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SWINE



The Newsletter of Prairie Swine Centre Inc.

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Livestock Issues Resource Centre

Lee Whittington, B.Sc., MBA and Ken Engele, BSA

The information you need when you need it!

Looking for information to cut the cost of operating your farm? Looking for information on what are the facts about pig welfare? Is your child doing an environment project at school and needs to know the facts about what is the impact of pork production on the environment? All these can be addressed by visiting the Prairieswine.ca website and searching the Livestock Issues resource centre.

Objectives:

To be the primary industry reference on environmental, and welfare issues, energy efficiency, and general production efficiency research for the Canadian pork industry.

Since 1998, the database-driven website has provided access to information on environmental research and technology applications for the pork industry. The program was expanded to include welfare related issues and information in 2001, and now hosts topics in production efficiency research,

Continued on page 2



“This past year the website has averaged over 2500 unique visitors each month.”

Program funding provided by



Continued from page 1

greenhouse gasses, and energy efficiency.

In this past year a total of 584 new summaries of research have been added to the on-line information database. This information covers the strategic areas of environment (186 entries), animal welfare (350 entries), and production efficiency research (48 entries). To do this a summer student, Kirsten Jensen, was employed this past summer (University of Waterloo, 3rd year student in environment and business major), a Post Doctoral Fellow (Dr. Stephane Hayne) with a doctorate in animal behaviour is contracted one day per week to write the animal welfare

components, and Ken Engele (Assistant Manager Information Services, Prairie Swine Centre) summarizes production research and manages the website interface.

Use of the on-line resource has been steady over the past year with over 2,500 visitors to the website each month. Funding from OFAC, Sask Pork, Manitoba Pork, and Alberta Pork, and Agriculture and AgriFood Canada (through ACAAF funding) was received during this period. Promotion of the website has been in pork producers newsletters, advertising at conferences ISTMM (Integrated Solutions to Manure Management), Lemna Swine Conference.

Magazine articles or advertising has appeared in Better Pork, Manure Manager, Western Hog Journal, the pork board newsletters across western Canada, as well as in a number of Prairie Swine Centre publications such as Centred on Swine (distributed to 400 pork producers in Ontario, 4 times each year), and biweekly Ezine distributed to pork producers and industry across Canada.


The site is easy to use as demonstrated in Figures 1 through 4 showing how to use the website to conduct a search of the entire database on the pork production topic of your choice. 



Figure 1. From Prairie Swine Centre website type the word(s) you want to search into the search box, in this case 'water use'.

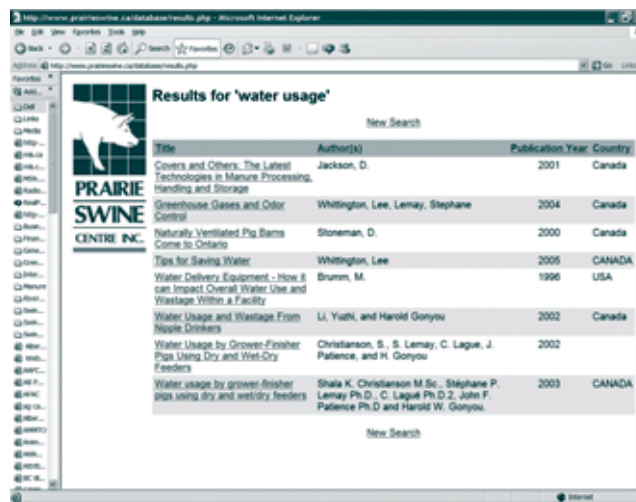


Figure 2. A list of articles from journals to popular press magazines is displayed by title, click the hotlink to read a summary of the article.



Figure 3. The summary is 300-1000 words in length and contains the key points from original article, also the name and reference information on the publication is displayed so you could find it.

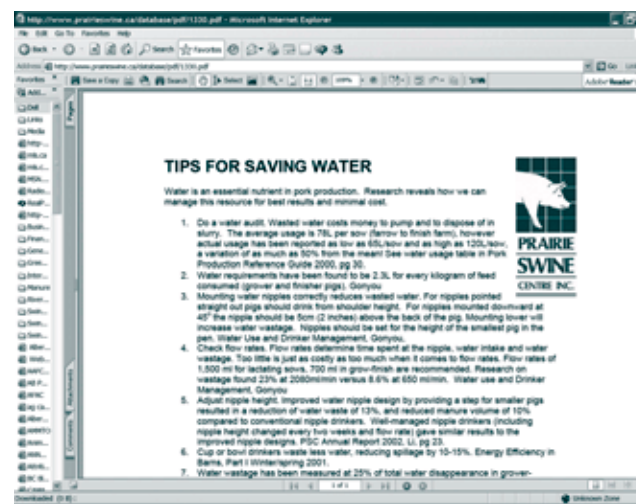



Figure 4. In this case a pdf file is attached to bottom of the summary article. Click here and a printable version of the water checklist is displayed for use at a barn meeting for training, or just for your own reference when troubleshooting.



Swine Facilities, Energy Efficiency, the Kyoto Protocol and Your Bottom Line

Cedric McCleod, M.Sc.
Canadian Pork Council

A lot of the Kyoto discussion has so far focused on renewable energy technologies: wind, water and biomass energy production. Parallel to the renewable energy movement, a quieter push towards energy conservation is also emerging. This should be of particular interest to Canadian pork producers. Swine operations have likely become accustomed to the ever-increasing February heat and hydro bills. Knowing the burden that energy expenditures can have on your bottom line, it might be worth while to consider a closer look at what those bills represent, and how you might be able to claw back some of those dollars by making your operation more energy efficient. The main energy consumers on farms are heating, including creep heat, lighting and ventilation systems.

Each on-farm energy consumption point has opportunities for improved operating efficiency, and small changes can result in decreased barn operating costs.

1. Heating Systems

Creep heat is a major consumer of energy in farrowing units. Full-time heat lamps can be managed more effectively by installing dimmers and diode switches (1/2 power). These simple

changes can save you roughly 30 per cent per year on creep heat energy costs. Installing high temperature cut-out thermostats to turn off creep heat on hot summer days can save another five percent and makes sows more comfortable. Converting to electric or hot water heat pads can save another 50 percent or more on energy expenditures in the creep.

Heating systems in all barns should be properly sized, located and most importantly, controlled so that the barn does not overheat. Over heating results in the exhaust fan system venting precious heat out of the barn, and a loss of cash from your pocket.

2. Lighting Systems

Barn lighting systems should be fluorescent unless lights are used for less than two hours per day. Compact fluorescents are a good first step, but 4-ft. tube fluorescents in vapour proof fixtures provide long life, low cost and excellent lighting. Expect to reduce energy use by 60-80 per cent compared to incandescent systems. In high ceiling barns, high intensity discharge (HID) such as metal halide and high pressure sodium light systems offer additional energy savings over fluorescent along with lower maintenance costs.


3. Ventilation Systems

Ventilation systems require careful evaluation when searching for energy efficiency options.

Buying fans based solely on the diameter is dangerous. For example, 24-in. fans range in total capacity from as low as 4500 to over 8000 CFM (cubic feet of air per minute exhausted). Efficiencies vary from as low as seven to as high as 20 CFM per watt of energy consumed.

Breeding, gestation and finisher barns may find substantial savings in installing dual ventilation systems, using fans during cold weather and converting to natural ventilation for warm weather periods. In the dual ventilation scenario, operating savings are in the 80 per cent range and the barn environment condition is maintained or improved over conventional fan-based systems.

Putting it all together

Living and farming in Canada, where it is often cold and dark, requires us to spend significant cash on heat and lighting. We have little choice on this. We do however, have choices on how we go about expending energy. The heating, lighting and ventilation tips discussed could see you achieve energy efficiency gains ranging from five to 80 per cent. An 80 per cent reduction in energy use for your barn ventilation system will do the following two things: lessen greenhouse gas emissions by reducing the amount of fossil fuel used to run the system, and reduce your expenditures on ventilation by 80 per cent. You can choose which one you want to get behind. 

News from the Pork Interpretive Gallery

HELP CHAMPION THE PORK INDUSTRY

Deb Ehmann

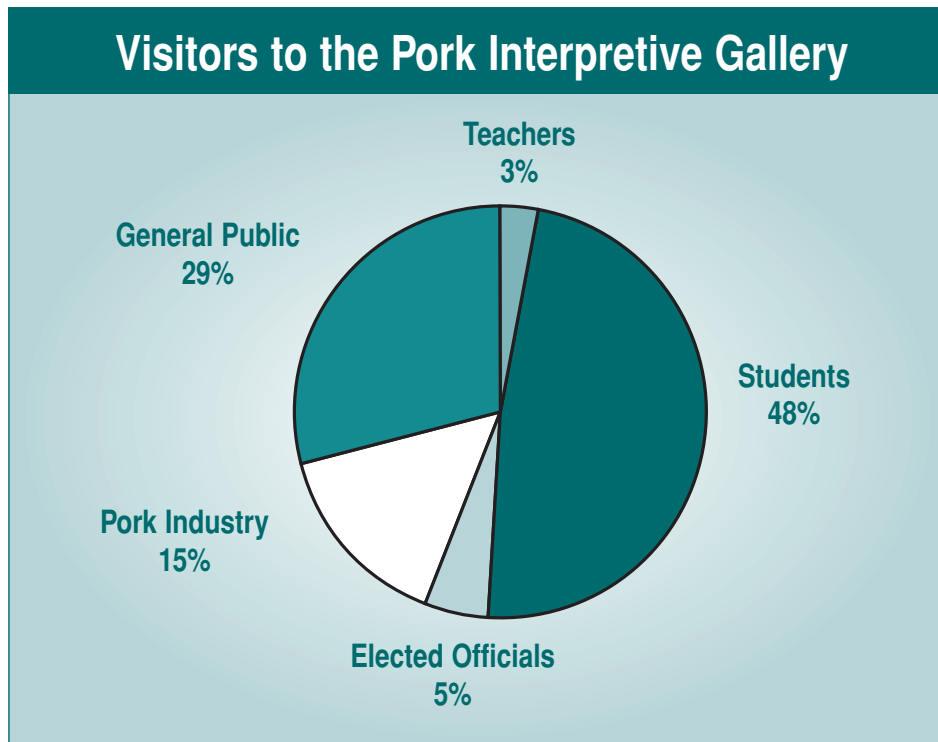
The Pork Interpretive Gallery is very committed to raising awareness of the pork industry with young people but continues to experience a growing interest by the adult population.

The above graph provides an overview of the visitors to the gallery as of February 1, 2006. It demonstrates the diversity of those drawn to the centre. 29% of visitors are Agricultural Producers, sales representatives and bureaucrats from around the world; Spain, China and the United States to name just a few.

It is gaining a reputation as an excellent learning facility.

- It is a teaching tool for the University of Saskatchewan
- Government and industry organizations are incorporating a visit to the gallery as part of the orientation package for new employees entering into agriculture and agriculture-related positions.
- Bureaucrats are promoting the economic gains to the agriculture industry by hog production with a hand on approach

This leads to a very important next step in the strategic plan to raise awareness of the contribution to society and the economy. The Pork



information and research on hog operations we continue to gain momentum.

The message needs to reach all those who can be positively affected by the hog operations. Community leaders that set direction for

volunteers to help champion the pork industry.

This is an opportune time to brainstorm about the groups of people that would benefit by hearing more about growing pigs in your area;

- Staff at the local financial institution
- Town Counsellors
- Rural Municipal Counsellors
- Chamber of Commerce
- Church organizations
- School staff members
- School classrooms
- Economic Development offices
- 4-H clubs
- Agriculture Producer clubs
- Grain Handling facilities staff and board members
- Community clubs such as Lions, Elks, Optimist, etc

These are people making decisions and playing leadership roles in your community. They need accurate information to make good decisions on behalf of the constituents they represent. It is in the best interest of the industry

“The Pig Ambassador Program is a great opportunity to get schools to the Pork Interpretive Gallery.”

Interpretive Gallery is the right vehicle to drive home the importance of the pork industry. The ultimate goal is to be recognized as a reputable resource of information. Strengthening communication channels with the general public and address the misconceptions about hog production head on is an objective that motivates every P.I.G. initiative. By providing solid

community development, economic development, educational awareness and environmental stewardship in Saskatchewan.

The result will be a better understanding of agriculture and its importance in maintaining a healthy and safe society for Canadians to live and work in. Once again the key is communication.

The Pork Interpretive Gallery is looking for

The Pork Interpretive Gallery provides opportunities for post-secondary students to gain a first-hand experience of the pork industry



The Pork Interpretive Gallery also provides international visitors an opportunity to get a close look at the Western Canadian pork industry.

to make sure current research and information is made available to them.

The Pork Interpretive Gallery provides valuable resources and learning experiences about the production of hogs. The interest by the general public steadily grows with respect to the operation of modern pork producing farms. The centre disseminates science-based facts that confirm the importance of pork in the food industry and the statistics to prove it.

Saskatchewan Pork Development Board, Prairie Swine Centre and the Pork Interpretive Gallery have developed an array of excellent resource materials and information fact sheets to assist in delivering the message about the industry to Western Canadian communities. The Pork Interpretive Gallery management will gladly assist in any way.

School Visits

Materials developed for school visits is based on the Saskatchewan School curriculum guidelines. It is the same information handed out at the centre.

1. The grade 4,5 & 6 curriculum is mainly about healthy bodies, controlling disease and the importance of eating a balanced diet. Young people need to be aware that pork is a healthy nutritional choice when planning their daily food intake.
2. The Grade 7/8 teachers use the tour to compliment the Science and Social Studies program. Renewable resources, Micro-organisms and Power are just a few
3. High School teachers and U of S professors consider the gallery to be a great teaching tool for Ag 30 classes as well as vet and pre-vet classes.

The Pork Interpretive Gallery was recently invited to the Rocanville Children's Science Fair. The kindergarten to grade three students enjoyed a one-hour presentation "All About Pigs".

Community Information Sessions

Any one that would be interested in presenting information to your local community or participating in a school visit or community meeting, please let us know. It means so much more when the presenter is someone from the community.

The Pork Interpretive Gallery is a unique new science based learning centre that is easy to talk about. If you can help out in any way please call 1-866-PIG-Tour or emailing pig@usask.ca to express your interest. Your help would be greatly appreciated.

The Bottom Line

We have lots to brag about as an industry.

1. Leadership role in environmental issues around the world. As the growing demand for pork increases world wide, pork producers in western Canada have expanded hog production facilities to help meet the growing food consumption demands.
2. Produce Canadian pork products in a safe and responsible manner.
3. Maintain strict biosecurity programs to maximize animal health and ensure genetic integrity in the hog processing industry.
4. Establish high standards in technology, genetics, animal welfare and feed formulation.
5. Place high priority on ensuring the good neighbour policy, protection of water supplies, manure management and odour control as good environmental stewards.

Let's work together to champion the industry.



Larger Groups for Grower-Finisher Pigs: Feeding and Social Behaviours and Impacts on Social Stress

Thusith S. Samarakone, M.Sc. and
Harold W. Gonyou, Ph.D.

Most studies on feeding and social behaviours of pigs have been conducted on groups of fewer than 40 pigs/group. However, these group sizes are much smaller than some that are now used in some commercial operations (100-1000 pigs/group) in North America and elsewhere. The social dynamics of feeding and other behavioural activities of pigs in large social groups are not well understood and the competition for and the utilization of important resources such as feeders by pigs in larger social groups is therefore unclear. The present study was conducted to gain a better understanding of feeding and other behavioural activities and the impacts of larger social groups on social stress in grower-finisher pigs.

To address this question, two blocks, which consisted two group-size treatments, 18 (Small Group) and 108 (Large Group) grower-finisher pigs per pen, were carried out. Each block, which lasted 10 weeks in duration, consisted of two pens of Large Group and four pens of Small Group size. A total of five hundred seventy six barrows and gilts (Pig Improvement Canada) were used in the experiment at the PSC Elstow Research Farm. The animals were weaned at approximately 18-days of age, were then held in nurseries for eight weeks, before being used in the experiment. The ratio of barrows to gilts was kept constant (1:1) between the two group sizes and the average starting weight of pigs was 34.6 kg \pm 4.1 kg (S.D). Pigs were housed on fully-slatted floors with floor space allowance per pig of 0.76m².

Wet/dry feeders supplied feed and water to the animals, with a pig to feeder space ratio of 9 to 1. Feeders were spread equidistantly along the central line in large groups with four feeder holes per feeder location. This maintained an equal distribution of feeders within the large group, giving an equal opportunity for all the pigs to

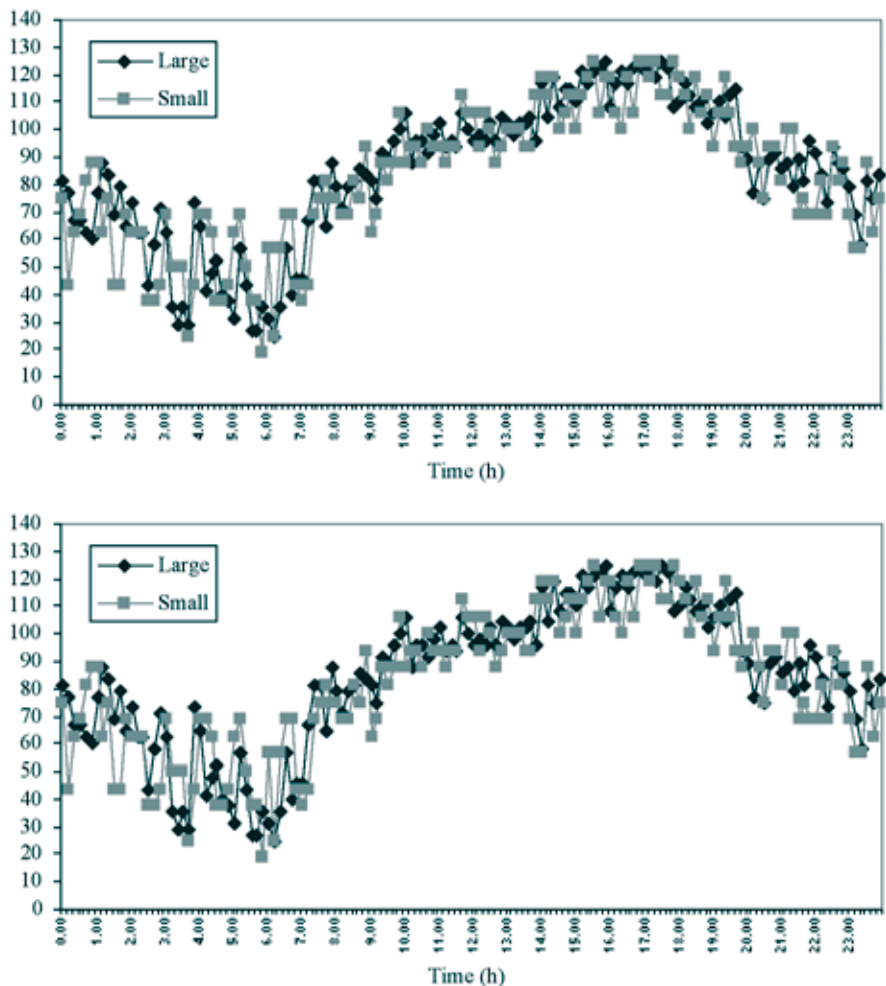


Figure 1. Effect of group size on daily feeding patterns of pigs at (a) day 3 and (b) during week 10 following group formations.

access the feeders without any difficulty.

The individual pig feeding behaviour and group feeding patterns were studied during weeks 1, 5, 7 and 10 of the grower-finisher cycle. In addition, other behavioural activities such as percentage of time spent on eating/drinking, resting (lying) and standing/walking and diurnal patterns of these activities of pigs in both large and small groups were studied during weeks 2, 5 and 10 following re-grouping.

To evaluate the group size effect on social stress, salivary cortisol levels were measured

periodically throughout the grower-finisher cycle i.e. during weeks 1, 2, 5 and 10. In addition, morphological parameters of the adrenal glands were measured at the end of grower finisher cycle to understand any effects of chronic stress on pigs that were formed into larger groups.

The pigs in large groups had more bouts of feeding (35 vs. 25, $P < 0.05$) and the feeding bouts were shorter in duration (232 vs. 301 sec, $P < 0.05$) during day 3 following re-grouping. However, no differences in number of feeding bouts and bout lengths were found during weeks 5, 7 and 10.

Table 1. Effect of group size on salivary cortisol concentration and adrenal gland morphology parameters of grower-finisher pigs^a.

Item	Small (18 pigs/pen)	Large (108 pigs/pen)	SEM	P
Cortisol (ug/dl)				
Week 1	1.98	2.12	0.19	
Week 2	2.05	2.11	0.17	
Week 5	1.33	1.39	0.17	
Week 10	0.59	0.87	0.17	
Average	1.49	1.62	0.14	0.54
Adrenal gland morphology parameters				
Adrenal gland weight (g)	4.81	4.94	0.15	0.54
Adrenal gland cortex to total area percentage	77.4	80.5	1.5	0.13

^a Mean cortisol and adrenal gland morphology parameters, least squares means.

More importantly, we found that the percentage of pigs queuing at the feeders to be high in larger groups than in smaller groups during day 3 (0.90 vs. 0.59 %, P <0.05). This trend of higher percentage of queuing at feeders were also apparent during day 6 following re-grouping (0.79 vs. 0.60 %, for large and small groups, P=0.08) but not thereafter. There were similar 24 hr group feeding patterns in pigs of both SG and LG during


weeks 1, 5, 7 and 10 (Figure 1). Furthermore, the average percentage of feeder spaces occupied (mean day 3 and 6 and week 5, 7 and 10) was also similar between the two group sizes (55.7 vs. 56.2 %, for large and small groups).

The average times spent on eating/drinking (5.2 vs. 5.2 %, for small and large groups), standing/walking (5.1 vs. 5.4 %, for small and large groups) and resting (89.6 vs. 89.3 %, for

small and large groups) did not differ between the two group sizes. Furthermore, the diurnal patterns of these activities were also not affected by the large groups.

One main concern of large group sizes for pigs is the potential for increased social stressors. Interestingly however in our study, during the entire 10 wk experimental period, pigs in larger groups did not demonstrate any short-term (acute) or long-term (chronic) responses of social stress (Table 1). Therefore, it was apparent that the pigs had not gone through any adverse social stressors by living in larger groups.

The Bottom Line

The feeding behaviours of pigs were disturbed immediately following re-grouping into larger groups. Pigs in larger groups seemed to take some additional time to adapt their feeding behaviours as indicated by the similar patterns observed later in their grower-finisher cycle. Our results do not suggest any additional acute or chronic social stressors in pigs that are formed in larger groups. However, management of feeding behaviour in terms of accessing feeders may be critical immediately following formation of pigs into larger groups. 

Update on Nutrition program - March 2006

Pascal Leterme, Ph.D.

The Nutrition Program has two components - ingredients and animal requirements. The first component is focused on the evaluation of the quality of ingredients used in swine nutrition and produced in Western Canada. Particular attention is paid to pulses.


A study, funded by the Flax Council, was completed on the nutritional value of whole flaxseed and showed that the latter can be incorporated at a rate of 15% in the pig diet. The main interest of flaxseed lies in its essential fatty acid content that can be incorporated in the lipid fraction of the carcasses.

Another study, ordered by the Saskatchewan Pulse Growers, is currently conducted on lentils. Lentils are normally for the human market but it is estimated that 10% of the production, that's to say 80,000 t, are downgraded every year and used by the feed industry. Virtually no information on their value to the pig exists, and the study will bring

some basic data on digestible energy and protein.

A main research program was started recently on the use of field peas in swine nutrition. Peas have become a major local ingredient recently, with 3.7 million metric tonnes produced in 2004. However, the information available is limited to growing pigs and most of the research was conducted in Europe. The new program will study the nutritional value of a large number of pea samples collected throughout the Prairies and will be carried out on piglets, growing pigs and sows. To our knowledge, this will be the first significant study on sows. The interest of the latter study lies on the fact that large animals are able to better digest fibrous diets such as peas compared to younger animals ones and a significant increase in nutritional value of peas in sows might be expected. Hence, new specific tables of nutritional value are currently developed in Europe for sows. The program will also look at the possibility of improving the nutritional value and reduce the variability of the latter through processing (grinding and pelletizing). The program will be funded by the Saskatchewan Pulse Growers and

the Alberta Pulse Growers.

A new research project has been approved for funding by the Saskatchewan Canola Development Commission and the Canadian Canola Council to study the net energy value of canola meal and full-fat canola seeds. The net energy system is more adapted to ingredients with high levels of protein and dietary fibre – as it is the case in canola – than the digestible energy system. Due to an increasing demand in biodiesel, the production of canola is expected to grow in the coming years and the use of canola by-products in swine nutrition will depend on our ability to estimate their real nutritional value for these animals. On the other hand, important breeding programs has allowed the development of canola seeds with very low levels of antinutritional factors and the use of whole canola seeds is now possible. Since they contain high levels of oil, their use as a valuable energy source can be envisaged. Our research program will provide original and valuable information on that new ingredient. 

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- Exposure limits
- Effects that H₂S may have on humans
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- Critical manure management
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Shannon LaRoche delivers this Hydrogen Sulphide (H₂S) workshop on contract through the Prairie Swine Centre

Participants receive a wallet certificate and training certificate upon completion of the course

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 Agriculture and AgriFood Canada

 Agriculture at AgriPartners Canada

 Sask PORK

Coming Events

Manure Management Conference: Challenges, Opportunities and Solutions

June 26-28, 2006

Capri Centre, Red Deer, Alberta

On-Farm Feedmill Management Workshop

June 22, 2006

Edmonton Research Station, Edmonton, Alberta

On-Farm Feedmill Management Workshop

June 23, 2006

Crop Development Centre, Brooks, Alberta

Saskatchewan Pork Industry Symposium

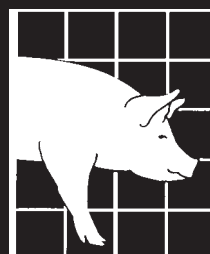
November 14-15, 2006

Saskatoon Inn, Saskatoon, Saskatchewan

Manitoba Hog and Poultry Days

December 6-7, 2006

Winnipeg Convention Centre, Winnipeg, Manitoba



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