

Evaluating Downforce Treatments and Emergence Across Soil Texture Zones in Corn Planting

Andrew Russell

Dr. Wesley Porter, Dr. Simerjeet Virk, Dr. Glen Rains
University of Georgia – Tifton
Department of Crop and Soil Science

Jason Mallard—UGA Extension Screven County, Pam Sapp—UGA Extension Jefferson County

Introduction

Soil textures can vary throughout a single field!

- ▶ Downforce has not historically been adjusted between fields, let alone within a single field
- ▶ Advances in planter technology (e.g. hydraulic downforce) have made real-time adjustments both possible and convenient
- ▶ Different soil textures (fig. 1) have different properties, even within the same soil series
- ▶ Denser soil textures can make more difficult to achieve the appropriate seeding depth
- ▶ One field can contain a variety of textures, from light sandy to heavy clayey
- ▶ Soil electroconductivity acts as a rough estimate of soil density and texture

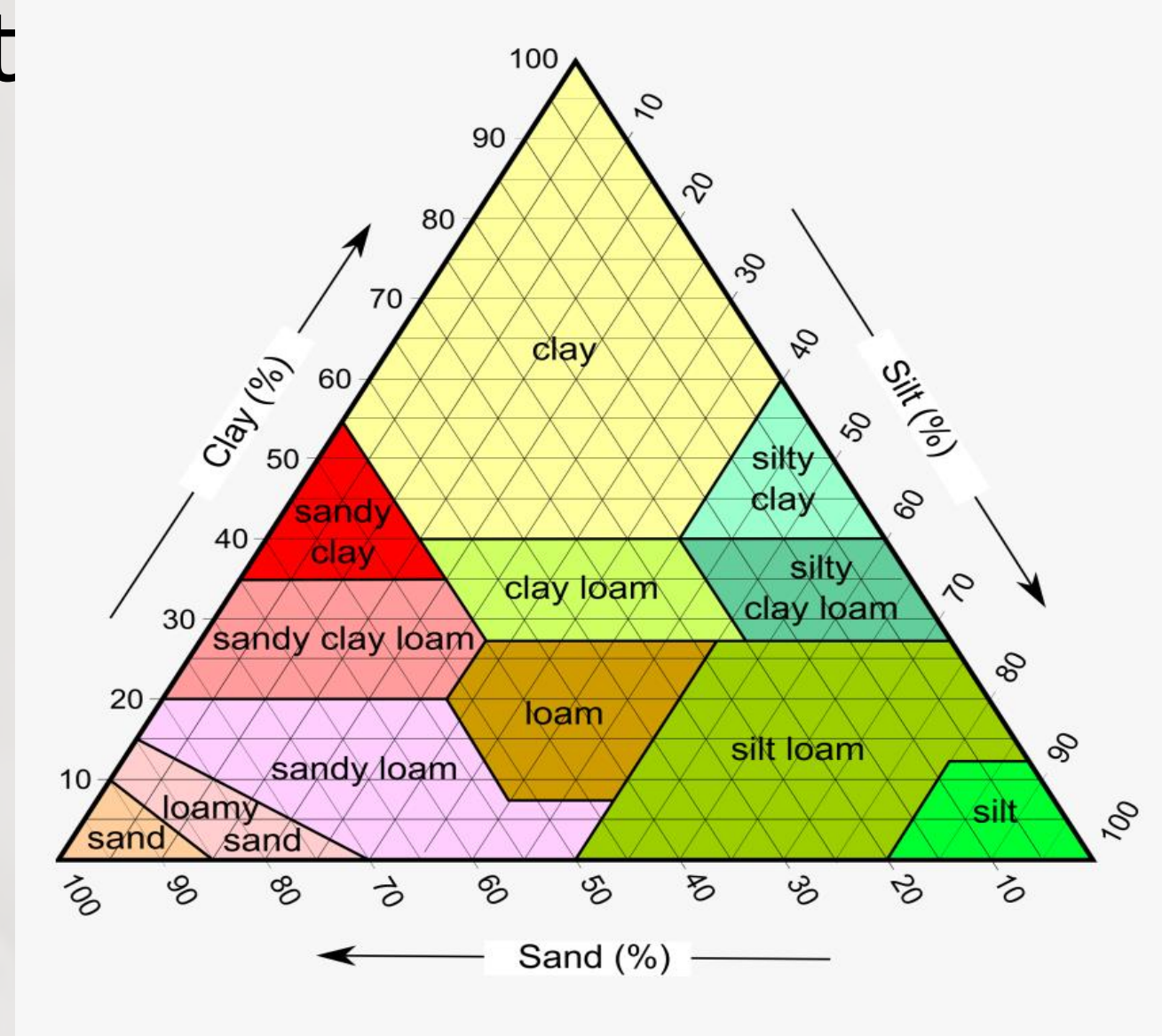


Figure 1 Soil Texture Triangle

Objective

Determine if changes in downforce across soil EC zones impact germination and stand establishment

Materials and Methods

- ▶ In 2021, utilized two separate on-farm locations in Jefferson and Screven Counties, located in the Eastern Coastal Plains of Georgia
- ▶ Soil EC data were acquired from local consulting firms which used a Veris unit (fig. 2) prior to 2020 (soil EC is considered stable data for several years)
- ▶ Zones (low, med, and high) were created in AgLeader SMS (fig. 3 and fig. 4)
- ▶ Each pass during planting set a single downforce along the length of the field across all zones, this was performed across three and four downforces for three replications (Screven and Jefferson respectively).
- ▶ A Trimble Nomad was used to follow each pass to the separate zones to mark 50 ft plots for emergence
- ▶ Counted emergence at regular intervals post-cracking



Figure 2 An example of a Veris soil EC collector

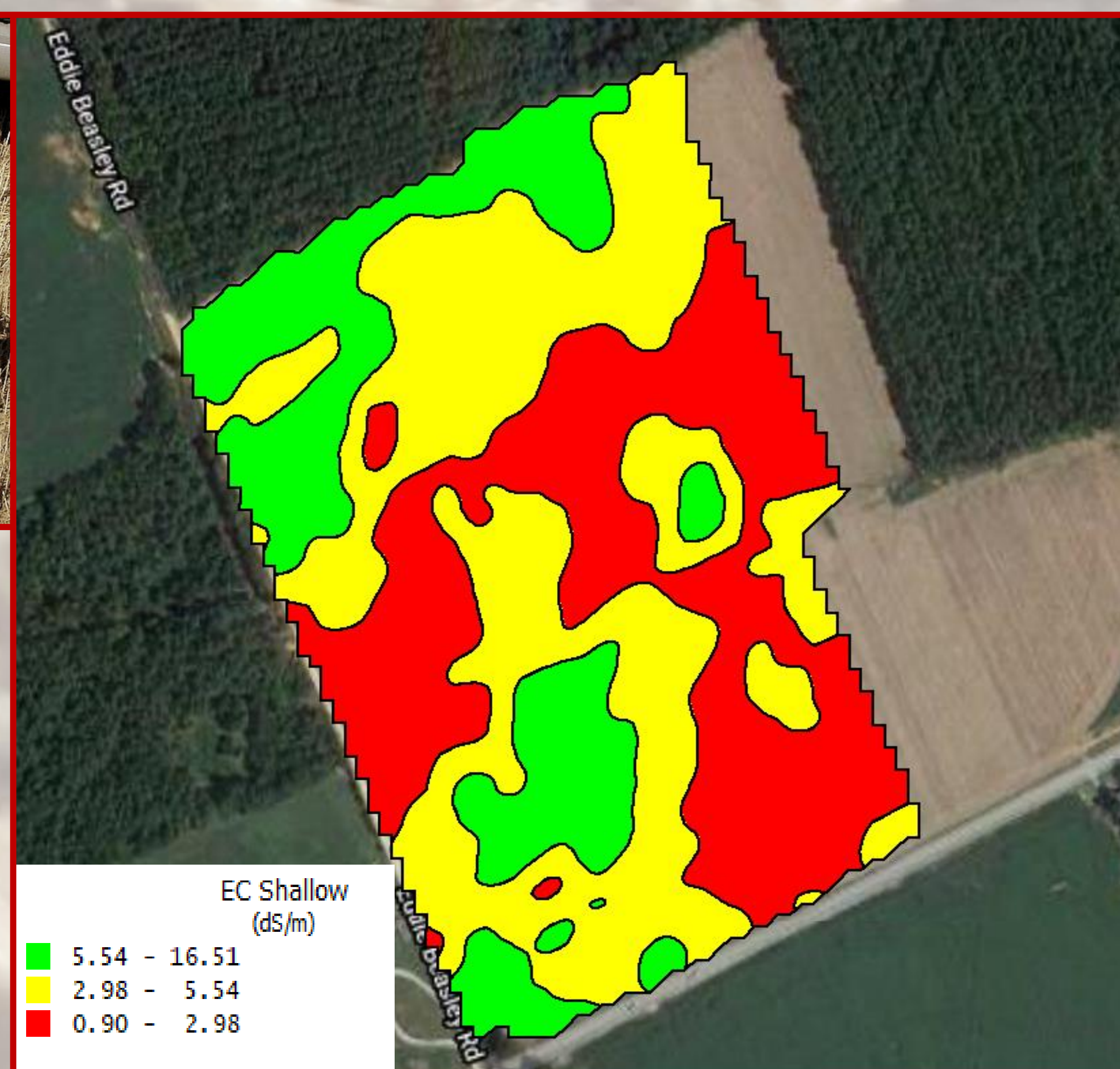


Figure 3 Soil EC map of field in Jefferson County

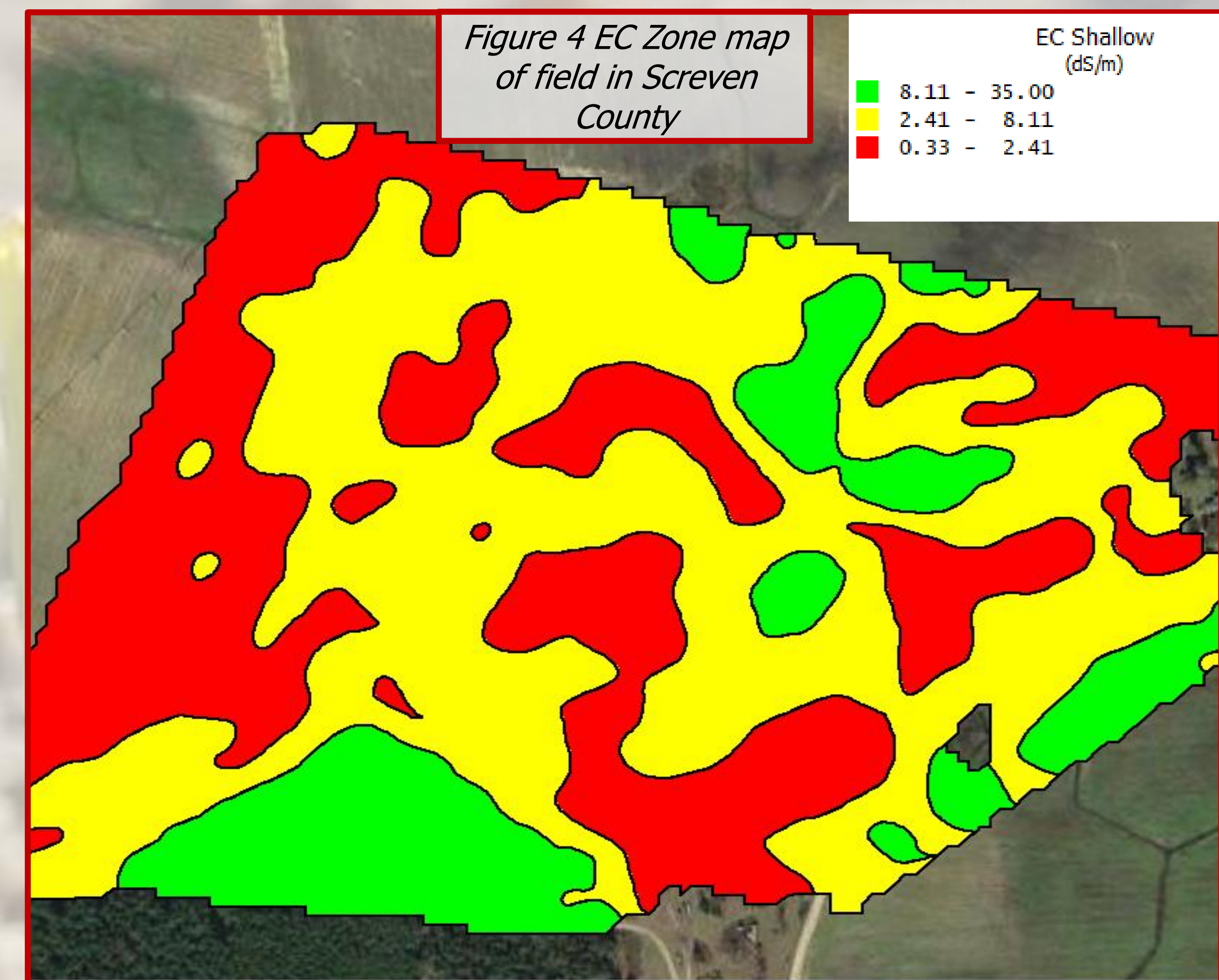


Figure 4 EC Zone map of field in Screven County

Results

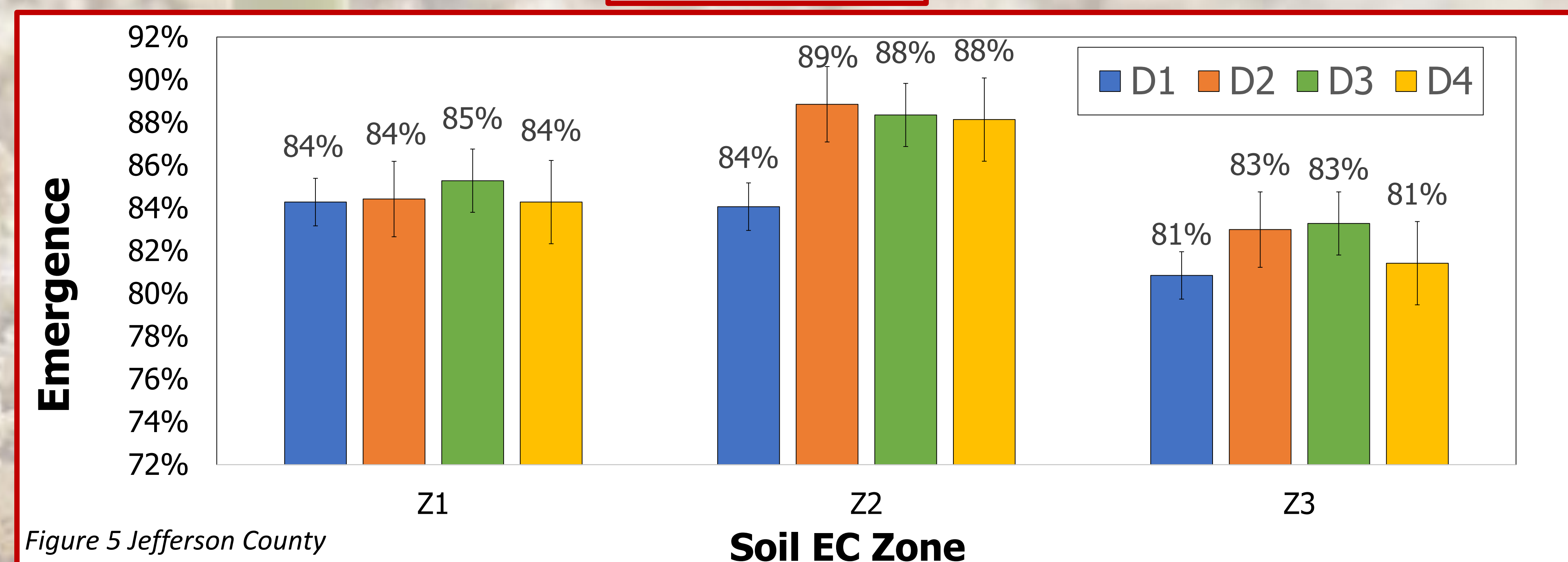


Figure 5 Jefferson County

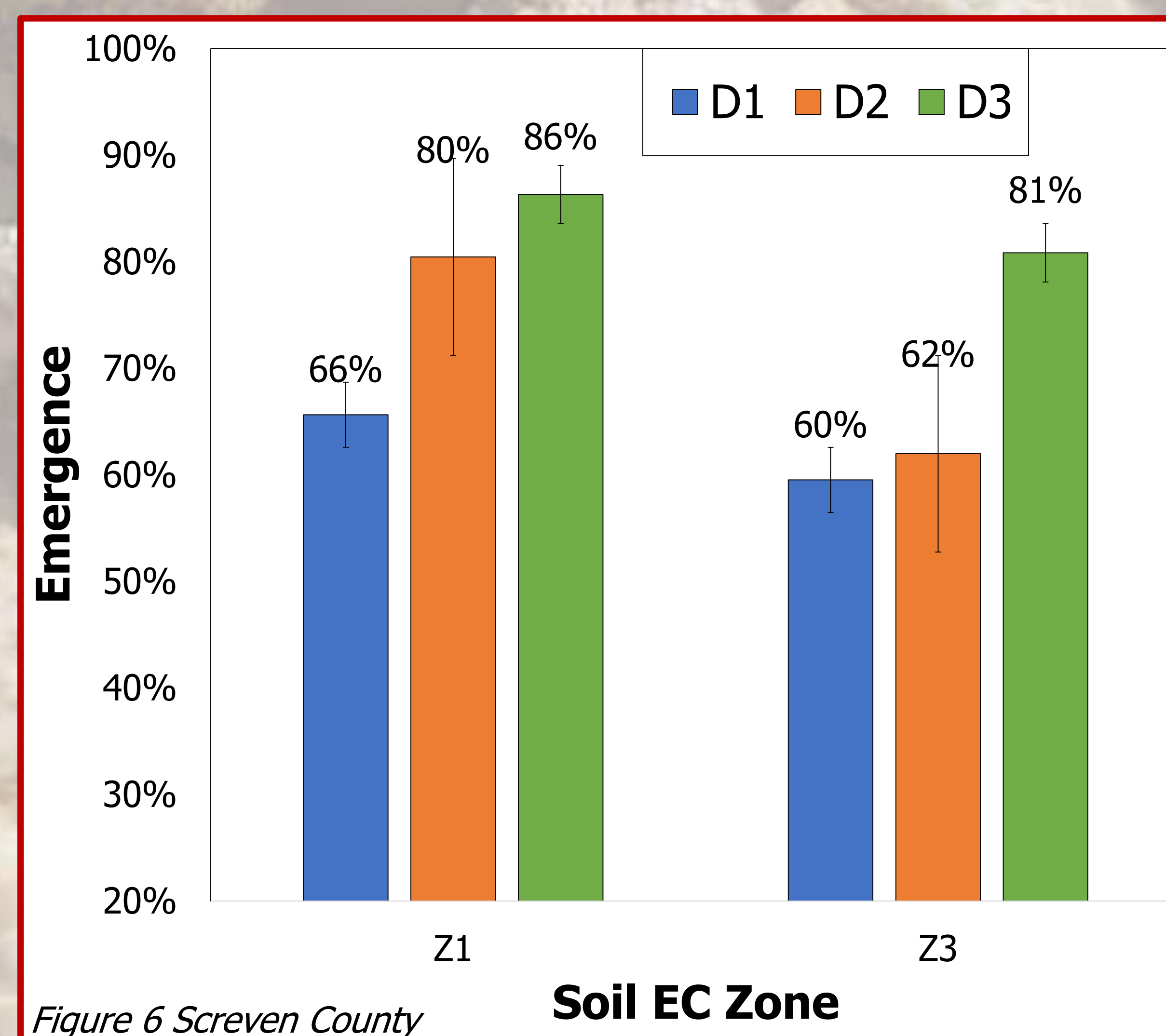


Figure 6 Screven County

Discussion

1. Low downforce had the lowest emergence in EC zones 2 and 3
2. The Jefferson trial showed that medium downforce was optimal.
3. Some data demonstrate the necessity of higher downforce for stand establishment in areas of high soil EC (fig. 6)
4. Further trials across more soil types would benefit the process of finding definitive trends

Thank You!

Thanks to our sponsor, the Georgia Corn Growers Association, for making this study possible



And thank you for reading!