ORAL ABSTRACTS

12th Annual Research Symposium

March 7 – 9, 2001

Oklahoma State University

Graduate College

BIOLOGICAL SCIENCES

Machinery selection for wheat production and soil conservation in Jordan
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The selection of the proper machine size to the required field operation on the right time, the size of equipment to be used with a given tractor size and the ownership costs of common farm machinery used in Jordan were studied. The cost of planting wheat at times earlier or later than the optimum time "timeliness cost" in Jordan was also determined. Actual weather and soil data from Jordan were used as inputs in a crop yield-predicting model, CERES-Wheat. This model was used to predict wheat yield at different planting dates in Jordan. The results of the model simulations were used in determining the timeliness cost. Timeliness cost was minimized by planting wheat during the mid of November. Planting one month earlier (October 15 - 20) led to the loss of 292 kg/ha of wheat, while planting one month later (December 20 - 25) caused the loss of 359 kg/ha of wheat.

The problem of soil erosion and its effect on wheat production in Jordan was studied. The rate of soil erosion resulting from different tillage systems was generated using the Environmental Policy Integrated Climate model (EPIC). The model was used to simulate the wheat yield and the rate of soil erosion on the clay soils of northern Jordan. The amount of soil erosion and its impact on wheat yield was simulated under different tillage systems for the period of 100 years. The tillage systems used in the model include moldboard plow, disk plow and a chisel-sweep tillage system. The Net Present Value (NPV) method was used to measure the costs and benefits of each system. The system with the highest NPV could be selected.

Effects Of Implant Status During Winter Grazing And Rate Of Gain During Summer Grazing On Performance By Stocker Steers - (Whiteman Award)
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Eighty-three steers (217 ± 4 kg) were used to determine the effects of an implant during the winter grazing season (Dec-Mar, 92d) and to detect if carryover effects of the winter implant varied with rate of gain during summer grazing (Apr-Sept, 151d). Steers were implanted with Synovex-S (WIN+; n=42) or no implant (WIN0; n=41), fed 2 kg of a 38% CP cube/(steer*feeding) 3X/week, and allowed to graze dormant Old World bluestem during the winter. In April, steers (240 ± 4 kg) were implanted with Synovex-S. To create different rates of gain (LOW vs HIGH), steers were stocked at 100 AUD/ha (n=4; LOW) with no supplemental feed, or 60 AUD/ha (n=4; HIGH) and supplemented with 2 kg/(steer*feeding) 3X/week, and allowed to graze native tallgrass prairie pastures. Interactions ($P < 0.06$) between winter implant status and summer rate of gain were detected for summer and total (Dec-Sept, 269 d) ADG. Implanting during winter grazing increased ($P < 0.09$) ADG (0.4 vs 0.3 kg). Summer ADG for steers at the LOW rate of gain did not differ ($P = 0.19$) for WIN+ (0.68 kg) vs WIN0 (0.63 kg) cattle. Steers at the HIGH rate of gain on the WIN+ (0.93 kg) and WIN0 (0.99 kg) treatments had similar ($P = 0.12$) summer ADG, and were greater ($P < 0.01$) than WIN+ or WIN0 steers at the LOW rate. Daily gain for the entire grazing period (WIN and SUM) by steers at the LOW rate of summer gain tended ($P < 0.07$) to be greater for WIN+ (0.47 kg) vs WIN0 (0.43 kg), while cattle at the HIGH rate did not differ between ($P = 0.33$) WIN+ (0.62 kg) vs WIN0 (0.64 kg). Both WIN+ and WIN0 steers at the HIGH rate of summer gain had greater ($P < 0.01$) total grazing period ADG than either treatment at the LOW rate. Use of a Synovex-S implant increased winter grazing ADG. Steers implanted during winter grazing with a reduced rate of gain in the summer tended to maintain their

advantage over the total grazing period. However, carryover effects of an implant during winter grazing were not affected by rate of gain during summer grazing.

Evaluation Of The Flathead Catfish Population And Fishery In Lake Carl Blackwell, Oklahoma, With Emphasis On The Effects Of Noodling

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Flathead catfish (Pylodictis olivaris) are a popular sport fish in Oklahoma and several states in the southeastern United States, yet little information is available regarding the impact of recreational harvest on the population dynamics of the species. In Oklahoma, angling groups have voiced concerns that the sport of noodling, or handgrabbing, may negatively impact flathead populations by selectively targeting spawning fish and larger individuals. The objectives of our study are to examine the flathead catfish population structure in Lake Carl Blackwell, Oklahoma,and determine the level and effects of recreational harvest on the the flathead population. The first objective was achieved through sampling the population with gill nets and electrofishing gear and recording the length, weight,and sex of fish collected, as well as environmental characteristics at the site of capture. A total of 860 flathead catfish measuring from 38 milimeters to 1130 milimeters in length were collected, of which 454 fish were tagged and released to estimate population size. Each month, a small sample was collected to determine the age distribution and growth rate of the population The second objective was accomplished by surveying fishermen and examining their catches, and using tagged fish harvested by fishermen to determine the rate of mortality due to exploitation. To date, 11 tagged fish have been reported captured by fishermen, of which six were taken by trotlines, three by noodling, and one each by rod-and-reel and a jugline. The size distribution of the harvested fish examined was compared to the size distribution of harvestable fish in the population, and the results suggest the size of fish taken by fishermen is representative of the population.

Changes in Gene Expression in Response to Leaf Rust Infection in Wheat

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Plant-pathogen interactions frequently involve changes in gene expression in response to signals produced by the two organisms. Wheat (Triticum aestivum) cDNA subtraction libraries enriched with pathogen-induced sequences were produced in leaf rust (Puccinia triticina) infected tissues undergoing hypersensitive response at 24 and 72 hours after inoculation (hai). Expression profiling was done using representational difference analysis (RDA) coupled with macroarray. Wounding effect due to cutting was also analyzed by producing detached-leaves cDNA-RDA library. Data analysis revealed that highly induced clones at 24 hai had sequence similarities to genes involved in oxidative stress, lignification and flavonoid biosynthesis. Clones with significant similarities to pathogenesis-related genes and putative regulators of the hypersensitive response were found highly expressed at 72 hai. Co-induction of some clones was observed at different infection stages (24 and 72 hai) and under different stress responses (wounding and pathogen infection) suggesting the presence of signaling network interactions and coordination among cells during plant defense response. Unknown clones with no significant similarities to the databases also were isolated and showed the same expression pattern as the clones with putative functions. Isolation of full-length cDNA sequences and further expression analysis are on going. Unraveling the molecular mechanisms of this disease resistance pathway will serve as a foundation for the rational design of novel methods of disease control.

Triglyceride Levels In Pea Aphid, Acyrthosiphon Pisum, In Relation To Rearing Temperature

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Pea aphids, Acyrthosiphon pisum, derived from a clonal colony, were reared on faba bean at 25C and 10C for several years in our laboratory. Aphids reared at 10C were much darker green in color than those reared at 25C. The aphids reared at 10C were also distinctly heavier than 25C reared aphids. Aphids reared at 25C were moved to either 10C or 4C and sampled after 16 days. The aphids moved to 10C turned a dark green color and increased in weight while those moved to 4C showed no change in color or weight. Total fatty acid content of aphids reared at 10C was about two-fold higher than that of 25C reared aphids. However, the total fatty acid of pea aphids raised at 4C did not change compared to that of 25C reared aphids. The increase of total fatty acid in pea aphids reared at 10C was due in large part to an increase of myristic acid, which occurred exclusively in the triglyceride fraction. There was no change in the levels of unsaturated fatty acids found in membrane phospholipids of aphids reared at 10C or 4C compared to 25C aphids. A time course study showed that when the aphids were switched from 25C to 10C, the total fatty acid content increased gradually over time and reached the maximum level around 16 days .

Evaluating The Effect Of Municipal Waste Water On The Sensitivity Of Resident Microbes To Common Antibiotics

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Municipal wastewater is released into the environment on a daily basis at nearly every city in the United States. Most of the treatment that this water receives is designed to reduce the level of nitrogen, phosphorus, ammonia and organic solids. Most of these treatment systems are not designed to remove other contaminants such as heavy metals, organic compounds (i.e. PAH, PCB) or pharmaceuticals. Because of these limitations, resident biotic communities of the receiving waters are exposed to an array of synthesized compounds that may produce physiological changes in these organisms. One group of compounds that has received a high degree of interest recently is antibiotics because of the potential for disease-causing microbial communities of receiving stream waters to develop resistance to antibiotics.

The objectives of this project were to use a combination of field collection and laboratory analysis to evaluate effluent from municipalities to determine if antibiotic resistance was developing in the resident microbial community downstream from the wastewater effluent outflow. Receiving streams were sampled near cities of three sizes to assess the effects of effluent amount on the level of resistance. The samples were analyzed for water quality and then bacteria from the water were cultured on agar plates. Antibiotic discs were applied to the plates. The effects of the antibiotics were measured and recorded.

The data indicated that resident microorganisms of the receiving waters of municipal wastewater effluent were resistant to several commonly used antibiotics. The data also exhibited that the antibiotic resistance was not related to the effluent of the waste treatment processes.

Effect Of Implanting On Performance And Carcass Characteristics Of Finishing Steers

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The objective was to determine the effect of implant strategy on finishing performance and carcass characteristics. Crossbred steers (n = 150; BW = 289±1.9 kg) were blocked by weight and randomly allotted to 30 pens (10 pens/block; 5 hd/pen) in a 180-d finishing study. Two pens/block were assigned to one of five implant treatments. Treatments were: 1) no implant (NC); 2) implant d 0; 3) two implants d 0; 4) implant d 0 and reimplant d 94; and 5) implant d 0, explant and reimplant d 94. All implants were a combination of estradiol (24 mg) and trenbolone acetate (120 mg). Overall daily gain was 13.5% greater ($P < .001$) for implanted steers compared with NC steers, and was 7.2% greater ($P = .02$) in steers with two implants vs one implant. Overall DMI tended to be greater ($P = .06$) in implanted compared with NC steers, whereas DMI did not differ ($P > .70$) among implanted steers. Similar to daily gain, implanted steers had greater ($P = .008$) gain:DMI than control steers (.171 vs .158±.004), and steers

receiving two implants had greater (P = .03) gain:DMI than steers receiving one implant (.174 vs .163±.004). Implanted steers yielded 20 kg more hot carcass weight than NC steers. No differences (P > .10) were observed among treatments for skeletal maturity, lean maturity, ribeye area, marbling score, or quality grade. Yield grade was lower (P = .03) in steers implanted with two implants on d 1 compared with steers implanted on d 1 and reimplanted on d 94. Implanting twice resulted in greater performance and carcass weight compared with implanting once. In general, performance and carcass traits were similar in steers implanted twice on d 1 compared with steers implanted on d 1 and reimplanted later in the feeding period.

A Study Of The Levels Of Total And Fecal Coliform And Enterococcus On Frequently And Infrequently Used Coves

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An elevated level of total coliform is sometimes the reason for beaches closing or an uncommon amount of people in an area having stomach problems. Total coliform is the presence of a certain group of bacteria that come from the excrement of animals. To study this in more detail, fecal coliform is the presence of certain bacteria found only in warm-blooded animals. Lake Murray was a prime place to study these special bacteria because of its usage as a recreational water reservoir. These coliform and enterococcus analyses may potentially be an indicator of dumping of houseboat sewage into the lake. This summer, samples were taken at four coves and at each cove two sites were chosen, one farther inland and one at the mouth. The different coves were chosen due to the probable usage of the area (e.g., swimming, diving, recreational boating, and fishing). Also, water quality measurements were taken to correlate and support the data taken for the bacterium. All of the data will explain certain things that are involved with how the water quality will affect the levels of total coliform and enterococcus in the water and around areas of different usage criteria.

Langerhans Cell Migration Following Treatment Of Mouse Skin With Cd80 Specific Antibody

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The objective of this study was to investigate the role of CD80 in the induction of Langerhans cell (LC) migration in mice and its dependence upon pro-inflammmatory cytokines. To test whether CD80 effects LC mobility, we injected Balb/c mice with monoclonal antibodies against CD80 separately and in combination with antibodies against IL-1a, IL-1b and TNFa. Preliminary results obtained from in vitro studies indicated that administration of antibody against CD80 caused a significant depletion in the number of LC in epidermal tissue and co-administration of antibodies against cytokine TNFa and adhesion molecules ICAM-1 and LFA-1 blocked this effect. However, identical treatment with antiobodies against IL-1a and IL-1b failed to suppress A-CD80 induced depletion. An additional study showed that H8, a G-protein inhibitor blocked Anti-CD80 induced decrease in LC whereas H7, a protein kinase C inhibitor failed to do so, indicating the involvement of a G-protein dependent pathway.

We tentatively propose that antibody against CD80 induces migration of LC by a pathway dependent upon IL-1a, TNFa and on one or more G-protein dependent events.

This work was supported by the National Institute of Arthritis and musculoskeletal skin diseases (grant #AR43401).

Cytokine Induction By Influenza Virus: A Possible Correlation To Pathogenicity

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Influenza A virus is a negative sense single-stranded RNA virus known to infect humans, chicken and other mammals. So far, there are 15 different hemagglutinin (HA) subtypes of influenza A virus and all of them are commonly found in avian species. Three flu pandemics occured during the last century, 1918, 1957, and 1968, and were caused by H1, H2 and H3 subtypes, respectively. The HA of influenza A viruses is highly immunogenic, and it is known to induce Th1 and Th2 types of cytokines. The level of cytokine induction upon pulsing lymphocytes with influenza A virus could be used to predict pathogenicity of different HA subtypes. In this study, we pulsed human and equine peripheral blood lymphocytes (PBL), and Jurkat cell line, with H1N1 (A/PR8/34), H2N2 (A/Japan/57), H3N2 (A/Aichi/68), H3N8 (A/Eq/Kentucky/98), and H7N7 (A/Eq/Prague/56) influenza A virus subtypes. Quantitative and semi-quantitative analysis by ELISA and RT-PCR respectively, were used to compare the levels of cytokine induction by these viruses. Both Th1 and Th2 types of cytokines are induced in human and equine PBL. Furthermore, we observed that H3N2 and H2N2 influenza A viruses induce higher level of cytokines in human PBL as well as in Jurkat cell line. Both H3N2 and H2N2 subtypes are human pathogens. However, H2N2 subtype has not been found circulating since 1968. Therefore, our results suggest that this in vitro model could be used as a potential indicator of pathogenicity of various HA subtypes. We plan to test if there is a correlation between this in vitro study with an in vivo mouse model in predicting pathogenicity of new influenza viruses.

Determination Of The Metabolizable Energy Concentration And Proximate Analysis Of Seven Corn Grains Fed To Growing Pigs And Subsequent Use In Developing Prediction Equations For Energy.

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Two experiments were conducted to evaluate the energy balance of pigs fed seven corn grains. In Exp. 1, eight sets of three littermate barrows (25.6 kg) were utilized to examine three commercially available corn hybrids. The hybrids (A, B, C) were grown in the same location during the same year. In Exp. 2, twenty-four barrows (27.5 kg) were used to evaluate four corn types (D, E, F, G). Experimental diets (1.0% Lys) consisted of each corn (90.48%) supplemented with casein (5.04%), crystalline amino acids, and vitamin/mineral sources. In a previous study in our lab, the ME of casein was found to be 4,560 kcal/kg and, thus, the casein in the diet supplied 230 kcal/kg. Pigs were individually housed and allotted to dietary treatments based on body weight. Following a 7-d adjustment period to the diets, a 5-d collection of feces and urine was performed. Data are reported on a DM basis unless otherwise noted. In Exp. 1, the GE (kcal/kg) of Hybrids A, B, and C were 4,349, 4,323 and 4,467, and the GE of the diets were 4,306, 4,317, and 4,337 kcal/kg, respectively. Digestible energy for Diets A, B, and C were 3,884, 3,909, and 3,836 kcal/kg, which resulted in DE: GE of .902, .906, and .885, respectively. The ME of the 3 diets was 3,811, 3,838, and 3,773 kcal/kg and ME:GE were .885, .889, and .870. The ME of the three diets was similar, but ME:GE tended to be lower ($P<0.14$) for Diet C as compared with Diets A and B. In Exp. 2, the GE (kcal/kg) of corns D, E, F, and G were 4,462, 4,761, 4,594, and 4,601, and the GE of the diets were 4,428, 4,718, 4,542, and 4,507 kcal/kg, respectively. The ME for the diets containing D, E, F, and G were 3,868, 4,127, 4,006, and 3,935, which varied greatly ($P<0.04$) depending on the source of corn. However, no differences were observed in DE: GE or ME:GE for the four experimental diets. In both experiments, subtraction of the ME provided by casein from the ME of the diets resulted in ME, on an as-fed basis, of 3,505, 3,543, 3,476, 3,600, 3,841, 3,660, and 3,625 kcal/kg for corns A through G, respectively. The ME:GE of the seven corns were .913, .926, .879, .901, .905, .909, and .890, respectively, indicating that energy utilization was variable for the seven corn grains. Because of this variation, proximate analysis also was conducted on the seven corns in an attempt to develop equations to predict ME. The equation that best predicted ME was: ME = 3531 - 929.3 (% Ash) + 75.1 (% EE) + 131.2 (% CP) + 34.3 (% NDF), R2 = .9928. These results indicate that variations existed in the seven corns for ME content and energy utilization. As well, equations using proximate analysis values to predict ME concentrations of corn were shown to be effective with high accuracy. However, additional research is needed to more precisely determine this relationship for a wide variety of corn grains.

Number of Cows in Estrus but not Size of Pen alters Estrous Behavior in Beef Cows

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We examined the effects of number of cows in estrus and confinement area on estrous behavior using the HeatWatch® system. The HeatWatch system continuously monitored estrous behavior of cyclic, non-suckled Angus and Angus x Hereford cows for 50 d in the winter (January and February) and summer (July and August). Sixteen cows were maintained in a drylot (60 x 100m) and 16 cows were in a pasture (12 ha) during each season. At the beginning of treatment, estrous cycles were synchronized with two injections of 25 mg $PGF_{2\alpha}$ at a 10 d interval. Thereafter, cows were treated with $PGF_{2\alpha}$ so that 1, 2-3, 4-6 or 7 or more cows would exhibit behavior concurrently. Plasma concentrations of progesterone were used to determine if cows exhibited a normal ovarian response to $PGF_{2\alpha}$. Cows exhibiting normal progesterone concentrations in plasma were used in analyses. Number of mounts and duration of estrus were similar ($P > .10$) for cows in the drylot and pasture. Estrous cows were mounted more times in winter than in summer ($P < .05$) and duration of estrus was longer in winter ($P < .005$). Number of mounts per estrus increased linearly ($P < .0001$) as the number of cows in estrus increased from 1 to 7 or more with one estrus cow exhibiting the fewest mounts (10.7 ± 5.3) and 7 or more estrus females having the greatest mounts per estrus (49.9 ± 3.2). Duration of estrus was similar ($P > .10$) when 2 or more cows were estrus ($16.5 \pm .9$ h) and shortest ($P < .01$) when one cow was estrus (11.6 ± 1.4 h). Increasing the number of cows in estrus increased the duration of estrus and number of times a cow was mounted, and may increase the number of cows detected in estrus.

Orthologous Genomic Regions Of The Rp23 Black6 Mouse, White Mouse 129Sv-Cj7 And Human Chromosome 22

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Portions of the genome of RP23 Black6 mouse will be sequenced via a shotgun sub-cloning strategy. The specific regions to be sequenced will be BAC's 311c19, 412j23, 329d14, 329l13, 313e8, 259j8 and 381f7. Once completed, these sequences will be compared with syntenic known regions of the genomes for white mouse 129Sv-CJ7 at BAC's 596k8, 541l22, 329p18, 555d9, 67d14, 14k23 and b4353i3 and human chromosome 22 from D22S543 through ATP6E and D22S427. This region of chromosome 22 has been linked to Cat-eye syndrome and is orthologous to both regions of mouse genomes studied.

When Human Chromosome 22 is compared with the orthologous region of white 129Sv-CJ7 it is found that the exon coding regions are 99% identical, while the non-coding intron regions are around 1% the same. It is believed that when human chromosome 22 and homologous regions of RP23 Black6 are compared similar findings will be observed. It is also found that, two human genomes will exhibit 99.9% identical exon regions and 99.8% identical intron regions. I predict that when mouse 129Sv-CJ7 and RP23 Black6 are compared, the exons will be over 99% identical while the introns will be about 98% identical. The reason the intron regions will have less similarity than those of two humans, may be that the mice are from two separate lab strains, unlike humans.

Role Of Major Surface Protein 1 In The Biological Transmission Of Anaplasma Marginale

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Anaplasma marginale, an ehrlichial pathogen of cattle and wild ruminants, invades erythrocytes, which are subsequently removed by the bovine immune system causing mild to severe anemia. Biological transmission is effected by feeding ticks. The first site of infection occurs in tick gut cells. After a second feeding, salivary glands become infected from where A. marginale is transmitted to cattle. Several geographical isolates of A. marginale

have been characterized, some of which do not appear to be tick-transmissible. In this research we studied two A. marginale isolates: an Oklahoma isolate which is tick transmissible and an Okeechobee isolate, which is not transmitted by ticks. We also used Dermacentor variabilis ticks from the same two regions as the isolates, Florida and Oklahoma. Both groups of ticks transmitted the Oklahoma A. marginale, while they both failed to transmit the Okeechobee isolate. We used a quantitative PCR to determine infection of salivary glands. Ticks exposed to the Oklahoma isolate proved to have infected salivary glands while those exposed to the Okeechobee isolate were not infected. Therefore, Okeechobee isolate was not able to be transmitted by both groups of ticks. We also studied the ability of the MSP1a from the two isolates to adhere to tick cells using an adhesion-recovery assay. In this assay we demonstrated that recombinant E. coli expressing Oklahoma isolate MSP1a adhered to cultured and native gut cells, while the Okeechobee isolate MSP1a was not adherent. The Okeechobee A. marginale, therefore, probably is unable to invade tick cells, the first step required for completion of a transmission cycle. Determining the mode of A. marginale transmission is important in the formulation of effective and economical control strategies.

Agmatine inhibits AVP- and cAMP-stimulated water permeability in the rat cortical collecting duct

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In the collecting duct of the nephron, arginine vasopressin (AVP) increases water permeability through the G protein-mediated activation of adenylyl cyclase and increase in intracellular adenosine 3', 5'-cyclic monophosphate (cAMP) levels. Alpha-2 (a2) agonists inhibit AVP-stimulated water permeability by binding to inhibitory G protein-coupled a2 adrenoceptors (a2AR) and thereby inhibiting adenylyl cyclase activation. Some of the biological effects mediated by a2 agonists occur in the presence of non-hydrolyzable cAMP analogs and may result from nonadrenergic imidazoline receptors (IR) that exist in the rat kidney. Thus, a2 inhibition of AVP-stimulated water permeability in the rat collecting duct occurs via cAMP and cAMP-independent mechanisms and could be caused by different receptors. Agmatine is an endogenous imidazoline compound metabolized from the amino acid arginine by arginine decarboxylase, which is also present in the kidney. Agmatine does not inhibit AVP-stimulated water permeability in the inner medullary collecting duct (IMCD), however microperfusion of agmatine into renal interstitium produces reversible increases in nephron filtration rate (SNGFR) and absolute proximal reabsorption (APR). The purpose of this study was to test the effect of agmatine on AVP-stimulated and cAMP-stimulated water permeability in the rat cortical collecting duct (CCD) and to determine if a2ARs and IRs are involved. CCDs from young male Sprague-Dawley rats were isolated and perfused to determine the osmotic water permeability coefficient (Pf). Agmatine inhibited AVP- and cAMP-stimulated Pf and was not reversed with the a2 antagonist yohimbine or the imidazoline antaginist idazoxan. Results suggest that agmatine modulates water permeability in the CCD via a cAMP-independent mechanism mediated by a receptor other than a2AR or IR and thus constitutes a novel endogenous regulatory system in the kidney.

Effect Of Rate Of Liveweight Gain During Winter On Subsequent Feedlot Performance Of Cattle.

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Forty-eight fall-weaned Angus x Angus/Hereford steer calves (244 $\pm$ 23 kg) were used in a completely random design to determine the effect of rate of liveweight gain during the winter on growth and feed efficiency, carcass merit and empty body composition in the finishing phase. During the 120-d growing phase, the three treatments were high (HGW, 1.28 kg/d) and low (LGW, 0.48 kg/d) gain on wheat pasture and winter grazing of dormant tallgrass native range (NR, 0.21 kg/d). Stocking density was used to produce the desired rates of gain on wheat pasture. Steers grazing NR were offered 0.91 kg/d of cottonseed meal based 41% CP supplement. Prior to the feedlot phase, four steers from each treatment were harvested to measure initial empty body composition. The remaining 36 steers were placed into three pens/treatment and fed a whole-shelled corn finishing diet. Steers were harvested at a common endpoint of 1.27 cm of 12^{th} rib backfat as determined by ultrasound. Final empty body composition and carcass traits were measured after a 48-h chill. During all periods, DMI (% initial BW) of HGW

steers was lower (P<0.05) than LGW and NR steers. There were no differences in ADG or feed efficiency among the three treatments. Carcass weights were greater (P<0.05) for HGW than LGW steers; however yield grade, ribeye area, and marbling score was similar among the treatments. These data indicate that LGW and NR steers did not exhibit compensatory growth compared to HGW steers. Despite heavier initial BW of HGW steers, ADG and feed efficiency conversion was similar to LGW and NR steers.

	HGW	LGW	NR	SEM
Initial BW, kg	**404[a]**	**311[b]**	**256[c]**	**2.4**
Final BW, kg	**587[a]**	**546[b]**	**570[ab]**	**8.0**
Days fed	**91[a]**	**123[b]**	**165[c]**	**0.0**
Feed DMI, % BW				
Days 0-29[d]	**2.14[a]**	**2.65[b]**	**2.87[b]**	**0.06**
Days 30-50[d]	**2.49[a]**	**2.96[b]**	**3.13[c]**	**0.02**
Days 0-harvest[e]	**2.15[a]**	**2.47[b]**	**2.41[b]**	**0.04**
ADG, kg/d				
Days 0-29	**2.09**	**2.37**	**2.23**	**0.17**
Days 30-50	**2.28**	**2.49**	**2.25**	**0.17**
Days 0-harvest	**2.01**	**1.91**	**1.90**	**0.06**
Gain:Feed DM, kg	**0.193**	**0.187**	**0.190**	**0.004**

[abc]Within a row, means without a common superscript letter differ (P < 0.05).
[d]Initial BW
[e]Mean BW

Key Words: Growing Cattle, Winter Weight Gains, Feedlot Performance

Plant/Microbe Interaction Between Bermudagrass and Ophiosphaerella herpotricha

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Bermudagrass (Cynodon dactylon (L.) Pers.) was introduced into the United States from eastern Africa. Bermudagrass is a warm season perennial turfgrass with tolerance to heat and drought and wear resistance. The characteristics of bermudagrass make it ideal for public parks, athletic fields, golf courses, as well as rangelands and hay meadows in the sunbelt regions of the United States. The soil fungus Ophiosphaerella herpotricha (Fr.:Fr.) J. C. Walker (= Ophiobolus herpotrichus (Fr.:Fr.) Sacc. & Roum.) is one of three pathogens responsible for the root disease Spring Dead Spot (SDS) of Bermudagrass. First identified in Oklahoma in 1936, the disease primarily affects 3-6 year old, intensively managed turf. Close mowing with an accumulation of thatch and heavy fertilization in the autumn months increases the occurrence of SDS, while neglected Bermudagrass is rarely infected. The disease takes from 12?18 months to establish, followed by the appearance of symptoms in early spring when circular spots of dead turf appear within an otherwise healthy stand of Bermudagrass. The spots may range from a few centimeters to a meter in diameter. Replacement value of Oklahoma turf has been estimated to be as high as 1.7 billion dollars annually. Fungicides are only moderately effective if applied before the turf becomes symptomatic, and ineffective if applied after the appearance of symptoms. The fungicide Rubigan, active ingredient fenarimol (alpha-(2-chlorophenyl)-alpha-(4-chlorophenyl)-5-pyrimidinemethanol, 11.8%, Dow AgroSciences), is commonly used for control of SDS in Kansas giving only erratic control. Rubigan, a systemic fungicide and member of the naphthalene chemical class, has potential undesirable properties as a human endocrine disrupter or hormone mimic as well as being toxic to fish. Biocontrol agents for SDS will, ideally, eliminate the use of fungicides, thus eliminating human exposure. We are in the very early stages of developing a biocontrol agent for SDS. Our first objective is to develop an assay to quantify the level of O. herpotricha infection in soil and plant material. The assay will be used to determine the presence and intensity of fungal infection before the onset of symptoms, follow the rate and range of infection, and determine the effectiveness of any biocontrol agent in controlling SDS. Secondly, we will isolate and identify the culturable endophytic bacteria from the crown tissue of

two bermudagrass varieties, resistant Midiron and susceptible Tifgreen. Screening will then be conducted to determine the anti-fungal properties of each bacterial isolate. The eventual use of these bacteria will eliminate unforeseen negative ecological impacts commonly found with exotic biocontrol organisms. Preliminary results indicate that Midiron crown tissue contains more isolates that display anti-fungal properties than are found in crowns of the susceptible variety.

Response Of Adult Male Collared Lizards, Crotaphytus Collaris, To Increased Threat By A Neighbor

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The role of threat in determining the behavior of individuals during contests has focused primarily on interactions between territorial neighbors. In many taxa, territory residents respond less aggressively to neighbors than they do toward strangers (the ?dear enemy? phenomenon), presumably because the neighbor represents less of a threat than a stranger. It has been hypothesized and shown empirically that residents will demonstrate reduced aggression towards neighbors wherever they are encountered along that resident's territorial boundary, except for when the neighbor is displaced to the boundary opposite the shared boundary. In this new location, the neighbor represents a greater threat. Finding increased aggression toward displaced neighbors has been interpreted as individual recognition, but it does not provide sufficient evidence to rule out the possibility that the resident sees the neighbor out of normal context as literally just another stranger. Finding neighbor-stranger discrimination at the appropriate boundary but not on the opposite boundary does provide some evidence that individuals recognize one another individually and not just as a class. That conclusion, however, assumes a priori that they are capable of individual recognition because they have not been given a chance to recognize that neighbor both out of environmental context and when it is not a potentially increased threat. There must be corroborating evidence, ideally with the same individuals, showing that they are capable of individual recognition without environmental cues to put the neighbor into context. Otherwise, conclusions become circular. My objective was to integrate field experiments and neutral arena encounters, using a territorial lizard species (adult male Crotaphytus collaris) previously shown to display the dear enemy phenomenon, to provide evidence that territory residents can individually recognize neighbors and increase aggression toward them as threat increases. As predicted, resident males exhibited the dear enemy phenomenon and treated neighbors on the opposite boundary equally aggressively as strangers. In the neutral arenas, where neighbors and strangers pose the same threat, residents treated strangers more aggressively than neighbors. Although not significant, residents tended to respond even more aggressively to displaced neighbors than toward strangers. These results provide strong evidence that male collared lizards are able to recognize individuals and respond to them according to the threat they pose to the resident. The nominally higher levels of aggression displayed toward displaced neighbors relative to strangers suggests that displaced neighbors represent more of a threat, presumably because 1) they are known territory holders, and as such presumably have what it takes to acquire and defend a territory, and 2) they know the area and the resident better than a stranger would. A displaced neighbor, then, stands a better chance of usurping mates or portions of a territory than a stranger.

Porcupines, Pinyon Pines, And Pine Engraver Beetles: What's The Connection?

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Understanding linkages among different trophic levels is important to conservation and management of ecosystems. The goal of this research was to test the hypothesis that porcupines (Erethizon dorsatum) predispose the papershell pinyon pine (Pinus remota), a Pleistocene relict species, to colonization by pine engraver beetles of the genus Ips. I studied porcupine ecology, pinyon pine physiology and physiognomy, and beetle-pine associations on a study area in the southwestern Edwards Plateau of Texas from June 1997 to August 1999 to elucidate relationships among 3 non-related taxa. Porcupines exhibited disproportionate use of pinyon pines ($P < 0.001$) and were selective at the

level of tree morphology whereas pine engraver beetles were selective at levels of tree morphology and physiology. A significant association ($P < 0.01$) was detected between beetle colonization and porcupine-damaged trees. Although attacks by beetles were evident on both types of trees, successful colonization was greater on pines damaged by porcupines than on undamaged trees. Intensity of porcupine attack, indexed by number of feeding scars and amount of bark removed, was also associated with greater colonization rates by beetles. An examination of experimentally manipulated trees indicated differences in fructose and glucose, resin flow, and monoterpene concentrations over time, but differences were not associated with bark removal. Data on these interspecific relationships are of regional interest relative to conservation of this unique pinyon-juniper woodland, and of wider value as a model system showing the role of distinct phyla that define community structure in forest and woodland ecosystems.Cut and paste or type abstract here.

Expression And Characterization Of A Noval Antimicrobial Protein From Loblolly Pine

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Antimicrobial protein (AMP) representing a group of cysteine-rich short peptides appears to be involved in host defense. These special peptides are present in many plants, animals and fungi. Recently, a gene from loblolly pine encoding for a novel antimicrobial protein was isolated and named PtAMP. Here we report the heterologous expression of this gene in vitro and purification of the protein for antimicrobial activity assays. The PtAMP gene was cloned into an expression vector pET30c+ and the expression product was purified by affinity chromatography. The gene encodes 105 amino acids including 7 cysteine residues and the expressed protein is 19.8 Kilo Dalton as detected by Western blot analysis. The AMP protein exhibited strong antimicrobial activities against a broad spectrum of Gram-positive and Gram-negative bacteria as well as some fungi. Using combination of microplate-reading and plate-spreading methods, it was observed that the protein inhibits the growth of bacteria at low concentration and kills bacteria at high concentrations. When testing with Pseudomonas syringae, the protein at the concentration of 40 ug/ml killed 90% of the bacteria that grew in a mid-logarithmic phase in six hours. The protein even killed all the bacteria of a concentration of 108 within twenty hours. However, the protein has no toxicity to plant cells such as tobacco and the host loblolly pine cells. Northen blot is being carried out to determine the transcriptional pattern of this protein in loblolly pine. And Southern blot analysis will be carried out to check if any other genes of the PtAMP family exist in the loblolly pine genome.

Effect Of Supplement Energy Source And Degradable Intake Protein Level On Performance Of Spring-Calving Cows Winter Grazing Stockpiled Bermudagrass –

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Sixty-three mature spring-calving beef cows were used in a completely randomized design to determine the effects of energy source and DIP level on cow performance while grazing stockpiled bermudagrass pastures. Twenty-eight and thirty-five cows were allocated to one of four supplement regimes, at each of two locations (STW and HASK). A negative control (NEG) was imposed and supplement groups were either 1) soyhull based (SH); 2) corn-based with similar DIP to SH (LC); or 3) corn-based with double the DIP of SH. The SH and LC supplements were formulated to provided 63 g/d DIP and the HC supplement supplied 125 g/d of DIP. Pastures were grazed to approximately 7.5 cm in late August and fertilized with 56 kg N/ha. Grazing was deferred until November 15, upon which treatments were initiated and continued for 70 days. Methods for collecting forage samples for determination of nutritive value varied by location. At STW, masticate samples were collected using esophageally cannulated steers, at HASK, forage pluck samples were collected. Average forage CP (DM basis) during the trial was 17.2 ± .71% at STW and 8.6 ± .87% at HASK. Forage NDF (DM basis) averaged 52.7 ± 1.84% at STW at 69.9 ± 2.14% at HASK. Upon initiation of the trial all treatment groups and locations were similar ($P > .5$) in weight (WT; 547 ± 13.7 kg) and body condition (BCS; 5.1 ± .11). However, more forage was accumulated at HASK (3253 ± 199 kg DM/ha; $P < .0001$) compared to STW (1588 ± 226 kg DM/ha). Cow BCS change was unaffected by treatment ($P > .1$) and location ($P > .5$). Cow WT change was unaffected by treatment ($P > .2$), yet cows at STW gained 11.9 ± 3.7 kg more ($P < .001$) than HASK.

Due to the lack of change in body condition, mean weight gain (73.5 ± 4.3 kg) is attributed to change in fetal mass. This study demonstrates that during mild winters, supplemental energy and DIP is not required for maintaining body condition of spring-calving beef cows grazing stockpiled bermudagrass pastures.

The Effects Of Dietary Manipulation Of Vitamin D On Behavior Of The Panther Chameleon (Furcifer Pardalis) In Natural Light Environments

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Basking behavior in reptiles has been thought to contribute only to regulation of body temperatures, but it may serve at least two purposes, thermoregulation (regulation of body temperature) and ultraviolet (UV) photoregulation (regulation of exposure to UV). Panther chameleons (Furcifer pardalis) can obtain vitamin D either through dietary intake, or by photobiosynthesis with the aid of UV. Whether panther chameleons can adjust their exposure to UV to compensate for a low versus high dietary intake of vitamin D was investigated. Basking behavior in panther chameleons was quantified two ways for a twelve-hour diurnal period. One method was to calculate a basking frequency, the other to indirectly measure exposure to UV light. Panther chameleons on low vitamin D diets exposed themselves to more UV than panther chameleons on high vitamin D diets. In comparison with null models, chameleons on high vitamin D diets exposed themselves to less UV than expected, whereas the low vitamin D diet lizards did not. In addition, panther chameleons on high vitamin D diets had basking frequencies lower than expected, whereas the low vitamin D diet chameleons did not. Ultraviolet photoregulation seems to be an important role of basking behavior in panther chameleons.

Management Strategies And Live Weight Gain Of Steers Grazing Old World Bluestem.

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Three hundred and sixty crossbred steers (248 ± 24 kg) were used to determine the effects of management system on animal performance. Steers were weighed and allotted in a completely randomized design to one of four treatments with three replicates per treatment on May 12. Treatments were, 1) intensive early stocking (IES; stocking density of 1344 kg/ha and a 65d grazing season); 2) half intensive early stocking (HIES; 672 kg/ha, 65d of grazing); 3) season long (SL; 672 kg/ha, 134d of grazing); and 4) season long supplemented (SLS; same stocking density as SL and fed 0.59 kg×steer-1×d-1 of a 31% CP supplement prorated for 3x/week feeding from July 18 - Sept. 24). The IES treatment had a lower BW ($P < 0.01$) than HIES, SL, and SLS at the end of the early period (May 12 - July 17; 300 vs 313, 315, and 316 kg). At the end of grazing trial SL and SLS were similar ($P = .21$) in BW (361, 369 kg). Early period ADG was similar ($P = 0.42$) for SL, SLS, and HIES (1.02, 1.03, and 1.06 kg/d) and greater ($P < 0.01$) than IES (0.72 kg/d). However, IES steers had greater ($P < 0.01$) gain/ha (104 kg/ha) and reduced ($P < 0.01$) gain/steer (47 kg) in the early period than SL, SLS, and HIES. In the late period (July 18 - Sept. 24) SLS cattle had greater ($P < 0.02$) ADG (0.78 vs 0.67 kg/d), gain/ha (58 vs 51 kg/ha), and gain/steer (53 vs 46 kg) than SL. Gain/ha (127 vs 133 kg/ha) for the entire grazing period was similar ($P = 0.41$) for SL and SLS. Gain/steer (121 vs 113 kg) and ADG (0.90 vs 0.84 kg/d) for the entire grazing period tended ($P > 0.10$) to be greater for SLS than SL. Gain/ha by IES steers during the early grazing period was 80% of the total gain/ha of SL and SLS during the entire grazing period. Intensive early stocking was an effective management tool for maximizing gain/ha during the early grazing period, while supplementation during late summer grazing tended to improve individual steer performance.

Key words: Growing Cattle, Old World bluestem, Grazing

The Effects Of Body Condition At Parturition And Postpartum Protein Supplementation Of Beef Cows On Estrous Behavior And Follicle Size.

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Multiparous Angus x Hereford cows (n = 45) were fed to calve with a body condition score (BCS; 1 = emaciated, 9 = obese) of thin (< 5) or moderate (≥ 5). Cows were blocked by BCS and calving date (March and April) and randomly assigned to receive either low (1.2 kg/d) or high (2.5 kg/d) amounts of a 42% CP supplement. All cows grazed the same native grass pasture with native grass hay free choice, and were fed supplement in individual stalls for 49.2 ± 2.3 d. Beginning 20 d postpartum, blood samples were obtained from each cow three times weekly, and estrous behavior was monitored continuously with a radiotelemetry system. Onset of estrus was defined as the first of two mounts within 4 h. At 4 to 14 h after the onset of estrus, size of the dominant follicle was determined by ultrasonography, and a blood sample obtained for quantification of estradiol. Duration of luteal activity (LA) before and after estrus was characterized as short (plasma progesterone ≥ .5 ng/mL for < 5 consecutive samples) or normal (plasma progesterone ≥ .5 ng/mL for ≥ 5 consecutive samples; ≥ 10 d). Body condition score of thin cows was less (P < .01) then moderate cows (4.3 ± .1 vs 5.0 ± .1). Cows on high and low nutrition had similar BCS after treatment (4.5 ± .1). Prior to the first estrus, short LA occurred in 65% of cows, normal LA occurred in 27% of cows, and LA was not detected in 8% of cows. Duration and number of mounts of the first estrus postpartum were not influenced by BCS at calving or postpartum nutrition. Size of the dominant follicle was greater (P < .01) for moderate BCS cows than thin cows (15.3 ± .5 vs 13.4 ± .4 mm), and for high vs low postpartum nutrition (15.0 ± .4 vs 13.7 ± .5 mm). Concentrations of estradiol in plasma at estrus were not influenced by BCS or nutrition. In conclusion, postpartum nutrient intake and BCS at calving influence the size of the dominant follicle at the first estrus in multiparous beef cows.
Keywords; Nutrition, Estrus, Follicle

Release Of Prostaglandin Precursor, Arachidonic Acid, Via A D2 Receptor In Salivary Glands Of The Lone Star Tick, Ambloymma Americanum (L.)

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Ticks are important pests of animals and humans and are capable of transmitting pathogens that cause serious diseases. In the tick, salivary glands act as organs of fluid secretion. Ixodid ticks, including the lone star tick, feed for relatively long periods on host animals. Throughout feeding, the tick encounters several defense mechanisms initiated by the host, which include: inflammatory/immune responses, clotting and blood vessel constriction. Salivary gland secretions counter the host defense system by secreting a cocktail of bioactive molecules along with excess the fluid. This cocktail includes prostaglandins. Prostaglandins regulate a variety of physiological processes that are involved in the host parasite interaction. In order for prostaglandins to be synthesized, the salivary glands must regulate the release of its precursor, arachidonic acid (AA). Previous work has shown that dopamine released from nerves, initiates an influx of Ca2+ into the glands, activating an intracellular phospholipase-A2, leading to the release of arachidonic acid. Arachidonic acid is then converted to prostaglandins via the cyclooxygenase pathway. The exact mechanism of how arachidonic acid is released after gland stimulations by dopamine is still unclear. My results show that stimulation of glands with PPHT-HCl, a dopamine D2 agonist, potentiates the release of arachidonic acid. The possibility of a D2-like dopamine receptor was supported by results showing that SCH 23390, a dopamine D1 receptor antagonist, potentiates the release of AA. Other results will be presented to demonstrate the importance of ?second messenger? molecules in the release of arachidonic acid after initial stimulation by dopamine.

Developing a Biolistic method for Genetic Transformation in loblolly pine (Pinus taeda.)

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The objective of this project is to develop a genetic transformation system for loblolly pine using Biolistic particle delivery system. A plasmid DNA, pBI221.23 containing the hpt gene coding for hygromycin resistance, and the gusA gene coding for Ò-glucuronidase, both fused to the CaMV35S promoter was used. Shoot apical meristem tissue was targeted, as it is a group of actively dividing cells capable of developing adventitious buds that can be subsequently rooted. Apical meristem tissues were bombarded with the plasmid DNA, which was coated on gold particles. GUS (Ò-glucuronidase) activity was monitored histochemically with X-gluc giving a blue color where gusA gene was expressed in the bombarded tissues. Adventitious buds were induced by culturing the transformed tissues on GD medium containing phyto hormones: BAP and NAA. Elongation of buds were induced and the transformed tissues were selected on GD medium containing hygromycin. Transformation will be further confirmed by Southern blot analysis.

Heat Stress And Antioxidant Defenses In Horticultural Crops

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High temperature stress affects plant growth and development, and limits geographical distribution of plants in many parts of the world. In spite of extensive research on changes in gene expression associated with the heat shock response, mechanisms of injury and involvement of signal transduction pathways in acclimation responses are not well understood. Exposure of plants to biotic and abiotic stresses can result in the formation of activated oxygen species (AOS), which can have beneficial or harmful roles depending on several factors, including their concentrations. Defense responses can be triggered by moderate levels of AOS, such as hydrogen peroxide (H2O2). When present in excess, they have deleterious effects on enzyme activity and membrane function. Various antioxidant defenses act as pre-emptive scavengers to intercept AOS before they harm plant cells. Primary enzymatic defenses against H2O2 include catalase (CAT) and ascorbate peroxidase (APOX). H2O2 is significant due to its permeability across the membranes chemical stability, and implication as a secondary messenger in signal transduction pathways. This project focuses on the role of H2O2 in heat stress injury and the involvement of known signal transduction pathways in high temperature acclimation. Objectives include determination of: 1) the relationship between CAT and APOX activity and membrane integrity at elevated temperatures in the heat tolerant species vinca (Catharanthus roseus) and the heat susceptible species sweet pea (Lathyrus odoratus), 2) whether endogenous H2O2 levels change in heat stressed plant tissues, and if treatments increasing H2O2 levels affect thermotolerance, 3) whether treatments that stimulate known signal transduction pathways increase thermotolerance and if treatments inhibiting known signal transduction pathways block acclimation.

Phenotype Elucidation Of A Putative G Protein-Coupled Receptor In Dictyostelium Discoideum

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Eukaryotic cells react to environmental signals through cell surface receptors. In conjunction with GTP-binding regulatory proteins, or G proteins, the surface receptors are necessary for initiating the conversion of external signals into downstream second messengers (e.g. cAMP, IP_3, etc.) For example, light and chemicals can stimulate G protein-coupled receptors (GPCRs) to promote the senses of sight, taste, and smell. Hormones can use these receptors to regulate cell growth and division and differentiation. Chemotaxis, the ability of an organism to detect and move toward a chemical attractant or away from a chemical repellent, is also mediated by GPCRs. Chemotactic movement is an important feature of leukocyte migration during an immune response.
The soil amoebae, *Dictyostelium discoideum*, is a simple eukaryotic organism that can be used to study signal transduction, chemotaxis, and development. They grow vegetatively as individual amoebae and after a period of starvation begin a social, multicellular developmental cycle which leads to a fruiting body with spores. They are amenable to biochemical analysis and their haploid genome allows relatively easy characterization of recessive mutations.

In *Dictyostelium*, several GPCRs have been discovered and analyzed. An example is the cAMP receptor family. These receptors are maximally expressed at different stages of the life cycle and allow intercellular communication. They are necessary for aggregation of amoeba and differentiation within the fruiting body structure. As with all GPCRs, they have a serpentine morphology with seven transmembrane domains characterized by stretches of hydrophobic amino acid residues. Additional GPCRs are thought to exist based upon the discovery of other ligands and several types of G proteins. The search for additional GPCRs is facilitated by the *Dictyostelium* genome sequencing project. Compilation of genomic sequence information allows for the identification of new genes that can be targeted for disruption. Conceptual translations of these sequences can be aligned to known proteins to find identity between amino acid sequences. Through this strategy, homologues to GPCRs can be found. With *Dictyostelium*, over-expression of a gene or knock-outs through homologous recombination are viable methods of ascertaining gene function as these alterations sometimes effect the normal developmental cycle. RNA blots and reporter gene analysis can be used to define gene expression patterns and provide clues to gene function.

An Improved Mucosal Dna Vaccine For Equine Influenza

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Outbreaks of equine influenza occur periodically, despite repeated vaccinations by horse owners or trainers. Equine influenza causes great economic loss to the horse industry. The currently available vaccines, consisted of inactivated whole virus, do not produce consistently protective immunity, probably because they do not elicit strong mucosal antibody response. The duration of immunity they elicit is short. Production of these inactivated vaccines involves labor-intensive processes requiring eggs or cell culture with the accompanying problem of new viral strain adaptation. Furthermore, updating of current vaccine requires testing and evaluation to be licensed, and a long lag time between the development and availability. Therefore, there is an urgent need to develop an alternate vaccine for this disease. This study involves the development and evaluation of a DNA vaccine for equine influenza.

The hemagglutinin is the most immunogenic viral protein. The hemagglutinin gene, derived from equine influenza virus strain A/Equine/Kentucky/98, was inserted into an expression vector, pTOPO3.1. In vitro assessment of hemagglutinin protein expression will be carried out by means of transfecting mammalian cells, or by using an in vitro transcription and translation system. This vaccine will be delivered intranasally, facilitated by liposomes, to mimic the natural route of infection. Increased in serum and nasal IgA titers will be assessed both in the mouse and in the equine model. Antibody titers are assayed by ELISA. Vaccinated mice, and horses, will be subjected to a challenge experiment to evaluate the potency of the vaccine.

This vaccine is unique in the fact that it is delivered intranasally, as compared to the customary intramuscular, or by gene gun inoculation of other DNA vaccines. The advantage of a DNA vaccine is that the duration of immunity produced will be much longer, as DNA vaccines act like live attenuated vaccines. Production of a DNA vaccine, and incorporation of new strains, will be much easier than with the conventional vaccine.

Effects Of Dietary L-Carnitine On Growth Performance, Carcass Characteristics, And Apparent Nutrient Digestibil In Weanling Pigs.

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Two experiments were conducted to evaluate the effects of supplementing L-carnitine to the diets of weanling pigs on growth performance, carcass composition, and apparent total tract nutrient digestibility. In Exp. 1, 128 weanling pigs (5.5 kg initial BW; 18 d) were randomly allotted based on BW, sex, and litter to four dietary treatments containing 0, 25, 50, or 100 ppm L-carnitine. Pigs were fed in three dietary phases (P1: d 0-10; P2: d 11-24; and P3: d 25-38 with 1.6, 1.4, and 1.2% Lys, respectively). Phase 1 and 2 diets were complex corn-soybean meal-dried whey based containing animal plasma, blood meal, and lactose, while diets for P3 were corn-soybean meal based.

Pigs and feeders were weighed weekly for the determination of average daily gain, average daily feed intake, and gain:feed. There were 6 pens/trt of 4-6 pigs/pen. Average daily gain, ADFI, and G:F for the 38-d study were, respectively: 337, 347, 370, and 363 g; 503, 502, 516, and 523 g; and .669, .692, .717, and .693. Dietary L-carnitine increased ADG (linear, $P<0.09$) and G:F (quadratic, $P<0.03$) for d 0-38. However, this improvement in ADG and G:F associated with L-carnitine was greatest (linear, $P<0.03$) during Phase 2. In Exp. 2, six sets of four littermate barrows (4.9 kg; 18 d) were randomly allotted to the four dietary treatments used in Exp. 1. Pigs were housed individually in metabolism chambers and a 5-d total but separate collection of urine and feces was performed during each phase (P1: d 4-9, P2: d 17-22, and P3: d 29-34). There were no treatment by period interactions; therefore, data were pooled across periods. Growth performance trends were similar to those observed in Exp. 1. Increasing L-carnitine resulted in a slight improvement (quadratic, $P<0.10$) in energy and nitrogen digestibility with the greatest response observed in pigs fed 25 to 50 ppm L-carnitine. At the conclusion of the experiment, each pig was killed and carcass composition and tissue accretion rates were determined. In addition, at the onset of the study a fifth littermate from each set of pigs was killed for the determination of initial body composition. Increasing levels of L-carnitine resulted in an improvement (linear, $P<0.01$) in the percentage of protein, fat, and water in the carcass. As well, an increase (quadratic, $P<0.05$) in the rate of tissue accretion for protein and energy was observed. Accretion rates for protein, fat, and energy were, respectively: 34, 43, 49, and 45 g/d; 21, 21, 24, and 21 g/d; and 379, 425, 483, and 426 kcal/d. Additionally, the ratio of protein accretion to fat accretion, 1.59, 2.07, 2.08, and 2.23, respectively, improved (linear, $P<0.01$) with increasing dietary L-carnitine. These results suggest that the addition of 50 ppm L-carnitine improved growth performance, carcass composition, tissue accretion rates, and, to a lesser degree, nutrient digestibility in weanling pigs.

Intrathymic Transplantation Of Genetically Modified Thymic Epithelial Cells To Modify Immunity

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Thymic epithelial cells (TEC) are involved in the selection and retention of maturing thymocytes (T-cells) that demonstrate affinity for autologous majorhistocompatibility complex (MHC) proteins, also known as positive clonalselection. TEC may also be involved in negative clonal selection, the process which deletes self-reactive maturing T-cells, in immune education and maturation. The isolation, genetic modification, and retransplantation of TECmay allow for the advantageous exploitation of this cell's function in thereeducation of the host immune system. These studies investigate whetherintrathymic (IT) transplantation of genetically modified TEC is able to alter host immunity without affecting appropriate immune responsiveness, and therebybypass allograft immunity and eliminate chronic application of immunosuppressive drugs. We investigated the isolation, culture, and in vitromanipulation of rat TEC. Wistar-Furth rats (4-5 days old; N=6) were sacrificedand thymi removed. TEC were isolated by mincing followed by collagenasedigestion and then plated in media supplemented with prolactin and IGF-1.Immunocytochemistry and transmission electron microscopy (TEM) were used tousing an indirect antibody/peroxidase technique, revealed intracellularcytokeratin. Desmosomes and keratin intermediate filaments, typical of epithelial cells, were visualized by TEM. The fluorescent molecular probe CMFDA (10 nM)was used to label TEC in vitro. Labeled cells were collected on a Millipore PTFEfilter, fixed, paraffin embedded, and sectioned. Anti-fluoresceinimmunoperoxidase staining demonstrated positivity for the CMFDA probe. Labeled TEC were injected intrathymically via indirect visualization. TEC recipients were sacrificed two days post-transplant, and thymi were excised, fixed in Bouin's solution, embedded, and sectioned. Immunocytochemicalstaining with an anti-fluorescein primary antibody demonstrated positivity at the injection site, indicating intrathymic engraftment of labeled cells. Electroporationwas used to transfer naked DNA encoding the red fluorescent protein (RFP)reporter gene into cultured TEC, which resulted in the in vitro expression of RFP gene product by TEC. However expression of RFP within these cells wastransient, and diminished after 48 to 96 hours, indicating that the RFP gene wasnot incorporated into the TEC genome. In vivo studies using transgenic TEC arelimited by cell number and an inability to significantly expand TEC cell populations in vitro. Calcium-free WAJC-404 media, supplemented with insulin(1□mg/ml), epidermal growth factor (EGF, 10ng/ml), cholera toxin (20ng.ml),transferrin (1□mg/ml), and dexamethasone (10nM) is under investigation as atechnique to immortalizeprimary TEC cultures for use in continued gene transfer and cell tracking studies using a rat model of IT transplantation. In summary, the successful isolation, in vitro maintenance and intrathymic transplantation of TEChas demonstrated the feasibility of using this

cell type for studies ofimmunomodulation by transplantation to the thymic site. The ability to transfer novel genes to TEC has been demonstrated. However the stable long-term expression of RFP within TEC, and the long-term viability of transgenic TEC within the host thymus remain to be elucidated. (OSU-COM intramural support).

Framework For Assessment Of A Cafo In A Wellhead Protection Area

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Problems in ground water quality degradation related to anthropogenic sources have become more prevalent as the population grows and the use of land for agriculture intensifies. One problem associated with agricultural practice that has prominently affected water quality is the increase of concentrated animal feeding operations, given the recent trend toward larger and more specialized animal operations.

Concentrated Animal Feeding Operations (CAFOs) produce large amount manure that require sophisticated storage and management systems as well as sufficient cropland for disposal or nutrient utilization. Manure contains nitrogen, which in the form of NO3 can leach into the ground water sometimes approaching 10 mg/l, a maximum contaminant level (MCL) set by EPA to protect public health.

Under the Safe Drinking Water Act Amendment 1986, the Wellhead Protection Program was developed to protect ground water quality from further degradation. The program requires delineation of wellhead protection areas, to protect the surface and subsurface areas surrounding a well or field of wells (wellfield) supplying a public water system.

Many studies have been conducted to provide alternative best management practices (BMPs) to farmers that enable them to maintain production while protecting water quality, including ground water. However, protection of ground water in a wellhead protection area requires not only individual BMPs, but also community planning. Yet, it is difficult to encourage communities to participate in such effort. Additional information is required to explain the risk of nitrate contamination to their drinking water, as well as the benefit and the cost associated.

This study suggests to the farmers, the producers, the community, and other decision-makers, a framework to asses NPS management in a wellhead protection area. The purpose of the study is to develop a means of assessing the risk of nitrogen contamination of a public well and the benefits to society from controlling NPS such as CAFOs in the wellhead protection area.

The scope of the study will focus on nitrate contamination of ground water, the potential economic benefit from controlling NPS, and the possible cost avoidance to communities from cleaning up should their public wells become contaminated.

Mtbe Contamination And Its Treament By Biological Means

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Methyl tertiary butyl ether (MTBE) is a fuel oxygenate added to the gasoline to reduce air pollution. The 1990 Clean Air Act Amendments require areas that exceed the national ambient air quality standard for carbon monoxide to use oxygenated gasoline during the winter also require nine metropolitan areas that have most severe ozone pollution to use year-round reformulated gasoline that contains fuel oxygenates. Widespread use of this chemical has resulted in frequent detection of MTBE in the shallow groundwater throughout the United States. MTBE is of concern because of its high solubility, low Henry's constant, high mobility in ground water, potential health risks and low taste and odor thresholds. Present paper presents the literature review on the extent of contamination of drinking water sources by MTBE and also briefly discusses the studies on the point source MTBE contamination

like LUST's. The technologies used for MTBE remediation like ground water extraction, air stripping, advanced oxidation are briefly discussed. The paper specifically deals with biological methods to treat MTBE like the use of oxygen release compound (ORCÒ) for bioremediation of MTBE, bioaugmentation and oxygenation etc. In addition to these, the air phase treatment of MTBE by biofiltration is discussed which is an economical way to deal with the large amounts of contaminated air streams released during soil vapor extraction, air sparging and air stripping operations used for MTBE remediation. There are a few studies conducted on biofiltration of MTBE but there are still some problems like long start-up times and uncertainties about the transient behavior of the biofilter treating MTBE that need attention. To answer these questions a study is being conducted at Civil and Environmental Engineering department of Oklahoma State University to improve the startup time and to study the steady state and transient state behavior of the biofilter treating MTBE.

In Vitro Overexpression Of Taxadiene Synthase - A Key Enzyme Of Taxol Biosynthesis In Yew Tree

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Taxol, one of the best anti-cancer agents approved by Food and Drug Administration (FDA), is extracted from the bark of Pacific yew. It is highly effective against breast cancer, ovarian cancer, lung cancer and AIDS-related Kaposi's sarcoma. However, in contrast with the efficacy, its supply is extremely limited, which makes it one of the most expensive drugs in the world. For producing 1 kilogram of taxol, 13,600 to 16,800 kilograms of yew bark has to be used. In order to meet the increasing demand for taxol, several alternative supply sources have been attempted so far, but none of these can solve this supply problem completely. Biotechnology techniques, such as plant cell culture bioreactor or microbial fermentation with a genetically modified organism, have great potential to develop alternative sources or better systems for improvement of taxol production. The development of these techniques is largely dependent on detailed information of the taxol biosynthetic pathway, by which plant cell synthesize taxol from simple molecules under catalysis of multiple enzymes. In the multi-step taxol biosynthetic pathway, conversion of geranylgeranyl diphosphate (GGPP) to taxadiene is the first and the rate-limiting step, which is catalyzed by Taxadiene Synthase (TS). Low-level expression of the *ts* gene appears to be one of the reasons for low yield of taxol in yew tree. Thus, *in vitro* overexpression of this enzyme was attempted for improving taxol production through metabolic engineering. The *ts* gene was cloned into an expression vector pET-30c first, by which *ts* gene was transcribed by a highly efficient T7 RNA polymerase. Then the construct was transferred to *E. coli* pLysS host cell. The TS protein was purified from host cell through His-binding chromatography. SDS-PAGE and Western blotting confirmed the identity of the TS protein. We have also found that soluble TS enzyme was only synthesized under 27^{o}C, and it reached highest expression level around 2.5 hours after the induction by isopropyl-β-D-thiogalactopyranoside (IPTG).

Effects Of Acutely Restricting Nutrition On Endocrine And Ovarian Function In Beef Heifers

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Effect of acute nutritional deprivation on ovarian luteal function and plasma concentrations of glucose, insulin, IGF-1, NEFA, and thyroxine was determined in 14 mo old Angus x Hereford heifers (BCS=5.7; 317 kg BW). Heifers (n=19) were housed in individual pens in a barn and fed a diet supplying 1.2 x maintenance (1.2 M) for 1 wk to allow adaptation. Heifers were then randomly allotted on d 0 to either a diet supplying .4 x maintenance (.4 M) or 1.2 M. Heifers were treated with $PGF_{2\alpha}$ on d –10, 0, and 10. Blood plasma was collected via tail venipuncture on alternate days. Heifers with plasma progesterone less than .5 ng/mL on d 15 to 21 were classified as anovulatory. Heifers on .4 M (306 ± 1.7 kg) lost BW while 1.2 M heifers (321 ± 1.7 kg) maintained BW. Seventy percent (7 of 10) of .4 M heifers did not ovulate on d 14 while all 1.2 M heifers had normal luteal function. Nutritional restriction for 14 d did not alter plasma glucose or insulin. Heifers on .4 M had less plasma thyroxine (32.3 ± 1.7 ng/mL) than 1.2 M heifers (40.9 ± 1.7 ng/mL; $P < .01$). A day x diet ($P < .01$) effect on

plasma NEFA was due to 1.2 M heifers maintaining NEFA concentrations while .4 M heifers had increased concentrations. Nutritional restriction decreased concentrations of plasma IGF-1 in .4 M heifers from 50.5 ± 2.3 ng/mL on d 0 to 28.5 ± 2.3 ng/mL on d 14; however, 1.2 M heifers maintained concentrations (54.9 ± 2.3 and 58.4 ± 2.3 ng/mL on d 0 and 14, respectively; day x diet effect; $P < .01$). Acute nutritional restriction induced anovulation in 70% of heifers within 14 d, and plasma concentrations of NEFA increased while IGF-1 decreased.

Key Words: Beef heifer, IGF-1, NEFA

Detection Of Fungal-Induced Cdnas From Bermudagrass Using Subtractive Hybridization Coupled To Cdna Microarray

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Bermudagrass is extensively used for turf, forage, and soil stabilization in the southern United States. The fungal disease, spring dead spot (SDS), is a common and often serious problem of many high quality bermudagrass cultivars. Because the molecular mechanisms of host-fungus interactions are unknown, it has been impossible to develop a transformation (i.e. genetic engineering) strategy to improve the resistance of bermudagrass to this disease. This research was conducted to improve bermudagrass resistance to SDS by identifying and characterizing fungal induced gene(s), which is a key step toward the development of resistant cultivars. Differential expressed gene transcripts were selected from two sets of samples (resistant cultivar vs. susceptible cultivar; infected tissue vs. non-infected tissue) by using a new technique, Suppression Subtractive Hybridization (SSH) to create a normalized population of cDNAs representative of the mRNA population. cDNAs were cloned into plasmid vectors and transformed into E. coli. Two SSH libraries that contain 834 fungal-induced gene transcripts have been established. The average size of cDNA inserts was 400 bp. Ninety-two of these clones have been sequenced. Sequence data were compared with the nucleotide sequence database in GenBank to predict the putative function of the differentially expressed genes. Six categories of genes involved in host-pathogen interactions were identified: 1) anti-microbial, 2) general stress response, 3) low molecular weight defense signals, 4) high molecular weight signal regulation, 5) cell maintenance, and 6) development were selected from the resistant cultivar. Sequence data indicated that disease resistance was associated with a complex plant defense response, which involved an integrated set of genes. Future work will include submitting the fungal-induced cDNAs (ESTs) data to the GenBank EST database, monitoring expression profile of these genes by cDNA microarray, and cloning full-length cDNAs by using the rapid amplification of cDNA ends (RACE) technique. Results of this research will help elucidate the molecular mechanisms of the plant defense system imposed by pathogen stress. Isolation of fungal resistant genes will allow us to ultimately control spring dead spot of bermudagrass by plant transformation.

EDUCATION

The Meaning Of Supervision In Teacher Education

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This paper reports the findings of a study conducted within a hermeneutic phenomemological perspective in order to lay bare the meaning of supervision as understood by five university supervisors and five of their student teachers. The context is an elementary, middle and secondary student teaching program at a Midwestern university in the United States.

A 21St Century Community Learning Center: A Case Study Of Collaboration And Partnerships

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A mandate by the federal government was that schools receiving 21st Century Community Learning Center grants were to collaborate with community and agencies. The case study was of a 21st Century Community Learning Center, an after-school program, that was effective in reducing afternoon and early evening crime in the neighborhood surrounding the elementary school. The case study indicates various entities were involved with the school through networking, but the surveys and interviews produced the view that each was working separately and knew little of the total picture. Recommendations include: (1)bringing all key stakeholders together for a meeting to put the puzzle pieces together, (2) have a community education program where the total community is served, and (3) involving teachers, parents, and agencies in communication and planning will create synergy through collaboration and partnerships.

The Internet And Higher Education: Dissertations Using Internet Citations From 1989-1998 At Oklahoma State University

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SCOPE AND METHOD OF STUDY: The purpose of the study was to ascertain the usage of Internet citations being utilized within the doctoral students' research. The population of the study were dissertations available at Oklahoma State University's library which were produced by students in the following five colleges: Agriculture; Arts and Sciences; Education; Engineering; and Human Environmental Sciences.

FINDINGS AND CONCLUSIONS: The number of dissertations with Internet citations was unexpectedly and remarkably low at 18. Overall, 1998 can be considered the baseline year for dissertations with citation usage. There were12 dissertations published in 1998 with citations. Students in technical fields were more likely to use the Internet for information. Because the number of dissertations with citations was low, a post-hoc analysis was performed on the 83 citations found.

These results indicate the sources of information most cited were from .gov and .edu websites.

How A Person's Beliefs About The Nature Of Knowledge Affect Receptiveness To Complementary / Alternative Health Care

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In recent years, there has been a growing awareness in the U.S. that alternative forms of medical treatment may be as successful in addressing certain chronic illnesses as traditional Western methods. From almost mainstream treatments such as chiropractic and osteopathic to more esoteric methods such as aromatherapy and reflexology, Americans are being offered a virtual smorgasbord of alternative/complementary health care practices. This paper will report on a survey of attitudes of receptiveness of complementary treatment and how a person's beliefs affects his/her willingness to try a different mode of health care. Respondents will be asked to rate the acceptability of a number of therapies, and answer questions that determine their beliefs about the nature of knowledge.

Student-Athletes' Perceptions Of Their Roles And Relationships At A Division I Ncaa University.

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The purpose of this study was to examine student-athletes' perceptions of their roles and relationships at a Division I NCAA university. The subjects of this study were comprised of student-athletes from a mid-sized Division I NCAA university. This university is also a member of a major athletic conference. When investigating the literature from this research field it was discovered that while there is a vast amount of writings on student-athletes, there is not a large amount of researched academic work on the subject of student-athletes roles and relationships at a university. It was also discovered that there is even less academic research in this field that involves the student-athletes own perceptions of their life at a university. This study was conducted to help fill the void in that area of research. The study was conducted using qualitative research methods. Formal and informal interviews were used in the information gathering process. Classroom and other observations were also used to gather information for the study. It was assumed that most student-athletes were very open and honest in their responses during the interviews. The findings from this study covered a wide range of topics. One of the topics discussed was the student-athletes concept of time. All student-athletes interviewed discussed how their time is very structured and limited due to practices, workouts, study and rest time. Another topic was athletic scholarships. It is often misunderstood that an athletic scholarship is a multi-year commitment between university, coach and student-athlete. The scholarship that a student-athlete receives is actually a one-year agreement and can be terminated by the university or coach, leaving the student-athlete very few options. Also the findings show that most student-athletes expressed a unique bond with other student-athletes, regardless of sport. This bond and shared experience allow the student-athletes to develop and grow like family.

An Experimental Study On The Effectiveness Of Making Students Aware Of The Lesson Objectives At The Beginning Of Each Lesson.

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A considerable number of research findings, which were done in different countries, indicate the usefulness of making students aware of the lesson objectives prior to every instruction. However, this assertion faced many criticisms. Even some educators confirmed by researches that showed the demerits and limitations of this method. Having this controversy in mind, the purpose of this study was to investigate the impact of informing students about the lesson objectives at the beginning of each period in Ethiopian teaching-learning situation, particularly in two selected Elementary and Junior Secondary Schools of Alemaya, Eastern Harargie (Ethiopia).

By so doing, this paper was aimed at proposing a better methodology that can enhance students' maximum level of understanding. It assessed whether making students aware of lesson objectives is merely a waste of time or an input in the teaching-learning process.

The research method used was an experimental one. To this end, the investigator taught mathematics for three consecutive weeks for grade eight students in each of the two selected schools. Twenty students in each of the two schools were selected by a purposive sampling method. The selection was made in such a way that individual students' mathematics performance in the two schools were compared by their former mathematics result and a pre-test administered by the investigator. Based on this, pairs of students who were found as having similar mathematics performances in the two schools were selected to put one of them in the experimental and the other in the control group.
As far as possible, similar type of methodology was used in the two groups except the inclusion of informing objectives in the case of the experimental group. Finally a post test was administered to both groups. Care was also taken not to make the students conscious of the experimental study, which was being conducted on them.

The data collection instruments used in the study were tests and documentary analysis. And, the data collected were analyzed using percentages, means, Pearson Product- Moment Correlation and the T- test.

The results of the study revealed that there was a significant difference in the final performances of the students of the two groups. That is, students in the experimental group scored better than students in the control group in the

final teacher-made test. Hence, this finding supported the assertion that making students aware of lesson objectives at the beginning of each period fosters better learning. Finally, appropriate recommendations were forwarded.

Faculty Differences In The Human Sciences And Agricultural Sciences In Time Allocation

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Faculty workload for professional duties and responsibilities are important to time allocation. This longitudinal study examines the differences between gender and discipline in time allocation for scholarly activities. Participants were contacted by mail over three years from 62 land grant universities. The sample was evenly distributed by gender and represents the human and agricultural sciences.

This study indicates there are significant differences in time allocation for scholarly activities. Further, the findings support previous research on gender differences in time allocation to specific professional activities. Male faculty devote a higher portion of their time to research than female faculty. Also, human science faculty allocate a greater percentage of time to teaching than agricultural faculty. In contrast, the faculty in agricultural sciences spend more time in research than faculty in human sciences. The allocation of scholarly activities is influenced by differences in the tasks of the various disciplines and by gender.

Fatigue Behavior Of Carbon Filled Natural Rubber Under Stress Controlled Loading At Different Stress Levels

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The purpose of this research is to investigate how to better meet the needs of college students involved in a distance learning environment. Characteristics of students are classified as traditional or nontraditional and as part-time or full-time status. A pilot study will be conducted using the students enrolled in a Food Preparation and Sanitation course in the School of Hotel and Restaurant Administration at Oklahoma State University. The study will determine the perceived benefits and the applications of web-based distance learning in hospitality education programs. This study also will explore and determine the effectiveness of the web-based distance learning program in conjunction with traditional (face to face) classroom instruction offering choices for the students to enhance their learning experience. These choices include lectures viewed via Internet, and/or attending regularly schedule class lectures. The research projects will provide the flexibility needed to meet the time constraints of busy traditional and nontraditional students. Results of study may show that faculty must be more receptive to offering more distance learning courses along with the traditional (face to face) classes for graduate and undergraduate students. In addition, more resources may be needed to establish additional distance learning opportunity in core course requirements for specific majors.

The Effect Of Services Of The Educational Opportunity Center On Postsecondary Enrollment

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Scope and Method of Study: This descriptive study utilized frequency data and t tests to determine what specific components of the Educational Opportunity Center (EOC) workshop influence participants to enroll in postsecondary education. The Educational Opportunity Center is a federally funded grant program that assist at-risk adults in enrolling in postsecondary education. A survey was created using federal mandates of the EOC program to measure how aware participants were of educational information and how likely they were to use educational information after the EOC workshop. The study used a modified experimental design to control for the

threat of administering a pretest and a posttest. In addition, qualitative data gathered by interviews were analyzed to describe what components of the Educational Opportunity Center workshop were most beneficial. The 307 participants in this study were adults that were completing the EOC workshop in 29 counties in Northeast Oklahoma. The participant's mean age was 32. Almost 60% of the participants were female. Over 40% of the participants were White and almost 50% were minorities.

Findings and Conclusions: This study found participants were likely to use the majority of the information presented in the EOC workshop. Also, a significant change was found in the following areas of educational information after the participant attended the workshop: a) basic skill level, b) career counseling opportunities, c) job availability, d) filling out the financial aid form, e) personal counseling opportunities, f) career interest, and g) financial aid information.

Major conclusions are that the participants will use information that is relevant to them and that the workshop reduced the barriers that prevent participation in adult education. However, in order to get actual application of this new information, the workshops need to include activities that allow the participants to apply the new information. Recommendations were offered to increase the effectiveness of the workshop by applying adult education principles and by tailoring the workshop to meet specific needs. In addition, the workshops need to consider the sociological, economic, and psychological needs of the learner.

An Assessment Of Program Factors Influencing California Ffa Proficiency Award Participation

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Scope and Method of Study: The purpose of this study was to identify selected program factors influencing California FFA proficiency awards program participation and to determine the relationship between selected program factors and perceptions held by department heads regarding SAE programs and FFA proficiency awards. Specific objectives were: (1) To determine selected program factors relative to California FFA chapters participating in the FFA proficiency award program; (2) To determine the perceptions of department heads concerning supervised agricultural experience (SAE) programs; (3) To determine the perceptions of department heads concerning the FFA proficiency awards program; (4) To determine the relationship between selected program factors and perceptions held by department heads regarding the supervised agricultural experience (SAE) program; and (5) To determine the relationship between selected program factors and perceptions held by department heads regarding the FFA proficiency awards program. The scope of this study included all California agricultural education program department heads during the 1999-2000 academic year. The survey was administered during the spring of 2000. Means, frequency distributions, percentages, Pearson correlation coefficients, and the chi-square were used to analyze and describe the data.

Findings and Conclusions: An overwhelmingly majority of California FFA members received instruction, supervision, and participated in SAE programs and the FFA's proficiency awards program. Department heads were in agreement with SAE and FFA proficiency awards program theory and demonstrated evidence of their commitment by their advocacy for SAE program participation, SAE instruction, SAE program supervision, and high level of FFA proficiency award applications at the sectional, regional, state, and national levels. It was concluded California FFA members demonstrated a high level of participation in SAE and FFA proficiency awards programs. It was further concluded that strong support by California's agricultural education department heads toward SAE program supervision, classroom SAE program instructional components, written SAE policies, and student SAE and FFA proficiency awards program involvement have been largely responsible for the number of California finalists and winners in national FFA proficiency awards competition during the five-year period, 1994 to 1999.

Wheelchair Accessible Teaching In A Middle School Classroom

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Effective classroom instruction is essential to students' success in the classroom. However, little research has been documented or performed in the area of increasing the effectiveness of classroom instruction from teachers who are in wheelchairs. Data for this research was gathered through interviews of teachers in wheelchairs, personal observations of teachers in wheelchairs as they teach, and, as a wheelchair user, personal experience as a substitute teacher and field observations within the Teacher Education – Professionalism, Leadership, Understanding, Scholarship program (T-PLUS) at the University of Oklahoma. Results of this study are as follows: (1) the layout of the classroom must be arranged for wheelchair accessibility to allow for easy access for student instruction and monitoring; (2) students need to be able to see the teacher because body language and mannerisms of the teacher are important for clear instruction; (3) the use of technology; and (3) time management.

Mentoring Future Faculty Members: Perspectives From The Trenches

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Doctoral candidate with goals of working in higher education can provide beneficial viewpoints of mentoring to the faculty involved directly and indirectly with them. We propose suggestions to enhance the mentoring process based on previous research, first-hand experiences, and dialogue with other doctoral candidates to address the multiple needs and voices of the doctoral candidate. Each student may have a different approach to being an educator, necessitating diversity in the mentoring process. For instance, the doctoral candidate may aim to be an administrator of faculty member. Ideas for mentoring the student to incorporate pedagogical concepts into their area of concentration will be presented. We will include in the discussion expectations of the mentor-doctoral candidate relationship from the perspective of the doctoral candidate. These expectations are in regards to the doctoral process, research activity and exposure to the departmental processes. Even though doctoral candidates may not be directly involved with educating while in their program, being encouraged to observe and have some input in the program is beneficial as a learning tool for the future educator. Not only does this keep the candidate current with education issues, it provides a method for integrating theory into practice. First hand accounts of adversities and problems encountered will be described and potential solutions offered. Such a problem may exist when doctoral candidates are trying to pursue their own research interests. They may become discouraged if the mentor is pushing them towards the mentor's own ideas rather than providing guidance and support for the candidate's interests. While we feel that mentoring is a symbiotic relationship, understanding the perspective of the doctoral candidate may help promote the success of the relationship.

Resiliency Of Wichita State University Students

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Student retention is such a major concern for many universities that it was one of the topics discussed during the 2000 KAAN Meeting at Fort Hayes State University. If students do not complete their studies, there is great loss both for them, other groups that offer them support, and the university/college in which they are enrolled. Using the formula that Dr. Rich Robbins from Washburn University introduced, and realizing that most bachelor degrees at WSU require a minimum of 124 credits to graduate, the average loss of tuition revenue for students who do not finish their bachelor degrees would be a minimum of $14,400 per student. Thus, retention and how it can be achieved should be something taken seriously.

This research will be an attempt to better understand the reason(s) why Wichita State University students "stick it out" and finish their bachelor degrees. The research population consists of 130 people including academic advisors from all departments on campus, instructors of self-help or motivational courses, and academic administrators

whose main responsibilities are in the area of academic counseling. The main method for gathering information will be a mailed questionnaire. In addition, there will be personal interviews with the selected self-help course instructors. The respondents will be asked to list factors that students have cited as the causes for dropping out and resiliency. Responses will be plotted on a frequency chart so that patterns can be easily identified.

Hypotheses to be tested in this study include the following:

1. The more compatible the student's interests are with the advisors, the more likely the students will complete their studies.

2. The more clear the goals and objectives are to students, the more likely the students are to complete their studies.

3. Students who are well prepared academically for college are more likely to complete their studies than those who are not.

4. Students who express positive perceptions of themselves are more likely to finish their studies than those who express negative perceptions.

Hopefully, findings from this research will be helpful in assisting present and future academic advisors, teachers, and academic administrators in adjusting and creating new curriculum and policies that will improve student retention. The limitation of this study is that the information collected will only be representative of the views of advisors at Wichita State University. The information obtained can nonetheless assist other colleges and institutions by providing them with a starting point in their student retention efforts.

The Effectiveness Of Hyperstudio As A Teaching Tool For Gross Motor Skills

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The research represents phase two of a previous research topic studied last summer. Children between the ages of three and seven years of age were tested on the effectiveness of this multi-media computer program. Thirteen children were divided into sub groups comparing traditionally taught methods of learning motor skills to learning them multi-media. The main purpose of this study was done in order to measure the effectiveness of the program itself. Another purpose of this study includes introducing a new way of learning (physical education) gross motorskills. Gross motor skills are what warm up the largest muscles in the body first. Some of which are jumping, hogging, skipping and etc. Hopping and skipping showed significant improvement. Each child displayed and individual improvement (within their are group) on their own level.

First-Generation Students: A Closer Look At Learning

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Scope and Method of Study: This study was designed to explore individual differences in learning strategy preference between first-generation and non-first-generation Tulsa Community College (TCC) students. The stratified, cluster sample consisted of 101 first-generation and 355 non-first-generation students. The purpose of the study was to (a) identify learning strategy preferences both for first-generation and non-first-generation community college students, (b) examine the relationship of these learning strategies to demographic variables, (c) explore the relationship between learning strategies and academic performance, (d) describe instructor actions that

aid learning and those that deter learning, and (e) ascertain the relationship between academic performance and generation status. In this descriptive study, ATLAS was utilized to measure learning strategies and group the learners into three categories of Navigator, Problem Solver, and Engager. In-depth interviews were conducted with 45 students in each of the learning strategy groups and generational groups to describe barriers that they overcame to attend college and influences that led them to attend TCC.

Findings and Conclusions: Chi Square indicated that Engagers were over-represented with 54.2% of the population when compared to norms for ATLAS. Thus, learners are attracted to learning organizations that convey images congruent with their preferred learning strategy. Analysis of Variance indicated the grade point average of the first-generation students was higher than the non-first-generation group. This difference was eliminated when it was controlled for by the covariant of age. First-generation students were found to be older, earn less income, perceive lower levels of social support from their families, and possess lower degree aspirations at the graduate level. The findings from student interviews supported and enhanced the descriptions of the three categories of ATLAS. Aspirations, benefits, and perceptions of the students support the concept of the community college being a true "people's college." Recommendations were made for improving student learning and for professional development for faculty, staff, and student services personnel.

HUMANITIES

Creative Writing Panel Discussion With Rod Zink, Carmella Braniger, And Mark Parsons Of The OSU Graduate Program In Creative Writing

Nancy Call and Michelle Brown
Oklahoma State University

This is a proposal to do a short poetry reading as part of a panel of creative writers. I plan to read a short collection of poems that I have written since I have been attending Oklahoma State University. I began as a first-year student in the Ph.D. English program with an emphasis in creative writing in the fall of 1998. My speciality is poetry. This selection of poetry covers, among other things, the Oklahoma landscape, climate, and culture. My poetry also include poems about Native American history. Some of my poems, those of a more personal nature, tend to be short lyrical poems. I would be honored to be on a panel with my fellow creative writing students as well as a part of the OSU 12th Annual Graduate Research Symposium.

Broadcasters Streaming Into The Future: A Delphi Study On The Future Of Radio On The World Wide Web

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Scope and Method of Study: This study sought to determine changes that the diffusion of Web radio will impose on broadcasters. Managers need to understand industry changes to make important operational decisions. Radio stations are not exempt from the media melding phenomena occurring on the Internet. The Delphi Technique was used to ascertain some pertinent issues. A 50 - member panel consisting of three groups of industry authorities contributed comments in three rounds of surveys. Fifteen radio station general managers, program directors, and network/group executives, 19 executives of companies providing streaming services, executives of affiliated Web businesses, and writers/editors of publications covering the evolution of Web, and 16 national and state broadcast association leaders participated.

Findings and Conclusions: This study attempted to provide broadcasters further understanding of the complexities of their business. Panelists reached consensus on the following ideas. Content will remain crucial for stations.

Stations should create narrower formats attracting communities of listeners from other geographic areas based on special interests, while not abandoning local audience interests online. All station employees need additional training to promote, program and sell the Webcast. Stations should use Web sites to offer new services/formats to listeners/advertisers while creating new revenue opportunities, specifically e-commerce. Stations should consider not only how their content sounds, but also its appearance. Promotion/marketing will take on new significance as audiences further fragment. Stations should provide resources for the Web operation, including full-time employees, recognizing that the potential exists for the primary signal distribution to evolve from transmitters to servers. Broadcasters should become allies with Web/computer companies. Broadcasters need to re-evaluate their competition because other traditional media now have the capability to offer audio entertainment/information. Stations must determine their Web site's mission and communicate it to their audiences, employees, and advertisers

The Early History Of Riverside Indian School: A Study In Forced Assimilation
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Under the administration of President U.S. Grant the United States Federal government changed their policy towards the Native American Indians in 1867. The new stance was termed the "Peace Policy" and its primary goal wa to change the Indian population into citizens embodying the Protestant values of social reformers in a "peaceful" way. One of the most significant means of achieving the goal was through the federal education program that targeted the Indian youth and lasted until 1928, roughly 60 years. This study focuses on the assimilation techniques the government and the reformers used in thier attempt to annihilate Native American Indian culture and how Riverside Indian School in Anadarko, one of the oldest boarding schools still in existence, fits into this history.

Selections From Bedtime Stories: A Novel
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Bedtime Stories is a postmodern treatment of a contemporary American couple?s inability to communicate-- the only way they can seem to do so is through the stories which they tell one another at night. The work is divided into a series of alternating sections through which the same events are witnessed from various points of view in multiple styles and narrative formats. There are also several distinct time lines; echoes from the characters? actions, memories, and therapy sessions in the various ?time lines? surface, disappear, and resurface. As the novel progresses, the narrative elements eventually merge together to bring the reader a disturbing picture of the couple?s troubled relationship.

MINORITY ISSUES

Improving Indian Education Through Cultural Awareness
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This research examines the need for cultural awareness to improve Indian education. Non-Indian parents and communities in America have maintained control over their children's education through elected school boards whereas Indian parents and tribes have historically been denied this right. For various reasons federal, state and private agencies have basically assumed control over education of Indian children. From the beginning, immigration to this country was mainly used to assimilate Indians into the national mainstream. By robbing Indians of their land, culture, language and beliefs, it was presumed that they would eventually acquire traits of the

dominant society. With many Native languages and traditions near the brink of extinction, access to education can be used to help preserve rather than replace Indian traditions. For Indian people, the link between education and culture is fundamental and cannot be stressed enough as they struggle to maintain their identity.

PHYSICAL SCIENCES AND TECHNOLOGY

An Effort For A User Oriented Process Modeling Language

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Enterprise modeling is the process of representing an enterprise, by explicitly describing its operations, which would be useful in understanding existing (or to be designed) business processes, and in improving the effectiveness and efficiency of the enterprise as a whole. The representation of an enterprise could be in the form of a mathematical model, symbolic representation, or textual description. The purpose of a model is to allow the modeler to gain a thorough understanding of the enterprise, analyze its processes, and suggest changes or new ideas to improve the processes.

The ideal characteristics of a modeling language are presently dispersed in more than one language like IDEF. CIMOSA, Data flow diagrams, etc. This research is a part of the NSF funded project in the Industrial engineering department at OSU.

The objectives of the research can be stated as follows.

1. To conduct a more thorough evaluation of the existing modeling techniques.

2. To identify constructs, theory, etc., of the existing modeling techniques that can be incorporated into, or which can support a new modeling language.

3. To design a new set of modeling constructs, with clearly defined syntax and semantics.

4. Since this research does not involve quantitative techniques, it is difficult to present a rigorous verification and validation of the resulting modeling language. The difference between the current techniques and the proposed technique will be demonstrated using an example and via qualitative arguments.

Two Stage Short Run Variables Control Charting

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Short run control charting, as described by Hillier (1969), is necessary in the initiation of a new process, during the startup of a process just brought into statistical control again, and for a process whose total output is not large enough to use conventional control chart constants. In each of these situations, little or no historical information is available about a process in order to estimate process parameters to begin control charting. Consequently, the initial data obtained from the early run of the process must be used for this purpose. A methodology for short run control charting is from Hillier (1969). It uses a two stage procedure to establish control of a process and to set limits for monitoring the future performance of a process, all from a small set of data drawn from the initial run of a process. Several problems exist with this methodology that limit its application. One is that it has been applied to only three types of control chart combinations. Additionally, results in the literature for these control chart combinations are limited and in some cases incorrect. This research effort solves these problems, with the end result being a comprehensive, theoretically sound, and easy-to-implement methodology that is immediately applicable in industry due to the creation of computer programs to calculate the short run control chart factors.

A Web Information Organization And Management System (Wioms)

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This paper addresses problems associated with the Netscape Navigator browser, specifically the currently inadequate history and bookmarking functionality. It discusses trends in web navigation and reveals user needs that have not previously been addressed. The focus is on the development of a Web Information Organization and Management System (WIOMS) using HyperText Markup Language, JavaScript programming language, and the principles of Graphical User Interface design. The WIOMS improves current browser functionality by incorporating navigation and history capabilities along with user document description, and keyword and World Wide Web search in a user-friendly interface. The WIOMS gives the user the ability to assign a category/priority to each entry (consisting of the document description and Uniform Resource Locator) into one of up to five lists.

Heavy Metals In Fluvial Sediments Of The Picher Mining Field, Northeast Oklahoma

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Heavy metals are present in fluvial sediments of the Picher Mining Field as a result of lead and zinc ore mining. Fluvial sediment samples were collected in 1983 - 1984 by the USGS and were analyzed for several metal elements by Inductively Coupled Argon Plasma - Atomic Emission Spectroscopy (ICAP-AES). USGS sampling sites were revisited in the year 2000 to obtain data for comparison of changes to 1983 - 1984 data. Sediment samples from 2000 were analyzed by (ICAP-AES) for lead, zinc, cadmium, chromium, copper, nickel, arsenic, and iron. Underground mine workings have filled with water and are discharging water into some reaches of area streams. Several large tailings piles that were created during the milling process remain in the area and tailings were observed in the sediment samples at some of the sampling locations. Statistical analysis utilizing the non-parametric Wilcoxon test revealed that there is no statistically significant difference at the $p = 0.05$ level of confidence in the year 2000 metal concentrations in fluvial sediments compared to the USGS data from 1983 - 1984.

Fatigue Behavior Of Carbon Filled Natural Rubber Under Stress Controlled Loading At Different Stress Levels

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In this paper, mechanical property test on carbon filled natural rubber material was performed to study the material constitutive relation. Ogden model for hyperelastic materials such as rubber is used to construct nominal stress and nominal strain curve by fitting test data from uniaxial tension tests. Fatigue tests were carried out to investigate the damage and fatigue failure behavior of carbon filled natural rubber material under stress-controlled loading at different maximum stress levels. From the specimen surface after testing, damage sites, fatigue cracks and surface roughness were observed. At different maximum stress levels, specimens underwent different damage and fatigue failure processes under stress-controlled cyclic loading. Experimental observation in fatigue tests indicates that there are less small cracks on the surface when the maximum stress is relatively high, there are less small cracks but the roughness is changed on the surface when the maximum stress is relatively low, and there exist more small cracks on the surface when the maximum stress is medium. For carbon filled natural rubber material, stress concentration around the boundary of rigid carbon filler will affect fatigue crack initiation and its propagation. For medium stress level, there are many small cracks coalescenced together causing three dimensional zig-jag style

fracture surface and macro cracking jumps up in its magnitude. At the same time, stress amplitude and fatigue lifetime curve for carbon filled natural rubber material was also obtained from fatigue tests.

From experimental results, it can be concluded that 1) when the filled natural rubber material is used in real, stress-controlled loading approach in fatigue tests can be more practical and useful than strain-controlled loading one to predict fatigue lifetime, because different stress levels may cause different damage processes; 2) Stress amplitude and fatigue lifetime curve is provided for carbon filled natural rubber material.

Parametric Study On Shear Slitting

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In industry, shear slitting is widely used to cut a variety of material. In most circumstances, slitting quality is very important for further manufacturing.

In this project, we are investigating the effects of slitting parameters on the quality of slit edges and slitting forces. Slitting parameters examined include clearance, overlap, cant angle, rake angle and speed, etc. The slitting quality is indicated by burr height in this project. The materials tested in this project are aluminum webs, provided by the sponsor, ALCOA.

We have done two series of tests on two different kinds of Aluminum webs, varying three major parameters, clearance, overlap and cant angle, one by one within certain ranges. Experimental results show that slitting forces vary according to these slitting parameters and burr height is also strongly affected by these parameters.

A set of slides are prepared for the presentation of the experimental results and conclusions.

Using A Shewart Control Chart To Study The Effect Of The Maintenance Schedule On Production Costs

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The purpose of this research is to study the effects of using a run-to-failure, time-of-use or hours-of-use preventive maintenance, and/or a predictive maintenance schedule on production costs. Production scrap costs are represented as the number of parts produced that are not within specification multiplied by the individual unit scrap cost. Standard Shewart Xbar and R charts and a sample size of 3 are used to monitor a product dimension of a part produced by a system that is defined as having two distinct serial failure modes, one distributed as a Weibull distribution and one distributed as an Exponentially distribution. The product dimension is considered to be a normally distributed random variable with its mean and variance values being derived from the two serial failure modes with the following two functions, where F(t) is the cumulative failure rate of the system and a, b, c and d are constants.

mean = aF(t)b Variance = cF(t)d

The model is designed such that the upper and lower control limits on the control charts can be related directly to the product specification.

The methodology of this research is to simulate the product dimension when each type of maintenance schedule is applied, individually and in combinations. In addition, the product dimension is simulated when no maintenance schedule is defined. This last simulation represents a run-to-failure maintenance strategy.

The contribution of this research to the body of existing knowledge is that it combines the fields of machine reliability and product quality. This is significant because, while each field of study has been, individually, well researched, there have been few studies that attempt to combine these fields to develop a maintenance plan based on product quality.

Extraordinary Calculus
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Everyone in Mathematics, Engineering, and Physics, along with othermajors have a firm grasp of derivatives and integrals. We find that derivatives and integrals to integer orders are only a small fractionof the bigger picture of Calculus. We generalize all kinds of things to more abstract setting in the sciences, so is there a way to generalize derivatives and integrals? The answer is definitely yes, and through history the phrase 'Extraordinary or Fractional Calculus' has been coined for derivatives and integrals of arbitrary order. We will give a brief overview of extraordinary derivatives and bring out some similarities and differences from ordinary derivatives.

Sustaining Technological Innovation And Technology Transfer In A Deregulated Environment
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More than 40 states have deregulation on the books or in development. Considering the latest energy predicaments encountered by consumers in California, some states are revisiting their deregulation legislation in order to avoid similar circumstances that nearly crippled and bankrupted major utility companies in California. Aside from consumers having to learn again and struggle with brownouts and blackouts and various electricity-shortage-level stage alerts, deregulation in the electric industry has definitely made its mark on society. This research investigates the impact of deregulation on technological innovation and technology transfer in the electric utilities industry. Since the electric utilities industry will now rely on mainly competition to govern its growth and maturity, both public and private sectors of the industry, and the society in general, will be in dire shape to sustain technological innovation and successful technology transfer. Moreover, once deregulation is in full swing, providing and sustaining good reliable quality electrical service to consumers will be extremely difficult at first. However, maintaining sound technological innovation and technology transfer processes by the industry?s participants will be the key components to track and use to determine if the industry will remain deregulated in the near future. To make this determination, the researcher used System Dynamics to study the short-term and long-term consequences of deregulation for all aspects of the electric utilities industry.

Frame Synchronization For OFDM In Slotted Aloha Mobile Communication Systems
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In this paper, we present a novel methodology of achieving frame synchronization for orthogonal frequency division multiplexing (OFDM) systems. The proposed frame synchronization topology utilizes the inherent timing mechanism of slotted ALOHA multiple access technology. The proposed scheme applies frame synchronization on OFDM frames that exist in synchronized time slots from the slotted ALOHA multiple access mechanism. The fine-tuning is required to perfectly detect the frame synchronization pattern, which will dynamically change due to the user mobility and transmission signal multipath and shadowing effects.

Orthogonal Frequency Division Multiplexing (OFDM) technique is a novel method for transmitting messages through a channel with the sole purpose of reducing the inter-symbol interference (ISI) and the inter-carrier interference (ICI) between adjacent transmitted data. OFDM systems are very attractive for mobile communication applications due too the inherent capability to eliminate frequency selective fading. Wireless applications of

OFDM technology is emerging as one of the core technologies that will be employed in the near future has technical developments permit. Some examples exist in 4th generation wireless mobile communication systems, as well as IEEE 802.11a wireless local area network (LAN) devices that provide 54 Mbps at the 5.7 GHz industrial, scientific, and medical (ISM) frequency bands.

Frame synchronization is one of the most a critical processing functions that an OFDM system has to accomplish in order to provide quality performance high data rate transmission. Frame synchronization problems arise when the receiver cannot estimate the exact position of the start of the frame from a sequence of frames transmitted. Carrier offset arises because of the mismatch between the transmitter and the receiver tuning circuits. These synchronization problems lead to ISI and ICI hence loss of data.

In [1], the proposed synchronization scheme, which applied OFDM over ALOHA, resulted in less than a 1.5 dB Eb/No difference compared to the ideal synchronization case in for the same bit error rate (BER) for both the 10 Hz and 20 Hz Doppler rates. Compared to the performance obtained in [1], the proposed novel slotted ALOHA OFDM system possess more then a two fold gain in multiple access utilization due to the inherent slotted-timing scheme. In addition, compared to the synchronization methodology applied in [2], the proposed slotted ALOHA OFDM architecture does not have the possibility of coarse OFDM frame synchronization failure. In the proposed mechanism, only the fine-tuning procedures of the frame synchronization mechanism, which is similar to the methodology applied in [2], is necessary. This enables the proposed OFDM system to perform better as well as have a much simpler processing architecture.

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Whispering-Gallery-Mode Evanescent-Wave Microsensor

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The high quality factors (Q) of resonant whispering-gallery modes of a fused silica microsphere allow these passive resonant cavities to be used as sensors. The evanescent portion of these modes is allowed to interact with the gas or liquid surrounding the microsphere. The change in absorption of the surrounding medium is detected and analyzed to determine the effective path length and concentration of the absorbing molecules. The long effective path length of these sub-millimeter devices allows them to be as sensitive as that of a typical multipass-cell system that measures tens of meters in length and orders of magnitude more sensitive than other evanescent-wave sensors. This gives them the advantage of both size and sensitivity.

Results will include the detection of ro-vibrational overtones of carbon dioxide within the 1570-1580 nm wavelength range and absorption of a liquid dye within the 750-850 nm wavelength range.

Fracture Modeling Of The San Antonio Segment Of The Edwards Aquifer, Central Texas

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The San Antonio segment of the Edwards aquifer of central Texas is a prolific, well-studied, fractured karst aquifer. The average regional values of permeability of this aquifer are two orders of magnitude greater than the average permeability on the well scale and six orders of magnitude greater than the average permeability measured in core samples. This effect is referred to as the permeability scale effect. Previous work has attributed the permeability on the well scale to fractures. The purpose of this study was to determine whether outcrop data could predict the permeability of the aquifer on the regional scale. Well scale fracture density data from previous work were extrapolated to the regional scale to calculate how many connected fractures are encountered in a model cell. This number of fractures was then used to determine the estimate of regional permeability from the outcrop data. The outcrop permeability model yielded an appropriate mean value of regional permeability. This model suggests that the scale effect is only an artifact of sampling a larger portion of a fracture aperture distribution.

A General Framework For Grain Blending And Segregation

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We present an optimization model to analyze grain blending and segregation decisions when faced with different premium schedules. We focus primarily on intrinsic grain attributes like protein content to drive grain blending decisions, and also study the effect of concave/convex price schedules. Results as applied to wheat storage records from grain elevators in Oklahoma will also be discussed.

Estimating Surface Fluxes Using A Land Surface Model

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Exchanges of water and energy between the surface of the earth and the atmosphere occur continuously. However, modeling these exchanges poses great challenges for many reasons. Recently there has been a focus on physically-based modeling of the surface exchange processes from both hydrological and atmospheric science perspectives. The Oklahoma Mesonet is an automated network of 114 stations covering the state of Oklahoma. Each station measures many meteorological and soil variables. Surface energy budget measurements have been added to selected Mesonet sites through the Oklahoma Atmospheric Surface-Layer Instrumentation System (OASIS) project. In this study, a popular land surface model has been used to simulate net radiation and latent, sensible and ground heat fluxes, for comparison to the direct measurements made at two OASIS sites. The results indicate that the model estimates of surface fluxes are reasonable and can be integrated with atmospheric modeling in order to improve weather prediction.

SOCIAL SCIENCES

Alternative Approaches For Nutrition Field Research In Developing Countries

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A Participatory Rural Appraisal method was adapted for studying food habits of rural households in southern regions of Ethiopia. The farmer's association list was used as a sampling frame to randomly select 90 households in Sidama, Gurage, Hadya, and Wolayta (N=360). Specific participatory methods used were focused group discussion; ranking, scoring, and seasonality analysis. As wealth determines food consumption, the criteria used by rural households in defining wealth of the study area were identified. Analysis of the wealth criteria generated indicated that the size of animal and plant products owned

by households placed the households in rich, medium or poor wealth strata. The methods employed verified that seeking nutrition related data from rural households needs techniques that are simple and applicable to existing rural situations. Traditional surveys tend to increase the suspicions of rural people, as they are usually associated with tax collection. Likewise, asking rural mothers about the quality and quantity of food served daily to family members is challenging to educators, when most rural families in developing countries live with limited food resources. Furthermore, the low literacy level of most rural families requires tools that reflect regular daily practices. Norway Agricultural University and Awassa Agriculture College Research Collaboration Project funded this study.

Technical Efficiency Of Poultry Farms In Saudi Arabia

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The government of Saudi Arabia has made a substantial effort to develop broiler production. The cost of producing broilers on many of the farms exceeds the cost of imported broilers. The objective of this research is to determine if poultry producers in the central region of Saudi Arabia are efficient

Multiple-Use Land Management: A Linear Programming Model For The Province Of Antioquia (Colombia)

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A multiple-use land management is a well-known approach to efficiently and sustainably allocate land. However, in tropical developing countries like Colombia (South America), this approach is not well known nor applied yet. Three main activities are considered: forestry, agriculture and pasture. The objective is to maximize a social utility function subject to a set of constraints. Two environmental outputs are taken into consideration: sedimentation and water yield from each of the activities. The specified economic model is dynamic. As a tropical country, Colombia has not been free of the problems of land misallocation, deforestation and soil erosion, particularly in the Andean portion of the country. The lack of long-run policies to develop the natural resource sector including agriculture has led the country to a process of land misallocation. For example, the Government argues that 45 percent of the Colombian territory exhibits some degree of land use conflict between current and potential use. In fact, current land area occupied by livestock is about 40 million hectares while the true potential is just 15 million hectares. On the other hand, the lands that are considered appropriate to develop agricultural cropping, basically in the plains, are now used in extensive livestock and pasture. In turn, the high lands in the Andes, which are highly productive in forest, are used in intensive agriculture. The results of this misallocation of land could not be worse: low productivity in agriculture, soil erosion, runoff, very high opportunity costs of agricultural production, rural poverty and violence, among others.

Using a mathematical programming approach, this paper aims to to shed light on the land and forest management problems in the North Samaná watershed (290 thousand hectares) located in the Province of Antioquia, by approaching different alternatives of land use. According to the physical, climatic and economic characteristics of the watershed, management prescriptions must provide the social planer with the tools to choose the alternative with the highest social net benefit from the activities developed in the watershed. Such activities (forest, agriculture and pasture) are meant to be within a sustainable development context.

The Dopamine Theory And Alternative Therapies For Attention Deficit-Hyperactivity Disorder

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Studies using different paradigms in both auditory and visual modalities have shown that children's attentional abilities show substantial change between 5 an 7 years. Five-year-olds display difficulty in attending to relevant information and ignoring irrelevant information, while 7-year-olds display a very significant improvement in their ability to appropriately attend to all information. Additionally, the younger children are much more susceptible to distraction and benefit the most from environmental assistance to remain focused. The purpose of this paper is to discuss research from our laboratory and others that have investigated the mechanisms underlying this very significant developmental change.

We attempted to investigate the 5-7 shift using a focused selective attention paradigm while measuring both behavioral and electrophysiological measures. Children heard stimuli in both ears, one ear being the relevant channel, and the other irrelevant. Targets were rare stimuli and standards were frequent stimuli that could both occur in either ear. Children were instructed to respond to targets in the relevant channel and to ignore targets in the irrelevant channel as well as all standards. Accuracy of the behavioral measures were hits and false alarms. The two electrophysiological measures were event-related potentials (ERPs), notably the P3 waveform.

The results of this study showed that 7-year-olds were behaviorally more accurate in responding than 5-year-olds. Not only did 7-year-olds have more hits but they also had fewer false alarms than their younger counterparts, a finding that is expected according to the developmental literature. The ERP results, however, were most interesting. Seven-year-olds showed significantly larger P3 amplitudes between the attended and ignored targets while 5-year-olds showed no differences. Since P3 is thought to represent attention, this finding indicates that the 7-year-olds were processing the relevant stimuli to a greater extent than the irrelevant stimuli. Five-year-olds appeared to be processing both stimuli equally.

Many paradigms that have examined attention with young children have incorporated tasks that measure more than attentional processes alone. Many of these tasks, including our paradigm, require response inhibition to irrelevant stimuli. Consequently changes occurring from 5 to 7 years could involve improved attention processes, improved response inhibition, or improvement in both processes. It is possible that these two processes are part of a complex, coordinated set of processes that function as a unit and develop as a unit. Therefore, it is important to examine those studies that confound attention with executive functioning, and to develop paradigms that can be used to disentangle the two processes.

Current research in our laboratory that is attempting to tease apart these two mechanisms using a behavioral selective attention task will be presented.

Substitution Effects Of Alternative Fishing Sites For Eastern Oklahoma Natural Stream Anglers Using Constant Elasticity Of Substitution Utility Demand

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Oklahoma fishermen (anglers) have an abundant number of choices of where to fish and type of fishing. Oklahoma has many lakes, rivers and small streams, each of which represents a potential fishery to the angler. Oklahoma anglers may fish at these state locations but they may also choose to fish at locations out-of-state.

Anglers may choose the number of fishing trips they make each year (or season) and the places (sites) at which they fish. Some anglers make many trips each year, others choose to make only a few trips. Some anglers fish only at one or a few sites, others choose to fish at many sites. Thus, sites may be competitive in the distribution of a limited number of angler trips.

Each angler creates his/her own market for the total number of trips per year and the number to each site based on the cost of each site, the attributes of each site, and the angler?s own personal preferences and resources. Because each trip to each site is associated with an expected fishing experience and cost, if the relative cost per trip

between different sites should change, anglers have a further choice as to their willingness to substitute their limited number of trips between the different sites.

Little was known about small stream fishing in eastern Oklahoma until the Oklahoma Department of Wildlife Conservation commissioned a recent survey of Oklahoma fishing license holders that fished small streams. Results of that survey indicate that of the 627,000 Oklahoma license holders in 1993, an estimated 11.6 % (or 72,600) fished eastern Oklahoma small streams for an estimated 1,128,500 total trips (Oklahoma Department of Wildlife Conservation, 1996). A follow-up survey indicated these anglers also fished at reservoirs, lakes, large rivers and farm ponds. What is not known is how eastern Oklahoma small stream anglers are willing to substitute small stream fishing for other types of fishing given a change in relative trip costs.

The importance of this information becomes relevant when managing small natural streams in eastern Oklahoma. On the basis of the importance of 1,128,500 eastern Oklahoma small stream fishing trips, the Department of Wildlife Conservation could take a more active role in managing such streams for the benefit of all Oklahoma fishing license holders. In the process, this could change the quality and cost of small stream fishing. Knowledge of the willingness of small stream anglers to substitute stream trips for other types of fishing trips provides a better basis for the management of natural stream fishing.

The objective of this study is to estimate the elasticity of substitution in conjunction with the impact of changing price and quantity related indices for eastern Oklahoma small stream fishing trips relative to all other water body fishing trips in Oklahoma by using a constant elasticity of substitution utility demand model.

U.S.Regional Commodity Trade Parameter Estimates

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Commodity trade among regions is explained by market behavior. Consumers determine consumption levels of imports versus domestically produced goods based on maximization of utility. Products classified within the same broad economic sector (i.e. food and kindred products) are imported as well as produced domestically. Market behavior for imports for a specific region may be subsumed under the behavioral parameter of elasticity of substitution of imported goods for domestically produced goods. Given these behavioral parameters (elasticities), a change in level of imports in determined by a change in relative import to domestic product prices.

A second level of substitution may occur by source of imported goods. That is, broad geographic source of imports (i.e. census regions of Northeast, Northwest and South) may be differentiated because of differences in quality of goods or differences in mix of goods within the same sector. Sources of imported goods may lead to consumers willingness to substitute goods from the Northeast for goods from the south depending on relative price levels.

The purpose of this research is to estimate the two levels of elasticities of substitution for 23 different commodity groupings using recent data on interregional commodity flows. These estimates will be compared to alternative estimates available in the literature.

Handicap Accessibility In Our National Park Historic Sites

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The purpose of this research is to examine the tools and methods employed by the National Park Service (NPS) in managing handicap accessibility at historic sites. This project will evaluate what has already been done, what can be feasibly be done, and what new technologies can be employed, while at the same time preserving the balance of

preservation and accessibility. For the purpose of reference, this research will for the most part follow the guidelines of the Americans with Disabilities Act of 1991.

The major problem for the NPS lies in its mandate to make historic sites accessible, while at the same time protecting the integrity of the site from human impact. One of the hardest jobs of any site manager is to open the site to the public, and at the same time protect it from visitation. The ability for handling accessibility issues calls for fundamental changes in any site. Trails, doors, entrances, fire escapes, and all other alterations must be made to accommodate persons using wheelchairs or walking aids.

There are several different theories when dealing with the issues of disabled accessibility. One such argument would be the complete disregard for all handicapped accessibility so that the site will remain as pristine as possible in its original condition. Another is to revamp the entire site to bring everything in the resource into compliance with a complete disregard for the historic integrity of the site. The goal of this paper is to evaluate the tools and methods that are employed by the National Parks Service for disabled accessibility in relation to their impact upon the resource.

Tools that the NPS can employ range from placing accessible overlooks in historic landscapes to altering entrances to accommodate accessibility issues. This research will look at the functionality of these tools, and also how they blend into the historical integrity and esthetics of the site as a whole.

It is important to recognize different persons are impacted from any alterations to these sites. All visitors, disabled or non-disabled persons are all impacted by any change to these resources. As a result these changes and tools must be accommodating to not only the disabled visitor but also to all visitors. With this important aspect in mind we must always remember that the overriding effort of this paper, and the National Park Service mandates, calls for the preservation of the site's historic integrity.

Travelers' Perception Of Oklahoma As A Travel Destination

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According to recent T&T Update (June 2000) published by Oklahoma Travel & Tourism Division, travel and tourism becomes one of Oklahoma's top three industries in terms of economic impact on the state. In 1999, travelers to Oklahoma spent over 3 billion dollars (T&T Update, June 2000). As State of Oklahoma has begun to recognize the importance of travel and tourism in generating employment, wages, and state and local tax revenues, the state is directing and implementing the $4 million ?Oklahoma Native America? advertising campaign, marketing Oklahoma to domestic and international tour operators and group leaders.

THE PURPOSE OF THE STUDY

The purpose of the study was to identify Oklahoma's position as a leisure destination by comparing key Oklahoma visitor and non-visitor characteristics versus same characteristics for key states and to investigate perceptions of Oklahoma versus competitive states as a travel destination.

METHODOLOGY

In order to fulfill the purpose of the study, the content analysis was conducted based on data derived from the 1999 American Traveler Survey (ATS) and Image Study conducted by Plog Research. In addition, secondary data such as various magazines, journals, and literatures published by the State of Oklahoma was reviewed in this study.

DISCUSSION

The Plog study indicated that 2% of respondents think of Oklahoma as a leisure destination and 4% would consider it as state to visit within the next 12 months. Oklahoma places relatively low in terms of the appeal of various states as leisure destinations and future intent to visit while Texas, Louisiana, Colorado and Missouri generate higher visitation intention.

With regard to the reasons why a traveler would or would not visit Oklahoma, the results show that the primary reasons of travelers who will visit Oklahoma in the next 12 months are to visit family and friends, they live in Oklahoma, or that it is close by. In contrast, travelers who indicate that they will definitely or probably will not visit Oklahoma in the next 12 months declare that they have no desire to go, there is nothing to do in Oklahoma, or there is no reason to go to Oklahoma.

Findings indicate that Oklahoma is successful in attracting travelers who are more upscale with higher household incomes than non-visitors. They are more likely to have higher education attainment, to hold executive/managerial positions and are less likely to be retired.

With regard to travel characteristics, Oklahoma visitors tend to take annual travel more frequently and spend more nights away from home than non-visitors. They also take more trips to visit friends/relatives than non-visitors.

IMPLICATIONS

Advertising that illustrates different activities available in Oklahoma can potentially influence those who currently do not plan to visit Oklahoma by awakening a desire to go there and proving that lots of opportunities for fun exist. It can also influence those who live in or near Oklahoma to stay close-to-home because leisure options are available without long-distance travel.

Reasons For Employee Turnover In Oklahoma Lodging Properties As Perceived By Housekeeping Managers

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Employee turnover has been a major issue throughout the history of lodging industry. The impact of this chronic problem has been much more intensive during the periods of labor shortage. At the beginning of 21st century United States is enjoying record low unemployment rate which might ultimately lead to higher employee turnover.Housekeeping was used to be the most vulnerable department to turnover in hotel organizations. Consequently,the study attempts to explore and analyze the important reasons which cause guestroom attendants employed in Oklahoma lodging properties to leave the organizations.

Keywords: Lodging, Housekeeping, Employee Turnover

A Geography Of The Cultural Perceptions Associated With The Beauty Of Women

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A description of the historical role of beauty to the western civilization and how we think today in terms of beauty and its relationship to power and creativity. Also included is a cross-cultural comparison of the interpretation of feminine beauty throughout many parts of the world.

Differentiating Behavioral Inhibition From Attentional Changes In Early Childhood Development

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It is estimated that Attention Deficit Hyperactivity Disorder (ADHD) affects between 2 and 9.5 percent of the school-age population worldwide. There are three major characteristics of ADHD: inattention, hyperactivity, and impulsivity. Children with ADHD are easily distracted by extraneous stimuli, and find it difficult to sustain attention in work or play activities. Although ADHD is routinely treated with psychostimulants, such as methylphenidate (Ritalin), psychostimulant therapy has several drawbacks including, and perhaps most important, the potential for abuse. They must be taken frequently to maintain a therapeutic effect, and a "rebound" effect may occur if dosage is not properly maintained. Sleep disturbances may also occur, which can exacerbate symptoms associated with ADHD. Advances in research on alternative therapies have allowed some children to lessen their dosages of psychostimulants, and there are more options available for children that do not respond to psychostimulants. This paper will examine recent findings in the research regarding alternative therapies for ADHD, especially as they relate to brain neurotransmitters.

One current position holds that there is a deficit or dysfunction of the neurotransmitter dopamine in the brains of children with ADHD. Dopamine is involved with a number of functions in the human brain, including positive reinforcement, movement, and emotional regulation. Its role in attention and attentional disorders is not well understood. At the molecular level, major questions such as whether there is too little dopamine present in the brain or if the dopamine receptors are ineffective still remain to be answered. Much current research focuses on dopamine receptors and the genes that code for them in ADHD populations.

A second approach follows that of Diamond (1997) who notes that children with phenylketonuria (PKU), though they have been treated early and continuously, exhibit symptoms similar to those seen in children with ADHD, such as attention problems, difficulty concentrating, and problems with executive functions. Dopamine synthesis is significantly reduced in the prefrontal cortex of children with PKU. It is possible that similar deficiencies contribute to ADHD.

A number of alternative therapies for ADHD relate to the dopamine deficit theory. These therapies, which include nutritional supplements, antidepressants, and anticonvulsants, will be reviewed and evaluated. The prospects for further research based on the dopamine deficit theory will also be addressed.

Aging And Public Policy

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Social Sciences
Abilene Christian

One of the hottest legislative topics in the United States pertains to the rapidly growing elderly population and their demands and needs. From Social Security to Medicare all the way down to accessibility issues, the debate is only beginning. This study attempted to identify the trigger mechanisms that initiate the aging policy formation process. The literature review revealed tremendous activity in the policy making process as it relates to aging policy; however, with the multitudes of known initiators a reliable method of testing and replication was not found. A discussion of those unidentified initiators undoubtedly leaves some areas uncovered that are in need of redress.

Print Media And College Sports Coverage: It's All About Football

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Media coverage of sports is important because it provides the chance for athletics to reach people who otherwise would not be included, such those who do not have season tickets to every college sport. Media coverage allows various sports to grow and develop new fans. The purpose of this study is to compare the theories of agenda setting, cultivation and uses and gratification to media coverage of football compared to that of track and field/cross

country. A content analysis approach was taken to carefully examine media coverage of these two sports in a highly recognized university newspaper. The research conclusions revolve around the idea that the media is responsible for the popularity of some sports, such as football, as well as for the public neglect of other sports

The Characteristics And Importance Of Random Sampling
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Sampling is an important element of most research projects. It is especially important in the conduct of survey research. Although drawing samples of some populations can be fairly straightforward, characteristics of the population or sampling frame can make identifying truly random samples more difficult.

The purpose of this project is to develop and execute a multi-level random sampling of advertising academics and educators, advertising agency practioners, and corporate practioners. This will produce samples sufficient for cross-categorical comparison in defining the "Seminal Literary Contributions to the Discipline of Advertising: Academic and Practioner Perspectives."

Opening The Lockbox On Campus Crime
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It took Jeanne Clery's death for someone to realize that no one knew what was really going on at college campuses across America: unreported crime. On April 5, 1986, she was sexually assaulted and murdered in her dormitory room by a fellow student at Lehigh University in Bethlehem, Pennsylvania. The Clery family was one of the first few groups of people to understand that little was being done to prevent crimes on college campuses. After a short investigation, Howard and Connie Clery found out that members of their daughter's community weren't aware of a string of violent crimes that were happening on their campus. So security doors were staying propped open and trusting collegians were leaving their doors unlocked. The Clery family, followed by many others, then became intent on freeing the critical information students need to be aware of crime and safety in their environment. Great strides have thus been made in opening the public eye to crime on college campuses, but not without recurring resistance.

An Examination Of The Relationships Between Strategy, Environment, And Performance In A Fundamental Analysis Model
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The purpose of the study is to assess the association between strategy, accounting information, and past firm value in order to develop a valuation model that predicts future firm value. Strategic research shows support for the premise that strategy and the business environment affects firm value. Accounting research has documented an association between accounting information and firm market value. There has been a call for research that examines accounting information within a context and tries to use accounting information to link firms' decisions and actions to value. Using the theories of Porter and Miles, this study develops a model that links firms' strategy choices and accounting information to performance by measuring the strategic fit. Strategists believe firm value is equal to a multiple of book value plus the intrinsic value created by the fit between the environment, managerial decisions, and firms' actions. A fundamental analysis model created by Feltham and Ohlson describes firm value as a multiple of book value plus discounted abnormal earnings. These two theories of firm value are combined to link future earnings to current strategic decisions. The results of this study will contribute to the accounting

literature by providing information about the reflection of firm specific characteristics in accounting in-formation. Additionally, it will address how the firms' characteristics and accounting information can translate into future firm value.

Minimum Cost Of Water Pollution Abatement For Farmers In Beaty Creek, Oklahoma

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The uniform standard used to meet the 1973 Clean Water Act (CWA) has been blamed for causing cost inefficiency. Many watersheds in the US are threatened by excess quantities of phosphorous that come from land application of manure. Many of these watersheds are in the process of setting total maximum daily load (TMDL) for phosphorous. The setting and implementation of these TMDL's may be done with little economic analysis. Portney's review of cost benefits studies of the 1973 Clean Water Act (CWA) shows costs likely exceed benefits. However other research shows the same benefits could have been reached for one-third to one-half the cost. The minimum total cost for a group of producers to meet a given discharge limit requires that the marginal abatement cost for each producer is equated at the receptor or point of measurement. The optimal solution implies that individual producers will have different application rates of manure.

High phosphorus loads are blamed for the low water quality in Lake Eucha, which is located in northeastern Oklahoma. Much of the phosphorous has been traced to high surface application rates of poultry manure on pastures in the Eucha watershed. The process of setting TMDL's for the Eucha basin has started. Beaty Creek is one tributary that contributes about 39 percent of the total phosphorous load to the lake.

The objective of the study is to minimize the long- term cost (reduction in farm income due to the reduction of using manure as fertilizer) in the basin in order to meet various TMDL's that might be proposed. First the SWAT (Soil Water Assessment Tool) was used with GIS to divide the Beaty creek into HRU's. Simulation was used to determine the response of crop (Bermuda grass) to application of commercial nitrogen and poultry manure for each HRU. The long-term accumulation and runoff rates of nitrogen and phosphorous were also estimated for each hydraulic response unit. These data were used to construct multi-period optimization models of crop production, nutrient accumulation, and nutrient loss for each HRU.

The simultaneous solution of a multiyear model for a watershed with many HRU's was not considered feasible. Rather a decomposition process is being tested in which each of the net present value of crop production subject to charges for nutrient loss is solved separately for each HRU. Total phosphorous emissions from each HRU reaching the base of the watershed are summed. If total phosphorous emissions exceed the targeted TMDL, the charge on phosphorus emissions is increased and the individual HRU problems are resolved. The emissions charge is modified until total phosphorous emissions are within tolerance values of the TMDL. As a result, a locus of various marginal abatement costs associated with different TMDLs is depicted. This abatement cost curve is essential in making decision of what level of TMDL should be chosen.

"Safety, Efficiency, And Connectivity: A Comprehensive Evaluation On Bicycle Commuting To The Oklahoma State Campus"

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This study examined the safety, time efficiency and connectivity of designated bicycle routes used for commuting by Oklahoma State University students. Specifically examined were roadways and trails designated for bicycling that are used for daily commuting by Oklahoma State University students. Time to commute from home to campus, separation from motor vehicle traffic and pedestrians, linkage of designated routes and maintenance of designated routes were analyzed. Criteria used in this study included the use of the bicycle compatibility index (BCI) and design specifications used by the BikePlan Source. The study found that the majority of Oklahoma State

University students are not able to commute directly to campus using designated bicycle routes that are safe, time efficient and afford protection from vehicular traffic or pedestrian traffic.

Profit, Ownership, And The Corporation: Deviance In American Eldercare

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For-profit and non-profit nursing homes neglect, exploit, and abuse residents, but higher deviation from law is found among for-profit homes. Non-compliance with Health Care Financing Administration guidelines reflects variation in ownership and rates of deviance. This analysis of 385 nursing homes showed a connection between for-profit ownership and higher deficiency rates. The analysis of deviance in American eldercare contributes to comparative research examining corporate lawbreaking and non-compliance to nursing home regulations.