**ON-FARM RESEARCH: Utilization of On-Farm Data on Soybean Production**

**Summary:**

Nowadays good agronomical practices demand the adoption of new technologies that deliver better resource efficiency. The objective of this study was to identify and work closely with high-yielding soybean farmers in order to implement precision Ag tools, in this case: satellite imagery. Fields were selected for the 2017 growing season. The study is based on working with the field variation and the selection of three productivity zones outlined according to normalized difference vegetation index (NDVI) values.

**Introduction**

Vast information about crop health and development can be obtained via characterization of the temporal and spatial variability in the field, for example with the utilization of satellite imagery. Satellite imagery may provide crucial information that could potentially influence the decision-making process related to all farming inputs such as fertilizer, seeding rate, genotype selection, and pesticide application, among others.

The main objectives of this study are to: 1) explore the potential use of satellite imagery to identify productivity zones and evaluate soybean development across the growing season at the on-farm scale, and 2) explore relationships between satellite imagery data and ground-truth based plant traits such as plant growth and final yield.

**Progress**

*Sites Description*

Field sites were established for 2017. Agronomical practices were those suitable per site. Productivity zone maps for each location were established. This current growing season we have partnered with Justin Knopf in Gypsum, Andy Winsor in Perry, Matt Everhart in Salina, and Chris Bodenhausen in Muscotah,

In-season measurements: Plant phenology, soil moisture and satellite information were gathered to delineate zone management zones prior to soybean harvesting time.

**Impact**

Information related to this project was presented in a field tour coordinated by our group in collaboration with Tom Maxwell, county Ag Extension Agent (K-State Research and Extension, Central KS district). The below information was presented at this event.

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**Fig. 1.** Precision Ag tools to assist famers at varying field-scales: regional (use of satellite to identify crops), local (provide yield estimate), and field (for management zones) scales.