

## Information Sources

### Books

*Agaves, Yuccas, and Related Plants* – Mary and Gary Irish – Timber Press

*Agaves of Continental North America* – Howard Scott Gentry – The University of Arizona Press

### Online

[www.mswncatalog.com/MSWNCatalog.pdf](http://www.mswncatalog.com/MSWNCatalog.pdf) (Mountain States Wholesale Nursery Product Catalog)

[www.desert-tropicals.com/Plants/Agavaceae/Agave.html](http://www.desert-tropicals.com/Plants/Agavaceae/Agave.html) (Desert-Tropicals.com)

[www.agavaceae.com](http://www.agavaceae.com) (Click “botanical database AGAVACEAE” at the bottom)

[www.yuccado.com](http://www.yuccado.com) (YuccaDo Nursery)

## Overview

*Agave* is a New World genus comprised of 200 to 250 species. Its native range goes from the Southwestern United States through Mexico and Central America and into the Caribbean Islands. Agaves grow in a variety of habitats from deserts to forests to the seashore. They grow at elevations ranging from sea level to over 7000 ft.

Agaves have played an important role in the indigenous civilizations of their range. The plants and their flowers have been used for food and beverages. Their fibers have been used to make rope and paper, and their leaves to make medicines, soap, and poison to tip arrows for fishing. Dried bloom stalks have been used as poles, and rows of plants as living fences. With the European occupation of Mexico came the technology to distill roasted agaves into liquors. *Agave tequiliana* and *A. angustifolia* are used today to produce tequila and mezcal respectively. *A. sisalana*, the source of sisal fiber, is cultivated worldwide today to make rope and twine.

Agaves form rosettes varying in size from a couple inches to over 15 ft. across. Most agave species are monocarpic, that is they flower once and die. There are a few species that are polycarpic (flowering multiple times). Agave blooms are either paniculate – forming a tall spike with panicles, or spicate – forming a tall unbranched spike.

## Cultivation Information

### Soil

Agaves can handle a wide range of soil types, provided they are well-drained. It is better to avoid soil mixes with too much clay or organic matter. The addition of gravel or crushed granite, as well as raised beds can help to improve drainage. When planting agaves, it is best to raise them on a slight mound an inch or so above the soil level. This will help to prevent the crown from rotting.

### Water

When established, most agaves rarely need supplemental water. During very dry summers water well once or twice a month. It is better to water deeply, but infrequently, than to water lightly more often. Agaves which are water stressed can yellow or have a withered or wrinkled appearance on the leaf. A deep watering will correct the problem. The lower leaves of over-watered agaves will usually begin to turn brown or black and die off. In serious cases the base of the plant will rot. It is best to keep agaves as dry as possible in cold weather.

### Propagation

Agaves can be easily propagated by seed or by removing offsets or bulbils. When removing offsets, it is O.K. for them to remain unplanted for days or even weeks. Agaves root easily and can be moved from place to place in the garden without problem. It is best to trim the roots back to 4 or 5 inches before replanting. Occasionally, moving a mature plant can trigger the plant to bloom.

### Winter Protection

Cold tolerance in agaves ranges from frost tender to handling temperatures as low as -20°F. Generally, agaves with soft, pliable leaves are less hardy than those with hard, rigid leaves. Listed cold tolerances are a good guide but there is variation in how much cold individual plants can take. Soil conditions and the location in the garden will also influence a plants cold hardiness. Many plants will begin to show freeze damage at temperatures far above what would actually kill the plant. For some species this damage will grow out in a few months, others can take much longer. Marginal plants can be covered with towels or blankets to help prevent frost damage. Christmas lights can also be used to provide additional heat.

## Pests and Problems

**Agave Snout Weevil** – The most serious agave pest is the agave snout weevil/beetle (*Scyphophorus acupunctatus*). It is a dark brown to black weevil around .5 in. in length with a very long obvious snout. It bores a small hole near the base of the leaf in which it deposits eggs. The larvae eat their way through the heart of the plant. The larvae also introduce bacteria which ultimately cause the center of the plant to rot out. Generally, the leaves of what appeared to be a healthy plant will suddenly start to turn brown and drop, leaving the central bud standing. The central bud will often easily pull out. When any damage is apparent it is too late for the plant. Fortunately, healthy plants can usually repel the insect with an acidic sap before they can lay eggs. Stressed plants and those about to go into bloom are the most susceptible. Plants can be treated with Marathon 1% Granular Greenhouse and Nursery Insecticide. Sprinkle 1 to 5 tablespoons (depending on the size of the plant) around the base of the rosette. It is a systemic insecticide and will need to be watered into the soil. This can be expensive but may be worth it for more valuable plants.

**Deer** – Deer usually avoid eating all but the softest of agaves. They will, however, scrape the velvet off of their antlers on larger specimens. The damage ranges from one or two shredded leaves to a destroyed plant.

**Hail** – Hail will leave small spots on the leaves of agaves. It is especially noticeable on dark green varieties like *A. salmiana* and *A. victoriae-reginae*. Placing a square of window screen fabric (available in rolls from hardware stores) over plants in threatening weather can help prevent small hail damage.

## Agave Species for Central Texas

### ***Agave americana***

*Agave americana* has a long ornamental history and is grown across the globe. It is one of the earliest European introductions from the New World. Linnaeus used the species in 1753 to describe the genus *Agave*. *A. americana* is a large, highly variable species which offsets freely. It grows from 6 to 10 ft. tall and 10 to 13 ft. wide. The leaves are hard, very smooth, and deeply guttered with the color ranging from gray-green to gray to glaucous blue-gray. The inflorescence is a panicle 16 to 26 ft. tall with yellow flowers. *A. americana* can bloom after about 10 years in the ground and will die after blooming. It is easy to cultivate. It tolerates a wide range of soils and can handle hot dry conditions as well as cooler wet ones. *A. americana* is cold tolerant to around 15°F. It grows best in full sun but can handle some shade. All types of *A. americana* are highly susceptible to the agave snout weevil – particularly before blooming. There are also some very nice variegates of *A. americana* that can be used in the landscape.

***Agave americana* var. *marginata*** – Forms a large rosette of strap-like leaves with yellow margins. Not as cold hardy as the species. Hardy to around 20°F but can start to show some freeze damage at 25°F without protection. It can reach the same size as the species but grows much slower, especially if it's not in full sun.

***Agave americana* var. *medio-picta alba*** – Forms an urn-shaped rosette with a creamy white-yellow stripe down the center and green margins. Hardy to around 15°F but can start to show some freeze damage at 23°F without protection. It is much smaller than the species reaching only around 4 ft. in height and width. It doesn't grow as fast as the species but grows faster in full sun than partial shade.

***Agave americana* var. *striata*** – Has a similar growth habit to the species with a random creamy yellow coloring finely striped through the glaucous blue-gray leaf. Exact cold hardiness is untested but is probably similar to *A. americana* var. *marginata*. Grows to 6 ft. tall and 8 ft. wide.

***Agave americana* subsp. *protoamericana*** – Similar to the species but smaller with glaucous blue-gray leaves. Cold hardy to at least 15°F. Grows to 6 ft. tall and 8 ft. wide. This is the only form of *A. americana* with a known wild population. It is documented to occur in the Sierra Madre Oriental of eastern Mexico.

### ***Agave bracteosa***

*Agave bracteosa* is a small species from the Mexican states of Coahuila and Nuevo León. It rarely exceeds 1.5 ft. in height and width. It forms a rosette of flexible, spineless, lime green leaves which twist, arch, and recurve gracefully. The leaf margin is smooth but can be a little sharp. Older plants will produce offsets. The bloom is a dense spike with white to pale yellow flowers on the upper third. Unlike most agaves, *A. bracteosa* does not die after it blooms. It can grow in full sun or light shade. In full sun it is susceptible to yellowing in the summer from heat stress, but will regain its green color with a little extra water. In light shade the yellowing is not a problem. *A. bracteosa* is cold hardy to around 15°F. It is an excellent choice for small spaces and also works very well in containers.

### ***Agave colorata***

*Agave colorata* is a medium-sized species from the coastal zones of the Mexican state of Sonora. It is generally 4 ft. in height and width. It has broad glaucous blue-gray leaves with strong bud imprint marks and cross banding. The leaf margins have strong undulations and large prominent teeth with dark brown teeth. The inflorescence is a panicle 6 to 10 ft. tall with yellow flowers. The plant is usually solitary, but may produce a few offsets. It will die after flowering. *A. colorata* can handle most soils

as long as it has adequate drainage. It grows best in full sun. *A. colorata* is cold hardy to around 15°F. It is a very beautiful plant, although it can be difficult to find.

### ***Agave lophantha***

*Agave lophantha* is a medium-sized species from the Rio Grande Valley of Texas in Starr and Zapata counties and on into the Mexican state of Veracruz. Rosettes are 2 ft. in height and 3 ft. wide. The green leaves are stiff, glossy, and sword-like, with a light stripe down the center. The margins are saw-like and lined with fine gray to brown teeth. It has a long terminal spine. *A. lophantha* offsets and will produce large irregular colonies plants which can harbor agave snout weevils. It is best to remove the offsets to avoid this problem. The bloom is a 11.5 to 13 ft. spike with yellow-green flowers. It dies after flowering. It will grow in full sun or light shade. *A. lophantha* is cold hardy to around 10°F.

***Agave lophantha* var. *brevifolia*** – Similar to the species with much shorter leaves ending in a blunt tip. Rosettes are 1.5 ft. in height and 2 ft. in width. May possibly be a hybrid with *Agave xylonacantha*. This form is much more handsome than the species. It offsets, but does not quickly form large colonies. Cold hardy to around 10°F.

### ***Agave neomexicana***

*Agave neomexicana* is a small to medium species from the mountains of southeastern New Mexico and western Texas. It usually grows to be 1.5 ft. in height and 2 ft. wide. It forms compact rosettes of slender, lanceolate, blue-green to gray leaves. *A. neomexicana* looks similar to *A. parryi* var. *parryi*, but has narrower leaves. The bloom is a panicle 8 to 11 ft. tall with flowers that are red in bud and yellow when open. It dies after flowering but produces a large number of offsets throughout its life. *A. neomexicana* requires excellent drainage. It grows best in full sun. It has excellent cold tolerance, being said to withstand temperatures as low as -20°F.

### ***Agave ovatifolia***

*Agave ovatifolia* is a newly described (2002), medium-sized species from northern Nuevo León, Mexico. It grows to be 2 to 4 ft. high by 3 to 5 ft. wide. It forms a slightly flattened rosette with short, wide, powder-blue leaves. The inflorescence is a 10 to 14 ft. panicle with yellow-green flowers. It does not produce offsets and will die after flowering. Plants are tolerant of most soil types as long as the drainage is good. Limited water will keep the plant on the smaller side. It can be grown in full sun to very light filtered shade. *A. ovatifolia* is cold hardy to around 5°F.

### ***Agave parryi***

***Agave parryi* var. *parryi*** – Native from central Arizona into New Mexico and south into Mexico. Forms compact, nearly round rosettes 2 ft. high by 3 ft. wide of light gray to light blue-green lanceolate leaves 10 to 16 in. in length. All *A. parryi* varieties have leaves which are thick, rigid, smooth, and flat to barely concave on the surface. The inflorescence is a panicle 11 to 20 ft. tall with lemon yellow flowers having tints of red or pink when in bud. It dies after flowering, but produces many offsets. It grows well in full sun or partial shade. It has few soil requirements but prefers good drainage. *A. parryi* var. *parryi* is cold hardy to -20°F.

***Agave parryi* var. *parryi* “Estrella”** – A tissue-cultured clone of *A. parryi* var. *parryi* with an exceptionally symmetrical form and blue color. Cold hardy to around 10°F.

***Agave parryi* var. *couesii*** – Native to central Arizona. It is smaller than the type with a leaf shape in between the lanceolate form of var. *huachucensis* and the obovate form of var. *truncata*. Cold hardy to around 0°F.

***Agave parryi* var. *huachucensis*** – Native to southeastern Arizona and Chihuahua, Mexico. It is the largest and most robust of the *parryi* varieties. The leaves are longer, up to 25 inches, and more lanceolate than the type. It does not like to be overwatered. Cold hardy to around 15°F.

***Agave parryi* var. *truncata*** – Native to the Durango-Zacatecas border in Mexico. It is one of the most handsome of all the agaves. It forms dense symmetrical rosettes of blue-gray obovate to ovate leaves 3 ft. tall and wide. Cold hardy to around 15°F.

### ***Agave salmiana***

*Agave salmiana* is a large, variable species from the Mexican states of San Luis Potosí, Hidalgo, Puebla, Guanajuato, Michoacán, Mexico, Querétaro, and Oaxaca. It ranges in size from 5 to 6.5 ft. tall and 10 to 13 ft. wide. It is an urn shaped rosette with thick, hard, fleshy, deeply guttered leaves which are dark green to glaucous gray-green. *A. salmiana* has a wavy leaf margin with a long terminal spine. The bloom is a panicle 23 to 26 ft. tall with yellow flowers tinged with red while in bud. It dies after flowering, but produces at least a few offsets. It grows in full sun to light shade. There are numerous varieties and cultivars with some being frost tender and others hardy to 5°F.

***Agave salmiana* var. *ferox*** – One of the largest varieties with leaves about a foot wide and 3 ft. long. The teeth and terminal spine are brown, large, and heavy. It is cold hardy to around 20°F.

### ***Agave scabra***

*Agave scabra* is a medium to large species from the Chihuahuan Desert region of northeastern Mexico. It is usually around 4 ft. in height and width. The leaves are gray-green, thick, and very rough. They curve strongly with heavy teeth and a long terminal spine. The inflorescence is a 13 to 19 ft. panicle with yellow flowers. It dies after flowering, but usually produces numerous offsets. *A. scabra* prefers to be very hot and dry in full sun. It is cold hardy to 10°F.

### ***Agave schidigera***

*Agave schidigera* is a small to medium Mexican species ranging from northwestern Chihuahua south to Michoacán and east to San Luis Potosí, Zacatecas, and Durango. It generally grows to around 2 ft. in height and width and forms compact, symmetrical rosettes of dark green leaves with white bud imprints and marginal fibers. *A. schidigera* produces a 10 to 12 ft. tall bloom stalk with green-yellow flowers tinted with purple. It rarely offsets and dies after flowering. Full sun helps keep the rosette compact. *A. schidigera* is cold hardy to around 15°F. “*Durango Delight*” is a commonly found cultivar.

### ***Agave striata***

*Agave striata* is a clumping species from northeastern Mexico. Plants can grow to 3 ft. in height and 4 ft. across. It forms fairly open rosettes of thin leaves .25 inch wide by 2 ft. long. The leaves are stiff, rhomboid in cross section, and green often with a reddish cast. The inflorescence is a spike 5 to 8 ft. tall, often crooked, and lined with yellow to red-purple flowers. *A. striata* does not die after flowering, but produces axillary branches. It maintains its best form in full sun and requires little water. It is cold hardy to around 15°F.

***Agave striata* subsp. *falcata*** – Has an even more open rosette than the type. It has overall wider leaves that are thicker at the base.

### ***Agave victoriae-reginae***

*Agave victoriae-reginae* is a small species from the Mexican states of Coahuila, Durango, and Nuevo León. It grows to 1.5 ft. in height and width. It forms a dense, symmetrical rosette of hard, triangular leaves with white marks and margins. The bloom is a 15 ft. spike densely packed with cream to red-purple flowers. It dies after blooming, but grows slowly and can take decades to bloom. Some plants are solitary, while others offset. It prefers well-drained soil, and will maintain the best form in full sun with light water. *A. victoriae-reginae* is cold-hardy to a least 10°F.

***Agave victoriae-reginae* “compacta”** – A more compact form than the species growing to 1 ft. tall and wide. The leaves are shorter and wider. It has very wide and showy markings compared to the species.

### ***Agave weberi***

*Agave weberi* is a large species 4 to 5 ft. in height by 6.5 to 10 ft. in width that has no known wild form. The leaves are wide, fleshy and gray-green to shiny green. The upper half of the leaf has a smooth margin while the lower half can have fine teeth. The bloom is a panicle 23 to 26 ft. tall with yellow flowers. Some individuals form bulbils on the bloom stalk. It dies after flowering, but usually produces a moderate number of offsets. It can be grown in full sun or light shade. It may yellow due to heat stress but will recover with a little extra water. *A. weberi* is cold hardy to around 12°F.

## **Photos**



Paniculate Bloom (*Agave salmiana*)



Spicate Bloom (*Agave xylonacantha*)



Agave Snout Weevil



*Agave americana*



*Agave americana var. medio-picta alba*



*Agave americana var. marginata*



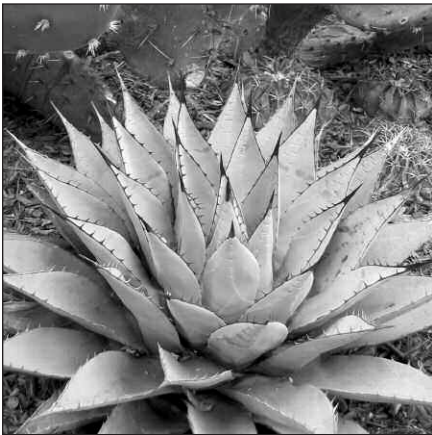
*Agave bracteosa*



*Agave colorata*



*Agave lophantha var. brevifolia*



*Agave neomexicana*



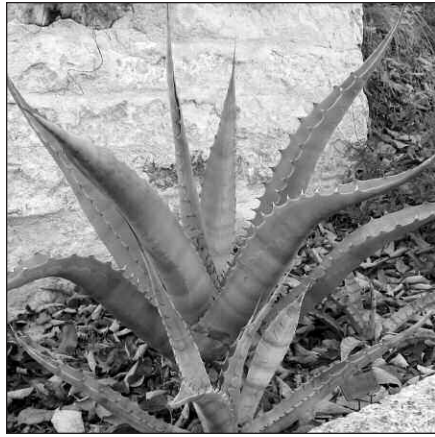
*Agave ovatifolia*



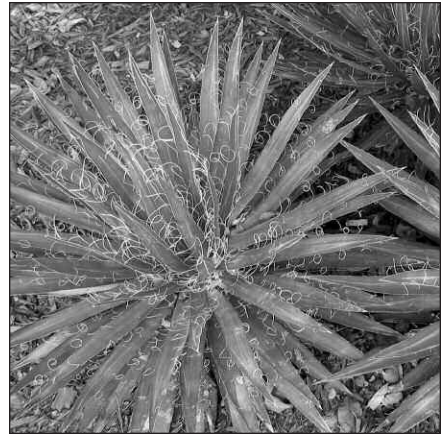
*Agave parryi var. truncata*



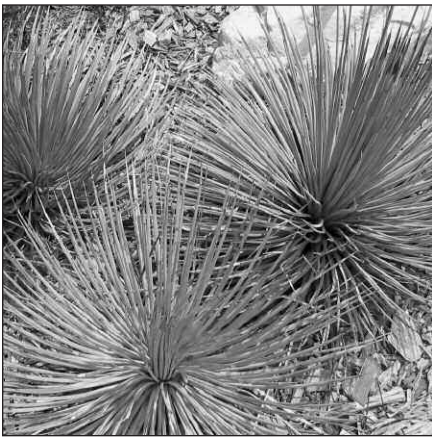
*Agave salmiana*



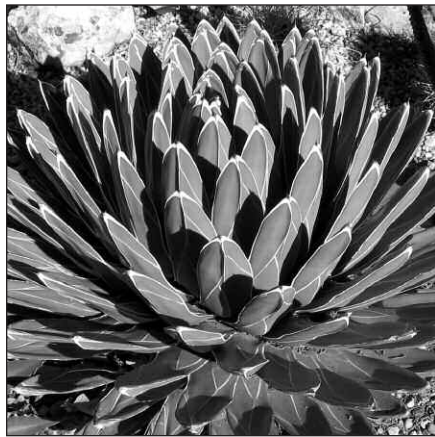
*Agave scabra*



*Agave schidigera*



*Agave striata*



*Agave victoriae-reginae*



*Agave weberi*

# Agaves Growing Outside in Jeff Pavlat's Garden • Austin, TX

Species	Size (H x W)	Cold Tolerance	Notes	Exposure
<i>Agave americana</i>	6-10' x 10-13'	15°F		Full Sun
<i>Agave americana marginata</i>	6-10' x 10-13'	20°F	Will burn some if unprotected at 25°F	Full Sun / Partial Shade
<i>Agave americana</i> var. <i>medio-picta</i> <i>alba</i>	4' x 4'	15°F	Will burn some if unprotected at 23°F	Full Sun
<i>Agave angustifolia</i> var. <i>marginata</i>	4' x 4'	25°F	Needs protection below 28°F; Burns seriously and most leaves drop down at 24°F	Full Sun
<i>Agave bovicornuta</i>	4' x 4-5'	20°F	Solitary	Partial Shade
<i>Agave bracteosa</i>	1.5' x 1.5'	15°F	Doesn't die after flowering	Partial Shade
<i>Agave celsii</i>	2' x 2'	15°F		Partial Shade
<i>Agave colorata</i>	4' x 4'	15°F	Solitary or with few offsets	Full Sun
<i>Agave "Cornelius"</i>	1.5' x 1.5'	Unknown	Somewhat monstrose variegated agave of unknown origin; Cold tolerance unknown	Full Sun / Partial Shade
<i>Agave desmetiana variegata</i>	3' x 3'	25°F	Burns easily; cover and heat with light bulb below 28°F; Grows out very quickly after damage	Partial Shade
<i>Agave filifera</i>	2' x 2'	17°F		Full Sun / Partial Shade
<i>Agave havardiana</i>	3' x 4'	-10°F	Grows slow; Solitary	Full Sun
<i>Agave lechuguilla</i>	1' x 1'	0°F	Forms a colony	Full Sun
<i>Agave lophantha</i>	2' x 3'	10°F	Forms a colony quickly which harbors agave snout weevils; Better to remove offsets	Full Sun / Partial Shade
<i>Agave lophantha</i> var. <i>brevifolia</i>	1.5' x 2'	10°F	More attractive than the normal form of <i>A. lophantha</i>	Full Sun / Partial Shade
<i>Agave montana - La Encantada site</i>	3' x 5'	10°F		Full Sun / Partial Shade
<i>Agave montana - La Pena site</i>	3' x 5'	10°F	Hasn't grown as well as <i>A. montana - La Encantada site</i>	Full Sun / Partial Shade
<i>Agave multiflora</i>	3' x 5'	20°F		Full Sun / Partial Shade
<i>Agave murpheyi</i>	3' x 3'	20°F	I've found it's not nearly as cold hardy as reported; Burns some at 25°F	Full Sun
<i>Agave neomexicana</i>	1.5' x 2'	-20°F		Full Sun
<i>Agave ocahui</i>	2' x 3'	15°F	Solitary	Full Sun / Partial Shade
<i>Agave ovatifolia</i>	2-4' x 3-5'	5°F	Solitary; Limited water will keep the plant on the smaller side	Full Sun
<i>Agave palmeri</i>	3' x 4'	10°F		Full Sun
<i>Agave parryi</i> var. <i>parryi</i>	3' x 3'	-20°F		Full Sun / Partial Shade
<i>Agave parryi</i> var. <i>Estrella</i>	3' x 3'	10°F	Tissue cultured selection of <i>A. parryi</i> var. <i>parryi</i>	Full Sun / Partial Shade
<i>Agave parryi</i> var. <i>truncata</i>	3' x 3'	15°F	One of the most beautiful agaves	Full Sun / Partial Shade
<i>Agave parviflora</i>	.5' x .5'	10°F	Usually solitary	Full Sun / Partial Shade
<i>Agave salmiana</i>	5-6.5' x 10-13'	5°F		Full Sun
<i>Agave scabra</i>	4' x 4'	10°F		Full Sun
<i>Agave schidigera</i>	2' x 2'	15°F	Usually solitary; "Durango Delight" is a very nice selection	Full Sun
<i>Agave striata</i>	3' x 4'	15°F	Doesn't die after flowering – rosette branches	Full Sun
<i>Agave striata</i> subsp. <i>falcata</i>	3' x 4'	15°F	Doesn't die after flowering – rosette branches fewer but wider leaves than <i>A. striata</i>	Full Sun
<i>Agave victoriae-reginae</i>	1.5' x 1.5'	10°F	Doesn't like too much water; Slow growing but very beautiful agave	Full Sun
<i>Agave victoriae-reginae "compacta"</i>	1' x 1'	10°F	Doesn't like too much water	Full Sun
<i>Agave victoriae-reginae hybrid</i>	2' x 2'	10°F	Longer leaves; more open rosette; fewer white markings than <i>A. victoriae-reginae</i>	Full Sun
<i>Agave x "leopoldii"</i>	.5' x .5'	17°F	Forms a colony ( <i>A. filifera</i> x <i>A. schidigera</i> )	Partial Shade
<i>Agave x "sharkskin"</i>	3' x 4'	10°F	<i>A. scabra</i> x <i>A. victoriae-reginae</i> sometimes sold as <i>A. "Ruth Bancroft"</i> ; Slow grower	Full Sun
<i>Agave xylonacantha</i>	4' x 4'	12°F		Full Sun / Partial Shade
<i>Agave weberi</i>	4-5' x 6-5-10'	12°F		Full Sun / Partial Shade