UCRTRAC Accumulative Research Summary
Section C: Unbiased Product Testing (fertilizers, pesticides, equipment, etc.)
Project 9

Title: Influence of Primo on the Total Nonstructural Carbohydrate Partitioning of Tall Fescue.

Objective: To determine if turfgrass carbohydrate reserves are enhanced in total or preferentially partitioned following Primo treatment. Primo reduces the leaf growth rate, and generally there is an inverse relationship between the turfgrass growth rate and tissue carbohydrate reserves. Thus, the hypothesis is that increased food reserves are involved in prestress conditioning, and can improve the stress tolerance of turfgrasses. It has been reported that there is a clear positive relationship between carbohydrate reserves and turfgrass tolerance to freezing stress and heat stress. It also has been reported, though not as well documented, that there is a positive relationship between carbohydrate reserves and drought resistance of turfgrasses.

Location: A mature plot of Bonsai tall fescue located at the UCR Turfgrass Field Research Facility.

Duration: Two seasons

Funding Source: Novartis

Findings:

- The 1995 and 1996 Primo carbohydrate studies were conducted on a mature, representative, well-maintained tall fescue turfgrass, and Primo was applied accurately as per label instructions. The studies were conducted during the same time period during both seasons (Aug. to Oct.), so any seasonal effects on plant growth, and carbohydrate partitioning were minimized.
- Visual turfgrass quality was slightly lower in Primo-treated plots than check plots in 1995, but not in 1996. However, visual turfgrass quality remained well above acceptable levels during both years.
- Weekly and accumulative clipping yields were significantly lower in Primo-treated plots during both years. The percent reduction for accumulative clipping yield for 5 weeks in 1995 was 61%. The percent reduction for accumulative clipping yield for 6 weeks in 1996 was 25%.
- Total nonstructural carbohydrate (TNC) levels in crown, leaf, and root tissues were not enhanced in 1995 and 1996 when sampled 6.0 and 7.0 weeks following Primo treatment, respectively. Also, TNC partitioning was not affected in 1995 and 1996.
- It is unknown if results would differ if measurements were made sooner following Primo application or if multiple applications of Primo at a lower rate were tested.

Status: A two-season study was completed. A technical article was prepared and will be submitted to a scientific journal.
