Dr. Antonio Palomo Yagüe

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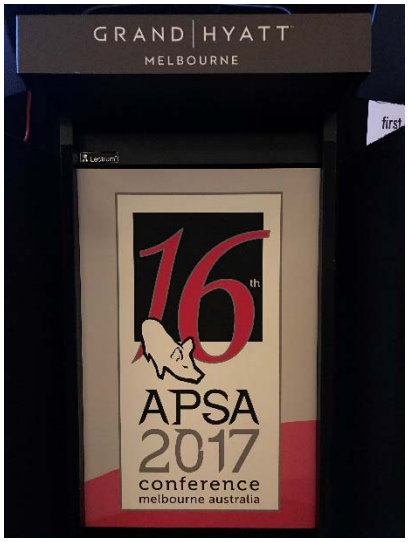
INTRODUCCIÓN .

Durante el 30 Aniversario de la Australasian Pig Science Association (APSA) se ha celebrado la 16 Conferencia bianual en Melbourne entre los días 19 a 22 de noviembre 2017 con la asistencia de especialistas en porcino de Australia , Canadá , Corea del Sur , Dinamarca , España , Estados Unidos , Francia , Holanda y Singapur . Australia tiene una población próxima a los 25 millones de habitantes , siendo el sexto país más grande del mundo y uno de los de menos densidad de población . Melbourne capital de Victoria es la segunda ciudad más grande (4.529.500 habitantes) , después de Sydney (capital de Nueva Gales del Sur) con 4.920.000 , y seguidas de Brisbane con 1.977.000 (Estado de Queensland) , Perth con 1.659.000 habitantes capital del estado de Australia occidental y Adelaida con 1.300.000 habitantes capital del estado de Australia meridional . Entre las cinco ciudades tienen el 50 % de la población de todo el país , donde viven aproximadamente unas 100.000 personas de habla hispana . Melbourne en 2016 fue nominada como la mejor ciudad del mundo para vivir , y su lema es " Vives acquirit enudo " (adquirimos la fuerza mientras prosperamos) .

La producción porcina se compone de 250.000 reproductoras en poco más de 1.000 granjas dispersas entre Nueva Gales del Sur (25 %) , Victoria 8 22 %) , Queensland (20 %) , Australia Meridional (20 %) , Australia Occidental (10 %) y otro 3 % en diferentes ubicaciones . Las principales empresas productoras son SunPork Group , Rivalea y Linley Valley Pork . El consumo per cápita ronda los 20 kg y tienen altos estándares de calidad de carne , sanidad (SRRP negativa , vacunando de Parvovirus , Mal Rojo , Circovirus , Mycoplasma hyopnemonia e inmunocastración) , bienestar y sostenibilidad . Su productividad es inferior a la de España (penalizan prolificidad < 12 , fertilidad < 84 % y mortalidad de cerdas > 10 % sobre todo) y sus costes de producción superiores



REPRODUCTION

SEASONAL INFERTILITY IN PIGS What have we achieved and where are we up to ? – Dr. Ray King

1º - Identification of seasonal infertility in Australian herds

Effect of mean maximum weekly temperature on returns to oestrus – increase between 28-32 ºC (14,4 %) and > 32 ºC (18,7 % - interval between mating and returns and % sows)

The expression of oestrus in weaned sows during the year reduce in t2,8 un august/October - September October 71,1 % to 88,2 – 93,6 % (s , 26,3 % sows in oestrus < 7 days of weaning) . Sows anoestrus > 30 days post weaning increase until 33,3 % between august/October , 26,3 % September/October – 2,8 November/January ad 4,3 % between may/june.

Seasonal infertility in the pig decrease in farrowing rat , delayed return to oestrus and failure of regular return to oestrus after mating . High temperatures may cause endocrine changes around ovulation and effects on semen quality . Sows may retain some remains of photoperiod seasonal infertility . Management , husbandry an housing stressor also contribute to seasonal infertility . here is and individual effect.

Nutrition : pregnancy rates 7 weeks after mating in groups eating ad libitum first 4 weeks increase farrowing rate compare to restricted (low than 2.5 kg/day) . High level feeding of group housed sows during early gestating in

summer-autumn offers a simple strategy for mitigating the reduced infertility (propose more than 2,5 kg/day – Sawyer 2013) .

Some projects to improve ➔

a) 2D-107 Melatonin implants : gilts were extremely sensitive to the negative feedback
b) 2D-108 identifying at risk sows : the probability of later pregnancy loss in summer increased with increasing parity , increasing weaning to oestrus interval , decreasing lactation length and decreasing litter size weaned . Th concentration of progesterone in follicular fluid from both small and large follicles was about 50% lower in summer compared with winter . The quality of oocytes recovered
c) 2D-109 GnRH analogues : investigated the use of GnRH analogues to increase progesterone in early pregnancy to reduce the impact of embryo mortality on farrowing rate and litter size during periods of seasonal infertility . Treatment with PMSD/HCG .
d) 2D-110 Betaine/hormone levels . investigations of the use of supplemental betaine during gestation (3 to 7,6-9 g/day) of sows mated in January/February increase farrowing rate and don´t change total born alive . In older sows can increase litter size and reduce late pregnancy loss in summer . New studies to progesterone levels (ng/ml) on days 3 to 31 post AI for pregnant sows mated in summer increase in sows betaine addition .
e) Timing of ovulation (cumulative proportion) after first detection of oestrus for sows weaned during summer increase over winter 18 hours . Ovulation may occur early in relation to oestrus during the summer months .

Intangible benefits of investment in seasonal infertility R&D : Andy Paterson (1979) , Deborah Pett (1985) , Bronte Stone (1985) and Tony Peacock (1991) , Mark Lorschy (1994) , Corinna Klupiec (1995) , Michael Bertoldo (2010) .

Impact of seasonal infertility on farrowing rate at a low vs risk farm to flow production (drop until 55 %) disrupt the production on summer time and November to February .

Measure points :

- Pay particular attention to oestrus detection procedures
- Mate gilts and sows at the first signs of standing oestrus

- Increase the emphasis on checking for return to oestrus
- Maximise nutrient intake of lactation sows
- Increase feed intake during the first n 3-4 weeks of gestation
- Supplement the gestation diet with betaine
- Consider a fixed time insemination protocol
- Provide cooling for sows and boars
- Mate more sows to cover the period time

Future of seasonal infertility R&D in Australia .

- APL 2014/15 priority : management interventions
- APL 2015/16 priority : investigation of different mating strategies
- Studies into the possible mechanisms and reasons behind this very complex syndrome

SOCIAL CONSUMER

CONSUMERS WANT PORK WITH ADJECTIVES – Dr. Darryl D´Souza – Sun Pork Solutions

Holistic approach : all about the product , product desirable characteristics and focus on intrinsic attributes . Pork quality : intrinsic attributes (23 countries to 12.590 consumers) preference for lean , drip , colour and marbling . Difference intrinsic and extrinsic attributes in the context of pork quality : German consumers put attention on fat percentage , no GMP feed..

Quality unknown before purchase and must be inferred from quality attributes , source of these quality attributes have changed . Consumers use adjectives as indicator of pork quality . Branding of fresh meat in Australia is low (poultry is the exception) – significant shift to private labels (The Aldi effect) .

Fresh pork adjectives : retailer influence ➔ increasingly , retailer private-labels now provide a choice , price (value) or quality attribute (premium) . Animal welfare / production systems > product safety , health and environment .

Australian consumer prefer : taste , price , health , easy to cook m, versality , welfare , environmental friendly packaging and meat .

USA consumers : food safety , nutrition , taste , price , natural , convenience , environment , fairness and tradition .

CHINA consumers : traceability , quality certification , appearance and price .

Willingness to pay stay in : lower cholesterol pork loin steaks (increase the consumption if price same) , impact of medium welfare standard . Significant growth opportunity for a medium welfare standard belong the current 12 % . Supermarket put attention on welfare .

Pork with adjectives (future trends) : without antibiotics and pay for eating quality . Pork with adjectives in Australia will continue to increase and continued focus on animal welfare , production systems and health attributes .

INNOVATION IN AN EXPANDING MARKET : AUSTRALIAN PORK IS NOT A COMMODITY – Mr. Evan Bittner – The University of Melbourne

There are more people living inside in Asia than outside of it . China consume and produce over 50 % of the worlds pork and meat consumption

growing annually (emerging middle class over 400 million people) . Australia represent 0,4 % of global pork production and trade export less restrictive , clean and green reputation internationally .

West in not east (culture really matters) : over 2600 unique cultural consumers segments across Asia . Disruptive innovation and the Uber effect. The state of innovation in the Australian food industry has never been as topical than now . Don´t be blockbuster .

Internationally , Australian food exporters are seen as traders, and not considered good promoters of their product (need marketing) . Premium factor = $ value/volume – size of market not the only indicator of opportunity (Example Japanese vs China fruits juice market 43,8 vs 22,8M USD) . Premium factors of meats in China : offals , pigs ,meat pigs and edible over bacon and ham . Premium brands are emotionally engaging with a compelling story. Not just about the country of origin (drives premium)

Consumer aided design (CAD) : is more deliberate an time consuming process of product development, Traditional approaches to new product development in the food industry have a success rate of 10 % . CAD has been shown to increase this success rate to 30-50 % . The KANO MODEL : satisfaction (attractive) and functionality .

Benefits of Australian farming systems and presence of compatible market suggest offal , not meat . Our initial perceptions of what Australian and Chines consumers would have of our farming systems were wrong . Different between provenance vs Country of origin (COO) – communicated provenance is variable and actual provenance is fixed .

WHAT ARE THEY THINKING ? CONSUMER ATTITUDES TO MEAT PRODUCTION IN AUSTRALIA – Dr. Heather Bray –The University Adelaide

We are all citizen-consumers : people engage in both citizen and consumer behavior all the time and these can often appear in conflict . Efforts to bring these into more in alignment (ethical , political consumption) have been problematic . Looking at consumer behavior alone does not take into account all behaviours than can affect industry value chain .

Previous social research : what people know about farming practices , what people think about welfare on farms , whether people would pay a premium for ethical claims , assumption about shared understanding of welfare

and that purchasing behavior is related to this same idea of " welfare " (perceptions of farm animal welfare) .

Research in the food values research group ➔ understanding how attitudes to food production are influenced by society , culture , history , etc .

Ethical choices are not always about ethics : people choose foods with ethical claims for a range of reasons : taste , nutrition , freshness , food safety and price . Social acceptability bias – telling us what they think we want to hear (beliefs is not the same than behaviours) , Free-range = better quality in the way of confinement meant absence of a natural diet , better sensory characteristics , nutritional value (What´s better for the animal is better for me).

Perception of pig welfare is worse than red meat sector : pig welfare was considered poorer than sheep and cattle welfare .

How do Australians learn about meat ? : conversations occurred during meal preparation , urban parents , mothers more likely to feel conflicted about eating meat than rural parents and fathers , parents talked about humane treatment on farm , during slaughter and respect for the animal , The community generally has positive perceptions of what farmers do than are not based on knowledge . Identifying shared values is vital for engagement ,

NUTRITION : GUT HEALTH AND GROWTH PERFORMANCE

MANITOL AND GALACTOSE AS MARKERS OF GASTROINTESTINAL TRACT MORPHOLOGY IN PIGS AFTER GRADUAL OR CONVENTIONAL WEANING – DL Turpin – Murdoch University

Gut development between weaning (3-4 weeks 9 to 12-14 weeks of life . Intermittent suckling take effect to solid feed intake before and after weaning and villus development . Primiparous litter have low weight and gastrointestinal development , Measuring gastrointestinal morphology by two sugar absorption test (mannitol and galactose test) . Plasma mannitol and galactose before and after weaning decreased after weaning , jejunum villus height decreased after weaning and have a good correlations between both – Mannitol and galactose reflect the morphological changes than occur in the jejunum before and after weaning .

DIETARY FIBRE IMPROVED ILEAL MORPHOLOGY WITHOUT REDUCING ILEAL DIGESTIBILITY IN WEANING PIG HOUSED IN AN INFERIOR ENVIRONMENTAL CONDITION – TK Shin – Chungnam National University

Weaning pigs stressor : environmental , immune stress , nutrition , crowding , growth performance . Non starch polysaccharades low digestibility in monogastric , reduce incidence of post weaning enteric disorder , reduce potential pathogen and increase carbohydrates digestibility . There were interactions between sanitary conditions and dietary treatments in crypt depth and villous-crypt ratio (V : C) on d 7 and 14 . Pigs that were housed in poor sanitary conditions had lower AID of dry matter than pigs that were housed in sanitary conditions on d 14. A diet supplemented with 2% cellulose decreased AID of crude protein compared to pigs fed a diet with 0 or 1% cellulose. A diet with 1% added cellulose increased V: C ratio, but feeding a diet containing cellulose impaired the AID of crude protein and energy on d 14 in both sanitary and poor sanitary conditions.

INCREASING DIETARY TRYPTOPHAN AND DECREASING OTHER LARGE NEUTRAL AMINO ACIDS INCREASES WEIGHT GAIN AND FEED INTAKE IN WEANER PIG INFECTED WITH ESCHERICHIA COLI – SO Sternadale – Murdoch University

Response to weaning stress : increase cortisol , ACTH , CRH , cytokines acute phase proteins .. Needs to be provided in diet to meet optimal performance in way to altering the tryptophan (increase and reduce other large

neutral amino acid ratio) in diet . Experimental design in piglets with or without susceptibility to E. coli infections (mucin 4 gene correlates) . No effects of E. coli infections on ADG , ADFI or blood markets (except cortisol) . Increase Tryptophan increase weight gain and feed intake in weaner pig infected with E.coli

EFFECTS OF FEEDING CONJUGATED LINOLEIC ACID AND MEDIUM CHAIN FATTY ACIDS TO GILTS AND SOWS ON SURVIVAL OF THEIR PROGENY – Jessica Craig – Murdoch University

Gilt progeny is lighter , high mortality and low colostrum and milk production . CLA increase Igs in colostrum and piglet serum . MCFA have antimicrobial effects (ketogenic) . Experimental studies to feeding MCFA (0,1 % Aromabiotic) and/or CLA 2,5 % (Lutrell Pure) to gilts and sows in final gestation and lactation (days 107 to weaning) .

Any significant difference on serum IgG and preweaning mortality , each and both in gilt and sows (more pronounced in gilt progeny) .

DIETARY ESSENTIAL OIL VOLATILES ARE TRANSFERRED TO MILK AND AMNIOTIC FLUID IN SOWS – Rousset Palou & Eugeni Roura – University of Queensland

Animals recognize their own mother´s smell . Smell of dietary volatiles have been detected during delivery . Flavour added in maternal diet during lactation are more accepted at weaning . Experimental study on 38 multiparous Large White sows at 104 days of gestation - study of transfer of different acid volatiles geraniol - anethole in colostrum and milk . No significant difference between control and treatments for placental fluid . Nerolina , oregano and clove transmit by amniotic fluid . Volatiles are quickly absorbed in GIT .

EFFECTS OF DIFFERENT AMOUNTS OF WHEAT BRAN AND OAT HULLS ON PRODUCTION OF SHORT CHAIN FATTY ACIDS IN THE HINDGUT OF PIGS – Vishal Ratanpaul – University of Queensland

Enzymatic digestion on small intestine and fermentation on large intestine. Physiological effects of fiber . gastric distension , stimulation of passage rate , large intestine fermentation . Increase fermentation vs feed intake study with 11 diets control to highly digestible starch diet (oat hulls an wheat bran at different levels) piglets 3 week after weaning . Total SCFA :WB exert dose dependent effect passage rate effect at increase concentration . OH have low effect . WB is likely to favour growth of healthy microbiota in the

hindgut with possible activation of the 'intestinal brake' and a decrease in FI. OH may not trigger the 'intestinal brake' because of its low fermentability, when fed with a highly digestible base diet. Oat hulls have low or no fermentability when compared to WB diet. This study confirms that fiber source alters the extent of hindgut fermentation.

EFFECTS OF L-CITRULLINE SUPPEMENTATION ON LACTATION PERFORMANCE OF SOWS IN SUMMER – Fan Liu – Rivalea Australia

Nutritional strategies to reduce heat stress in animals : reduce heat production and thermic effect , facilitate hear dissipation and protect cells and tissues from heat stress damage . Role of skin vasodilation in heat dissipation : blood flows close to surface and heat is lost .

L-citrulline is a potential nitric oxide donor (1%) and can improve lactation performance . Study with 110 parity 1-7 sows with control on summer time between 108 days to weaning time (26 days) . L-citrulline reduced respiration rate but not rectal temperature (increase between 8 to 17 hours) , tended to increase litter size at 21 days posf-farrowing (10,1 vs 9,6) , increase pre-weaning survival rate (12,6 vs 14,6 %) , increase total nitrite and nitrate concentration in urine but not in plasma .

THE EFFECT OF HEAT STRESS ON RESPIRATORY ALKALOSIS , BLOOD ACID BASE BALANCE AND INSULIN SENSITIVITY IN CINNAMON SUPPLEMENTED PIGS – Jeremy Cottrell – The University of Melbourne

Evaporative heat loss by panting can result in hyperventilation and acid-disturbances (respiratory alkalosis) – radiant heat loss is the redistribution of blood flow from the body scour to peripheral . Proposed that increasing insulin sensitivity may be a useful strategy to reduce blood acid-base balance . Cinnamon increase susceptibility to insulin . Cinnamon had lower fasted glucose concentrations , but did not effect IVGTT. Less insulin required to clear same glucose (increase sensitivity) . Heat stress increased ileal methane concentrations and Cinnamon improved TER in HS pigs only without change in permeability (Ileal barrier function) ,

Physiological responses : respiration rate and skin temperature plateaued after 4 h , rectal temperature

Respiratory alkalosis : increase alkaline pH , reduce bicarbonate , reduce potassium and base excess and increase urine acidity (haematocrit reduce 17 %) . Heat stress increased insulin sensitivity , reduce hematocrit .

DIETATY PHYTATE , CALCIUM AND PHYTASE LEVELS MINERAL UTILISATION IN WEANED PIGS – Patrick Guggenbuhl- DSM

Hypothesis : phytase inclusion level would modulate the P and Ca utilization in presence of different dietary levels of this (two levels of phytase 0,18 – 0,31 % and two levels of calcium 0,45 - 0,80 %) in weaned pigs . Bone characteristics (bone ash and break force) : phytase increase break force in diets high and low calcium .

Calcium has a high ability to chelate phytate and by that reduced he phytate accessibility to the phytase active side . The high level of phytase compensate the high level of calcium . The optimal formulation include low levels of calcium , low levels of phytates and high levels of phytases .

POTENTIAL OF BLOOD BIOMARKERS TO ESTIMATE OPTIMUM AMINO ACID REQUIREMENTS FOR PIG GROWTH – EA Soumeh – Aarhus University - Denmark

Overview project based to dose-response studies for estimating Ile , Val and Leu requirements , metabolomics on blood/urine samples and estimate the requirements . SID Ile/Lys 0,52-0,53 – SID Val/Lys 0,67-0,71 and SID Leu/Lys 0,84-0,94 . Metabolomics studies based on average daily gain (metabolites in blood can be used as response traits in short term studies using few animals) .

Blood biomarkers may be used to find AA requirement and a short term approach may be applicable but risk of bias of models take account(confident limits) .

FACTORS INFLUENCING THE MEASURE OF CREATININE IN NON-REPRODUCTIVE PIGS – Tracy Muller – SunPork Solutions

Muscle contraction : ADP to ATP (P – CP and creatinine in kidneys) . Renal function vary with degree of maturity (parity , pregnancy and lactation).

Previous work in sows describe different levels compare production phase , temperature , age , feed intake .. In non-reproductive pigs the principal influence factors are temperature and feed intake .

EFFECTS OF DIETARY Ca AND DIGESTIBLE P CONCENTRATIONS AND ADDITION OF PHYTASE ON GROWTH PERFORMANCE OF NURSERY PIGS – F. Wu – Kansas State University

Excess Ca impairs P absorption (Ca-P complex) .

Reason lead to overfeeding Ca in swine diets : analytical error , Hideen Ca from feed ingredients , other ca sources (water)

Experimental design with 720 pigs from 6,1 kg during 5 weeks (Ca 0,58 to 1,03 %) and phytase (1000 FTU or 2500 FTU) . Increase calcium reduce average daily gain , average feed intake , feed efficiency and increase bone ash concentration Adding phytase to P deficient diet improved pig performance (alleviated the negative impact of excess Ca) . Excess Ca impaired growth when P was deficient .

NOVEL MARINE POLYSACCHARIDES AND MATERNAL NUTRITION TO STIMULATE GUT HEALTH AND PERFORMANCE IN POST-WEANING PIGS – John O´Doherty – University College Dublin

Weaning stress is a acute phase with loos of protective maternal milk antibodies , change in diet from digestible milk proteins and lactose to solid feed with complex nutrients, rise in cortisol due to social stress factors , anorexia and low feed intake , increased gut inflammation and impaired gut barrier function , villus atrophy , cript hyperplasia and reduce brush border enzymes , reducing nutrient digestion and absorption , allows the proliferation of E. coli … Ban on AGP increasing resistance against antibiotics (human + animals) . ZnO ➔ feeding of pharmacological doses of zinc oxide to pigs = environmental accumulation and increase in antibiotic .

Feed additives than beneficially affect health and growth performance of pigs : feed additives , organic acids , galacto oligosaccharides , yeast , MOS , probiotics , nucleotids , enzymes , essential oils , aromatic compounds , The research objectives is to identify and characterize natural products as sugars from seaweed (Laminaria digitate , Laminaria hyperborean , Ascophyllum nodusum.. The inclusion of A. nodosum seaweed extracts reduce E. coli excretion and reduce daily gain in weaned and growing pigs (12-28 % low) . Study to define bioactive compounds with antimicrobial and inflammatory hits in vivo , ex vivo and in vivo screen . Laminarin is a water soluble undigestible polysaccharides with low molecular weight composed of glucans linked side chains of various distribution and length (variety specific) with ant-inflammatory an antibacterial properties .

Fucoidan is a fucosa sulphated water soluble polysaccharides (undigestible sugar with molecular weight 40-1400kDa with properties to antiviral , immunomodulatory , antibacterial and anti-inflammatory . Some trials with supplementation of the piglet diet after weaning with laminarin and fucoidan

obtain different results : feed efficiency the same with combine and better each , average daily gain , faecal score , log of AEED gene copy number/g of digesta , duodenal morphology – villous height (18 – 20 % plus) , colonic inflammatory gene expression (IL-6 , IL-7) , increases the expression of glucose transporters in the ileum (laminarin > fucoidan) and total tract nutrient digestibility.

Second objectives are compare ZnO to laminarin after weaning (D0-32) with increase average daily gain

Can sow nutrition influence lifetime performance and health of the pig ?

- The GIT develops early in embryonic life during the process of gastrulation
- The immune system has begun developing by d 16 of gestation

Objective 3 are maternal supplementation this polysaccharides compare to oil fish and obtain increase colostral IgG concentrations 2 hours post farrowing , increase phagocytotic capacity of whole blood cells (10 %) , overall daily gain , reduce caecal E. coli 9 dpw, and increase height in the ileum . Effect of maternal dietary and ETEC challenge .

The seaweed species , method of extraction and characteristics of the extract are fundamental , as well as pig maturity .

THE EXPRESSION OF BITTER TASTE RECEPTORS (T2Rs) IN THE PORCINE GASTROINTESTINAL TRACT EPITHELIUM AND SMOOTH MUSCLE – N. Tang & E. Roura – The University of Queensland

Gatstrointestinal motility controlling appetite and food intake . Administration of bitter compunds = smooth muscle relaxation = delay in intestinal emptying . Bitter compounds and pT2Rs expression in extra oral tissues . Specific T2R gene expression of a sunset of porcine intestinal epithelium and smooth muscle (duodenum , oesophagus and stomach) . Confirmed the expression of porcine T2R genes beyond the oral cavity .

IMPORTANCE OF CONNECTIVITY GRAINS FOR AusScan NIR PREDICTION ACCURACY – John Black Consulting

SusScan is the culmination of 20 years research in premium grains for livestock program , Pork CRC & Poultry industries . An estimated 40.000 scans 2017/18 , 22.000 on-line world . Robust NIR calibrations require information

from 100´s of measurements and a variety range of samples . The limitations to infrastructure capacity and research funds and grains energy values .

NIR calibrations : compared unadjusted (raw) date +- standard errors with statistically corrected values . Accuracy of NIR calibrations for predicting unknown samples is approximately twice the standard error of the measurement (+- 0,22 MJ/Kg Pig DE) .

A DOUBLE-CHOICE MODEL TO QUANTIFY NEGATIVE PREFERENCE TO BITTERNESS IN PIGS – Eugeni Roura – The University of Queensland

Reduce fat deposition and improve feed efficiency in fattening-finishing pigs . Screening study effects of bitter compounds on performance parameters to identify novel bitter taste active compounds in pigs than can contribute to reduce excess fat deposition on pig (need to adjust sugar solution dose) The new DC model is effective to reflect the perception of bitterness in pigs . The new screening method allowed to identified novel compounds .

PREFERENCE THRESHOLDS FOR FOUR LIMITING ESSENTIAL AMINO ACIDS IN PIGLETS – Max Muller – The University of Queensland

Glutamate and other NEAA stimulate appetite in young pigs – Capable of distinguishing between diets varying in EAA content . Compare preference to lysine (low doses) , methionine (no dose significant) , tryptophan (prefer high dose) and threonine (no dose significant) .

EFFECTS OF STANDARDISED TOTAL TRACT DIGESTIBLE PHOSPHORUS ON PERFORMANCE , CARCASS CHARACTERISTICS AND ECONOMICS OF 24 TO 130 KG PIGS – Carine Vier – Kansas State University

P is the second most abundant mineral in the body after Ca essential for growth performance and mineralization . Four dietary treatments with 0,31 . 0,27 . 0,24 and 0,21 STTD P in fattening pigs corn and soybean meal with monocalcium phosphates diets . Grown performance and feed efficiency obtain at 120% P level NRC 2012 recommendations . NRC 2012 may underestimate the requirement of STTD P for growing-finishing pigs=115-130 % (improve over feed cost – carcass value) . the estimated STTD P requirement for pigs from 24–130 kg to maximise growth performance ranged from 116% to122% of the NRC (2012) recommendations for each phase, depending on the response criteria and statistical model.

POSTERS .

- In hot weather, *Saccharomyces cerevisiae boulardii*, increased feed intake in pigs fed a low energy diet, most likely due to reduced heat increment during digestion. However, in high DE (high starch) diets feed efficiency is improved. The use of the live yeast Levucell SB is a useful tool for maintaining pig growth performance over hot weather.
- Levan-type fructan could be a prebiotic to enhance growth performance, nutrient digestibility and improve the absorption of calcium and iron in weaner pigs.
- After weaning, piglets face various challenges, such as relocation, new housing, mixing with unfamiliar piglets, dietary switch from milk to solid feeds, resulting in stresses to their metabolic system that often lead to gut inflammation accompanied with increased level of oxidised products, which further increases the severity of any intestinal disorder. The selenium (Se) based enzyme, glutathione peroxidase (GSH-px) is widely present in the intestinal villi, and protects the intestines against oxidative stress. The efficiency of Se uptake from diet into the body tissues depends on the source supplied, and Se-yeast has been found more nutritionally effective than sodium selenite . OH-SeMet appeared to be effective in enhancing liver Se content, which may have been involved in promoting antioxidant status in weaned piglets, leading to reduced diarrhoea occurrence.
- Increased sow prolificacy has led to an increase in pre-weaning mortality in Australia. Reducing pre-weaning mortality would not only have economic benefits for pig producers, but also social and animal welfare benefits. Previous research into the inclusion of L-glutamine in late gestation diets using gilts showed that supplementing gestation diets with 1% L-glutamine between d 90 and 114 of gestation increased average piglet birthweight and significantly reduced variation in piglet birthweight . The addition of L-glutamine sow gestation diets fed to multiparous sows late in gestation in Australia to improve piglet birthweight and pre-weaning survival seems unwarranted.
- Study confirms numerous other investigations showing that gilt progeny are born lighter and grow slower than sow progeny in the pre-weaning period. However, feeding conjugated linoleic acid (CLA) and (or) medium chain fatty acid (MCFA) in late gestation and lactation at the current levels did not improve preweaning growth of sow or gilt progeny.

- There was a significant strong correlation between birthweight and time to first walk (R2 = 0.76), which means that birthweight accounts for 76% of the variability of time to first walk post-birth. Baxter et al. (2008) noted that piglets that have low birthweights often have poor thermoregulatory ability and depleted body energy reserves, causing them to receive small amounts of colostrum in the early stages of birth which reduces their viability and survivability.
- The administration of intranasal oxytocin to gilts during farrowing had a negative impact on their piglets' colostrum intake and growth. Gilts that were administered oxytocin spent significantly greater time ventral lying than lateral lying and this likely reduced the opportunity for piglets to suck. Future research is required to further explore the effect of intranasal oxytocin on gilt maternal behaviour, to determine if the dose of oxytocin was appropriate, and the most appropriate time to administer oxytocin intranasally.
- Sows provided with lucerne display greater levels of arousal in anticipation of the arrival of a feed cart and a feeding event, both in terms on hypothalamic-pituitary-adrenal axis and behavioural activity. This is in keeping with previous reports on the effects of enrichment. Therefore, our data indicate that lucerne may be an effective enrichment for sows before farrowing.
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WELFARE - LACTATION

NEUROPHYSIOLOGICAL ASSESMENT OF ANIMAL WELFARE – Alan Tilbrook – The University of Queensland – Animal Welfare Science Centre

The objectives of centre are continuous improvement in animal welfare , the assessment of animal welfare (negative , positive) and the value chain (animal and environment adapt) . Animal welfare relation to a state within the animal , how the animal feels now , how the animal copes with the conditions in it lives . The concepts of animal welfare are naturalness , biological functioning and affective states (emotional) .Important interaction between biological functioning and affective states .

Neurophysiological approaches to assessment of animal welfare points . neural pathways , specific brain regions , biomarkers of animal effect .

Assessing emotion are difficult evaluate , inability to distinguish positive and negative states and not suitable for production .

Understanding how the brain regulates emotions it´s clear in humans (frontal , parietal , occipital and temporal lobe) – roles of the neurophysiological systems and we need biomarkers to identify the neural activity in the brain (micro RNA measure in brain and blood – anxiety increase MiRNA 34c = amygdala) . Pain (microRNA 34c , 135 , 9 , 21 & 124) .

THE REPRODUCTIVE VALUE OF ENRICHEMENT TO SOWS AT FARROWING – Kate Plush – SunPork solutions

Natural living , biological functioning (healthy , growing and reproducing) and affective state (positive experiences and emotions) = welfare assessment 101 . Enrichment of the farrowing crate with Lucerne hay (1 kg per day to farrowing and 200 g per day in lactation) . The piglet interval birth and farrowing duration don´t have any difference , no impact on total piglets born or on piglets born alive and reduction in the number of stillborn . Per 100 sows farrowed lucerne would achieve an extra 30 piglets born alive .

A PRELIMINARY EXAMINATION OF SHAM CHEWING BEHAVIOUR IN GROUP-HOUSED NULLIPAROUS SOWS – LM Hemsworth

www.animalwelfare,net.au

Indoor production systems are considered by some to provide barren environment for animals – Stereotypies are repetitive behaviours induce by frustration and your origin and mechanism remain unclears . Study 20 group-housed nulliparous sows in gestation 7 days after breeding at 1,8 m2/sow .Developing an appropriate method of sampling sham chewing in group housed nulliparous sows using 5-min IPS o 2-min IPS = more than 75 % of sows were observed performing sham chewing (higher than expected in literature) . These findings suggest that an instantaneous point sampling frequency of 30 s is likely to identify sham chewing behavior in 200 group-housed .

INFLUENCE OF ACCESS TO MAIZE SILAGE ON SHAM CHEWING AND STOMACH ULCERS OF GESTATING SOWS – Lisbeth Hansen – Danish Pig Research Centre

A total of 2.988 sows study moved into the gestation unit 4 weeks after service and free access stalls or wet feed in long trough . Sows examined for stomach ulcer after weaning at slaughter (minor ulcers < 0,5 cm diameter , large ulcers > 2 cm diameter) . Administration 3 kg of maize silage per sow per

day reduce the stomach ulcers . Further research to include sugar beet in gestation feed (4-6 %) and 300 g hay silage in lactation .

AGONISTIC INTERACTIONS IN STABLE GROUP HOUSED SWINE USING A GESTAL FREE ACCESS STALL OVER TWO GESTATION PERIODS – Monique Pairis García – Ohio State University

Aggression is most frequent after mixing or regrouping , most intense during the first 48-56 hours , often occur around feeding .Gestal system as optimal at 15-20 sows per ESF . Stable gestation group decrease sow aggression during the consecutive gestation period .

GROUP LACTATION COMPROMISES PIGLETS PERFORMANCE AND SHIFTS INJURIES FROM WEANING TO LACTATION – DS Lines -SunPork Farms

Decreased growth performance in grouped pig from the day after mixing to 7 days before weaning are not compensate 30 days after weaning , Injury scores increase from aggression .

CONFINEMENT OF SOWS AT PARTURITION INCREASES THE INCIDENCE OF BEHAVIOURS THOUGHT TO INDICATE PAIN – Tanya Nowland

Hypoalgesia a decrease in sensitivity to painful stimuli and unclear how farrowing environment impacts hypoalgesia (the perception of pain in mammals is thought to be similar to humans) . Sows housed in open pens exhibited fewer pain related behaviours (tail flicks , back leg forward and strains) – degree of parturition induced hypoalgesia may be affected by housing – increased the number of posture changes , reduced the amount of time spent nosing crate fixtures and reduce the incidence of pain .

NURSE SOWS DISPLAY ALTERED IN THE NEXT GESTATION – Jane Alexopoulus – SunPork Farms

Increase use of nurse sows to accommodate the increased number of pigs born and udder capacities (manage piglets that are failing to thrive on their biological mother) . Nurse productivity 842 vs 899 pigs/100 sows bred nurse vs control (800 first lactation sows trial) . In nurse vs control reduce farrowing rate (72 vs 81 %) , increase wean to service interval (7,3 vs 5,4) and increase piglets born alive (13,1 vs 12,3) . Best parity effects on nurse sows ate between 2 to 4 . Further exploration of populations dynamics . Nurse sows should be exploited for subsequent reproduction .

FARROWING PERFORMANCE OF SOWS WITH INCREASED MAGNESIUM CONCENTRATIONS IN A TRANSITION DIET- Kate Plush – SunPork Farms

The transition have more change in environment (group to create) , in fed (high to low fiber , low to high protein and energy) and physiological state .

Magnesium reduces susceptibility to stress , protects piglets from birth trauma and effective laxative (farrowing duration and mastitis) . Study to implement higher magnesium fed five days before farrowing in 800 sows to three treatments (control , MgSO4 2,85 kg/tn and supplement) . Increased piglet born dead and post natal mortality was increased . Still working in this area of transition die (interaction with Calcium we need consider) .

POSTERS .-

- Sow longevity and lifetime productivity is a key factor in determining herd productivity and lowering production costs. Sow replacement rates are high in Australia, with an average of 59% sow turnover . Sows with body protein not exceeding 26 kg, and body fat mass no less than 41 kg, last longer and are more productive than large lean sows. Furthermore, we suggest that breeding sows need to be individually fed throughout life so that body reserves, particularly fat levels, can be maintained .
- Study and subsequent prediction models show how stage of gestation and parity affect growth of different tissue pools, sow maternal BW, and feed usage throughout the course of gestation. Further research is needed to investigate these differences and if there is an impact on subsequent performance.
- Cervical mucus properties have potential as an alternative oestrus detection tool in addition to existing monitoring programs. Further investigation is required to determine if using these markers can reduce the time for oestrus detection and to predict insemination timing results in satisfactory fertility.
- Gilts from male-biased litters display a delayed LH surge, an attenuated duration of the LH surge and a reduced time from the onset of LH surge to the peak. Combined, these data suggest that the response of the HPG axis during oestrus is different between gilts from male biased litters and gilts from female-biased litters. These differences may affect reproductive performance and therefore, with further research, the sex ratio could be used as a selection tool to improve the breeding herd.
- Study support the hypothesis that the in utero environment in which a gilt develops significantly affects the birthweight, and subsequent growth

performance of an individual animal. Sexual maturity appears to be occurring independently of the in utero sex ratios, as there was no significant difference observed in large antral follicle numbers. However, the significantly higher number of small antral follicles observed in gilts from female-biased litters, indicates that these animals may have a higher ovarian reserve in comparison to gilts from normally distributed or male-biased litters .

ENVIRONMENTAL

AEROBIC AND ALGAL TREATMENT FOR PIGGERY EFFLUENT AND WATER REUSE : DESIGN OF AN INTEGRATED WASTEWATER TREATMENT PLANT – NN Cheng – SN Jenkins & S. Tait

Anaerobically digested piggery effluent (ADPE) has high ammonia (NH3) and suspended solids concentration, which precludes using it as a substrate for the growth of most microalgae for effluent treatment, disinfection and sustainable biomass energy production. An integrated wastewater treatment system offers the potential to treat waste safely and provide additional on farm energy, while reducing GHG emissions and producing high quality water for reuse in piggery operations.

Utilisation of the microalgae biomass as an alternative fertiliser significantly improved the overall wheat yield and shoot production

particularly at higher application rates. However, shoot production was slightly lower in the plants receiving the microalgae when compared to the mineral fertilizer NH4NO3. The soil N mineralisation rate was positively correlated with the amount of microalgae biomass applied implying that the microalgae provides an available nitrogen source for plants but not to the same extent as NH4NO3. This is because a large proportion of the N in microalgae is in an organic form and needs to be mineralised by soil microorganisms before it is plant available. Consequently, an increase in microbial activities (CO2 production) was observed in the soil amended with the microalgae biomass. Further studies to determine the agronomic and economic value of microalgae as a fertiliser are needed.

Across the Australian pork industry, a 5% change in feed wastage is 82 000 tonnes feed/year, with a current value of approximately $38m. While its importance is widely recognised, there are currently no practical robust methods

to quantify feed wastage. Feed wastage influences feed efficiency, shed (manure), effluent management practices and effluent characteristics.

GENETIC

WHAT DOES THE " CLOSED HERD " REALLY MEAN FOR AUSTRALIAN BREEDING COMPANIES AND THEIR CUSTOMERS ? – Kim Bunter – The University of New England

Commercial programs are bases on relevant breeds in all species Conservation goals or maximizing diversity different tan commercial pig breeding. Genetic variation must be useful (source populations to founding population – use as parents , population size and other selective screening) . Founder parents > segregating gametes > new combinations in offspring . Founders provide initial genetic variation . Population characteristics are also altered by selection (traits means , variation and accumulation of inbreeding) . In closed populations inbreeding will increase . Selection for genetic improvement is conducted at the top (nucleus herd – inbreeding maters up here) .

No substantive evidence for lack of genetic variation in Australian sow farms and genetic gains reflect selection pressures . Other genetic index evaluated are effective population sizes are adequate for pigs (Duroc , Landrace and Large white similar than in USA) , good evidence for genomic diversity in LW (heterozygosity – 33,9 and 35,5 % European and Australian) and some evidence for multiple origins within AUS LW breed .

Breeding companies focus ; a well managed program will deliver results , large enough populations , the right breeding tool , tools and innovation (genomics) . There is no substantive evidence that the closed herd issues is a major limitation to genetic improvement in Australia .

THE ROLE OF GENOMICS IN PIG IMPROVEMENT – Dorian Garrick – Massey University

Mission of a pig breeding company it to invest in the generation of improved crops of purebred lines nucleus (maternal and terminal boars) . Industry structure : nucleus , multiplier and commercial sow farms . Pre genomic era selection in the nucleus sector focused on using data collected on nucleus animals (growth rate , body composition , feed efficiency , reproductive performance) .

Genomic era : pigs usually have 19 pairs of chromosomes . A common error is the substitution of one base pair for another single nucleotide polymorphism (SNP – Illumina SNP bead chip) . Breeding merit is sum of average gene effects (true breeding value) . Reliable prediction requires large training populations of genotyped and phenotype . Genomic prediction evaluation can be based on markers before the selection candidate expresses the phenotype (based on measurements on purebred pigs and commercial descendance) – it allows inheritance of chromosome fragments to be tracked . Require cash and intellectual investment .

GENETIC IMPROVEMENT AND DISSEMINATION FOR THE GLOBAL COMMERCIAL SWINE INDUSTRY – Mathew Culbertson – Genus PIC

Globalization of genetic dissemination . Genetic gain = commercial profit potential . Drivers of gain stay in accuracy (great data + great science 9 , selection intensity/variation and generation interval . Increasing intensity by driving genetic gain (intensity and variation) , driving delivery – impact of individual (extended AI) and exploiting leverage (2017 : < 1 boar/sow – 2000´s : 3,5 boars/sow) . Capture best data is critical : pigs born , pre-wean survivability and piglet birth weights should be pigs weaned . Cost per genome are very chipper now than in 2001 . Genetic breakthrough creates PRRS-resistant

SEASONAL EFFECTS CAN BE SEPARATED FROM OTHER CHALLENGES IN THE PIG ENVIRONMENT USING TIMES SERIES ANALYSIS – Sarita Guy – The University of Sydney

Medication frequency is higher in groups of pigs with lower average daily gain . Can be applied to other herds and alternative traits .

MODIFYING PROCEDURES TO ASSESS IMMUNE COMPETENCE IN MATURE BOARS – J. Harper - AGBU

Immune competence procedures using test antigens have been developed to assess an animals ability to mount both AMIR (antibodies mediated immune response) and CMIR (Cell mediated immune response) . Experiment with multivalent vaccine (Equivac T 5 – Zoetis) intradermal injection perineal and ear base in 9 mature boars . Boars varied in their AMIR and CMIR response and need implications investigated in a larger scale project .

BREEDER DAM PARITY DOES NOT AFFECT LIFETIME REPRODUCTIVE PERFORMANCE – Robert Hewitt

Interrogated performance of 5.755 gilts an 18-136 gilts (SunPork and Rivalea) to parallel . Age at mating 225-229 days of life , total born 11,25 gilts – 11,60 sows , still born 0,65 , weaned 9,2-9,8 and weaned to oestrus 6,2-8,76 sows and gilt (single differences) . Best parities between 3 to 5 . Fewer selected gilt progeny were mated , primarily due to anoestrus . However , of those successfully mated , farrowing rate was higher for gilt progeny Non negotiables of gilt development still important.

EARLY LIFETIME PERFORMANCE PARAMETERS AFFECTING SELECTION AND REPRODUCTIVE SUCCESS IN GILTS – Rebecca Athorn - Rivalea

Sow replacement in Australia is 56,1 % (average parity which sow culling = 4,1) . Reason for culling are reproduction fertility (42) , performance (19) , locomotor (12) , age (20 %) .

Gilts that are born heavier and which do not have any growth deficits during early development . Early lifetime performance indicators –

selection : preweaning gain , birth weight , Overall early in life performance indicators were relatively poor predictors of outcomes for individual gilts . Month of birth and breeding site were the best predictors.

CAFFEINE INCREASES GESTATION LENGTH ON A COMMERCIAL FARM – Brooke Dearlove – The University of Adelaide

Currently 770.000 piglets die in the farrowing shed each year in Australia . Caffeine use in human preterm neonatal babies by reduce the frequency of apnea and need for mechanical ventilation during first 7 days of therapy . Mechanism of action is not yet certain . Single dose of caffeine 1 day before parturition increased piglet temperature at birth , extend sow gestation length and reduced stillbirths . Doses of 1,5 g caffeine 2 times a day or 3 g caffeine 2 times a day . Treatment did not affect total born , born alive , stillbirths (mistakes in supervision) , piglet survival to days 1 , 4 and 21 . Gestation length was affected by treatment (increase 1 day – 116 vs 115) and a breed difference in gestation length was also see (82 % sows farrowed on or after day 116 compared to 46 % of control sows) .

SOW DIMENSIONS INCREASE WITH INCREASING PARITY BUT NOT WITH INCREASING LITTER SIZE – Vivi Aarestrup Moustsen – SEGES Danish

Farrowing unit – crates ➔ feed and drink (produce up to 16 kg milk per day) , rest and get up normally , neonatal piglets access to suckle without difficulties . Compare dimension sows between 2003 to 2017 :

- Length , cm 192 vs 193
- Height , cm 90 vs 90
- Width , cm 43 vs 44
- Depth , cm 65 vs 66 (Not full grown sows between years

Besides sow dimensions on movement don't change . Are the dimensions of farrowing crates sufficient for todays sows : YES . Does largest sows needs birth to large litters : NO .

A SINGLE INTRAVENOUS INJECTION OF KISSPEPTIN EVOKES AN INCREASE IN LUTEINISING HORMONE IN 15- AND 18-WEEK-OLD GILTS – Cameron Ralph – The University of Melbourne

Hypothalamus produce GnRH than stimulate anterior pituitary to produce LH & FSH than stimulate ovaries to produce estrogen and progesterone (Female HGS axis) . Kisspeptin stimulatory neurokinin B that can mediate the feedback mechanism of the gonadal steroids on GnRH and LH (essential for the onset of puberty) .

The effects of a single intravenous injection of Kisspeptin 10 mg on LH in 18 week old gilts after 30 to 90 minutes before . Have a key role in the neuroendocrine control of reproduction in pigs GnRH neurons and the gonadotropes are sensitive to kisspeptin in pigs as young as 15 weeks old .

LIFETIME SOW PRODUCTIVITY IS INFLUENCED BY BOTH BODY PROTEIN AND BODY FAT RESERVES AFTER FIRST-LITTER WEANING – Rob Smits – Rivalea

The cost recovery of a gilt occurs after parity in most herds . High sow turnover in early parities is mainly due to reproductive failure and low performance , Sow herd have a high replacement rate that has no changed to last 10 years . A low muscle mass may initiate warning signals that delay or even prevent the subsequent reproductive cycle to allow the animal to recover from the large metabolic insult incurred in lactation . Live animal parameters and tissue content via DXA and chemically analysed viscera were measured . LWT , P2 , Leg Fat and Parity correlated with body protein and body fat . Sows with excessive body protein mass / > 26 kg) after P1 were more likely to be culled early . Changing composition of gilts and parity 1 sows to have less body mass as protein and more as fat may improve longevity .

EFFECT OF PARITY AND STAGE OF GESTATION ON MATERNAL GROWTH AND FEED EFFICIENCY OF GESTATING SOWS – Lori Thomas – Kansas State University

Feed intake in gestation is typically based on the sow´s body condition , parity and longevity . Sows entry to ESF and supplement 2 kg/day gilt , 2,3 kg/day ideal sows and 3 kg/day skiing sows . Sow gestation nutrient requirement are affected largely by requirement of the sow for maintenance and maternal protein and lipid deposition .

POSTERS .

- Dam parity affects the growth rate of finisher pigs and gilt progeny have lower growth rates than progeny from multiparous sows, although the magnitude of this effect varies between herds . IgA levels were not significantly different in gilt progeny compared to progeny from multiparous sows. The levels of IgG in progeny tended to increase with parity number and gilt progeny had significantly lower IgG levels than progeny from P3 or P6 sows; however, dam parity was not a significant effect overall. The reduced capacity of younger sows to support the growth potential of their progeny. Haematological and immunoglobulin levels of weaner pigs were not inferior in gilt progeny.
- One study showed that with increasing parity, sow haemoglobin level decreased, while piglet haemoglobin levels stayed constant.
- Modern sow genotypes have changed considerably since body composition studies were conducted over 25 years ago on Australian genotypes. Earlier predictive equations were developed on datasets of slaughtered gilts and first-litter sows (e.g. Mullan and Williams 1990) or used genotypes from the United Kingdom (Large White · Landrace crossed with Landrace · Meishan; Gill 2006). As part of a larger project to evaluate sow lifetime performance and longevity over several parities (Smits *et al*. 2017), we established

predictive equations based on measured live animal data for body protein and fat of sows before mating for Australian maternal genotypes. Develop equations provide a valuable tool for predicting changes in body protein and fat reserves in this commercial genotype across a range of parities, weights and backfat measures.

MEAT QUALITY AND FOOD SAFETY

GUARANTEEING CONSISTENTLY HIGH QUALITY AUSTRALIAN PORK : ARE WE ANNY CLOSER ? – Heather Channon – Australian Pork Limited

Meeting consumer needs – importance of taste . The contributors of inconsistent pork eating are flavor and odour issues , overcooking well done > 75 ºC , low intramuscular fat levels , PSE incidence and inadequate ageing . Meat Standards Australia program (MSA) guarantees the eating quality of beef (MQ4) and sheep (SEQ) . Satisfy include : tenderness considered as the key organoleptic trait , flavor , overall liking or pork taste (consumer acceptability of Australian pork less than 10 %) . Compilation of database including 328 studies reporting effects on pork eating and/or technological quality conducted between 1968-2015 . Normal distributions used to characterize uncertainty for all correction factors . Parameters more important for quality : gender – sex (immunocastrated male and female vs entire) , genotype , halothane gene , housing , hanging , age , ageing period (2-7 post slaughter) , moisture infusion , intramuscular fat content > 1,6 % and internal temperature . Majority of studies have involved the loin . Boar taint incidence 0 % immunocastrates and castrated . Fail rates not influenced by age at slaughter of female pigs or ageing for 7 o3 14 days . Loin muscle pH decline post-slaughter Finding support inclusion of IC males in eating quality (continuous improvement in eating quality) .

THE EFFECT OF PRE-SLAUGHTER FACTORS ON MEAT QUALITY VARIES BETWEEN MUSCLE CUTS – AK Lealiifano – The University of Melbourne

Consumer´s expectations of meat quality grows . Interventions in housing (deep litter systems to grow out pigs to slaughter weight) , weight (trends to heavier carcass production to minimise overhead production cost) and sex (immunocastrated males at 15 and 19 weeks life) . Pre slaughter factors housing , carcass weight and sex , both individually and as additive factors significantly influence objective carcass quality but with a large variability between factors. Heavier carcass do not contribute to poorer meat quality .

THE INCIDENCE OF PALE SOFT EXUDATIVE PORK IN ENTIRE MALE PIGS FROM AN AUSTRALIAN HERD – Cameron Jose – Murdoch University

Fail rates as high as 35 % . pH of meat influence nutrition , stress , environment and fighting (< 5,5 = PSE 5,5-6,2 Normal and > 6,2 DFD) . Experiment with 198 entire male pigs . Different definition of PSE : drip loss > 5 % , pH 3 hours < 5,7.. Low ultimate pH = acid meat , pH < 5,4 , + hot temperature at 18 minutes , preslaughter stress positive correlation Overall 43,9 % carcasses were either acid meat or PSE positive in Australia.

PREVALENCE SURVEY OF TOXOPLASMA GONDII IN HEARTS FROM WESTERN AUSTRALIAN SOWS – Kate Hodgson – South Australia

Congenital (in utero) transmission from mother to foetus , drinking contaminated water , infected organ transplant , consumption of uncooked or undercooked contaminated meat , accidental ingestion through to cats , WHO ranked T. gondii as high priority among 31 food borne hazards . Sows heart collected at slaughter with total of 215 samples . The estimated sow prevalence of T. gondii in WA sow hearts are 5 - 8 % (SD+- 1,4 %) .. No statistical significant difference between states

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