

PROCEEDINGS
of the
Ninth Annual
Agricultural Consortium of Texas
Research Symposium



**Texas Colleges
and Universities**

Today's Graduates...
Tomorrow's Agricultural Leaders

April 4th, 2019
Texas A&M University
College Station, TX

**2019 Agricultural Consortium of Texas Research
Symposium**

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ABSTRACTS

Graduate Student Competition

1. Evaluating the effectiveness of four sanitizers on water quality in commercial broiler houses.

K. Achilles, D. McCreery, and J. L. Bray - *Stephen F. Austin State University and Pilgrims.*

The importance of water quality and its ability to cause major impacts, whether it is positive or negative, is often overlooked in the poultry industry. The microbial content of water is just one of many water characteristics that need to be monitored and regulated to insure a flock is receiving good quality water. The purpose of this study was to determine the effects of four different sanitizers under commercial broiler house conditions. All four sanitizers were hydrogen peroxide based sanitizers. Each product was assigned to one of four commercial broiler houses at the Stephen F. Austin State University Broiler Research Center. Two water lines within each house were cleaned with the assigned product prior to placement for three consecutive flocks in accordance with Pilgrim's water sanitation protocols, leaving two water lines per house that were used as control groups. Water and swab samples were collected from all four water lines within each house after sanitizing prior to flock placement and again prior to the end of the flock. These samples were analyzed by the Pilgrim's Walker Creek Lab for aerobic plate count, E. coli, yeast and mold. Data was analyzed using SAS 9.4 to determine significant differences among treatment groups over time. After examining the results, coliform and E.coli counts were consistently low and within an acceptable range. Aerobic plate counts and yeast and mold counts were consistently decreased following the use of each sanitizer.

ABSTRACTS

- 2. A comparative analysis of a built-up composting poultry litter system compared to a conventional poultry litter system and their effects on the performance of broiler chickens.**

G. Ashabranner, I. Brock and J. L. Bray - *Stephen F. Austin State University*

Poultry litter is a mixture comprised of a carbon source used for bedding, fecal matter produced by the birds and the naturally present microflora responsible for decomposition. The poultry litter management system known as the built-up composting litter system is one such method many use, yet there is little modern data. The premise of this method is every application of nitrogen excreted from the birds, an application of carbon will be added to combat it, forming a compost pile like affect. Where a conventional litter system uses old litter with no additional applications of carbon. During this study, we observed the bird's overall health, welfare, and production to evaluate both litter management systems. Paw quality and mortality was monitored and recorded. Feed conversion was calculated to determine the gain in weight per pound of feed fed. A litter test was conducted from both systems at the end of each flock to determine the quality of the litter, as well as, its potential for further composting. This study consisted of two 100 ft² pens, one representing a conventional litter system and the other representing the built-up composting litter system. We determined broiler performance has grown significantly. The carbon-nitrogen ratio of the two litter samples shows the built-up composting litter method will make a finer compost. Paw scores and mortality show to be higher when using the conventional litter system. Lastly, the live weight of the bird at slaughter showed a significantly higher average from the built-up composting litter system.

ABSTRACTS

3. Evaluating water consumption, performance parameters, and yield of broilers reared on different water treatment programs under a high stocking density with or without heat stress.

I. Brock, G. Ashabranner, and J. L. Bray - *Stephen F. Austin State University*

Water is one of the most important nutrients for an agricultural animal. A good water source will improve digestion and metabolism, reduce stress, and improve overall bird health and welfare. The objective of this study was to evaluate the effects of three different water treatment programs delivered to commercial broilers reared at a high stocking density compared to a control group of birds reared at a lower stocking density and no water treatment, both with and without heat stress. A total of 5,448 Ross X Ross commercial broiler chickens were reared at the SFASU Poultry Research Center for 49 days. The chickens were equally divided among 8 treatment groups. Four different water treatments were tested with one half of the facility being reared at normal temperature conditions and the other half being reared under a heat stress condition. Each pen of birds was weighed at day 13, 33, and 49. For this study, performance parameters, water consumption and meat yield was measured to determine the effects among the eight treatment groups. The results showed that birds reared under optimal temperature conditions had a statistically higher average body weight at the completion of the study. The addition of the water treatments decreased feed conversion ratio regardless of temperature conditions. Heat stress conditions increased overall water consumption of the birds. The inclusion of the water treatments increased meat yield of broilers reared under optimal temperature conditions. In conclusion, the addition of water treatments increased performance, water consumption and meat yield.

ABSTRACTS

4. Prevalence Influence of Cattle Stress Response to Restraint Method on Artificial Insemination Pregnancy Rates

R. C. Carrell, W. B. Smith, L. A. Kinman, V. R. G. Mercadante, and D. A. Roper – *Tarleton State University and Virginia Tech university.*

Physiological stress has been associated with decreased pregnancy rates in beef cattle. Alternative handling restraints have been developed, but little evidence exists confirming their efficiency. Our objective was to determine if a difference was present in pregnancy rate to fixed-time artificial insemination in *Bos taurus* females when using a breeding box versus a squeeze chute. Females from two separate locations were exposed to FTAI protocols while restrained in a squeeze chute (n=169) or a breeding box (n=162). Females were exposed to the 7 day Co-Sync + CIDR protocol pre-breeding. At breeding, females were randomly assigned to treatment. Blood was collected via coccygeal venipuncture for assessment of plasma cortisol concentration using an automated ELISA assay (Immulite 2000 XPi, Siemens). Chute and Exit Score (1-5) were assessed at the time of breeding by a trained technician. Pregnancy was verified thirty days post-breeding via rectal ultrasonography. Pregnancy rate and cortisol (PROC GLIMMIX) were analyzed using SAS version 9.4. A Linear Regression Model (SAS version 9.4) was used to determine relationships between chute score, exit score, and cortisol. It was found that there was no difference in pregnancy rate between the breeding box and the squeeze chute (61.73% vs 64.71%, P=0.31, respectively). Cortisol showed no difference between box and chute (59.44 ± 10.17 vs 58.61 ± 10.16 , P=0.68, respectively). There was no linear relationship between response variables (P=0.14). It can be concluded that stress responses are similar between the box and chute. Therefore females may have similar pregnancy rates when exposed to FTAI in either restraint mechanism.

ABSTRACTS

5. **Identifying Impacts of Climate Variability on Profit Risk of Small Beef Grazing Operations in North Central Texas**

K. Cooper, E. Osei, A. Lovell, and David Drueckhammer – *Tarleton State University*.

Small beef grazing operations are an important part of Texas agriculture. These operations are at a high risk for climate impacts on profit. Careful evaluation of the economic impacts of drought and other climate effects were performed in order to better equip producers with the skills and knowledge needed to withstand extreme climate events. Using a specific study area in north central Texas, two computer simulation models were used to determine the impacts of climate variability on forage production and farm profits: Agricultural Policy/Environmental eXtender (APEX) and Farm-level Economic Model (FEM). These models have been calibrated over a wide range of soils, weather, and land cover across the nation. For this study they were ran with a historical baseline along with eleven different climate scenarios, including three main future climate scenarios: Representative Concentration Pathway 26 (RCP 26), RCP 45, and RCP 85, which represent increasing levels of average ambient temperatures. After evaluating model results it is shown that profit risk for small beef grazing operations will increase significantly from current levels if weather conditions follow the patterns projected under RCP 85. Under the most pessimistic scenario for temperature increases – RCP85 – farm profits are projected to increase, but at the expense of a quadrupling of profit risk. RCP 26 and RCP 45 show that small beef grazing operations profits will double in profit risk compared to the historical baseline.

ABSTRACTS

6. **Empirical Analysis of Factors Influencing Households' Demand for Omega-3 Enriched Eggs in the United States**

L. Fox and R. Bakhtavoryan – *Texas A&M University-Commerce.*

According to the data from the U.S. Department of Agriculture, per capita egg (retail shell eggs and eggs in foodservice and consumer packaged goods) consumption was 279 eggs, up by about 10% from 2012. Eggs are an excellent and affordable source for various important nutrients. Omega-3 enriched eggs come from hens whose feed is supplemented with an omega-3 source like flax seeds. Omega-3-enriched eggs are higher in omega-3s than conventional eggs, which is very important since most people do not eat a lot of beneficial omega-3s. As such, research is needed to better understand patterns of omega-3 enriched egg consumption across diverse sociodemographic groups that would result in recommendations geared toward the improvement of nutrient adequacy.

A tobit model is estimated employing the 2016 Nielsen Homescan Panel data on household purchases to empirically investigate the impact of various socioeconomic variables on the demand for omega-3 enriched eggs. The set of socioeconomic variables hypothesized to affect the demand for omega-3 enriched eggs include own price, prices of conventional and organic eggs, household size, income, residence, age and presence of children in the household, age, employment status, educational level, marital status, race, and ethnicity of household heads.

ABSTRACTS

7. **Evaluating An Analysis of Central Texas Producers' Willingness to Adopt Red Meat Mobile Slaughter Units**

L. Fox, R. Harp, and J. Lopez – *Texas A&M University-Commerce.*

Mobile Slaughter Units (MSU) may be a promising niche market for red meat producers in Texas as the market for humanely harvested and organic red meats grows (Food Safety and Inspection Service, 2010). Johnson, Marti, and Gwin (2012) found there is a lack of small slaughter facilities for cattle and a large number of small farms across Central Texas, and suggested additional research into consumer tastes and preferences and economic feasibility of MSUs in Texas.

Currently, Texas possesses only one MSU, which specializes in harvesting wild and farmed game, such as boar, quail, and deer (eXtension.org, 2016). Small producers who do not have access to federally inspected harvesting facilities benefit the most from MSUs because these eliminate the need for animal transportation as well as the transportation costs.

Small producers may be able to capitalize upon the increasing demand for humanely harvested red meats and the promising market for MSU. The existing literature is limited regarding Texas consumer attitude toward MSU branded meat, Texas producer need for MSUs, and overall economic feasibility of MSUs in Texas. This study contributes the extant literature by analyzing Central Texas producers' willingness to adopt red meat MSUs.

ABSTRACTS

8. **A Measure of Emotional Intelligence in Texas School-Based Agricultural Educators**

C. N. Frost, J. C. Haynes, W. B. Smith, W. A. Atchley,
and C. L. Andrew – *Tarleton State University*.

School-Based Agricultural Education programs provide experiences and opportunities conducive to academic success in students. This study sought to explore the importance and inclusion of emotional intelligence in agricultural educators, who served as a students' social and emotional coach, and developer of academic success. It was determined that Emotional Intelligence of Agricultural Educators could be developed, further supporting the improvement of content retention in students. Based on the findings of this research, it was determined that in the sub-categories of Emotional intelligence, women had a higher emotional intelligence in some sub-categories, whereas men out perform them in other areas. Since it has been determined that teacher effectiveness is positively correlated with student success, and that the emotional experiences of teachers (i.e., Emotional Intelligence), can have a positive outcome on teaching practices and student retention of content, professional development targeting improvement in Emotional Intelligence should occur.

ABSTRACTS

9. Does consuming organic foods make people feel good about their diet?

K. Gaylord, D. Chen, M. J. Anderson, and S. S. Nair –
Sam Houston State University.

Despite the fact that there have been inconsistent findings on the nutritional difference between organic and conventionally grown foods, and the health benefits of consuming organic foods are largely unknown, an increasing number of American families have made organic foods part of their everyday diet. This study aims to investigate the perceived dietary benefits of consuming organic foods among American adults. Data on organic food purchasing behaviors, dietary health, and food availability at home are obtained from the 2009-2010 National Health and Nutrition Examination Survey. Approximately 36.23% of the consumers have bought organic foods in the 30 days prior to the survey. Consumers who buy organic foods have a significantly higher rating of their dietary health than those who do not (difference=0.34, $p<0.001$). However, this effect might stem from the underlying differences in their dietary composition, because organic buyers have higher consumption of fruits, vegetables, fat-free/low-fat milk, and lower consumption of salty snacks and soft drinks, making their diet healthier than others. To reduce the observed bias, we use propensity-score matching to compare the self-rated dietary health of organic food buyers with that of consumers who do not buy organic foods but have similar demographic characteristics and dietary composition. The resulting Average Treatment Effect (ATE) of buying organic foods on self-rated dietary health is much smaller and less significant (ATE=0.10, $p<0.05$). In conclusion, consumers who buy organic foods feel better about their dietary health than those who do not, even if their dietary composition is similar.

ABSTRACTS

10. Feeding practices and morphometric measurements in maintenance and lightly worked horses in southeast Texas

L. A. Holland, J. K. Suagee-Bedore and K. J. Stutts – *Sam Houston State University.*

Previous research indicates a high prevalence of concentrate feed use, regardless of workload, as well as overweight and obesity in companion horses. The objective of our study was to characterize the use of concentrates and workloads of mature riding horses in southeast Texas in addition to obtaining morphometric measurements to determine the prevalence of over-conditioning in this population. Data were collected from horses (n=29) residing at 3 equine facilities. Body weight was obtained using a livestock scale, while daily rations of forage and concentrate were measured with a digital scale. Owners were surveyed to obtain data regarding workloads, while trained observers collected body fat measurements (BCS, cresty neck score [CNS], and rump fat thickness via ultrasonography) for each horse. When grouped by BCS, the percentage of horses scoring lean (4-5.5) was 62.1% and overweight (>6-7.5) was 37.9%. The percentage of horses working at each NRC workload were 17.2% at maintenance, 62.1% at light, and 20.7% at moderate. In conclusion, our data shows the measured population as having fewer overweight horses than lean horses, with prevalence of overweight being similar to previously published studies in other regions of the country and world. The lack of difference in the amount of concentrate offered to horses with different workloads reinforces the need to educate owners about appropriate use of concentrates and forages. This information provides insights into the current nutritional status and workloads of horses in this region, and identifies areas for further research in the area of equine nutrition in southern climates.

ABSTRACTS

11. Experiential learning and situated learning for nontraditional students

J. Lopez and R. L. Williams – *Texas A&M University-Commerce.*

As the demographics of the United States continue to change and grow, agricultural education at both the secondary and post-secondary level continues seeking opportunities to prepare students for careers in the industry. Some students may have little to no prior knowledge or experience with agriculture, so it is important to identify various methods of teaching that can help them effectively learn. This can aid in both the recruitment of nontraditional students and the retainment of them in the field of agriculture. Learning by doing and learning through experience has continuously been a key component in agricultural education and can serve as a stepping stone for nontraditional students. This single case study investigation was designed to describe the author's personal experience as a student pursuing a degree in agricultural sciences with no prior experience or background in agriculture. It was also designed to describe how the author gained practical knowledge through experiential and situated learning that was provided through research involvement, internships, conferences, and travel opportunities. It was concluded that experiential learning and situated learning are key strategies in education that can be utilized to obtain authentic opportunities for learning in agriculture, especially for those who may not have a traditional background. While in-class learning can build a firm foundation for agricultural study, experiential learning through research, conference participation, internships, and travel opportunities can help students better understand and grasp concepts covered in agricultural sciences courses, while also helping them build and form their own opinions.

ABSTRACTS

12. Agricultural Literacy and the Unwanted Horse

M. Mayes, A. Lovell, R. Tarpley, and S. Graham –
Tarleton State University.

Today there is an agricultural literacy crisis. Many believe that chocolate milk comes from brown cows; that Genetically Modified Organisms (GMOs) are analogous to poison; and that farmers and ranchers are unnecessary, because food comes from the grocery store. This disconnect from the truth continues with the unwanted horse situation; many believe that the wild mustang is on the verge of extinction. Looking further at the unwanted horse problem, two schools of thought emerge. First, scientists, veterinarians, and government officials argue that there are too many unwanted horses, both domestic and feral, with too few solutions. Second, animal activist groups and supporters argue that there are abundant resources to manage unwanted horses, and that for the Bureau of Land Management (BLM), wild horses are not over-crowded and need to be left in place, untouched, on the range. Animal activists are effectively using highly produced and visually impactful messages on social media platforms to forward their beliefs, and many of their statements are contributing to the agricultural literacy problem.

ABSTRACTS

13. The Economic Analysis of Corn Grain Optimization and Price Variation in Cattle on Feed in Texas

B. Moltz, M. Yu, E. Osei, and B. Smith– *Tarleton State University.*

Cattle placed on feed is a practice to maximize the amount of meat produced before being sent to slaughter, which has become a major agricultural industry. These facilities rely on different feed inputs to build the most cost-effective rations possible to increase the average daily gain of the cattle, which can significantly impact the profit. The three primary sources of profit risk when placing cattle on feed are: fed cattle prices, feeder cattle prices, and corn prices. The optimization of input quantities, especially corn, is crucial to maximize production efficiency and ultimately profit. The objective of this research is to determine the optimal corn grain production rate for cattle on feed in Texas and estimated profit maximization under various price ratios for corn grain and live cattle. Utilizing data from various USDA sources, various different input production levels and prices were collected. SAS, PROC CORR, PROC GLM and PROC REG procedures were used to identify the relationships among variables and stepwise regression models were used to estimate the different production functions. Sensitivity analysis were performed for the optimal production of corn grain rate, and consequent profit under various combinations of corn and live cattle prices for the four different functions. Additionally, a continuous form curve for optimal corn grain production rates under various price ratios was developed. The study will explain the difference of multiple function forms and can be used as a tool for producers and policy-makers.

ABSTRACTS

14. Evaluating the Effectiveness of Supplemental Instruction on Generation Z Students in AGN 331

S. Simons, C. Carraway, S. Jones, and F. Majs - *Stephen F. Austin State University*

The purpose of this research was to determine the effectiveness, barriers and benefits of Supplemental Instruction (SI) on Generation Z students in AGN 331 (Soil Science). The theory used as a model for this research was the Pace Model of College Impress (Pace 1979). Prior research indicated that SI improves test scores, final grades, retention and persistence in historically difficult courses (Martin et al., 1983). Correlations and ANOVA's were ran in order to determine a relationship between the non-SI attendees to those who did attend SI. Data was ran on SAS. Referring to test scores, a correlation was ran on the amount of hours spent in SI and the improvement on all of the exams. This correlation would be categorized as weak (0.16915). The correlation between the improvements from exam one to exam two was a moderate correlation (0.36243). This could be due to more students attending SI after grades were submitted for exam one. A moderate correlation was observed when the number of hours participated was ran with their final grade in soils (-0.37152). The final grade reported an average of 0.56 points higher and on the final exam an average of 4.26 points higher if the student had access to SI sessions. The conclusion: SI was effective in increasing final grades in AGN 331. Student perceptions of SI were gathered via Qualtrics. The survey showed that all students, regardless of attendance, thought SI was beneficial. But, the biggest barrier to their attendance was other obligations at that time.

ABSTRACTS

15. Effects of a novel blend of citrus botanical oils on equine behavior during a startle test and while trailering

T. L. Thomson, J. K. Suagee-Bedore, M. J. Anderson, K. K. Fikes, B.M. Medina, A. L. Wagner, and I. D. Girard – *Sam Houston State University and Probiotech International.*

The equine industry uses a wide variety of calming supplements to help horses cope with the stressors of interacting with humans and to modify their behavior to be safer to work around. This study evaluated Phytozen® (Probiotech), a novel, proprietary blend of citrus botanical oils, magnesium, and yeast. Young horses (n=14), concurrently enrolled in an academic equine training program, participated in a 2 mo feeding trial, and were assigned to either a control (CON, n=7) or treatment (TRT, n=7) group. The TRT group received the supplement, top dressed onto their normal feed, once daily (per manufacturer's recommendations). Horses were housed in individual stalls for the study period with occasional turnout to a dry lot or hand walking in the middle of the day (15 – 30 min). In order to ensure treatments were balanced, horses underwent an anxiety-test prior to the start of the study. The anxiety test consisted of taking two horses to an outdoor pen containing a round pen at one end. The test horse was taken to a feed bucket at the far end of the pen and released, while the companion remained in the round pen. The amount of time spent in proximity to their companion vs. consuming feed was measured, and positive and negative behaviors were scored. These scores were used to develop an anxiety score that was used to block horses to treatments. On day 55, horses underwent an exit speed test (EST), during which time to travel 10 ft and total distance traveled were recorded. Data were analyzed by one-way ANOVA, with time spent on negative behaviors and time to travel 10 ft being log transformed to improve normality and being presented as geometric mean and 95% confidence intervals. In the EST, TRT horses tended to have longer times to travel 10 ft than CON horses (1.35 [0.39,4.70] vs. 0.26 [0.07, 0.91] sec, P=0.064), while not traveling different distances (20±4 vs 21±4 ft, P>0.9). As illustrated by the slower time in the EST test, it is possible that this novel blend reduces startle responses in young horses. This could have positive benefits for human safety during the training process.

ABSTRACTS

Undergraduate Student Competition

16. Factors Associated with Late Fees on Personal Loans for Peer-to-Peer Lending

A. Bonin, T. Oyeleke, B. Piersol, J. Pike, J. Slankard, D. Chen, R. Irani-Kermani, L.A. Wolfskill, and S. S. Nair – *Sam Houston State University*.

Online peer-to-peer (P2P) lending communities enable individual consumers to borrow from, and lend money to, one another directly. Although, P2P lending have received great coverage in media, they received little attention from academic researchers. One main area of conflict between the lender and the borrower is the concept of late fees. Although it has been advised to avoid late fees for so many reasons, the amount of the late fees is significantly different when it comes to different types of loans and that is one of the concerns when an agreement is in line. In this study we analyzed the influence of various factors on total amount of late fees paid by borrowers by using the Lending Club available datasets that shows the characteristics of the borrowers who received loans from their club. We used multiple linear regression to evaluate the effects of various independent variables on the dependent variable (late fees). The results showed a significant association between the late fees paid and several variables such as the interest rate, borrower's total monthly debt (DTI), and loan grade (assigned based on credit score).

ABSTRACTS

17. Moo-vie Snacks: Storage stability and nutritive value of waste popcorn as a feedstock

L. P. Bielamowicz, T. J. Garcia, N. M. Cherry, J. P. Muir, and W. B. Smith – *Tarleton State University and Texas A&M AgriLife Research.*

The use of by- or co-products in livestock production is not a novel concept. However, as adoption of a novel feed ingredient increases, the cost efficiency of its use generally decreases. Therefore, discovery of novel feed ingredients is a worthwhile academic pursuit. Our objective was to determine the storage stability of popcorn (*Zea mays* L.) in terms of gain or loss in nutritive value. Popcorn was collected on consecutive weekdays in two wk from a local cinema. Samples ($n = 10$) were subdivided into 9 aliquots and subjected to storage, uncovered, for 0, 1, 2, 3, 7, 35, 70, 105, and 140 d. Following the assigned storage time, samples were dried at 55°C to determine weight loss. Samples were dried at 55°C, ground to pass through a 2-mm screen, and subjected to a batch-culture in vitro assay for digestibility estimates. Subsamples were ground to 1 mm assayed for neutral detergent fiber and acid detergent fiber. There was a linear increase ($P < 0.01$) in weight following open storage which was attributed to absorption of ambient moisture. There was a linear decrease ($P = 0.03$) in NDF, with values decreasing from 20.2% at d 0 to 16.6% at d 140. However, there was no effect of storage on ADF ($P = 0.29$), IVTD ($P = 0.38$), or IVNDFD ($P = 0.37$). Results are interpreted to mean that waste popcorn is relatively shelf stable and may be a viable candidate as a feedstock for diet formulation.

ABSTRACTS

18. Kibbles ‘n Conjecture: A corollary analysis of ingredient composition, price, and nutritive value of commercial dog food

T. B. Burrell, R. A. Miller, and W. B. Smith – *Tarleton State University.*

Quality nutrition for canine species contributes to a large global economic and health care field. Choices abounds in terms of the availability of food in any given retail outlet. Likewise, there is copious conjecture surrounding the supposed benefits of certain brands or types over others. A comparison of nutritive value of feeds relative to ingredient formulation and consumer cost would provide useful insight to the consumer when making selections for canine companion animals. This study sought to ascertain the correlations among ingredient position, nutritive value, and cost of commercially-available dog food. Commercially-available dog food was evaluated at local retail outlets in Stephenville, TX. For each observation, records were made of brand name, formulation, ingredient list, guaranteed nutritive analysis, and cost. Order in which meat, meat meal, or corn occurred in the ingredient list was not statistically correlated to cost per kg ($P \geq 0.33$) or concentrations of crude protein ($P \geq 0.35$), crude fat ($P \geq 0.13$), or crude fiber ($P \geq 0.35$). Grain-free formulations cost significantly more than conventional formulations (\$2.70 vs. \$4.60/kg; $P < 0.01$). However, there was no effect of formulation on concentrations of crude protein ($P = 0.07$), crude fat ($P = 0.37$), or crude fiber ($P = 0.44$). Results are interpreted to mean that, despite claims to the contrary, order of ingredients in a formulation have no observable effect on the nutritive value, but large effects on cost, of commercially-available dog food.

ABSTRACTS

19. Factors Affecting Interest Rate offered on Peer-to-Peer Personal Loans

M. Depine, A. Ramos, B. Nichols, T.r Krus, L. Pollock, R. Irani-Kermani, S. S. Nair, D. Chen, and L.A. Wolfskill–
Sam Houston State University.

Online peer-to-peer (P2P) lending clubs and communities enable individual consumers to borrow from, and lend money to, one another directly. They have received great coverage in media but little attention from academic researchers and when it comes to loans interest rate estimation is one of the most important elements for both the lender and the borrower. There are many factors that influence interest rates. When it comes to individual's decision making process these factors can be seen as macro factors like supply and demand, inflation, and federal funds rate and micro factors like credit scores, loan amount and duration, and guarantee. In this study we analyzed the main micro factors influencing the interest rates for peer to peer personal loans by using the Lending Club available datasets that shows the characteristics of the borrowers who requested loans from their club. We used multiple linear regression to evaluate the effects of various independent variables on the dependent variable (Interest rate). The results show a high positive correlation between the interest rate as the dependent variable and the funded amount and the borrower's total monthly debt (DTI).

ABSTRACTS

20. Livestock Literacy: Waste newspaper as a component of silage for livestock feeds

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Research.*

Per unit energy, fiber is among the most expensive components of the ruminant diet. While the use of by- or co-products can help offset the costs of feeding cattle, these feeds often increase in price with increased adoption. Wastes from human enterprises may represent the next step in feedstuff investigation. Our objective was to evaluate the suitability of newspaper as a component of silage for ruminant feeding. Newspapers were obtained from the Dick Smith Library and JTAC News at Tarleton State University (Stephenville, TX). Samples were cut into strips (approximately 4.0×30.2 mm) using an office shredder. Sorghum-sudangrass was harvested and cut by hand to lengths of approximately 10 cm. Samples were combined to achieved DM ratios of 100:0, 75:25, 50:50, 25:75, and 0:100% newspaper and sorghum-sudangrass. Distilled water was added to achieve 45% DM. Samples were packed in a double layer of plastic sheeting and sealed in 19 L buckets. Laboratory silos allowed to ferment for 35 d. Ensiled samples were assayed for DM, particle size, and silage acids. There was no effect of newspaper percentage ($P = 0.47$) on silage pH. Ammonia (0.04 to 1.2% DM), total VFA (0.01 to 4.8% DM), lactic acid (0 to 46.6% VFA), and acetic acid (0.01 to 2.4% DM) increased linearly ($P < 0.01$) with increased concentration of sorghum-sudangrass. Results indicated addition of newspaper to grass silages could represent a viable means to decrease cost and extend resources for ruminant animal producers.

ABSTRACTS

21. Plant functional traits of *Carapa guianensis*, a widespread tropical tree, adapted to local climate conditions at two elevations in Costa Rica

M. Flores, A. Keebler, E. M. Prior, L. Gomez, E. Gonzales, K. Brumbelow, and G. W. Moore - *Texas A&M University*.

Tropical rainforests are among the most biodiverse ecosystems in the world. However, plant species occurrence are highly dependent on localized topography, elevation, and climate. Convergent evolution has been studied extensively to identify key plant traits that vary along those gradients, which contributes to a greater understanding of how species adapt to climate variation. This project investigated leaf physiological and anatomical trait variation within a select tropical tree species, *Carapa guianensis* Aubl, which thrives in a wide range of elevations and climates within Central and South America. At two sites in Costa Rica, four leaves were sampled on each of three sample trees of *C. guianensis* growing at approximately 500 m (Texas A&M University Soltis Center) and approximately 830 m elevation (Pocosol Biological Preserve), in which we measured leaf photosynthesis and stomatal densities. Photosynthetic responses across a range of light intensities were assessed to determine the maximum potential photosynthesis of trees occurring at contrasting elevations. We found that stomatal density was higher at decreasing elevations, possibly as a means to compensate for less cloud cover. Furthermore, *C. guianensis* trees located in lower elevations had higher net photosynthesis rates (P_{gmax}) than trees sampled at higher elevations, after accounting for differences in leaf temperature. These findings suggest that lower elevations with higher light intensity can significantly drive critical plant processes. Hence, further experiments are needed, not only to explore plant functional traits in species adapted to occur across wide ranges of elevations, but climatic changes that drive them.

ABSTRACTS

22. Net Ecosystem Exchange of CO₂ for Corn and Cotton

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Since plants absorb carbon dioxide (CO₂) through photosynthesis, crop fields act as a sink of CO₂. However, CO₂ is released to the atmosphere because of the plant and soil respiration. Net Ecosystem CO₂ Exchange (NEE) is a measure of the net CO₂ flux, where negative values indicate CO₂ sink. Photosynthetically Active Radiation (PAR) is the portion of solar radiation that plants use for photosynthesis. Since CO₂ assimilation is directly related to photosynthesis, PAR and NEE are related. This study quantified the relationship between PAR and NEE for cotton and corn and compared their cumulative NEE. The daily data on NEE (measured using eddy covariance system) and PAR (measured using LI-COR quantum sensor) were collected from a field experiment conducted at Texas A&M University Soil and Crop Research Farm. Descriptive statistics were used to graphically analyze the time trend in NEE and PAR data and to compare cumulative NEE for the two crops. Simple linear regression was used to assess the influence of PAR on NEE. The results showed that corn assimilates more CO₂ compared to cotton even though the duration of the corn crop is smaller than that of cotton. The results of the regression analysis showed a significant relationship between PAR and NEE for both cotton and corn. One unit increase in PAR results in 0.0155 units increase in NEE for cotton and 0.0064 units increase for corn. This indicates that corn is more efficient in using photosynthetically active solar radiation to assimilate CO₂.

ABSTRACTS

23. An approach to detect disease and water stress in wheat genotypes using spectral reflectance data

R. Kim, R. Raman, and N. Rajan - *Texas A&M University.*

The United States of America (USA) is one of the largest wheat exporters in the world. According to FAO 2016, it ranked first in wheat export value and second in wheat export quantity. However, grain yield loss due to rusts (leaf, stem, and stripe) and leaf streak diseases has gained much attention. Any loss in the US wheat yield severely affects the food-deprived world. To prevent the yield loss, early detection of stress becomes important. One such attempt has been made using ASD FieldSpec®4 in the wheat field at Brazos Bottom Farm, College Station, TX. Based on visual observation of plant health, eight genotypes in two replications were selected- three healthy, two leaf rust affected, two water stress and minor leaf rust affected, and one water stress affected. They were compared based on their spectral reflectance curve especially in short wavelength infrared (SWIR) region (900-2500 nm). The spectral reflectance curve in SWIR region supports visually observed data. Reflectance decreased with increase in leaf water content from 1100-2500 nm, i.e., healthy plants showed lower reflectance value while higher reflectance was observed for diseased plants in SWIR. The result suggests that spectral reflectance data obtained since tillering stage might give a better understanding about genotypes prone to stress and steps can be taken to prevent disease infestation at early stage of crop growth, thus minimizing grain yield loss. In addition, genotypes showing lower reflectance curve from tillering to harvest might be used by breeders to develop new varieties not prone to stress.

ABSTRACTS

24. Comparison of physiological responses to exercise in horses on a conditioning regimen versus inactive horses receiving a yucca and fenugreek (Digesta Well® NRG) dietary supplement

R. M. Miller, J. K. Suagee-Bedore, K. B. Thompson, L. A. McFarland, T. L. Thomson, K. J. Stutts, M. J. Anderson, A. L. Wagner, and I. D. Girard – *Sam Houston State University and Probiotech International.*

Yucca and fenugreek are purported to reduce inflammation and improve metabolic response to exercise. Therefore, we evaluated the effects of a dietary supplement (DigestaWell® NRG) in unconditioned horses completing an exercise challenge test. In this study, 10 unfit horses were assigned to receive exercise (EXC; n=5) or the dietary supplement (SUP; n=5). Horses assigned to EXC were ridden daily at a walk, trot, and canter. Horses assigned to SUP were given the supplement once daily and received no strenuous exercise. Horses underwent a 14-min standardized exercise test prior to (Period1) and after a 4-wk treatment period (Period2). Heart rate, respiration rate, blood lactate concentrations, and thermal images of six muscle groups were obtained prior to, immediately after, and 2 hr post-test. Data were analyzed using repeated measures ANOVA. During Period1, no significant differences were found between the treatment groups ($P>0.05$). During Period2, EXC horses had a lesser ($P<0.01$) increase in heart rate than SUP horses at 0 and 10 min post exercise indicating that the conditioning program improved cardiovascular fitness. Despite this, SUP horses had lower ($P<0.01$) temperatures in their back, hip, foreleg, and knee at 2 hr post exercise indicating reduced peripheral blood flow as compared to EXC horses. SUP horses also had lower ($P<0.001$) lactate concentrations than EXC horses at 2 hr post exercise, and these lower concentrations indicate a lower blood flow, and henceforth lower peripheral temperatures. Infrequently exercised horses may benefit from yucca and fenugreek supplementation through lower lactate concentrations and peripheral temperatures following exercise.

ABSTRACTS

25. Reduce Reuse Rerumen: Reduction of *Eschericia coli*, coliform bacteria, Enterobacteriaceae, and yeast and mold colonies in dried paunch manure

R. A. Miller and W. B. Smith - *Tarleton State University*.

The discovery of novel by-product feeds for animals, especially cattle, supports an economically viable agricultural community and enhanced stability in the United States food chain. By-products of livestock processing could provide the tools necessary to achieve this goal. Paunch manure, the material from ruminant stomachs at the time of harvest, is a waste product of the meat industry and represents a final loss due to cost of disposal. Our objective in this study was to determine the microbial content of fresh versus dried paunch manure in an effort to assess viability as a potential feed source. Fresh paunch manure was collected from cattle at a local abattoir and immediately homogenized for microbial plating. One milliliter of decanted paunch manure was plated on specialized film for determination of colony counts from Enterobacteriaceae, coliform-forming bacteria, *Eschericia coli*, and yeast and mold. Plates were incubated at 36°C for 24 ± 2 hours. In the wet paunch, *E. coli* had a mean colony count of 3, coliform bacteria of 53, yeast and mold of 0, and Enterobacteriaceae were too numerous to count. In the dry paunch, *E. coli* had a mean colony count of less than 1, coliform bacteria of 52, yeast and mold of 0, and Enterobacteriaceae less than 1. Source of paunch contributed a majority to the total variance in all instances of the random effects models. Results are interpreted to mean that, given the drastic reduction in microbial loads, paunch manure may represent a viable feedstock for further testing and development.

ABSTRACTS

26. Bayou Beef: A random effects model of crustacean waste as a feedstock

S. L. Wood, N. Cherry, J. P. Muir, and W. B. Smith-
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Research.*

It is important for researchers, as progressive producers, to consider human enterprise wastes as one of the next steps in feedstuff investigation. In an effort to reuse a seemingly useless and disposable component of one of America's most enjoyed aquatic delicacies, our objective was to determine the nutritive value of crawfish and shrimp shells in relation to ruminant nutrition. These discarded items were collected from local events and sorted into four different groups: crawfish heads, crawfish tails, shrimp shells, and shrimp tails. Crawfish and shrimp wastes were tested independent of each other. These groups were dried at 55°C for 72 h and ground to pass through a 2-mm screen. Samples were subjected to a batch-culture in vitro true digestibility (IVTD) assay. A separate set of samples were assayed for dry matter, neutral detergent fiber (NDF), and acid detergent fiber (ADF), and acid detergent lignin (ADL). Data were analyzed as a completely randomized design. Crawfish heads contained 26% NDF, 13% ADF, and 1% ADL, while crawfish tails contained 24% NDF, 16% ADF, and 1% ADL. Crawfish heads and tails did not differ in IVTD ($P = 0.48$) or in vitro NDF digestibility (IVNDFD). Shrimp shells contained 36% NDF, 27% ADF, and 4% ADL, whereas shrimp tails contained 29% NDF, 18% ADF, and 1% ADL. Shrimp tails had greater ($P < 0.01$) IVTD but lesser ($P = 0.01$) IVNDFD than shrimp shells. Results are interpreted to mean that crustacean waste may represent a suitable prospective feedstuff for further evaluation.

ABSTRACTS

27. Fertilizer type and rate influence on *Erysimum* growth and development

C. Wright - *Stephen F. Austin State University*

A greenhouse study was conducted to evaluate the response of *Erysimum* to fertilizer type and rate. Two fertilizers sources were used Peter's 15-5-15 (water soluble fertilizer) and Osmocote 18-6-12 (controlled release fertilizer). Fertilizer rates consisted of 0 (control), 50, 100, 200 and 400 ppm N for the Peter's 15-5-15 fertilizer and 0 (control), low, medium (recommended rate), high and very high for the Osmocote 18-6-12 fertilizer. *Erysimum* 'Sugar Rush Yellow' (288) plugs were planted 2 per 4 inch pot in potting soil on September 21, 2018. There were 10 treatments in with 8 replicates in a randomized complete block design. On September 28, 2018, the pots were treated with the corresponding fertilizer and measured. Each week the pots were fertilized and measured to calculate average growth for each treatment. This experiment was 8 weeks long and terminated on November 16, 2018. For growing *Erysimum* 'Sugar Rush Yellow' the best fertilizer for growth and flowering would be Peters Excel 15-5-15 at the 200 ppm N applied weekly. If Osmocote is used the low level should be used to be at the critical level. Using the medium, high, and very high would be a waste of fertilizer because the plants did not respond to excess nutrition.