

PLUMERIA PLANT BIOLOGY, CULTIVATION TECHNIQUES AND PEST CONTROL MEASURES

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Abstract. This article discusses the biology, agronomy and pest control measures of the plumeria plant. In order to propagate plumeria in vitro, it is first necessary to know its biology well. Since this plant has high ornamental value, even if its vegetative and generative organs were propagated in laboratory conditions and adapted in greenhouses, the number of ornamental plants would increase by one.

Keywords: plumeria, biology, ecology, agrotechnology, vegetative, generative, pest, control, adaptation.

INTRODUCTION

Plumeria (Latin: Plumeria) is a highly ornamental flowering plant belonging to the Apocynaceae family. These tropical trees or shrubs are named after the famous French botanist and explorer Charles Plumier. This heat-loving frangipani can be grown indoors and is characterized by rapid growth (approximately 40 centimeters per year). For this reason, the plant requires regular pruning; otherwise, if left unchecked, it can grow to 2 meters or more in height. Its leaves are dark and dense, sometimes with a purple, brown, or silvery sheen. The leaf shape is round or elongated, with a smooth or wavy surface. The central vein is clearly visible and divides the leaf into two parts with parallel, convex "veins."

Problem Statement. The bush's fleshy leaves and shoots contain a sap that can cause redness and itching of the skin. Therefore, it's essential to wear protective gloves when pruning and repotting the plant. Also, avoid bringing the plant pot into rooms where small children play or where pets are present. It's worth noting that almost all Apocynaceae are toxic plants. Plumeria buds are large (5-10 centimeters across) and grow in dense clusters of 17-20. The scent of the flowers is reminiscent of gardenia, lemon, and oriental spices all rolled into one. This extract is highly sought after by cosmetologists and perfumers. The aroma becomes especially intense at sunset. This is because frangipani is pollinated by nocturnal moths in its natural habitat. Indoor plumerias begin blooming from early to mid-July and finish blooming by the end of October. In the wild, however, the buds adorn the bush year-round. Frangipani is native to North America, but this spectacular plant is most

commonly found in the Caribbean, Southeast Asia, and India. Plumeria, like all clivia species, is not only exceptionally beautiful but also beneficial, purifying indoor air of harmful particulate matter. Residents of Thailand believe the shrub has magical powers. The people of that region often perform rituals and ceremonies involving frangipani. It is believed that the plant can bestow eternal life, good fortune, and good fortune. Growing frangipani indoors is quite a challenging endeavor. First, it's worth noting that it's quite difficult to find seeds or seedlings commercially. Second, large specimens should be kept only in large spaces. However, this isn't a barrier for true indoor gardening enthusiasts. When returning from trips abroad, tourists often take cuttings or seed pods of plumeria with them. The following frangipani species are suitable for home cultivation.

White plumeria (*Plumeria alba*). In the wild, it grows on the Lesser Antilles in the Caribbean. These shrubs grow up to 10 meters in height. The leaves are large and elongated (up to 30 centimeters long and up to 7 centimeters wide), their undersides covered with dense white hairs, and the edges of the leaves are slightly raised. The buds have an alluring fragrance; they are not particularly large (up to 2.5 centimeters in diameter) and are white with a yellow center.

Red plumeria (*Plumeria rubra*). Red plumeria grows primarily in Mexico and northern South America. It can reach a maximum height of 5 meters. The leaves are almost 50 centimeters long. The undersides of the leaves are often covered with hairs, and some species have pointed leaf tips. The buds grow in racemes.

Plumeria Obtusa. In the wild, it is a medium-sized evergreen shrub, reaching 3-5 meters in height. Some varieties reach only 1.5 meters in height. In indoor gardening, *Plumeria Obtusa* grows compactly, reaching only 40 centimeters in height. The leaf blades are dark green and double. The underside is covered with fine, grayish-green hairs. The leaves do not exceed 20 centimeters in length. Each bud opens on a long stalk. The edges of the petals are slightly recurved, and almost half the petal surface is a rich yellow hue. The fragrance of the flowers is somewhat reminiscent of jasmine.

Growing from seed. Growing plumeria from seed is not an easy task. It's further complicated by the fact that they may fail to germinate or may not inherit the characteristics of the mother plant. The seeds ripen in pods; when this happens, they must be removed and prepared for planting. To begin, take two cloth pods, dip them in warm water with a growth stimulant, and place the seeds between them. Next, you'll need peat pellets. Dip the seeds in them so that about a quarter of them remain above the surface. Cover the seedlings

with plastic or glass, water them periodically, and ventilate them. For storage, place the seedlings in a warm room at a temperature of at least 22-23°C. Rooting will occur after about one and a half to three weeks. You'll notice cotyledons on the sprouted seedlings. Remember to remove the film from them (the tightness it creates can lead to rot). Once the seedling has gained strength, transplant it into a larger container. Plumeria grown from seed will bloom only after 2.5 years.

1. Seed Collection: Plumeria seeds are the product of generative propagation, which develops after the plant flowers and are collected after they have matured. Before collecting, the seeds are ripened by thoroughly drying the seed coat.

2. Seed Preparation: To ensure good seedling growth, treat the seeds with water before planting.

3. Planting the Seeds: Plant the seeds in a shallow pot with well-drained soil, place them in a shallow hole, and cover with soil.

4. Watering and Light: Lightly moisten the soil and place the container in a sunny location. Do not overwater. Germination Time: Seeds usually germinate in 2-4 weeks. After the seedlings have developed more than 1 or 2 leaves, they are transplanted individually into separate pots.

Research results. Methods for propagating plumeria by cuttings:

1. The best time to take plumeria cuttings is spring or early summer. 2. To obtain cuttings, select healthy, undamaged stems. Cut cuttings 30 cm long.

3. Cut the cuttings with garden shears or a clean knife under the leaf nodes of the branch at an angle of 45°C.

4. The base of the plumeria plant, cut at the tip, is thoroughly dried for 1-2 weeks in a cool, ventilated area. This prevents the branch from rotting and helps it harden. 5. Press a 5-7 cm diameter section into a clean pot with well-drained soil and cover with soil.

6. Before planting, soak the cuttings in water. After planting, dry the soil thoroughly, then water (plumeria cuttings rot from excess water).

7. Place the pot in a well-lit area (at least 6 hours of sunlight per day for good rooting). 8. After 4-6 weeks, the cuttings will begin to develop roots. To check this process, carefully remove the cuttings from the soil and inspect them. Cultivation instructions:

1. The cuttings root well and are transplanted to the designated location.

2. Plumeria seedlings begin to bloom after several years, with flowering lasting several months.



Figure 1. *Plumeria rubra* seedling with leaf bud and chlorosis.

Rust is another persistent problem for many plumeria plants. This fungal leaf disease typically accumulates on the undersides of leaves throughout the growing season. To reduce rust levels during the following growing season, collect fallen leaves and remove them from the area in the fall. Some control can also be achieved with chemical fungicides.

REFERENCES:

- 1) Armitage, A. M. (2008). *Herbaceous Perennial Plants: A Treatise on Their Identification, Culture, and Garden Attributes*. 3rd Edition. Stipes Publishing, Champaign, IL.
- 2) Dirr, M. A., & Heuser, C. W. (2006). *The Reference Manual of Woody Plant Propagation: From Seed to Tissue Culture*. 2nd Edition. Timber Press, Portland, OR.
- 3) Ghosh, A., & Das, A. (2015). *Plumeria spp.: Morphology, biology and propagation techniques*. *Journal of Ornamental Horticulture*, 18(2), 101–110.
- 4) Langenheim, J. H. (1994). *Plant Resins: Chemistry, Evolution, Ecology, and Ethnobotany*. Timber Press, Portland, OR.
- 5) McMillan, C. (2012). *Plumeria: A Complete Guide to Growing Frangipani*. Florida: Pineapple Press.
- 6) Shankar, R., & Kumar, S. (2018). Integrated pest management of *Plumeria*: Techniques and applications. *International Journal of Plant Protection*, 11(3), 45–53.
- 7) U.S. National Plant Germplasm System (NPGS). (2021). *Plumeria* germplasm information. USDA, Agricultural Research Service.
- 8) Yusupova, M., Irisova, S., & Numonov, O. (2024). *Biology Of Pomegranate Pests, Control Measures And First Aid In Case Of Pesticide Poisoning*. In *BIO Web of Conferences* (Vol. 82, p. 01014). EDP Sciences.

9) Irisova, Sh. "Protection of plants sown after cereals in the Fergana valley." *Science and innovation* 2.D11 (2023): 158-166.

10) Faxriddinovna, I. S. (2023). Ekish oldidan chigitga elektrofaollahgan suv bilan ishlov berishning g'o'zaning o'sish davriga ta'siri. *Science and innovation*, 2(Special Issue 11), 421-425.