

Fall 2021 Graduate Seminar Series

Importance of Experimental Locations and GxE Effects in Predicting Phenotypic Response



Ms. Hanisha Vemireddy

Graduate Student, Department of Industrial and
Manufacturing Systems Engineering
Iowa State University

Wednesday, October 27, 2021 This will be a virtual seminar.

Zoom Address: <https://us02web.zoom.us/j/5124759039>

Abstract

Commercial plant breeding is a complex problem where we start with thousands of experimental genotypes that are each planted in a limited number of locations. Ideally, to make a reliable decision on which genotypes must be commercialized/ advanced for further experimentation, we would want each of the genotypes to be planted in a vast number of locations over several years and that's clearly not possible for practical reasons. In this presentation, we explain how we can identify subsets of genotypes that have a similar GxE effect to a specific genotype and use observations of these similar genotypes by tweaking their performance to better understand the performance of the genotype in a broader range of locations. Another important factor while designing these experiments is the choice of locations in which the genotypes are planted. Ideally, we would want to use those test locations that can help us easily discriminate the genotype main effects. We can identify those locations that can be used to exaggerate the GxE effect and help better differentiate the genotype and use them for our experiments later.

About the Speaker

Hanisha Vemireddy is a graduate research student working with Dr. Sigurdur Olaffson. She did her Bachelors in Mathematics and Masters in Quality Management Science, both in Indian Statistical Institute, Bangalore Center. Her research interests are in Data Mining, Predictive Plant Phenomics, and Data Visualization.