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Improving NASS Estimates of Planted Acres

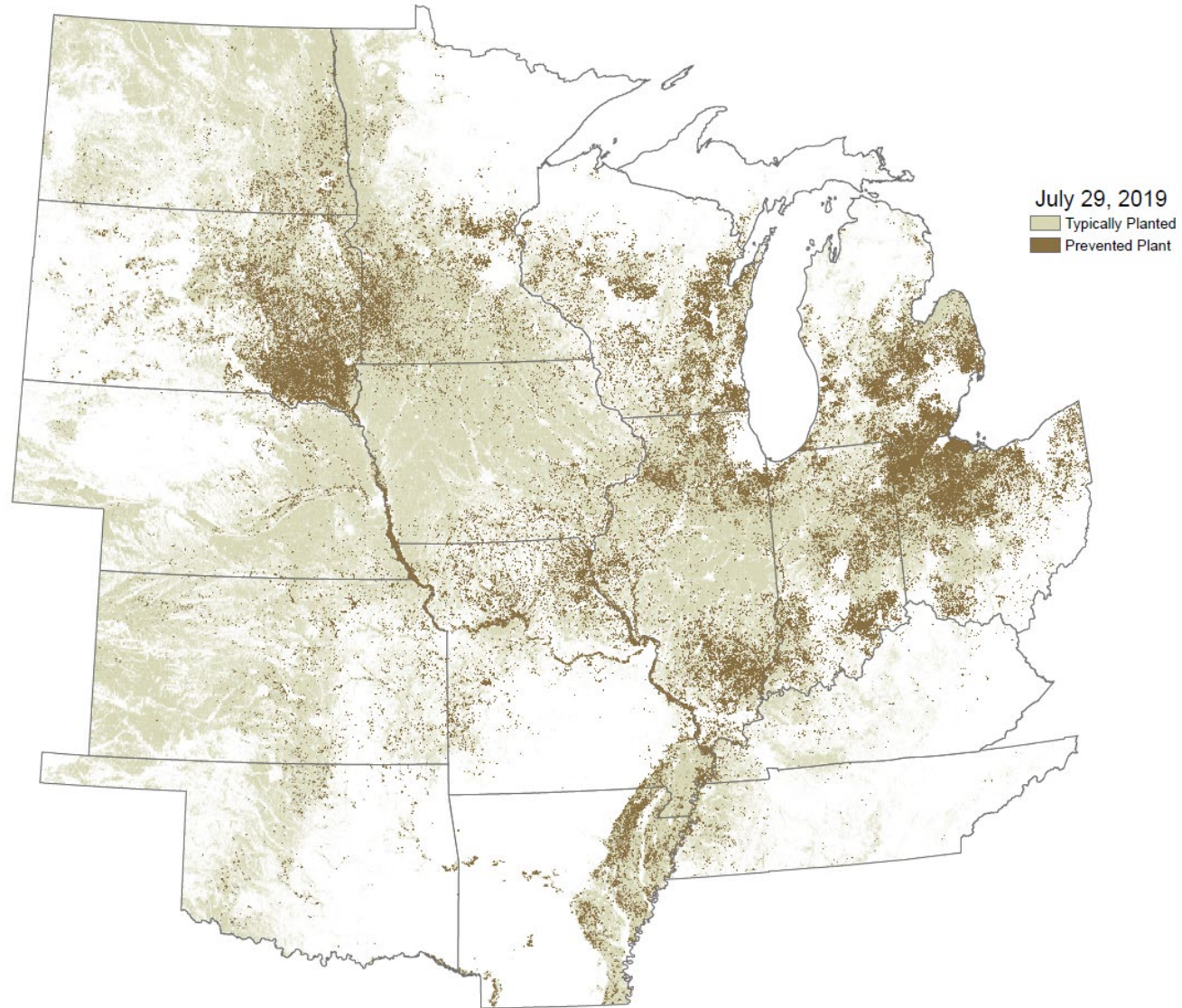
Linda J Young

USDA National Agricultural Statistics Service

February 20, 2020



2019 Planted Acres and Those That Could Not be Planted as Planned

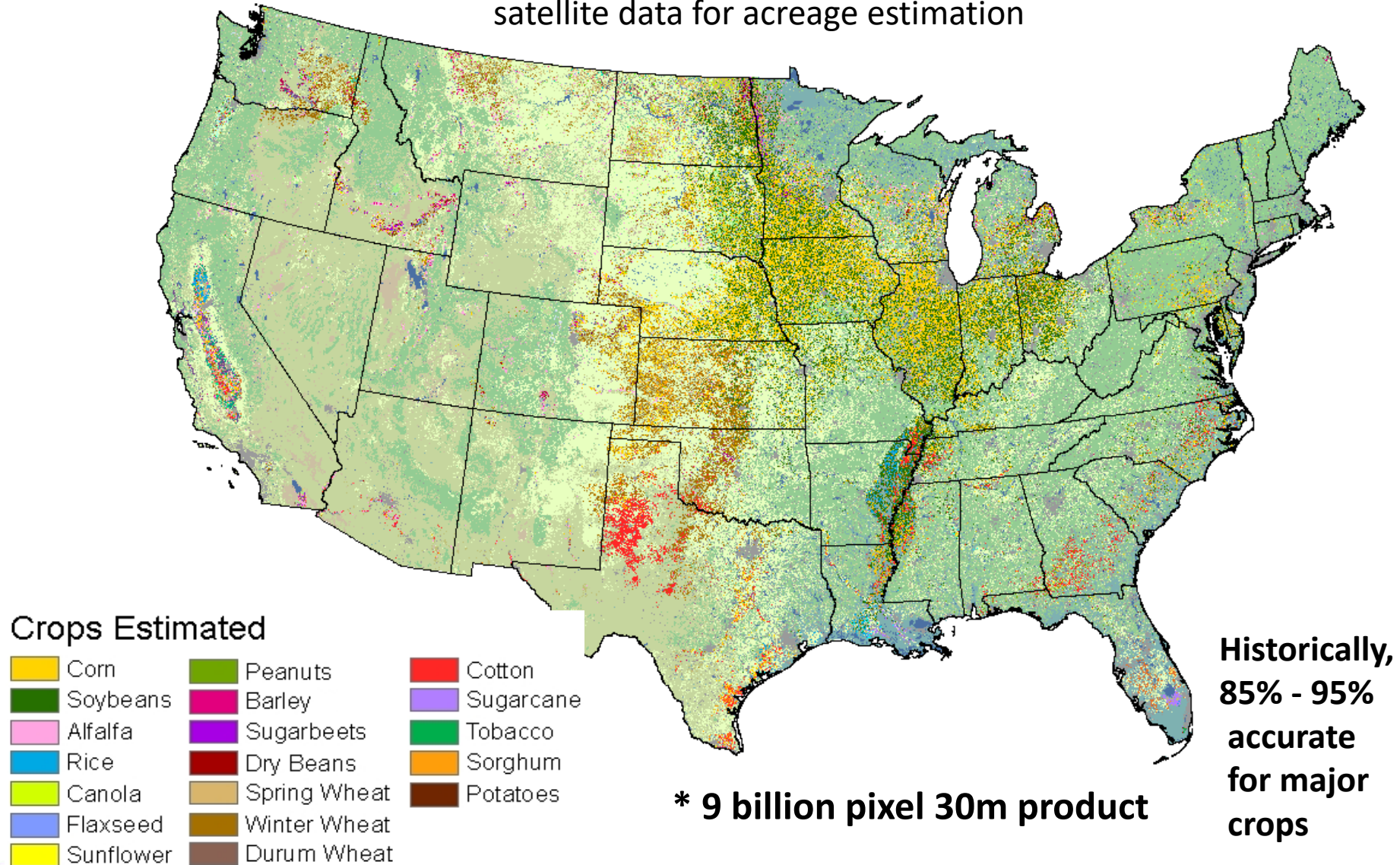


Illinois Pilot Study: Paradigm Shift

- Historical Approach to Estimating Planted Acreage
 - Primary Source: Surveys
 - Secondary Sources: Non-survey data, e.g., remote sensing, administrative, and weather data
- Possible New Approach to Estimating Planted Acreage
 - Primary Sources: Non-survey data
 - Secondary Source: Survey data

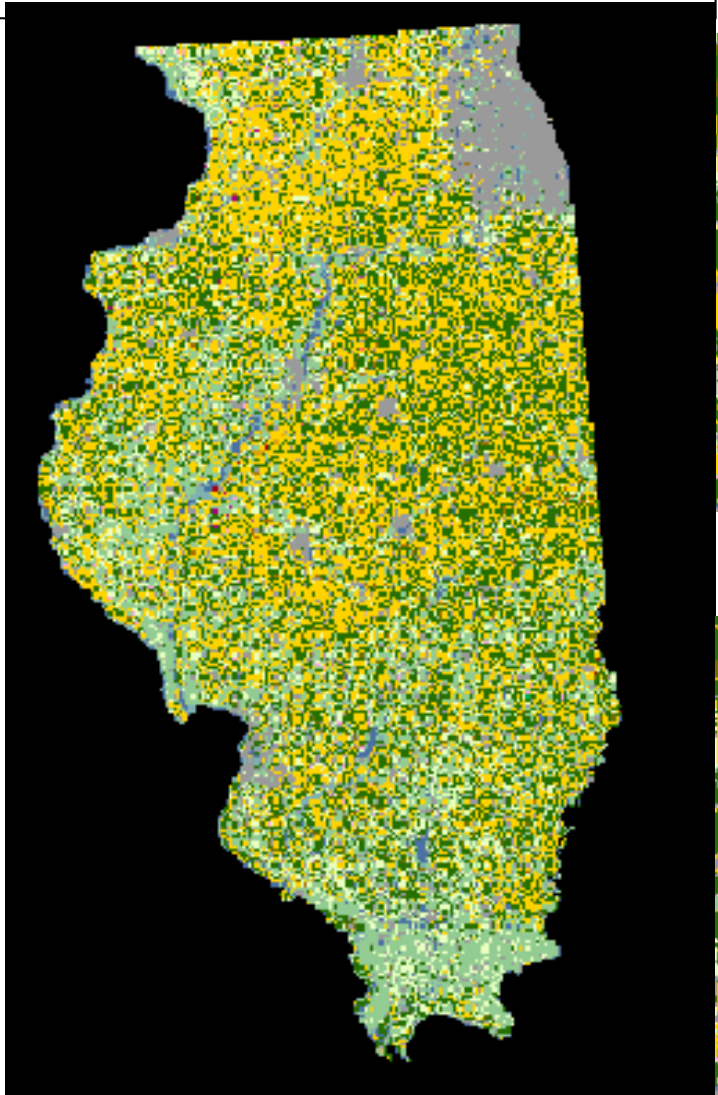
Cropland Data Layer

Annual national coverage since 2008
A raster, crop-specific, land cover data set produced using
satellite data for acreage estimation

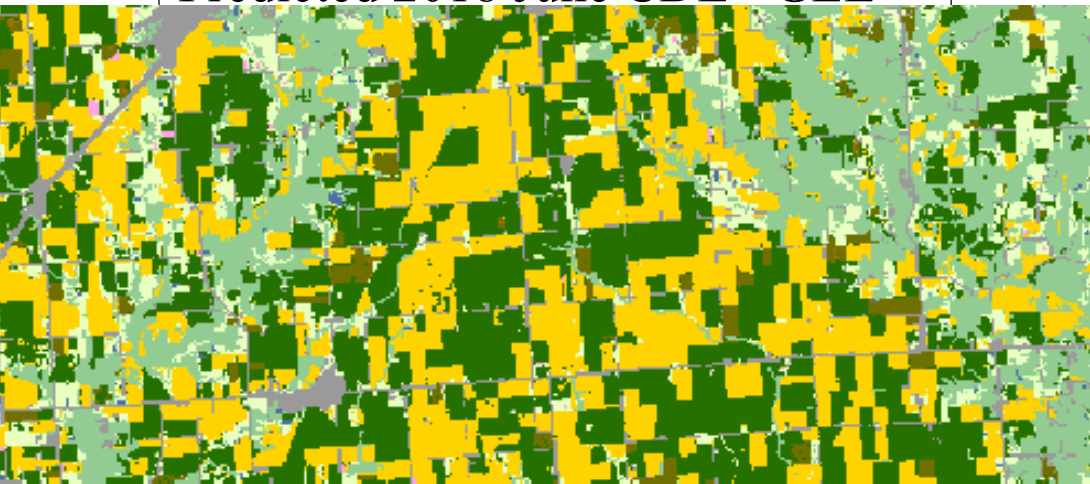


Preseason Prediction of Land Planted to Corn and Soybeans

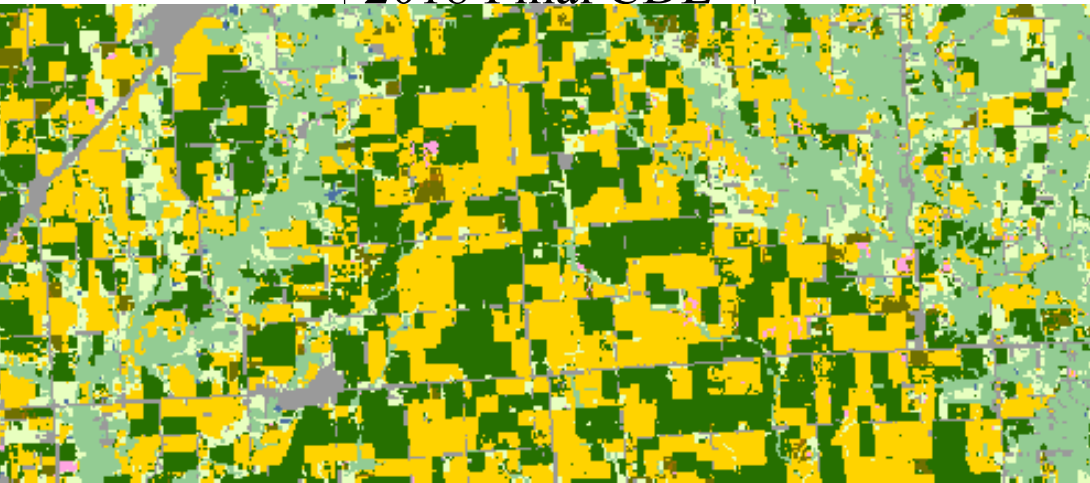
Predicted 2018 June CDL - GEE



Predicted 2018 June CDL - GEE



2018 Final CDL



Remote Sensing: Finer Resolution

Puerto Rico, Hurricane Maria 2017

Before

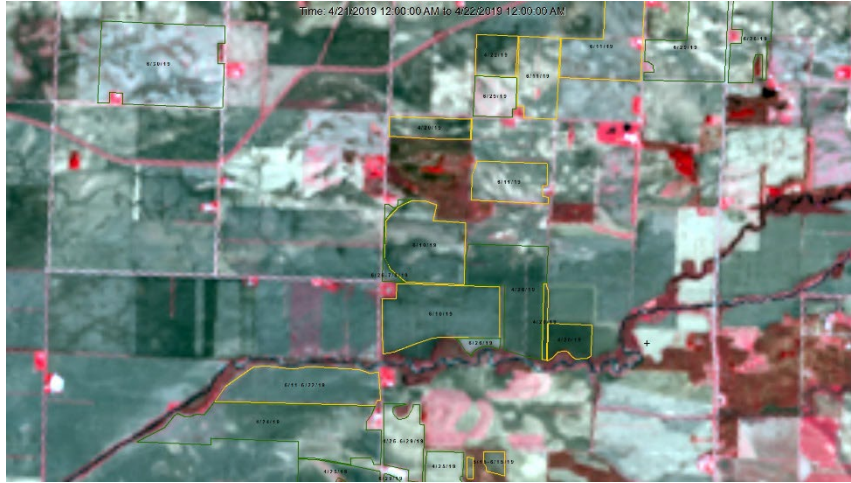
After



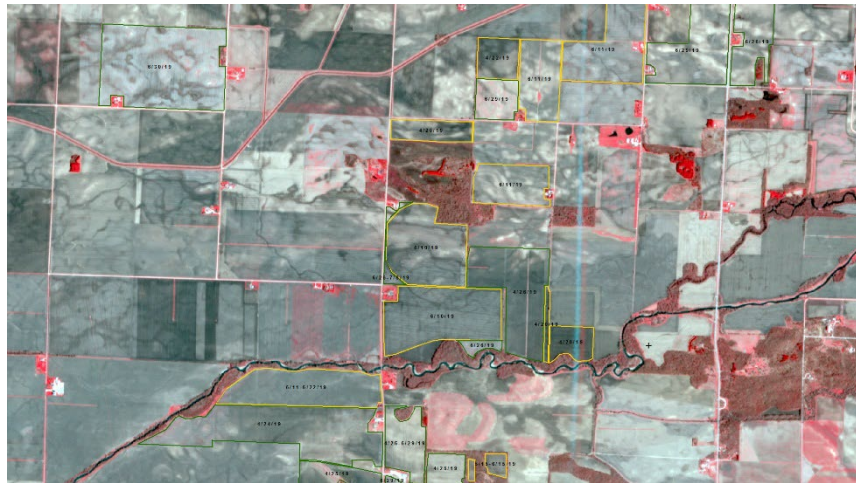
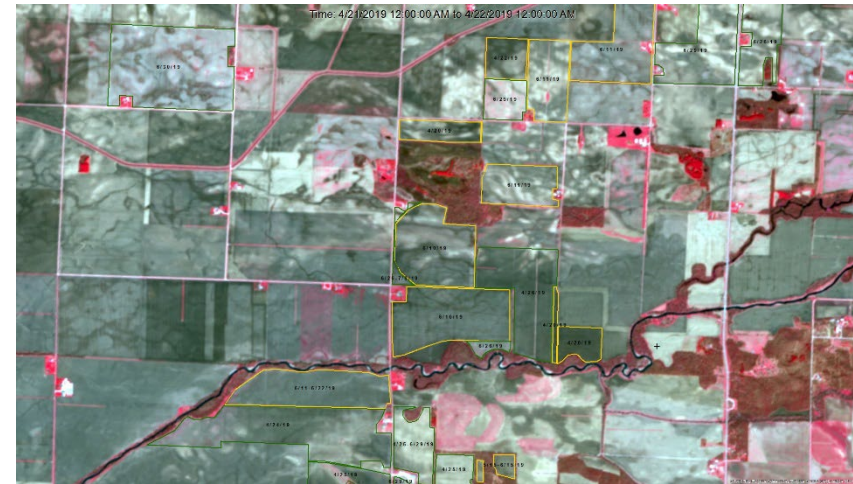
- Daily 3m imagery
- Provides data on inundated areas
- Information?
 - Time of planting
 - Crop planted

What is the Value of High Resolution Imagery?

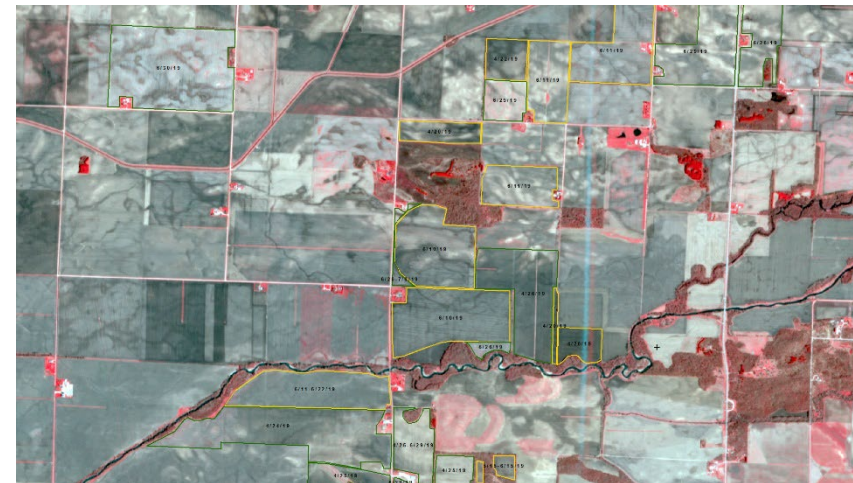
30-meter



10-meter

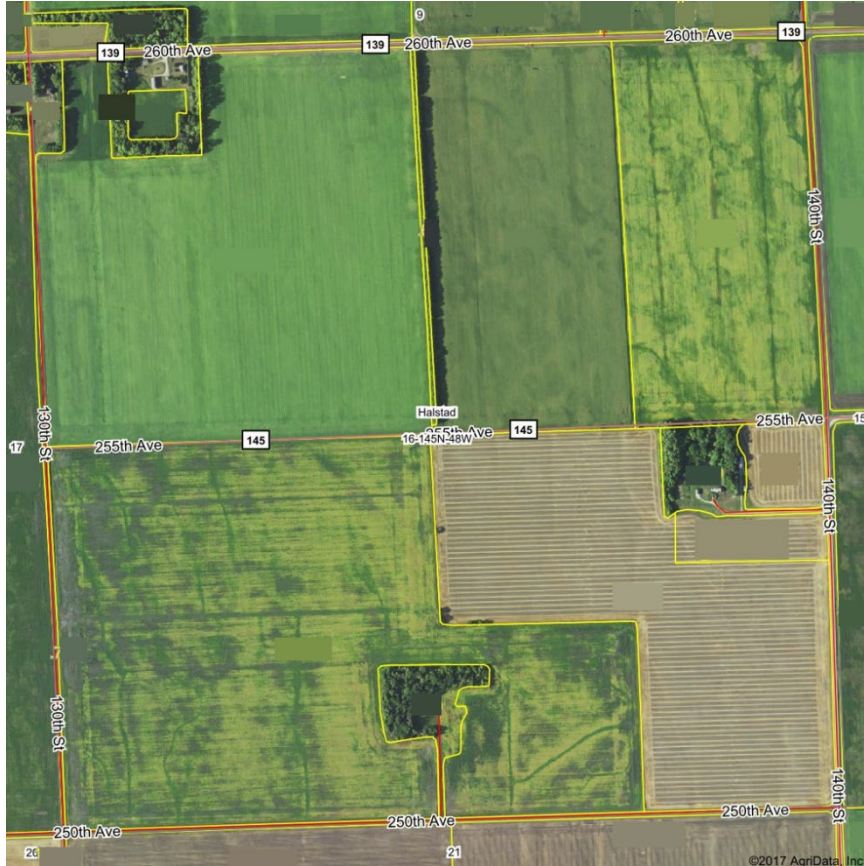


3-meter



3-meter

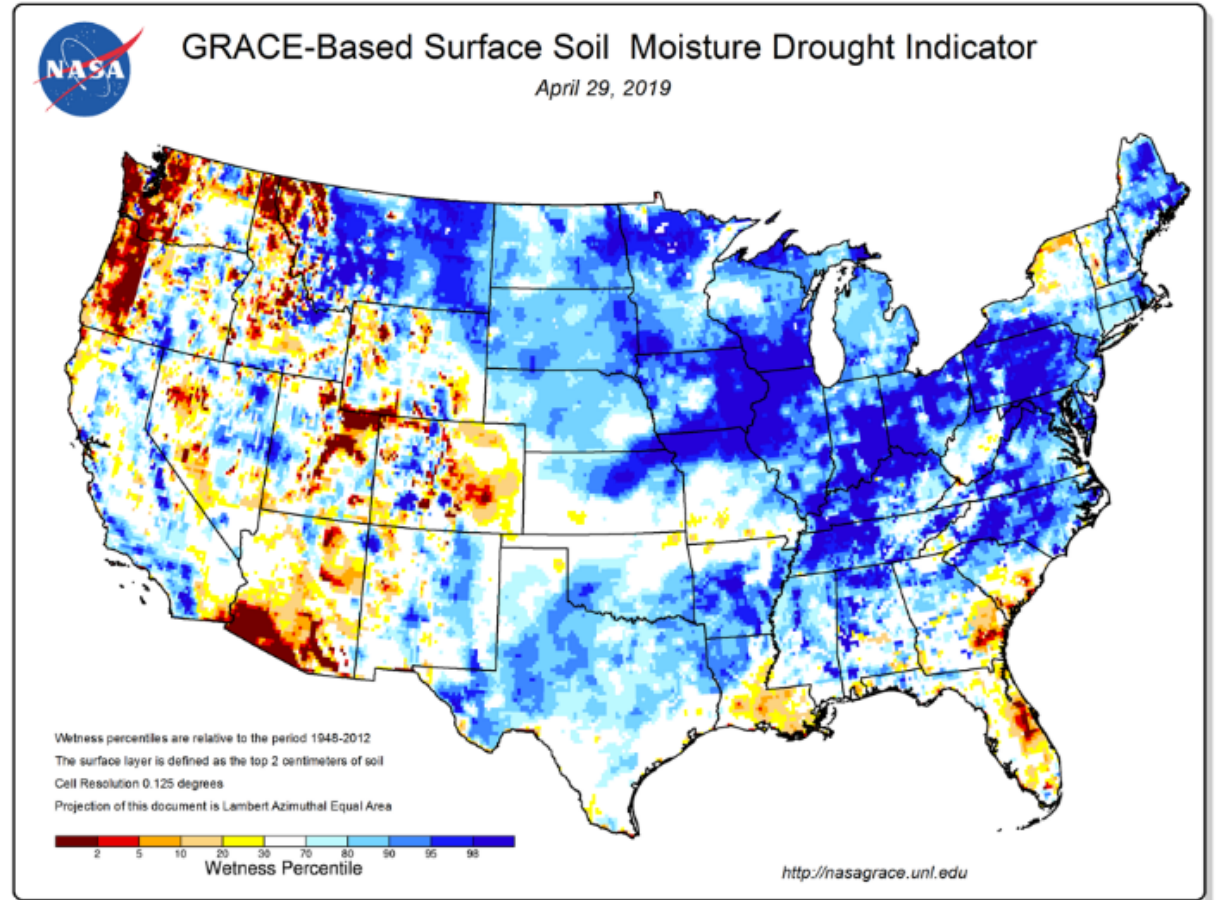
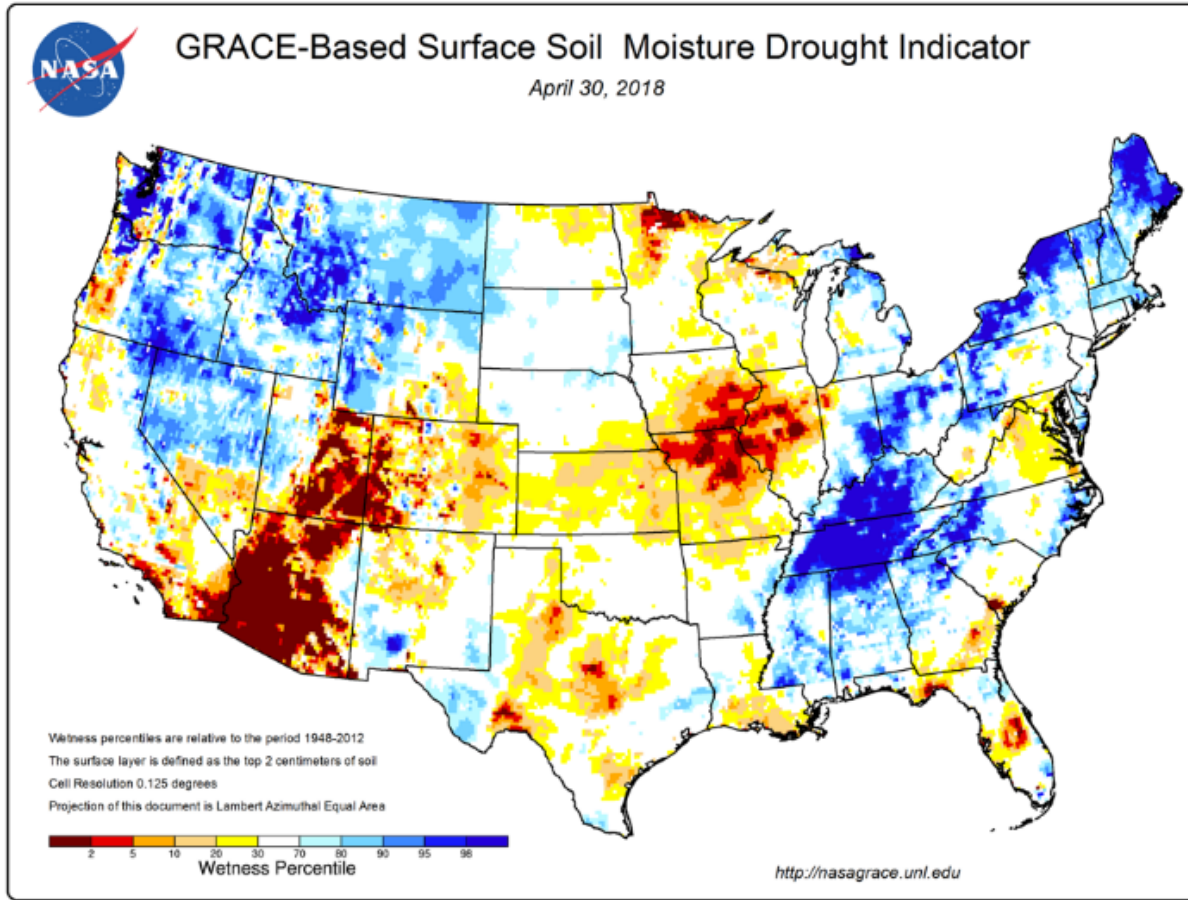
Farm Services Agency (FSA) Data



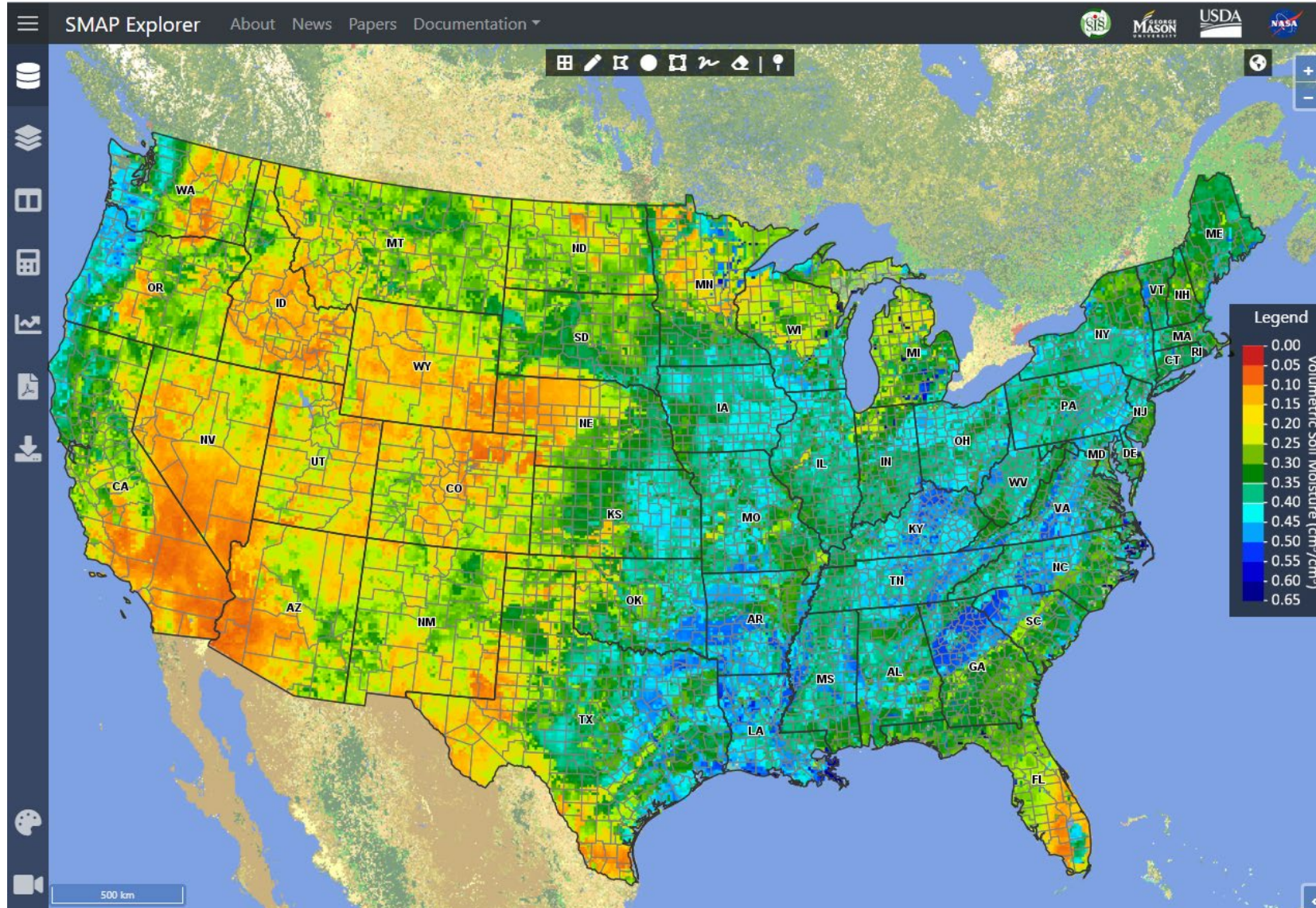
- FSA Common Land Units
- FSA-578 Form
 - Available for all land associated with a USDA program in a calendar year
 - Provides crop information
- Need: Link survey data to the land
 - FSA and NASS farm definitions differ
 - Have linked farms with simple farm structures—working on the rest

[https://www.agridatainc.com/Home/Products/Mapping%20Features/Land%20Resource%20Intelligence/FSA%20Field%20Boundaries%20\(CLU\)](https://www.agridatainc.com/Home/Products/Mapping%20Features/Land%20Resource%20Intelligence/FSA%20Field%20Boundaries%20(CLU))

Quantifying Soil Moisture: GRACE



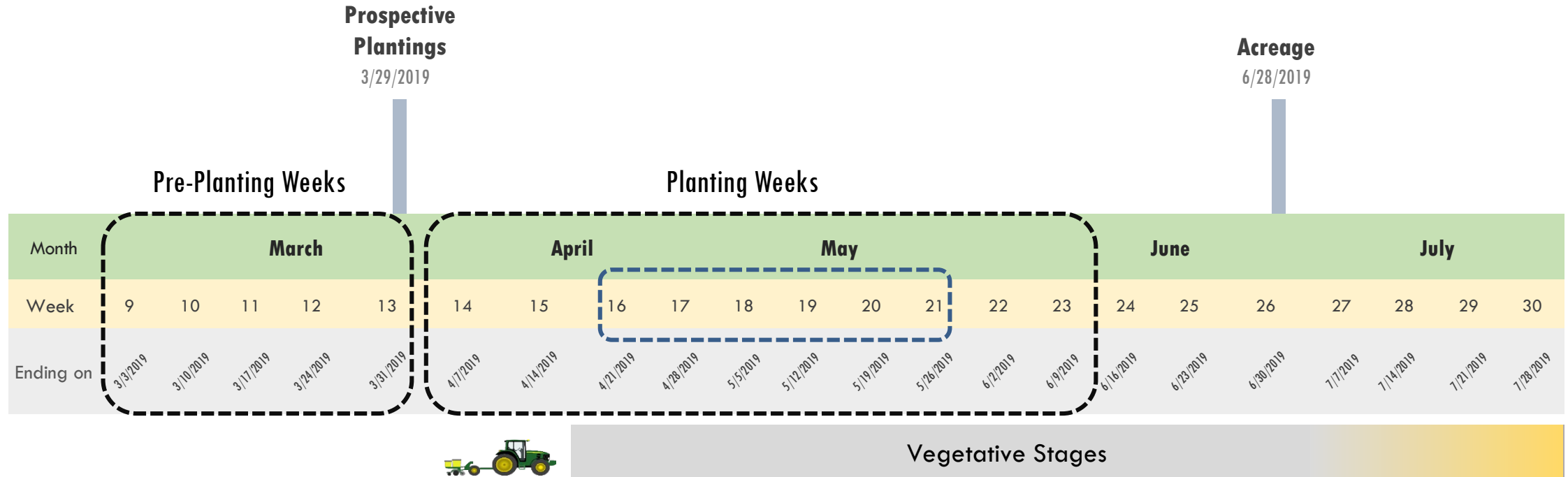
Soil Moisture Monitoring Prototype



Provide qualitative and quantitative top and sub soil moisture measurements



Pre-Planting and Planting Weeks



Usual planting dates: April 14 to June 5

Most active planting dates: April 14 to June 5



Source: <https://downloads.usda.library.cornell.edu/usda-esmis/files/vm40xr56k/dv13zw65p/w9505297d/planting-10-29-2010.pdf>

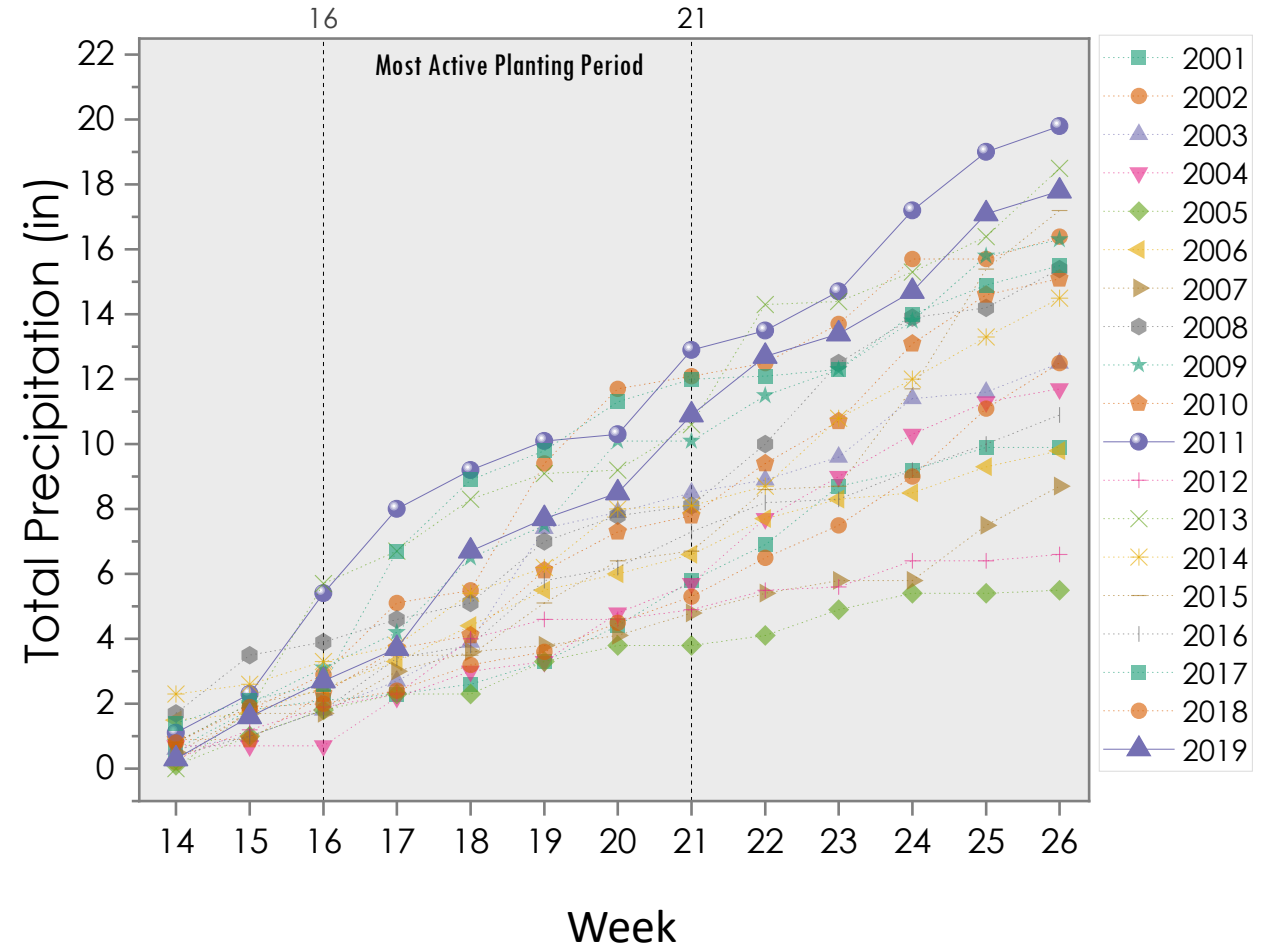
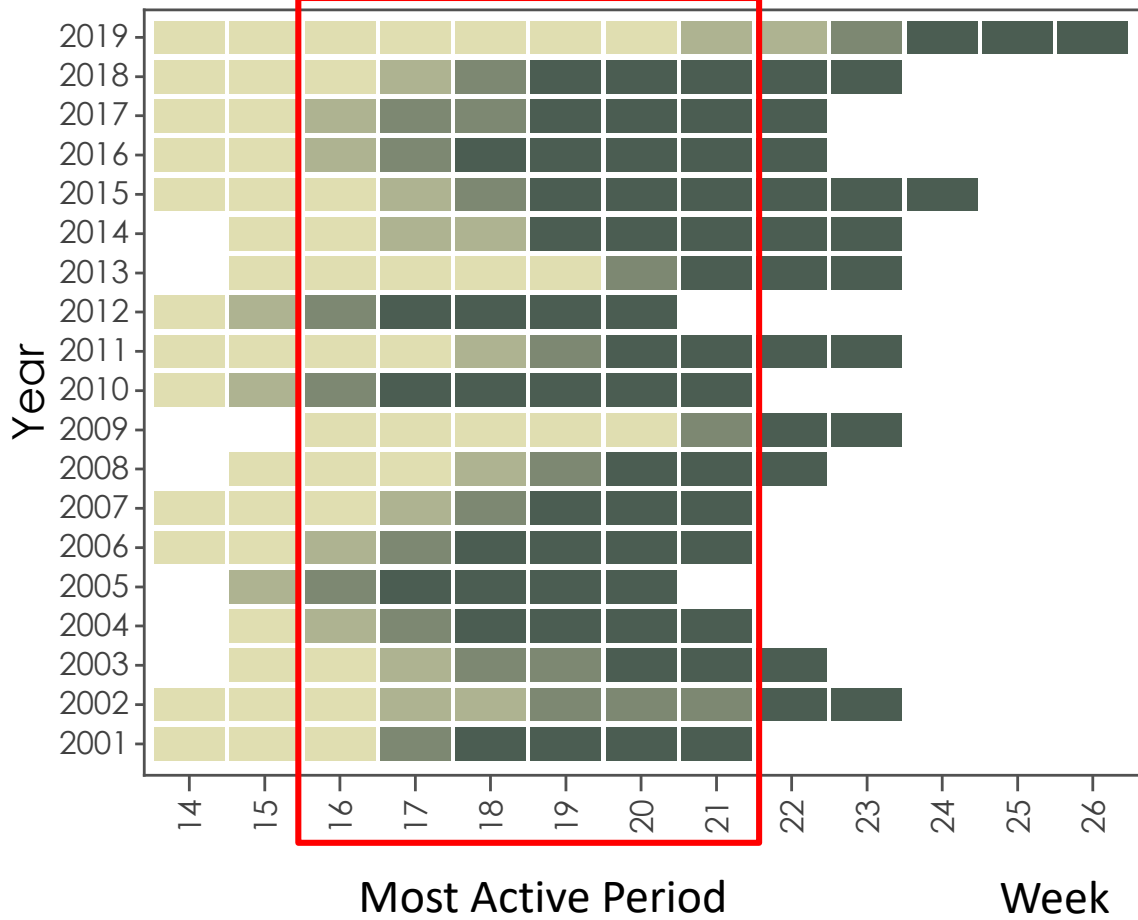
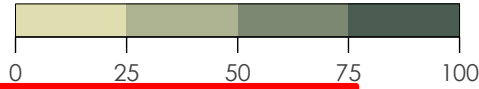




Time of Planting and Precipitation



Percent of Corn Planted

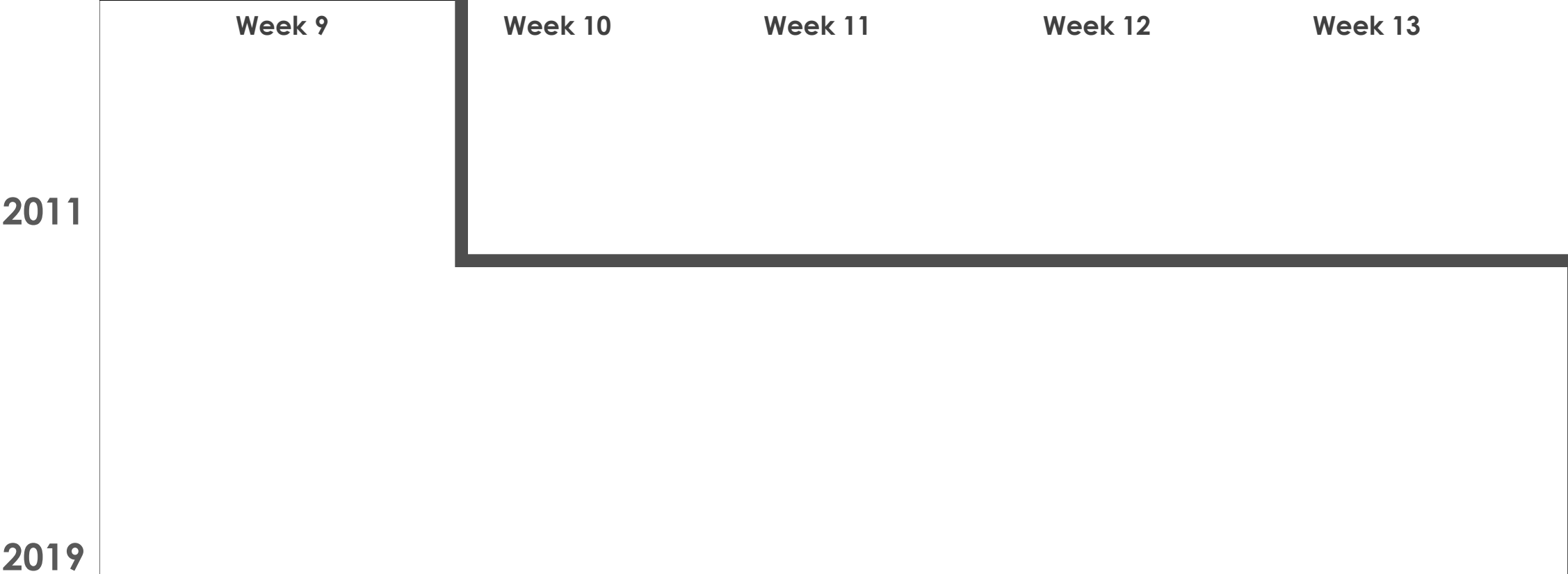


Source: <https://quickstats.nass.usda.gov/>

Statewide Average Precipitation



Pre-Planting: GRACE-Based Root Zone Soil Moisture Drought Indicator



Planting: GRACE-Based Root Zone Soil Moisture Drought Indicator



Final Thoughts

- Focus: Providing estimates that make sense agronomically
- Opportunity to add data as it becomes available
 - Want to compare 30-m vs 10-m vs 3-m remote sensing data
- Potential outcomes:
 - Reduction in respondent burden
 - Releasing estimates on a finer temporal and spatial scale
- Illinois Pilot Study is a proof-of-concept test
 - All methods are scalable
 - A phased approach

Thank you!

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