

# Innovative Space Technology Approaches Presentation to Scientific and Technical Subcommittee: 2019



VIENNA | February 19, 2019

# Innovative Space Technology Approaches Sustainable Development

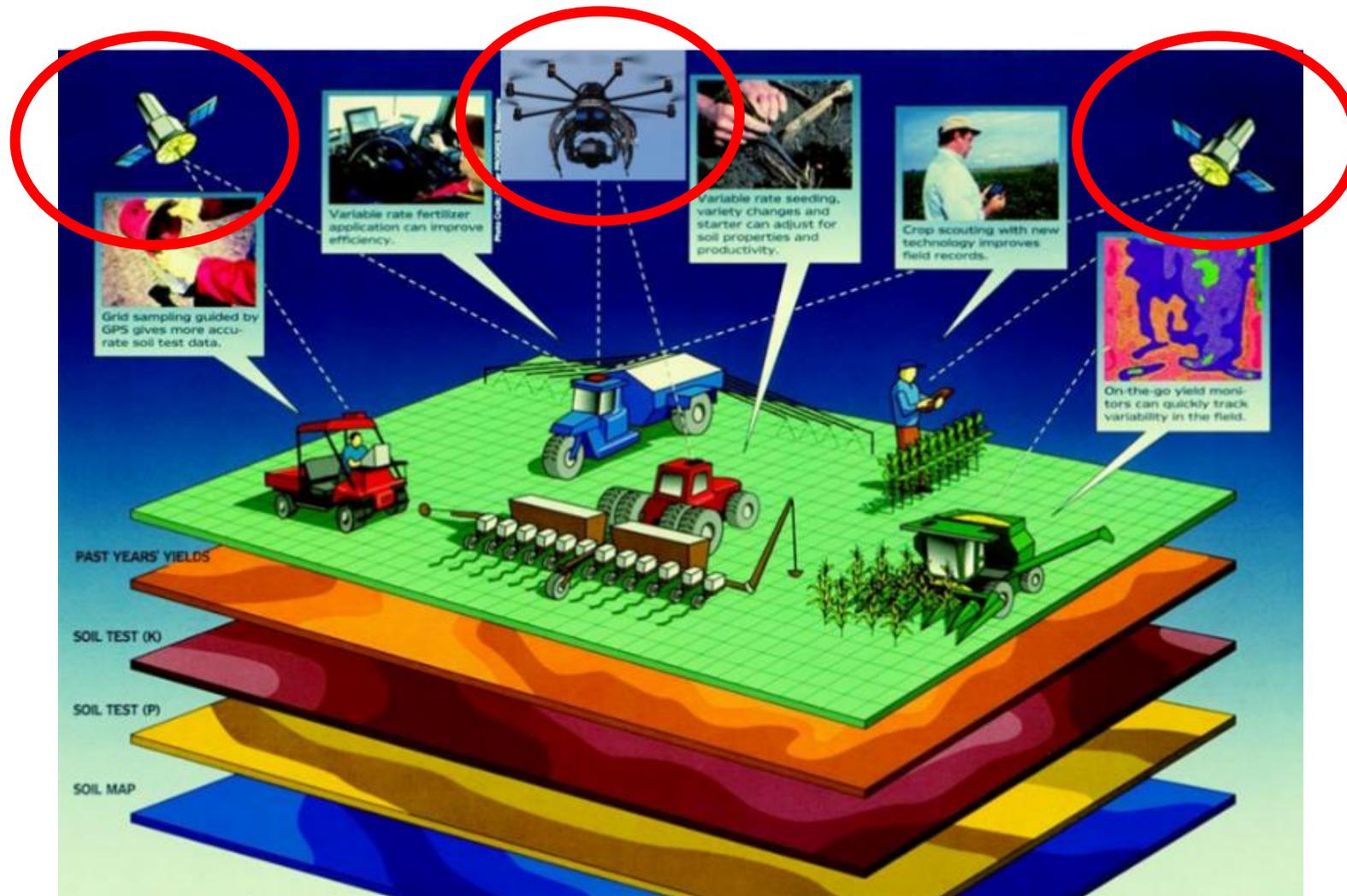


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**Innovative Space Technology  
Approaches to Serve the Needs of  
Developing Countries for Precision  
Agriculture**

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# Data-Driven Precision Agriculture is a Reality in the West



## 01 Daily Farm Management

- Daily Prescriptions & Guidance
- **Early Warning**
- Crop Stress Identification
- **Directed Scouting**
- Water, Nitrogen and Protection Management
- **Variable Rate Application**
- Yield Prediction
- Archival Record

## 02 New Product Crop Trials

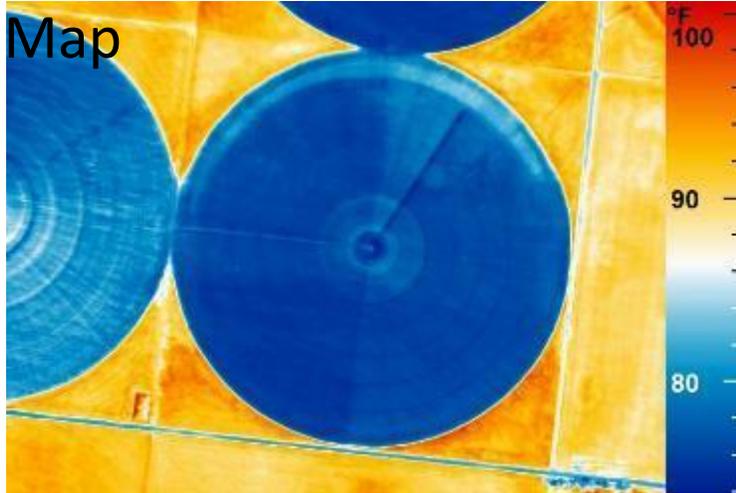
- Product Application Efficacy
- **Compliance**
- Return on Investment
- **Manual Labor cost Reduction**
- Connectivity
- **Automated Data Archival & Retrieval**



# Remote-Sensing: Early Warning has Economic Impact



## Remote Sensing Water Stress

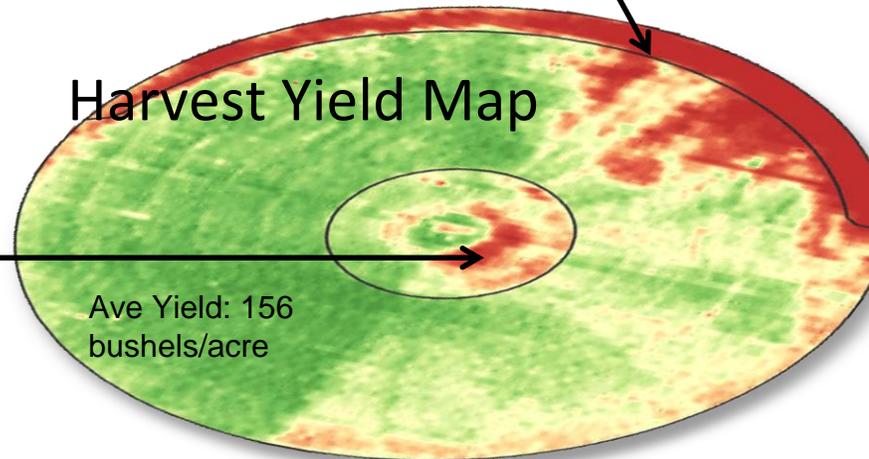


Acres: 8.7  
Ave Yield: **18.2 bu/ac**  
Yield Loss: 137.6 bu/acre  
1197 total bushels

Economic Loss:  
@ \$6 corn (2012) **\$7182**

Acres: 9.3  
Ave Yield: **128.8 bu/ac**  
Yield Loss: 27.2 bu/ac  
253 total bushels

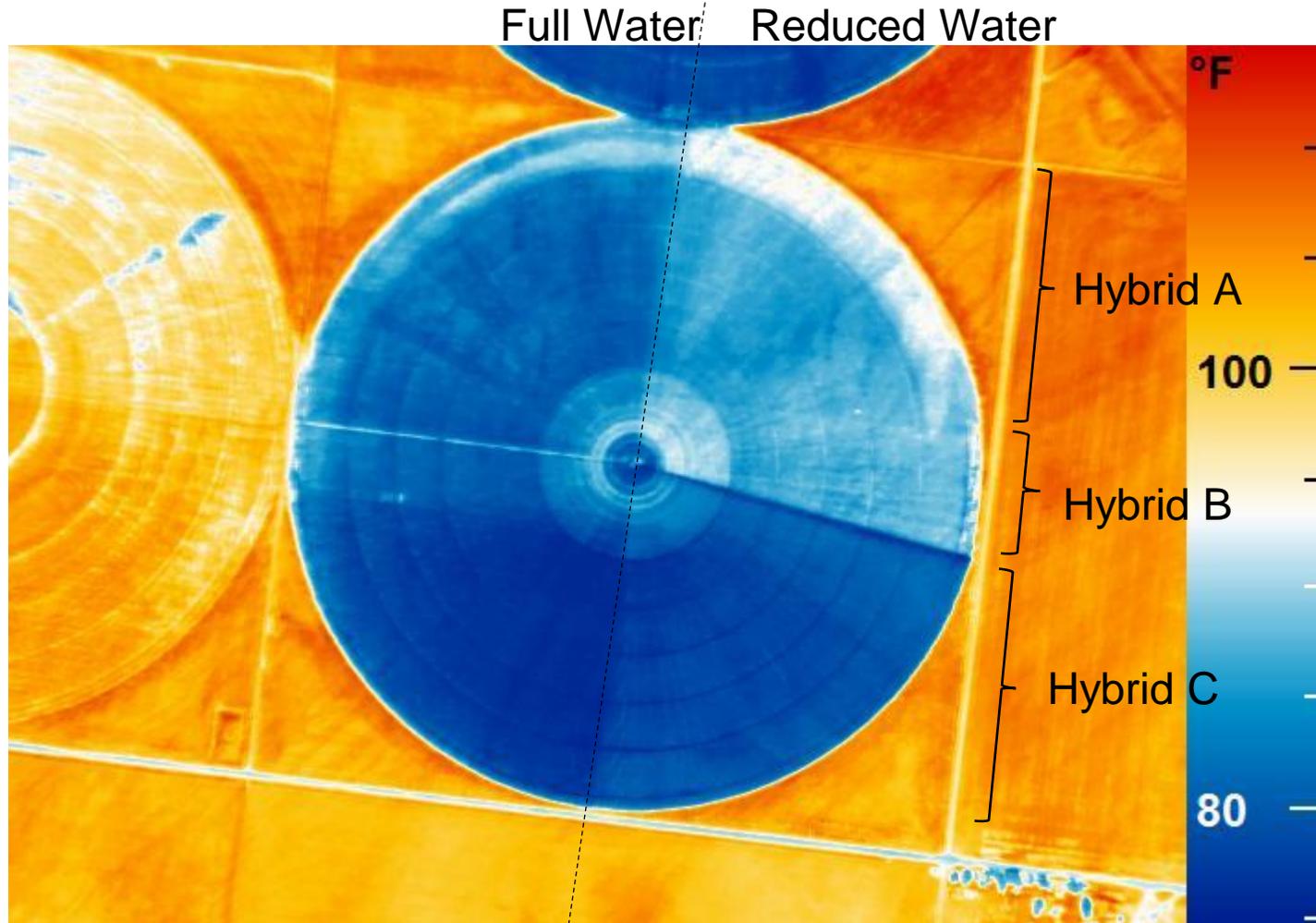
Economic Loss:  
@ \$6 corn **\$1518**



Data Source: SaraniaSat partner Cornerstone Mapping

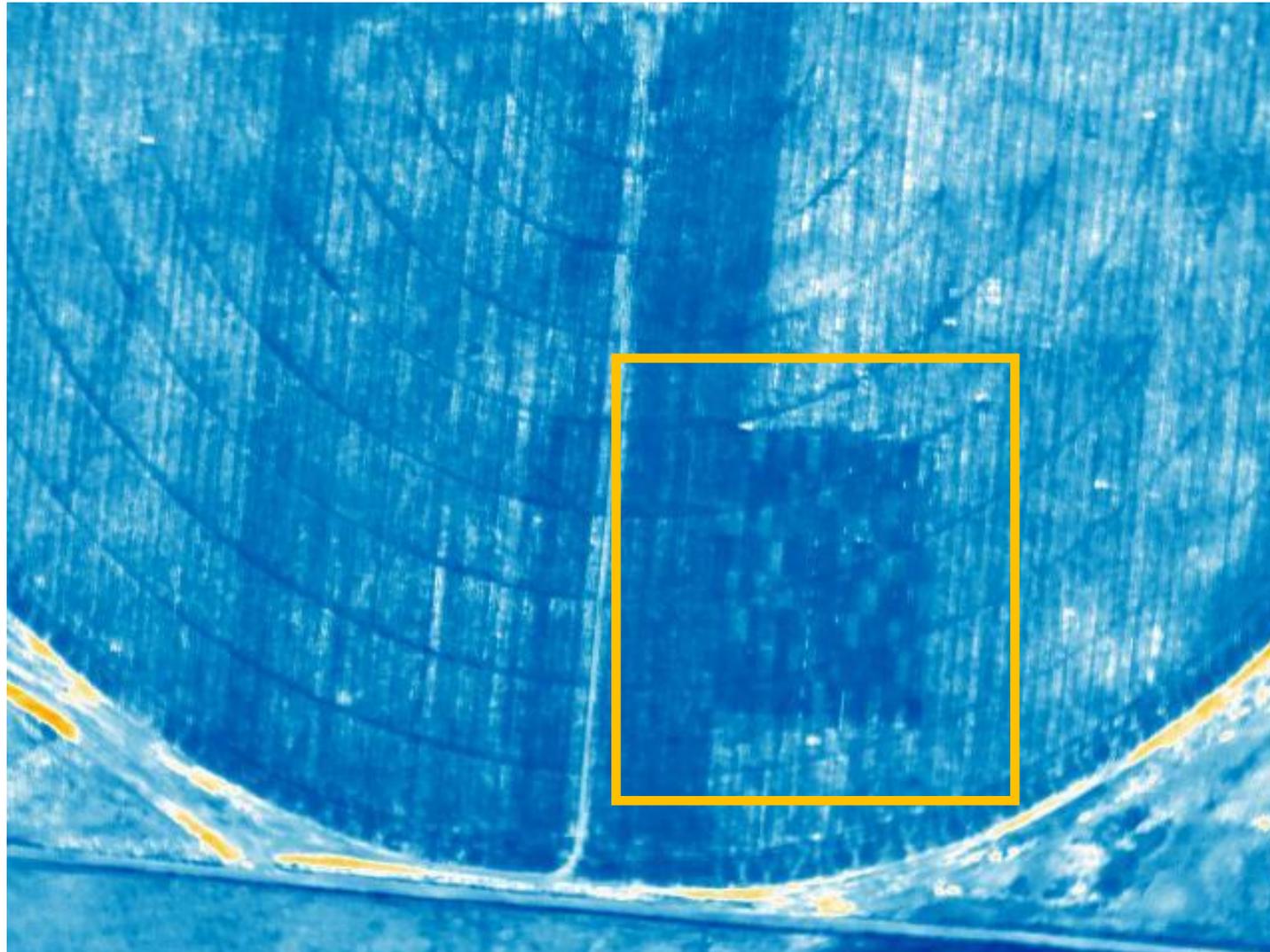


# Remote-Sensing: Drought Resistance Comparison



Data Source: SaraniaSat partner Cornerstone Mapping

# Remote-Sensing: Crop Response to Variable Fertilizer Rates



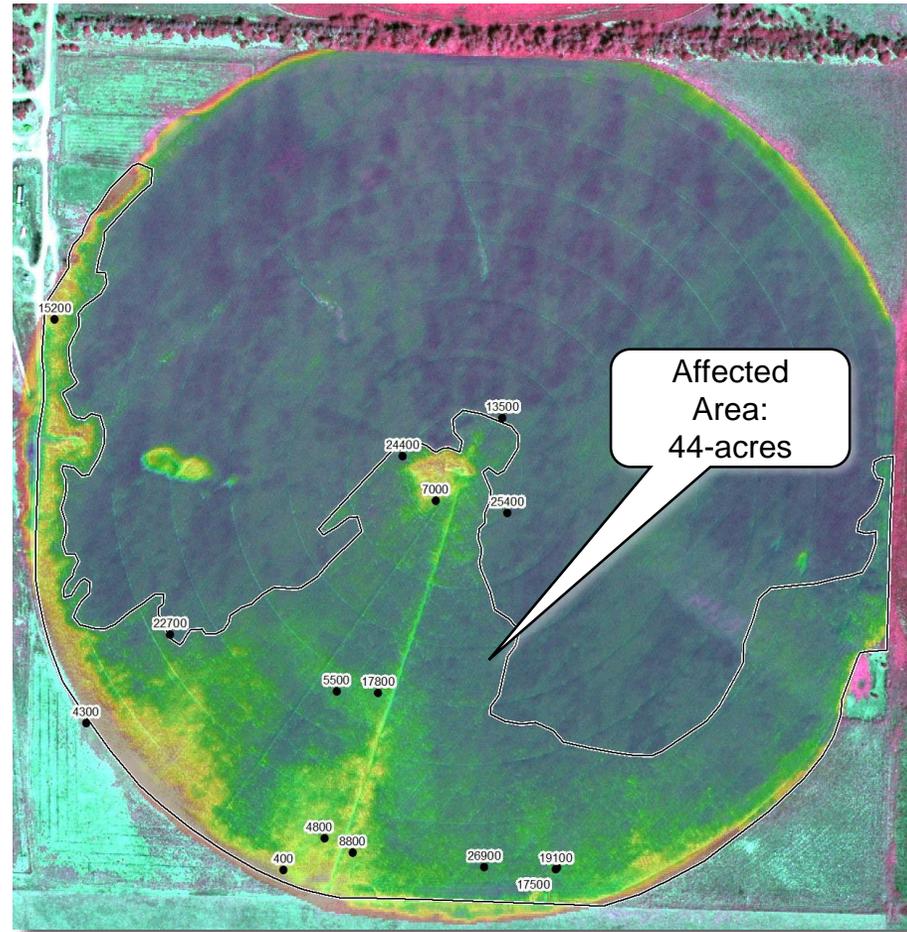
Data Source: SaraniaSat partner Cornerstone Mapping



# Remote-Sensing: Crop Insurance Assessment



Ground truthed population counts verify damage seen in the Remote Sensing



Data Source: SaraniaSat partner Cornerstone Mapping





# Proposed CANEUS Collaborative Pilot Project Structure



1. Define Key Agricultural Questions to be answered by Space-based Remote Sensing.
2. Design Pilot Project and Determine Expected Outcomes.
3. Execute the Pilot Project and Acquire Necessary Data
4. Evaluate Project Results and Conclusions based on Predetermined Success Criteria
5. Assuming Success, Determine Future Projects and Expansion of the Program



# Global Adoption of Data-Driven Agriculture has Multiple SDG Payoffs

