# Plumeria Potpourri

The Plumeria Society of America

## March 12th Meeting

Tuesday, March 12, 2019, 7:00 p.m.
Cherie Flores Garden Pavilion, 1500 Hermann Drive, Houston, Texas

*... anyone with an interest in plumeria is invited to attend ...*

Speaker: John Ferguson

Topic: Importance of Soil and Mulch

March 2019

# President's Corner

*by* **Ray Allison (RayAllison@GaryGreene.com)**

Spring is well on its way for most of us and our beloved plumeria soon will come out of hibernation.

Our speaker for the March 12th meeting is confirmed, and it will be John Ferguson, known to many of us through the online newsletter *Lazy Gardener & Friends* and Nature's Way Resources (wwwnatureswayresources.com).

John will talk about many things plumeria, including how important soil and mulch are to the spring boost in growth and to sustain growth all year.

By popular request, we will continue producing and emailing to our membership a low resolution electronic version of our newsletter. If we don't have a good email address for you, please let us know. We will continue to publish and mail the print newsletter.

This is also a popular time of year to renew PSA memberships—remember, you can always go to our Website (www.theplumeriasociety.org) to renew.

Stay tuned for 2019—more fun to come as we celebrate the 40th anniversary of The Plumeria Society of America.

## In Memorium—Merv Ballans

Merv and Wendy Ballans, IPC, Naples, Florida 2017
photo by Kerrie Siebert

Many plumerians over the years have had the pleasure of meeting Wendy and Merv Ballans, founding members of the Frangipani Society of Australia (FSA). Merv recently passed on and is survived by his wife Wendy.

Frangifest 2005 in Australia included a tour of their beautiful gardens. Merv and Wendy also attended the IPC in Florida in 2017.

Many years ago, the Ballans started their business, The Frangipani Gardens, a specialist plumeria nursery north of Brisbane.

## 2019 Houston Area Plant Sale Calendar

### Clear Lake Sale (1st sale)

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| April 30 | Commitment to sell at Clear Lake |
| May 7 | Sellers' meeting after the general meeting |
| May 29 | Cultivar list for Clear Lake sale |
| June 8 | Sale at Clear Lake |

### Clear Lake Sale (2nd sale)

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|---|---|
| July 2 | Commitment to sell at Clear Lake |
| July 9 | Sellers' meeting after the general meeting |
| July 10 | Cultivar list for Clear Lake sale |
| July 20 | Sale at Clear Lake |

### Contact

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*If you're on Facebook, join us at*

**https://www.facebook.com/groups/PlumeriaSocietyAmerica**

**Our page now has 2,974 members from all over the world. It's a great place to ask a question or show off your blooms.**

*If you're on Instagram, join us at*

**https://instagram.com/p/BiuuQVwnZcF**

# Part 1: Making the Most Out of Slow Release Fertilizers

*by* **George Hadjigeorge, Texas**

Plumerias are heavy feeders and require regular fertilization to grow and bloom well. This is especially true for plants grown in pots. For potted plants, watering and rain water leach out the fertilizer from the soil much quicker than for plants grown in the ground. When using conventional fertilizer, potted plumerias should be fertilized every 4–5 weeks during the growing season. An alternative to frequent fertilizing with conventional fertilizers is to fertilize once with a slow release fertilizer that will last for the whole growing season.

Slow release fertilizers have become very popular with plumeria growers. The solid fertilizer spheres are coated with a special polymer. Every time the pellets are watered, they release some of the fertilizer that is inside each pellet. The amount released depends on the thickness of the polymer. Thicker polymers release fertilizer at a slower rate, and the fertilizer lasts longer. Typically, slow release fertilizers are sold with a life expectancy of 3–4 months, 5–6 months, and 8–9 months. These are the three practical ranges. Anything less than three months is not practical for plumerias because conventional fertilizer is more appropriate and four times cheaper. Anything longer than nine months is also not practical for plumerias because fertilization is only necessary during the growing season. During the winter, the plants are dormant and do not uptake nutrients.

Slow release fertilizers allow plumeria growers to apply fertilizer once in the spring, and they are good for the whole year. For this reason, even though they cost about four times as much as regular fertilizers, they have become very popular in the plumeria world. I use Osmocote Plus® 15-9-12 (N-P-K) with micronutrients. N-P-K stands for Nitrogen-Phosphorous-Potassium. Osmocote Plus contains 0.48% Iron and 1.3% Magnesium, and trace amounts of other metals. The Osmocote Classic® 14-14-14 (N-P-K) is the original slow release fertilizer, and it is widely available, however, it does not contain micronutrients. Osmocote invented slow release fertilizers. Unlike conventional fertilizers, there are not many N-P-K ratio options for slow release fertilizers.

Osmocote Plus contains iron and magnesium, which are essential for the health of plumeria plants. It also contains other trace elements like calcium, molybdenum, zinc, boron, copper, and manganese. These micronutrients are also coated with polymer, and they release over time, just like the fertilizer itself. Iron makes the leaves very green and helps with photosynthesis. Magnesium helps prevent sunburn of the plumeria leaves. When magnesium is available throughout the growing season, there is no need to add Epsom salts, a source of magnesium.

Florida Colors Nursery also markets a slow release fertilizer called Excalibur®. This is custom made for Florida Colors Nursery and can be mail ordered from them. It comes in two versions: Excalibur IX with 9 months release and Excalibur VI with 6 months release. It contains micronutrients, and 0.48% Iron and 0.36% Magnesium. It is an 11-11-13 (N-P-K fertilizer) which is more or less a "balanced" formulation.

Florikan® also makes slow release fertilizers, but their formulations contain too much Nitrogen. They are designed mostly for trees and evergreens. I would not use those on plumerias.

It has been proven that the best N-P-K ratio for flowering plants is a 3:1:2 N-P-K ratio. This is the standard ratio for rose fertilizers. The Osmocote Plus 15-9-12 (N-P-K) ratio is not far from the 3:1:2 ratio used for roses. Plumerias do well with this fertilizer and look very healthy (pictured below) and bloom well. The Nitrogen number is a little high, but it's useful for high-rainfall areas like the Gulf Coast of Texas. As stated above, water leaches fertilizer from

the soil and the higher N number makes Nitrogen available longer.

On reading the label on the Osmocote Plus bag I became concerned. It says that the specified life of the 8–9 months time release fertilizer is affected by the soil temperature, and the specified expected life is on the basis of 70˚ F. soil temperature. Obviously the soil temperature in the summer is higher than 70˚ F., which means the fertilizer will not last for its specified expected life. The bag shows a table with data at different soil temperatures. Higher soil temperatures reduce the life of the fertilizer by one month for every ten degree rise in soil temperature above 70˚ F.

That got me wondering—what is the average soil temperature during the summer, and how much is it going to reduce the life of the fertilizer? What life length fertilizer shall I choose to feed my plants?

I want to start feeding them in April (in March the plants are dormant). I do not want my plants fertilized past September, because the fertilizer will make the plants grow in October and November. Fresh growth during those months is subject to frost damage and stem rot in winter storage. The plants do best when the tips are allowed to stop growing and are hardened before they are put into winter storage.

I want the slow release fertilizer to be effective for six months. Which slow release fertilizer do I pick—the 5–6 months or the 8–9 months? Judging from the label data of one month reduction of expected life for every ten degrees above 70˚ F. soil temperature, with an assumed average soil temperature of 90˚ F. during the summer months, the life of the fertilizer will be shortened by two months. So, a 5–6 months slow release fertilizer will only last 3–4 months and will run out of juice and will not last for the whole season. So, the only choice is to use the 8–9 months version, which will last 6–7 months.

But what is the actual soil temperature during the growing season? Will the 8–9 months version last for the whole growing season? For this reason I collected a lot of soil temperature data from various pot sizes during the growing season and measured the effect they have on the life expectancy of the slow release fertilizer. I also looked for ways to make the most of slow release fertilizers by maximizing their expected life.

So, the question is, how hot does the pot soil get in the summer months? First how does the pot soil get heated? There are three mechanisms for heat transfer: a) conduction, b) convection, and c) radiation. Conduction is a non-issue because the pot does not touch anything. Convection is slow. It depends on the temperature difference between the pot and the air. Typically, during the day, the temperature of the pot is much higher than the ambient temperature, so convection will transfer heat the other way—it will cool the pot some rather than heat it. The pot gets heated mainly by absorption of radiation from the sun. In other words, for the pot to heat up, the sun must shine directly on it. The ambient temperature has just a very small effect.

So what is important is the duration of time the pot is exposed to sunlight and whether or not other objects shade the pot at different intervals during the day. The amount of radiation a pot will receive also depends on the total emissivity of the material the pot is made of. Black pots have a total emissivity of unity, which means they will absorb all the radiation that falls on them and will get much hotter than non-black pots. How hot the soil in the pot will get depends on the surface to volume ratio of the pot.

High surface to volume ratio pots (one-gallon pots) receive more radiation per unit volume of the soil they contain and as a result they get hotter. The soil in a lonesome one-gallon pot in full sun will reach 120+° F. in less than 10 minutes. I measured the temperature of many pots and I got 120+° F. in all of them. Even pots in the shade will reach these temperatures when the sun rays fall on them for a short time.

Here is an example. This group of one-gallon plants were under the shade of a persimmon tree and a larger plumeria plant. The one-gallon pots were facing west and protected from the sun most of the day. The soil temperature was 94° F. in the shade; the ambient temperature was 95° F.

In the afternoon, when the sun rays hit the pots, the soil temperature reached 120° F. in less than 10 minutes. The temperature probe was inserted into the middle of the pot halfway down the soil line. The pot with the temperature probe seen in the picture below, can be seen in the left picture above (front row facing west). The temperature rose so quickly because of the black color of the pot and the high surface to volume ratio of the one-gallon pot.

How about when one-gallon pots were grouped together? The front row that saw the sun got very hot (120° F.). The middle pots also got hot, but not as hot as the pots in the front row. For one-gallon pots grouped together when ambient temperature was 90° F., these were the measured temperatures for pots in the middle row at 1.5" below the soil line in the center of the pot: pot #1 106° F., pot #2 108° F., pot #3 110° F. And this was with the plant leaves shading the soil at times during the day and the surface of the pot not seeing the sun.

With 99° F. ambient temperature at 1.5" below the soil surface, the measured temperatures were: pot #1 110° F., pot #2 115° F., pot #3 113° F. with front row pots 120° F. The ambient temperature was not a big factor—it just made a difference of a few degrees. The key to how hot the pots will get is the duration of sun exposure. Small one-gallon pots got very hot in full sun, whether they were in the front row (120° F.) or they were in the middle of a group (106–115° F.), independent of ambient temperature.

At night the temperature of the soil dropped to about the minimum night temperature, which typically was about 80° F. during the summer.

What was the average temperature of one-gallon pots then? For the middle of the group it was about 80° F. at night and 110° F. during the day for an average of 95° F. This is 25 degrees higher than the 70° F. basis for slow release fertilizers and will reduce the life expectancy of the fertilizer by 2.5 months (at a rate of one month per ten degrees). So a 5–6 months slow release fertilizer will only last about 2.5–3.5 months at these temperatures.

For the front row it was 80° F. at night and 120° F. during the day for an average of 100° F. This is 30 degrees higher than the 70° F. basis for slow release fertilizers and will reduce the life of the fertilizer by 3 months (at a rate of one month per ten degrees). So a 5–6 months slow release fertilizer will only last about 2–3 months. This is a significant reduction in the life expectancy of the fertilizer and should be taken into account when fertilizing plants in one-gallon pots. I would not use anything but an 8–9 months slow release fertilizer for one-gallon and two-gallon pots, which will last 5–6 months in hot weather.

... to be continued in May

# The *Plumeria* Part 6: *Plumeria inodora*

*by* **Donald R. Hodel**
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This sixth installment of the series presents and discusses *Plumeria inodora*.

**3. *Plumeria inodora*** (***inodora*** = odorless or unscented).

Synonyms: *P. alba var. inodora* (*inodora* = unscented).
*P. alba var. fragrans* (*fragrans* = fragrant).
*P. alba var. fragrantissima* (*fragrantissima* = most fragrant)

Nicolaus Joseph von Jacquin (1727–1817), a Dutch-born Austrian botanist, physician, and chemist, named and briefly described *Plumeria inodora* in 1760 in his *Enumeratio Systematica Plantarum quas in insulis Caribaeis*, which was an account of the plants he had studied and collected on the Caribbean Islands and northern South America (Colombia and Venezuela) from 1755–1759. Austria emperor Franz Joseph I had commissioned Jacquin to undertake this expedition to collect plants, animals, and other curiosities for his palace's natural history collections. Jacquin's description was very brief and hardly diagnostic, stating the plant was fruiting, and the trunk was sparsely divided into few branches.

A few years later in 1763, in his *Selectarum Stirpium Americanarum Historia*, Jacquin provided a more expansive but still largely undiagnostic description of *Plumeria inodora*. He stated it was an erect, shrubby tree about eight feet tall with a few-branched trunk with short branches. The leaves were like those of *P. rubra*. Flowers were white, unscented, and the corolla lobes (petals) flared out larger than those of other members of the genus. He was emphatic and went on to say that, without a doubt, *P. inodora* was a distinct plant. He also noted that it grew wild in the woods at or near Cartagena, Colombia.

The description is from Allorge (2019), Woodson (1938), and herbarium specimens.

**Habit:** small to medium, deciduous tree to 20 feet tall and wide, vase-shape, sparsely to moderately branched, open to moderately dense.

**Trunk:** branched 1–2 feet above ground, branches all attaining about the same height; bark gray.

**Leaves:** spirally arranged at the branch tips; petioles 0.5–1.2 inches long; blades 8 inches long, 1.5–3 inches wide, obovate to oblanceolate, widest beyond middle at about ¾ the way toward tip, tip abruptly pointed, gradually narrowing toward the base, green above, pale and with very soft, short hairs below, primary nerves prominent, secondary nerves somewhat conspicuous below, tertiary nerves reticulate.

Fig. 1: *Plumeria inodora*, Colombia, *Smith s. n.*, Natural History Museum, Paris.

Fig. 2: *Plumeria inodora*, Brazil, *Ducke s. n.*, Natural History Museum, Paris.

Fig. 4: *Plumeria inodora*, Guyana, *De La Cruz 4286*, Field Museum, Chicago.

Fig. 3: *Plumeria inodora*, Guyana, *Peterson 7667*, Natural History Museum, Paris.

Fig. 5: *Plumeria inodora*, Venezuela, *Humbert 26835*, Natural History Museum, Paris.

**Flowers:** arranged in a several-flowered, terminal cluster, stalk of cluster 1.2–2.75 inches long; individual flowers 1.5–1.75 inches long, 1–1.5 inches wide, on pedicels 0.25 inch long; calyx crown-like, 0.06–0.09 inch tall, 0.125 inch wide, pale green; corolla lobes in bud completely and strikingly spirally contorted, at anthesis corolla tube or throat yellow, 0.5–0.75 inch long, 0.125 inch wide at base where stamens are attached, gradually widening to an opening 0.25 inch wide and there somewhat abruptly flared into lobes, lobes white, 1 inch long, 0.45 inch wide, broadly obovate-oblong to spathulate, imbricate in proximal 1/3, free in distal 2/3; apparently scentless diurnally but fragrant nocturnally.

**Fruit:** 2 pods (follicles) to 4–8 inches long, olive-green with white spots, maturing brown, short-pointed, wide-spreading, joined at base, splitting to reveal about 150 seeds per follicle in 4 rows; seeds winged, 0.2 inch long, 0.07 inch wide, brown.

**Distribution:** Colombia, Venezuela, Guyana, Brazil.

**Ecology:** *Plumeria inodora* primarily occurs from sea level to about 500 feet elevation in seasonally dry to moist forests and scrublands; mostly on granitic hills, bluffs, or outcrops.

**Common Names:** *quanto coba* (Venezuela).

**Notes:** *Plumeria inodora* is a little known and poorly documented species from northern South America. I have not seen or am aware of any living material of this species in cultivation in Hawaii, California, or Florida. I was only able to find online a single habitat photograph of this species (see *https://mapsights.com/cumaribo/plumeria-inodora/21077899*) growing on a granitic bluff in Colombia but no photographs of living plants, flowers, or fruits with confirmed identification; all were misidentified as *P. obtusa* or white-flowered forms of *P. rubra*. However, I was able to find online several herbarium specimens identified as *P. inodora* (Figs. 1–5) that appear to coincide with the original descriptions and those of Woodson (1938). In these specimens note the leaves with the blade widest distally toward the tip, the tip abruptly pointed, and in some the corolla tube widening distally just before the flared lobes.

Woodson (1938) stated that *Plumeria inodora* was distinct from all other members of the genus except *P. pudica* in its nearly funnel-shaped corolla, the floral tube gradually widening above the attachment of the stamens to an opening twice the diameter of the tube at its base. He further stated that *Plumeria inodora* differed from *P. pudica* in its leaves with a distinct petiole, its leaf blades obovate to oblanceolate, and the corolla lobes in bud completely and strikingly spirally contorted. Surely much more work is needed to circumscribe and differentiate *P. inodora* better from other species, especially *P. pudica* and perhaps even *P. rubra* and *P. obtusa*.

As noted on labels of herbarium specimens, *Plumeria inodora* is deciduous from February through May and flowers March through September. The specific epithet inodora means scentless or without odor, and Jacquin noted the odorless flowers and used this character when naming this species. However, labels of some herbarium labels noted the flowers were fragrant, but at night and not during the day, suggesting that Jacquin should have done is botanizing at night!

**NEXT: *Plumeria pudica***

## Literature Cited

Allorge-Boiteau, L. 2019. Flore des Guyanes Apocynaceae. Online: *http://www.ilerouge.org/documents/Flore%20des%20trois%20Guyanes.pdf* Accessed 28 January 2019.

Woodson, R. E., Jr. 1938. *Plumeria*. North American Flora 29(2): 115-119.

# Seedlings and Cuttings

*by* **Carl Herzog, Southern California**

Carl Herzog is a founding member of the Southern California Plumeria Society in San Diego. He has been growing plumerias for approximately 30 years. In the past few years, he has become an expert at growing seedlings in an aquaponic environment. The seedlings grow faster using this method. Most of his seedlings are used for grafting, and they are ready within a year.

According to Wikipedia, aquaponics "refers to any system that combines conventional aquaculture (raising aquatic animals such as snails, fish, crayfish, or prawns in tanks) with hydroponics (cultivating plants in water) in a symbiotic environment. In normal aquaculture, excretions from the animals being raised can accumulate in the water, increasing toxicity. In an aquaponic system, water from an aquaculture system is fed to a hydroponic system where the by-products are broken down by nitrifying bacteria initially into nitrites and subsequently into nitrates that are utilized by the plants as nutrients. Then, the water is recirculated back to the aquaculture system."

**Grow Tubes:** I have been using the 2" x 7" tubes purchased from Stuewe & Sons (www.stuewe.com). Smaller tubes will probably work, but you would have to move the seedlings out sooner.

**Seeds:** They need to be fresh, and it also helps if they are firm and plump. I start my seeds from March to August. I can start them as early as March because of my greenhouse. I do not like starting seeds after August because the growing time is too short.

**Mix:** I use a stringy coir, often called bird's nest coir. I stuff it into the tubes, leaving an inch to the top—a seed goes on top of the stringy coir, then on top of the seed, I put an inch of regular coir. The tube is watered and placed in the grow bed (clay pebbles).


I have found it is better if the seeds have not started to sprout before I put them in the grow tubes. The less you disturb the seeds the better it is. So, I plant my seeds right in the grow tubes.

The tubes can be placed close together in the grow bed, and the tubes where the seeds do not sprout can be removed easily. When the plants are up, you can rearrange the tubes.

**Roots:** Usually in 8–10 weeks, my grow tubes show roots coming out the bottom. Then it is time to

transplant them. Do not leave the tubes in the grow bed too long. If you have a lot of roots growing out of the bottom of the tubes, they will just break off during transplanting, and you will have lost them. It will take a little trial and error to get to know your plants and growing conditions. If all things are right, the tube should be full of roots. The roots will have grown into the coir and all around it, so when you remove the seedling it will hold together. All you have to do to remove the seedling is to turn it over, and with a quick shake, it will come out intact. With the tubes you will not disturb any of the root system.

**Planting:** You can inoculate the seedling roots with mycorrhizae or any other special treatment you like. I use a two-gallon size pot when transplanting, and the plants do much better in the larger size.

**Soil Mix:** My standard potting mix is 1/3 sand, 1/3 pumice, and 1/3 organic material.

**Fertilizer:** I add 15 pounds of Best's Gro-Power (3-12-12) to a yard of my standard potting mix. Additionally, I feed the seedlings via an injection system, so every time I water, the plants are fed. I use Peters 8-45-14 water soluble at a ratio of 200 to 1 in the injector.

In an ideal situation I feel most seedlings will flower in three to four years. A few have bloomed as quickly as two years, but that is rare. Some can also take a lot longer than that to bloom.

**YouTube videos on Carl's set up**
**https://www.youtube.com/watch?v=t35LOJRKVIw**
**https://www.youtube.com/watch?v=eSCHaLG8EUs**

## Cuttings

I prefer to cut when I see growth/leafing out on the mother plant. I find that almost all cuts work well—straight across or angle. The type of cut is based on the cutting itself—it depends where it is on the tree and how I can maneuver a knife/saw for the cut. I use Dip 'N Grow, a liquid rooting hormone, on my cuttings. (You should only dilute as much as you are going to use that day because it has an alcohol base, and the properties change if kept for more then 24 hours.) I sometimes slice a vertical cut at the base of the cutting in about 2 or 3 places depending on the diameter of the cutting. Once the cuttings are prepared, I place them in rooting tubes (www.stuewe.com). The cuttings remain in these tubes until they start producing healthy-looking leaves. Leaving a cutting in these tubes for too long does not work well for removal—the roots become too long and break off from the base too easily. The potting mix for the rooting tubes and for up-potting is the same as listed above for seedlings.

## http://www.thePlumeriasociety.org

Our new website is easier to navigate and to find information about plumeria care, cultivar registration, society news, events, and much more! Since the website is new, please check for updates and to see added features such as the flower identification database and a members only newsletter archive! Below is the current MEMBERS ONLY login and password information that will be needed to access the website's newsletter archive.

Log in: **psamember** Password: **Scottpratt93**

Twitter feed: **@Plumeriasociety**

JOIN US ON facebook

### Joining the PSA ...

**www.theplumeriasociety.org**

Click on "Join the PSA" tab at the top of the home page.
To join by mail, select PDF.
To join online, select Online Form (Paypal).

When joining by mail, send a check to:
The Plumeria Society of America, Inc.
P.O. Box 22791
Houston TX 77227-2791, USA

**Dues are $35 per year**

### When does your PSA membership expire?

**Your newsletter envelope mailing label has your membership expiration date.**

### 2019 PSA Calendar

January 15 .....meeting
March 12 .....meeting
May 7 .....meeting
June 8 (Bay Area Community Center Seabrook/Clear Lake).....Show & Sale I
July 9 .....meeting
July 20 (Bay Area Community Center Seabrook/Clear Lake).....Show & Sale 2
October 8.....Fall Luau Social (potluck) & meeting

- Meetings are held at Cherie Flores Garden Pavilion, 1500 Hermann Drive, Houston, Texas.
- Meetings begin at 7:00 p.m. You're welcome to come 30–45 minutes before the meeting for snacks and chat.
- We have a raffle, guest speakers, and more.
- Non-members are always welcome!
- Join us to learn about plumeria care and collecting.
- Bring plants, cuttings, etc. for door prizes! These can be anything, not just plumerias.

### Purpose of The Plumeria Society of America

1. Promote interest in and increase knowledge of plumeria hybridization, propagation, and culture of plumerias.
2. Share this knowledge with hobbyists interested in plumerias.
3. Provide a register for recording, identifying, and classifying by name new types and varieties of plumerias.
4. Encourage and unite plumeria enthusiasts around the globe, throughout America, and across the seas.

### 2019 PSA Officers and Directors

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|---|---|---|
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