ENH1159

UF UNIVERSITY of FLORIDA
IFAS Extension

Agave and Yucca: Tough Plants for Tough Times[1]

Gary W. Knox[2]

Many people rightly think of agave and yucca as tough plants associated with extreme climates like deserts and dunes. What they may not realize is that agave (*Agave* spp.) and yucca (*Yucca* spp.) also adapt well to home and commercial landscapes, where they thrive in the sometimes harsh conditions associated with urban environments.

Interest in agave and yucca has grown recently, thanks in part to increasing water restrictions in many Florida urban areas. Agave and yucca are found in native environments that typically are dry, hot, sunny, and windy with low rainfall and poor soil. In cultivation, this adaptability translates into low maintenance since typically they need little or no irrigation, fertilizer, pruning, or spraying. Furthermore, many agave and yucca withstand drought, heat, strong winds, and cold weather, and have few pests and diseases. They are tolerant of poor soils and therefore rarely develop nutrient deficiencies. The wide variety of sizes, shapes, and growth characteristics permits many landscape uses, including groundcover, bedding plants, container plants, shrubs, and, especially, dramatic specimen plants. Table 1 lists a number of species and cultivars available, along with their descriptions.

Above and beyond their toughness, agave and yucca capture the imagination because of their dramatic architectural forms and unusual shapes. In addition, these plants boast intriguing defensive "weaponry"—stiff, hard, or leathery leaves, often armed with barbs, teeth, or spines. Because of this armor, many of these plants can present a hazard, especially to small children.

Agave

Agave tends to have more armor than yucca. Each agave plant consists of a rosette of long, stiff, spear-shaped, fleshy leaves often armed with teeth and tipped with a long terminal spine. *Agave* spp. are familiar to most people thanks to the commonly grown century plant, *Agave americana*, but there are more than 200 additional species of agave with potential landscape use.

Agave varies in size from a few inches to more than 12 ft. tall and wide. Leaf color ranges from deep green to grass green to blue green to gray, and leaves may be striped or mottled with white, cream, yellow, or chartreuse. Though it sometimes takes years for flowering to occur, agave develops branched spikes of yellow, rose, or white tubular flowers on incredibly tall stems 6–40 ft. above the plant. After flowering, the parent plant typically dies, although

1. This document is ENH1159, one of a series of the Environmental Horticulture Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. Original publication date February 2010. Visiit the EDIS Web Site at http://edis.ifas.ufl.edu.

2. Gary W. Knox, Extension specialist and professor of environmental horticulture, University of Florida/IFAS, North Florida Research and Education Center.

usually a number of small plants form around the base of the parent plant. The small plants are technically called "offsets" but are commonly called "pups." These may be separated from the parent plant for propagation. Two species of agave are native to Florida: false sisal (*Agave decipiens*) and wild century plant (*Agave neglecta*).

Yucca

Yucca is similar to agave but often forms trunks and typically has more numerous, thinner, leathery leaves with a smaller terminal spine. Yucca leaves range in color from deep green to pale blue, and leaves may be striped in shades of white, cream, yellow, or chartreuse. When in flower, yucca produces large, upright panicles (flower clusters) of white, bell-shaped flowers. Unlike the tall flower stems of agave, yucca flower panicles are held within or just above the foliage. There are more than 20 species of yucca, of which three (or four) can be considered native to Florida: Spanish bayonet (*Yucca aloifolia*), Adam's needle (*Yucca filamentosa*), and moundlily yucca (*Yucca gloriosa*). Florida taxonomists believe curve-leaf yucca, *Yucca recurvifolia*, is the same as moundlily yucca (*Y. gloriosa*), whereas Agavaceae taxonomists consider *Y. recurvifolia* a separate species.

Plant Requirements and Placement

Almost all agave and yucca selections require full sun (at least six hours of direct sunlight) for best appearance and growth. Much of Florida has sandy, well-drained soils on which agave and yucca can thrive despite the rain and humidity. However, even with sandy soils, some desert agaves are difficult to grow in Florida.

Areas with perched water tables or heavy soils can still grow agave and yucca, provided these plants are grown above grade or on a slight mound that provides better drainage. Another alternative is to amend the soil to improve drainage. A final option is to grow these plants in containers with well-drained potting soil and irrigate as needed.

Winter soil drainage is especially critical in northern Florida. Roots often begin to rot during cool, damp winter weather if growing in conditions with poor drainage.

Table 1 lists agave and yucca in the collection at the North Florida Research and Education Center in Quincy. The table also indicates cold damage (if the plant was located outdoors) based on observations after successive low temperatures during the winters of 2009–2010 and 2008–2009. Low temperatures include 21.50°F on January 22, 2009, and 28.44°F, 22.13°F, and 15.26°F on December 21, 2009, and January 5 and 11, 2010, respectively.

Water and Fertilizer

Agave and yucca require occasional watering after planting to aid with establishment. Thereafter, most agave and yucca plants will thrive on rainfall alone.

Similarly, most established agave and yucca do not need fertilizer and will subsist in many urban soils, especially if organic mulch is used. Low rates of fertilizer may be applied to young or small plants to aid establishment or improve growth rates.

Pests, Diseases, and Cultural Problems

The most serious pest is agave snout weevil (*Scyphophorus acupunctatus*). The adult female weevil, about 1/2 in. long and brownish, uses its "snout" to puncture the base of a plant and lay eggs. In this process, microorganisms are introduced that decompose plant tissue, usually causing the plant to wilt, collapse, and die. White, grublike larvae develop from the eggs and feed on the decaying tissue. The grubs (which are, incidentally, the "worm" traditionally placed in some bottles of tequila) eventually pupate and emerge as adults, with the entire life cycle lasting 60–90 days. This weevil can attack all species of agave, though large-growing species with broad leaves (like century plant, *Agave americana*) appear more susceptible than small species with hard or fibrous leaves. Weak plants or agave plants that are about to flower are especially vulnerable. *Yucca* spp. are occasionally attacked. Control of agave snout weevil is difficult, and infestations can be prevented by maintaining healthy plants and destroying infested plants.

Plant bugs (*Caulotops* and other species) are small insects that occasionally build up in large numbers and damage agave plants by feeding on leaves, resulting in light yellow scars or spots. Yucca plant bug (*Halticotoma valida*) causes similar damage to *Yucca* spp. Plants weakened by too little light or too much water may become infested by various mealybugs or scale species. Eriophyid mites occasionally feed within vegetative buds of container-grown plants, resulting in leaf scarring or abnormal growth. Most disease problems are various root rots usually associated with wet soils and often exacerbated by cool temperatures and weakened plants.

Agave and yucca are native to cool, temperate areas, high-altitude areas, and tropical climates. However, their broad and often fleshy leaves and stems make them susceptible to freeze damage, particularly when grown outside their native range in cold or humid climates or irrigated areas. Freeze damage occurs when these species are exposed to temperatures below their range of adaptability for several hours. A few days after the freeze, spots, cracks, or areas appearing water soaked will develop on damaged leaves; severely damaged leaves will appear mushy. These areas will eventually dry and turn brown, making the leaves unsightly. Unfortunately, removal of damaged leaves often alters the canopy or symmetry of the plant, resulting in an unsightly specimen. Although severe freeze damage may kill the plant, freeze damage often stimulates offsets on lower portions of the plant

Container Gardening

Agaves and yuccas are excellent plants for containers. Their coarse, bold textures and odd shapes add interest, making them excellent specimen plants and focal points. Agave and yucca are particularly well suited for containers because their low water requirements and drought tolerance permit longer intervals between watering than most other plants. Finally, growing agave and yucca in containers allows for use of well-drained potting soils and flexibility in relocating container plants to sheltered areas during extreme rain events or cold weather. Containers may provide the only way to successfully grow arid, desert-adapted species in Florida's humid climate.

Propagation

Many species of agave and yucca spontaneously form new plants from offsets or "pups." Technically, these are new shoots that develop from underground rhizomes. Offsets can be removed from the original plant at any time, although well-rooted and larger offsets result in faster establishment and growth. Some *Yucca* spp. additionally form suckers at the bases of stems. These may be similarly divided, dug, and planted. Development of offsets often is stimulated by plant damage or stress.

Bulbils, which are small plants attached at the base of the flowers, may be used to propagate some species of agave. Bulbils usually develop as the flowers die. They can be removed and potted at any time, but they establish faster if allowed to remain on the flower stalk until at least four leaves have formed.

Yucca may be rooted from rhizome or stem cuttings. Three-inch sections of rhizomes can be collected in late winter and placed horizontally on well-drained potting soil in a warm, humid environment; shoots and roots form several weeks later. Semihardwood cuttings from the current season's growth also may be collected and rooted similar to other woody plants, although greater success usually occurs with *Yucca* spp. native to humid environments.

Agave also may be propagated by cuttings, but, in this case, leaf cuttings are used. Mature leaves are cut and the cut portion of the leaf is allowed to callous. They are then placed cut-side down in a well-drained rooting substrate. Under commercial nursery conditions, small plants form along the cut base of the leaf after several months.

Seed of agave and yucca may be harvested from mature capsules and sown fresh or stored for up to five years. Germination usually occurs within three weeks of sowing. Seedling growth rate varies with species.

Historical and Modern Uses

Almost all species of agave and yucca have been used by the native peoples of the Americas for food, fiber, fencing, or soap. The most well-known usage

of agave is for the alcoholic beverage, tequila. This use of agave has an interesting heritage and involves unusual plant parts and processes. Prior to flowering, an agave plant accumulates high concentrations of sugars in the sap. Middle Americans (natives of Central America and Mexico) learned to identify this stage of growth in several *Agave* spp. and subsequently drain the sweet sap, called aguamiel. Although sometimes used as a beverage itself, aguamiel is more often processed into syruplike agave nectar, currently becoming popular as a natural sweetener. Aguamiel also is fermented to a mildly alcoholic drink called pulque. Middle Americans often cultivated the species best used for producing pulque.

Spanish colonists modified and added distillation to this process to ultimately develop tequila. In this scenario, the preflowering agave is harvested, the leaves are removed, and the resulting stem and leaf bases are cooked, chopped, fermented, and finally distilled into an alcoholic drink generically called mescal. Tequila is made by the same process, but legally "tequila" only refers to distilled mescal made from the species, *Agave tequilana*, in the Mexican state of Jalisco.

Despite its well-known beverage uses, historically, the primary use of agave and yucca has been for fiber. Leaf fibers were extracted and used to make cloth, rope, and baskets. Flowers, buds, some fruit pods, and flower stems were eaten raw or cooked. The stem and leaf bases of some *Agave* spp. were roasted and eaten, or dried to make sweet cakes. Roots of several species contain a mucilaginous substance used fresh or dried as soap. Trunks of yucca and various agaves have been used for fencing and cattle food.

In addition to the huge tequila industry in Jalisco, agave and yucca currently are cultivated as fiber crops and as ornamentals.

Agave Toxicities

Although agave has extensive food uses, it can contain toxic compounds. The juice or sap may contain needlelike oxalate crystals that can irritate the skin, mouth, tongue, and throat. Swelling of the throat, breathing difficulties, and burning can result. Furthermore, the juice, sap, and thorns can cause a skin rash or irritation. Finally, ingestion of some species of agave can cause stomach upset, vomiting, or diarrhea.

References

Florida Automated Weather Network (FAWN). 2010. http://fawn.ifas.ufl.edu/ (accessed January 17, 2010).

Fox, A. M., D. R. Gordon, J. A. Dusky, L. Tyson, and R. K. Stocker (2008) IFAS Assessment of Non-Native Plants in Florida's Natural Areas – Status Assessment. Cited from the Internet January 11, 2010. http://plants.ifas.ufl.edu/assessment/pdfs/finalassessjun05.pdf

Irish, M., and G. Irish. 2000. *Agaves*, *yuccas and related plants: A gardener's guide*. Portland, OR: Timber Press.

Kelly, J., and M. Olsen. 2006. *Problems and pests of agave, aloe, cactus and yucca*. AZ1399. Tucson: University of Arizona Cooperative Extension.

Thetford, M., J. L. Gibson, A. Santilli, B. O. Ballard, and J. K. Groninger. 2007. Succulents for southern gardens. *Proceedings of the Southern Nursery Association Research Conference* 52: 244-247.

Wunderlin, R. P. and B. F. Hansen. 2008. *Atlas of Florida Vascular Plants*. [S. M. Landry and K. N. Campbell (application development), Florida Center for Community Design and Research.] Institute for Systematic Botany, University of South Florida, Tampa. (http://www.plantatlas.usf.edu/; cited from the Internet January 11, 2010).

Table 1. Characteristics of *Agave* and *Yucca* spp.[x] in the collection at the University of Florida/IFAS North Florida Research and Education Center, Quincy, Florida.

Name	Photo	Common name and comments	Reported mature size (height x width in feet)	Reported hardiness[y]	Freeze damage in North Florida[z]	Native distribution
Agave × *arizonica*		"Arizona agave"; tolerates poor soil and drought but requires good drainage; pups freely	2' x 2'	8–10	Slight at 15°F	Arizona
Agave americana		"Century plant"; the most widely grown ornamental agave; typically has gray to gray blue leaves, but it is variable in size and appearance; pups freely	Up to 6'–12' x 13'	15°F	Moderate to severe at 22°F	Southwestern U.S. and northern Mexico
Agave americana 'Gainesville Blue'		"Century plant"; blue form of century plant; may be a selection of the hybrid *A. americana* × *A. scabra*; pups freely	4' x 5'; up to 6'–10' x 13'	8–10; 15°F	None at 22°F; severe at 15°F	Garden origin
Agave americana 'Marginata'		"Variegated century plant"; variegated form of the common century plant; fantastic stripes of yellow along the margins of each leaf; said to be slightly less cold hardy and slightly smaller growing than the green form; pups freely	3'–5' x 2'–5'	8b–10	Moderate at 15°F	Garden origin

Name	Photo	Common name and comments	Reported mature size (height x width in feet)	Reported hardiness[y]	Freeze damage in North Florida[z]	Native distribution
Agave americana 'Medio-picta Alba'		"Variegated century plant"; this dramatic agave has a clean, white stripe down the center of each blue green leaf; somewhat slower growing, smaller, and less hardy than the green century plant	4' x 5'	9a–10	NA	Garden origin
Agave americana var. *protoamericana*		"Hardy century plant"; slightly smaller and more cold hardy than *A. americana* with an upright, compact form and blue gray leaves; its smaller size makes it more suited to most gardens; pups freely	4' x 4'	7–10	None at 15°F	Eastern Mexico
Agave americana var. *protoamericana* 'Lemon Lime'		"Variegated century plant"; yellow green stripe down the center of each leaf contrasts with the blue green color of leaf margins; pups freely	Unknown	Unknown	Moderate at 15°F	Garden origin
Agave angustifolia 'Marginata'		"Variegated Caribbean agave"; discovered in Poona, India, this plant is now popular worldwide, favored for its compact form, symmetry, and variegation; the species is grown for fiber; also known as *A. angustifolia* var. *marginata*	3'–4' x 3'–4'	10–11	Moderate at 22°F; severe at 15°F	Garden origin
Agave Blue Glow™		"Blue Glow™ agave"; solitary rosettes of stiff, blue green leaves accented by red margins; thought to be a hybrid of *A. ocahui* × *A. attenuata*	1'–2' x 1'-2'	7?–10	None at 15°F	Garden origin

Name	Photo	Common name and comments	Reported mature size (height x width in feet)	Reported hardiness[y]	Freeze damage in North Florida[z]	Native distribution
Agave celsii		"Century plant"; readily offsets and forms colonies; leaves are wider in the middle, soft, upcurved, and graceful; margins of the leaves have tiny, closely spaced teeth; tolerates some shade	2+' x 2+'	12–25°F	Moderate to severe at 15°F	Eastern Mexico
Agave 'Cornelius'		"Cornelius century plant"; great green and yellow variegated foliage with undulating margins; somewhat slow growing; some say it forms colonies, others say it rarely pups	1'–2' x 2'–4'	9–10	None at 15°F	Garden origin
Agave dasylirioides		"Sotol maguey" or "dasylirion agave"; a rare agave native to rock cliffs and mild climates (not hot, not cold); soft, yuccalike, gray green leaves have a red brown terminal spine and sharp leaf margins; great in containers	2' x 4'	9–10	Moderate to severe at 22°F	Mexico
Agave desmettiana 'Variegata'		"Variegated smooth agave"; forms an upright, urn-shaped plant; most leaves are smooth with a dark brown terminal spine; fast growing; no natural populations are known, but it is cultivated widely for its beauty; pups freely; best in part shade	2'–3' x 2'–3'	9b–10; 25°F	Severe at 22°F	Garden origin
Agave ferdinandi-regis		"King Ferdinand agave"; a stunning plant with chunky, triangular leaves, it is similar to *Agave Victoria-reginae* but with larger, bluer leaves with larger terminal spines; also known as *A. scabra* × *Victoria-reginae*	1'–2' x 1'–2'	7b–10	NA	Mexico

Name	Photo	Common name and comments	Reported mature size (height x width in feet)	Reported hardiness[y]	Freeze damage in North Florida[z]	Native distribution
Agave flexispina		"Century plant"; forms rosettes composed of a few broad leaves denoted by large brown black teeth	1' x 2'	7b–10	None at 15°F	Mexico
Agave franzosinii		"Century plant"; large-growing, species with powder blue leaves tipped with 2-in. terminal spines; each leaf recurves at the tip; known only in cultivation and has been in European gardens for more than 100 years; pups freely and often forms colonies; plant it in the ground and give it plenty of space	6'–8' x 8'–10'	8–10	None at 15°F	Known only in cultivation
Agave geminiflora		"Twin-flowered agave"; a striking specimen, often solitary; leaves are linear, narrow, and smooth with whitish filaments along the margins; somewhat tolerant of shade and moisture; a great container plant	2' x 2'	9b–10	Moderate at 22°F; severe at 15°F	Western Mexico
Agave geminiflora Rasta Man™		"Rasta Man™ twin-flowered agave"; allegedly an improved form of the species, and otherwise similar: leaves are linear, narrow, and smooth with whitish filaments along the margins; somewhat tolerant of shade and moisture	2' x 2'	9–10	Moderate at 22°F; severe at 15°F	Garden origin; species is from western Mexico

Name	Photo	Common name and comments	Reported mature size (height x width in feet)	Reported hardiness[y]	Freeze damage in North Florida[z]	Native distribution
Agave gentryi 'Jaws'		"Jaws century plant"; selected for the size and arrangement of the teeth, hence the name; can grow in a colony, making a vicious groundcover	4' x 8'	7b–10	None at 15°F	Mexico
Agave ghiesbreghtii El Montevideo™		"El Montevideo™ century plant"; dark green glossy leaves with a pale stripe down the center and warm brown teeth on the margins (mostly the lower parts of the leaves); the species has long been cultivated as a garden plant	1½'–2' x 1½'–2'	7–11; 25°F	Severe at 22°F	Garden origin (the species is native from Mexico to Guatemala)
Agave gracilipes		"Slimfoot century plant"; plant grows as a solitary rosette of rigid, gray green leaves; probably originated as a hybrid	1' x 2'	6–9	None at 15°F	Texas, New Mexico, and northeastern Mexico
Agave guiengola Lago Lindo™		"Lago Lindo™ century plant"; unusual among agaves in that this one can tolerate light shade; thick, light green leaves appear very fleshy; each leaf has a prominent brown terminal spine; produces few offsets	3' x 4'	9–11	Severe at 28°F	Garden origin (the species is native to Oaxaca, Mexico)
Agave gypsophila		"Gypsum century plant"; rare plant found growing on gypsum hills and calcareous soils; wavy, gray green leaves have relatively soft teeth on their margins; good container plant	2'–3' x 2'–3'	9b–11	NA	Mexico

Name	Photo	Common name and comments	Reported mature size (height x width in feet)	Reported hardiness[y]	Freeze damage in North Florida[z]	Native distribution
Agave 'Joe Hoak'		"Joe Hoak variegated agave"; very beautiful agave with gracefully recurved leaves forming an elegant, urn-shaped plant; leaves have a beautiful gray, green, and cream variegation; supposedly originated from Joe Hoak, Hoak's Nursery, Miami; also known as *A. meridensis*, *A. mendensis,* and *A. desmettiana* 'Joe Hoak'	2'–3' x 3'–4'	9a–10	NA	Garden origin
Agave lechuguilla		"Lechuguilla" or "shin dagger"; the name translates to "little lettuce," but the plant has never been eaten, though it has been used for soap and fiber; found in limestone soils, it is nonetheless easy to grow in all soils; straight, light green striated leaves; pups freely and can form large colonies	1½' x 2'	7–10; 0°F	None at 15°F	Texas, New Mexico, and northeastern Mexico
Agave lophantha		"Thorncrest century plant"; this is a variable species with dark green to yellow green leaves, often with a stripe down the middle; some plants are solitary, some form colonies	1'–2' x 1'–2'	7–10; 20°F	None to slight at 15°F	South Texas and eastern Mexico
Agave lophantha 'Splendid'		"Splendid agave" or "thorn-crested agave"; this form of the species has broader leaves and a more prominent stripe of variegation down the center of each leaf; sometimes called *A. univittata*; forms colonies	2' x 2'–4'	7b–10	None at 15°F	Garden origin (the species is native to South Texas and eastern Mexico)

Name	Photo	Common name and comments	Reported mature size (height x width in feet)	Reported hardiness[y]	Freeze damage in North Florida[z]	Native distribution
Agave macroacantha		"Black-spined agave"; dramatic plant form; flat, linear, rigid leaves are blue gray to green with small, dark brown teeth and large black spines (hence the name); grows best in light shade but needs good drainage; great container plant	1'–2' x 1'–2'	9b–10	Slight at 22°F; moderate at 15°F	Mexico
Agave obscura		"Hardy century plant"; not much is known about this rare plant; found on rocky hillsides, plants form spiky, basketball-sized individuals	2' x 2'	8a–10	NA	Mexico
Agave ovatifolia		"Whale's tongue century plant"; solitary agave with short, wide, cupped, gray leaves; tolerant of moisture and cold	3' x 5'	7–9	None at 15°F	Mexico
Agave parrasana		"Cabbage-head agave"; each gray, rounded leaf ends in a sharp tip; leaves are held tightly in the rosette, giving the plant a distinctive form; this solitary agave is very ornamental; great in containers	2' x 3'	7b–10; 22°F	Severe at 15°F	Mexico
Agave parryi subsp. *Huachucensis*		"Ft. Huachuca agave" or "artichoke agave"; large and robust form of the species, forming a round rosette composed of flat, wide, gray leaves; good drainage is critical, especially in winter	2'–3' x 3'	6b–10	Slight at 15°F	Southwestern U.S. and Mexico

Name	Photo	Common name and comments	Reported mature size (height x width in feet)	Reported hardiness[y]	Freeze damage in North Florida[z]	Native distribution
Agave parryi var. *truncata*		"Artichoke agave"; extremely handsome form of the species with obovate, blue gray leaves with reddish brown margins, teeth, and terminal spine; offsets freely to form colonies of broad, blue, rounded plants; cold hardy at least as far north as Gainesville	1'–2' x 1'–2'	6–9	NA	Mexico
Agave parryi var. *truncata* Retro Choke™		"Retro Choke™ agave"; forms a tight head similar to cabbage with leaves that impress on each other, leaving a beautiful pattern; leaves grow up to 1 ft. long and are blue green with teeth	2'–3' x 2'–3'	7–11	Slight at 15°F	Garden origin (the species is native to Mexico)
Agave polianthiflora		"Mescalito"; this small, solitary agave has linear, dark green leaves with white filaments along the margins; great for containers; flowers are rose red, which is unusual among agaves	½' x 1'	Unknown	Slight to moderate at 15°F	Mexico
Agave potatorum hybrid		"Butterfly agave"; the species is usually solitary, growing as an open, spreading, symmetrical rosette with up to 80 short, wide, gray green leaves; good container plant; "potatorum" means "of the drinkers" and refers to its use for alcoholic beverages	1'–2' x 2'–3'	7b–10	Moderate to severe at 15°F	Mexico (the species)

Name	Photo	Common name and comments	Reported mature size (height x width in feet)	Reported hardiness[y]	Freeze damage in North Florida[z]	Native distribution
Agave pumila		"Dwarf agave"; this plant has mysterious origins and is one of the smallest agaves known; not surprisingly, this plant is extremely slow growing; excellent drainage is a must	½' x ½'	9–11	NA	Unknown
Agave salmiana		"Giant agave" or "pulque agave"; very large-growing plant with huge, gray green, recurved leaves; variable in its appearance and hardiness; traditionally used to make the alcoholic beverage, pulque	5'–6' x 6'–13'	7b–10; variable cold hardiness; some down to 5°F	None at 15°F	Mexico
Agave salmiana 'Mr. Ripples'		"Mr. Ripples giant agave"; very large-growing plant with huge, gray green, recurved leaves; 'Mr. Ripples' makes a fast-growing plant with undulating, blue green leaves	5' x 8'	7b–10	NA	Garden origin (the species is native to Mexico)
Agave salmiana var. *ferox*		"Giant agave" or "pulque agave"; this differs from the species in being urn shaped with dramatically recurved leaves; teeth and terminal spine are large and heavy	6' x 12'	8–10; 25°F	None at 15°F	Mexico
Agave scabra × *victoria-reginae*		"Sharkskin agave" or "mescal"; symmetrical rosettes of triangular, blue green foliage; formerly *A. neomexicana*	1'–2' x 3'–4'	7b–10	Slight at 15°F	Garden origin

Name	Photo	Common name and comments	Reported mature size (height x width in feet)	Reported hardiness[y]	Freeze damage in North Florida[z]	Native distribution
Agave 'Sharkskin Shoes'		"Sharkskin Shoes century plant"; upright, triangular, olive green leaves feel like sharkskin; slow growing; a selection of the natural hybrid, *Agave ferdinandi-regis* × *A. scabra*	3' x 3'	7b–10	None at 15°F	Garden origin (the parent species are native to Mexico)
Agave striata		"Narrowleaf agave"; "striated agave"; variable species with narrow, almost round, green leaves with a sharp terminal spine; leaves may turn reddish purple in winter; forms colonies	2'–3' x 2'–4'	8–10; 15°F	None at 15°F	Northeastern Mexico
Agave striata var. *nana*		"Dwarf narrowleaf agave"; smaller growing form of the species	1' x 1'	8–10	Severe at 15°F	Garden origin (the species is native to northeastern Mexico)
Agave striata var. *striata*		"Espadin"; variable species with narrow, almost round, green leaves with a sharp terminal spine; leaves may turn reddish purple in winter (as shown in photo); forms colonies	3' x 3'	8b–10	None at 15°F	Mexico
Agave tenuifolia		"Slender-leaf agave"; almost weeping foliage; more tolerant of shade and moisture	1' x 1'	8–10	Slight at 22°F	Northeastern Mexico

Name	Photo	Common name and comments	Reported mature size (height x width in feet)	Reported hardiness[y]	Freeze damage in North Florida[z]	Native distribution
Agave tequilana Blue Star™		"Blue Star™ agave"; rosettes of smooth, bright blue leaves with a terminal spine; tolerates light shade; the species is used to make tequila, but is also grown as an ornamental	2'–4' x 2'–4'	9a	NA	Garden origin (the species is native to Mexico)
Agave toumeyana var. *bella*		"Miniature century plant"; leaves are straight and incurved, giving the rosette an urnlike shape; leaf margins are covered with thin, white filaments, giving them a distinctive look; leaves are green and leave white bud imprints on upper and lower sides; forms colonies; each plant may be composed of up to 100 leaves; does well in pots; avoid overwatering	½' –1' x ½' –1'	8–10	NA	Central Arizona
Agave Victoria-reginae		"Queen Victoria century plant"; geometrically arranged leaves and rounded form make this one of the most strikingly beautiful and desired species; distinctive, stocky, triangular leaves are dark green, accented by white leaf margins and other white markings; very slow growing and rare	Up to 3' x 3'	7b–10; others say 10°F	NA	Mexico
Agave vilmoriniana		"Octopus agave" or "amole"; native to Mexico, this agave develops narrow leaves that twist toward the ground, resulting in the common name; usually solitary; good container plant	3' x 5'	9–10; 25°F	NA	Mexico

Name	Photo	Common name and comments	Reported mature size (height x width in feet)	Reported hardiness[y]	Freeze damage in North Florida[z]	Native distribution
Yucca aloifolia 'Variegata'		"Variegated Spanish bayonet"; the flat, linear leaves have yellow or white margins and sometimes have a red tinge when young; usually the plant is single stemmed up to 10 ft. tall, but several stems sometimes emerge from the base; the species is one of the oldest yuccas in cultivation (since 1605); also known as *Y. aloifolia* f. *marginata*	10'–15' x 3'–5'	6–10; 0°F	None at 15°F	Garden origin (the species is native to southeastern U.S., Caribbean, and Mexico)
Yucca baccata		"Banana yucca"; small-trunked plant with up to 10 trunks; individual trunks often curve and branch; leaves are variable, from blue green to gray; as implied by the common name, fruits were eaten raw or roasted; also, leaves were used for basketry, and soap was extracted from roots; good winter drainage is important	3'–6' x 3'–4'	5–10	None at 15°F	Southwestern U.S. and northern Mexico
Yucca decipiens		"Palm soapwort"; very slow growing but eventually forms a branched, treelike plant up to 30 ft. tall; the stiff, dull green leaves have whitish filaments along the margins	3'–6' x 12'–30'	8–10	Moderate at 15°F	Mexico
Yucca filamentosa		"Adam's needle"; stemless yucca growing up to 4 ft. wide; bluish green leaves are thin and straight and have many curling, white filaments along the margins (hence the species name); many forms are cultivated	3'–5' x 3'–4'	4–10; -20°F	None at 15°F	Eastern U.S.

Name	Photo	Common name and comments	Reported mature size (height x width in feet)	Reported hardiness[y]	Freeze damage in North Florida[z]	Native distribution
Yucca filamentosa 'Color Guard'		"Color Guard variegated Adam's needle"; similar to the species, but with cream-colored leaves edged with green; 'Color Guard' does not persist well in Florida; 'Bright Edge' is a similarly variegated form performing and persisting much better; 'Garland's Gold' and 'Gold Sword' have yellow variegation down the middles of leaves and also grow well in Florida	2'–4' x 3'–6'	5–10	None to slight at 15°F	Garden origin (from Japan; the species is native to the eastern U.S.)
Yucca gloriosa 'Variegata'		"Variegated moundlily yucca"; stiff, blue green leaves have a broad, creamy gold margin; treelike but with few branches; plants may develop multiple stems from the base	2'–3' x 4'	7–10	None at 15°F	Garden origin (the species is native to the southeastern U.S. coast)
Yucca recurvifolia		"Pendulous yucca" or "curve-leaf yucca"; shrubby and can spread by developing multiple trunks from basal offsets; dark blue green leaves usually gracefully "droop"; white, bell-shaped flowers appear on 2 ft. spikes above the foliage in midsummer; excellent ornamental; sometimes listed as *Y. gloriosa* or *Y. filamentosa*	4'–10' x 4+'	7–10; 15°F	None at 15°F	Southeastern U.S. coast
Yucca recurvifolia 'Variegata'		"Variegated curve-leaf yucca"; wide, soft, weeping blue green leaves have chartreuse edging; otherwise, similar to the species type	4'–10' x 4+'	7–10; 15°F	None to slight at 15°F	Garden origin (the species is native to the southeastern U.S. coast)

Name	Photo	Common name and comments	Reported mature size (height x width in feet)	Reported hardiness[y]	Freeze damage in North Florida[z]	Native distribution
Yucca rostrata		"Beaked yucca"; soft, blue green, undulating foliage; single trunked with one or several heads of leaves; the common name is derived from the distinctive beaklike appendages on the dried fruit	6'–15' x 8'	7b–10; 10°F	None at 15°F	Southwestern U.S. and northern Mexico
Yucca thompsoniana		"Thompson's yucca"; single trunked with one or several heads of leaves; similar to *Y. rostrata* (and sometimes considered a variety of this species), but smaller and with shorter leaves	4'–7' x 5'	5–10; perhaps -10°F	None at 15°F	Western Texas
Yucca treculeana		"Trecul yucca," "Spanish dagger," "palma pita," or "Don Quixote's lace"; usually a single treelike trunk but may develop candelabralike branches with time; leaves are dark green to blue green, straight, and have a dark brown terminal spine; leaves were used for thatching, fibers for rope, and the fleshy fruits were used for an alcoholic beverage	5'–25' x 5'	7–10; 10°F	None at 15°F	Southwestern Texas and northeastern Mexico

[x] Plants native to Florida are indicated as "southeastern U.S." in the column labeled "Native distribution." *Agave americana* and *A. desmettiana* have been evaluated using the *IFAS Assessment of Non-Native Plants in Florida's Natural Areas* (Fox et al. 2008). These species are not documented in any undisturbed natural areas in Florida. Thus, they are *not considered a problem species and may be recommended* in Florida. All other non-native species listed in this document have not been reported in Florida's natural areas and/or have not yet been assessed using the "Status Assessment" as established by the *IFAS Assessment of Non-native Plants in Florida's Natural Areas* (Fox et al.). Without this assessment, the temporary conclusion is that each of these species is *not a problem species at this time and may be recommended.* However, this conclusion may change once an assessment has been completed.

[y] Numbers are the USDA cold hardiness zones to which the taxon is adapted or the lowest reported temperature for survival.

[z] Foliar damage was evaluated a few days after low temperatures (°F) at NFREC, Quincy, of 21.50 (Jan. 22, 2009), 28.44 (Dec. 21, 2009), 22.13 (Jan. 5, 2010) and 15.26 (Jan. 11, 2010) (Florida Automated Weather Network 2010). Ratings of foliar damage are none (no damage), slight (minor foliar damage, typically leaf spots), moderate (significant foliar damage, often extensive leaf discoloration or killing of some leaves), and severe (most or all leaves killed). NA indicates "not applicable" (plant was not outdoors).