



Growth Responses of Bermudagrass to Various Bio-Stimulants Under Sodium-Chloride Stress

Research By Mohammad Pessaraki, PhD, Univeristy of Arizona

Research Report

Objectives:

To compare the growth response of bermudagrass to various bio-stimulants under sodium-chloride stress and recommend the most effective bio-stimulant under saline conditions.

Materials and Methods:

Growth responses of bermudagrass (*Cynodon dactylon L.*, cv. Tifway), to three bio-stimulants: Bio-stimulant 1 (BS1), Bio-stimulant 2 (BS2), ENCAPSALT® (ENC), and a control (CON) were studied hydroponically under EC of 15 dS/m sodium chloride (NaCl) stress in a greenhouse. In this experiment, a randomized complete block design was used with four replications of each treatment (Fig.1). The growth responses of the grasses included shoot and root lengths, shoot and root fresh and dry weights, and the grasses' general quality. The grasses were grown in half-strength Hoagland solution for 12 weeks for complete establishment of roots. During this period, the shoots were clipped weekly to uniformly distribute grasses in all the experimental units (cups), and the clippings were discarded. At the week 12, the roots were also cut and discarded to promote their being consistent among all grasses. Then the salt stress was imposed and the bio-stimulants were applied. The grasses were allowed to grow for 7 weeks at this phase of the experiment, during which the shoots' and roots' lengths were measured (Fig. 2), and the grasses' general qualities were evaluated weekly. Then the shoots were harvested and the clippings' fresh and dry weights (oven-dried at 65°C) were measured and recorded (Fig. 3). At the last harvest (the 7th week harvest), roots were also harvested, and their fresh and dry weights were determined (Table 1).

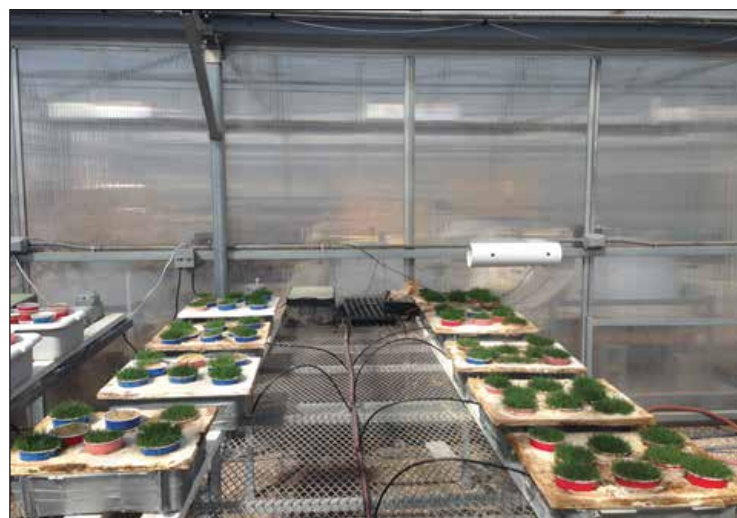


Figure 1. Greenhouse experimental settings

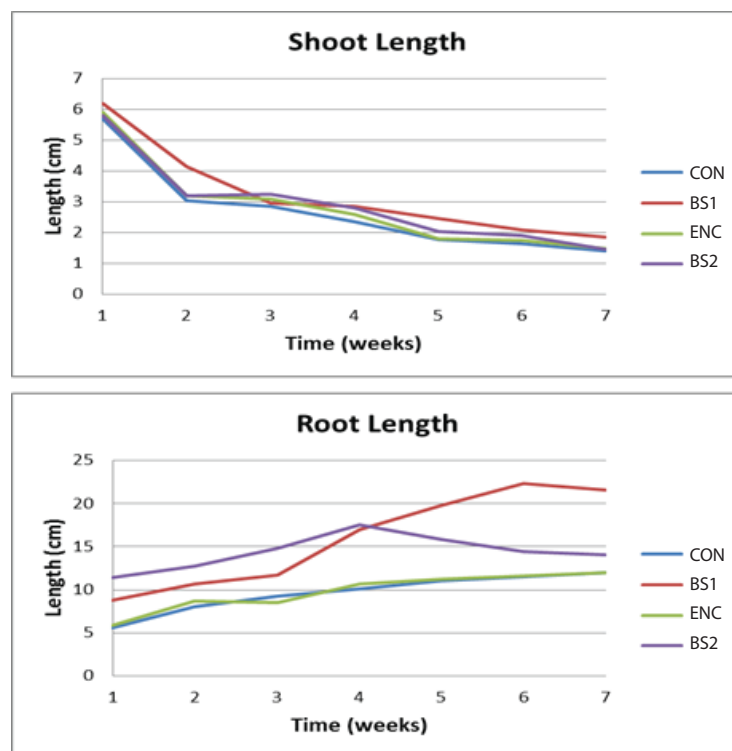


Figure 2. Bermudagrass shoot and root lengths

Results:

- Under salinity stress, the grasses' general qualities were substantially improved by all the bio-stimulants compared with the control.
- Among the three bio-stimulants, ENCAPSALT® resulted in the lowest enhancement in shoot and root heights but higher enhancement in shoot and root weights than the control.
- Importantly, lower shoot height and higher grass weights are the most desirable qualitative factors in turfgrass management.

Conclusion:

Results indicated that the application of the bio-stimulant ENCAPSALT® under salt stress condition improves the quality of bermudagrass.

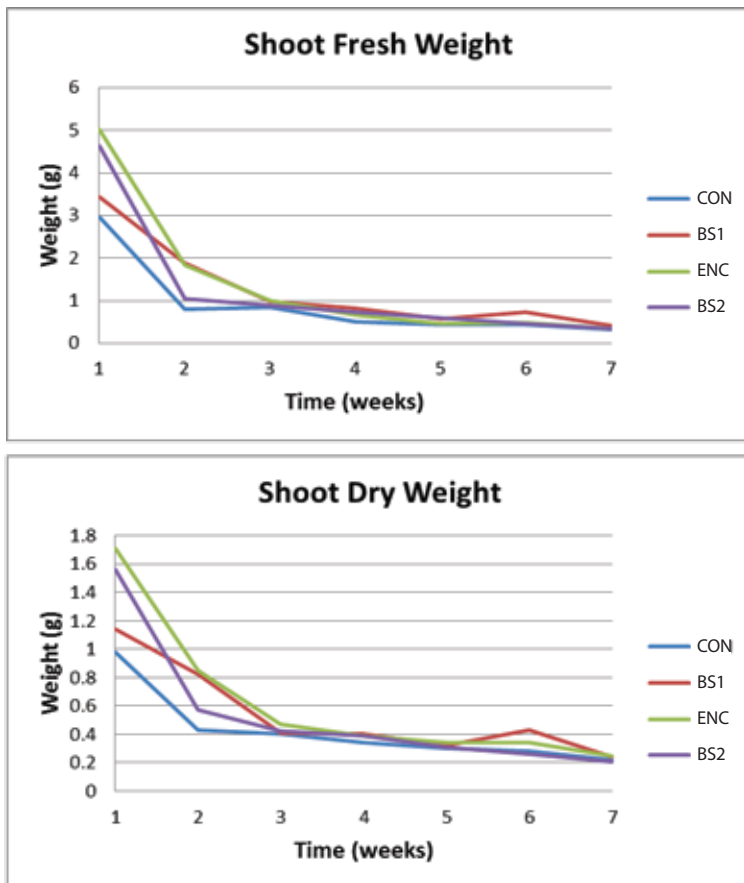


Table 1. Means of root fresh weight (FW) and dry weight (DW) at harvest

Bio-stimulant	Root FW (g)	Root DW (g)
CON	0.10b	0.04a
ENC	0.12b	0.04a
BS1	0.18a	0.05a
BS2	0.15ab	0.04a

Figure 3. Bermudagrass shoot fresh and dry weight

Full research report available upon request.

If you would like to learn more about this amazing product, contact us direct at **480-961-1220** or visit **www.humagroturf.com**.