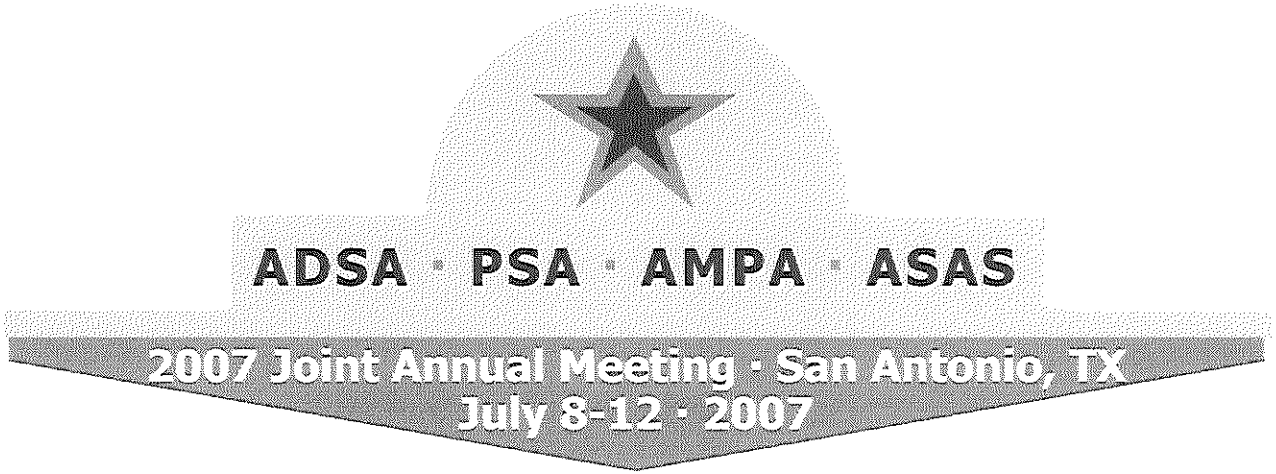

Abstracts

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768 Practices and perceptions of cow-calf producers regarding the National Animal Identification System. S. J. Breiner*[1], D. A. Blasi[1], K. M. Boone[1], T. C. Schroeder[1], and S. A. Grau[2], [1]*Kansas State University*, [2]*Beef Magazine*.

The proposed U.S. National Animal Identification System (US-NAIS) has generated many concerns among beef cattle producers. The goal of the NAIS is to utilize 48-hour traceback in the event of an animal disease outbreak. The traceback would identify all animals that have had contact with the diseased animal, while linking an animal to its premise of origin. According to the Diffusion of Innovation theory, getting a new idea adopted, even when it has clear advantages, is often very difficult. However, by adopting innovations relatively sooner than others in their system, the theory shows marked benefits for innovators and early adopters, as well as a widening of the socioeconomic gap. A national study was conducted at Kansas State University to gauge beef producer acceptance and adaptability to implement the US-NAIS. Participants were selected in the spring of 2006, from a mailing list of cow-calf producers with more than 100 head of cows. *BEEF*® Magazine provided the mailing list and a random sample of 1,000 producers was selected. The results show a knowledge gap between the proposed system and producer understanding. Producers were also divided on support for the proposed system. When ranking their level of support on a scale of 1 to 6, with 1 being strongly supportive and 6 being strongly opposed, 49% of producers showed some level of support and 48% showed some level of opposition. Data shows a mean of 3.53 with a standard deviation of 1.672. Data also highlights a lack of understanding of the regulations and implementation procedures among producers. The results of this study brought considerable insight into the current practices and perceptions of beef cattle producers, and will be used to develop educational materials to improve their understanding of this proposed program.

Key Words: Animal Identification, Beef Cattle Producers, Radio Frequency Identification

Production, Management & the Environment - Livestock and Poultry: Livestock Production, Management, and Environment

769 Effect of littered systems on pollutant emissions into the air in gestating sows. C. Pineiro*[1], G. Montalvo[2], P. Illescas[2], and M. Bigeriego[3], [1]*PigCHAMP Pro Europa, SA, Spain*, [2]*Tragsega, Spain*, [3]*Spanish Ministry of Agriculture, Spain*.

During the last decade, the approach to environmental issues related to animal production is changing, including concepts such as emissions to soil, water, air and proper use of energy and water. In the EU Reference Document (BREF, 2003) on Best Available Techniques (BAT) for Intensive Rearing of Poultry and Pigs several techniques were proposed for emissions abatement. In Spain, a project financed by the Spanish Ministry of Agriculture, Fisheries and Food was planned to evaluate the BAT proposed by the BREF under Spanish conditions. The aim of the present work was to assess one of the BAT proposed for gestating sows, the littered systems (straw based) using good practices (enough straw, changing the straw frequently, functional areas) on gas emissions. The study was performed in a commercial farm using 60 gestating sows housed in two different rooms during four weeks. In the first room, the reference system was implanted (total-slated floor over deep manure channel and monthly removal); whereas in the second room, concrete floor was applied and 360 kg of straw were scattered over the floor (3 kg per sow and week). The concentration of the NH_3, N_2O and CH_4 (by means of semi-continuosly monitoring using an Innova 1312 multi-gas monitor; SIR, SA, Spain) in each room were measured. The solid concrete floor system with straw reduced the average NH_3 (11%, $P<0.05$), and CH_4 (66%; $P<0.01$) in comparison with the reference system. However, N_2O emissions increased by 190% ($P<0.001$) in the littered system. From these results, we conclude that despite ammonia emissions are reduced, an important greenhouse gas (N_2O) is hugely increased. Moreover, associated costs were extremely high (extra costs was 47.6 - 55.4 euros/place and year for new installations, and 72.7 - 80.5 euros/place and year for existing installations) because of the cost of straw and the required extra labour. Hence, harmonization of this directive with others affecting animal husbandry (Council Directive 98/58 CE) should be carefully performed to avoid the impairment of environmental performance.

Key Words: Gestating Sows, Ammonia, Littered Systems

770 Effect of different dietary strategies on productive performance and gas emissions in post-weaned piglets. G. Montalvo[1], C. Pineiro*[2], J. Morales[2], S. Godbout[3], S. P. Lemay[3], M. Belzile[3], J. Feddes[4], P. Illescas[1], M. Bigeriego[5], and C. de Blas[6], [1]*Tragsega, Spain*, [2]*PigCHAMP Pro Europa SA, Spain*, [3]*IRDA, Canada*, [4]*U. Alberta, Canada*, [5]*Spanish Ministry of Agriculture, Spain*, [6]*UP Madrid, Spain*.

The objective of this study was to assess the effects of different dietary strategies on post-weaned piglets performance and gas emissions. Dietary strategies assessed were low-protein content (LP, 16.6%CP), soluble fibre through sugar beet pulp inclusion (SBP, 10%) and acidification adding benzoic acid (BA, 5%). A total of 80 piglets were fed on five different isoenergetic diets: control diet, LP, SBP, BA, and the combination of all (LP+SBP+BA) during four weeks. Ten environmentally-controlled chambers, each housing eight piglets (13.1 kg initial BW, F1 cross (Yorkshire × Landrace) × Duroc) were used to monitor: average daily gain, ADG; average daily feed intake, ADFI; gain:feed ratio, G:F, airflow rate, NH_3, CH_4, and N_2O concentrations. G:F differed among treatments, being higher in LP+SBP+BA groups (0.46 vs 0.55 kg/kg in LP+SBP+BA and control groups, respectively; $P<0.05$). This effect was due to both a lower ADG compared with SBP and BA groups (532 vs 628 as average g/d; $P<0.05$), and higher ADFI compared with that of the control group (1.16 vs 1.05 kg/d; $P<0.05$). Also showed higher ADFI than control group (1.15 as average vs 1.05 kg/d; $P<0.05$), but no differences were found in G:F or ADG among any individual dietary strategy and the control group. Ammonia emissions from the control diet where 0.9 mg/h/kg pig, and similar to the BA diet, but the LP, SBP and LP+SBP+BA diets had emission rates about 50% lower with respect to control diet ($P<0.05$). For CH_4, the control diet showed an emission of 0.851 mg/h/kg pig, whereas the LP diet decreased emission rates about 40% ($P<0.05$). Other treatments had not effect on the emission rates of this gas. Nitrous oxide emissions were similar for all treatments (around 0.017 mg/h/kg pig), except for LP+SBP+BA diets where emissions reached 0.028 mg/h/kg pig. These results show that changes in nutrition may help to control emissions to the atmosphere, without affecting animal performance.

Key Words: Weaned Piglet, Nutrition, Gas Emissions

771 Cost of ammonia emissions abatement techniques in Spain. C. Pineiro*[1], G. Montalvo[2], P. Illescas[2], and M. Bigeriego[3], [1]*PigCHAMP Pro Europa, SA, Spain*, [2]*Tragsega, Spain*, [3]*Spanish Ministry of Agriculture, Spain.*

The Integrated Pollution Prevention and Control Directive is mandatory in the EU from the first of January of 2007. The implementation of the best available technicques (BAT) to control emissions is a key concept to be implemented at farm scale. The objective of this study was to present a calculation on cost of every BAT under Spanish conditions. The information provided will allow defining the most cost-effective methods for reducing ammonia emission from Spanish farms. The calculation was carried out according to the methodology set out in the Reference Document on Best Available Techniques for Intensive Rearing of Poultry and Pigs, taking into account the economic life of the investment, deducting grants and including changes in performance. The costs were calculated for feeding techniques, animal housing, slurry storage and spreading techniques. Units used for assessing costs were $/place per year for feed and housing techniques, and $/m^3 or tonnes per year for manure or slurry storage and manure or slurry spreading categories. All these costs have been expressed also as $/kg pig produced, because in the pig sector it is more easily understood, and it is easier to calculate the cost for all of the production process. The basis for this calculation was 20 marketed pigs of 100 kg per sow per year. Further adjustments can easily be undertaken to reflect local conditions. Extra costs calculated for abatement techniques are listed next table. The standard concepts used and the transparency of the proposed methodology allows its implementation in other countries just using the appropriate figures for local conditions.

Table 1.

Techniques		$/place/year	$/t pig prod./year
Feeding	Low protein diet + amino acids	0.5 - 3.4	1.7 - 11.6
Housing			
Gestating sows	Reduced manure pit	7.5 - 8.9	2.8 - 3.9
	Littered system	62.5 - 105.7	23.5 - 39.7
Lactating sows	Manure pan underneath	23.0 - 48.9	2.9 - 6.0
Growers-finishers	Sloped manure channel	0.9 - 10.1	3.3 - 34.6
	Partially slatted floor	0 - 5.6	0 - 19.3
		$/m^3/year	
Spreading (pig slurry)	Trailing shoe	1.2 - 1.8	15.1 - 23.1
	Band spreader	1.1 - 1.6	13.0 - 19.8
	Incorporation	0.3 - 0.8	3.8 - 10.0

Key Words: Cost, Ammonia Abatement, Pig

772 Influence of diet and genotype on performance of weanling pigs destined for natural label or commodity pork markets. A. F. Harper* and M. J. Estienne, *Virginia Polytechnic Institute and State University, Blacksburg.*

Diet formulation and pig genotype are important factors in the production of pork for niche markets. Weanling pigs (n = 60; 9.71 ± 0.03 kg BW) were used to assess diet and sire breed effects on performance. Diet treatments were a 2-phase series of diets acceptable for natural pork labeling (no antibiotics or blood or meat products) or a 2-phase series of conventional nursery diets (contained blood and meat products in phase 1 and medicated with 27 ppm carbadox throughout). The factorial treatments were: the natural diet fed to Berkshire-sired pigs, the natural diet fed to terminal Hampshire-sired pigs, the conventional diet fed to Berkshire-sired pigs, and the conventional diet fed to terminal Hampshire-sired pigs. There were 5 pens of 3 pigs per pen for each treatment. Feed and water were provided ad libitum. Pig BW and feed intake were determined at d 9 (phase 1) and d 34 (phase 2). During phase 1 pigs fed the natural diet had lower ($P < 0.01$) ADFI (201 vs. 280 ± 15 g) and ADG (156 vs. 204 ± 9 g) than pigs fed the conventional diet. Over the 34-d trial there was no main effect difference ($P > 0.24$) in ADFI (803 vs. 844 ± 25 g), ADG (436 vs. 453 ± 10 g) or G:F (0.55 vs. 0.54 ± 0.01) for the pigs fed the natural or conventional diets, respectively. During phase 1 performance traits were not different ($P > 0.19$) between Berkshire- and Hampshire-sired pigs, but for the entire trial ADG tended be greater for Berkshire-sired pigs (472 vs. 418 ± 17 g; $P = 0.11$). An interaction ($P < 0.05$) between diet and genotype was observed for ADG during phase 1. Hampshire-sired pigs fed the natural diet had lower ADG (123 ± 17 g) relative to Berkshire-sired pigs fed the natural diet (188 ± 17 g) or Berkshire-sired (208 ± 17 g) or Hampshire-sired (199 ± 17 g) pigs fed the conventional diet. Conventional diets produced superior growth performance during phase 1 but this advantage was not maintained for the entire 34-d nursery period. The interaction in ADG suggests that Berkshire-sired pigs may have greater potential to maintain a high level of performance than certain terminal-line sired pigs when less complex, antibiotic-free starter diets are fed.

Key Words: Pigs, Diet, Genotype

773 Loading gantry versus traditional chute for the finisher pig: Effect on transportation and packing plant losses. N. Berry*, A. Johnson, K. Stalder, T. Baas, and L. Karriker, *Iowa State University, Ames.*

Pig mortalities from the farm to the harvest facility have been estimated to cost the U.S. swine industry over 55 million dollars annually. The objective of this study was to determine if chute design affects the incidence of dead, injured or stressed pigs upon arrival at the packing plant. A total of 456 semi loads of crossbred finisher pigs (117.43 kg) from a single finishing site were collected. A two by two factorial arrangement of treatments was compared, with loading systems (prototype loading gantry [P] vs. traditional chute [T]) and pull (first pigs marketed or first pull [FP] vs. last pigs marketed or closeout [CO]). Pigs were loaded using standard procedures for pig handling and transportation. Performance measures evaluated were dead on arrival (DOA), stressed on arrival (SOA), crippled on arrival (COA), dead in plant (DIP), stressed in plant (SIP) and crippled in plant (CIP). Data were analyzed using PROC Glimmix of SAS where dependent traits were evaluated with a full model including load chute, load crew, barn, pull, load time per pig, travel time, hauler, average live weight, kill date, week, and month fixed effects and a harvest day random effect. All non-significant sources of variation were removed from the final analyses models. For all performance measures there was no loading systems (P vs. T) effect (P>0.05). A pull effect (P<0.01) for SOA's with more occurring at closeout than first pull (0.30 vs. 0.16) was identified. Month of marketing was a source of variation (P<0.05) for SOA, DIP and SIP. Pull by load chute was a source of variation (P<0.01) for DIP's with CO pulls from the P chute having fewer DIP's when compared to CO pulls from the T chute. Fewer DIP's were