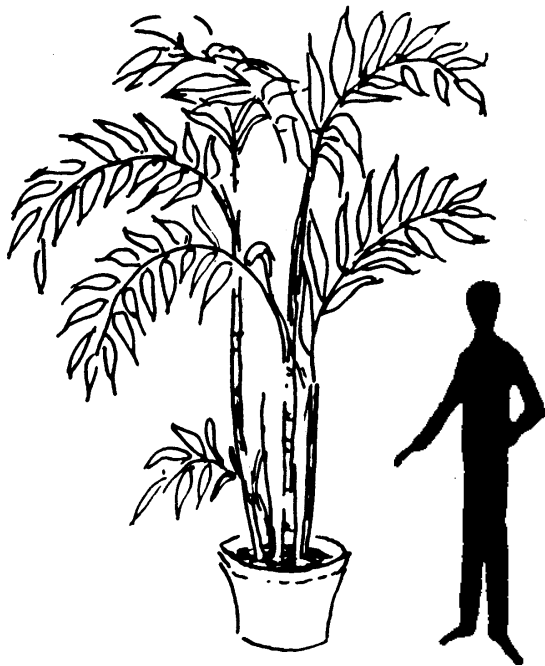
Growth Rate: Slow

Trunk Width: 1 - 2'

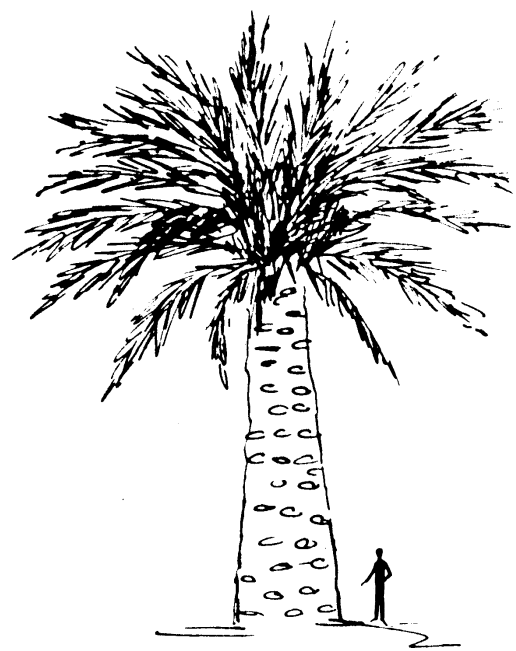
Cultural Requirements: Old fronds need to be cut evenly to avoid a ragged appearance. Deep, infrequent irrigation is best.

Problems: Iron chlorosis can occur on alkaline and poorly drained soils. Susceptibility is shown to bud rot and root knot nematodes.

Common Name: Costa Rican Parlor Palm
Scientific Name: *Chamaedorea costaricana*



Common Name: Chilean Wine Palm
Scientific Name: *Jubaea chilensis*



Description: This small clump-forming palm has slender bamboo-like trunks and graceful feathery leaves.

Landscape Use: Tolerance to low light levels makes Costa Rican Parlor Palm an excellent plant for warm shaded outdoor areas or for indoor use. This is a frost tender palm. Outdoors it is best used as a container plant.

Foliage: Evergreen

Climate Zone: (3), (4), (5)

Height: 8'-10'

Light Exposure: Full shade

Spread: 4'-6'

Water Use: Medium to high

Growth Rate: Moderate to fast

Trunk Width: clumping

Cultural Requirements: The Parlor Palm thrives in moist soil but will stand some neglect in watering. The shaded, protected locations required for outdoor use will usually be a few degrees warmer than nearby open areas on cold nights. When temperatures drop below the mid-20s in open areas, container plants should be moved indoors.

Problems: None recorded in Arizona other than sensitivity to frost.

Description: The Chilean Wine Palm develops a massive, columnar trunk which is one of the thickest of all palms. This self-pruning species forms a handsome patterned surface on the gray trunk. The dense feather-duster crown is made up of stiff, bristling leaves.

Landscape Use: The massive character of Chilean Wine Palm merits its use as a specimen in parks and large garden areas.

Foliage: Evergreen

Climate Zone: (4), (5)

Height: 50'-80'

Light Exposure: Full sun

Spread: 20'-30'

Water Use: Medium to high

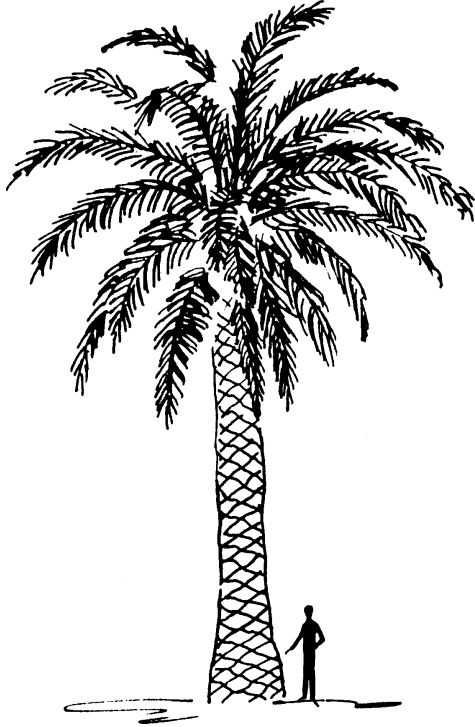
Growth Rate: Extremely Slow

Trunk Width: 4'-6'

Cultural Requirements: Regular watering and fertilization is best.

Problems: Not commonly available in Arizona.

Common Name: Canary Island Date Palm
Scientific Name: *Phoenix canariensis*



Description: Canary Island Date Palm is a large, wide-spreading feather palm of majestic proportions. The glistening, dark green leaves with orange midribs are long and arching, giving the crown a distinct fountain-like outline and form. The trunk of young trees is pineapple-shaped becoming columnar at maturity. Female trees produce clusters of orange-yellow fruit in the fall.

Landscape Use: Most effectively used along avenues, in parks and large commercial and residential landscapes. Young trees make attractive and undemanding container subjects.

Foliage: Evergreen

Climate Zone: 4, 5

Height: 40'-50'

Light Exposure: Part shade, full or reflected sun

Spread: 20'-40'

Water Use: Medium to high

Growth Rate: Slow

Trunk Width: 3'-4'

Cultural Requirements: Deep, regular irrigation and fertilization encourages faster growth. Periodic pruning and grooming are necessary for best appearance.

Problems: Fruit is messy and attractive to birds. Pruning maintenance can be costly. Dry rot is sometimes an unsightly problem on frond stubs and trunk. This palm recovers slowly from frost damage. Susceptible to rootknot nematodes, bud rot, and palm borers. May develop magnesium deficiency.

Common Name: Date Palm
Scientific Name: *Phoenix dactylifera*



Description A rough textured slender trunk and feathery, widespread canopy characterize the Date Palm. The gray-green head of leaves is ascending in the center and downcurving towards the outside, giving a stiff formal appearance. Offshoots may appear at ground level or on the trunk. Trees are male or female, and both sexes must be planted to ensure fruit production. In some areas, pollen can be obtained commercially to fertilize a single female tree.

Landscape Uses: In urban landscapes this palm makes a dramatic specimen tree. It is also planted in rows along roadways and drives. The Date Palm blends well with desert growth to give a feeling of a desert oasis. Its slender trunk makes this species more graceful for some landscape uses than Canary Island Date Palm.

Foliage: Evergreen

Climate Zone: 4, 5

Height: 50'-60'

Light Exposure: Part shade to full sun

Spread: 25'-35'

Water Use: Low, medium or high

Growth Rate: Slow

Trunk Width: 2'-2.5'

Cultural Requirements: To develop a single trunk or maintain a neat appearance, offshoots need to be removed or limited to a few in number. Transplanting is best in summer. Regular irrigation and fertilizer encourages best growth.

Problems: Old fronds and fruit drop require considerable cleanup. Too messy for pool/patio use. Susceptible to bud rot, palm borer, and nematodes. Pruning may be costly when the palm is tall.

Common Name: Senegal Date Palm
Scientific Name: *Phoenix reclinata*

Common name: **Pygmy Date Palm**
Scientific Name: *Phoenix roebelinii*



Description: Tall and slender, this species develops a dense head of graceful, feathery fronds. The bright green leaves are much smaller than those of the Canary Island or Date Palm. Suckers from the base can be encouraged to form a tree with several trunks. These tend to lean away from one another as they mature. Hybrids of this species and Canary Island Date Palm are hardier and more massive in scale.

Landscape Use: This is a very striking specimen palm adapted for use in warm, sheltered microclimates in low elevation desert locations. The slender leaning habit of the clump form lends great charm and a distinctly tropical appearance to the landscape.

Foliage: Evergreen

Climate Zone: (5)

Height: 20'-30'

Light Exposure: Part shade to full sun

Spread: 8'-12'

Water Use: Medium to high

Growth Rate: Moderate

Trunk Width: clumping

Cultural Requirements: Plants respond well to regular watering and application of nitrogen fertilizers. Not commonly available in Arizona.

Problems: For use in protected, nearly frost-free areas only. Severe frost damage may be expected when temperatures fall below the mid-20s F.

Description: This dwarf, slow-growing palm develops a dense, graceful crown on a single, straight to curving trunk. The arching finely cut, dark green leaves create a delicate, refined appearance.

Landscape Use: The Pygmy Date Palm is valued as a highly decorative, small-scale palm for protected locations. It is ideally suited for container culture.

Foliage: Evergreen

Climate Zone: 5

Height: 6'-8'

Light Exposure: Part shade to full sun

Spread: 3'-5'

Water Use: Medium to high

Growth Rate: Slow

Cultural Requirements: Regular watering and application of nitrogen fertilizer promotes vigorous, lush growth.

Problems: Spines present on the leaf petiole are a minor nuisance. Frost damage is likely in cold microclimates. Susceptible to micronutrient deficiencies

FAN PALMS

Common Name: **Mexican Blue Palm**

Scientific Name: *Brahea armata*



Description: Waxy, silvery-blue leaves arch gracefully from the erect columnar trunk of this striking palm. Faintly fragrant, creamy white flowers are arrayed on flower stalks 18 feet or more in length. Some consider it better appearing in youth since mature specimens develop a stockier trunk and the foliage has a less pronounced blue color.

Landscape Use: This beautiful tree offers much versatility as a landscape palm or as a container subject. The attractive blue foliage makes a nice contrast with desert vegetation.

Foliage: Evergreen

Climate Zone: (4), 5

Height: 25'-30'

Light Exposure: Part shade, full or reflected sun

Spread: 6'-10'

Water Use: Low to medium

Growth Rate: Slow

Trunk Width: 3'+

Cultural Requirements: Mexican Blue Palm tolerates extremes of heat, cold, wind and a wide range of growing conditions. Regular, widely spaced irrigation is best.

Problems: None reported.

Common Name: **Guadalupe Fan Palm**

Scientific Name: *Brahea edulis*



Description: A robust, handsome palm similar to Mexican Blue Palm but faster growing and with less conspicuous flowers. Large, medium green leaves hold their color well through the winter and shed cleanly. Flowers appear on 4-5 foot long stalks and are followed by heavy clusters of small, black edible fruit.

Landscape Use: This fan palm is excellent as a specimen, in groups, or as a container plant when young. It is more effective for smaller scale use than Washingtonias.

Foliage: Evergreen

Climate Zone: (4), 5

Height: 20'-30'

Light Exposure: Part shade, full or reflected sun

Spread: 8'-10'

Water Use: Low to medium

Growth Rate: Slow to moderate

Trunk Width: 2.5'-3'

Cultural Requirements: This species adapts to a wide variety of soil and cultural conditions. Deep, infrequent irrigation is best.

Problems: None recorded in Arizona.

Common Name: Mediterranean Fan Palm
Scientific Name: *Chamaerops humilis*



Description: This slow grower is one of the most cold-hardy of all palms. The distinctive fan-shaped fronds are composed of stiff, blue-green to gray-green leaflets. These eventually form a compact head at the end of each curved stem. In Arizona, the bushy, multi-trunked type is the most commonly used form of this highly variable species.

Landscape Use: The suckering habit eventually results in pleasing stem groupings and much landscape interest. This small palm makes a striking accent plant against architectural features. It is one of the best species for containers as well as for massing at the base of taller growing palms.

Foliage: Evergreen

Climate Zone: (4), 5

Height: 5'-15'

Light Exposure: Part shade to full sun

Spread: 5'-20'

Water Use: Low, medium or high

Growth Rate: Slow

Trunk Width: clumping

Cultural Requirements: Mediterranean Fan Palm survives much neglect but grows best in rich soil with ample water. Some pruning may be necessary to limit the number of stems and to remove old fronds.

Problems: None recorded in Arizona.

Common Name: Chinese Fountain Palm or Chinese Fan Palm
Scientific Name: *Livistona chinensis*



Description: Chinese Fountain Palm develops a rounded fountain-like crown of graceful leaves atop a slender trunk. The shiny, bright green foliage forms a distinctive fringe of drooping leaf tips on mature plants. The large 3- to 5-foot fans are self-cleaning, leaving an attractive, leaf-scarred trunk.

Landscape Use: A striking landscape specimen for warm winter areas. Tolerance of low light conditions makes it an excellent plant for indoor use when young. It is not commonly available in Arizona.

Foliage: Evergreen

Climate Zone: (4), 5

Height: 15'-25'

Light Exposure: Part shade

Spread: 10'-15'

Water Use: Medium to high

Growth Rate: Slow to moderate

Trunk Width: 1'-2'

Cultural Requirements: Afternoon shade is important in hot desert climates.

Problems: Frost damage is likely in cold microclimates.

Common Name: **Sonoran Palmetto**
Scientific Name: *Sabal uresana*



Common Name: **Windmill Palm**
Scientific Name: *Trachycarpus fortunei*



Description: This picturesque fan palm is native to the canyons and tablelands of Sonora, Mexico. Young plants are particularly attractive forming a cluster of large bluish-green fans with deeply divided segments. With maturity, the blue color of the fans becomes less prominent and a fairly stout trunk develops.

Landscape Use: The Sonoran Palmetto is excellent as a specimen, along avenues or in parks.

Foliage: Evergreen

Climate Zone: 4, 5

Height: 30'-40'

Light Exposure: Full sun

Spread: 15'-25'

Water Use: Low to medium

Growth Rate: Slow

Trunk Width: 2'-3'

Cultural Requirements: Once established, this palm is very cold hardy. Well drained soil is necessary for best growth.

Problems: Not commonly available in Arizona.

Description: Windmill Palm is small, slow-growing and tolerant of both heat and cold. Fan-shaped leaves are displayed in a windmill-like fashion in a compact, regular head. The slender, upright trunk tapers inversely from top to bottom. Stubs of old fronds protrude from a shaggy covering of hairy, black fibers.

Landscape Use: This semi-dwarf compact species is effective for tropical plantings, atriums and containers. It makes artistic pairs for an entryway, along a narrow walk or drive.

Foliage: Evergreen

Climate Zone: 4, 5

Height: 15'-25'

Light Exposure: Part shade to full sun

Spread: 6'-8'

Water Use: Medium to high

Growth Rate: Slow

Trunk Width: 1'

Cultural Requirements: Responds well to regular irrigation and fertilizer. Appearance is best when grown in the shelter of taller trees or on the east side of structures where the tree is shaded from afternoon sun. Occasional pruning is necessary for a neat appearance.

Problems: Fronds may become tattered in high winds and tip-burn with reflected sun and heat.

Common Name: **California Fan Palm**

Scientific Name: *Washingtonia filifera*



Description: A powerful, stately palm whose heavy trunk supports a crown of large, fan-shaped leaves. Foliage stands erect and spreading on spiny petioles when young. With maturity, leaves droop to the smooth trunk forming a handsome thatch. The California desert type retains the dead fronds all the way to the ground unless trimmed. This species hybridizes easily with *W. robusta*, so that a large variation in appearance is possible, even from commercial sources.

Landscape Use: The massive character of this palm tends to dominate small landscapes and small structures. The best use is as a street or park tree or a specimen in large-scale landscapes.

Foliage: Evergreen

Climate Zone: (3), 4, 5

Height: 40'-60'

Light Exposure: Part shade to full sun

Spread: 15'-20'

Water Use: Low to medium

Growth Rate: Moderate to fast

Trunk Width: 4'-5'

Cultural Requirements: Some drought tolerance is shown but prefers regular, infrequent, deep irrigation. Good soil drainage is important. Periodic grooming improves appearance. Fertilize annually in spring or summer.

Problems: Thatch may harbor pests and be a fire hazard. Yearly trimming can be costly. Susceptible to bud rot and root knot nematodes.

Common Name: **Mexican Fan Palm**

Scientific Name: *Washingtonia robusta*



Description: This tall, graceful fast-growing palm is well adapted to Arizona's heat and low humidity. Bright green, fan-shaped leaves form a luxuriant but more compact head than California Fan Palm. The trunk flares at the base but tapers into a slender column above. The dry leaf thatch is not so uniform or attractive as that of the California Fan Palm. It may be removed or allowed to hang naturally, and often breaks loose. This species hybridizes easily with *W. filifera*, so that a large variation in appearance is possible, even from commercial sources.

Landscape Use: Planted as a street or park tree, lawn specimen and in groups for a tropical effect. Its height, form and ease of transplanting make it a popular landscape specimen to lend vertical scale to large spaces.

Foliage: Evergreen

Climate Zone: (4), 5

Height: 40'-100'

Light Exposure: Part shade to full sun

Spread: 10'-15'

Water Use: Low, medium or high

Growth Rate: Fast

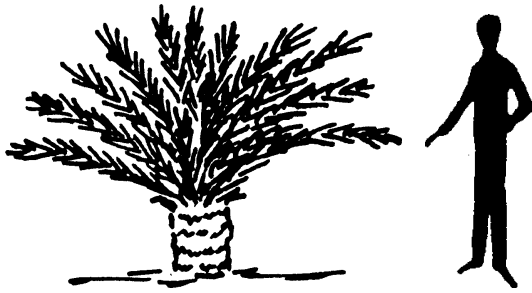
Trunk Width: 2.5'-3'

Cultural Requirements: Tolerance is shown to poor conditions but best growth occurs with good soil and regular irrigation. Occasional grooming is needed. Fertilize annually.

Problems: Although often injured by winter cold, near the limits of its range this palm regrows a new head of leaves by midspring. Thatch usually breaks loose on tall trees. Somewhat more disease-resistant than other palms. Palm flower caterpillars are an occasional litter problem beneath the tree or in nearby structures. Avoid planting near power lines.

PALM-LIKE PLANTS

Common Name: **Sago Palm**
Scientific Name: *Cycas revoluta*



Description: This small, compact plant is not a true palm, but a cycad. The shiny, dark-green foliage consists of numerous feathery leaves arranged in a flat spiral at the top of the heavy black trunk. The plant is slow-growing, producing new leaves only once a year.

Landscape Use: The Sago Palm makes an excellent tub or planter subject. It is effective when combined with other tropical and subtropical plants. Small Sago Palms are sometimes used under tall trees in place of ferns.

Foliage: Evergreen

Climate Zone: (4), 5

Height: 6'-10'

Light Exposure: Part to full shade

Spread: 3'-5'

Water Use: Medium to high

Growth Rate: Slow

Trunk: clumping or single to 1' width

Cultural Requirements: Good quality garden soil and regular irrigation encourage best growth and appearance. In zone 5, select a shady planting site.

Problems: Plants may sunburn with full to reflected sun and heat, especially when grown as container plants.

Common Name: **Dioon**
Scientific Name: *Dioon edule*



Description: This slow-growing cycad develops a rosette of leaves from a short, cylindrical unbranched stem. The young Dioon has an airy, lacy fern-like quality. As plants mature, the leaves become rigid and silvery grey, reminiscent of palm foliage.

Landscape Use: Dioon is rich and exotic in character. It is excellent as a container plant or for enclosed or partly enclosed garden areas with a tropical theme.

Foliage: Evergreen

Climate Zone: (4), 5

Height: To 5'

Light Exposure: Part to full shade

Spread: 3'-5'

Water Use: Medium to high

Growth Rate: Slow

Trunk Width: 1'

Cultural Requirements: Well-drained, fertile, organic soil and protection from hottest sun and wind should be provided for best growth.

Problems: Plants may sunburn with full or reflected sun, especially when grown as container plants.

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