

An introduction to Cold Hardy Palms (USDA Zones 6b-8a)

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Foreword

Welcome to the world of Cold Hardy Palms.

If you live in USDA Zone 6b or above, you can grow palms. Not just any palms, but “native” palms too! It sounds fantastic, but it is absolutely true.

If this is news to you, then you are about to embark on a journey of discovery and enlightenment that will make a defining mark in your gardening world.

The world of cold hardy palms is curious. Knowledgeable gardeners, nurserymen, and horticultural agents have known about cold hardy palms for decades, but the knowledge somehow hasn't hit the streets. There are reasons why – the biggest of which simply seems to be the assumption that palms can't be grown anywhere except in the Florida tropics or in the warm southwest. Finally, however, the time of cold hardy palms has come to the limelight, principally because of the Internet and its world-wide-web.

I present to you an introduction to the cold hardy palms.



Needle Palm (*Rhapidothymus hystrix*),
the cold-hardest trunk-forming palm.

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Dwarf Palmetto (*Sabal minor*),
the cold-hardest palm.

List of Cold Hardy Palms

USDA Zones 6b to 8a.

* Expect leaf damage from average low in listed zone; ** could be lethal.

List is cumulative upwards.

6b Cold Snap –5 to 0F

Rhapidophyllum hystrix

Sabal minor

7a Cold Snap 0 to 5F

Sabal 'Birmingham'

Sabal 'Louisiana'

Sabal 'Tamaulipas'

7b Cold Snap 5-10F

Sabal uresana

Trachycarpus 'Bulgaria'

Trachycarpus fortunei

Trachycarpus nanus

Trachycarpus takil

Trachycarpus wagnerianus

8a Cold Snap 10 to 15F

Brahea armata*

Brahea berlandieri aka B. bella

Brahea decumbens

Brahea dulcis*

Brahea moorei

Butia capitata

Butia eriospatha

Butia capitata odorata

Butia paraguayensis

Butia purpurascens

Butia yatay

Chamaedorea microspadix*

Chamaedorea radicalis*

Chamaerops humilis*

Chamaerops humilis cerifera*

Jubea chilensis**

Nannorrhops ritchiana**

Nannorrhops ritchiana 'Silver'**

Phoenix dactylifera**

Phoenix loureiroi humilis**

Phoenix loureiroi pedunculata**

Phoenix sylvestris**

Phoenix theoprastii**

Sabal domingoensis**

Sabal etonia

Sabal "Brazoria" aka xtensis*

Sabal mexicana*

Sabal palmetto

Sabal rosei*

Serenoa repens

Trachycarpus latisectus

Trachycarpus martianus

Trachycarpus 'Naga Hills'

Trachycarpus oreophilus

Trachycarpus princeps

Trithrinax brasiliensis

Trithrinax campestris

Washingtonia filifera**

Washingtonia filifera-x-robusta**

Average Frost Dates USDA Zones

<u>Zone</u>	<u>Last</u>	<u>First</u>
Z6b	April 30	Oct 18
Z7a	April 25	Oct 20
Z7b	April 10	Oct 25
Z8a	March 30	Nov 1
Z8b	March 15	Nov 15

NOTE: Whether it is grass or perennials or annuals or trees you are planting, you have to meet the requirements of the plant to succeed. That means: proper site selection; site and soil preparation when needed; adequate irrigation when needed; selecting the right plant and right size of plant; and planting at the optimal time. Succeeding with palms can be as easy or as difficult as you want to make it.

That being said, nature is not perfect. Poor health, diseases, pests, natural disasters, and old age befall people and palms alike. Nothing lasts forever. Palms are not a panacea. They are simply a choice that you may not have known about, a treasure that you have been deprived of, and a new hope.

No guarantee is made, given, or implied. Please understand.

Key to Cold Hardy Palms¹

USDA Zones 6b-8a

- 1A Trunk absent or creeping or below ground (not upright).....2
 1B Trunk upright, even if low and squat.....8

Non-trunking or Subterranean trunk

- 2A Tiny teeth seen or felt on leaf pinnae - *Serenoa repens* Z8a
 2B No tiny teeth on leaf pinnae.....3
 3A Inflorescence terminal (at end and center of stem), upright, extends beyond leaves - *Nannorrhops ritchiana* Z8a, 7b
 3B Inflorescence not terminal.....4
 4A Hastula truly palmate; petioles armed; leaves of older specimens stunningly silvery-blue or frosted white on edges.....5
 4B Hastula costapalmate or strongly costapalmate; petioles not armed...6
 5A Inflorescence extends well beyond leaves; back of leaves white, front of leaves green - *Brahea moorei* Z8a
 5B Inflorescence held within leaves; leaves very white front and back - *Brahea decumbens* Z8a
 6A Inflorescence bushy and \leq leaf length; hastula strongly costapalmate - *Sabal etonia* Z8a
 6B Inflorescence sparse and \geq leaf length; hastula costapalmate.....7
 7A Subterranean trunk vertical and deep (not creeping); hastula not extremely skewed. - *Sabal minor* Z7a, 6b
 7B Subterranean trunk creeping below surface; hastula extremely skewed. - *Sabal 'Tamaulipas'* Z7a

Palms with a trunk

- 8A Leaves pinnate (like fern leaf or ostrich feather).....9
 8B Leaves palmate or costapalmate...13
 9A Thick sturdy trunk, even massive (not thin and narrow).....10
 9B Thin trunk (may be very short or up to several feet).....12
 10A Deep-green glossy leaves (with wide leaf pinnae) on a very stout trunk - *Jubea chilensis* Z8b
 10B Leaves gray-green or green, not glossy, pinnae long and thin.....11
 11A Leaves arch out then curl down towards trunk, leaves gray to green; wide pinnae taper long and thin - *Butia sp.*Z8a
 11B Leaves held aloft and out- like an open umbrella - *Phoenix sp.* Z8b
 12A Short, 6-inch trunk at most; red berries - *Chamaedorea radicalis* Z8b, 8a
 12B Tall narrow trunk, red berries - *Chamaedorea microspadix* Z8b, 8a
 13A Wide, squat, trunk has long, sharp, conspicuous spines - *Rhapidophyllum hystrix* Z7a, 6b
 13B Trunk lacks spines (but leaves may have teeth).....14
 14A Leaf stem bears teeth.....15
 14B Leaf stem w/o thorns or teeth.....20
 15A Teeth small, trunk average.....16
 15B Teeth large, trunk wide.....19
 16A Hastula palmate; palm suckers at base. *Chamaerops humilis* Z8a
 16B Hastula costapalmate; petioles armed.....17
 17A Stem of inflorescence extends beyond leaves & inflorescence hangs gracefully down 6-ft or more - *Brahea armata* Z9a, 8b
 17B Inflorescence not as above.....18
 18A Dead leaves naturally fall off trunk, boot and all, leaving a clean trunk - *Brahea edulis* Z9a, 8b
 18B Dead leaves remain attached to

¹ For mature specimens, not seedlings and small specimens. If in doubt, see species descriptions.

- trunk for some time
 - *Brahea dulcis*/ *B. berlandieri* Z8a
- 19A Teeth green; many leaf filaments
 - *Washingtonia filifera* Z8b, 8a
- 19B Teeth red; few leaf filaments
 - *Washingtonia robusta* Z9a, 8b
 NOTE: Hybridization of *W. filifera*
 x *W. robusta* = *W. filabusta*
- 20A Tiny teeth seen or felt on leaf
 pinnae – *Serenoa repens* Z8a
- 20B No tiny teeth on leaf pinnae.....21
- 21A Inflorescence terminal (at end and
 center of stem), upright, and much
 longer than leaf-length
 – *Nannorrhops ritchiana* Z8a
- 21B Inflorescence not terminal.....22
- 22A Leaves truly palmate; Abundant,
 coarse hair surrounds trunk at leaf
 bases (although trunk may be bare
 further down) – *Trachycarpus sp.*
 (see page 11) Z8, 7b
- 22B Leaves costapalmate (or weakly so)
 Trunk not hairy.....23
- 23A Leaf weakly costapalmate; most
 pinnae $\leq 2/3$ leaf length.....24
- 23B Leaf very costapalmate; most
 pinnae $\geq 2/3$ leaf length.....25
- 24A Trunk normal - *Brahea nitida* Z9a
- 24B Trunk short & squat except very
 old specimens where boots have
 fallen off - *Sabal* 'Louisiana' Z7a
- 25A Inflorescence \geq leaf length; leaves
 glaucous – *Sabal uresana* Z8a, 7b
- 25B Inflorescence \leq leaf length.....26
- 26A Most pinnae $\geq 3/4$ leaf length, ends
 long, thin, and wispy27
- 26B Most pinnae $\leq 3/4$ leaf length;
 pinnae somewhat broad;
 inflorescence < than leaf length,
 – *Sabal mexicana* Z8b, 8a and
 – *S. 'Brazoria'* Z8a
- 27A Inflorescence = leaf length; trunk
 not slow – *S. palmetto* Z8a
- 27B Inflorescence < leaf length; trunk
 slow – *Sabal* 'Birmingham' Z7a



Windmill Palms, Pullen Park, Raleigh, NC.



Sabal minor, Jaycee Park, Raleigh, NC.



Windmill Palms, Pullen Park, Raleigh, NC.

Palm Morphology

Boot: Remnant of the leaf stem attached to the trunk after the leaf dies and separates. Temporary or lacking in some species.

Costapalmate: A leaf where the hastula is elongate and pointy to very elongate and pointy; Hastula resembles an arm that ends in a praying hand whose middle finger may be very long.

Hastula: Found in palmate and costapalmate leaves. The *upper* leaf-end of the stem where the leaf and pinnae are attached (do not confuse with rachis!).

Inflorescence: The branched stem that bears the palm flowers, and later its fruit. May be sparse - having a few short branchlets at long intervals, or bushy – having a congestion of branchlets.

Palmate: A leaf where the hastula is round or ovoid, not elongate and not extending along the leaf midrib; Hastula resembles an arm that ends in a fist.

Pinnae: Divisions of the leaf found along the midrib in pinnate leaves or as spread fingers in palmate and costapalmate leaves.

Pinnate: The leaf stem continues as the midrib and pinnae are attached to the midrib like filaments of a feather to the feather shaft. Leaf resembles a fern or cicad leaf.

Rachis: The *lower* part of the stem that extends along the *underside* of the leaf along its midrib (Not to be confused with the hastula!).

Stem / Petiole: The woody extension that attaches the leaf to the trunk.

Trunk: The aerial or underground body that bears the leaves. When visible above ground (aerial), the palm is said to have a trunk.



Palmate hastula.



Costapalmate hastula.



Very costapalmate hastula.



Sabal 'Tamaulipas' hastula



Rachis on a very costapalmate leaf.

Species Descriptions²

BRAHEA (Rock Palm): Species of *Brahea* are native to Baja California, Mexico, Guatemala, Nicaragua, and neighboring areas. Nearly all *Brahea* species require full sun, excellent drainage and low humidity, although a few have been grown in the humid southeast. The non-trunking species (*B. decumbens* & *B. moorei*) are differentiated by their inflorescence and leaf color. The trunking species are sometimes difficult to separate, in which case “species” are ascribed to localized populations. It is useful to know where your plant is from because particular populations may be hardier to cold.

Brahea armata Blue Hesper Palm: Native to Baja California, *B. armata* has stiff bluish leaves, but its inflorescences erupt from within the leaves and dramatically weep in long streamers towards the ground. Tall specimens in flower look like alien space craft with numerous golden, downward pointing jets, or an aerial medusa with long, gold, graceful tentacles. Z8b, 8a

Brahea berlandieri Blue Rock Palm: The northernmost population of the *Brahea dulcis* complex, *Brahea berlandieri* is found in Tamaulipas, Mexico where individuals may cling to sheer rock faces. Adult specimens have survived brief 5F exposure in Texas. Bluish green leaves. Z8a, 7b

Brahea decumbens Blue Dwarf Rock Palm: *Brahea decumbens* is perhaps the most coveted palm of this genus. It is absolutely stunning in old age because its leaves are brilliant silvery-blue or white. Slightly more cold hardy than its showy relative - *Brahea moorei*. Z8a

Brahea dulcis Rock Palm: Mexico to Nicaragua. Prefers well-drained sites and

low humidity, although excellent specimens are grown in Fairchild Tropical Gardens, Florida. Z8b, 8a.

Brahea edulis Guadalupe Palm: The only *Brahea* that drops its dead leaves, giving it a clean look. Native to Guadalupe Island, it is endangered by goats that eat the seedlings. Fortunately it is popular in southwest landscapes and seedlings are avidly reared. Z9a, 8b.

Brahea moorei Spearmint Rock Palm: Native to northeast Mexico, Sierra Madre Oriental, where it inhabits light shade, *B. moorei* is highly ornamental but doesn't form a trunk. Do not despair, its leaves are arresting. Older specimens have the backs of the leaves and the ridges of the leaf-folds frosted pure white, in high contrast to the very green leaf front. Z8b, 8a.

Brahea nitida Guatemala Rock Palm: Native to Guatemala. *Brahea nitida* is the only *Brahea* whose leaf petioles are not armed. Z9a, 8b.



Young *Butia capitata*, Lee County, NC

BUTIA (Jelly Palm): Species of *Butia* are native to Argentina; Brazil; Paraguay; & Uruguay. There are trunking and non-trunking species. *Butia* provides us with the cold-hardest pinnate palms: *Butia capitata odorata* and *Butia eriospatha*. *Butia* prefer well drained sandy-loam to loamy-sand soils, although adequate moisture is needed. Full sun or part shade is best for most

² When 2 zones are given, the 2nd is riskier.

varieties. As the name implies, the fruits of some species are used to make jelly.



Adult *Butia capitata*, Lee County, NC

Butia capitata Jelly Palm: Found in Brazil and Uruguay; commonly cultivated in southeastern USA.

Significant leaf damage begins at 10F, but the plant may survive brief periods to about 6F. Can be grown in clay soils so long as excellent drainage is provided. Fruit is large, orange to yellow & reportedly delicious. Z8a, 7b

Butia capitata odorata Southern Jelly Palm: Perhaps the cold-hardest pinnate palm, native to southern Brazil and Uruguay. It has smaller fruit and a more compact form than its northerly neighbors. Z8a, 7b

Butia eriospatha Woolly Jelly Palm: Native to extreme southern Brazil, the Woolly Jelly Palm gets its name from the fuzzy spathe (sheathing bract) that protects the young flower stalk. It may be cold hardier than *Butia capitata odorata*. Z8a, 7b

Butia paraguayensis Dwarf Jelly Palm: From Paraguay and southern Brazil, this jelly palm forms a subterranean trunk that may very slowly become aerial, rarely more than 6-feet tall. Z8a, 7b

Butia purpurascens Purple Jelly Palm: Native to central Brazil, this palm gets its name from its purple fruit (rather than

the orange or yellow fruit typical to the genus). Z8a.

Butia yatay Yatay Palm: Native to Argentina. Seeds are larger and the trunk is thinner than *B. capitata*. Z8a.

Chamaedorea microspadix

BambooPalm: Native to mountainous areas of Mexico where it inhabits deep shade in very moist, rocky, well-drained soil. Resembles bamboo in that it has a thin trunk and pinnate leaves. Leaves cold hardy to 22F, stem hardy to about 12F. Brilliant red berries. Z8b, 8a.

Chamaedorea radicalis Another native of mountains of Mexico, but has no or very little trunk. Requirements same as *Chamaedorea microspadix*. Z8b, 8a.

Chamaerops humilis Mediterranean Fan Palm: Native to lands on the western half of the Mediterranean Sea, this is an easy and rewarding palm in Zone 8a and above, however do not plant where pedestrian traffic is expected as the leaf stems have sharp teeth. Z8a, 7b

Chamaerops humilis cerifera Blue Mediterranean Fan Palm. Same as above except leaves are blue. Z8a, 7b

Jubea chilensis Chilean Wine Palm: This stunning palm is native to cool, windswept areas of Chile. A more dramatic pinnate palm would be hard to find, although reports of its cold hardiness are often exaggerated. Large, very green, cicad-like leaves grace a wide, imposing, clean trunk. Leaf damage begins around 15F, but individuals have survived brief exposure to 10F, possibly lower. Absolutely dramatic and imposing where it can be grown without regular winter damage and without exposure to high heat and humidity, which makes southern and coastal California ideal, but the southeastern USA less so, and Florida nearly impossible. Z8b, 8a

Nannorrhops ritchiana Mazari Palm: Native to Pakistan & Afghanistan. Perhaps no palm receives higher unsubstantiated accolades for its cold hardiness. I have seen reports of hardiness to 0F, but can find no one who has a long-term specimen except in Zone 8a or warmer. Absolutely requires sandy soil with excellent drainage and full sun all day long. Leaves are green to grayish-green. May or may not form a narrow, inclined trunk. The only cold hardy palm whose inflorescence arises from the very end of the stem. The tip of the stem dies back after flowering, like a yucca. Z8a, 7b

Nannorrhops ritchiana 'silver' The silver form of Mazari Palm, perhaps a separate species, and less cold hardy than the green form. Z8b, 8a

PHOENIX (Date Palm): Native to well drained soils in full sun from Africa and the Mediterranean, *Phoenix* species are pinnate, trunk forming palms, some of which are marginally cold hardy. I list these species only because some enthusiasts in Zone 8a and 8b may want to risk adding a date palm to their outdoor collection. Phoenix species are less cold hardy than the *Butia* species, and I would direct everyone who desires a beautiful, cold hardy pinnate palm to the Butias. Nevertheless, here are the marginally cold hardy date palms. Z9.

Phoenix dactylifera Leaf hardy to 16F or so, this species is easily grown in Mediterranean climates that aren't too cold in winter. Forms suckers/offsets from the base. Z9, 8b.

Phoenix loureiroi humilis Mountain Date Palm: As the name implies, this non-suckering species occurs in the mountains from India and China to the Philippines. There is hope that a palm from the Himalayas would be quite cold hardy. Z9, 8b.

Phoenix loureiroi pedunculata Dwarf Mountain Date Palm: As the name implies, this small species occurs in the mountains from India and China to the Philippines. If it forms a trunk, it is short, and it typically has many suckers/offsets, making it easy to distinguish from the subspecies *humilis*. Z9, 8b.

Phoenix sylvestris Silver Date Palm: Silver Date Palm is another beauty for Mediterranean climates, it has silvery leaves and a thin, tall trunk. Z9.

Phoenix theoprastii Crete Date Palm: From Crete comes the reportedly cold hardiest date palm. Crete Date Palm sports silvery green leaves and often multiple trunks. Z8b.



Needle Palms at Jaycee Park, Raleigh, NC.

Rhapidothymus hystrix Needle Palm: One of our great native palms, Needle Palm naturally occurs in South Carolina, Georgia, Alabama, Mississippi, and Florida. Its name derives from the fact that its stout trunk is armed with long, tough spines. Needle Palm is remarkable. Although happiest in moist to wet soils in part shade, it also flourishes in full sun in well-drained soils. And it is absolutely the cold-hardest trunk-forming palm, able to withstand brief exposure to -10F, with no leaf damage at -4F. This is odd as it is native to the hot and humid southeast.

Despite its cold-hardiness, Zone 6b is not conducive to robust growth of Needle Palm, as the season is short and the number of days at or above 80F is not great. However, with a well-chosen site Needle Palm may be somewhat content there. Needle Palm seems to be taken for granted, and is endangered in the wild due to habitat destruction. It truly is a lovely palm in part shade. Z6b.

SABAL Palms of the genus *Sabal* are all native to Central and North America, and the Caribbean. Within their native habitats they can be prolific, but they are cherished for their beauty and drama. A good deal of disagreement exists regarding *Sabal* species and varieties within species. This has led to a confusion of palm names that have been touted, refuted, changed, but somehow always managing to linger and resurface. No doubt some of the names that appear below stand to be changed or lost in the future. Hold me no grudge.



Sabal 'Birmingham' at Jaycee Park, Raleigh

***Sabal* 'Birmingham'** Birmingham Palmetto: A source for wonder. *Sabal* 'Birmingham's name derives from the fact that a gardener in Birmingham, Alabama grew this amazing palm. All seed stock originated from her plant. She bought her palm while in California. No native source has yet been traced for this singular *Sabal*. *Sabal* 'Birmingham'

slowly forms a trunk, in old age resembles *Sabal palmetto*, and is cold hardy to 0F. *Sabal* 'Birmingham' likes full sun or part shade in moist to very moist soil. It is not particular about soil, doing equally well in sandy-loam and amended clay. Z7a.

Sabal* 'Brazoria' aka *xtexensis

Brazoria Sabal: Unlike *Sabal* 'Birmingham', we know exactly where this *Sabal* comes from: Brazoria, Texas. Prefers moist, well-drained soil in full sun. You would be hard pressed to differentiate this palm from *Sabal mexicana*, which it greatly resembles, however, *Sabal* 'Brazoria' experiences leaf damage at 10F whilst *Sabal mexicana* weighs in at 14F. Z8a

Sabal domingensis* aka *blackburniana* aka *umbraculifera Hispaniolan Palmetto: Native to the Island of Hispaniola, this *Sabal* has been reported cold hardy to 8F, but that contrasts with reliable reports of hardiness to only 22F, which seems more likely for a Caribbean plant. *Sabal domingensis* prefers full sun and well-drained, sandy soil. Described as a bigger, more robust appearing *Sabal palmetto*. Z9, 8b.

Sabal etonia Scrub Palm: *Sabal etonia* is native to the endangered Florida Scrub plant community in well-drained sandy soils under the hot, baking sun of Florida's peninsula. *Sabal etonia* does not normally form a trunk, although specimens with several feet of upright trunk are known. Z8b, 8a.

***Sabal* 'Louisiana'** Louisiana Palmetto: The native distribution of *Sabal* 'Louisiana' appears to coincide with that of *Sabal minor*, except that Louisiana Palmetto keeps near the coast. Presently recognized as a trunk-forming variation of *Sabal minor*, Louisiana Palmetto is nonetheless distinctive. Typically it has bluish leaves that are larger and more

numerous than a similar aged specimen of *Sabal minor*, and Louisiana Palmetto slowly forms an aerial trunk. It is not as cold hardy as *Sabal minor* and experiences leaf damage at 5F.

Louisiana Palmetto prefers part shade in moist to wet soil, but specimens in full sun can be stunning. Z7a

Sabal mexicana Mexico Palm:

Native to Texas, south to Mexico and Nicaragua, *Sabal mexicana* is a robust, tall, and impressive palm. The trunk retains the boots of dead leaves for a long time, giving the palm a stout and robust appearance. *Sabal mexicana* prefers full sun in a well-drained but moist soil. Expect leaf damage to begin about 14F. Z8b, 8a



Sabal minor, North Carolina Botanic Garden, Chapel Hill, NC

Sabal minor Dwarf Palmetto: Native to all coastal states from Texas east to North Carolina, and inland to southeast Oklahoma, Dwarf Palmetto is absolutely the cold hardiest non-trunk-forming palm in the world, surviving -17F, with no leaf damage at -4F. Dwarf Palmetto prefers partial shade in moist to wet soil, with little regard as to sand or clay content. It can also be grown in sandy, well drained, almost arid soil in full sun. It's one tough (but pretty) cookie. Like the very cold hardy Needle Palm, Dwarf Palmetto is underused in the

horticultural world. It is native, dramatic in large sweeps of the landscape or as a solitary specimen, and is easy to care for – so why isn't it as well known and as sought-after as *Phlox* or ferns? Z6b

Sabal palmetto Palmetto/Cabbage Palm:

Palmetto graces the coasts in its native range from North Carolina south to Florida and west to Texas. Although no other trunk-forming palm naturally occurs farther north than Palmetto (Bald Head Island, NC), it is not as cold hardy as one might expect, and experiences leaf damage at 8F, though individuals have survived a bitter -4F. Palmetto prefers full sun in well-drained sandy soil. For some reason it is difficult to get Palmetto to grow well inland away from the coast, but some people are successful. The trick may be growing a seedling in a very tall pot for several years until it has a trunk, and only then transplanting it to a suitable site in the landscape, making sure not to damage the roots. Called the Cabbage Palm because people once ate the leafy “cabbage” where from the leaves originate, which killed the tree. Z8a, 7b

Sabal rosei Llanos Palmetto: Native to western Mexico in subtropical deciduous forests and plains, *Sabal rosei* has the appearance of a slim-trunked *Sabal mexicana*. Prefers moist, well-drained soil in full sun. Z8b, 8a

***Sabal* ‘Tamaulipas’** Tamaulipas Dwarf Palmetto: A curious palm from the Mexican State of Tamaulipas.

Tamaulipas Dwarf Palmetto behaves unlike any other *Sabal* species. It forms an underground trunk upon which it continuously advances, slowly snaking its way from hither to thither. Also, many of the leaves have an extremely skewed hastula. *Sabal* ‘Tamaulipas’ is surprisingly cold hardy considering its



Sabal 'Tamaulipas' at JC Raulston Arboretum, Raleigh, NC

land of origin. It has endured 6F with no leaf damage. Z7a.

Sabal uresana Sonoran Palmetto: A beautiful and dramatic blue or glaucous-leaved, cold hardy, trunk-forming palm native to stream valleys of Mexico's Sonoran Desert, but just how cold hardy is a matter of debate. I have seen listings of 14F and others of 6F. I have a small specimen that endured 9F with no leaf damage whatsoever, so 6F would not surprise me. *Sabal uresana* prefers plenty of moisture in well-drained soil in full sun. 7b.

Serenoa repens Saw Palmetto: Native to open forests and coastal dunes in Florida, South Carolina, and Georgia, Saw Palmetto is aptly named for the teeth on its leaf pinnae. The fruit is extensively collected for the nutraceutical market. An extract is used to treat BPH (benign prostatic hyperplasia), enlarged prostate, in men. *Serenoa repens* is a distinctive palm for the landscape. Some specimens produce an aerial trunk. The leaves are typically a grayish green, but spectacularly white populations are known. The most inland, and presumably cold hardiest population is known as *Serenoa repens* 'Georgia Silver'. Z8a.

TRACHYCARPUS (Windmill Palms)

Perhaps the most popular cold hardy trunk forming palms in the world, and deservedly so. Windmill Palms are native to moist temperate forest climates in the orient, principally China & India, where they prefer well-drained soil in part or full sun. Nearly all rapidly form a sturdy, upright trunk. A foot of trunk growth per year is not unusual. Highly sought after and subject to earnest discussion among palm enthusiasts, Windmill Palms are the ambassadors of the Cold Hardy Palm world.

Dichotomous Key to *Trachycarpus*³

- 1A. Vertical, obvious trunk.....2
- 1B. No - or very small trunk – *T. nanus*
- 2A. Trunk hairy, not bare;
seed kidney-shaped.....7
- 2B. Bare trunk below leaves (seed either kidney or coffee-bean shape.....3
- 3A. 60 (+ -) pinnae per leaf.....4
- 3B. Perhaps 48 (+ -) pinnae per leaf;
Back of leaves white or whitish;
seed kidney-shaped. – *T. princeps*
- 4A. Toothed petiole; Inflorescence
typical/sagging; kidney-shaped seed.
– *T. 'Naga Hills'*
- 4B. Petiole not armed.....5
- 5A. Seed coffee bean shape.....6
- 5B. Seed kidney shaped; Inflorescence
nearly horizontal; Underside of
leaves blue-gray. – *T. oreophilus*
- 6A. Petioles broad, almost 2-inches
– *T. latisectus*
- 6B Petioles narrow – *T. martianus*
- 7A. Leaves small, stiff
– *T. wagnerianus* & *T. 'Bulgaria'*
- 7B. Leaves normal size - *T. fortunei*
and *T. takil*

³ References to *Trachycarpus* key on page 17.

***Trachycarpus* ‘Bulgaria’** Bulgarian Windmill Palm: Not native to Bulgaria, but worthy of recognition. Fifty-year-old specimens in Plovdiv, Bulgaria have withstood numerous exposures to temperatures below 0F. Seedlings of these palms are highly sought after for good reason. *Trachycarpus* ‘Bulgaria’ has smaller leaves and a tighter appearance than *T. fortunei*. Z7b, 7a



Trachycarpus fortunei, Jaycee Park, Raleigh

Trachycarpus fortunei Windmill Palm
An excellent and impressive cold hardy palm with many forms recognized by palm enthusiasts, or at least politely argued about (*T.* ‘Bulgaria’, *T.* ‘Taylor form’, *T.* ‘Takil’). Old specimens in North Carolina have survived several brutal winters where temperatures dipped to or below 0F. No lightweight when it comes to cold hardiness, and worthy of place in any garden. Z7b, 7a
Trachycarpus latisectus Windamere Palm: *Trachycarpus latisectus* comes from the Sikkim Himalayas of India and was originally known as *T. sikkimensis*. The name was changed to *latisectus* in

reference to the wide pinnae (2-inches across) of the leaves. *T. latisectus* naturally sheds its dead leaves, leaving a bare trunk, a trait shared by a few other windmill palms that need a more subtropical climate. Seeds are coffee bean shaped. *T. latisectus* has not so far proved as cold hardy as hoped. Z8a
Trachycarpus martianus Himalayan Windmill Palm: Much like *T. latisectus* in appearance (bare trunk & coffee bean shaped seeds) and cold hardiness, except that *T. martianus* has narrower pinnae on its leaves. Thus the leaves are not as big and broad as those of *T. latisectus*. Z8a
***Trachycarpus* ‘Naga Hills’** From Manipur, India, *T.* ‘Naga Hills’ is like *T. oreophilus*, but has toothed petioles. New to horticulture. Z8a 7b.

Trachycarpus nanus Dwarf Windmill Palm: Native to China’s Yunnan Province. A Windmill palm with no or little trunk. Kidney-shaped seed. Z8a, 7b
Trachycarpus oreophilus Thai Mountain Windmill Palm: Another bare-trunked windmill palm, but the leaves of *T. oreophilus* have 60 pinnae, making them large and very round. Seeds are kidney-shaped. Z8a

Trachycarpus princeps Stone Gate Windmill Palm: Distinguished from *T. martianus* and *T. oreophilus* by the very white backside of its leaves, *T. princeps* is another windmill palm suitable for warm temperate and cool subtropical climates. Z8a

Trachycarpus takil Kumoan Windmill. From the Himalayas near Kumoan, India, *T. takil* is at least as cold hardy as *T. fortunei*. Recent genetic studies reportedly raise doubts about the validity of *T. takil* as a separate species, and the morphological characteristics of *T. takil* may be found in variable populations of *T. fortunei*. Always room for more study. Z7b, 7a



Trachycarpus fortunei, Pullen Park,
Raleigh, NC

Trachycarpus wagnerianus No one is sure where this wonderful windmill palm originated, but speculation links it to Japan. Why then is it called *wagnerianus*? (Windmill palms keep you scratching your head). Known only from cultivation, *T. wagnerianus* is differentiated from other windmill palms by its smaller, stiffer leaves and tighter appearance. To my eye it resembles *T. 'Bulgaria'*. Whatever the case, *T. wagnerianus* is thought to be cold hardier than *T. fortunei*, though it is hard to believe that it could be cold hardier than *T. 'Bulgaria'*. Z7b, 7a

Trithrinax brasiliensis Brazil Needle Palm: Not to be confused with Needle Palm (*Rhapidophyllum hystrix*) which has needles only on its trunk, Brazil Needle Palm gets its name from the dangerously pointy tips of its very stiff leaves. It will stab the fool out of you before you get a look at its spiny trunk, so plant it where you and others are likely to see it but unlikely to have a

close encounter. Prefers well-drained soils in a rainforest climate. Tolerates cold to 20F. Z9a, 8b

Trithrinax campestris Blue Needle Palm: Like Brazil Needle Palm except the leaves are blue, even stiffer, and even more likely to sharply get your attention. It is native to Argentina and Uruguay and prefers well-drained soils in full sun in a Mediterranean climate. It is cold hardy to about 15F. Z8b, 8a

Washingtonia filifera California Fan Palm: Native to moist microclimates in arid regions of California, Arizona, and Baja California. Requires full sun and well-drained soils. An imposing palm because of its mature size, and a bit of hazard when cleaning up its leaves because they are heavily armed with large, green, jagged teeth. Stately as a solitary specimen, but more so when it occurs as a grove of palms. Leaf damage begins around 14F. Z8b, 8a

Washingtonia filifera-x-robusta The common hybrid between the two species. So common, in fact, that it may be difficult at times to find a pure specimen, especially in cities and suburbs.

Washingtonia robusta Mexican Fan Palm: Native to Mexico and Baja California in the same sort of habitats as *W. filifera*. Mexican Fan Palm has large, red teeth on the stems of its leaves, a slightly thinner and taller trunk, but otherwise is similar in appearance to California Fan Palm. As would be expected from its more southerly distribution, *W. robusta* is less cold hardy than its relative, and experiences leaf damage at 20F. Z9a, 8b

Planting Cold Hardy Palms

Create an extensive area of well-amended soil in the area where you intend to plant the palm. Mix in fine organic compost and a well-balanced slow release fertilizer. You want the largest area of prepared soil as you can manage so that the root system of your palm is not curtailed. Prepare new plant beds in fall or winter so that the soil ingredients have time to “cook” by the time spring planting arrives.

Plant AFTER last-frost in spring but before mid-summer. You want the palm to have plenty of new roots established, and to be over any transplant shock, before it has to endure winter shock.

Plant the largest palm you can afford, gallon-size being the smallest recommended, five-gallon being better, especially with trunk-forming palms. If you purchase quart – or pint-sized palms (as they are often available on the Internet) it is advisable to grow them up to a larger size before planting out.

If you apply fertilizer, use a slow-release formula in early spring and perhaps again in early summer, but **DO NOT** fertilize your palms any later than that. You want your palm’s growth to be slowing down with the season, not surging along when frost arrives.

Site your palm in such a way as to mimic its natural habitat as much as possible. It is dangerous to place palms where they will receive a good bit of shade in winter, even if they are hardy to –10F. Even the cold-hardyest palms can be damaged or killed by an extended freeze. Their hardiness is to cold snaps, not prolonged freeze.

Maintenance of Cold Hardy Palms

If you follow the planting advice, and only plant palms rated for your USDA climate zone, then maintenance of your palms will be minimized. If you push the limits and try growing palms rated beyond your zone, then extra winter care will be needed. I recommend **NOT** pushing the limits because gardening is enough work as it is. I want you to enjoy your palms – not worry about them.

If you follow the planting advice, then the most important maintenance issues to face are: providing the correct moisture regime; correct nutrient regime; and removal of old inflorescences or dead leaves.

MOISTURE / WATER

Adequate moisture during the growing season is perhaps the most important factor contributing to robust growth and health of a palm (assuming you have followed the planting advice given). Except for species native to arid climates, *an inch of water a week during the growing season is a good rule of thumb.* That also happens to be the rule of thumb for lawns - so when your lawn is drying out, so are your palms. Providing adequate moisture can be as complicated and expensive as installing an irrigation system, or easy as dragging around the garden hose. Suit yourself.

If you live in the southeastern USA, locate species from arid climates in very-well-drained soils and landscape positions so that they are less likely to develop problems from over-watering.

FERTILIZER

Whatever the case, *NEVER over-fertilize and ALWAYS provide a proper watering regime.*

Only apply fertilizer in early spring or early summer. A palm's growth needs to be slowing down as fall and winter approach. Slow-release fertilizers with micronutrients are safest to guard against chemical burn. Nutrient deficiency is only likely in very sandy soils, but should be resolved with typical slow-release fertilizer with micronutrients.

Not everyone uses fertilizer. Impressive results have been demonstrated with root hormones and a proper watering regime. A product called 'Superthrive' provides an artificial rooting hormone that has been shown to be effective. Some growers avow by kelp-derived products that naturally have plant hormones in them, such as 'Algoflash'. Whether you use fertilizers or plant hormones, more is not better. Follow the label directions.

OLD INFLORESCENCES and DEAD LEAVES

The removal of old inflorescences or dead leaves is really only done to maintain the 'look' of the palm. You can remove the inflorescence before or after it flowers depending on whether you want to harvest the seeds, or not.

The effect of removing dead leaves is not purely esthetics – they may be very important in shielding the trunk and growing bud from severe cold. Someone may think that removing dead leaves improves the 'look' of the palm, but what good is that if the palm dies during a cold winter because of the act? Now that you know the possible repercussions, suit yourself - and don't blame me.

WINTER PROTECTION

If you are not pushing the limits and are only planting cold hardy palms rated for your USDA climate zone, then little or

no winter protection of your palms will be needed – except possibly during their first winter in the ground. However, if a record low is predicted, you may want to protect any palms that might be marginally cold hardy for your area.

There are many ways to protect palms, depending on their size. Two things need protection, the growing bud and the trunk. Small palms are easiest to deal with because the whole palm can be covered, but palms with large trunks or giant spreads of leaves are much more difficult.

The simplest method of protection is to swaddle the trunk and bud with insulation – that being layers of landscaping fabric, or old sheets, or cardboard, or insulation. There are electric heating pads available that can be wrapped around the trunk, but some people wrap the trunk in Christmas lights and wrap the whole thing in landscape fabric to retain the heat. Anyhow, the garden can soon look rather unpleasant, and *it is a lot of work putting up and taking down the protective devices – good reason to use only palms suited to your USDA zone.*

GERMINATING SEEDS

If you have the time, or nursery specimens are unavailable or too costly, then raising palms from seed can be a very rewarding experience.

Obtain fresh seed! Viability and germination rate decrease with age. Be certain your seeds are fresh. Time to germination can vary from a few weeks to a few years depending on the species and seed quality. Notoriously quick germinators are *Nannorrhops ritchiana* and *Trachycarpus fortunei*, by which is meant within a month or so.

Float-test your seeds for viability; if some float and some sink, reject the floaters. If you are uncertain, isolate the floaters and attempt to germinate them separately.

Clean the flesh off the seeds. If the flesh has already been removed, skip this step. Removing the flesh can be done manually or by fermentation. If the seed is small, in nature it probably is eaten and distributed by birds or mammals whose digestive systems would remove the fruit flesh and clean the seed. To ferment, place seed in a wide-mouthed container with just enough water to submerge the seeds. Place the mixture in a warm location for a week or so; empty the water; thoroughly scrub and rinse the seeds as clean as possible; repeat for another week if necessary. This is best done outside or somewhere that people will not be offended by the odor and plethora of midges, gnats, and flies that will be attracted to the brewing concoction.

Disinfect the seeds. Disinfecting solutions can bleach your carpet and fabric and irritate your skin and mucous membranes, so wear eye protection and gloves, and work in a well-ventilated room or outdoors. Create a 10% bleach solution (one part bleach with ten parts water). Dip the seeds into the solution, and rinse thoroughly with tap water. Alternatively a 5% hydrogen peroxide solution can be used (one part hydrogen peroxide with 20 parts water). Do not overexpose the seeds to disinfectant as it may harm them.

Seeds of palms from temperate regions *may* require a **cold stratification** at 40F for six-weeks to improve germination. Cold stratification is simple. Place a portion of clean and disinfected seeds in barely moist medium in a sealed plastic

container or bag, then refrigerate for six weeks. **DO NOT ALLOW THEM TO FREEZE.** It helps to place the ‘remove by’ date on the container so you know when to take the seeds out for germination.

Select a germination method and medium. I recommend a **seed flat** with cells filled with seed starter mix or professional potting mix or pure perlite. Seeds of palms from arid regions should be germinated in perlite, while seeds of moisture loving palms can be started in seed starter mix. Fill the cells with medium, push a seed into each cell and cover to a depth about 2X the seed diameter. The medium should be slightly moist to moist.

Other methods include placing seeds in a large, broad rimmed community pot with a growing medium, or in a large re-sealable clear plastic bag with moist perlite. In the latter case it is crucial to check the bag frequently and remove seedlings before their roots become hopelessly entangled.

Date and label the flat. Cover with loose-fitting plastic and place in a warm site, 80F or so. Too high a heat can harm seeds. Check weekly for seedlings.

When either the seed leaf has grown substantially or the taproot begins to show through the bottom of the cell, **transfer seedlings** to a labeled, deep, narrow pot. (An old 20-ounce water bottle makes a cheap first pot once the top is cut off and a few large holes are drilled in the bottom). Place the seedling in filtered sun or part-shade or under a good grow-lite in a warm location – at least 70F.

Keep records of your methods and successes or failures to improve your future results.

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Some Palm Societies

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www.palmsociety.org
- International Palm Society
www.palms.org
- Palm And Cycad Societies of Australia
www.pacsoa.org.au
- Southeastern Palm Society
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