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2008 KSU INSORTMIL/USAID Poultry Experiment in West Africa

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Poultry Experiment in West Africa

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March 31, 2009
Introduction

- INTSORMIL (funded by USAID) promotes the use and marketability of sorghum and millet in developing nations around the world.
- A key objective is to provide technology transfer that will improve production, storage, marketing, and utilization of sorghum and millet.
- An additional objective is to build human capital via student training and collaboration with colleagues in targeted regions of the world.
Justification

- We were approached by potential collaborators from the National Institute for Agronomic Research in Niger (INRAN)
- Sorghum is the second most produced cereal (after millet) in Niger
- Locally produced sorghum is generally less expensive than imported corn, yet imported corn remains the main cereal used in poultry feed (Abdoulaye et al., 2006)
• It is well established that tannins have negative nutritional consequences in animals and humans and sorghum suffers from the image of necessarily having high tannin content.

• Research at Kansas State University suggests that proper milling is even more important in sorghum-based than corn-based diets.

• Hancock et al. (2000) proposed that adequate processing improved the nutritive value of sorghum in monogastrics to near that of corn.
Chick feeding assay
- Corn
- Local sorghum
- Improved sorghum

Broiler experiment
- 60 days experiment

Layer experiment
- 18 month experiment
Objective

To determine the feeding value of diets made with imported corn, a local landrace sorghum, and an agronomically improved sorghum variety
• **Trts:**
  - Imported corn
  - A locally produced landrace sorghum (Mota Galmi) with red seed, purple plant, and 0.3mg of CE/100mg grain DM
  - An improved variety (IRAT204) with white seed, tan plant, and no detectable tannins

Particle Size: 600
Gain: Feed d 0 to 60

- No trt effect (P > 0.28)

Imported corn: 478 g/kg
Landrace sorghum: 490 g/kg
Improved sorghum: 484 g/kg
Carcass Yield d 60

Landrace vs improved (P < 0.001)

- Imported corn: 76.0%
- Landrace sorghum: 76.6%
- Improved sorghum: 74.7%

SE 0.5
Feed Intake for Layers Fed Corn vs Sorghums in West Africa

- Corn vs Sorgs (P < 0.01)

Imported Landrace

Improved sorghum

SE 2.6
Percentage Production for Layers Fed Corn vs Sorghums in West Africa

Corn vs sorgs (P < 0.001)

- Imported corn
- Landrace sorghum
- Improved sorghum

SE 1.9
Successes

- Completion of collaborative research projects with INRAN (2005 and 2006)
- Projects served as basis for an INRAN Sorghum Field Day and development of a Poultry Producers Association in Niamey (2005 and 2006)
- Experiments served as senior projects for two students at Abdou Momouni University, Niamey, Niger (2005 and 2006)
- Two papers at the 2006 International FRSIT Conference in Ouagadougou, Burkina Faso
- Two posters at the 2006 SICNA Conference, Santa Anna Puebla, NM
Two posters at the 2007 National Field Day, Niamey, Niger

Abstract at the 2007 Poultry Science Association Meetings, San Antonio, TX

Presentation at the 2007 Technology Transfer Workshop, Senegal

Abstract at the 2008 International Poultry Conference, Atlanta, GA

Presentations in the USGC Sorghum Utilization Workshops in Ireland, England, Holland, and France, 2008

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So, what’s next?
Feeding Value of Corn vs Properly Milled Local Sorghum for Poultry in West Africa

- Salissou Issa and Joe Hancock, Kansas State University, Manhattan, USA
- Ayao Missohou, Regional College of Sciences and Veterinary Medicine (EISMV), Dakar, Senegal
- Bantieni Traore, Institute of Rural Economy (IER), Bamako, Mali
- Hien Ollo, National Institute for Environment and Agricultural Research (INERA), Bobo-Diolasso, Burkina Faso
- Hamani Marichatou, Abdou Moumouni University (UAM), Niamey, Niger
- Iro Nkama, University of Maiduguri, Nigeria
• TRTS: Corn and locally produced sorghum (non-tannin) ground through 6.4 and 2 mm screens

• Samples of all cereals and diets collected and subjected to p-size and proximate determinations

• Each station to feed a minimum of 400 1-d-old broiler chicks (25 birds/pen and four pens/trt) for 42 d
• Feed and water consumed ad libitum
• Birds killed (12) and carcass yield recorded
• Response criteria will be ADG, ADFI, G:F, and carcass yield
• All data pooled and analyzed as a 2 x 2 factorial with main effects of cereal source and particle size
Difficulties

• Funding (Provide enough as things are more expensive than in USA or EC)

• Facilities (poultry houses, feed mill)

• Input Accessibility (feed ingredients, chicks)

• Transportation
Success

- Create a West African/KSU poultry Network
- Premix for the 5 project sites
- Discuss protocol and data collection forms
- Improving the poultry house (lighting, compartments)
- Strength relationships between Research Institutes, Universities, and Processors (Poultry producers and feeds industries)
- Training (8 students) and information exchange (22 presentation related to sorghum processing and utilization)
Questions?