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1st Annual Beef Field Day at Farmbelt Equipment in Brookhaven

On Saturday, June 17th, Dr. Brandi Karisch, Cobie Rutherford, Katelin Hyman (MSU-ES apprentice) and Sara Terrell attended the 1st Annual Beef Field Day at Farmbelt Equipment in Brookhaven, MS.

The 75 producers in attendance heard a beef industry update from Rutherford and learned how to capture more value for feeder calves from Dr. Karisch. Rutherford and Karisch tag teamed a BQA training and demonstration for the attendees.



Dr. Brandi Karisch



Katelin Hyman and Dr. Brandi Karisch



Sara Terrell

GRADUATE STUDENT RESEARCH

We have some pretty exciting things going on in our equine research program. Check out these photos from graduate student Caitlin Chase's current project looking at the effects of hay quality on muscle glycogen replenishment following exercise. The mask measures oxygen intake and CO2 output during exercise. She is supervised by **Dr. Brian Rude**.



Photo credits to
Liz Caldwell

Animal Agriculture in China: Dairy Industry

— A Study Abroad Course (ADS 4990) Report
by Jasmyn Fearon and **Shengfa Liao**

The dairy industry in China is one of the most rapidly growing sectors in the food industries of the country, according to Dr. Shengli Li, Professor of Dairy Production at China Agriculture University, who presented a lecture to the animal and dairy science students of Mississippi State University in Beijing, China on May 12th, 2017. Dr. Li shared that the advancement in research and technology has allowed for better quality of dairy products from year to year. Despite the melamine scandal in 2008 that lost the trust of Chinese consumers, the dairy farmers are determined to expand the industry, and the dairy business is recovering and has been increasing approximately 8.2% in milk yield every year.



With Holstein being a dominant breed in China, animal breeders are also developing dual purpose cattle because it was found that hybrid cattle have less disease than purebred Holsteins. China currently has more than 8,000 dairy farms (>100 head/farm). Because of the favorable weather conditions, the most productive farms are located in the Northeast region and operate around a central processing system containing information about disease, fertility, herd data, milking data, and feeding data. The most popular farming system in China is the large-scaled farms (about 40%), followed by the cooperative farms (about 30%), while the small backyard farms (about 25 to

30%) are now gradually declining in popularity. It is predicted that the backyard farms will account for only a minute percentage in a few years to come due to their poor production efficiency and low milk quality.

The production management in China resembles that in the US somehow. Approximately 89% of farms in China are of free-stalls, leaving 11% to be of tie-stalls. As far as milking goes, 83% farms have developed milking parlors and 17% have in-stall milking. The two main styles of milking parlors are 72 rotary milking parlors and 2 ´ 24 side by side parlors. The standard diet is a total mixed ration (TMR) which is used by 95% of the farms. Used in typical rations are many feedstuffs same as those used in the US to keep cows with high productivity.



The commonly used feedstuffs include corn, wheat, soybean meal, alfalfa hay, and corn silage. 98% farms use corn silage and 84% use alfalfa over other Chinese hays. Some local feedstuffs are often added to the ration depending on their availability.

In the US, approximately 40-50% of milk is processed further into cheese and other products; however, China uses almost 80% of milk as liquid (includes yogurt) products. Cheese is not popular. Ice cream is well liked but the consumption is still not high. While the US per capita dairy product consumption is about 234 kg/year and the developing countries' average is 70 kg/year, the Chinese per capita consumption is a mere 36 kg/year. The urban consumption is much greater than that of rural consumption due to the differences in product availability and household income. Chinese government has been making supporting efforts to increase its consumption of domestic dairy products across the nation.



There are several policies implemented that encourage advanced research and better milk quality. The Dairy Herd Improvement (DHI) Project promotes genetic improvement, higher milk fat percent, higher milk protein percent, and better product hygiene. The Food to Feed Project attempts to solve the problem of overproduction of corn and to improve the crop farming efficiency. The Pilot Program on Livestock Manure Disposal is implemented because manure management is the most limiting factor when determining a farm size. This policy regulates the utilization and disposal of comprehensive livestock manure, which ultimately avoids environmental pollution. Other two projects are Standardized Scale Dairy Farming, Dairy Alfalfa Development Project, and Raw Milk Quality and Safety Monitoring.

Dairy farmers in China, nonetheless, bear a financial burden of repaying the government back for the land usage and, consequently, Chinese milk products are among the highest tag prices in the world. The other challenges that Chinese dairy farmers are facing include low production efficiency, low consumer confidence, and a high level of importation. Nonetheless, the number of scaled operations, the amount of advanced research, and the amount of milk produced are all increasing each year. Therefore, the Chinese dairy industry is expecting a fast upward development in the next few years and should have a bright future.



Upcoming Extension Events

Beef Extension – Dr. Brandi Karisch Cobie Rutherford



- Warm-season Forage Field Day on June 23, Starkville, MS
- 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



- NE District 4-H Horse Show, June 7-10, Starkville, MS
- Mississippi 4-H State Horse Championship, June 20-24, Jackson, MS

Dairy Events – Dr. Amanda Stone



- Events and publications are online at: <https://extension.msstate.edu/dairy>

2017 Refereed Publications:

- 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.