ANIMAL WELFARE SCIENCE CENTRE

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SCIENCE CENTRE

Pig Welfare Seminar

JULY 9TH 2010

LECTURE THEATRE

DPI, ATTWOOD

Program

10.15:	**Opening** – Alan Tilbrook, Deputy Director, AWSC, Monash University
10.20:	Paul Hemsworth, Director, AWSC, The University of Melbourne *Australian research on group housing of gestating sows*
11.05	Greg Cronin, The University of Sydney *Reducing pain associated with husbandry procedures in piglets*
11.20	Graeme Pope, Rural Solutions SA *Benchmarking ProHand Implementation – What are the benefits for pigs & people?*
11.50	Prof Knut Bøe, Norwegian University of Life Sciences *Loose-housing of lactating sows: Piglet requirements for space and thermal conditions, and experience with a birth-to-slaughter-system in Norway*
12.25	*LUNCH*
13.10	Rebecca Morrison, Rivalea (Australia) *Commercially viable non-crated farrowing systems*
13.20	A/Prof Inger Lise Andersen, Norwegian University of Life Sciences *Piglet survival in individual, loose-housed sows – the impact of sow behaviour, farrowing environment and management*
13.55	Kathleen Plowman, Australian Pork Limited *PigCare: pig welfare and quality assurance*
14.25	Roger Campbell, Pork CRC *Pig Welfare Considerations in the Pork CRC Rebid –responding to customer and community desires*
14.50	*Discussion (Paul Hemsworth)*
15.30:	**Wrap up & close** – Alan Tilbrook

Australian research on group housing of gestating sows

Paul Hemsworth, Director AWSC, School of Land and Environment, The University of Melbourne and the Department of Primary Industries (Victoria)

Abstract:

Confinement of animals is contentious for many people, possibly because of concerns for reduced animal welfare with restrictions in space, social contact and choice of stimuli for interaction. Furthermore, the public appears to be more concerned about the welfare of pigs and poultry than other farm animals, presumably because their housing is viewed as confinement.

In relation to pig housing, the most contentious animal welfare issue is housing of dry (non-lactating) sows. Increasing public concern about confinement housing has led internationally to legislation and consumer and retailer pressure to increase the use of group housing for gestating sows. Industry experience however indicates that the opportunity for group housing to improve sow welfare is presently limited by the high levels of aggression that is commonly observed in newly-formed groups of sows after mixing.

There are few rigorous recommendations in the scientific literature on the design features of sow group housing that reduce sow aggression. Design features of the pen, such as provision of feeding stalls and time of mixing, have been shown to affect aggression in sows. There is evidence that floor space may affect injuries, stress and reproductive performance, but it is important to quantify the effects of space, group size and their interactions on sow welfare. Substantial research on space, group size, feeding stalls and time of mixing is presently underway in Australia.

Irrespective of the design features, understanding the effects of individual sow characteristics and group composition is important in reducing sow aggression and stress. In the wild, a presumed adaptive function of intraspecific aggression is dispersion of animals and therefore unfamiliarity or 'social strangeness' is likely to be a major factor responsible for this intra-specific aggression in sows. Aggressive behaviour is strongly influenced by experience and there is limited evidence in pigs and other species that level of participation in social interactions may affect stress. For example, animals that engage in aggression, either winning more or less of their fights, and animals that avoid social interaction may differ in the stress that they experience and thus their fitness in the group. Therefore, research on the effects of aggressive behaviour of individual sows on how well individual sows and the group as a whole performs is presently underway in Australia. There is limited evidence that aggressive behaviour traits, such as delivery of reciprocal aggression in young pigs, may be heritable.

Improvements in our knowledge of sow aggression and the principles of mixing sows to reduce aggression and stress are required to develop practical strategies to reduce sow aggression and stress in a commercial environment and to inform sow welfare recommendations and standards.

Notes:

Reducing pain associated with husbandry procedures in piglets

Greg Cronin, Crystal Espinoza, Sabrina Lomax and Peter Windsor, Faculty of Veterinary Science, The University of Sydney

Abstract:

Piglets in commercial piggeries experience a number of routine husbandry procedures such as tail-docking, teeth clipping and ear-notching. In addition, piglets may be castrated, although this is not common in the Australian pig industry. The procedures are typically applied to piglets within the first few days of life, and piglets are reported to experience significant stress, pain and discomfort that may persist for up to 4 days. Anaesthesia and, or analgesia are rarely used for piglets experiencing these procedures, whereas comparable surgeries in human and companion animal medicine require anaesthesia and analgesia. However, in response to consumers questioning the ethics of applying invasive procedures in production animal husbandry without appropriate anaesthesia and, or analgesia, there has been a move towards the use of pain relief for these procedures, for example in Europe.

A research programme in the Faculty of Veterinary Science, University of Sydney is investigating mechanisms to prevent or minimise pain, that are affordable and can be practically applied to production animal husbandry. Within that programme, PhD student Ms Crystal Espinoza is aiming to identify the best methods of pain management for routine husbandry procedures conducted on pigs. The research is an extension of current work investigating the use of topical anaesthesia to anaesthetise wounds following routine husbandry procedures on lambs and calves (mulesing, castration, tail docking and ear notching of lambs and castration, dehorning and ear notching of calves). The aim of the research is to prevent or substantially reduce the pain associated with these husbandry procedures. The research will assess the efficacy of the topical anaesthetic spray Tri-Solfen® applied to the castration, tail-docking and ear-notching wounds of piglets, for reducing pain.

Notes:

Benchmarking ProHand® Implementation – What are the benefits for pigs & people?

Graeme Pope, Rural Solutions SA

Abstract:

ProHand is a computer-based training program which aims to improve the attitude and behaviour of industry stock people through modification of their beliefs about the sensitivity of pigs to their handling, and the consequences of routine adverse handling.

While all trainees complete a Training Feedback Sheet on completion of their ProHand workshop, there has been a lack of formal evaluation of ProHand benefits when applied across a range of commercial production settings.

A recent ProHand Benchmarking study funded by Australian Pork Ltd and conducted by Rural Solutions SA, in association with Monash University and Consistent Pork, WA has now demonstrated the two (2) indicators of significant on-farm behavioural change being implemented on-farm after ProHand training were improved pig handling techniques and reduced negative handling. Further, the main indicator of ProHand benefits or effects being seen on-farm were significant improvements in staff working conditions, made possible through pigs becoming physically easier to move and handle.

ProHand facilitators can now incorporate the practical results of this study during their future delivery of ProHand Pig Handling training to industry stock people.

ProHand® *is an original concept developed by Australian Pork Limited in 1996*

Project funded by Australian Pork Limited

Notes:

Piglet survival in farrowing pens with individual, loose-housed sows – the impact of sow behaviour, physical environment and management around the time of farrowing

Inger Lise Andersen, Guro Vasdal and Knut Egil Bøe, Norwegian University of Life Science, Department of Animal and Aquacultural Sciences, Ås Norway

Abstract:


Knut Bøe

Crushing and starvation are the two major causes of mortality of live born piglets in loose-housed farrowing systems. Results show that piglets with poor ability to maintain their body temperature have a higher risk of both starvation and crushing, suggesting that hypothermia is likely to be the primary cause of death. Larger litter size leads to less mature piglets at birth, a longer latency to first suckle a teat after birth and more piglets not receiving milk during milk let-down, thus a high competition for teats. Piglets from larger litters have a lower birth weight, lower weight gain to weaning and greater variation in weight within the litter. Larger litters are also associated with a greater decrease in rectal temperature shortly after birth, and furthermore, higher piglet mortality due to both crushing and starvation. With the selection for increased litter size, sows, and especially gilts, tend to spend less time on piglet-related activities, showing a less protective behavioural style. This is indeed becoming a challenge for modern pig breeding.

Results both from Denmark and Switzerland show that keeping the sows loose in individual farrowing pens, does not increase piglet mortality compared to housing farrowing crates. Sows housed in pens display increased piglet-directed behaviour, higher responsiveness to piglet screams and increased nursing behaviour compared to crated sows. Around the time of farrowing, sows prefer to rest on heated floor, and floor heating in the sow area has positive effects on piglet body temperature, time to first suckle and piglet survival. Also, increased amount of bedding (litter) in the sow area at the time of farrowing is associated with a lower prevalence of mastitis, shoulder ulcers and leg problems in both sows and piglets and a reduction in piglet mortality. Sows prefer to lie down against a solid sloping wall. This also provides an escape zone for the piglets and encourages the sow not to lie down in the middle of the pen where most of the crushings occur in individual pens. Substantial scientific effort has been put on trying to increase use of the creep area by piglets, but most research has not been successful, as the piglets prefer to stay close to the sow in first two days of their life. Piglets prefer high temperatures and soft surfaces, but the extent to which the piglets use the creep area does not seem to affect piglet mortality. Rather than aiming at attracting piglets away from the sow, we should design pens that allow the piglets to stay in a nest area where the nursing occurs, while the sow can leave for feeding, drinking, defecation etc. A diet high in fibre prior to, and during parturition, appears to improve intestinal function and stimulates initiation of lactation.

Results from Norwegian farms suggest that use of roughage during pregnancy improves piglet survival. Providing the sows with an increased amount of straw or other types of nest building material 12 hours before expected parturition can both improve maternal behaviour and reduce piglet mortality. An efficient way of reducing the heat loss and increasing piglet survival is to dry the piglets with straw or paper towels and place them underneath the heat lamp or at the udder immediately after birth. By attending farrowing, farmers may also discover birth problems sooner, and be able to save screaming piglets from near-crushing situations. Helping piglets to get colostrum after birth by placing them at the udder, and thus reducing time from birth to the first suckle, has also been found to improve piglet survival. Moderate or large amounts of sawdust or other types of litter in the sow area at the time of farrowing reduces mortality compared to no or little bedding. Other factors such as cross fostering, tooth grinding (not clipping), and overall positive handling of sows are also of great importance for piglet survival.

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Commercially viable non-crated farrowing systems

Rebecca Morrison, Rivalea (Australia)

Abstract:

From an animal welfare perspective, the use of farrowing crates to restrict sow movement is being increasingly questioned. Opponents criticise farrowing crates because they are designed to restrict sow movement. Sow activity increases before farrowing and prior to farrowing sows will gather branches and grass to form a 'farrowing nest'. Opponents of crates argue that thwarting pre-farrowing 'nesting' activities constitutes a welfare problem. However, farrowing crates are designed to protect piglets from being crushed and killed by the sow.

The highest incidence of piglet mortality and injury occur during the first three days of life, with unrestricted movement of the sow being a major contributing factor. Commercially-viable, non-crated farrowing systems that take sow and piglet welfare into consideration need to be developed.

Rivalea Australia is leading the way in the Australian pork industry in terms of researching and investigating non-crated farrowing systems. We are consolidating information on the alternatives to farrowing crates, seeking advice and trialling appropriate, practical systems that may be commercially-viable. Some of the non-crated systems we are investigating included free range, deep-bedded group lactation and farrowing pens.

Rebecca is a Research Scientist at Rivalea. She conducted her PhD (Behaviour and welfare of pigs in deep-bedded, group housing systems) with Prof. Paul Hemsworth and Dr. Greg Cronin at the University of Melbourne. Rebecca has worked at the University of Minnesota as the Sustainable Swine Production Systems Scientist, working and researching a range of non-crated farrowing systems. Rebecca will present an outline of Rivalea's non-crated farrowing research program.

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PigCare: pig welfare and quality assurance

Kathleen Plowman, Australian Pork Limited

Abstract:

A place for animal-based pig welfare assessment indicators was identified in the recent review of the Australian Pork Industry Quality Assurance (APIQ). The review found that the existing welfare auditing structure and approach within APIQ 2004 follows a question and answer-based methodology and is based on the 2004 Mode Code for Animal Welfare (Pigs). It generates a closed, subjective and qualitative repeatable set of outcomes which withstands scrutiny with difficulty. The system is desk and facilities driven, with some aspects of stockmanship but negligible animal-based indicators and animal-based outcomes.

The new APIQ program, APIQ✓™, has evolved resulting in an animal welfare module, “PigCare” which sits within the program. PigCare is based on the extensive research conducted by Massey University and the New Zealand pig industry to implement an on-farm welfare assessment program of pigs. It has subsequently been trialled and adapted to the Australian context.

The PigCare module has been developed to both support inclusion of animal-based indicators in APIQ and also as a stand-alone pig welfare assessment tool. It is designed to enable semi-quantitative and repeatable assessments of on-farm animal welfare that can be cross-referenced to the Model Code of Practice for the Welfare of Animals (2007, ed. 3.) It is designed for use by auditors and producers alike, across the spectrum of production applications. With further refinement, it may also be used as a standalone document by DPI livestock inspectors, RSPCA inspectors and veterinarians. Particular emphasis is placed on the competency of auditors in the efficacy of the program and credibility of its outcomes. Emphasis is also placed upon the monitoring of progress internationally and, where relevant, the incorporation of internationally developed tools into the Australian system.

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Welfare Considerations in the Pork CRC Rebid –responding to customer and community desires

Roger Campbell, Pork CRC

Abstract:

The Australian industry is facing increasing competition from imported pork from Denmark, Canada and the USA. Imported pork exceeded 150,000 tonne (carcass equivalents) in 2010 and represents some 70% of all the manufactured pork products currently sold in Australia. Without improvements in the efficiency of production and cost competiveness on a global basis the Australian pork industry would likely to continue to decline in size and ultimately face the threat of fresh pork imports which could and likely would have a devastating effect on producer margins and their longer term survival.

The current Pork CRC has concentrated on improving the efficiency of pork production and the global competiveness of the Australian pork industry. Most of the technologies developed have been designed to be implemented within current production systems and have resulted in reductions in cost of production ranging up to 35 cents/kg carcass weight.

More recently the industry has been challenged by animal welfare advocates , retailers and consumers in respect to the housing of sows in stalls and at present this appears to be a/or the major 'welfare" issue that needs to be debated and addressed by industry stake holders. Simply moving to group housing of sows won't necessarily improve the situation or make the industry more viable. Cost effective management/housing systems are yet to be established and given the capital costs involved, the many unknowns and the probability of significant declines in reproductive performance changing housing systems because you are forced to could in fact further hasten the decline of pork production in Australia.

There is evidence from the current Pork CRC that changes to the management and mating of sows in lactation may enable the move from stalls to group housing to be achieved without any decline in reproductive performance and may actually reduce sow wastage which is relatively high in Australia and occurs mostly in the period between weaning and remating. The new technology developed by researchers at Sydney University will be the basis of a major program in an application for funding of the Pork CRC for a further eight years. The program titled "confinement free systems" will have as its core objective the development of cost effective management and housing systems which have no adverse effects on reproduction/cost of production and improve the welfare and well being of sows and their progeny.

The program will involve some of the world's leading researchers, commercial production companies and participants such as the RSPCA and Woolworths. The involvement of the RSPCA and Woolworths will bring about a new perspective to the justification and design of research projects and more customer and community orientated views of project and program outcomes and how they are communicated and utilised.

Other programs within the proposed Pork CRC will revolve around reducing antibiotic use, improving human health and reducing the impact of the industry on the environment. The change of emphasis in the Pork CRC rebid reflects general consumer and community concerns/desires surrounding their food supply. It is hoped that by reducing the collateral costs associated with pork production that Australian producers will gain market advantages over other meats and those countries exporting pork to Australia.

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The Animal Welfare Science Centre

www.animalwelfare.net.au

The Animal Welfare Science Centre was established in 1997 by the University of Melbourne as a collaborative centre for research, teaching and training in animal welfare, with the two organisations Monash University and the Victorian Department of Natural Resources and Environment.

In 2009, a long-standing collaborative arrangement with the Department of Animal Sciences of The Ohio State University (OSU) was formalised by admission of the Department and the College of Veterinary Medicine at OSU as full partners of the Centre.

The AWSC currently comprises 4 collaborative partners – DPIV (through the Future Farming Systems Research Division), The University of Melbourne (School of Land and Environment and Faculty of Veterinary Science), Monash University (School of Psychology and Psychiatry and Department of Physiology) and OSU (Department of Animal Sciences and College of Veterinary Medicine).

In 2009, the AWSC together with the Centre for Animal Welfare and Ethics of The University of Queensland (CAWE), the Animal Welfare Unit of CSIRO and 2 New Zealand organisations, (Massey University's Animal Welfare Science & Bioethics Centre and AgResearch) were designated as an OIE Collaborating Centre for Animal Welfare Science and Bioethical Analysis.

The Centre has considerable research and teaching capacity in animal welfare science and has made a number of important national and international contributions to research, teaching and training.

The Centre conducts research across 3 programs areas:

1. Welfare methodology.
2. Housing and husbandry effects on animal welfare.
3. Attitudes to animals and animal welfare, and farmer, consumer and community behaviour.

These programs support the fourth program area:

4. Tertiary and post-graduate education and training

The Centre's activities are guided by our vision and mission:

Our Vision

"Animal welfare and its constant improvement are societal and cultural norms"

Our Mission

"To contribute to improved animal welfare as a world leading provider of expert information, advice and education underpinned by rigorous research"

For further information on Centre RD&E activities, please email Jeremy Skuse, Executive Officer at:

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