

Application of multi-input source machine learning for field crops to improve yield predictions

Kevin Lee¹, Keith Cherkauer¹

¹Purdue University

In recent years, the weather has become increasingly unpredictable, putting farmers at risk of not producing stable field crops to meet market demand. A decision support system that analyzes and predicts crop behavior can help farmers respond more quickly. Remote sensing can be used to assess the phenotype of field crops over a large area. With the development of unmanned aerial systems (UAS), higher camera resolutions and temporal analysis are now possible. Many crop models are only designed for use during a single season or for a specific crop type. This limits their usefulness for farmers who need to plan for multiple years and different crop types. The Multi-Input Source Stress Analysis (MISSA) is a pipeline that automates the process of generating impactful data from remote sensing products combined with environmental factors such as soil and weather data. Additionally, the MISSA can predict plant stress or yield using a machine learning model. This presentation will cover the input data and flexibility of the system to adapt to various situations.