



## Sustainable Agriculture and Natural Resource Management Innovation Lab

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### CCRA 09 Trip Report: Kenya

6 June – 13 June 2014

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**Purpose of Trip:** 1) Visit CAPS field trial sites established at Manor House Agricultural Center near Kitale Kenya; 2) evaluate and troubleshoot performance of field analyzers used to collect soil CO<sub>2</sub> gas fluxes, and 3) work with Manor House personnel to refine methodology for maintaining field instruments.

**Sites Visited:** Manor House Agricultural Center, Kitale Kenya

#### *Key accomplishments:*

I met with personnel from Manor House Agricultural Center who are working with LTRA-10 to conduct CAPS research near Kitale Kenya. These personnel, Dennis Shibonje and Joshua Ouko, have also been working with CCRA09 during the past 11 months to maintain and download data from 5-6 ADC Bioscientific soil CO<sub>2</sub> flux analyzers that were installed by CCRA 09 personnel during July 2013. We spent 2.5 days in the field evaluating performance of the analyzers. We were able to identify problems with two of the analyzers, and fix problems with one. Plans were made to complete the measurements. Two repaired units will soon be shipped from Virginia Tech to Manor House, and will be installed in the field. Some refinements in methodology were decided upon as well. I came away very impressed with our partners at MH and the cooperation they have given to the CCRA.

#### **Description of Activities:**

I (Thomas Thompson, CCRA 09 PI) traveled from Lilongwe, Malawi to Nairobi on 6 June. After spending one night in Nairobi, I traveled by air to Eldoret, Kenya. On 8 June, after spending one night in Eldoret, Manor House personnel took me to Manor House, near Kitale. I left Manor House on 12 June for Nairobi and left Nairobi for the USA on 13 June.

On 9 June, I visited the CAPS field site at Manor House. Personnel from Manor House explained the field experimental setup and their experiences during the past year with the field CO<sub>2</sub> analyzers (manufactured by ADC Biosciences). We downloaded data from each of the five analyzers currently in the plots (six were originally installed). After reviewing the data, we identified two of the analyzers that appeared to be performing incorrectly. Our work during the next two days was focused on these units. I also used the downloaded data to produce graphs to illustrate performance of the analyzers over time. My time on 10-11 June was spent troubleshooting the two analyzers by changing program parameters, evaluating air flow, voltage, and other variables. Because of our work, one of the analyzers was again reading correctly by the time I left. One other analyzer could not be repaired; I believe it has a faulty infrared gas analyzer. This cannot be repaired, except by the manufacturer, located in the UK. The manufacturer has repeatedly declined to send a technician to service the units in the field. These units, manufactured by ADC Bioscientific, have not consistently performed as hoped, and therefore I cannot recommend them to others.

On 12 June I concluded my visit with a tour of Manor House, a discussion of research activities, and a final meeting about CCRA 09 endeavors.

**Suggestions, recommendations, and/or follow-up items:**

- 1) MH personnel will record the time and date of each change made to the machines—changing batteries, soda lime, moving the machines, changing filters, etc.
- 2) MH personnel will download and send.csv files to CCRA09 PIs each week.
- 3) For the machines within NT plots (33367, 33368), MH personnel will ensure that soil cover by crop residues is similar around the machines and inside the chamber as in the plot.
- 4) When the two repaired analyzers arrive from Virginia Tech, they will be installed as soon as possible as per our discussions.

**Short-Term Training:**

Program type (workshop, seminar, field day, short course, etc.)	Date	Audience	Number of Participants		Training Provider  (US university, host country institution, etc.)	Training Objective
			Men	Women		
Troubleshooting ADC Bioscientific CO2 analyzers	June 10-11	MH personnel	3	0	Virginia Tech	Improving performance of ADC Bioscientific CO2 analyzers

**List of Contacts Made:**

<b>Name</b>	<b>Title/Organization</b>	<b>Contact Info (address, phone, email)</b>
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