

Water Retention Response of Soil Applied Terreplenish.

A. Introduction

(1) Effects to be measure is increased soil moisture retention with a soil-applied diluted mixture of Terreplenish and water.

(2) The trials were conducted at Beaver Creek Gardens of Poplar Grove Illinois. between August 16th, 2013 and September 25th, 2014.

(3) Solutions in the Land, LLC was contracted in 2011 to present to write efficacy trial protocols and conduct trials on a product made by Feed Earth Now, called Terreplenish.

(4) Solutions in the Land, LLC profile:

Ronald G. Doetch, Managing Partner, Principal Investigator, University of Illinois, BS Agronomy, 1969, Wisconsin Integrated Cropping System Trials Advisory Board, 1996-2010, University of Wisconsin, Arlington Research Farm, Agriculture Efficacy Trials, 1970-present.

Cal Pickrum, Research Intern

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B. The Product Terreplenish

(1) Application Guidelines

For Pre Plant Application: Apply 7-10 days ahead of seeding.

For Post Plant Application: Apply after emergence. Applications may be repeated every 7 days or every 3 in fast maturing crops < 45 days

Dilution Guidelines

Suggested dilution 25- 50 parts water to 1 part Terreplenish; this container makes 25 gallons of solutions. Do not mix stronger than one 64oz container to 5 gallons of water.

Re-entry time - ZERO

Safe for pet and child exposure immediately after application.

Tank mixing with synthetic & chemical fertilizers is discouraged.

Chemical analysis

Numerous trace amino acids, carboxylic acids, peptides, alcohols, ammonium salts

-0.1%, complex sugars, esters, aldehydes; concentrate pH before dilution 4.0;

Microorganisms > 10⁸ CFU/ml, 1%: Lactobacillus casei.

Caution

Avoid spills and prolonged direct contact with the skin and wash with clean water immediately to prevent injury irritation. Do not ingest. The fermented products repeatedly have been shown to be free pathogens. Keep out of sunlight. Avoid prolonged exposure to oxygen by replacing cap after each use.

(2) Claim: Soil-applied Terreplenish will aid soil in the retention of moisture provided base saturation of the soil is sufficient to sustain microbial life.

C. Materials, Methods and Procedures

(1) Greenhouse studies were conducted at Beaver Creek Gardens in Poplar Grove, IL. Trial protocol was established to conduct greenhouse trials to determine changes in soil moisture retention. Trials were conducted in greenhouse conditions to preserve accurate, uniform conditions. We created a trial protocol to equally distribute the same amounts of liquids into the trays and gather the rates of moisture loss and water evaporation. Our trays were placed in a southern facing greenhouse, which temperatures did not exceed 85 degrees Fahrenheit and did not fall below 55 degrees Fahrenheit. During the trials, to prevent severe heliotropism, trays were turned and weighed after every irrigation sequence. The trays were filled with Promix BX, which the soil pH was neutral.

(2) The experiments were conducted in 3 separate trays (Tray measurements were 11-1½" x 22-1½" and cell measurements 1- 7⅛" across and 2-1½" for depth) filled with Promix-BX General Purpose Growing Medium (available from Premier Horticulture Inc. Quakertown, PA). There was no observed pest infections nor fungal growth. This growing medium consists of 10-14% perlite, 3-7% vermiculite, 79-87% peat moss, 1.5% specific gravity. The PH of this growing medium is neutral with no additional fertilizer added. One tray was treated with normal well water from Beaver Creek's well, another treated with 1-50 dilution of Terreplenish with water, and the third was treated with 1-25 dilutions of Terreplenish with water.

The fluctuation of temperatures during the extent of the trial was 55 degrees at night, to 85 degrees Fahrenheit during the day. A total of 6 cycles were repeated over active growing months in the study time period.

(3) Summary of the data can be found in section B. In regards to the environmental impact assessments relating to persistence, leach-ability and runoff potential, as well as degradation of compounds, our data is not applicable because the experiments were conducted in germination trays.

(4) Our layout was a greenhouse trial measuring water retention rates in trays. We conducted these trials six times in the like environments as specified in part C section 2.

D. Results

(1) We concluded that after six cycles of trials comparing the results of water retention between these three liquids, that in all cases the soils that had the higher recommended strength amendment added to those soils had higher moisture retention rates. The more diluted amendment had a lesser effect on moisture retention. All trays had growing plants and the plant health was better in the treated trays. No correction was made for healthier plants respiring at a higher rate that theoretically could create more trans evaporative moisture losses from the soil. Additionally, no correction was made for increase plant weight due to improved plant health. In the following chart, H2O represents water only. TP 1-50 represents a 1-50 dilution of Terreplenish to water. TP 1-25 represents a 1-25 dilution of Terreplenish to water. The water only trays lost 13.58% more moisture than the trays with the 1-25 dilution of Terreplenish in 30 days.

