

- TITLE:** Root Lengths of Two Hybrid Bluegrasses, Kentucky Bluegrass, and Tall Fescue: A Field Study
- OBJECTIVES:** Evaluate total root lengths in the 0 to 80 cm profile of Kentucky bluegrass (KBG), tall fescue (TF), and two cultivars of hybrid bluegrasses (HBG) under well-watered conditions.
- AUTHORS:** Kemin Su, Dale Bremer, Steven Keeley, and Jack Fry.
- SPONSORS:** The Scotts Co., Inc, Golf Course Superintendents Association of America, and the Kansas Turfgrass Foundation.

Introduction

New HBG, which are genetic crosses between KBG (*Poa pratensis* L.) and native Texas bluegrass (*Poa arachnifera* Torr.), have the appearance of KBG but may be able to withstand higher temperatures and extended drought without going dormant. Rooting depth may affect the ability of turfgrasses to maintain higher quality during hot and dry periods; turfgrasses with deeper roots can tap into soil water reservoirs lower in the profile. In this study, total root lengths of two HBG were compared with KBG and TF (*Festuca arundinacea* Schreb.) in plots under a large (12 by 12 m) rainout shelter near Manhattan, Kansas, USA.

Materials and Methods

Total root length in the 0 to 80 cm profile was measured for two HBG cultivars ('Thermal Blue' and 'Reveille'), one KBG ('Apollo'), and one tall fescue (*Festuca arundinacea* Schreb.) ('Dynasty') after two years under well-watered conditions.

Results and Discussion

Total root length in the 0 to 80 cm profile was greatest in Thermal Blue among turfgrasses (Fig. 1). Total root length was greater in Apollo than in Reveille, while Dynasty's was between Apollo and Reveille but not significantly different from either ($P < 0.05$). Total root length in the lower profile (60 to 80 cm), however, was greatest in Dynasty among turfgrasses (Fig. 2). Total root length was similar among bluegrasses in the lower profile. More roots at deeper depths may explain why the quality of TF was higher than bluegrasses in related water-deficit studies at Kansas State University (e.g., see article *Performance in the Transition Zone of Two Hybrid Bluegrasses Compared with Kentucky Bluegrass and Tall Fescue* in this year's report). This study under the rainout shelter will continue during summer 2006. More results will be included in next year's turfgrass research report.

Acknowledgements

The authors appreciate the loan of a hydraulic soil probe, used for the collection of root cores in this study, from Dr. Jay Ham, Agronomy Department, K-State.

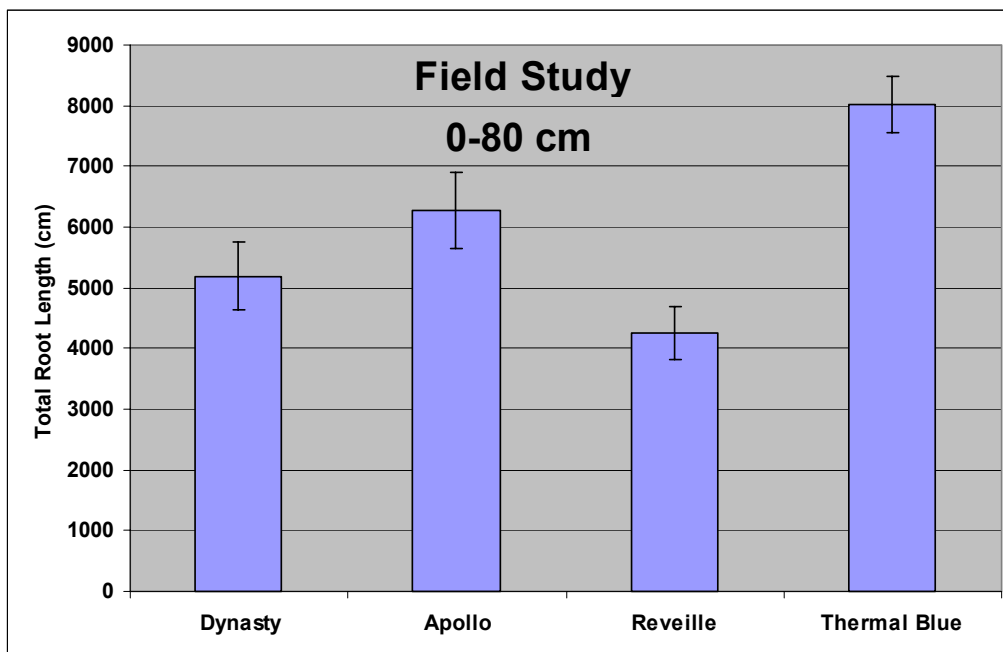


Figure 1. Total root length in the 0 to 80 cm profile of tall fescue (Dynasty), Kentucky bluegrass (Apollo), and two cultivars of hybrid bluegrasses (Reveille and Thermal Blue) under well-watered conditions.

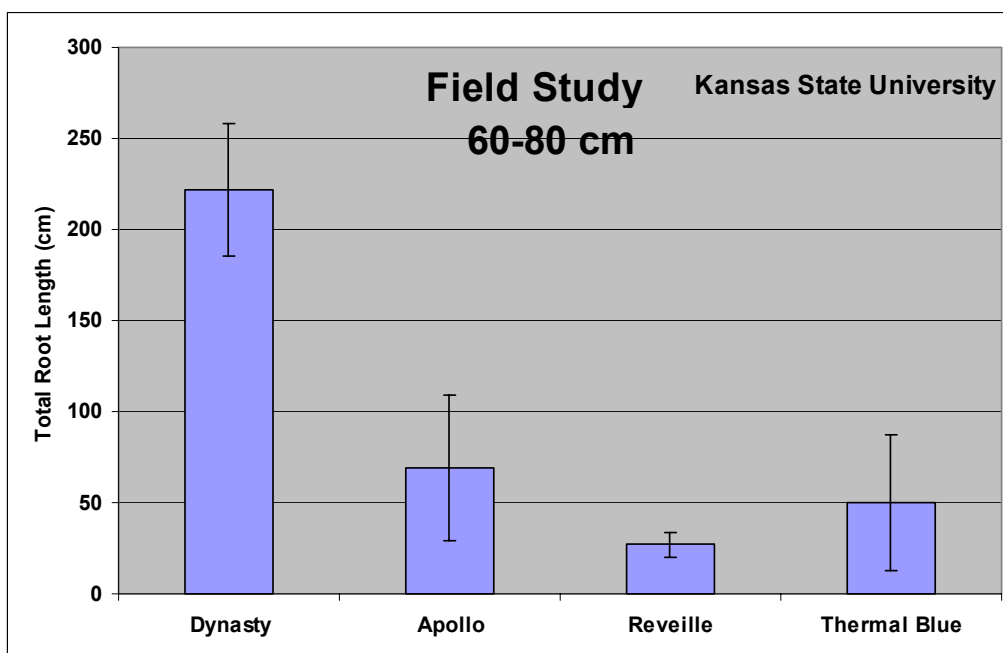


Figure 2. Total root length in the lower profile (60 to 80 cm) of tall fescue (Dynasty), Kentucky bluegrass (Apollo), and two cultivars of hybrid bluegrasses (Reveille and Thermal Blue) under well-watered conditions.