



News from KSU Animal Sciences

- ✉ **Developing and Implementing Your Company's HACCP Plan** for meat, poultry and juice processors virtual workshop will be September 30-October 2, 2020. Information and registration for the 2.5 day International HACCP Alliance accredited workshop is online at <http://haccp.unl.edu>. For more information, contact Dr. Liz Boyle at lboyle@ksu.edu or 785-532-1247.

- ✉ **KSU Beef Stocker Field Day to be hosted virtually on October 1** – The 21st KSU Beef Stocker Field Day will be hosted virtually on Thursday, October 1. The day will start at 9:30 a.m. with a welcome and conclude by noon. The tentative schedule is as follows:
 - 9:30 am Welcome and Overview of the KSU Beef Stocker Unit – *Mike Day, ASI Department Head, and Dale Blasi, KSU Extension Beef Specialist*
Moderator – Wes Ishmael, Cattle Current
 - 9:45 am Beef Cattle Market Outlook - *Glynn Tonsor, KSU Agricultural Economist*
 - 10:15 am Making Alternative Ration Ingredient Changes Work – *Justin Waggoner, KSU Extension Beef Specialist*
 - 10:45 am Nutrition and Management - Limit Feeding – *Dale Blasi, KSU Extension Beef Specialist*
 - 11:15 am Economic Aspects - Limit Feeding – *Glynn Tonsor, KSU Agricultural Economist*
 - 11:45 am Closing Remarks and QuestionsPlease visit <https://ASI.KSU.EDU/StockerFieldDay> to learn more about the schedule and program. To register, go to <http://bit.ly/2020StockerFieldDay>. For more information, contact Dale Blasi (dblasi@ksu.edu; 785-532-5427).

- ✉ **Don L. Good Impact Award Virtual Program** - A virtual ceremony will be hosted to honor Kelly & Marcie Lechtenberg and family as the winner of the 2020 Don L. Good Impact Award. Watch for more details on the virtual award ceremony at www.asi.k-state.edu/familyandfriends.

- ✉ **Make plans now to register for the 2020 Virtual KSU Swine Day**. The 2020 KSU Swine Day will be hosted virtually on Wednesday and Thursday, November 18-19, via zoom webinar platform from 10 am – 12 noon each day. The program will include updates on KSU research on nutrition, feed safety and feed processing. Watch for more information to register and the schedule at www.KSUswine.org. For more information, contact Joel DeRouchey (jderouch@ksu.edu; 785-532-2280) or Lois Schreiner (lschrein@ksu.edu; 785-532-1267).

Department of Animal Sciences and Industry

Kansas State University
218 Weber Hall, 1424 Claflin Road
Manhattan, KS 66506
785-532-6533
www.asi.ksu.edu

September 2020 issue





Youth for the Quality Care of Animals (YQCA) is a national, multi-species youth livestock quality assurance program that was launched in 2017. Youth may participate in the program online or through a face-to-face class with a certified instructor. This is a fee-based program, which is \$12/child for the online course or \$3 for a face-to-face session. Kansas has renewed its partnership with the program for 2020-2021, which allows agents and ag teachers to have the opportunity to obtain their certification and teach youth the curriculum through face-to-face sessions. As the third program year comes to a close, YQCA has shut down the system in September. So, until October 1, youth will not be able to access the system to complete the training or obtain a number. The system will also be inaccessible to instructors, so no additional certification may be issued, classes created, profiles updated, etc. During this time, the YQCA staff will be uploading the new modules and curriculum for the 2020-2021 year, as well as performing system maintenance. Agents who were certified last year can re-certify beginning on October 1. Details will be distributed directly from YQCA to currently certified instructors. Any additional agents who would like to become certified need to email Lexie Hayes at adhayes@ksu.edu to be added. New instructors will need to watch their email for a token from YQCA to set-up their instructor account and complete the certification. Once agents complete the certification process, the YQCA staff will distribute the new materials and their certification will be valid until September 1, 2021. Although a final decision will be confirmed by each respective board, we do anticipate exhibitors will continue to be required to complete annual YQCA certification to participate in the Kansas State Fair Grand Drive and the Kansas Junior Livestock Show. The 2021 show will also be the first year it is required for 7-year-old participants at KJLS. This age group may only obtain certification by participating in a face-to-face class that uses the junior slide deck. A parent or guardian needs to attend with a 7-year-old in order for them to obtain their certification.

CALENDAR OF UPCOMING EVENTS		
Date	Event	Location
September 30-October 2, 2020	Developing and Implementing your Company's HACCP Plan Virtual Workshop	
October 1, 2020	KSU Beef Stocker Virtual Field Day	
October, 2020	Don L. Good Impact Award Virtual Program	
November 18-19, 2020	KSU Swine Day Virtual Conference	

What's New.....

↪ **Management Minute** – Justin Waggoner, Ph.D., Beef Systems Specialist

“Talent Management”

The concept of “Talent Management” came up in a recent conversation. This is the strategy which an organization or business uses to hire, manage, retain, and develop employees for leadership roles. Many businesses lose exceptionally talented employees because their strengths and talents were not recognized. Additionally, an effective talent management strategy is a mechanism to groom and develop future leaders and managers. Managers play a key role in an organization’s talent management strategy, as they must identify talented, exceptional employees. Managers also serve as mentors, providing coaching and feedback to develop employees. Research conducted by the American Society for Training and Development documented that those organizations with the most successful talent management systems also asked managers to discuss the talents and skills of their most talented employees with other managers and leaders. Discussing the organizations most talented employees creates an internal talent pool that various departments can draw from to fill current positions. Do you have exceptional employees in your organization? What is your talent management strategy? Are you at risk of losing your best employees?

For more information, contact Justin Waggoner at jwaggon@ksu.edu.

↪ **Feedlot Facts** – Justin Waggoner, Ph.D., Beef Systems Specialist

“Feedlot Heifer Performance in 2019”

Each year, I summarize the data from the K-State Focus on Feedlots, in an effort to document annual trends in fed cattle performance. The Focus on Feedlots data for heifers from 2019, 2018 and 2017 is summarized in the table below. The number of heifers marketed decreased in 2019 with more than 26,900 fewer heifers being marketed in 2019 than 2018. Heifer in weights were slightly lower, averaging 704 lbs in 2019. Final weights of heifers were on average 7 lbs lower in 2019 at 1265 lbs, compared to 1272 lbs in 2018. Heifer days on feed increased to 175 days, an increase of 9 days relative to the 166 days reported in 2018. Heifer average daily gain was similar across years, but feed conversion increased relative to 2018 and 2017. Death loss increased to 2.01% relative to 1.75% and 1.64% death losses reported in 2018 and 2017, respectively.

Total cost of gain increased in 2019 to \$89.48/cwt. Heifer cost of gain was \$5.11/cwt greater on average than that of steers, \$84.37/cwt versus \$89.48/cwt.

Annual Closeout Summary: Heifers

Year	Total Head	In Weight ³	Final Weight	Days on Feed	Avg. Daily Gain	Feed/Gain (Dry Basis)	% Death Loss	Cost of Gain/Cwt
2019	198769	704 (649-759)	1265 (1220-1314)	175 (159-194)	3.20 (2.88-3.78)	6.61 (6.28-7.31)	2.01 (1.48-2.75)	\$89.48 (85.30-95.11)
2018	225752	733 (689-767)	1272 (1250-1308)	166 (158-180)	3.19 (3.10-3.37)	6.44 (6.24-6.71)	1.75 (1.26-2.35)	\$83.36 (78.52-88.20)
2017	275542	729 (696-760)	1252 (1202-1292)	160 (149-171)	3.23 (3.00-3.49)	6.37 (6.13-6.53)	1.64 (1.34-1.93)	\$78.10 (75.40-80.64)

For more information, contact Justin Waggoner at jwaggon@ksu.edu.

Sensory Evaluation from Asian Consumers of Six Different Beef Shank Cuts - The objective of this study was to evaluate factors affecting Asian consumers' purchasing decisions and eating preferences of six different beef shank cuts. Six different beef shank cuts, three from the forequarter [biceps brachii (shank A); a combination of deep digital flexor and flexor digitorum superficialis (shank B); extensor carpi radialis (shank C)], and three from the hindquarter [flexor digitorum superficialis (shank D); deep digital flexor (shank E); and a combination of long digital extensor, medial digital extensor and peroneus tertius (shank F)] were collected from 12 U.S. Department of Agriculture Low Choice beef carcasses. Shanks from the left side of the carcasses were used for consumer taste panels, and consumers visually evaluated size and surface color of samples from the right side of the carcasses.

Bottom Line... There were differences among consumer preferences for different shank cuts. Consumers preferred shanks A, D, and F in the sensory taste panel, while shanks A and C were the most preferable in visual evaluation. Shanks A, D, and F should be priced with a premium, while shank C should be discounted in domestic Asian and international markets. View the complete research report at www.asi.ksu.edu/cattlemensday. For more information, contact Michael Chao (mdchao@ksu.edu; 785-532-1230) or Elizabeth Boyle (lboyle@ksu.edu; 785-532-1247).

Effect of Pellet Die Thickness and Conditioning Temperature During the Pelleting Process on Phytase Stability - This experiment was designed to evaluate the effects of pellet mill die thickness and conditioning temperature on the stability of microbial phytase. Treatments were arranged as a 2 × 3 factorial of die thickness (L:D 5.6 and 8.0) and conditioning temperature (165, 175, and 185°F). Phytase was added to a corn-soybean meal-based diet and mash samples were collected for phytase analysis. The diet was pelleted via steam conditioning and using a pellet mill with a 5/32 × 7/8 in (L:D 5.6) or 5/32 × 1 1/4 in (L:D 8.0) pellet die. Conditioner retention time was set at 30 sec and production rate was set at 33 lb/min, approximately 100% of the rated throughput for the pellet mill. All treatments were replicated on three separate days. Pellet and conditioned mash samples were collected and immediately placed in an experimental counter-flow cooler for 15 min. For each treatment, pellet and conditioned mash samples were composited such that two samples of each were analyzed for phytase activity and pellet durability index (PDI). Conditioning temperature, hot pellet temperature (HPT), and production rate were recorded throughout each processing run. Data were analyzed using the GLIMMIX procedure in SAS (v. 9.4), with pelleting run as the experimental unit and day as the blocking factor. There was no evidence for a die thickness × conditioning temperature interaction for any of the pelleting or phytase responses analyzed in this study. Hot pellet temperature was increased when diets were pelleted with a thicker die, and by increasing conditioning temperature from 165 to 185°F. Pellet durability index was greater for diets pelleted using the thicker die with an 8.0 L:D compared to the die with a 5.6 L:D. Additionally, PDI increased with increasing conditioning temperature. Increasing conditioning temperature from 165 to 185°F decreased phytase stability of conditioned mash and cooled pellets, with no difference in stability due to die thickness.

Bottom Line... Results of this experiment show that phytase stability in conditioned mash and pellets decreases linearly when conditioning temperature rises above 165°F and HPT rises above 177°F. Although the thicker pellet die increased HPT by an average of 1.9°F and increased PDI by an average of 7.8%, there was no evidence that the additional frictional heat associated with increasing the die L:D from a 5.6 to an 8.0 resulted in lower phytase stability. Finally, increasing conditioning temperature linearly increased HPT and PDI. More information is available in the KSU Swine Day Report at www.KSUswine.org. (*This study conducted by C.N. Truelock, N.E. Ward, J.W. Wilson, C.R. Stark, and C.B. Paulk*)

The Effect of Pellet Mill Production Rate and Knife Distance on Pellet Quality - Longer pellet lengths may lead to decreased pellet breakage, resulting in increased pellet durability index (PDI). Thus, the objective of this experiment was to determine the effects of production rate and knife distance on pellet length and subsequent pellet quality. Treatments were arranged in a 2 × 3 factorial with two production rates (16 and 33 lb/min) and three knife distances (0.25, 0.50, and 0.75 in). All diets were conditioned at 185°F and pelleted using a CPM pellet mill equipped with a 0.19 in × 1.25 in die. The production rate (PR) and knife distance (KD) were randomized to minimize the effects of pelleting and sampling order. There were three replicates per treatment. Samples were analyzed for pellet length, percentage fines, and PDI using the standard and modified tumble box method (STD and MOD, respectively) and Holmen NHP100 with a 60-sec run time. There was no evidence for an interaction between PR and KD for all analyzed variables. The 16 lb/min PR yielded a longer pellet compared to the 33 lb/min PR. The PR had no effect on percentage fines; however, decreasing the PR tended to increase PDI regardless of analytical method. Increasing KD resulted in longer pellets and decreased percentage fines. Reducing KD to 0.25 in reduced PDI compared to 0.50 in and 0.75 in treatments, which yielded similar PDI.

Bottom Line... In conclusion, pellet quality can be improved by increasing the pellet length from 0.19 to 0.34 in (KD 0.25 and 0.75 in, respectively). More information is available in the KSU Swine Day Report at www.KSUswine.org. (*This study conducted by C.E. Evans, R.J. Beeman, M. Saensukjaroenphon, C.B. Paulk, and C.R. Stark*)

The Effects of Cordyceps Mushroom Powder and Purified Mushroom Beta-Glucan on Nursery Pig Performance

- One hundred thirty-two gilts and barrows (18.2 d of age) weighing an average of 13.4 lb (Duroc × (York × Landrace)) were put on test for a 35-day growth trial to assess the effects of Cordyceps mushroom powder (MP) or purified mushroom beta-glucan (BG) as an antibiotic alternative in nursery diets. There were 6 diets, negative and positive controls (NC and PC), 150 and 300 ppm mushroom powder, and 150 and 300 ppm beta-glucan equivalents to the MP diets. Pigs were divided by weight, sex, litter, and assigned to 6 body weight (BW) blocks. Within BW blocks, sex ratios were constant in each pen. Pigs and feeders were weighed weekly to determine average daily gain (ADG), average daily feed intake (ADFI), and feed efficiency (F/G). During phase 1 (d 0 to 7), pigs fed the PC had increased ADG, ADFI, and d 7 BW compared to pigs fed the NC. Beta-glucan and MP also increased ADFI in phase 1 compared to the NC. During phase 2 (d 7 to 14), a health challenge (hemolytic Escherichia coli) went through half of the pigs with the other half challenged in phase 3 (d 14 to 21). This led to some erratic performance because of the pigs eating, but losing weight. In phase 4 there was a BG and MP interaction between source and dose. Pigs fed 300 level of MP had improved F/G, while those fed the 300 level of BG had poorer efficiency in phase 4.

Bottom Line... Overall, there was an improvement in F:G ratio in the PC when compared to the NC. There was also an interaction between source and dose for ADFI between the BG and MP treatments. There was a significant improvement in F/G in MP and BG pigs compared to NC pigs. On day 35, there were no differences in final BW among treatments. A premarket weight was collected on all pigs at d 154 after weaning, and pigs fed the 300 BG from day 0 to 35 were 24.4 lb heavier than the NC and 15.4 lb heavier than the PC. More information is available on this experiment and others in the KSU Swine Day Report at www.KSUswine.org. (This study conducted by J.A. Richert, M. Thayer, C. Chastain, A. Duttlinger, J. Feldpausch, R. Garcia, B. Richert, and J. Nelssen)

Evaluating the Interactive Effects of Cordyceps Mushroom Powder and Carbadox to Pharmacological Copper and Zinc for Nursery Pigs

- The objective of this study was to evaluate the independent and additive effects of Cordyceps mushroom powder (MP) and carbadox to pharmacological levels of copper and zinc in nursery pig diets. Two hundred and ten crossbred weanling pigs average of 19 d of age and 12.8 lb were used in a 33-day growth trial. Pigs were allotted by weight, sex, ancestry, and assigned to body weight (BW) blocks. Within BW blocks, sex ratios were constant in each pen. Pen was the experimental unit, and growth performance was analyzed using BW, average daily gain (ADG), average daily feed intake (ADFI), and feed-to-gain ratio (F:G). There were seven pigs/pen and six pens/treatment. Treatments were: 1) a negative control diet (NC); 2) positive control (PC; carbadox, 50 g/ton); 3) NC+ 300 ppm Cordyceps mushroom powder (NC+MP); 4) PC + 300 ppm mushroom powder (PC+MP); 5) supplemental copper sulfate (125 ppm) and zinc oxide (3000 ppm d 0 to 7, 2000 ppm d 7 to 35), CuZn. Dietary treatments were fed in a four-phase feeding program (d 0 to 7, d 7 to 14, d 14 to 21, and d 21 to 33). Pigs fed the PC, PC+MP, and CuZn diets had increased BW, ADG, and ADFI over those fed the NC at the end of phases 1, 2, and 3, with no main effect of MP treatment. During phase 4, pigs fed MP, PC, and CuZn diets all had increased ADG; 0.95, 1.05, 1.00, 1.11, 1.07 lb/d, diet 1–5, respectively) and ADFI over the NC fed pigs. Overall, d 0 to 33, pigs fed PC diets and CuZn had increased ADG and ADFI, with pigs fed MP tending to have increased ADFI over NC-fed pigs. Plasma TNF- α concentrations at d 14 postweaning showed a trend for a carbadox main effect, as well as a mushroom by carbadox interaction for plasma TNF- α , with the 300 ppm MP having the numerically highest value, while the combination of carbadox and 300 ppm MP had the lowest concentration of TNF- α .

Bottom Line... Feeding nursery pigs pharmacological levels of Cu+Zn and carbadox have economical value to increase nursery pig performance, while MP may increase pig ADFI and final BW through potentially complementary modes of action to carbadox. More information is available on this experiment and others in the KSU Swine Day Report at www.KSUswine.org. (This study conducted by J.A. Richert, M. Thayer, C. Chastain, A. Duttlinger, J. Feldpausch, R. Garcia, B. Richert, and J. Nelssen)

The Department of Animal Sciences and Industry at Kansas State University is seeking applicants for the position of **Animal Technician II - Dairy Unit**. This is a part-time, University Support Staff (USS) position and exists to milk, feed and provide care of Dairy Teaching and Research Center dairy herd, which is used for teaching and research purposes. This is a relief milking position in which the candidate must be available 24 hours a day, 7 days a week to be called in to work. Application deadline: Screening begins immediately and will continue until a suitable candidate is identified. For more information, contact Mike Scheffel, search committee chair, at 785-537-0941 or scheffel@k-state.edu. To apply, go to <https://careers.k-state.edu/cw/en-us/job/509658/animal-technician-ii>.

ASI Faculty Spotlight



Michael Chao (mdchao@k-state.edu; 785-532-1230)

Assistant Professor/Meats

Dr. Michael Chao is a meat scientist with research interests in meat lipidomics and developing niche meat processing techniques to serve the needs of domestic, ethnic and international markets.

Michael grew up in Taiwan until the age of 15, when his family moved to the Los Angeles suburb of San Marino. A desire to be a veterinarian led him to UC Davis to major in animal science. The introduction to animal science class his freshman year opened his eyes to the opportunities in livestock production. He earned both his bachelor's (2007) and master's (2011) degrees from UC Davis and then his PhD in animal science with a specialization in meat science and muscle biology from University of Nebraska-Lincoln in 2015.

At K-State, Michael's appointment is 60% research and 40% teaching. In his role, he teaches advanced meat science and is in the process of developing a fresh meat-based class.

He has worked for the US Meat Export Federation, both as an intern based in the organization's Denver headquarters and Taiwan office, and later on a contract basis to lead Taiwanese and Chinese auditing and business teams through beef and lamb processing plants in the United States.

Michael and his wife, Ying, have two sons — Luke and Hans.



Jim Drouillard (jdrouill@k-state.edu; 785-532-1204)

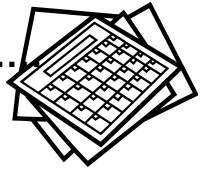
Professor/Beef Cattle Nutrition

Jim Drouillard joined the K-State faculty in 1995, and he, his wife, Patti, daughter Kameron, and son, Jason, are residents of Olsburg.

A two-time Gator, Jim received his Bachelor's (Animal Science) and Master's (Animal Breeding) degrees from the University of Florida in 1985 and 1986, and his PhD from the University of Nebraska in 1989. Jim has responsibilities in teaching (20%) and research (80%), and is faculty coordinator for the Beef Cattle Research Center. His research has focused on feedlot cattle production, emphasizing grain processing, pre-harvest food safety, byproduct utilization, and the effects of diet on cattle health, performance, carcass quality, and meat composition.

What Producers Should Be Thinking About.....

WHAT PRODUCERS SHOULD BE THINKING ABOUT IN NOVEMBER....



BEEF -- *Tips by Dale Blasi, Extension Beef Specialist*

Spring Calving Cows

Cowherd Management

- Pregnancy check (if not already completed)
- If candidates for culling were not selected in September or October, it should be completed now.
- Consider feeding cull cows to increase body weight, value, and utilize cheap feedstuffs. Value of gain is equal to the difference between the ending value and beginning values divided by the gain. Compare this to cost of gain figures. When cost of gain is less than value of gain, profit will be realized.
- Body Condition Score
 - Provide thin cows (body condition score 3s and 4s) extra feed now. Take advantage of weather, stage of pregnancy, lower nutrient requirements and quality feedstuffs.
- In late fall and early winter, start feeding supplement to mature cows using these guidelines:
 - Dry grass 1½ - 2 lb supplement/day of a 40% CP supplement
 - Dry grass 3 - 4 lb supplement/day of a 20% supplement
 - Dry grass 10 lb good nonlegume hay, no supplement needed
 - Compare supplements on a cost per pound of nutrient basis.
- Utilize crop residues.
 - Average body condition cows can be grazed at 1 to 2 acres/cow for 30 days assuming normal weather. Available forage is directly related to the grain production levels.
 - Limiting nutrients are usually protein, phosphorus, and vitamin A.
 - Strip graze or rotate fields to improve grazing efficiency.
- Discontinue feeding tetracycline if used for anaplasmosis control.

Calf Management

- Participate in National Level Breed Association Performance Programs CHAPS and(or) other ranch record systems.
- Finalize plans to merchandise calves or to background through yearling or finishing programs.

Forage/Pasture Management

- Plan winter nutritional program through pasture and forage management.

General Management

- Document cost of production by participating in Standardized Performance Analysis (SPA) programs.
- Review management decisions, lower your costs on a per unit of production concept.
- Plan your marketing program, including private treaty, consignment sales, test stations, production sales, etc.

*We need your input! If you have any suggestions or comments on **News from KSU Animal Sciences**, please let us know by e-mail to lschrein@ksu.edu or phone 785-532-1267.*