Moisture Manager is a proprietary blend of the patented Hydretain soil moisture management technology combined with an advanced naturally derived soil surfactant for improved penetration.
Patented Technology Proven to Reduce Watering Requirements up to 50% for Plants, Flowers, Shrubs, Trees, Turf and Agriculture
What is Hydretain®?

A liquid blend of HYGROSCOPIC and HUMECTANT compounds designed to manage soil moisture in between irrigation or rainfall.

• **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-useable droplets on treated root hairs.
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.
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 to growing media as a liquid, so plants can be treated by growers just before they are shipped. Hydretain has been developed by Ecologel USA, 5001 Rio Vista Ave., Tampa, Fl. 33634. (813) 886-5700. It is now available to growers.

In our research, Hydretain was diluted in ratios of 1:5 to 1:20, and 3-ounce solutions of these ratios were poured into 4-inch pots containing geraniums, impatiens or vinca. 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 plain water lasted five days, while the treated plants went one to 11 days before wilting. For impatiens, plants were held until they wilted a second time. The treatments were given at 1:10 and 1:15 dilutions, for the second time, two to three days later, and the medium absorbed more water when it was irrigated.

Vinca also lasted longer when treated with Hydretain.

Table 1

<table>
<thead>
<tr>
<th>Hydretain dilution</th>
<th>Days to wilt</th>
<th>Total days to wilt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>3</td>
<td>148</td>
</tr>
<tr>
<td>1:20</td>
<td>3</td>
<td>132</td>
</tr>
<tr>
<td>1:15</td>
<td>4</td>
<td>172</td>
</tr>
<tr>
<td>1:10</td>
<td>5</td>
<td>121</td>
</tr>
</tbody>
</table>

* Each pot received 90 ml (3 fluid ounces) of Hydretain solution. Control plants were given plain water.
* Days were given 180 ml (6 fluid ounces) of Hydretain solution.

Table 2

<table>
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<tr>
<th>Hydretain dilution</th>
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<th>Total days to second wilt</th>
</tr>
</thead>
<tbody>
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<td>148</td>
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* Each plant received 90 ml (3 fluid ounces) of Hydretain solution. Control plants were given plain water.
* Days were given 180 ml (6 fluid ounces) of Hydretain solution.
* At first wilt, plants were given 180 ml (6 fluid ounces) of water. This is total days from treatment to second wilt.

Table 3

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<tbody>
<tr>
<td>Control</td>
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<td>1:20</td>
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<td>1:15</td>
<td>5</td>
<td>11</td>
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Greenhouse Applications

Philodendron "Pothos"

Watering reduced from 3 times per week overhead and 2 times per week hand-watering to 2 times per week overhead and no hand-watering.
“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
Containerized Plant Trials - Impatiens

Day 1

Day 12: First Watering at Day 6

Day 27: First Watering at Day 23
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.
Lake Arrowhead Country Club Field Trial

Steep slope location. Treated in June. Photographed in July: one month after application.
Penn State Seed Germination Trial

Containers were given the same number of seeds and volumes of water. Germination rates, germination percentage and survival rate of Hydretain treated pots is superior to controls.
Independent Grass Seed Germination Trial

Shows Hydretain Promotes Healthier Root Growth

CONTROL

48 Days

Hydretain
The entire area was seeded on July 14, 2009. The picture was taken 5 days later.
Hydroseeding
Turf Production

Premium turf grown on plastic

After 8 weeks of production the treated acre is closer to harvest, requiring about 20% less production time.
Blue Valley Sod – Minnesota July 2002

Landscape Installation and Maintenance

Flowers, Shrubs, Trees & Turf
Home Lawns, Parks & Commercial Properties

Recreational Park - Melbourne, FL

Side by Side Comparisons of Treated and Untreated St. Augustine Lawns
Roadway Tree Installation
Saint Cloud, MN
Summer 2002

Every Other Tree Treated with Hydretain®
Tree Study

Evaluation of Hydretain 2X on Container Grown Trees

By Mark J. Arena
Clemson University Extension Service
Moncks Corner, SC

During the month of January 2001, 3-gallon Live Oaks were transplanted into 35-gallon black plastic nursery containers. The substrate used consisted of 80% 0-17 pine bark and 20% hardwood fines having 87% pore space and a water holding capacity of 13%. All trees were planted and maintained under standard growing conditions at Reesville Tree Farm, Reesville, SC.

On 24 April 2002 (15 months after transplant) the experiment was initiated. There were three treatments with twenty replications per treatment:
- Treatment 1: substrates treated with Hydretain 2X every three months, rate used was 130-ounces/80 gallons water (irrigation was kept at a 33% [1/3] reduction throughout the experiment)
- Treatment 2: standard irrigation volume (positive control)
- Treatment 3: reduced irrigation (irrigation was kept at a 33% [1/3] reduction throughout the experiment)

Irrigation volumes were adjusted according to weather and time of year. Treated substrates used 80-gallons of Hydretain for twenty containers; therefore, each container received 4-gallons of solution. Treatments were applied on the following dates 24 April, 24 July, and 25 October.

Caliper of trees was measured at 6-inches above the substrate and recorded monthly. The final measurement was recorded on 10 December 2002 and data statistically analyzed using a T-test.

Results demonstrated that Hydretain treated substrates produced the greatest caliper growth at 0.89 inches followed by the positive control at 0.84 inches. The negative control produced the least amount of caliper growth at 0.64 inches. Statistics showed no difference between the Hydretain and positive control treatments; however, there were differences between the negative control and these two treatments. Based on these results Hydretain may be capable of producing the same caliper growth on Live Oaks with reduced irrigation volumes under these conditions.

Hydretain produced the greatest increase in growth with 33% less watering.
Potted Plants

After 1 Week without Water
Citrus Tree Resets

Florida Citrus Grower (during 2000 drought)

Reduce his required watering on resets from 3 times per week to once per week with a 300:1 dilution of Hydretain.

Each reset received 5 gallons of total fluid for a cost of 33¢ per tree.
Hydretain treated seedlings produced as much as 40% more tomatoes during drought conditions.
Agricultural Seedling Trials

FT Farfan Limited Trinidad
These sports fields in the Florida Keys reduced required watering by 66% - from every day to every 3rd Day
June 22, 2001

Mr. Richard Irwin
Ecologel USA, Incorporated
2780 S.E. 35th Street
Ocala, FL 34471

Subject: Clarification related to Petition for Variance #1790
(Hydretain® Root Zone Moisture Manager)

Dear Mr. Irwin:

This letter is in response to your facsimile transmission dated June 5, 2001. You had contacted us to petition for a variance from the Southwest Florida Water Management District’s water restrictions.

The District’s water restrictions were declared and modified by Board Orders 92-12, 92-21, 92-60, and SWF 93-105 in accordance with Chapter 40D-21, Florida Administrative Code (F.A.C.). These restrictions have been further modified on a temporary, emergency basis by Executive Director Order SWF 00-18.

Due to the nature of your request, I am pleased to inform you that your situation does not require a District variance. Specifically:

You requested permission to allow users of Hydretain® to water-in this humectant and hygroscopic product;

The manufacturer’s written instructions assert that it is applied as a liquid compound to moist soil and that it needs to be watered-in with a complete irrigation cycle (appropriate to the soil and plant material involved) within 24 hours of application in order to be properly activated and carried to the root zone. The written instructions also indicate that the product is generally applied once every three months, but that the application schedule may vary depending on the plant material and product concentration used; and

District restrictions already make allowances for the watering-in of pesticides and other horticultural chemicals when required by manufacturer’s instructions. As such, your product would qualify for the similar exemption.

Homeowners and other small property owners who apply the product themselves should generally schedule applications to take advantage of their assigned watering day(s). Professional applicators should provide written instructions to the property owner or manager so that the owner/manager would be able to produce these instructions upon request. Please note that some local governments do not provide a chemical water-in exemption and others, including Hillsborough County, require that the professional applicator post a dated temporary sign on the treated area in order to qualify for the chemical water-in exemption.

Thank you for meeting with me on June 11, 2001 to discuss your product and its water conserving properties. Thank you also for your inquiry, as it demonstrates your commitment to conserving Florida’s most precious natural resource.

Sincerely,

Lois Ann Sorensen
Demand Management Coordinator

cc: Hillsborough County Water Department
Rand Baldwin, Governmental Affairs Coordinator
Jimmy Brooks, Governmental Affairs Coordinator
Joanne McClellan, Governmental Affairs Coordinator
Steven Minnis, Governmental Affairs Coordinator
Benefits

Double Even Triple the Days Between Required Watering
.....And Profit from the Benefits of Proper Moisture Management

• Eliminate or Minimize Drought Stress
• Reduce Overall Watering Requirements
• Enhance Nutrient & Pesticide Efficiency
• Control or Eliminate Localized Dry Spots
• Improve Transplant Establishment
• Increase Seed Germination
• Maximize Crop Production
• Accelerate Crop Grow-In
• Extend Retail Shelf Life

Cut Watering up to 50% or more!
General Application

Turf, Seeding, Overseeding, Hydroseeding, Sodding & Sprigging

- Apply 9 oz. per 1,000 sq. ft. by spray or drench (3 gallons per acre).
- Follow with enough water to carry product to the root zone or seed level.
- Maintain every 3 months at the full rate or monthly at a 1/3 rate (3 oz per 1,000 sq. ft.).

Trees, Shrubs, Plants, Potted or Containerized Plants & Gardens

- Dilute 2 oz. per gallon. Apply by drench.
- One application lasts up to 3 months.

Quantities Available

- QUART BOTTLE
- 1 GALLON JUG
- 2.5 GALLON JUG
- 55 GALLON DRUM
- 275 GALLON TOTE

PLEASE REFER TO THE PRODUCT LABEL FOR COMPLETE APPLICATION INSTRUCTIONS.