Research Talk Abstract:

## Title (?): Redesigning Yield Map Plots for Comprehension and Usability

A common issue with farming practices across the world is the inefficient application of crop inputs, like nitrogen, on farm fields. This inefficient application of crop input impacts profit and the environment. The Data Intensive Farm Management (DIFM) Project aims to address this inefficient application of crop inputs to farm fields through the use of on-farm precision experimentation. As part of this, the relationship between input application and yield is explored using a graph. However, the plots currently given to farmers and consultants are not perceptually optimal, due to features like overlapping data as an example. Hence, improvements need to be made to make this relationship easier to see for farmers and crop consultants. Data visualization has become an important inference tool as technology has developed, so in this presentation, I will begin by motivating the purpose of wanting to visualize data. Next, I will describe best practices on how to develop a perceptually optimal graph using knowledge on how our brains work. Using this knowledge on the designing of perceptually optimal graphs critiques will be made on currently used yield plots by DIFM and in the Literature. Finally, I will introduce our currently proposed yield plot and why this is improvement over those previously used.

Teaching Talk Abstract (1):

Title: Can We Say What Caused the Effect?

A common goal in a study is to determine if there is a cause-and-effect relationship between variables. However, there are times when this relationship can not be established due to variables outside of the study affecting the results. In this lesson, we will discuss the impact of these outside variable, known as confounding variables, in trying to establish cause-and-effect. Then, we will discuss how to potentially take into account these confounding variables by developing an experimental study and instances when an experimental study is not a valid option.

Teaching Talk Abstract (2)

Title: Introduction to Confidence Intervals

In statistical inference the goal is to determine if a particular value of a parameter, which is a numerical property of the population, is plausible. Sometimes, however, the goal is estimation of the parameter, which is accomplished through a confidence interval. A confidence interval is defined as the range of plausible values of a parameter. In this lesson we will discuss what a confidence interval means and how to calculate it using the definition.