



• Teaching • Research • Extension • Departmental Activities

Oral Presentation at American Dairy Science Association Annual Meeting



By Dr. Brian Rude

ADS Graduate student, Sarah Allen, under the supervision of **Dr. Brian Rude**, presented the abstract titled **Efficacy of calcium montmorillonite clay at reducing aflatoxin transfer in lactating Holsteins fed a known concentration of aflatoxin.**

Congratulations to Ms. Allen. She received the **3rd Place Award** for her presentation.

Contributing authors include S. C. Allen, Z. A. Mason, **B. J. Rude**, C. Maki, I. Phillips, and S.H. Ward. This abstract is the result of collaborative efforts with Texas A&M and North Carolina State University.



Sarah Allen, Graduate Student

Animal Agriculture in China: Visiting a Modern Swine Farm



— A Study Abroad Course (ADS 4990) Report
by Kate Parsons and **Shengfa Liao**

On May 17, 2017, five students of ADS 4990 class toured the Tangshan (Yutian) Science & Technology Park, located in a rural area about a 3 hour drive from Beijing. As a daughter company of Beijing Dabeinong Technology Group Co. Ltd. (DBN) that produces and sells animal feeds, plant seeds, veterinary drugs, and pesticides internationally, this particular Science & Technology Park consists of a College of Swine Science and a demonstration swine farm.



This swine farm really surprised us after we drove through small villages after a small village. Our tour began in a technology-equipped Experience Room that has a huge computer monitor on the wall showing swine related market information real time. The room also has a 3-D model of the entire farm that can light up. The General Manager of the park, Mr. Haitao Qi, gave us a PowerPoint presentation that introduced the background, some important facts, and the major advantages of the farm.

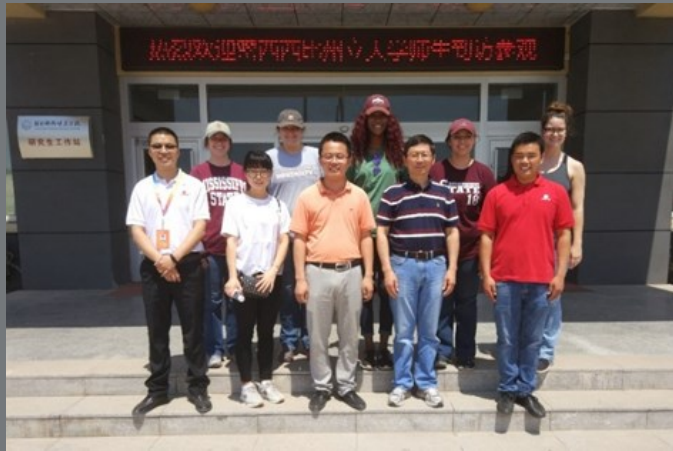
The swine farm was mainly constructed as a seedstock company that provides pure and cross breeds of pigs to other farms in the country. The farm routinely house 1,800 sows and 16,000 pigs as replacement stock, so they can commercially provide around 40,000 high quality gilts and boars each year. They sell boar semen as well. Culls and unsold replacement pigs are sold to the market for pork.

The management of the farm is all automated, which largely cuts down the demands for human interactions with pigs. A central control room has a wall of surveillance TV screens that monitor nearly all buildings of the farm in real time. The operating systems control the temperature and humidity in the barns so the pigs can live in a very humane environment all year round. Artificial insemination is well adopted for their reproduction practice. The waste management systems (including lagoons for sewage) decreases the possible pollution from the farm to the environment. The swine farm has little to no odor. The electricity for the farm is generated from biogas which conserves energy and reduces the park operation costs.

The farm uses automatic feeding systems at every production stage. With 14 electric feeding stations, 48 gestal feeding systems, and 48 dry-wet feeding systems, the health of the pigs is improved and maintained, and the cost of feeding is reduced as well. The consistency in time and amount of feed provides a stable environment for the pigs to grow at the same/similar growth rate.

This is important because the farm can sell a cohort of pigs at the same time that have similar characteristics, such as body weight, to ensure a steady profit.

As a high-tech enterprise, this farm compared with other commercial farms, has six major advantages: (1) the branding effect received from their good product quality, (2) the superior genetics received from Canadian pigs, (3) very advanced equipment that helps to reduce production cost, (4) well-known experts to maintain herd health, (5) the ability to educate other personnel in the industry, and (6) scholarly data resources from pig network to produce the next generation of pigs.

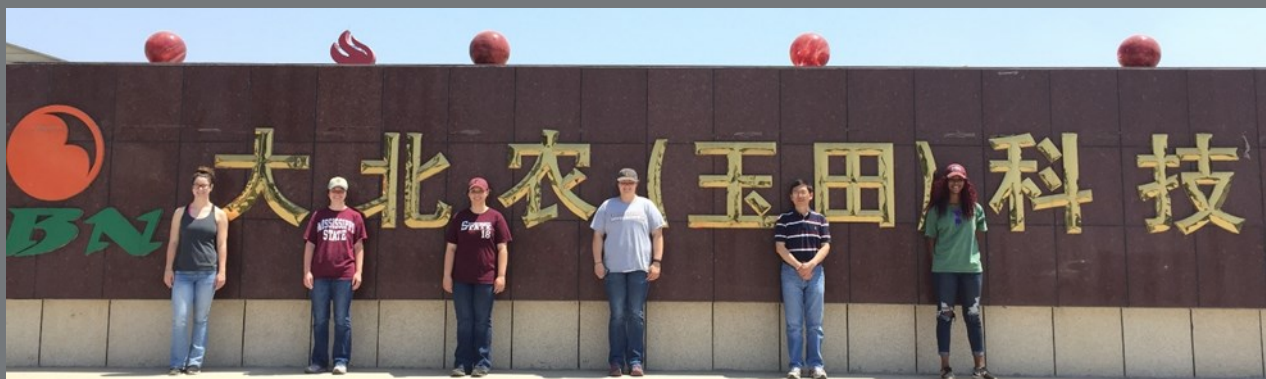


After the introductory presentation in the Experience Room and a brief tour of the surveillance room, the students were allowed to walk through one swine barn and observe through a glass window some sows in farrowing crates as well as some pregnant sows in the floor pens.

Some comparisons between some US farms and this DBN farm show how advanced the automatized systems they have, as well as how little man power is actually needed for manual management. Swine production has a very long

history in China. The swine industry is so much more advanced than other livestock industries in China probably because of the long tradition of eating pork by Chinese people. Though very well developed, Chinese swine production continues to grow because of their continual research in genetics, nutrition, and reproduction.

As one of thirteen swine farms owned by the DBN group, this farm is a central location responsible for training employees in and to the industry. The College of Swine Science graduates over 5,000 trained swine workers per year. At the end of our tour, Mr. Qi said, "You all are welcome back to China to give us advice after you graduate and become swine experts." Through this visit, we learned that this DBN group really encourages research, extension, and production efficiency for the swine industry in China, and maybe one day our ADS alumni could contribute to their advancements as well as the strides in the US!



Empowering Quality Scholarship

Stemming from his excellent scholarship in research, teaching and service, Dr. Erdogan Memili has been promoted to full professor.

Dr. Memili's research focuses on functional genomics of livestock reproduction within the concept of animal systems physiology. Teaching opportunities that he enjoys include ADS 4211/6211 Goat and Sheep Production Lab, ADS 4223/6223 Goat and Sheep Production, ADS 8973 Scientific Writing, PHY 8133 Endocrine Secretions. He collaborates with many of the Departmental faculty members.



Trained as a veterinarian at the University of Istanbul, Dr. Memili earned his MS and Ph.D. at the University of Wisconsin-Madison, and postdoctoral and sabbatical research training at Harvard and Cornell Universities, respectively.

Small Ruminant FAMACHA Training for Parasite Management

By Kipp Brown



The Lowndes County Extension Agency is hosting a FAMACHA training on August 15 from 6:00—9:00 pm.

FAMACHA training will educate small ruminant producers about parasite and forage management. Small ruminant producers will learn about the use of FAMACHA system, increase knowledge of forage management for small ruminant production, and increase knowledge of parasite control and treatment for goats and sheep.

For more information contact Kipp Brown at: kipp.brown@msstate.edu

Upcoming Extension Events

Beef Extension – Dr. Brandi Karisch Cobie Rutherford



- Stockmanship and Stewardship Regional Event, August 3-4, Starkville MS
- Homeplace Producers Feeder Calf Board Sale on August 7, Hattiesburg, MS

Equine Events – Dr. Clay Cavinder



- Upcoming Programs are online at: <http://extension.msstate.edu/agriculture/livestock/equine/upcoming-programs>
- For more info, contact Dr. Cavinder at clay.cavinder@msstate.edu

4-H Events – Dr. Dean Jousan



- For publications and upcoming events, go to: <http://extension.msstate.edu/4-h> or contact Dr. Dean Jousan at dj230@msstate.edu

Dairy Events – Dr. Amanda Stone



- On-Farm Processing Informational and Demonstration Event, July 6, 8am-5pm, MSU Campus, Moore Hall, \$25 Registration Fee

DAIRY EXTENSION EVENT

By Dr. Amanda Stone



ON-FARM PROCESSING INFORMATIONAL AND DEMONSTRATIONAL EVENT

Have you considered processing your
milk on-farm?

Unsure of the regulations required?

Interested in expanding your existing on-
farm processing program?

On-farm processing can provide a **niche market** for dairy farms. However, there are many factors to consider. This workshop will provide hands-on activities, tours, and presentations from MSU dairy and food scientists. You will leave with tools to help you in this exciting, yet complex, business.



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EXTENSION SERVICE

TOPICS INCLUDE

Hands-on yogurt, butter, &
ricotta making, start-to-finish

How to develop good
manufacturing practices &
standard operating
procedures

Tour of the
MAFES Custer Dairy
Processing Plant

How to ensure farm practices
produce safe milk for
processing

Tools to develop an efficient
plant lay-out

July 6, 8:00 – 5:00 PM

Moore Hall, Mississippi State
University
60 Garner Circle
Mississippi State, MS 39762

Cost: \$25/person

RSVP deadline: July 3

Dr. Amanda Stone

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Dr. Courtney Crist

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2017 Refereed Publications:

- Keomanivong, F. E., L. E. Camacho, **C. O. Lemley**, E. A. Kuemper, R. D. Yunusova, P. P. Borowicz, J. D. Kirsch, K. A. Vonnahme, J. S. Caton and K. C. Swanson. Effects of realimentation after nutrient restriction during mid- to late gestation on pancreatic digestive enzymes, serum insulin and glucose levels, and insulin-containing cell cluster morphology. *Journal of Animal Physiology and Animal Nutrition*. 101 (2017) 589–604. DOI: 10.1111/jpn.12480.
- Menezes, E.B., R.V. de Oliveira, M.F. van Tilburg, E.A. Barbosa, N.V. Nascimento, A.L.M.C.S. Velho, F.B. Moreno, R.A. Moreira, A.C.O. Monteiro-Moreira, G.M.C. Carvalho, A.F. Ramos, **E. Memili**, A.A. Moura. Proteomic analysis of seminal plasma from locally-adapted “Curraleiro Pé-Duro bulls” (*Bos taurus*): identifying biomarkers involved in sperm physiology in endangered animals for conservation of biodiversity. *Animal Reproduction Science*. <http://dx.doi.org/10.1016/j.anireprosci.2017.05.014>.
- Cavinder, C. A.**, A. Sear, R. Valdez, L. White. Utilization of Social Media as a Marketing Tool for Equine Businesses: An Exploratory Study. *North American Colleges and Teachers of Agriculture Journal*. June 2017, Vol 61(2).
- Gastal, G. D. A., A. Hamilton, B. G. Alves, S. G. S. de Tarso, **J. M. Feugang**, G. A. Apgar, C. K. Nielsen, E. L. Gastal, W. J. Banz. Ovarian features in white-tailed deer (*Odocoileus virginianus*) fawns and does. *PLOS ONE*. 12(5):30177357. <https://doi.org/10.1371/journal.pone.0177357>.
- Aguiar, F.L.N., G.D.A. Gastal, G.M. Ishak, M.O. Gastal, D.I.A. Teixeira, J.R. Figueiredo, E.L. Gastal, **J.M. Feugang**. Effects of FSH addition to an enriched medium containing insulin and EGF after long-term culture on functionality of equine ovarian biopsy tissue. *Theriogenology* 99 (2017) 124-133.
- Feugang, Jean M.** Novel agents for sperm purification, sorting and imaging. *Molecular Reproduction Development*. 2017. 9999:1-10. DOI: 10.1002/mrd.22831.
- Borchers, M. R., Y. M. Chang, K. L. Proudfoot, B. A. Wadsworth, **A. E. Stone**, and J. M. Bewley. Machine-learning-based calving prediction from activity, lying, and ruminating behaviors in dairy cattle. *Journal of Dairy Sciences*, Vol.100:1-11. 2017. <https://doi.org/10.3168/jds.2016-11526>.
- Lemley, C. O.** and K. A. Vonnahme. PHYSIOLOGY AND ENDOCRINOLOGY SYMPOSIUM: Alterations in uteroplacental hemodynamics during melatonin supplementation in sheep and cattle. *Journal of Animal Science* 2017.95:2211-2221. doi:10.2527/jas2016.1151.
- Gastal, G.D.A., F.L.N. Aguiar, B.G. Alves, K.A. Alves, S.G.S. de Tarso, G.M. Ishak, **C.A. Cavinder**, **J.M. Feugang**, E.L. Gastal. Equine ovarian tissue viability after cryopreservation and in vitro Culture. *Theriogenology* 97 (2017) 139-147.
- Maki, C R, S Allen, M Wang, SH Ward, **BJ Rude**, HR Bailey, RB Harvey and TD Phillips. Calcium Montmorillonite Clay for the Reduction of Aflatoxin Residues in Milk and Dairy Products. *Journal of Dairy and Veterinary Sciences*. 2017; 2*3): 555587.

- Regmi, N., T. Wang, **M. A. Crenshaw**, **B. J. Rude**, **S. F. Liao**. Effects of dietary lysine levels on the concentrations of selected nutrient metabolites in blood plasma of late-stage finishing pigs. *Journal of Animal Physiology and Animal Nutrition*. 2017; 1-7. DOI: 10.1111/jpn.12714.
- Wang, Taiji, **Jean M. Feugang**, **Mark A. Crenshaw**, Naresh Regmi, **John R. Blanton Jr.** and **Shengfa F. Liao**. A Systems Biology Approach Using Transcriptomic Data Reveals Genes and Pathways in Porcine Skeletal Muscle Affected by Dietary Lysine. *International Journal of Molecular Sciences* (2017) 18, 885.
- Cain, Amanda J., **Caleb O. Lemley**, F. Kevin Walters, David L. Christiansen, E. Heath King, Richard M. Hopper. Pre-breeding beef heifer management and season affect mid to late gestation uterine artery hemodynamics. *Theriogenology* 87 (2017) 9–15.
- Jones, Barbara W., **Amanda E. Stone**, Connie L. Wood, Kristen J. McQuerry, Joey D. Clark, Denise L. Ray, and Jeffrey M. Bewley, PAS. Case Study: Characterization of milk yield, lying and rumination behavior, gait, cleanliness, and lesions between 2 different freestall bases. *The Professional Animal Scientist* 33:140–149. <https://doi.org/10.15232/pas.2016-01548>.
- Stone, A. E.**, B. W. Jones, C. A. Becker, and J. M. Bewley. 2017. Influence of breed, milk yield, and temperature-humidity index on dairy cow lying time, neck activity, reticulorumen temperature, and rumination behavior. *Journal of Dairy Sciences* 100:1–9. <https://doi.org/10.3168/jds.2016-11607>.
- Hodge, Lauren B., **Brian J. Rude**, **Thu N. Dinh**, **Caleb O. Lemley**. Effect of u-3 Fatty Acid Supplementation to Gestating and Lactating Mares: On Milk IgG, Mare and Foal Blood Concentrations of IgG, Insulin and Glucose, Placental Efficiency, and Fatty Acid Composition of Milk and Serum From Mares and Foals. *Journal of Equine Veterinary Science* 51 (2017) 70–78.
- Littlejohn, B. P., M. C. Roberts, M. N. Bedenbaugh, A. W. Lewis, D. A. Neuendorff, D. G. Riley, J. A. Carroll, **R. C. Vann**, M. Amstalden, R. D. Randel, T. H. Welsh, Jr. (2017). Evaluation of the influence of prenatal transportation stress on GnRH-stimulated luteinizing hormone and testosterone secretion in sexually mature Brahman Bulls. *Journal of Animal Science* 95, 129-138. www.animalsciencepublications.org/publications/jas.
- Gastal, G D A , B G Alves, K A Alves, M E M Souza, A D Vieira, A S Varela Jr, J R Figueiredo, **J M Feugang**, T Lucia Jr and E L Gastal. Ovarian fragment sizes affect viability and morphology of preantral follicles during storage at 4°C. *Reproduction*, (2017) 153, 577-587.

2017 Book Chapters:

- Greene, Jonathan M. and **Peter L. Ryan**. L-Arginine in the Uterus and Placenta and During Gestation in Mammals. In *L-Arginine in Clinical Nutrition*, Nutrition and Health, Chapter 22. 2017. V.B. Patel et al. (eds.). DOI 10.1007/978-3-319-26009-9_22.
- Stone, A. E.** Precision dairy monitoring technology implementation opportunities and challenges. In *Large Dairy Herd Management*, 3rd Edition. (Edited by David K. Beede).