Swine Innovation Porc

A revolution in feed management is coming to your operations!

Candido Pomar, a researcher for Agriculture and Agri-Food Canada in Sherbrooke, Quebec, together with his brother, Jesus Pomar at the University of Lleida, Spain (and several teams of researchers from other universities and five countries) are behind what promises to be the next opportunity in swine feeding; one that has the potential to transform how we feed pigs within the next five years. This team of researchers is striving to develop technology for feeding pigs individually, on a daily basis, rather than using a phase feeding program targeting the average pig in a pen.

Innovation in pig feeding

Precision feeding techniques is an innovative approach to the feeding of growing pigs, enabling pigs to be fed daily on an individual basis, maximizing the growth potential of each pig. Current phase feeding programs are least-cost formulated and typically target average growth potential in a group or barn. The drawback with this approach is lost opportunity, with faster pigs being under fed and slow-growing pigs being overfed.

In a given population, nutritional needs vary considerably from one pig to another and similarly, for each pig their needs change over time and according to their individual growth patterns. Estimation of nutritional needs should no longer be seen as a static characteristic of a population, but rather as an independently evolving dynamic process for each pig in the barn.

Results

Preliminary results of trials conducted at the research center of Agriculture and Agri-Food Canada in Sherbrooke indicate pigs (25 to 105 kg) fed with rations adjusted to their daily needs, showed that nitrogen and phosphorus intake was reduced by 25% and 29% respectively, while excretion of these same nutrients was reduced by nearly 40%.

What is the potential cost - benefit of this system? Transitioning from a standard phase-feeding program to an individualized daily feeding system is expected to reduce feed costs by $8 per pig. Additional savings can be realized for those farms with on-farm feed mills, as the precision feeding program would utilize two (blended) diets throughout the grower-finisher increasing the milling capacity of the feed system. Cost savings would also be realized through more efficient use of phosphorus and amino acids, in

> Individually feeding pigs with diets adjusted for their daily requirements has demonstrated 40% reduction in nitrogen and phosphorus excretion while at the same time reducing feed cost by $8/pig.

turn reducing the nitrogen and phosphorus content in manure – resulting in lower application costs.

Looking at a whole farm analysis the potential of the precision feeding system could save producers up to to $14/pig, based on 2012 prices.

Development and technology transfer

Implementation of a precision feeding system creates significant challenges with regard to the complexity (e.g. estimation of individual nutritional needs), reliability (e.g. on-farm use of electronic devices) and profitability, requiring new designs for equipment and software. Developing and testing the precision feeding system has been conducted by Dr. Candido Pomar at the Sherbrooke research centre, in addition with funding from Canadian Agricultural Adaptation Council (Agriculture Council of Saskatchewan) two demonstration sites (Quebec, Saskatchewan) will be established for producers to view the technology first hand.

Participating research centers and universities

Dairy and Swine Research and Development Centre (AAFC), Quebec; Université de Sherbrooke, Quebec; Université Laval, Quebec; Centre de développement du porc du Québec inc.; Prairie Swine Centre, Saskatchewan; Universidat Lleida, Spain; Institute i Tecnologia de Recerca Agroalimentéries (IRTA), Spain; Institut National de la Recherche Agronomique, France; Universidade Federal de Santa Maria, Brazil; University of Wisconsin-Madison, U.S.A.;and others.

Precision feeding test with prototype feeding station.

Canadian financial partners

We also thank the Canadian financial partners in this project, without whose aid, could not be successfully carried out.
Swine Innovation Porc, its private partners and Agriculture and Agri-Food Canada.

Personal Profile

Yolande Seddon, Ph.D.

Yolande joined the Prairie Swine Centre as a post-doctoral research associate with the ethology and welfare department in January 2012. Yolande has had a lifelong interest in animal behaviour, how animals perceive their environment and their interaction with humans. She is an enthusiastic individual with research interests surround developing practical improvements for the management of pigs that improve their welfare and productivity.

Yolande grew up in a small village near rural Staffordshire, UK, surrounded by a menagerie of animals. She took a keen interest in animals from a young age and spent many years caring for her family's flock of Soay sheep and helping at local stables. Her keen interest in animals led her to obtain a BSc (Hons) in Animal Behaviour and Welfare at Myerscough Agricultural college, UK and an MSc in Animal Biology and Welfare, Writtle Agricultural College, UK. She undertook part of her MSc at HAS Den Bosch University of applied sciences in the Netherlands, obtaining a wider, international perspective on animal welfare issues. During her MSc Yolande had several opportunities in which she studied the behaviour of pigs. Interested by the challenges presented in pig production, and she subsequently turned her focus to developing a career in applied pig science. Yolande took a year away from studies and worked on indoor and out door pig units to develop her practical knowledge of pig production before returning to academia to complete a British Pig Executive funded PhD at Newcastle University, UK. Her PhD research focused on the development of improved management strategies for the promotion of health in finishing pigs, and included work on sub-clinical disease detection.