

Nigeria Agricultural Policy Project Highlights

September 2018

Scholar Program 30

THE KELLOGG BIOLOGICAL STATION LONG TERM ECOLOGICAL RESEARCH

One of the units visited during my stay as a Visiting scholar at Michigan State University (MSU) was the Kellogg Biological Station's (KBS) Long Term Ecological Research (LTER). We defied the rains to embark on this remarkable tour, one experience of many to cherish!



Our first stop was the Robotics Milking system site. The setup, size of the cows, expanse of pasture in rotation and amount of data obtained is a story of its own.



The pasture dairy center with Brook, the farm manager

Back in Nigeria a few long term experiments exist and one such is the long term fertilizer trials at Obafemi Awolowo University (OAU) in Osun State. Working on soil erosion and soil productivity studies I have read the 17 years long work of Larney Frank at the Lethbridge station in Canada and heard about the famous Rothamsted Experiment station in the United Kingdom but to be physically standing on a Long Term Ecological Research station, the feeling, indescribable!

The overhead Irrigation systems were huge, the kind I had only seen in textbooks and as images on the internet. The experimental plots had a number of lysimeters in place for measurement of evapotranspiration and consumptive water use studies. The expanse of land, My Goodness!



The overhead sprinkler system of irrigation

Several studies were on going at the LTER. since soils vary both spatially and temporally. The essence of most long term experiments, is to study various processes of interest over time. Also, many ecosystem processes change slowly over time. One of the studies that caught my attention was that of carbon stock in certain tillage systems and Globally Warming Impact (GWI). Agriculture globally is responsible for 14% of Green House Gases (GHG) causing global warming to about the same extent as transportation. The study showed that conventional cropping methods have an average Global Warming Impact (GWI) of about 82 CO₂-equivalent per meter square. Nitrous oxide production alone accounting for more than half of this impact. This is more than the combined impact from fuel use and agrochemical inputs, including commercial fertilizer, agricultural lime, and pesticides. Thus with higher fertilizer use advocated for



in largely conventional cropping systems in Nigeria, the need for enlightenment and studies in this direction is imperative not just in terms of the profitability of inorganic fertilizer use and efficiency, but in relation to the environment and climate change related issues. Different cropping patterns can reduce GWI e.g. No till, minimal till and organic farming all help to build carbon stock and offset the GWI. Adoption of such agronomic practices could help mitigate GHG production in general.

By: Agada Iveren Blessing.

Our guide during the tour, Sarah explaining an aspect the of research projects at the KBS LTER

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