

Texas Tech University, Plant and Soil Science Spring Seminar 2024

Title: Improving Crop Drought Tolerance and Water-use Efficiency in the Texas High Plains – Physiological Perspective

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Location: MCOM 153 (Texas Tech campus)

Date/Time: Thursday, April 11th / 1200:1:00 PM

Abstract

The Texas High Plains is one of the most productive agricultural regions, with an annual economic value of \$1.6 billion in crop production. The area has a semi-arid climate with annual precipitation ranging from 380 to 580 mm. For field crop production, drought is the most common factor limiting yield and water use efficiency (WUE). In addition, other biotic (e.g., diseases, insects and weeds) and abiotic (e.g., cold, heat, nutrient deficiency, etc.) stresses also affect crop production and WUE. Our overall goal is to improve crop yield, stress tolerance and WUE in the Texas High Plains. To accomplish the goal, research has been conducted to address the following objectives: (1) understand physiological mechanisms for improved drought tolerance and increased WUE; (2) identify plant traits related to drought tolerance and WUE; (3) develop high throughput phenotyping tools; (4) optimize crop water use and WUE through the identification of new and improved cultivars/species, best management practices, and cropping systems. The results are particularly important to producers for crop production under water-limited conditions.