NCERA-219 Swine Production Management to Enhance Animal Welfare

Hosted by MSU, OSU and Purdue

Potawatomi Inn, 6 Lane 100A Lake James, Angola, IN 46703

October 18-20

Members present: Dale Rozeboom (MSU), Marcia Shannon (Missouri), Lee Johnston (Minnesota), Ryan Samuel (SDSU), Benny Mote (UNL), Steve Moeller (OSU), Brian Richert (Purdue)

Guest: Jessica Risser – Animal Health and Welfare Manager, Country View Family Farms/Clemens Food Group

Chair Dale Rozeboom called the meeting to order 1:30 PM.

Jessica Risser, DVM, presented on Clemens Food Group’s swine harvest plant and swine production farms and philosophies. Dr. Risser’s responsibilities also include the company’s swine welfare program.

1. Country View Family Farm has 65,000 DNA Genetic’s sows in company production and ½ of sows are in pen housing 250 sow pens with AP Schauer ESF system. Half of production is antibiotic free. 80% of pigs started in No Antibiotic Ever (NAE) stay antibiotic free. Contemplating washing sows prefarrow to minimize disease load in crates. They are a believers in 3 site production to maximize health of system and has plan to be 100% open gestation by 2022. They utilize company made turn around stalls in farrowing and are exploring the use of burlap for sow prefarrowing. They utilize hoof trimming for sows and identified ability to not dock tails if they increase airflow and square footage. Also investigating the use of a sun porch for sows to exit barn for natural air and sunshine.
2. Clemens, Hatfield, PA, started in 1895 with the company now in its 6th generation with 3,300+ team members. Goal is 10,000 hogs per shift and cannot double shift Hatfield facility due to location. Coldwater, Michigan plant uses innovative technology ie “vertical scald.” They have direct feedback and tracking at the plant to semi load of pigs.
3. General operations. Validus and FACTA inspected 1,500 of their farm sites in the previous year and will audit 100% of farms every 3 years. Medication where used is only at therapeutic levels following export withdrawal times.
4. Additional research needed on: Open pen gestation, farrowing stalls, new antibiotic classes specific to vet medicine, pain mitigation, antibiotic alternatives, farrowing enrichment, maximum sow size

Station Reports:

Steve Moeller: Ohio State University

1. Research
   1. 2 joint animal welfare graduate students
      1. Meloxicam piglets
      2. Imposed lameness and self-medicated pigs
   2. Sow intervention for milk quality
      1. Oils in feed starting at day 80 of gestation
2. Farm
   1. Started using DNA females
   2. Antibiotic free in feed
3. Institution
   1. New department chair John Foltz
   2. May break ground on a new multi-species teaching facility in 2018
      1. To house 10 sows for a 14 week class schedule
   3. Ohio State trying to deliver the Australian Pork Limited (APL) professional handling training
4. Extension
   1. Sow Housing Conference, youth, swine health, ventilation trailer training

Day 1 Adjourned at 6:02 PM

Day 2: Called to order at 8:00 AM

Marcia Shannon: University of Missouri

1. Institution
   1. New Dean – Christopher Daubert from NC State
   2. Enrollment drop causing consolidation in departments
   3. Down to <30 faculty
2. Research
   1. IACUC forcing old swine facility closure
   2. New breeding and nursery to be built
      1. 100 sow capacity
   3. Kevin Wells is leading gene editing research to reduce lysine requirements in swine diets
3. Extension
   1. Tim Safranski and new extension Swine vet Corinne Bromfield
   2. Marsha Shannon
      1. Large youth component (4H showpigs had widespread Mycoplasma Pneumonia in 2017), Women in Ag, Cooperative nutrition trials

Benny Mote: University of Nebraska

1. Institution
   1. New Chancellor, Ronnie Green, Animal Genetics
   2. New Vice Chancellor, Mike Boehm from Ohio State University
   3. New Department head, Clint Krehbiel from Oklahoma State University
2. Research
   1. Video capture for sow feet and leg structure
   2. Video enabled tracking of individual piglets’ activity
   3. Boar fertility
      1. Heat stress effects on boar semen from fall to summer
      2. Analysis of increased levels of arginine in feed on boar semen
3. Extension -PQA and Youth

Lee Johnston: University of Minnesota

1. Research impact:
   1. Research journal article on space allowance on finishing pigs
      1. Reviewer questioned statistics for optimization of square footage. Would like the group to identify where optimal space allowance is outside of 0.98 square meters or 1.0 square meters per pig as tested in the trial
      2. A reviewer didn’t like extension application of journal article.
2. Institution
   1. University of Minnesota deans started to award ~20 Land Grant Legacy Scholarships per year to rural students that have self-identified as wanting to return to rural areas post university education. Identified rural students have simply not had access to advanced high school classes that would have prepped them for college entrance exams but are bright students and tend to do well in college.
3. Research –
   1. Energy maintenance requirements less for sows in group sow housing due to huddling
   2. Tailbiting in swine: grow-finish, social structures
   3. Solar energy utilization for Minnesota swine farms, low carbon footprint energy systems, greening of agriculture
   4. Performance of pigs in air-cooled environment during simulated heat stress, liquid feeding in grow-finish,
   5. Age at first breeding and dietary energy effects on reproductive performance

Ryan Samuel: South Dakota State University

1. Institution
   1. Many administrative interim positions
   2. 450 students with teaching shortage
   3. Have departmental stipends for graduate students
   4. Ryan Samuel – new
      1. 40% research and 60% extension
      2. Has sow nutrition and amino acid research background
   5. Erin Cortis has departed SDSU for University of Minnesota
2. Research
   1. Ryan Samuel
      1. Will be utilizing SDSU’s new 1200 head wean-to-finish research barn
         1. Currently improving feed delivery out of Feed Logic
         2. Will utilize contracted pigs for facility going forward
         3. Researched heavy pigs in the finisher
            1. Pigs in pens with 6.8 square feet per pig were leaner and lighter than those that were allocated more space
      2. Gut health and alternatives to antibiotics
      3. Utilized wean-to-finish rooms with in floor heating and cooling
   2. Crystal Levesque - Maternal research
      * 1. Dietary requirements of phase feeding sows
        2. Essential oils and minerals oils
           1. Decrease farrowing duration
   3. Jeff Clapper
      1. Kisspeptin
         1. Influences of gonadotropin releasing hormone and puberty
      2. Timed breeding of gilts with Ovugel and Matrix
3. Extension
   1. Swine Day
      1. Facility open to the public
         1. 50 people toured the facility
         2. National Pork Board dietitian group through the facility
         3. See For Yourself group, a group of Mommy Bloggers went through facility
   2. Shafer
      1. Presenting with Operation Main Street

Dale Rozeboom: Michigan State University

1. Research
   1. Janice Siegford & Ron Bates -sow aggression
   2. Nathalie Trottier
      1. Lactating sow heat stress and dietary synthetic amino acids
      2. Gilt Development
   3. Dale Rozeboom
      1. Whey fed pork in wet dry feeders/cup waterers
      2. Yeast – Liu
      3. AMR
      4. Developing abstract for Midwest Animal Science meetings on finishing pig floor space requirements
   4. Cathy Ernst -Fire Feeders and feeding behavior
   5. Steve Safferman, Jason Smith, Rozeboom
      1. Manure nutrient movement through partially frozen soils
   6. Gilt work on gilt mammary development
2. Extension
   1. Madonna Gemus-Benjamin -Animal well-being audits/Human safety
   2. Rozeboom, Dean Ross, Beth Ferry, Emily Schmidt -Preparedness of Michigan Pork Producers for Highly Contagious Disease
   3. Beth Ferry -Preparing for CSIA’s
3. Institution
   1. State Funding, Ag Bio funding a new 250 head sow facility
      1. Pen housing and potentially farrowing pens
   2. New Animal Science Chair Pamela Ruegg

Brian Richert: Purdue University

1. Institution
   1. 2 new hires
      1. Tim Johnson: gut microbiota
      2. Jackie Borman: dairy extension
   2. Retirements of 3 faculty including Bill Muir
   3. Two positions moving forward to be filled
      1. Uterine biology with an emphasis on uterine programming
      2. Geneticist to replace Bill Muir
   4. Moving into new Animal Science Building starting in November
   5. Have approval to start looking at new farms
   6. 20 faculty currently engaged in swine research, teaching, and extension
2. Research
   1. Allan Schinkel
      1. Utilizing cooling pads under sows. Have shown to be able to replicate same feed intake as thermal neutral sows by utilizing cooling pads even with room temperature at 35 degrees Celsius
      2. Researching full length heating pads for piglets.
   2. Brian Richert
      1. Pork Board funded research on transportation stress
         1. Piglets transported 12 hours on 85 degree F day
         2. Piglets fed increased levels of glutamine. Demonstrated equal performance of glutamine as that of Denaguard/CTC
      2. Effects of noise in the farrowing house with sows in loud areas having elevated piglet mortality levels due to crushing.
   3. Susan Eicher
      1. Daily dose of prebiotics starting at birth
   4. Kara Stewart
      1. Super-dosing phytase
      2. Betane did have an effect on semen
      3. Relaxin at birth and colostrum intake
      4. Gilt synchronization protocols
   5. USDA graduate student
      1. Investigating piglet temperature preferences post weaning
3. Impacts: Temperatures in nursery, microzones in farrowing utilizing cool pads under the sows and full length heat pads, and changes to rest requirements for larger pigs.

Depart hotel for sow farm 1:00 PM. Engagement with new Spartenwood sow unit 6,000 group housed farm. Sow farm was recent new construction startup and had only been weaning piglets for less than 6 weeks. Farm short staffed. Our group was shown their entire facility that was fitted with the latest technologies. The farm utilized a MAXIMUS ventilation control system, operating entire facility from one room while indicating individual fan set speeds and current wattage usage. The farm installed air scrubbers consisting of cool cells pads to catch dust on the exhaust fans. The farm utilized filters for biosecurity control on the air inlets. The farm was very unique in that it had an in-barn quarantine for incoming gilts. The doorway between the gilt quarantine and sow gestation was double locked to control entry and air flow. The gilt quarantine utilized its own exhaust. The NCERA-219 group noted to the owners to be cautious of backdrafts through the ceiling inlets from the quarantine barn to gestation as the two shared the same attic space. The farm utilizes pen gestation post 30 days of gestation. Sows are housed in group pens of 12 sows with 20 square feet per sow. Farm working through new farm pains with equipment outages in pen gestation feeding. The feeding of the group housed sows is via feed dropped into troughs with sows separated with the shoulder races to limit sow aggression for uniform sow feed intake. Discussion on ability to house more sows than stalls which did not work as all sows wanted to eat when feed was dropped. Sows are grouped by breeding date and sow body condition upon placement into the group pens. Sows needing individual care (fighting, body condition or health) are returned to individual stalls. The farrowing rooms are fitted with both heat lamps and heat mats. Induction products and protocols were discussed. Feed for the sows is delivered ad libitum via direct fed lines. Ventilation in the farrowing rooms was also unique in that there were no individual fans in the rooms. Air was brought into the rooms from the attic and hall and is drawn out through the floor. The tour offered great insight and education for both the NCERA-219 group and management of sow farm.

The committee concluded day 2 with dinner at Bill’s Steakhouse with the owners of Spartenwood sow farm.

Day 3

Meeting was reconvened at 8:00 AM. Officer elections were opened. Motion for Benny Mote to chair NCERA 219 next year and Ryan Samuel to be Secretary. Unanimous vote for both. 2018 meeting to be held at Kansas State University. Benny Mote to work with Bob Goodband to solidify a date for the 2018 meeting and report back to the group.