TIES Program
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We were born and raised in the Laguna region, currently doing our college studies on Biochemical Engineering at the Biological Science School from the Universidad Autónoma de Coahuila, studying our last year of college.

Being aware of the opportunity we have in our home cities, with the agricultural and livestock production, and our interest in scientific research on the biofuels production, we joined the TIES Program “Integrated waste management with Energy Production for Increased Competitiveness of the Livestock Industry in Northeast Mexico”, to find and compare different technologies to assess value added products from the waste generated by the livestock industry at the Laguna Region.
• We have been working on anaerobic digestion of poultry litter for biogas production.

Anaerobic digestion is microbial process that involves different groups of bacteria that broke down complex molecules and continue with different pathways to get as final product biogas.

Biogas has around 60-80 % methane, and the rest is carbon dioxide. This biogas can be used as an energy source.

• Also we worked onto assess technologies like Compost and Ensilage, to pretreat the manures to brake down the remaining hemicellulosic compounds.

This to release the sugars contained in those polymers for fermentation to produce ethanol.
Our experience:

First of all, we are very thankful for the program directors: Dr. K. C. Das (UGA), and Dr. Nagamani Balagurusami (UAdeC).

Our five months here have been a whole new experience for us. The opportunity we had to get in touch with the research area at the Department of Biological and Agricultural Engineering, has led us to a new interesting understanding of what is science, and how we can make science.

The experience we had was not only in the academic area, but in our life styles as well, by giving us the chance of independence, and the interaction with people all around the world.
We have been practicing our English and our knowledge by interacting with people in the research area and exchanging ideas.
We have made visits to beef farms for collection of rumen fluid for our experiments of anaerobic digestion.
We have worked on instruments like: CHNS 932 & Proximate analyzer TGA 701
Also we have worked setting up the Gas Chromatograph (HP 5890 plus) for our gas composition analysis from the anaerobic digesters.

And UV-Vis Spectrophotometer for analysis like: Total Carbohydrates, Reducing Sugars, Cellulose and Lactic Acid.
Part of our work here has been to establish the laboratory to work with anaerobic digestion.

These are the 5 gal. Reactors we used for our anaerobic digestion experiments.

These are equipped with a stirrer, thermal jackets, and sampling ports.
We have worked also to assess composting as a pretreatment for poultry litter to release fermentable carbohydrates.
Being at the University of Georgia has given us many new experiences, the opportunity to exchange ideas and knowledge with researchers, M.S and PhD students.

This program also helped us to improve our skills and we had the big opportunity to use the facilities that the department has, so now we know the use of these instruments.

Finally this experience made us grow as persons and as young researchers. We want to continue with our studies, and are planning to apply for graduate school at the Department of Biological & Agricultural Engineering at UGA.