04/08/2022 Direct4Ag Meeting Notes

Participants:

Tony Studer

Jonathan Coppess

Chris Navarro

Rabin Bhattarai

Lowell Gentry

Dennis Bowman

Cory Mitchell

Yi Yang (Kaiyu Guan PhD student)

Gowtham Naraharisetty

Diego Calderon

Discussion:

Tony Studer: Cover Crop Model testing at Lowell Gentry's site. Collaborating with FarmBeats with Deepak Vashisht at CS

NCSA: Setup local development environment with Geostreams API and Geodashboard frontend. We can use the API to create sensors and upload sensor data. The frontend can preview the datasets on a map

Discussion:

Dennis Bowman noted that the Farm of the Future proposal was just granted through the Center for Digital Agriculture. Two 40 acre blocks will be used for testing. There is much overlap among AIFARMS, Thunderstorm, SmartFarm, Center for Digital Agriculture, Cover Crops and it would be best to collaborate and data share.

Livestock may be added to this discussion at a later date to this collaboration.

Cory Mitchell shows what a sensor looks like. The data is sent to a hot controller and data and logs are downloaded to an SD card approximately every two weeks. The file xtml records all data into a excel sheet. The sensor collects data every 15 minutes (for the Sangamon River location) collecting nitrate loss. We will translate a tile depth. USGS is measuring gate height.

There is a proposal to get new sensors and telemetry from NREC.

Alex Kuhl is testing several sensors including telemetry on Lowell's field and two other fields. Real time nitrate sensors.

Shalamar Armstrong of Purdue and Andrew Margenot are working on soil sensors, but was skeptical about getting nitrates from soil rather than water. We are more hopeful about the tile drainage sensors.

We would like sensors that also measure temperature.

Cory came across some values that may be standard deviation, so the data is not used.

There is a formula of comparing nitrogen concentration and pressure sensing.

We want to look at an individual field with several crops. Chris wants to know from NCSA's POV what we need to do to create the graphs of the data.

Lowell has a system of overflow in the tiles and how to compensate for floods

Units on Nitrate Concentration is mg/L.

Discussion of Cover Crop tool. Jonathan shared the graphs associated with nitrogen loss and nitrogen leached with and without cover crops. ISWS & SubX provides a fairly accurate forecast as it uploads weather data once a week.

Discussion of DSSAT model including C:N ratio, imagery, which includes cover crops, thunderstorm. Can you predict cereal rye biomass - include winter wheat and barley. Lowell will provide planting and termination data. Lowell has nine years of cover crop data on the three different crops.

If Lowell would upload his data in the box/google drive, we can start analyzing it.

Updates

NCSA Update	• Setup local development environment with Geostreams API and Geodashboard frontend. We can use the API to create sensors and upload sensor data. The frontend can preview the datasets on a map	
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