**Title: Breaking Barriers: Developing Tools for Moving Kansas Irrigated Soybeans Beyond 70 Bushels per Acre**

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**Objectives:**

1. Determine agronomic and physiological factors preventing soybean yields beyond 70 bushels per acre with emphasis on comparing standard and high oleic varieties, seed inoculant, late-season Nitrogen (N), and irrigation
2. Evaluate diverse set of rhizobium strains for (i) N fixation efficiency and their ability to provide adequate N levels throughout the lifecycle of the soybean plant and (ii) the interaction of the rhizobium efficiency with proposed crop management practices in Objective 1
3. **Develop time efficient small unmanned aerial system (sUAS) crop scouting tool that can be utilized in-season by Kansas soybean farmers with smart phones to determine (i) if their soybean crop has yield potential beyond 70 bushel per acre, (ii) if the rhizobium will supply enough N to support these yield increase, and (iii) appropriate N recommendations i.e., if additional N is needed to support 70 plus bushel per acre yield.**

**2nd Quarter Accomplishments:**

During the second quarter Dr. Asebedo has collected preliminary imagery data for the development of a sUAS scouting tool for soybeans in Kansas. In addition, Dr. Asebedo has been coordinating on the development of drone platforms and mobile application development with DJI for the purpose of making a low cost Kansas soybean scouting tool. DJI owns 70% of the drone market share and is currently one of the most used drone brands by Kansas farmers. Significant progress has been made to develop the KSC sUAS scouting app to work with drones that cost between $700 to $1500 to help facilitate low-risk adoption with high potential impact on soybean yields. Current development progress supports Dr. Asebedo’s goal of having the first KSC sUAS Soybean scouting app complete by the end of the project funding period (Feb. 2017). This will allow for initial Kansas farmer use of this scouting tool during the 2017 growing season. Scouting features in this tool will be developed during the third quarter of this project.