



## **Summary of Progress (August 2014-February 2015):**

### **Objectives:**

- 1) To quantify the effects of continuous corn, corn-corn-soybean and corn-soybean cropping systems on soil physical, chemical, and biological attributes.
- 2) To evaluate if and how changes in soil “quality” parameters might be associated with crop yields for each of the studied crop rotations
- 3) To include a final report at the conclusion of this project to address each of the objectives stated above.

### **Personnel:**

María Villamil and Emerson Nafziger are the project PIs. Mollie Adams started working on this project as an M.S. candidate on August 25, 2014. This semester, Fall 2014, Mollie is enrolled Agroecology (CPSC 437), Diseases of Field Crops (CPSC 407), and Soil Organic Matter (CPSC 586). In the spring, she is enrolled for Applied Statistical Methods I (CPSC 440) and Sustainable Planning Seminar (NRES 446).

### **Locations:**

Research plots at Monmouth, the Orr Center, Urbana, Brownstown, and Dixon Springs had been sampled completely; only 3 reps of the experiment at DeKalb were available for sampling. Up to this point in the project we have sampled and collected penetrometer data at all locations. Monmouth and the Orr Center were sampled on October 22 by five people. Brownstown was sampled on October 24 by four people. Dekalb was sampled on November 12 by three people. Urbana was sampled on November 14 by four people. Dixon Springs was sampled on December 11 by five people.

### **Lab procedures progress:**

- Grinding and sieving was started on December 15, 2014 on the 1512 samples (by depth) collected and it will take about 4 months to complete. Soil dry weight and wet weight were recorded in the samples coming out from the fields allowing for the determination of bulk density by the core method.
- Samples that have been sieved are now being compiled by depth to be sent to Brookside for analysis of N, P, K, and pH and analysis in our lab for water aggregate stability, total carbon, and microbial biomass C and N. The first group of compiled samples will be sent to Brookside over the next several weeks. Nitrate and ammonium testing along with water aggregate stability testing is currently underway.
- Data organization and statistical analysis will start as soon as possible after we start gathering results.

### **Preliminary data:**

At this point only Bulk density ( $\text{g/cm}^3$ ) and soil moisture (%) has been determined and we are presenting data per location and depth. Processing of samples is conducted in a random order to prevent biases therefore the data coming out from the lab only has general ID codes so far; identification by rotation is not available at this point.

**Bulk Density**

Depth (ft)	Brownstown	DeKalb	Dixon Springs	Monmouth	Perry	Urbana
0-0.5	1.45±0.01	1.30±0.02	1.41±0.01	1.24±0.02	1.36±0.02	1.31±0.02
0.5-1	1.48±0.01	1.41±0.01	1.48±0.01	1.32±0.01	1.45±0.01	1.35±0.01
1-2	1.43±0.01	1.37±0.01	1.45±0.02	1.25±0.01	1.44±0.01	1.34±0.01
2-3	1.53±0.01	1.41±0.01	1.53±0.02	1.32±0.01	1.39±0.03	1.44±0.01

**Moisture**

Depth (ft)	Brownstown	DeKalb	Dixon Springs	Monmouth	Perry	Urbana
0-0.5	17.92±0.21	21.07±0.65	21.81±0.25	19.89±0.17	19.14±0.28	18.24±0.14
0.5-1	16.74±0.21	20.21±0.91	19.13±0.20	19.62±0.22	17.90±0.32	19.46±0.20
1-2	20.34±0.28	21.87±0.50	20.56±0.15	21.84±0.16	19.47±0.22	21.15±0.24
2-3	20.05±0.50	20.08±0.64	19.22±0.22	20.86±0.13	20.08±0.38	19.12±0.35

**Please notice these are averages from the samples processed so far and therefore are not for distribution.**

**NUTRIENT RESEARCH AND EDUCATION COUNCIL**  
**"Measuring Soil Quality Changes in Corn and Soybean Rotations"**  
**Award Period: January 1, 2014 - December 31, 2014**  
**Current Reporting Period: May 1, 2014 - December 31, 2014**  
**INTERIM FINANCIAL REPORT**

INVESTIGATOR: Maria B. Villamil

EXPENDITURES:	PRIOR PERIOD EXPENSES	CURRENT PERIOD EXPENSES	CUMMULATIVE EXPENSES
Salaries & Wages	\$0.00	\$16,401.95	\$16,401.95
Fringe Benefits	\$0.00	\$4,381.56	\$4,381.56
Material & Supplies	\$0.00	\$1,473.11	\$1,473.11
Travel	\$0.00	\$0.00	\$0.00
Services	\$0.00	\$2,253.00	\$2,253.00
 Total Direct	 \$0.00	 \$24,509.62	 \$24,509.62
Indirect	\$0.00	\$2,720.58	\$2,720.58
Total	<u>\$0.00</u>	<u>\$27,230.20</u>	<u>\$27,230.20</u>

AWARD:	
1/1/14-12/31/14	\$36,318.00
Interest Accrued to date	<u>\$0.21</u>
	\$36,318.21
Less Expenditures	<u>\$27,230.20</u>
BALANCE	<u>\$9,088.01</u>

This report was prepared from  
 financial records of the  
 UNIVERSITY OF ILLINOIS  
 GRANTS AND CONTRACTS OFFICE

*Sandra Moulton*

Sandra Moulton, Senior Director  
 Post-Award Administration