



Effects of APEX-10 In Reduced Soil Moisture Levels

Dr. Bingru Huang, Department of Plant Biology and Pathology

Irrigation rates are critical for proper turf growth and balancing water conservation. Trials conducted at Virginia Tech have suggested the organic substances including humic substances in **APEX-10**, promotes drought resistance by promoting root growth and antioxidant activities. The trail objective was to determine whether **APEX-10** would reduce water requirements by prolonging irrigation frequency.

MATERIALS AND METHODS

Bentgrass and Bluegrass grown in pots were fertilized with Hoagland’s solution and placed in a climate controlled growth chamber at (75/65°f day/night) and able to acclimate for one week, then moved to the Greenhouse at (82/65°f day/night) for eight weeks. **APEX-10** was applied as follows.

Bentgrass 1½oz. per 1,000, 14-Days

Blue Grass 3oz. per 1,000, 30-Days

Two groups were established. Half with **APEX-10** and half without, then further separated to 3-groups for irrigation rates and soil moisture for the 8-week trail.

<u>Irrigation Rates</u>	<u>Soil Moisture</u>
3-Times Per Week	25%
1-Time Per Week	17%
1-Time every 2-weeks	7%

RESULTS & DISCUSSION

APEX-10 had a positive effect with both

species under all irrigation conditions.

Bentgrass

- ◆ Bentgrass at 17% moisture treated with **APEX-10** had better quality then plants with 25% moisture without **APEX-10**.
- ◆ Bentgrass at 7% moisture treated with **APEX-10** experienced less physical damage and recovered faster when moisture was restored to 25%.
- ◆ Bentgrass at 7% moisture treated with **APEX-10** recovered with a turf quality that was statistically similar to plants with 25% moisture without the use of **APEX-10**.

Bluegrass

- ◆ Bluegrass treated with **APEX-10** showed better quality and density throughout the entire Trial
- ◆ Bluegrass that was treated with **APEX-10** displayed better recovery throughout the entire trial.

Bluegrass Continued

- ◆ During the first 33-Days, Bluegrass with **APEX-10** at 17% moisture displayed better water holding capacity and quality than plants at 25% moisture and no **APEX-10**.
- ◆ Bluegrass treated with **APEX-10** increased shoot and root mass when compared to plants without the use of **APEX-10**.
- ◆ In 8-eight weeks, shoot weight was higher in every plot treated with **APEX-10**.



CONCLUSION

Based on this data, it can be concluded that **APEX-10** promotes significantly better drought tolerance and post drought recovery when compared to turf not being treated with **APEX-10**. Turf quality of Bluegrass improves with **APEX-10**, and Bentgrass will improve to a far greater degree. Improvements during times of water deficit are attributed to increased root and shoot production, which promotes water conservation and a faster recovery when irrigation returns using **APEX-10**.

Dr. Bingru Huang Ph. D.

