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### GT-1000™ and GT-2000™ Growth Trials

#### Purpose

To determine the potential for phytotoxicity from **GT-1000™** or **GT-2000™** applied to perennial ryegrass, Hahn's ivy and radish. Rates, frequency and method of application were selected to approximate and exceed concentrations and quantity of product that would normally come in contact with plant material located below a treated surface.

#### Methodology

The 6 week trial was conducted at the Soil and Plant Laboratory facility, Orange, California. Test materials included **GT-1000™** and **GT-2000™**. Test plants included Manhattan perennial ryegrass, common radish and mature Hahn's ivy (*Hedera helix*). Ryegrass and radish are frequently used in soil sterilant bioassays. Hahn's ivy is a common Southern California groundcover which is sensitive to burn from salt or herbicidal materials.

The trial consisted of a total of 30 flats (5 treatments which included a control, 3 test plants and 2 replicates). The ryegrass and radish was sown in 16 x 17 x 2.5" flats containing a 50% sphagnum peat moss/50% perlite potting soil. The test solutions were prepared as follows:

- A: 1 part **GT-2000™** to 100 parts tap water (1:100)
- B: 1 part **GT-2000™** to 500 parts tap water (1:500)
- C: 1 part **GT-1000™** to 100 parts tap water (1:100)
- D: 1 part **GT-1000™** to 500 parts tap water (1:500)
- E: Tap water control

The solutions were applied as a coarse spray with sufficient water to thoroughly wet foliage and soil at every irrigation.

During the first 3 weeks of the trial, a total of 9 applications were made with each test solution.

At the end of 3 weeks, all plant material was irrigated with tap water only for an additional 2 weeks.

## Observations

Results were consistent among replicates throughout the trial.

After each application of the **GT-2000**<sup>™</sup> there was evidence of localized burn on ivy leaves where the oil/wax component of the solution came in contact with leaf surface (Photos 1 & 2). There was no evidence of any systemic herbicidal activity. Two weeks after the discontinuation of treatments there was vigorous regrowth of the ivy of both **GT-2000**<sup>™</sup> treatments (Photos 3 & 4).

**GT-2000**<sup>™</sup> appeared to have no affect on the germination of radish or ryegrass (Photos 1 & 2). The material did result in slight burn on radish and ryegrass seedlings with the symptoms more pronounced at the 1:100 concentration (Photo 5). After 6 consecutive irrigations with **GT-2000**<sup>™</sup> solutions the ryegrass and radish were chlorotic compared to the control. Once clear water irrigations were applied, both the ryegrass and radish developed better color and appeared to grow normally (Photos 3, 4, & 6).

The coarse spray application of **GT-1000**<sup>™</sup> at the two dilutions also caused contact burn of the ivy (Photos 7 & 8). The extent of damage was greater at the 1:100 dilution with damage minor at the 1:500 dilution. When clear water irrigations were applied, regrowth appeared to develop normally (Photos 9 & 10).

The **GT-1000**<sup>™</sup> inhibited germination of radish and ryegrass when applied at the 1:100 dilution (Photo 7). At the 1:500 dilution, ryegrass and radish germination was fair but development was obviously restricted when compared against the control (Photo 16). After 3 weeks of irrigation with the product solution, clear water irrigations were applied to all flats including the ungerminated flats of **GT-1000**<sup>™</sup> at 1:100 dilution. Growth and color improved in all seedling material. After the introduction of clear water applications, the original ryegrass seed spontaneously germinated in the flats treated with **GT-1000**<sup>™</sup> at 1:100. The original radish seed did not germinate, but when reseeded into the previously treated 1:100 flats, radish germinated and developed normally (Photo 11). The results suggest that there are no residual affects from **GT-1000**<sup>™</sup> at either dilution rate.

## Conclusions

Based on this trial, which consisted of sensitive plant material and aggressive application rates, it appears that the adverse effect of **GT-2000**<sup>™</sup> or **GT-1000**<sup>™</sup> on plant material is limited to slight to moderate contact burn. In addition, where soil is drenched with a 1:100 solution of **GT-1000**<sup>™</sup> there is a short term inhibition of germination and seedling development. Based on this trial, there is no evidence of residual phytotoxicity from either test material.

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