



Southern
California
Plumeria
Society
Plumeria Basics

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Auxins

Auxins (plural of auxin) are a class of *plant hormones* (or plant-growth regulators) with some *morphogen*-like characteristics. Auxins play a cardinal role in coordination of many growth and behavioral processes in plant life cycles and are essential for plant body development.

Root growth and development

Auxins promote root initiation.

Auxin induces both growth of pre-existing roots and root branching (lateral root initiation) and is adventitious to root formation.

As more native auxin is transported down the stem to the roots, the overall development of the roots is stimulated. If the source of auxin is removed, such as by trimming the tips of stems, the roots are less stimulated accordingly, and growth of stem is supported instead.

Rooting Hormones

In horticulture, auxins, especially IBA and NAA, are commonly applied to stimulate root initiation when rooting cuttings of plants. High concentrations of auxin inhibit root elongation and instead enhance adventitious root formation.

Indole-3-butyric acid (1*H*-indole-3-butanoic acid, IBA)

IBA is a white to light-yellow crystalline solid. IBA is a **plant hormone** in the **auxin** family and is an ingredient in many commercial horticultural **plant rooting** products.



GardenTech Rootboost Rooting Hormone

Safety Data Sheet

Date of issue: 06/23/2020

Version: 1.0

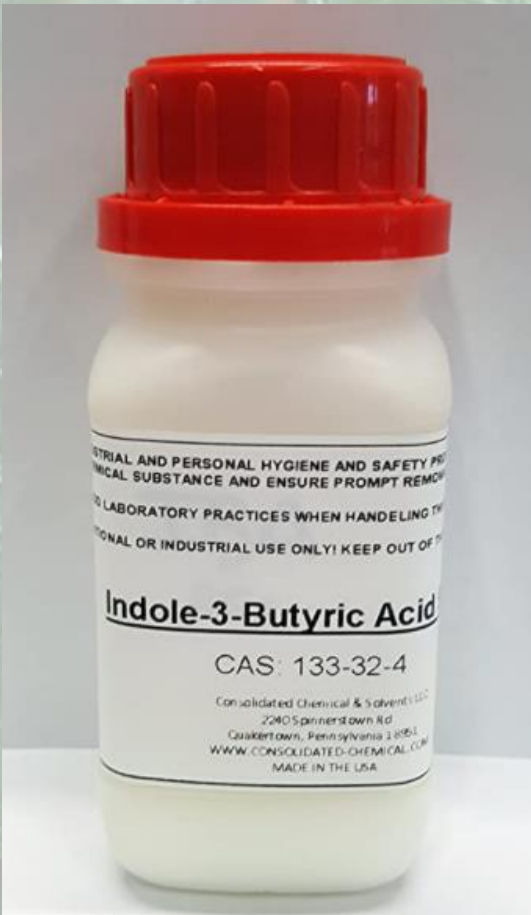
3.2. Mixtures

Name	Product identifier	%
Indole-3-butyric Acid	(CAS-No.) 133-32-4	0.1
Talc	(CAS-No.) 14807-96-6	95 – 99
Non-hazardous and/or does not meet criteria for classification	(CAS-No.) N/A	Balance

What are the ingredients of RootBoost?

.056 grams of IBA is the active ingredient in a 56-gram bottle, the rest of the contents is talcum powder

You can purchase IBA-K and make your own rooting hormone.



Indole Butyric Acid Water Soluble IBA-K >98% Pure
indole-3-butyric acid 25 Grams

Brand: Power Grown

★★★★☆ 41 ratings | 14 answered questions

\$19⁹⁶

Eligible for [amazon smile](#) donation.

- 99% ASSAY

Sulfur



Sulfur is as necessary as phosphorus and is considered an essential mineral.

What does sulfur do for plants?

Sulfur in plants helps form important enzymes and assists in the formation of plant proteins. It is needed in very low amounts, but deficiencies can cause serious plant health problems and loss of vitality.

Sulfur, used as a fungicide in the garden, is dusted over the freshly cut edges to prevent fungal infections from developing in the succulent cutting's vulnerable, moist interior.

Avoid breathing the sulfur powder and thoroughly wash your hands after dusting the cactus cuttings.

Sulfur can be purchased at nurseries and Amazon

**Bonide (BND141) - Sulfur Plant Fungicide,
Organically Controls Rust, Leaf Spot and Powdery
Mildew (1 lb.)**

Price: \$8.54 @ Amazon

- **CONTROLS A VARIETY OF INSECTS AND DISEASES**
- Sulfur Plant Fungicide is effective against rust, leaf spot, powdery mildew, chiggers, thrips, scale, and listed mites.



Organic Sulfur Powder-10Lb Bag



Price: \$19.19 @ **Amazon**

- Very fine ground sulfur powder
- 99% pure sulfur (feed grade)
- **NOT FOR HUMAN CONSUMPTION**
- Organic Compliant

Potato starch

- is **starch** extracted from **potatoes**. The cells of the root **tubers** of the potato plant contain **leucoplasts** (starch grains).
- To extract the starch, the potato plants are crushed, and the starch grains are released from the destroyed cells.
- The starch is then washed out and dried to powder. Potato starch is pure carbs.



Dipping Cuttings

A fresh cut is made as close to 90 degrees to the branch as possible, then dipped into sulfur/potato starch/IBA mix.

ROOTS



Root nubs forming and getting ready to push out into the soil. You can see the sulfur still attached to the cutting.

Winter storage of cuttings



This was a storage experiment based on Bud Guillot's first cutting, which was shipped from the Philippines encased in wax. This cutting was dipped into sulfur then melted beeswax.

BAG ROOTED CUTTING



This was a fresh cutting dipped in sulfur powder, then bagged so the excess powder wouldn't fall onto the car's upholstery. It was transport to San Jose for the winter and left in a greenhouse. This is what is looked like coming out of the greenhouse.

BAG ROOTING PLUMERIA CUTTINGS

What is needed

Coir, bricks or bails, depending on how many cuttings you plan to root

4x6 inch bags Plymor Flat 2 mil pack of 100 \$9.82 @ Amazon

Tape Amazon Commercial Vinyl Electrical Tape, 3/4 in x 60 ft Yellow, 10-Pack \$15.14



Preparing Coir

- **EASY TO STORE & EXPAND:** Each compact coconut coir brick expands into 8 quarts of starting mix, providing 16 quarts total. Just add water to expand! Dehydrated bricks save space until planting. Once expanded, coconut coir provides a quality growing medium for all types of plants - indoor plants, house plants, outdoor plants, and more!
- Coco coir has excellent moisture retention and better air circulation than peat. This eco-friendly, starting mix combines well with other potting soil and compost for container plants & raised beds.

SOIL MIX

Palm, Cactus & Citrus All Purpose Indoor & Outdoor soil Mix

Use for your palms, cactus, citrus, plumeria, succulents, and tropical plants.

- Ideal for indoor or outdoor use
- Can be used in containers & in-ground
- Absorbs water quickly & provides excellent drainage
- Ready to use – no mixing 100% satisfaction guaranteed
- **pH Range 6.0 – 7.3**

Roots

- The coir only needs to be damp, if it is too wet the cutting will rot.
- Fill the bag $\frac{3}{4}$ full of coir and squeeze the air out then insert the cutting halfway into the coir. Seal the bag by taping it to the stalk and work your way down the bag until the bag is firm.
- Place the cutting in a warm area standing upright to force rooting.



Can I reuse my old soil?

Yes..

By using soil amendments, you can reuse your old soil.
The next few slides will point out some amendments to
add to your old soil.

Alfalfa meal or pellets

Azomite

Fish/Kelp fertilizer

AMMENDMENTS

- Alfalfa Pellets act as a slow-release fertilizer and are an excellent source of nitrogen. Alfalfa also contains trace minerals and triacontanol, a naturally occurring growth promoter!
- Alfalfa Pellets can be used several different ways in gardening; during the growing season, to slowly release added nutrients to your garden all season long, it can be used at the end of the season for amending your soil, or it can be added to your compost pile, acting as a stimulator.

AMMENDMENTS

- Using pellets as an activator in your compost –
- Soak them overnight with water and then spread onto the compost. When soaked, alfalfa will decompose rapidly, creating heat which will help the rest of your compost to decompose with a higher nutrient level due to the use of the alfalfa. Higher nutrient levels in your compost and soil means more nutrient-dense product in your soil.

AZOMITE



- **Micronized**
- Micronized is a powder with flour-like consistency, where 90% of the particles will pass through a 200-mesh screen. Micronized is ideal for:
- Adding to the soil or water in hydroponic systems
- Blending into soil mixes
- Formulations of agricultural and horticultural nutrient products
- Irrigation system injection with agitation
- Greenhouse potting soil and fertilizer
- Home gardens
- Potted plants

Why AZOMITE®?



- Re-mineralizes soil for optimum growth
- Virtually odorless
- Improves root systems, yields and quality
- Natural occurring mineral deposit
- For all soil types
- **Potting Soil:** Add 7 -10 lbs. per cubic yard of potting soil, plus add low rates of AZOMITE® Micronized to the irrigation water, assuring there is adequate agitation, screen and nozzle sizes, when possible, on a weekly basis.
- **Compost:** Add 50-100 lbs. per ton of compost preferably at the beginning of the compost cycle.

Fish Emulsion

- Fish emulsion, or fish fertilizer for plants, is a fast-acting, organic liquid fertilizer made from the byproducts of the fishing industry. It is rich in nitrogen, phosphorus, and potassium, plus trace elements such as calcium, magnesium, sulfur, chlorine, and sodium.
- It is made from fish parts that would otherwise be wasted. It contains plenty of nutrients for quick absorption by plants. Fish fertilizer for plants is a mild, all-purpose feeding option that can be used at any time. It may be used as a soil drench, foliar spray, in the form of fish meal, or added to the compost pile.
- Fish fertilizer for plants is a concentrated product that is diluted with water prior to application. Combine $\frac{1}{2}$ ounce of fish emulsion with one gallon of water, then simply water the plants with the mixture. To get the most benefit from using fish fertilizer on your plants, apply the mixture twice per week.

Benefits of Liquid Seaweed Fertilizer

- Liquid seaweed solution promotes additional budding if applied as the plants are beginning to bud.
- The extract lengthens the life of cut flowers if they are sprayed with it a day or two before cutting.
- It can also be used as a rooting solution. Place cuttings in a solution of liquid seaweed and water until roots develop, then plant. When planting seeds or transplanting, water with the solution.
- Seaweed extract also boosts crop yields, improves resistance of plants to frost and disease, increases uptake of inorganic constituents from the soil, bolsters resistance to stress conditions.
- It promotes vigorous growth and helps deter pests and diseases on fruit, flowers, vegetables, lawns.

Benefits of Liquid Seaweed Fertilizer

- Seaweed fertilizers are especially useful in organic gardening. They contain almost every micro-nutrient in a fully chelated (immediately available) form. The algae is also full of carbohydrates, which plants use as a building block. Numerous beneficial microorganisms also use carbohydrates as a food source.
- Liquid seaweed fertilizers (especially the alginates in the seaweed) act as soil conditioners. The alginates react with metals in the soil and form long, cross-linked polymers in the soil. These polymers improve the crumbling in the soil and swell up when they get wet. They also retain moisture for a long time.

A close-up photograph of a cluster of plumeria flowers. The flowers are primarily white with a yellow center and some pinkish-tinted petals. They are covered in numerous small, clear water droplets, suggesting they have been recently watered or it has rained. The background consists of large, vibrant green leaves with prominent veins. The overall lighting is soft and natural, highlighting the texture of the petals and the freshness of the scene.

Questions