Statistical Inference

Statistical inference is the process of drawing conclusions from experimental data that can be applied to a larger population or landscape. In our research, we replicate treatments in each trial to provide the variability needed to determine if differences are real or occur just by chance. While lack of statistical difference may indeed result from similar treatment effects or outcomes, e.g., a 100 lb/A fertilizer rate produced a similar yield to 101 lb/A, differences can also result from experimental or random error associated with the trial. We normally recognize statistical significance at the 95% probability level, which means there is a 95% probability that observed differences represent actual treatment effects and are not due to chance. This is indicated in our reports with the symbols $P \leq 0.05$ or $\alpha = 0.05$. We typically show statistical differences between treatments with the use of alphabetical letters. Treatment means that are statistically similar will be followed the same letter.