TITLE: Root Lengths of Two Hybrid Bluegrasses, Kentucky Bluegrass, and Tall Fescue: A Greenhouse Study.

OBJECTIVES: Evaluate total root lengths in the 0 to 120 cm profile of Kentucky bluegrass (KBG), tall fescue (TF), and two cultivars of hybrid bluegrasses (HBG) under well-watered conditions.

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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 a greenhouse study.

Materials and Methods

Total root length in the 0 to 120 cm profile was measured for two HBG cultivars ('Thermal Blue' and 'Reveille'), one KBG ('Apollo'), and one tall fescue (*Festuca arundinacea* Schreb.) ('Dynasty') under well watered conditions. Turfgrass sods were transferred from the field onto clear polyethylene tubes filled with fritted clay in the greenhouse; polyethylene tubes were placed into opaque PVC tubes. Roots in all tubes were harvested when those in one tube were observed emerging from the bottom, and root length was measured.

Results and Discussion

Total root length in the 0 to 120 cm profile was greatest in Thermal Blue and Apollo (Fig. 1) and lowest in Dynasty and Reveille; no significant differences were observed between Thermal Blue and Apollo or between Dynasty and Reveille. In the 60 to 90 cm profile, total root length in Apollo was comparable to Dynasty and was higher than in Thermal Blue and Reveille (data not shown). Total root length in the lower profile (90 to 120 cm), however, was greatest in Dynasty and negligible but similar among bluegrasses (Fig. 2). 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).

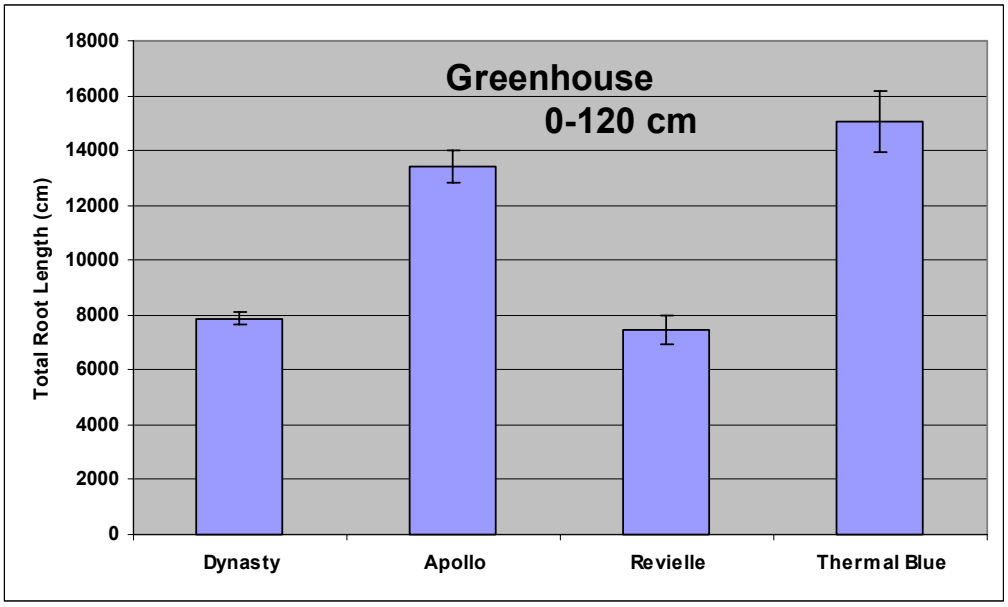

Figure 1. Total root length in the 0 to 120 cm profile of tall fescue (Dynasty), Kentucky bluegrass (Apollo), and two cultivars of hybrid bluegrasses (Reveille and Thermal Blue) under well-watered conditions.

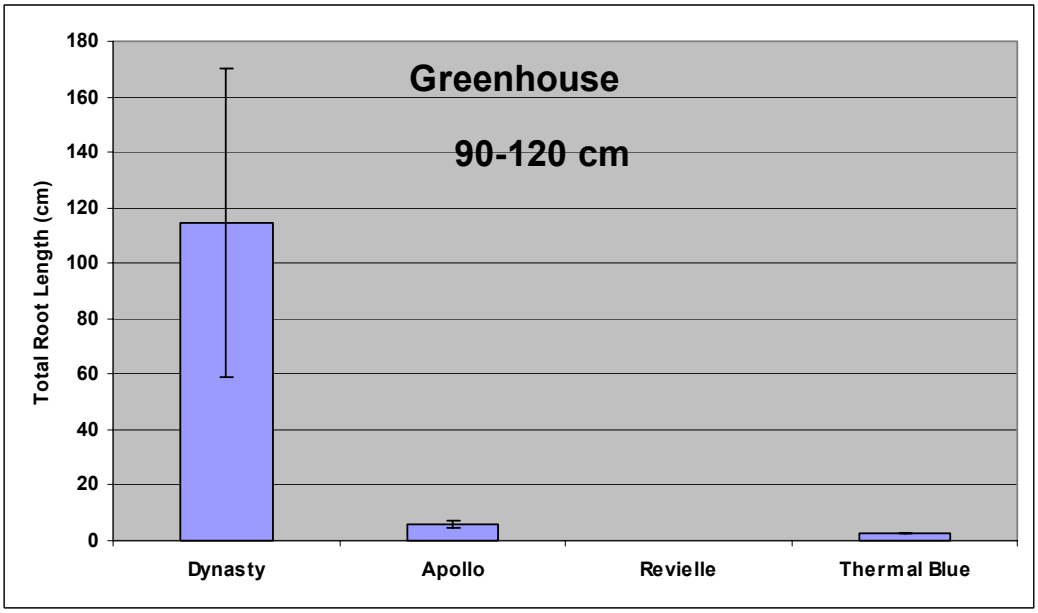

Figure 2. Total root length in the lower profile (90 to 120 cm) of tall fescue (Dynasty), Kentucky bluegrass (Apollo), and two cultivars of hybrid bluegrasses (Reveille and Thermal Blue) under well-watered conditions.