

Plumeria: Propagation from Cuttings¹

Andrew K. Koeser, Gitta Hasing, and Drew McLean²

Introduction

Plumeria (*Plumeria* spp. L.) are flowering ornamentals native to the Caribbean, Mexico, Central America, Venezuela, and Colombia. Highly valued for their colorful flowers, plumeria are now grown in tropical and subtropical areas throughout the world. Plumeria, or frangipani, are members of the Apocynaceae family. Unless steps are taken to prevent frost damage, plumeria are generally limited to landscape uses in south Florida and protected regions of central Florida.

Plumeria ranges in size from shrubs (dwarf varieties) to medium trees up to 40 feet (13 meters) in height (Eggenberger and Eggenberger 2005). Plumeria can be used well as accent plants. Most species of plumeria are briefly deciduous in the winter months; however, *Plumeria obtusa* and its varieties (e.g. 'Singapore White') are predominantly evergreen (Eggenberger and Eggenberger 2005). Plumeria in Florida are leafless in the spring when the flowering season begins, and they continue to grow leaves as the flower season peaks and declines (Eggenberger and Eggenberger 2005; Menninger 1975). Most varieties grow rapidly, excluding those with a dwarf habit. Plumeria species and varieties can be identified by differences in leaf shape, form, and growth habit (Figure 1).

Culturally, the wood of mature plumeria is used to create drums, bowls, trays, cabinets, and furniture (Eggenberger and Eggenberger 2005). Additionally, parts of the plant are used as folk medicine in India and elsewhere to create an

anti-inflammatory compress (Eggenberger and Eggenberger 2005; Gupta et al. 2006).

While the above uses are noteworthy, flower production is arguably the use most commonly associated with the species. Plumeria flowers are used in decorations, arrange-



Figure 1. The underside of leaves from two different varieties, note the different vein colors.

Credits: Gitta Hasing

ments, and for making leis or flower necklaces. The flowers are showy, fragrant, and found naturally in white, yellow, and red (Figure 2).

Hybrids have expanded the palette of colors to include shades of orange and pink as well (Figure 3; Eggenberger

1. This document is ENH1228, one of a series of the Environmental Horticulture Department, UF/IFAS Extension. Original publication date, October 2013. Visit the EDIS website at <http://edis.ifas.ufl.edu>.

2. Andrew K. Koeser, assistant professor; Gitta Hasing, biological scientist; and Drew McLean, biological scientist; Environmental Horticulture Department, Gulf Coast Research and Education Center, UF/IFAS Extension. Gainesville, FL 32611

The Institute of Food and Agricultural Sciences (IFAS) is an Equal Opportunity Institution authorized to provide research, educational information and other services only to individuals and institutions that function with non-discrimination with respect to race, creed, color, religion, age, disability, sex, sexual orientation, marital status, national origin, political opinions or affiliations. For more information on obtaining other UF/IFAS Extension publications, contact your county's UF/IFAS Extension office.

U.S. Department of Agriculture, UF/IFAS Extension Service, University of Florida, IFAS, Florida A&M University Cooperative Extension Program, and Boards of County Commissioners Cooperating. Nick T. Place, dean for UF/IFAS Extension.



Figure 2. From Left to Right: 'Royal Hawaiian,' 'Singapore,' and 'Key West Red' plumeria
Credits: Gitta Hasing

and Eggenberger 2005). Flowers are most aromatic during the night or early morning. As plumeria flowers mature, they can differ in size or color (Eggenberger and Eggenberger 2005).



Figure 3. From Left to Right: 'Nebels Rainbow' and 'Cerise' plumeria
Credits: Gitta Hasing

Basic Care

Plumeria require well-drained soils or potting soils. They will tolerate drought, but they grow best in moist—not wet—soil (Bunch 2010). Plumeria plants perform best in full sunlight. They tolerate a range of pH from slightly acidic to slightly alkaline (Eggenberger and Eggenberger 2005).

The Florida-friendly Landscaping™ program Green Industries Best Management Practice (BMP) handbook suggests a basic maintenance nitrogen fertilization rate of 0–2 lb/1000 ft² per year for ornamental landscape plants, including plumeria (Florida Department of Environmental Protection 2010). Applying a fertilizer high in phosphorus and low in nitrogen may increase flowering by plumeria

(Eggenberger and Eggenberger 2005). However, the use of phosphorus fertilizers within areas planted in turfgrass is limited by regional ordinances because of water quality concerns. Therefore, the use of high-phosphorus fertilizers should be limited to the area or bed where plumeria are grown. In addition, a soil test is recommended every two to three years to determine soil pH and nutrient levels before applying fertilizer or lime. If soil tests show increasing phosphorus levels over time, additional phosphorus applications are not needed to improve plant performance.

Plumeria in Florida

Florida has hardiness zones ranging from 8a–11b (Figure 4). As a tropical tree species, plumeria do not tolerate temperatures at or below freezing. Florida's subtropical climate is ideal during the warm summer months; however, plumeria may succumb to occasional cold snaps in the northern and central parts of Florida (Zones 8a-10a). In these zones, plants should be protected or brought indoors to avoid freezing temperatures. (Plumeria plants grow well in pots.) In south Florida (zones 10b–11b) or coastal areas buffered by warm waters, the risk of freeze damage is greatly reduced. Some popular cultivars in Florida include 'Celadine,' 'Maile,' 'Singapore,' and 'ScottPratt.'

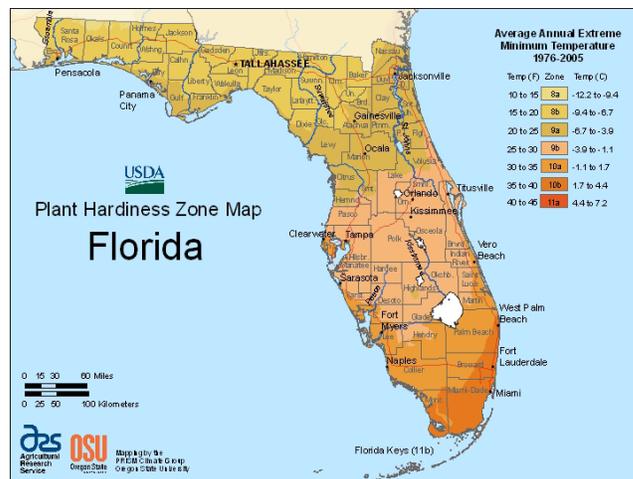


Figure 4. Florida has hardiness zones ranging from 8a-11b.
Credits: USDA

Propagation/Cuttings

Plumeria can be easily propagated by cutting the stem without using specialized equipment (e.g. misting bench) or materials (e.g. rooting hormones or sphagnum moss). This makes plumeria an ideal plant for the novice horticulturalist looking to expand his or her gardening skills. Once you have successfully mastered the techniques detailed below,

you can easily expand your collection of plumeria or introduce this showy ornamental to your friends' landscapes.

Patented Plumeria: When taking cuttings or propagating a plant, you need to know if the plant is patented or trademarked. Plant patents, which protect the plant originator or patent holder's investment, last for 17 years. The patent holder controls the propagation, sale, distribution, and royalty agreements associated with that particular plant (genetics). Trademarks are associated with the name of a plant, rather than the genetic makeup. If renewed every 10 years, trademarks can last indefinitely.

Plumeria currently protected by a patent cannot be propagated without the direct consent of the patent holder. You may legally take cuttings of trademarked plants if they were never patented or the patent has expired. However, you cannot sell the plant under the trademarked name (Chatfield and Quigley 2003).

Plumeria can be propagated through rooted cuttings, seeds, grafting, or air layering, though the former two options are the easiest and most common methods employed. Because of genetic variation associated with sexual reproduction, plumeria started from seed do not hold true to the parent plants. Plumeria originating from seeds often take three to four years to flower (Eggenberger 2005). As such, the use of cuttings is typically the preferred commercial-propagation method because it is fast and easy, and it preserves desirable plant characteristics. Plumeria cuttings should be taken from mature wood and should include the stem tip (Figure 5; Eggenberger 2005). Mature stems will have a grayish hue, which differentiates them from newer, green growth. Cuttings should be 12–15 inches long and approximately a ½ inch wide (Figure 6 and Figure 7). If leaves are present on the cutting, you can remove some or all of them to reduce transpiration (Figure 8). Allow the cutting to dry for three to five days, so a callus forms on the cut end (Figure 9). Sink the cutting base about 3 inches into a potting soil-filled container that is pre-moistened. Do not water for the first five to six weeks, while the cutting is developing roots (Bunch 2010). Since plumeria do not tolerate saturated soil conditions, the potting soil selected should drain well (Figure 10; Eggenberger and Eggenberger 2005). Water lightly when new leaves begin to develop (Bunch 2010). As new leaves become fully developed, resume normal watering. The potting soil in the container should stay moist but not wet.



Figure 5. A cutting should be taken from mature wood that is grey and firm.

Credits: Gitta Hasing



Figure 6. A cutting should be around 1ft. in length and a ½ inch in diameter.

Credits: Gitta Hasing



Figure 7. Making the cut.
Credits: Gitta Hasing



Figure 9. Let the base of the cutting air dry before planting into a pot (3–5 days) to prevent rotting.
Credits: Gitta Hasing



Figure 8. All or some of the leaves can be removed to reduce transpiration.
Credits: Gitta Hasing



Figure 10. Choose a medium that allows good drainage.
Credits: Gitta Hasing

References

Bunch, Alan. 2010. *The Exotic Plumeria, The World's Number One Plumeria Catalog*.

Chatfield, J. and M. Quigley. 2003. "A Plant by Any Other Name" in *Tree Selection and Planting: A Collection of CEU Articles*. International Society of Arboriculture, Champaign, IL.

Eggenberger, R. and Eggenberger, M. *The Handbook on Plumeria Culture*, Fourth Rev. ed. and Expanded. Golden Bridge Publications, 2005.

Florida Department of Environmental Protection. 2010. *Florida Friendly Best Management Practices for Protection of Water Resources by the Green Industries*. 2nd Edition. State of Florida.

http://fyn.ifas.ufl.edu/pdf/GIBMP_Manual_WEB_2_17_11.pdf.

Gupta, M., U. K. Mazumder, P. Gomathi, and V. Thamil Selvan. 2006. Anti-inflammatory Evaluation of Leaves of *Plumeria acuminata*. *BMC Complementary and Alternative Medicine*. 6(1):36.

Menninger, Edwin A. *Color in the Sky*. Horticultural Books, Inc. New York, 1975.

All About Frangipanis All Things Frangipani. Pacific Palms Designs. CSS Design by FCT. Web. 16 August. 2013. <http://www.allthingsfrangipani.com/frangipanis.html>.

USDA. *Plant Hardiness Zone Map Florida*. USDA Agricultural Research Service, United States Department of Agriculture. <http://planthardiness.ars.usda.gov/PHZMWeb/#>.

Acknowledgements

We'd like to give a special thank you to Alan Bunch, owner of The Exotic Plumeria, Seffner, FL, for plant identification and review.