



SUNSHINE™

From Florida, the Sunshine State

Ultimate Growth Stimulator

A magic plant hormone so wanted by gardeners, finally is here!

When people purchase plants and trees either on-line, or from their local nursery, expectation and anticipation for their new find is high. Many times, however, disappointment is encountered due to a variety of reasons. These reasons include changes in light, temperature, water, soil conditions and transportation; just to name a few. So how can the stress on newly transported and transplanted plants be mitigated? Easy! There are plant stimulators able to reduce the shock encountered.

One such plant stimulator, produced at TT Laboratories is SUNSHINE™-E, a revolutionary, broad spectrum, plant stress reliever, originally developed by innovative Russian scientists. Extracted initially from plant pollen, SUNSHINE™-E can bring back and keep the vigor to stressed plants in both the home and garden. Sunshine is indeed a plant stimulator on the cutting edge of plant care technology. Reasonably priced, and easy to use, SUNSHINE™-E will be your plants' best friend, next to yourself, of course.

The principals at TT Laboratories have a combined experience of over 125 years of growing and caring for some of the rarest, and most beautiful botanical specimens on the planet. So let our experience and hard work, in the hot Florida sun, be of benefit to your gardening experience.

SUNSHINE™-E will help your plants:
recover from stress
dramatically increase growth rate
get profuse flowering and fruiting
improve disease resistance, cold hardiness, and heat resistance
promote seed germination and root cuttings easily

Great for indoor plants!

What is SUNSHINE™-E?

SUNSHINE™-E is a new improved formula of natural plant growth hormone and the first representative of a new generation of agricultural chemicals, specifically designed for tropical plants, vegetables, and fruit trees. SUNSHINE™-E has a broad spectrum of stimulative and protective activities. Synthetically prepared chemical 24-epibrassinolide, active ingredient of SUNSHINE™-E, belongs to a class of brassinosteroids and is identical in all respects to naturally occurring plant hormone. SUNSHINE™ products are better stabilized than any previous chemicals of this group. A new improved formula of this plant stimulant contains special ingredients that provide more effective and faster action of the hormone.

SUNSHINE™-E formula is designed specifically for tropical plants, including

- flowering ornamentals and fruit trees
- woody species which metabolism is usually slower than one of herbaceous plants
- vegetables, leafy and tuberous, and herbs

SUNSHINE™-E acts in extremely low doses, which are comparable with the natural content of epibrassinolide in a plant. It is ecologically safe, nontoxic in relation to human, pets, useful insects and fish.

The compatibility of SUNSHINE™-E with other agricultural chemicals allows it to be used along with other treatments.

History of use

The first brassinosteroid was isolated in the end 1970 in the US by Mitchell, from bee-collected pollen of Yellow Turnip (*Brassica napus*). Today many brassinosteroids have been isolated from different plants and more than twenty-years of research proved importance of these naturally occurred hormones for plant growth and development. Unfortunately, pollen contains very small amount of brassinosteroids, almost 100 lb of pollen is required to produce 5 mg of the hormone. That's why a chemical synthesis is the only way to produce it.

Active ingredient, Epibrassinolide, has a long history of horticultural use worldwide, and particularly in Russia, where it has been used under name Epin, for not only garden applications but also for commercial scale crop improvements, including cold tolerance, heat resistance of commercial crops like tomatoes, cucumber and other vegetables. Epin has been officially patented in Russia and Belarus in 1992, and it is used for treatment of different agricultural crops (cereals, legumes, potato and vegetables, sugar beet, flax, cotton), ornamental, and for commercial applications in horticulture. It is now widely used by gardeners and plant collectors in European countries to stimulate growth rate, enhance blooming, help plants recover from transportation and re-potting stress, and for successful propagation.

Epibrassinolide has been tested for many years in greenhouses of Top Tropicals (one of the founders of TT Laboratories) on tropical plants, rare, tender, sensitive species. The research showed amazing results beyond any expectations. Throughout the years, formula has been evaluated and improved.

For over decade this hormone has been used by Top Tropicals horticulturists and their customers, and became a favorite “magic juice” for plants. Years ago it has been imported from Russia in small 1 ml vials and was quite expensive. TT Laboratories, together with Top Tropicals specialists, finally have developed a new, improved, and more cost efficient formula, and are proud to have now our own product, Made In The USA!

This hormone has been very popular among Top Tropicals customers for the past decade. According to the gardeners' feedback, it is very effective treatment for plants recovery after shipping. Indeed, it improves plant development in non-tropical environment, and is a great help for a zone-pushing plant collector who grows tropicals on a windowsill or in a temperate greenhouse.

SUNSHINE™-E special features

Improves:

- immunity of a plant, resistance to pesticide injury and diseases, stresses and unfavorable conditions such as drought, cold, low light, low humidity, high salinity, chill, insufficient nutrients
- quality and weight of a fruit, promotes fruit setting
- flowering profusion and tuber formation

Stimulates:

- physiological processes and growth of a plant (all parts), shortens the period for maturity
- root development in cuttings
- seed germination, increases germination rate
- new roots and healing of damaged roots on bare-rooted plants

“Magic” effects:

- effective post-transportation treatment to help plants to recover from shipping stress
- diminishes disease injury
- induces hermaphrodite flower and female flower
- makes leaves look healthy and shiny
- makes flowers bigger
- can inhibit aging
- can break dormancy
- gives more chances to bring a plant back to life within hours/days

SUNSHINE™-E facts and actions

Iochroma australis rooted cutting before and after using SUNSHINE™-E (3 weeks difference):



Plants sprayed during acclimatization by SUNSHINE™-E solution have uniform and large leaves:



SUNSHINE™-E is NOT:

- NOT a "magic-cure-all" medicine where one can't find its active ingredient. The hormone is well-known and used in different countries along with other hormones for promote growth, fruiting, blooming, rooting, etc.
- NOT bringing a dead plant back to live and it should be used only when needed: for stressed plants, for plants which need extra boost. Don't use it all the time. It's as bad as using steroids for building your muscles.
- NOT a fertilizer and won't replace it. You have to apply fertilizer and micro-element solution to keep your plants healthy.
- NOT a substitution for a proper plant care. It won't help if you keep a plant dry, dark and starving.

Formulation and Application

IMPORTANT: Dilute SUNSHINE™-E concentrate in DISTILLED water only, according to the table below. Formulation is stable in neutral and mild acidic conditions. Do not use tap water, drinking or natural spring water. Distilled water can be purchased in any Pharmacy, Grocery or Department store for about \$0.99 per gallon.

Try to avoid mixing it with any other chemicals, fertilizers or pesticides. Usual types of sprayers can be used, but if they were used previously with others chemicals, they must be washed with fresh water.

Use solution for soaking (seeds, bulbs, cuttings) or foliar spray. Plants should be evenly sprayed in clear windless day, seeds should be soaked during 4-14 hours. See table below for more possible applications.

Better results are obtained when young plants are treated.

Do not spray if rain is expected. Re-spray if it rains within 12 hours.

Dosage

Plant type	When to apply	Treatment	Concentration in water
Herbaceous plants	beginning of flowering	foliar spray	2.5 mg per 1 gal
Blooming woody shrubs, trees, vines	at budding	foliar spray	2.5 mg per 1 gal
Fruit trees	at budding and after flowering	foliar spray every 20 days	2.5 mg per 1 gal
Caudex forming plants and bonsai	once a month to promote caudex forming and stimulating new growth after pruning	foliar spray	2.5 mg per 1 gal
Bulbs and tubers	before planting	soaking for 24 hours	2.5 mg per 1 gal
Vegetables	beginning of flowering or tuber forming	foliar spray every 20 days	2.5 mg per 1 gal
Seeds	before sowing	soaking for 4-14 hrs	1 mg per 1 gal
Seedlings	once a week to promote rapid growth and root development	foliar spray	1 mg per 1 gal
Cuttings	before planting	soaking for 12 hours	1 mg per 1 gal
Bare-rooted plants	before planting	soaking for 15-30 min and foliar spray after potting	2.5 mg per 1 gal
Pre-treatment before stressful period	before cool/drought period or transportation	1-2 days prior	2.5 mg per 1 gal
Stressed plants	after transportation or re-potting	every 7-10 days until recovered	2.5 mg per 1 gal

Storing

- Store SUNSHINE™-E concentrate in dry and cool place. Refrigeration is ok, but don't freeze.
- Solution shouldn't be stored, prepare right before use as much as you need
- Keep away from food and out of reach of children

Chemical and Physical Properties of Active Ingredient

Chemical mechanism: active ingredient, Epibrassinolide, can increase synthesis of IAA, ABA and ethylene, promote individual cell expansion, and thus enhance plant growth. This is realized via complex sequence of biochemical shifts such as activation or suppression of key enzymatic reactions, promotion of protein synthesis, activation of photosynthesis, etc. Stable in neutral and mild acidic solutions, unstable in alkaline solutions.

Chemical name: (22R,23R,24R)-2a,3a,22,23-tetrahydroxy-24-methyl-B-homo-7-oxa-5a-cholestan-6-one.

Molecular formula: C₂₈H₄₈O₆, Molecular weight: 480, no characteristic odor; it is sparingly soluble in water.

Toxicology and Ecological safety

SUNSHINE™-E has the natural bioregulator as an active ingredient. It traditionally participates in food chains of people and mammals and its metabolic pathway is evolutionary habitual for them. This fact is an important prerequisite for considering SUNSHINE™-E as ecologically safe nontoxic chemical, that has been supported by the toxicological studies. Moreover, stimulation by SUNSHINE™-E of natural resources of a plant allows to diminish the employment of other plant protective agents, some of which are conflicting with respect to the environment. SUNSHINE™-E is a representative of a new generation of agricultural chemicals, which have no interference with the environment, act in natural doses and in a natural way.

Upcoming research

Citrus cure

...With regard to HLB, the citrus greening disease, SUNSHINE™-E may be the cure we have been seeking. Citrus greening is caused by a liberbacter, a bacteria, which in many ways acts like a virus. Whether the citrus trees are allergic to the bacteria itself, or chemical(s) the bacteria are producing, the trees are "itchy". Everywhere there is a differentiation in tissue: leaves, branches, grafting interface and root system, we find the tissues are clogged with flavinoids, particularly caratenoids. SUNSHINE™-E may be the plant "benedryl" for which we have been searching for...

Fruit and crops

..According to research, SUNSHINE™-E can decrease physiological drop from fruit trees, including Citrus species, peach, apple, pear and persimmon. The bud-appearing stage, the flowering stage and the young fruit stage are preferred...

...SUNSHINE™-E has a yield increasing effect on field crops and vegetables such as rice, corn, soybean, wheat, tomato and cucumber...

Virus cure

...Based on research conducted by Top Tropicals on Hibiscus plants, brassinolide applications greatly improved plant immunity and ability to fight viral diseases. Treated plants showed amazing results with leaf virus completely gone...

More products of SUNSHINE™ line are coming soon!
Plant boosters, Fertilizers, Wildlife Attractors and unique potting mixes.
Keep up with our updates and newsletters...

TopTropicals.com - TTLaboratories.com