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

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ABSTRACTS

1. What's the Point (Worth): A Hedonic Analysis of Whitetail Semen Auction Data.

K. Barnes, J. Franken, D. Ullrich, C. Stewart, and F. Mills, Jr. *Sam Houston State University*.

The cervid or deer production and hunting industry has an economic impact of $318.4 million in Texas and $3 billion in the U.S. The antlers of whitetail bucks are prized trophies for hunters, and for this reason, breeders make great investments to manage the genetic potential for antler growth in their deer herds. Sire selection can account for up to 90% of the genetic changes in managed herds of livestock. Therefore, substantial research investigates the value of certain characteristics of sires using hedonic analysis of auction data for various types of livestock, including race horses, beef cattle bulls and semen of dairy bulls. Similar hedonic analyses are used to investigate the value of attributes of hunting leases and permits. This study investigates the value of certain attributes of whitetail bucks using a hedonic analysis of whitetail buck semen auction data. Publically available data on semen prices, buck antler scores, buck age, and whether or not the buck is typical or non-typical are collected from the Texas Deer Association website. Auction prices range from $120/straw to $12,500/straw of semen with a mean of $2250/straw. Modeling price as a function of the other characteristics in an ordinary least squares regression, indicates that an additional 10 inches antler score increases the value of a straw of semen by about $153 on average, while larger premiums are paid for Texas genetics.

2. Influence of Mare Performance on Predicting Post-Partum Anestrus

C.D. Knight, J.L. Leatherwood, M.J. Anderson - *Sam Houston State University.*
S. Brinsko, and T. Blanchard - *Texas A&M University.*

Seasonal cyclicity and post-partum anestrus in mares have long plagued conception rates at equine breeding facilities. Photoperiod and body condition of mares have shown to impact the ability of a mare to ovulate and result in a successful pregnancy following parturition. Therefore, the objective of this study was to determine if weight and body condition score (BCS) impact the ability of a mare to ovulate following parturition. Mares (n=34; 2-24 years) of similar breeding from the Texas Department of Corrections (Huntsville, TX) with expected foaling dates from January and February were utilized to test the objective; measurements of body weight (BW), calculated by a weight tape, and BCS were obtained weekly. Data were analyzed using the PROC GLM procedure of SAS to compare differences across collection dates and between ovulated and non-ovulated mares. In a comparison of weekly data collection dates of ovulated mares, no statistical difference was detected ($P > 0.10$) in either BCS or BW. This illustrates that a common BW and BCS were shared by all ovulating mares regardless of ovulation date. However, the comparison of ovulated and non-ovulated mares also show no difference ($P > 0.10$) in either BCS or BW. Therefore, it can be concluded that BCS and BW alone is not an efficient way to determine ovulation following post-partum anestrus and other markers would need to be utilized to improve accuracy.

3. **An Economic Comparison of Shallow Subsurface Drip, Deep Subsurface Drip, and Center Pivot Irrigation Systems in South Georgia for a Repeated Five-Year Crop Rotation.**

T.W. Kelch, C.P. Martinez, S.S. Nair, and F.D. Mills Jr. – *Sam Houston State University*.
R.B. Sorensen - *USDA-ARS National Peanut Research Lab*

Efficient irrigation systems are important for conserving water resources and ensuring profitability. Three irrigation systems on South Georgia farms were compared over a 15-year planning horizon – shallow subsurface drip irrigation (SSDI) placed 2 inches below soil surface, deep subsurface drip irrigation (DSDI) placed 10 inches ± 2 inches below soil surface, and center pivot irrigation (CPI). Over the 15-year period, a 5-year crop rotation of cotton, corn, corn, corn, and peanuts was repeated three times on a 30 acre field, common in South Georgia due to terrain constraints. A comparative investment analysis was conducted. The revenue stream for the 5-year rotation, repeated three times (i.e., 15-year planning horizon), was calculated using a 15, 10, 5-year moving average of cotton, corn and peanut prices collected from USDA-NASS and each commodity's expected yield from historical data and expert opinion. All costs of operations were assumed to be constant except for the irrigation conveyance system, and annual irrigation repairs and maintenance. All revenue and investment costs were discounted at a 3% rate to account for the time value of money. The use of personally held capital was compared to borrowed capital at a 6% and at a 9% interest rate. Results indicated that though returns were slightly lower for SSDI compared to CPI, the present value (PV) of the returns above irrigation system costs was greatest for SSDI regardless of capital expenditure scenario. Therefore, farmers may consider SSDI when updating irrigation systems.

4. **Shaping Future Agriculturalists: Does Agricultural Literacy and Demographic Background Influence Student Views about Farm Policy?**

K.A. Laqua, S.S. Nair, F.D. Mills, Jr., and K.W. Ferrell – *Sam Houston State University*.

US food and agricultural policy can be a sensitive subject among numerous constituencies. Since university agricultural students may eventually become a part of these groups, does the level of agricultural literacy and personal backgrounds influence students' views of agricultural policy? The Food and Fiber System Literacy instrument and the Consumer Preferences for Farm Policy and the USDA Budget survey were administered to students enrolled in Introduction to Professional Leadership Skills (Intro) and in Agriculture and Government Programs (Policy) at Sam Houston State University (SHSU). A two-tailed student's t-test assuming unequal variances compared agricultural literacy between students in the two courses. Results indicated students enrolled in Policy were significantly more agriculturally literate than students enrolled in Intro ($p=0.0007$). Subsequently, students' level of agricultural literacy and demographic background were regressed on a series of seven Likert-type scale questions related to farm policy. "I prefer less government interference in markets," was the only relationship found to be statistically significant. Students in Intro preferred less government interference compared to students in Policy ($p=0.0509$). Students possessing greater agricultural literacy, regardless of classification, also preferred less government interference in markets ($p=0.0448$). Conversely, those students identifying themselves as Democrats rather than Republicans, desired more government interference in markets ($p=0.0331$). Students identifying themselves as Independents had comparable views to their Republican counterparts. Based on the preliminary findings from the policy questions posed, students' academic experience, level of agricultural literacy, and political affiliation influenced only their view regarding government interference in markets.

5. **Infectious Disease Prevalence and Age of Feral Cats In a Population Living on the Abilene Christion University Campus.**

A. Martinez, A. McCormick, I. Rojas and D. Hembree – *Abilene Christian University*

Feral cats tend to aggregate in locations where there are plenty of living areas and food sources, such as university campuses. Feral cat populations are often considered to be a nuisance or a health concern. The Agricultural and Environmental Sciences Department at Abilene Christian University, in conjunction with the ACU Grounds Crew, implemented a Trap-Neuter-Return (TNR) program in 2013. In 2014, the TNR program was expanded to include health testing. All of the cats in the program were estimated to be less than 5 years old, with the majority being 2 years of age or younger. This finding raises the question of the welfare and lifespan of cats living in feral cat colonies at ACU. We found that there is a very low prevalence of infectious respiratory diseases observed at the time of examination, and conclude that the relatively short lifespans are not due to these infectious conditions. Though the causes of feral cats' short lifespans are not fully known, we conclude that most deaths on campus are not due to FeLV/FIV due to the low prevalence of those infectious diseases among the feral cat population at Abilene Christian University.

6. **Assessment of Agricultural Mechanics Teachers Who Competed in the State FFA Agricultural Mechanics and Tractor Technician CDE.**

J. Pulley, M.J. Anderson, D. Ullrich, and J. Muller – *Sam Houston State University*.

There is a constant need for teachers to attend professional development, for them to better themselves and their students. This study looked at high school Agricultural Mechanics teachers to see where their professional development need is. The objective of this data determined what areas Ag Mechanics teachers are lacking, and what areas they need professional development in. This study took the Tractor Tech and Ag Mechanics test from the respective FFA CDE for the years 2006-2013, and broke the questions down into system areas, (engines, hydraulics etc.), with each system having sub-categories (maintenance, repair, and theory). The results reported no significant difference between the systems ($p=0.4928$). There was also no significant difference between the category data as well ($p=0.3033$). The Ag Mechanics data did show a significant difference between categories ($p=0.0005$). There could be several reasons for this outcome, teachers could be teaching the same every year, so the students that are returning aren't getting any better and the new students are brought up to where the returning students are at. Students could be teaching themselves to take up the slack from the teacher, so they are not getting everything that they need. The data shown can be used to plan workshops and other professional development opportunities. They can start with the lowest scoring system area and work up from there, whether they do one a year or multiple ones a year.

7. A Hedonic Analysis of Auction Prices for Beef Herd Bulls.

S. Skurja, and J. Fraken – *Sam Houston State University*.
S. Cunningham and K. Bacon – *Western Illinois University*

Cattle producers today need to take advantage of every opportunity to increase their herd's overall productivity. Herd bulls will influence a calf crop by 50% and can impact the genetics of retained heifers by up to 90% (Wagner et al. 1985). With herd bulls contributing the potential majority of future herd genetics, an in-depth study of prospective herd sire Expected Progeny Differences, or EPDs, and phenotypical traits is essential to successful cattle management. Past studies show EPDs to have limited influences on herd bull price; instead producers rely mainly on phenotypical characteristics when choosing bulls (Turner 2004; Atkinson 2010; Franken 2012; Stephens 2014). However, phenotypical traits alone do not give an accurate indication of a bull's prospective progeny's performance. As information becomes available, such as EPDs, consigners add the statistics to sale catalogs to inform prospective buyers of a bull's performance in comparison to the breed average. EPDs should give producers an advantage when selecting bulls, but the majority of producer's only focus on few EPDs, birthweight and wean-weight or year-weight. Producers should take advantage of new technologies and choose bulls who are not only appealing phenotypically, but also possess EPDs that will positively impact their herd. If producers are more attentive to EPDs, premiums will be given for bulls statistically superior to others. This study takes another look at factors that influence bull prices using new data from an Illinois auction to assess whether previous findings hold true in the current research context or if new trends are apparent.

8. Behavioral Responses of Livestock Exposed to Unmanned Arial Systems

P. Urso, R. Tipton, M. Beverly, S. Kelley, and J. Wilson – *Sam Houston State University*

Unmanned Arial Systems (UAS) are growing in popularity, their benefits in agriculture, specifically production assessments, have recently become more relevant. This study utilized an UAS to determine the flight zone, upon approach and hover, of selected livestock species: cattle, goats, and horses. Test areas were spacious so animals would not feel confined while providing space to flee when threatened. Horses were tested in two independent groups: outdoor round pens and indoor arena. Cattle were split into three groups: cows with calves (CWC), cows without calves (COC), and weaned heifers (WH). Goats were tested as a group in their home pasture. With each group, the UAS hovered, over the animals, 75 feet above ground before descending in 5 feet intervals. Environmental measurements were similar for each flight. Animals were signaled acoustically before seeing the UAS. Flight zones varied by species and group. The COC and WH allowed the system to hover at 15 feet above ground before they casually moved from the UAS. CWC, did not flee the drone, but huddled closer together around their offspring responding in a protective behavior. The goats allowed the UAS to hover at 10 feet before moving. Horses, tested indoors, expressed a startled, frightened behavior at 25 feet. The outdoor tested horses were calm and showed unstartled behaviors consistent with other specie groups. Geldings showed a much more relaxed behavior compared to mares. Understanding these behavioral responses could help producers utilize UAS for herd observations without disturbing animals in their natural environments.

9. Teaching Welding: Actual vs. Virtual Reality

M. Watson. D. Pavelock, D. Ullrich, R. Maninger, and J. Muller – *Sam Houston State University*

Theoretical learning in the classroom has become prevalent in the educational field. Students are being taught how welding works, yet have little hands-on instruction to make classroom learning effective. To help provide hands-on learning opportunities for students, many schools that are not equipped with a laboratory have moved to teaching with Virtual reality (VR). According to Dale's Cone of Learning, less than 50% of what is read or given in lecture is actually retained in the cognitive mind. Subsequently, students retain 70% in the cognitive mind by doing what is being taught. To obtain a higher retention rate VR has been brought into the educational field, by applying a theological viewpoint of welding and hands on manipulation. 29 students were split evenly into groups, some learning to weld in the laboratory and others by VR. Groups were evaluated by an American Welding Society (AWS) 1G test plate the volunteers welded after 5 practice passes. An AWS inspector evaluated the welds to find that no one passed the full D1.1 AWS test procedures, yet eliminating criteria's for root penetration. 60% of the students passed the AWS test weld by learning hands-on whereas only 6.25% passed when learning through VR. VR groups saved $71 dollars in wasted materials, not including consumables. This and other technologies are available and relatively inexpensive, but can only teach the basic manipulations and not actual welding. Much is needed in advancing technology to teach in a higher standard that industry is looking for.

10. Anxiety of Welding Lowered Through Virtual Reality

M. Watson. D. Pavelock, D. Ullrich, R. Maninger, and J. Muller – *Sam Houston State University*

Theoretical learning in the classroom has become prevalent in the educational field. Students are being taught how welding works, yet have little hands-on instruction to make classroom learning effective. To help provide hands-on learning opportunities for students, whom have disabilities or may be a little uncertain of the aspect of welding have moved to teaching with Virtual reality (VR). Anxiety and safety of others is the real reason that we are in a world of pendulum swinging towards VR over real world learning. Anxiety is an unsettling anticipation of a threatening event that has a negative impact on a person. Anxiety and fear are used interchangeably, they have different distinctions to some, yet they both are interpreted as an uncomfortable feeling VR has been brought into the educational field, by applying a theological viewpoint of welding and hands on manipulation. 29 students were split evenly into groups, some learning to weld in the laboratory and others by VR. 4 Surveys were giving to the students evaluating anxiety and confidence levels. The students of the VR groups had a lower levels of anxiety and higher confidence ratings compared to other groups during the learning process. Yet after all welds were completed the hands-on laboratory groups had higher confidence level in the welding aspect. This and other technologies are available and relatively inexpensive, but can only teach the basic manipulations and not actual welding. Yet, is a great start for those students who are worried about the hazards of welding.