Over 20 years experience providing environmentally responsible solutions for:

- Water Conservation
- Dust Mitigation
- Protection Against Mold, Mildew, Fungus & Algae
- Biological Lake and Pond Clarifiers
- Seaweed Extract Biostimulants
- Broad Array of Specialty Nutrients
- Advanced Soil Amendments
Environmentally Responsible Technology Proven to Reduce Watering Requirements up to 50% or more…

for use on Lawns, Flowers, Shrubs, Trees, Food Crops and Gardens

Hydretain ES Plus is USDA Certified Biobased Product
How Does Hydretain Work?

A liquid blend of **HYGROSCOPIC** and **HUMECTANT** compounds, Hydretain draws water vapor molecules together forming plant usable water droplets.

- **HYGROSCOPIC**: ABSORBING OR ATTRACTING MOISTURE FROM THE AIR.
- **HUMECTANT**: A SUBSTANCE THAT ABSORBS OR HELPS ANOTHER SUBSTANCE RETAIN MOISTURE.
Individual water molecules, as vapor or humidity in the soil, are not usable by plant roots and are constantly being lost to evaporation.

Untreated Plant Roots
(Magnified for clarity)

Hydretain Treated Roots

Hydretain attracts water molecules, forming plant usable droplets on treated root hairs.
Subsurface Moisture Vapor (Humidity) is Unavailable to Plant Roots, Just as We Are Unable To Drink the Humidity in the Air Around Us

By Attracting and Storing Water Vapor Molecules, Hygroscopic Humectants, Create Microscopic Droplets – Similar to Watching Condensation Form on a Cold Glass

This Process Helps Plants Use Soil Moisture Vapor that Would Otherwise be Unavailable to the Plant and Lost to Evaporation.
Originally Developed in Australia as a Roadway Dust Suppressant

Untreated Road Section
Heavy Dusting

Same Truck on Treated Surface
Minimal Dusting
First Tested on Turf

During a six week drought period

The entire lawn was as green and healthy looking as the center section prior to a six week drought.
June 7, 1991

Richard K. Irwin
Ecologe U.S.A.
5001 Rio Vista Ave.,
Tampa, FL 33634-5321

Dear Rick:

Terri and I have recently been using Hydretain on geraniums. The plants were grown in the usual way, but the treated plants were under less favorable conditions as they were over half the area of the untreated plants. The treatment was done on the first day and the results were dramatic; a 25% increase in growth the second year. We have not seen another water management product that came close to doubling the time a plant could go without water. In terms of numbers of pots, we are likely to use it on other plants. It is now available for purchase in the U.S. Probably 70% of the Hydretain and see its benefit identified.

Sincerely,

James E. Barrett

GROWING TRENDS: Jim Barrett

New media-applied humectant can improve plants’ drought resistance

Severe wilting of bedding plants in retail display areas is a common situation that often causes growers to lament about the degradation of the plants’ appearance after they leave the greenhouse.

The poor appearance at the retail level is also thought to reduce demand for bedding plants. Too frequently, personnel at retail garden centers and mass-merchandise stores are too busy to perform needed routine maintenance of plant material, and often bedding plants are not irrigated until they are wilting.

At the University of Florida, Terri Nell and I have been evaluating Hydretain, a water management product that is applied growing media as a liquid, so plants can be treated by growers just before they are shipped. Hydretain has been developed by Ecologe USA, 5001 Rio Vista Ave., Tampa, Fla. 33634. (813) 886-5790. It is now available to growers.

In our research, Hydretain was diluted in ratios of 1.5 to 2.0, and 3.0 parts solutions of these ratios were poured into 4-inch pots containing geraniums, impatiens or viola. The plants were grown using standard production practices and were at marketable size when treated. After treatment, plants were placed under heavy, shade cloth to represent a typical retail area. Plants were not watered until they wilted.

Geraniums given plant water lasted five days, while the treated plants went nine to 11 days before wilting. For impatiens, plants were held until they wilted a second time. The implication given Hydretain at 1.0 and 1.5 dilutions for the second time, two to three days later, and the median absorbed more water when it was irrigated. Violas also lasted longer when treated with Hydretain.

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Hydretain treatments on ‘Red Elite’ geraniums in 4-inch pots</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydretain dilution</td>
<td>Days to 1st wilt</td>
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<tr>
<td>Control</td>
<td>3</td>
</tr>
<tr>
<td>1:20</td>
<td>3</td>
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<td>4</td>
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<td>1:5</td>
<td>5</td>
</tr>
</tbody>
</table>

Each pot received 80 ml (3 fluid ounces) of Hydretain solution. Control plants were given plain water.

<table>
<thead>
<tr>
<th>Table 2</th>
<th>Hydretain treatments on ‘Super Elfin Red’ impatiens in 4-inch pots</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydretain dilution</td>
<td>Days to 1st wilt</td>
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<tr>
<td>Control</td>
<td>3</td>
</tr>
<tr>
<td>1:20</td>
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<td>1:5</td>
<td>5</td>
</tr>
</tbody>
</table>

Each plant received 80 ml (3 fluid ounces) of Hydretain solution. Control plants were given plain water.

<table>
<thead>
<tr>
<th>Table 3</th>
<th>Hydretain treatments on ‘Little Bright Eyes’ viola in 4-inch pots</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydretain dilution</td>
<td>Days to 1st wilt</td>
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<tr>
<td>1:5</td>
<td>7</td>
</tr>
</tbody>
</table>

Each plant received 80 ml (3 fluid ounces) of Hydretain solution. Control plants were given plain water.

Reprinted with permission from Greenhouse Manager.
Hydretain® Has Been Tested By Several Major U.S. Universities

University of Florida  Penn State
The Ohio State University  Clemson University
Ohio Wesleyan University

Research Reports Available Online
www.hydretain.com
The 14th fairway at Banyan had a chronic dry spot problem caused by cap rock with little top soil. The superintendent battled this problem for 15 years until trying Hydretain. Hydretain solved the problem and with regular treatments, at 3 month intervals, prevented its return.
Steep slope location. Treated in June. Photographed in July: one month after application.
Home Lawns, Parks & Commercial Properties

Recreational Park - Melbourne, FL

Side by Side Comparisons of Treated and Untreated St. Augustine Lawns
Potted Plants

After 1 Week without Water
Baucom’s Nursery in Summerville, SC, had a problem maintaining enough water on the outer edge of their poinsettia crop using overhead sprinklers. Hand watering was the first approach to solving this problem, however, this employee was needed for addressing other tasks. Therefore, an alternative to hand watering was needed. On October 2, 1998, an experiment was set up to test the effectiveness of Hydretain formula to eliminate hand watering.

Two test plots were used on opposite sides of the greenhouse. Two plots using four rows of twenty plants along the edge closest to the greenhouse’s outer walls were selected since these plots showed signs of wither. On one side of the greenhouse the first ten plants and four rows were treated with just water. The remaining plants, eleven through twenty, were treated with Hydretain at the rate of 2.8 ounces per gallon (641). All plants were watered to run off. On the opposite side of the greenhouse this arrangement was reversed. The first ten plants and four rows were treated with Hydretain and the remaining plants were treated with just water. All plants received equal amounts of solution on the day the experiment started. From October 2 until harvest these plants would only receive the water provided from the overhead sprinklers.

A few weeks into the experiment it was evident that the plants treated with Hydretain were out performing the other plants. On week six of the experiment pictures were taken of the plants from the outermost corner of the experiment. These plants were selected to demonstrate the dramatic difference in growth between the two treatments. The plants treated with Hydretain were larger in size, retained more leaves, and developed a larger root system compared to the plants on “just water”. In addition, the plants grown under “just water” were not salable.

Based on this study we believe Hydretain offers growers a solution to these “dry edges”. These positive results and other research have shown Hydretain offers solutions to many moisture management issues such as; increased shelf life, better moisture management on plugs, reduced watering time, and increased germination.

Mark J. Arena
Commercial Horticulture Agent

“...The plants treated with Hydretain were larger in size, retained more leaves and developed a larger root system compared to the plants on ‘just water’.”

- Mark Arena, Commercial Horticulture Agent
Description: Begonias were planted on June 1st. Picture on the left was treated with Moisture Manager one week after planting. Both were watered at the time of application. The flowers on the right have been watered to keep alive. The only water the plants on the left have received is rainwater. No fertilizer was applied to either side. Picture was taken on August 5th.
Tree Installation

Saint Cloud, MN
Summer 2002

Every Other Tree Treated with Hydretain®
Containers were given the same number of seeds and volumes of water. Germination rates, germination percentage and survival rates of Hydretain treated pots were superior to controls.
Hydretain treated seedlings produced as much as 40% more tomatoes during drought conditions.
Fruit & Vegetable Seedlings

- **PEPPERS**
  - DAY 7
  - UNTREATED
  - TREATED

- **TOMATOES**
  - DAY 14
  - UNTREATED
  - TREATED

- **LETTUCE**
  - DAY 6
  - UNTREATED
  - TREATED

FT Farfan Limited
Trinidad
Benefits

Maximize Irrigation Efficiency
Reduce Hand Watering
Decrease Irrigation Costs
Conserve Water
Protect Against Drought Stress
Survive Watering Restrictions
Minimize Wilt & Dry Spots
Improve Landscape Health
Improve Transplant Survival Rates
Increase Fertilizer & Pesticide Efficiency
Increase Seed Germination & Seedling Survival
Cut Watering Up To 50%

Hydretain®
ROOT ZONE MOISTURE MANAGER

Saving the World’s Water
...One Lawn at a Time

Ecologel Solutions, LLC
4060 SE 45th Court
Ocala, FL 34480
1-888-545-6307
www.ecologel.com

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