



325 NW VERMONT PLACE, SUITE 108  
BEND, OREGON 97701-4367

## ROOT ZONE

The attached information will introduce you to an entirely new type of anti-transpirant that actually causes plants to protect themselves against all forms of stress that cause plant moisture loss.

Root Zone when used on all types of container plants will do the following:

- **Protect against transplant shock**
- **Extend intervals between watering**
- **Protect Plants during shipping and display**
- **Replace P.G.R.'s**
- **Cut down on hardening off time**
- **Protect during extreme heat events**
- **Reduce water needs on an ongoing basis**
- **Bring poor looking Plants back to good health**

Effective for horticultural and agricultural plants in containers.

If you are interested in running your own trial contact GSI Horticultural for a free trial sample.

Please let us know your results. Our email address is [info2@gsihorticultural.com](mailto:info2@gsihorticultural.com) and our website is [www.gsihorticultural.com](http://www.gsihorticultural.com)

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## **ROOT-ZONE**

### **A UNIQUE NEW TYPE OF ANTI-TRANSPIRANT AND PLANT CONDITIONER**

- **DRENCH INTO THE SOIL OF ALL CONTAINERIZED PLANTS, OR TURF GRASS.**
- **USE PRIOR TO SHIPPING, TRANSPLANTING OR EXTREME WEATHER.**
- **ONE APPLICATION CAN PROTECT PLANTS FROM WATER STRESS FOR UP TO THREE WEEKS.**
- **GRAS MATERIAL.....REQUIRES NO E.P.A. OR F.D.A. APPROVAL**

#### **WHAT IS ROOT ZONE**

**Root-Zone** is an entirely new type of anti-transpirant that is drenched into the soil. Unlike typical spray anti-transpirants that attempt to plug stomatal openings with a film, **Root-Zone** is a humectant formulation that is drenched into the root system. This conditions the plant to produce additional amounts of abscisic acid (ABA) thus closing the stomata and reducing its own transpiration rate naturally. **Root-Zone** is most effective on all types of containerized plants.

#### **WHY & WHEN TO USE ROOT-ZONE**

**Root-Zone** should be drenched into the soil or soilless media of all containerized plants prior to transplanting, storing, shipping or display. It should also be used to protect plants against extreme weather conditions or any other possible environmental trauma that can cause transpiration stress. Transpiration manifests itself in plants through wilting, turgidity loss and drying. These concerns can be eliminated with a single drench application of **Root-Zone** prior to the expected problem. Use **Root-Zone** anytime high quality appearance and hardiness need to be maintained.

#### **WHO USES ROOT-ZONE?**

**GROWERS AND NURSERY**S (For containerized plants, including plugs, liners, B&B, bagged roses and trees)

Transplanting and Plant Establishment – Drench plants thoroughly prior to planting. Drench after planting if water supply will be limited.

Shipping – Apply prior to shipping or display.

Display – Improves shelf life quality and appearance – reduces watering needs.

**LANDSCAPERS:** **Root-Zone** can improve transplant success rate by over 100%, especially during difficult environmental conditions. No one wins when plants have to be replaced. It is tough on the pocket book and reputation.

**EXTERIOR GROUNDS MAINTAINENCE:** If you have to water every other day and could change that to every two or three days imagine the water and labor costs you could save. It also means a healthier plant by reducing root disease from over watering.

**INTERIOR PLANT MAINTAINENCE:** Those who are responsible for watering and maintaining plants indoors can appreciate the potential cost saving of doubling the time between watering. **Root-Zone** is the perfect solution for hotels, public buildings and interior-scapers.

**HOME OWNERS:** The most popular use is to protect containerized plants both indoors and outdoors during your absence. **Root-Zone** can keep your plants safe twice as long. Gardeners should use **Root-Zone** any time they transplant or expect extreme weather, (heat wave, unseasonable frost etc.)

**TURF GRASS PROFESSIONALS:** See Turf and Sod bulletin.

#### **ROOT-ZONE COMPARED TO FOLIAR ANTI-TRANSPIRANTS**

Researchers and chemists have long realized the potential benefits from developing a compound that would naturally increase the production of abscisic acid (ABA) in plants to close the stomata and reduce water loss from various stresses. ABA is a natural plant hormone and when produced it causes the plants to increase their own resistance to most environmental stresses. GSI Horticultural has successfully developed such a compound.

**Root-Zone** offers a method of reducing transpiration that is highly superior to film forming foliar anti-transpirants. Most film forming anti-transpirants do not have the ability to close enough of the stomatal openings, especially on the underside of leaves. In contrast, **Root-Zone** is extremely effective when applied as a single drench to the root medium or soil. This single root application induces the plant to quickly produce its own ABA, which is mobilized throughout the plant to increase stress resistance. **Root-Zone** is also less expensive, than foliar sprays and can be applied during the normal watering process. It is completely safe and environmentally friendly. The use of **Root-Zone** achieves hardier, healthier looking plants and uses less water to do it.

**Directions for Use:** DRENCH ROOT-ZONE DIRECTLY INTO SOIL OR MEDIA.

**Root-Zone** requires no special handling. Mix into water for drenching or add to irrigation water through measured drip or other injection systems. **Root-Zone** should be applied at least 24 hours or more prior to any expected plant stress. If hydrophobic soil or extremely dry media is a concern, add a small amount of non-ionic surfactant. **Root-Zone** is most effective when drenched into moist soil or media.

**Application rate:**

**Herbaceous plants** e.g. annuals, bedding plants, vegetables, turf.  
Start with 2 oz. of Root-Zone per gallon of water.

**Woody Plants** e.g. conifer, broad leaf evergreens, deciduous trees, shrubs and seedlings.  
Start with 6oz of Root-Zone per gallon of water.

**Turf Grass & Sod**  
(See Turf & Sod Bulletin)

The above dilution rates will be fairly accurate. If however you are not getting the results you want use our simple trial program to establish the best dilution rate for your needs. (See trial Protocol)

**CLEAN UP:** ROOT-ZONE IS WATER-SOLUBLE BUT STICKY. CLEAN HOSES, SPRAYERS AND TOOLS THOROUGHLY WITH WATER. A light application of water should also be used if Root-Zone gets on the flowers or foliage of delicate plants.

**Note:** **Root-Zone** can crystallize at cold temperatures. This will not harm the product. If crystallization occurs put **Root-Zone** into a warm environment and it will return to its normal appearance. On deep rooted plants a light drench of plain water will force the **Root-Zone** into a more effective area if applied within 24 hours of the **Root-Zone** application.

**Technical Data**

Classification:	Polyol Humectant plus activation agents.		
Form:	Clear colorless liquid	Hygroscopicity:	Medium
Ph @ 14% w/w in water:	5.0-7.5	Flash Point:	N/A
Viscosity @ 25° C:	Approximately 110 cups	Solubility H2O:	Water-soluble
Odor:	Sweet	Specific gravity:	1.4

**STORE AT ROOM TEMPERATURE**

MADE IN THE USA

**GSI Horticultural**

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## ROOT ZONE AND LONG TERM WATER SAVING

USE 30% LESS WATER ON YOUR GARDEN FOREVER!!

**Fact:** Plants are terrible water managers. The water that is applied is largely lost to run-off, evaporation and especially transpiration, which is water lost through the stomata or pores of the plant. Because of this the average Grower uses more water than necessary and over-watering also become a serious problem.

**Fact:** Water is like oil and we are running out of it. There is only so much water available and more and more of us wanting it.

**Fact:** \* Growers in some parts of the country are letting fields go fallow for lack of water

\* In other areas the cost of water is skyrocketing or being rationed!

**Fact:** You, the Grower can save water in your own Facility and still have a healthy growing program!

**Solution:** Condition your plants with a drench of Root Zone! .....It's really simple!

Once a month or as needed drench Root Zone into the root area of your plants. (Root Zone is more effective if you water the plants with plain water the day before, and another light watering the day after to make sure Root Zone reached the primary root area.)

NOW return to your regular watering schedule EXCEPT extend the time between waterings by 30%. That's all there is to it. You save water – You save time – and still have beautiful healthy plants.

Example: If you usually water your lawn or garden every two days –start watering every 3 days. Within a short period of time your plants and grass will be conditioned to use less water. It also means less work for you and the money savings can increase profits

If for any reason you do not see results, contact our consumer hot line at 541-383-0222.

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# **ROOT-ZONE**

## **THE NEW TYPE OF ANTI-TRANSPIRANT**

Plants are terrible water managers. Water that is applied to plants is largely lost to run off, evaporation and/or transpiration. Unfortunately, because of the plants inefficient systems of regulating water loss through transpiration, growers and farmers are forced to apply large quantities of water to compensate for the water loss. The majority of this water is lost through the stomata or pores of the plant surface.

Until now, the accepted way to reduce this water loss was through the application of a foliar anti-transpirant or anti-desiccant that physically plugged up the stomatal openings. A number of these products are available but they are largely ineffective and can be phytotoxic to plants. A test of these products at Oregon State University showed that only one foliar anti-transpirant was effective and safe on plants. That product was **Moisturin** from GSI Horticultural Products.

NOW...There is a new way to substantially reduce the problem of water loss through transpiration.

A new product called "**Root-Zone**" has been developed that is more effective than foliar anti-transpirants, costs less, and is extremely easy to apply through normal irrigation programs other than overhead sprinkler systems.

**Best of all, this product can reduce water needs by up to 40%.**

**Root-Zone** creates tougher, healthier looking plants that are extremely resistant to stress and water loss from drought, transplanting, shipping and long-term storage and display situations.

**Root-Zone** is biodegradable, non toxic and environmentally acceptable.

### **HOW IT WORKS**

**Root-Zone** conditions the plant itself to close the stomatal openings by inducing the production of additional abscisic acid (ABA) thus reducing its own transpiration rate. Researchers have long known that ABA is effective in promoting environmental stress resistance. However, until the development of **Root-Zone**, the method of naturally increasing the plants ABA level was expensive and unreliable. The ingredients in **Root-Zone** have overcome the cost and created a product that is safe, reliable and inexpensive. University tests have proven **Root-Zone** to be approximately 50% to 100% more effective than foliar anti-transpirants.

Water is becoming increasingly precious worldwide. Thirty nations, including the United States are currently experiencing water shortages and that number will increase as we move into the future. Water is also becoming expensive, with some growers spending up to one hundred and fifty dollars per acre for irrigation.

**Root-Zone** reduces water requirements and watering expenses...minimizes drought stress and reduces hand watering...improves shipping and transplant survival...reduces mortality and plant returns from long-term display...improves plant hardiness and appearance.

For additional information contact:  
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# OREGON STATE UNIVERSITY

## ROOT-ZONE ORIGINAL PATENT TEST RESULTS

The following information is based on University test results performed at Oregon State University in 1996. The data was used for verification of efficacy in the original patent for Root-Zone. The technical designation for Root-Zone during these tests was GLK8924. (These are excerpts taken from said tests.)

### TRANSPIRATION IN TOMATO PLANTS

The efficacy of the present invention is demonstrated by results showing reduction in transpiration rate of tomato plants. Water losses by transpiration of the tomato plants and by evaporation of the soil moisture were determined.

Two trays each containing ten young tomato seedlings along with another set of trays without plants were treated with an aqueous solution of 0.5% GLK8924 and DI water. Each tray was weighed three days after the treatments. Average water losses of a tray without plants (water loss by evaporation only), a tray with 0.5% GLK8924 treated plants (water loss by evaporation and transpiration), and a tray with DI water treated plants (water loss by evaporation and transpiration) were 26 grams/day, 37 grams/day, and 45 grams/day respectively. The transpiration rates per plant were 1.9 grams/day/plant for DI water treated plants and 1/2 grams/day/plant for GLK8924 treated plants. The root drenching with an aqueous solution of 5% GLK8924 reduced the transpiration rate of young tomato seedling more than 35% as listed in Table 1.

**TABLE 1**

Solution Uptake and Water Loss of Tomato Plants Treated With Aqueous Solutions of 0% and 5% GLK8924

		Solution Uptake (g)			
Treatments		(for 1 hour Dip)			
				Water Loss (g)	
1st	2nd	1st	2nd	(for 3 days)	
GLK8924	Water	146.9	88.0	109.2 (w/plants)	
GLK8924	GLK8924	111.6	97.7	114.8 (w/plants)	
Water	Water	163.5	136.7	135.1 (w/plants)	
GLK8924	Water	136.8	66.7	88.0 (no plants)	
GLK8924	GLK8924	138.0	60.7	72.1 (no plants)	
Water	Water	134.2	79.4	74.3 (no plants)	

### TRANSPORTATION OF BEDDING PLANTS

Young bedding plants are suffering from desiccation during transportation from seedling growers to farmers. Several trays containing celery, lettuce, and watermelon seedlings drenched with aqueous solutions of 2.5% and 5% GLK8924 a day before scheduled transportation. After making a round trip from Oregon state to Idaho state in June, 1993, the conditions of the seedlings were observed.

The bedding plant seedlings treated with formulations of the present invention suffered less than 5% damage and remained in a sellable condition, while the control plants suffered more than 50% damage from desiccation. The normal expected damage for one-way transportation from Oregon to Idaho state is 30% to 40% during hot months of June and July.

### GARDENIAS AND TRANSPORT

Potted dwarf gardenia plants are produced under hot and humid condition in Florida. When shipped to other states, these plants are very sensitive to heat and desiccation. Two sets of 36 potted gardenia plants were root drenched with water only and aqueous solutions of 5% and 8% GLK8924 a day before shipping to Medford, Oregon and Oregon State University. After withholding water for seven days, the plants were visually inspected and photographs were taken. The gardenia plants treated with 5% and 8% remained turgid and green while the control plants became wilted and dry. This effectiveness was demonstrated at both locations (Medford and Corvallis, Oregon.).

### **SHELF LIFE OF POTTED PLANTS**

The effectiveness of the present invention as an agent to extend shelf life of potted plants was tested on marigold, poinsettia, impatiens, gardenia, fuchsia, dwarf rose, and hemlock trees with applications of aqueous solutions of various concentrations of GLK8924. The applications extended shelf life of the plants tested. The treated plants stayed turgid and green much longer than the control plants.

### **CONIFERS AND DROUGHT STRESS**

The efficacy of the present invention in enabling plants to avoid drought stress is demonstrated by experiments showing that three species of young conifer seedlings treated with aqueous solutions of various concentrations of GLK8924 lose significantly less water than do seedlings treated with water only.

Six-month old, greenhouse grown Douglas fir, western hemlock, and western cedar in 60 ml styro-block containers were placed in a greenhouse to acclimate to a new environment. The plants were treated in six different ways: a well watered control, non-watered control, aqueous solutions of 2.5%, 5%, 10%, and 20% GLK8924. All seedlings were watered to field capacity one day prior to the treatment of 10 ml of each solution. The non-watered seedlings also received 10 ml DI water in a similar manner. Water was then withheld from the seedlings of 5 treatments for the duration of the experiment. The well-watered seedlings were watered to field capacity every other day for the duration of the experiment. Stomatal conductance, water potential and water loss were measured. Photographs were taken as symptoms appeared.

Stomatal conductance on GLK8924 treated seedlings was reduced when compared to the well-watered control. However, the levels were not as much as the non-watered controls. Water potential of the seedlings followed a similar pattern with the GLK8924 treated seedlings becoming a more negative relative to well watered controls, but not reaching a level as low as the non-watered controls. The weight of GLK8924 treated seedlings was decreasing at a much slower rate than compared to the non-watered controls.

Foliage discoloration, sunken bark, and mortality were noted on the non-watered controls at least one week prior to GLK8924 treated seedlings. The appearance of dead and desiccated foliage generally followed treatment concentrations with the higher concentrations maintaining a healthy appearance for several days longer.

### **ROOTING OF IVY CUTTINGS**

The effectiveness of the present invention as an agent to aid rooting of cuttings is demonstrated by experiments showing that dry root weight of GLK8924 treated ivy cuttings is more than 50% heavier than control rooted cuttings.

Ivy mother plants (Ivy stock plants) were root drenched with aqueous solutions of 5% and 8% GLK8924 a day prior to cutting. The cuttings were placed in a mist chamber to root for 30 days. The cuttings were then removed from the mist chamber and allowed to grow for 20 days in a greenhouse. Roots from five plants from each treatment were sampled, dried, and weighed.

The total dry root weights for the rooted cuttings from control, 5% GLK8924 treated, and 8% GLK8924 treated plants were 652, 1019, and 995 mg, respectively. Weight increase in dry root weight of the rooted cutting from 5% and 8% GLK8924 treated mother plants were 56.3% and 52.5% over the control dry root weight.

### **REDUCTION OF WATER NEEDS ON TURF GRASS**

The effectiveness of the present invention as a plant water reducing agent on monocotyledon plants was demonstrated by an experiment showing that the treated turf grass stayed green for 20 days while withholding water.

Two different cultivar sods, Palmer Rye (sunny grass) and Red Fescue (shady grass), were developed from seed on trays and water was withheld for 20 days before normal watering resumed. The sods treated with water only, started to turn brown and did not survive the water shortage.

### **PLANT CONDITIONING AGAINST ENVIRONMENTAL STRESS**

The effectiveness of the present invention as an agent to condition (acclimate) plants against environmental stress is evidenced by experiments showing that tomato plants treated with an aqueous solution of 4% GLK8924 accumulate higher solute and total ion concentrations in leaf sap than the plants treated with the same volume of DI water only. This is true for both irrigated and non-irrigated plants. The increases observed in individual ions are small, but taken together result in a significant increase of total ion concentration.

The solutes analyzed account for 75% to 80% of the total osmolality. The missing solutes likely include amino acids, organic acids, and other ions not analyzed (e.g. anions). The high increase in organic solute concentrations, especially sugar concentrations indicates that root drenching with an aqueous solution of 4% GLK8924 induce osmo-adjustment.

One result is that GLK8924 induces substantial increases in proline concentration of leaf sap. This is observed in both stressed (non-irrigated) and non-stressed (irrigated) plants. Proline can ameliorate the deleterious effects of high temperature, salt, and dehydration on enzyme activity and organelle systems. TABLE 2

Concentrations of Metabolites in Leaf Saps From 5 Weeks Old Tomato Plants 4 Days After Treatment With Aqueous Solutions of 0% and 4% GLK8924

	IRRIGATED		NON-IRRIGATED	
	DI Water	GLK8924	DI Water	GLK8924
P	20.4	20.0	20.8	24.9*
Mg	24.9	28.3*	29.9	35.5*
Ca	23.4	38.6*	33.4	43.2
Na	9.7	12.5	11.8	15.0*
K	133.0	137.1*	147.1	164.5*
Total Ions				
	211.4	236.5*	243.0	283.3*
Sugars	68.1	97.3*	56.5	109.0*
Total Solutes				
	79.5	333.7*	294.6	392.2*
<u>Osmolality</u>				
	47.4	436.0*	388.4	512.4*
Solutes Missing				
	67.9	102.3*	93.8	120.2*
W. Potential				
	7.5	9.5*	12.5	13.6*
*Statistically significant change				

### OVERALL EFFICACY OF GLS8924

The efficacy of the present invention is also demonstrated by experiments showing that the plants conditioned with the present invention are hardier against drought stress. A set of four tomato plants per each treatment including control was transplanted to 4-inch (in diameter) pot 29 days after the last treatment. After uniform soil water conditions were established, watering was stopped for a week.

Tomato plants conditioned 31 days prior to the water denial remained turgid and have dark green leaves while unconditioned plants (control plants) are severely wilted.

This long-lasting conditioning effect has been confirmed by an outside university evaluation. A set of 22 week old and plug-grown seedlings was treated with two sequential applications of an aqueous solution of 1% GLK8924. The treated plants exhibited a very rapid growth inhibition relative to the control plants. The difference was apparent within several days. After an additional two weeks, the plants in the plugs were transplanted into 6-inch standard pots to evaluate seedling response to water stress. After soil water conditions were established, water was withheld and plants were observed daily to evaluate the effects of the present invention. After ten days without water, the difference between treated and control seedlings was remarkable and distinct. Untreated plants were severely wilted, while treated plants remained turgid and had dark green leaves. There was no lasting growth inhibition, however, and time differences in leaf turgor do not appear to be related to differences in plant size.

## CONCLUSIONS

It is to be appreciated that the compositions of the present invention may effectively be used on plants to reduce water loss, to induce stomatal closing, to reduce transpiration rates, to avoid drought stress, to aid in rooting cuttings, to extend shelf life of container plants, to avoid transportation stress, to reduce root uptake and preserve soil moisture, to reduce water loss of severed plant tissue, to condition plants for drought stress avoidance, to reduce transplanting stress, and to act as an anti-desiccant. It is further to be appreciated that the effectiveness is universal, applying to mono- and di-cotyledon plants, to conifers and deciduous trees, to bedding plants and to vegetables



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541-383-0222

## PLANT NECTAR TESTIMONIALS

This test was done through the Gardening How to Magazine, and the Garden Club of America. 600 samples of (Root-Zone) now sold as Plant Nectar were sent out, these are a just a few examples of the reports we received back.

LeRoy Day – Excellent results

Mark Shipp - The ability to slow down transpiration so easily by simply applying this product in the water used on the plant before stressing it is a great tool to increase success.

Robin Webber – I would recommend this product. I went on vacation the week of April 7<sup>th</sup> and the plants I used this on were plants that needed water regularly and the plants were no worse for wear. Thanks for the product.

Alesia Lehman. I used it on several poster plants and only water on others. I didn't have to water as often and the plants looked great. I used this on my most water thirsty plants.

I will buy in the future so when I'm not home, I won't have to ask a neighbor to water my plants.

David Ryan – Because it is a liquid it reached the roots immediately. The plants I used the product on were far healthier looking.

Eileen Suarez – I used this product on some houseplants that I moving outside. Before I used the Root-Zone (Plant Nectar) they weren't looking very good but after one use of the product, they perked right up. My bougainvillea had lost all its leaves and they have come back better than ever.

Brenda Nicodemus - During the time when the plants were kept indoors I noticed that the double impatiens treated with Root-Zone (Plant Nectar) looked moor perkey than the other. And the begonia that was not treated lost both of its blooms. The begonia that was treated kept all its blooms.

William Najar – I was amazed how well my plants looked after applying this product to them within a short period of time.

Charlene Sawyer – The product helps to maintain plant vigor in the hotter winds of the desert. Similar containers not treated showed signs of wiling while the container using the product stayed strong.

Nelda Janway – The Root-Zone (Plant Nectar) was easy to use and seemed to help transplanted flowers and vegetables adapt faster. I also did not have to water my potted plants as often.

Mike Lucas – If used as directed Root-Zone (Plant Nectar) will give your plants a boost when transplanting. I found that the plants could go without water for two weeks.

Kelly Kromer – I used the Root-Zone (Plant Nectar) on tomato plants that I purchased and was unable to get into the ground for a few days. The plants are thriving.



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**ROOT-ZONE PROTOCOL  
PRELIMINARY TRIAL FOR ROOT-ZONE & PLANT NECTAR APPLICATION  
FOR CONTAINERIZED PLANTS**

**CONTAINER PLANTS**

**Root-Zone is the most effective product ever developed to protect container plants against stress from transplant shock, shipping, extreme weather and drought stress.**

**However to achieve the best results for your particular plants it is necessary to establish the best dilution rate for application.**

**Type of plant, condition of the plant, soil moisture and soil porosity can impact the dilution rate of Root-Zone. Fortunately one or more small simple trials can verify that you are getting the most benefit from Root-Zone**

**DIRECTIONS FOR USE**

Drench Root-Zone into the soil or media 24 hours prior to the expected stress event.

Root-Zone requires no special handling: Stir or mix into the water and drench the plants thoroughly. Root-Zone is most effective when applied to moist (not wet) soil.

**Dilution Rate: (For initial trials)**

Bedding plants & vegetables: **2-3oz** Root-Zone mixed into 1 gallon of water.

Woody Ornamentals, Conifers, Roses and big leaf evergreens: **6-8oz** Root-Zone into 1 gallon of water.

Turf Grass: (See Turf Grass Bulletin)

**Initial Test:**

Full drench ½ of the plants with water.

Full drench the other ½ of the plants with the Root-Zone/water mixture.

Containerized Control & Root Zone treated plants should be placed in separate trays to absorb any excess water for up to 24 hours. Then remove plants from the tray.

**DO NOT REWATER**

Weigh both Root-Zone treated plants and the watered control plants. Monitor plant quality differences including weight change, height and appearance until results are determined, usually two to twenty days depending on amount of stress applied to the plants, and the type of plant and media.

When favorable results are achieved and the dilution rate is satisfactory, testing should no longer be necessary, unless there is a change in the plant or media status. .

The above protocol is recommended for accuracy and fairness in initial tests. It will be of primary benefit to ascertain the most effective and economical dilution rates, for an ongoing program of use.

**NOTES:** For plants in delicate condition (leafing out or flowering, early growth prior to a developed cuticle) cut dilution rates in half (1/2).

If plant appearance or weight difference is not noticeable within 3 weeks, redo the test, adding an additional ounce of Root-Zone to the dilution. If the results are still not satisfactory increase the dilution rate in increments of 1 oz per gallon until optimum rate is achieved.

Plants treated with Root-Zone may show some wilting a few hours after application. This is normal and temporary. If plants show continued signs of phytotoxicity or wilting reduce the dosage and try again.

For the most accurate results:

Use as many plants as possible of the same species, size and condition.

Soil or media should be slightly moist to accept saturation of the Root-Zone dilution. The best time to run the test is the day after normal watering. It is also a good idea to apply 1/10 of an inch of water after Root Zone application (3 to 24 hours) to force Root Zone into the primary root area of dense media.

**SPECIAL NOTE:** We have growers contact us after testing and claim they could see no difference in the Root-Zone treated plants and the control plants. There are only two causes for this.

1. The plants were not sufficiently stressed (do not end test until stress is noticeable). Up to three weeks for some plants.
2. Dilution rate of Root Zone was low and needed to be increased

To our knowledge Root-Zone has never failed when these criteria were met.



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## WHEN TO USE MOISTURIN OR WHEN TO USE ROOT-ZONE

GSI Horticultural is the only company that manufactures and supplies two different types of anti-transpirants, Moisturin and Root-Zone. Actually we are the only company that manufactures an anti-transpirant like Root-Zone, which is drenched into the soil or media.

Root-Zone was developed because foliar spray anti-transpirants have limitations that stop them from being effective for certain situations where spray application is difficult.

<b>MOISTURIN</b> <b>Foliar Spray anti-transpirant</b> <b>Alternative to fungicides, and many insecticides</b> <b>Bare Root and Field Crops</b>	<b>ROOT-ZONE</b> <b>Soil drench anti-transpirant for <u>containerized</u></b> <b>plants, vegetables, B&amp;B, turf and sod</b>
<b>Uses</b>	<b>Uses</b>
Use as a safe environmental alternative to fungicides and insecticides. Forms a long lasting protective barrier on the plants.(Early Spring is most effective)	Interior plants to extend watering periods. Use in hotels, public buildings and by home owners to protect their plants while absent
Bare Root stock prior to winter storage, over-wintering or shipping. Apply to all deciduous plants immediately after abscission for protection against winter disease, and desiccation.	Prior to shipping in containers Prior to transplanting from containers Prior to display in containers
Protect plants against transpiration and desiccation brought on by extreme weather conditions. (Drought, frost damage, extreme cold or heat and salt damage.)	Prolong watering intervals of vegetables, bedding plants and containerized ornamentals (especially conifers and big leaf evergreens.)
Use as a long term sticker for animal repellants, fungicides, pesticides* PROPAGATION: Protect cuttings from stress until they are transplanted.	Turf grass and sod. Extends water application Intervals. Use on areas that do not get adequate water. (Dry spots-difficult to water areas)
Moisturin allows summer digging even during full flush. Protects drought sensitive plants (Norway maple, Hawthorns, etc)	Shipping and display of floral and tropical plants. Use to extend shelf life if shipping delays occur.
Extend Quality and duration of cut Christmas trees, greenery and holly (allows early Christmas Tree harvest.)	Transplanting seedlings and vegetables into the field or larger containers.
Apply prior to trade shows or other display situations to improved appearance and reduce wilt.	Extend shelf and storage life of bagged roses and trees.

In certain conditions Moisturin and Root-Zone may be used in combination to offer plants additional benefits against extreme transpiration or desiccation stress.

\*Only in states where EPA registration is not required for adjuvant. 4/27/2011