

Getting the Most out of Your Milkweed¹

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This publication outlines the care and planting considerations of milkweed utilized to attract monarch butterflies in Florida. Its intended audience is the general public, cooperative Extension agents, landscape professionals, nursery growers, and other green industry professionals who are interested in planting milkweed or designing gardens containing milkweed to attract monarch butterflies.

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Introduction

Milkweed is an increasingly popular plant choice for home gardens and landscapes throughout the United States. Its popularity is largely driven by the public's increasing engagement with monarch butterfly conservation efforts in the attempt to combat the documented decline in overwintering migratory monarch populations in recent decades (Brower et al. 2012; Thogmartin et al. 2017; Meehan and Crossley 2023; Monarch Joint Venture 2024). Milkweed also has appeal due to the wide variety of species and cultivars available, with over 70 species native to the United States, including **21 species native to Florida**. Milkweed is the larval host plant to the monarch

butterfly (*Danaus plexippus*), queen butterfly (*Danaus gilippus*), and soldier butterfly (*Danaus eresimus*), and it attracts many other beneficial insects like bees, which feed on flower nectar and pollen. Despite the apparent benefits that planting milkweed can provide, there are several caveats that must be considered to ensure monarch conservation efforts yield the intended results. This article is intended for home gardeners, nursery growers, landscape professionals, and any others who may engage in pollinator or monarch conservation gardening. It covers the basics of choosing the right milkweed species for a yard and how to design and manage a milkweed garden to maximize monarch recruitment and reproduction while reducing potential

harm or unintended consequences caused by improper plant selection or management practices.



Figure 1. Monarch and queen butterfly adults and larva. Left: Monarch butterfly larva on milkweed. Center: Monarch butterfly adult on pentas. Right: Queen butterfly adult on milkweed.

Credit: Bernadette Mach, UF/IFAS.

Milkweed Species for Florida

The term “milkweed” is primarily used to refer to plants within the genus *Asclepias* (Apocynaceae: Asclepiadoideae). With over 200 species worldwide, over 70 species native to the United States, and 21 species native to Florida, each milkweed species has its own particular growth habits and environmental needs. There are three non-native ornamental milkweed species that can be readily found at retail garden centers and nurseries in Florida and other parts of the United States. These include tropical milkweed (*Asclepias curassavica* L.) native to Central and South America, giant milkweed (*Calotropis gigantea* L.) native to tropical Asia, and balloon milkweed (*Gomphocarpus physocarpus* E. Mey) native to tropical Africa. Giant milkweed and balloon milkweed are both listed as posing High Invasion Risk by the [UF/IFAS Assessment of Non-Native Plants in Florida’s Natural Areas](#) ([assessment.IFAS.ufl.edu](#)). Of the non-native species, this document provides details about tropical milkweed but does not go into detail on the other two species because they are relatively poorly studied in the context of the monarch butterfly.

First and foremost, the best decision for production or planting is to choose a milkweed that is native to the area and adapted to local water, sun, and soil conditions. For example, species like swamp milkweed (*Asclepias incarnata*) need moderate to moist soils; species like aquatic milkweed (*Asclepias perennis*) need much wetter environments; and other species like butterfly milkweed (*Asclepias tuberosa*) prefer dry, sandy soils. See Table 1 below for specific information on the light, soil, and moisture requirements of Florida-native milkweed.

Second, choose a milkweed species that is appropriate for the size of the garden in which it will be planted. Some

milkweeds grow very tall and are well-suited for more natural landscapes or less manicured plantings (e.g., pocket prairies). These milkweeds tend to spread via underground rhizomes to quickly form large colonies, which can be good for large spaces but bad for smaller spaces where you want to maintain other plant species. Other milkweeds, like butterfly milkweed or aquatic milkweed, are compact and low-growing and thus more appropriate as garden edge plantings or even container plantings. See Table 1 for typical mature height sizes for different milkweed species.

Fortunately, research has shown that most if not all commercially available native milkweed species and cultivars attract and support monarchs (Baker et al. 2020; Baker and Potter 2018; Pocius et al. 2017), so any native species that fits the light, soil, and moisture levels of a landscape can be a good choice. For more information about Florida native milkweed species, their cultural requirements, and where to source native species, visit [UF/IFAS's Gardening Solutions webpage](#) ([IFAS.ufl.edu](#)); [the Florida Association of Native Nurseries' native plant and service directory](#) ([FANN.org](#)); and the [Florida Native Plant Society's plant database](#) ([fnps.org](#)). Consulting with an appropriate local cooperative Extension agent can be another great option for obtaining additional guidance on species selection for each unique landscape.



Figure 2. Photos of different milkweed species native to the United States. Top left, pinewoods milkweed (*Asclepias humistrata*); top right, swamp milkweed (*Asclepias incarnata*); bottom left, butterfly milkweed (*Asclepias tuberosa*); bottom right, aquatic/white swamp milkweed (*Asclepias perennis*).

Credit: Jaret Daniels, UF/IFAS.

Garden Design

One of the most important aspects of maximizing the conservation value of milkweed plantings is choosing the right garden design. It is important to plant plenty of nectar sources to attract adults as well as ample milkweed for the larvae to consume. Milkweed plants will be most frequently colonized by monarchs when more of the plant's vegetation is visible and accessible to adults. Therefore, when possible, planting milkweed with at least some clear area around it can allow monarch butterflies to easily access the entire plant, not just the top. A 2019 study (Baker and Potter 2019) showed that over the course of two years, milkweed gardens structured with adequate space to allow butterflies full access to the plants, about 1–1.5 m (3.3–5 ft) from surrounding vegetation, attracted approximately five times more eggs and larvae than did milkweed gardens with unstructured, crowded planting arrangements. Furthermore, gardens

with milkweed planted along the outer perimeter and butterfly-attractive flowering plants in the interior resulted in over twice as many eggs and larvae recruited than gardens with milkweed clustered in the center surrounded by nectar plants on the outer perimeter, or gardens composed of unstructured mixed plantings (Baker and Potter 2019). This type of design could easily be replicated in either in-ground plantings in a yard or by spacing out container plants appropriately. See Figure 3 for example garden designs of these approaches. MonarchWatch.org advises creating [monarch waystations](#), small gardens that provide resources needed by monarchs to reproduce and continue their migration. Monarch waystations can be a happy medium between highly manicured gardens and more naturalistic wildflower patches, and these waystations can fit in typical garden beds or smaller gardens that may be limited in space.

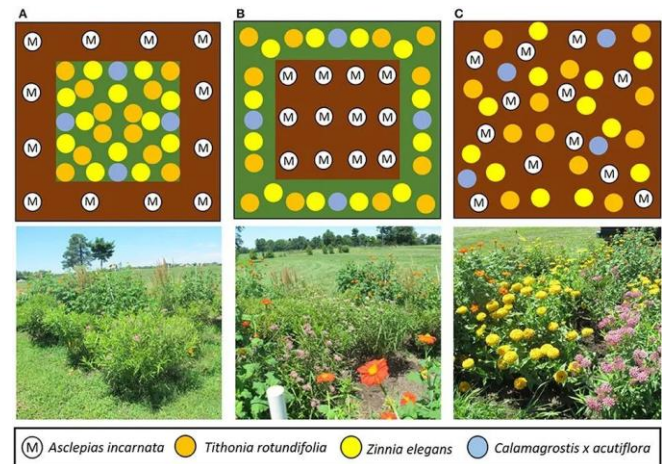


Figure 3. Diagrams showing three garden layouts evaluated by Baker and Potter (2019). The study found that gardens structured with milkweed on the perimeter (A) attracted significantly more monarch eggs and larvae than did the other two garden designs.

Credit: Figure © 2019 Baker and Potter, reproduced under Creative Commons Attribution License, originally published in the open-access journal *Frontiers in Ecology and Evolution* (Baker and Potter 2019). Creative Commons Attribution License (CC BY 4.0).

Maintenance and Pest Concerns

After installation into a landscape, milkweed will attract all kinds of insects. Most insects are beneficial or harmless, but there are a few pest species that warrant caution. This is especially true if the milkweed is stressed due to a mismatch between its environmental requirements and its planting site, or if the plant is experiencing water stress, extreme heat, or extreme cold. Some of the easiest milkweed pests to spot are the large milkweed bug (*Oncopeltus fasciatus*) and small milkweed

bug (*Lygaeus kalmii*) (Figure 4). These insects are bright red and black, and although they can feed on all parts of the milkweed plant, they favor the seed pods. Because of this, they typically are not considered serious pests of milkweed unless the milkweed is being grown at scale for seed production. Another group of easy-to-spot pests are milkweed beetles (*Tetraopes* spp.) (Figure 4). These beetles are bright red with black spots and feed on milkweed leaves and flowers. They rarely reach damaging levels, at least compared to the amount of leaf material that a monarch caterpillar will consume, so they can be left unmanaged unless they reach high densities. If they do reach high densities, it is recommended to simply hand-remove individuals and/or knock them into a container of soapy water.



Figure 4. Common pests of milkweed. Top left: Milkweed beetles (*Tetraopes tetraphthalmus*) on milkweed. Top right: Large milkweed bug (*Oncopeltus fasciatus*) on milkweed seed pod. Bottom left: Small milkweed bug (*Lygaeus kalmii*) on milkweed. Bottom right: Milkweed with high-density oleander aphid (*Aphis nerii*) infestation. Credit: Bottom photos and top right, Lyle Buss, UF/IFAS; Top left, Don Hall, UF/IFAS.

The oleander aphid (*Aphis nerii*, Fonscolombe) (Figure 4) is among the most common and problematic insect pest species that occur on milkweed, particularly in urban or residential gardens. These small insects are easy to spot due to their bright yellow coloring and high-density clusters along the stems and undersides of leaves. Aphids feed on phloem, the vascular tissue of plants that carries sugars. Their feeding damages the plant and can cause yellowing, leaf senescence, black sooty mold accumulation, and even plant death with high densities of aphid infestation.

Research indicates that oleander aphids can affect more than milkweed health. A University of Florida IFAS study

demonstrated that high-density oleander aphid infestations on tropical milkweed reduced monarch butterfly oviposition and caterpillar feeding and growth by approximately 50% compared to monarchs on aphid-free tropical milkweed plants (Mach et al. 2023). These pests can sometimes increase the amount of toxic defensive compounds (called cardenolides) present within some milkweed (Martel and Malcolm 2004), which can have downstream negative effects on monarch caterpillars (Ali and Agrawal 2014; De Roode et al. 2011). Importantly, the impact of aphid infestations depends on the density of the infestation, the length of time the plant has experienced the infestation, and the species of milkweed infested. For example, monarchs can feed and successfully develop on some native milkweed species, like swamp milkweed (*A. incarnata*), even under high-density aphid infestations (Martel and Malcolm 2004). This is yet another reason why milkweed species selection is an important component of gardening for monarch butterflies.

To combat pests like the oleander aphid, it is critically important to apply integrated pest management (IPM) principles. Scout plants frequently for pest infestations to detect them before they become a problem. Early-stage aphid infestations (Figure 5, left and center) are much easier to manage through physical removal or applications of a low-impact insecticide like insecticidal soap. However, high-density infestations (Figure 5, right) can be difficult to manage without using higher impact insecticides, which can inhibit the conservation value of milkweed for monarch caterpillars (Mach et al. 2024). Others have shown that increasing the number of pollinator-attractive plant species in milkweed gardens increases local predatory insect abundance without increasing predation of monarchs (Nestle et al. 2020). However, it is important to note and recognize that predation and parasitism of monarch butterfly caterpillars by other insects is common and a natural part of the monarch life cycle, as caterpillars are one of the most important and abundant sources of high-quality food for other insects and urban wildlife like birds.

Predatory insects, also known as natural enemies, will eat aphids and other pests of milkweed, helping reduce the need to resort to insecticide use or other forms of pest management intervention. In general, natural enemies thrive in species-rich, structurally complex landscapes. Therefore, creating diverse and structurally complex pollinator gardens to attract natural enemies in addition

to planting milkweed can help reduce oleander aphid densities and associated negative effects on monarchs.



Figure 5. Examples of low, moderate, and high aphid infestation. Left, center: milkweed with low- and moderate-density aphid infestations. Right: milkweed with high-density aphid infestation. Credit: Bernadette Mach, UF/IFAS.

Should treatment for a milkweed pest become necessary (i.e., the plant is at risk of dying from a heavy infestation), do not use insecticides that have systemic activity, as this can make the leaves, pollen, and nectar of milkweed toxic to monarchs and other beneficial insects over extended time periods. Instead, use a low-impact and non-systemic product like insecticidal soap or horticultural oil that does not have prolonged residual activity so that beneficial insects and monarchs are better protected from unwanted non-target effects. This is particularly relevant to nursery growers who may be propagating large numbers of milkweed plants in concentrated areas and dealing with pest infestations that may reduce the salability of plants.

Tropical Milkweed

No conversation about planting milkweed in Florida and the southern United States is complete without addressing the controversy surrounding the use of tropical milkweed (*Asclepias curassavica*, L.). Tropical milkweed, also known as Mexican milkweed, scarlet milkweed, or scarlet butterfly milkweed, is a milkweed species native to Central and South America. It is increasingly popular as an ornamental milkweed because of its ease of propagation and profuse aesthetically attractive blooms with a long bloom period. However, *A. curassavica* is listed as an invasive species in north, central, and south Florida by the [UF/IFAS Assessment of Non-Native Plants](https://assessment.ifas.ufl.edu/) (assessment.ifas.ufl.edu) and therefore should not be planted in Florida landscapes. Researchers have identified several negative consequences associated with the use of this plant species in Florida and the southern United States, described below.

Disrupts Monarch Migration

As a tropical species, *A. curassavica* does not senesce (die back) in the winter and grows year-round in warm climates like Florida if there is no hard freeze, unlike most native milkweed species. Although this may have ornamental appeal, it can cause migratory monarchs to exit reproductive diapause and stop migration when they encounter a milkweed food source along their migration route (Majewska and Altizer 2019). Thus, planting tropical milkweed can encourage migratory monarch butterflies to maintain winter residency outside of their overwintering grounds in southern Mexico, reducing migratory population size and increasing mortality risk (Batalden and Oberhauser 2015).

Encourages Parasite Infection

The year-round growth and flowering of tropical milkweed also make the plant a potential prolonged transmission site for *Ophryocystis elektroscirra* (OE), a protozoan parasite of monarchs that can weaken adults (Altizer and Oberhauser 1999) and that is spread by adult butterflies dropping spores on eggs, larvae, and milkweed (De Roode et al. 2009). Native milkweed species typically die back to the ground in the fall and winter, allowing for a break in adult monarch visitation and the subsequent transmission of OE. However, since tropical milkweed does not die back in the winter south of the frost line, it therefore can build up high levels of spores year-round, leading to persistently high spore-loads, high infection rates among adult monarchs, and subsequent poor survivorship (Satterfield et al. 2016).

Because of the harmful consequences of tropical milkweed remaining through the winter, tropical milkweed plants in a landscape should be cut back in late October to simulate the natural die-back of native milkweed species and to remove plant tissue potentially contaminated with OE spores. Continue this cut-back until the spring, when native milkweed species start growing again. (Incidentally, ideally, all milkweed species, tropical and native alike, should be cut back during the growing season each time they are defoliated by monarchs. Judiciously cutting back milkweed plants when they become defoliated, which may be several times during the growing season, will promote new bushy growth to feed more caterpillars.)

Increases Risk from Pests and Stress

Tropical milkweed is also particularly susceptible to high-density oleander aphid infestations, which can make it an

unsuitable host for monarchs. Its susceptibility can create an ecological trap if plants are treated with insecticides to control aphids and protect plant quality. In addition, tropical milkweed has elevated cardenolides, a plant chemical defense against pests, as compared to native milkweed species (Faldyn et al. 2018; Malcolm 1990; Soule et al. 2020; Züst et al. 2018). This characteristic makes tropical milkweed a riskier plant choice because it can become toxic to monarch larvae when under various stressors, like water, heat, or pest stress, as well as when it is treated with insecticides. For example, research has shown that warmer temperatures associated with urban landscapes and climate warming can further increase cardenolide concentrations in tropical milkweed tissues beyond what monarch caterpillars can tolerate, making it a toxic host (Faldyn et al. 2018). Because of these various concerns, tropical milkweed is not recommended for monarch conservation plantings in Florida (Anderson-Messee 2022). Instead, native milkweed species are a more appropriate choice to support monarchs in your yard.

Mitigating Negative Aspects of Tropical Milkweed

Tropical milkweed currently represents the lion's share of commercially produced and sold milkweed in Florida and much of the southern United States. In most cases, it is difficult to find alternative, native species of milkweed in Florida beyond a few nurseries that specialize in native plants. Additionally, the selection of native milkweed tends to be limited to just a few species, namely butterfly milkweed (*Asclepias tuberosa*), swamp milkweed (*Asclepias incarnata*), and aquatic milkweed (*Asclepias perennis*). Even for those nurseries providing native milkweed for sale, there are challenges associated with increasing the production and availability of these native species, so demand almost always outstrips supply. For these reasons, tropical milkweed represents the majority of milkweed already installed into Florida residents' yards and gardens, and it will likely continue to make up a large component of milkweed plantings in urban and residential gardens. Therefore, it is important to implement practices that reduce the negative impacts of tropical milkweed on monarchs, such as using IPM and integrated pest and pollinator management (IPPM) principles to manage key insect pests, not creating new installations of tropical milkweed, and cutting back existing plantings in the fall to simulate natural die-back of native species.

Key Messages

In short, sourcing native milkweed can be inconvenient but worth the effort to avoid planting non-native milkweed that can negatively affect monarchs. When choosing a native milkweed, pay close attention to the light, soil, and water requirements for each species to match the right plant to the right planting site. When designing your garden, consider planting milkweed on the perimeter to increase use by monarch butterflies, with plentiful nectar plants inside the perimeter to encourage natural enemies and other pollinators. When bringing new plants home from the nursery, and whenever possible, scout for pests so that they can be suppressed before they become a larger problem. Should pest problems arise, treat them first with low-impact insecticides like insecticidal soap. Avoid using any systemic insecticides on milkweed, as this may negatively affect monarchs and other beneficial insects.

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Table 1. Florida-Native Milkweed Species and Their Characteristics.

Scientific Name	Common Name(s)	Distribution				Commercially Available?	Environmental Requirements			Habit & Phenology	
		Panhandle	North	Central	South		Light	Soil	Moisture	Form	Blooms
<i>Asclepias amplexicaulis</i>	Clasping milkweed	✓	✓	✓		no	full sun to part shade	sandy	average, well-drained	up to 4ft	late spring to summer
<i>Asclepias cinerea</i>	Carolina milkweed	✓	✓			no	full sun to part shade	sandy	moist, well-drained	up to 2ft	summer
<i>Asclepias connivens</i>	Largeflower milkweed	✓	✓	✓	✓	no	full sun	sandy to loamy	moist to wet	up to 2ft	late spring to summer
<i>Asclepias curtissii</i>	Curtiss' milkweed		✓	✓	✓	no	full sun	sandy	average, well-drained	up to 4ft	summer
<i>Asclepias feayi</i>	Florida milkweed		✓	✓	✓	no	full sun	sandy	average, well-drained	up to 2ft	summer
<i>Asclepias humistrata</i>	Pinewoods milkweed	✓	✓	✓		yes	full sun	sandy	average, well-drained	up to 2ft	spring to early summer
<i>Asclepias incarnata</i>	Swamp milkweed	✓	✓	✓	✓	yes	full sun to part shade	silty to loamy	moist to wet	up to 4ft	summer to fall
<i>Asclepias lanceolata</i>	Fewflower milkweed	✓	✓	✓	✓	no	full sun to part shade	sandy to loamy	moist to wet	up to 3ft	late spring to fall
<i>Asclepias longifolia</i>	Longleaf milkweed	✓	✓	✓	✓	no	full sun to part shade	sandy to loamy	moist to wet	up to 2ft	spring to fall
<i>Asclepias michauxii</i>	Michaux's milkweed	✓	✓			no	part shade	sandy	dry to average	up to 1ft	spring to summer
<i>Asclepias obovata</i>	Pineland milkweed	✓				no	part to full shade	sandy	dry to moist	up to 3ft	late spring to summer

Scientific Name	Common Name(s)	Distribution				Commercially Available?	Environmental Requirements			Habit & Phenology	
		Panhandle	North	Central	South		Light	Soil	Moisture	Form	Blooms
<i>Asclepias pedicellata</i>	Savannah milkweed	✓	✓	✓	✓	no	full sun to part shade	sandy	moist, well-drained	up to 1ft	late spring to fall
<i>Asclepias perennis</i>	Aquatic milkweed	✓	✓	✓		yes	full sun to part shade	wetland	moist to wet, well-drained	up to 2ft	spring to fall
<i>Asclepias rubra</i>	Red milkweed	✓				no	full sun to part shade	acidic wetland	moist to wet	up to 4ft	late spring to summer
<i>Asclepias tomentosa</i>	Velvetleaf milkweed	✓	✓	✓	✓	no	full sun	sandy	dry	up to 3ft	summer
<i>Asclepias tuberosa</i>	Butterflyweed; Butterfly milkweed	✓	✓	✓	✓	yes	full sun	sandy	average to dry	up to 2ft	late spring & summer
<i>Asclepias variegata</i>	Redring milkweed	✓				no	full sun to part shade	sandy	average to dry	up to 4ft	spring to summer
<i>Asclepias verticillata</i>	Whorled milkweed	✓	✓	✓	✓	yes	full sun to part shade	sandy	average	up to 3ft	summer
<i>Asclepias viridiflora</i>	Green milkweed	✓				no	full sun	sandy	dry	up to 2ft	summer to fall
<i>Asclepias viridis</i>	Green antelopehorn	✓	✓	✓	✓	yes	full sun	sandy	moderately dry to moist, well-drained	up to 2ft	winter to summer
<i>Asclepias viridula</i>	Southern milkweed; Green milkweed	✓	✓			no	full sun	acidic wetland	moist	up to 2ft	after fire

Sources: Atlas of Florida Plants, Florida Wildflower Foundation, Lady Bird Johnson Wildflower Center.

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