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Seeking Your Thoughts
Message From the Presedent

Lee Whittington,
Prairie Swine Centre

Pork producers are amazingly resilient people - taking positive action daily in the face of current challenges to stabilize their farms' position. In response to the current challenges Prairie Swine Centre, like all pork producers, have made many changes to reduce costs. This issue of Centred on Swine is one of those changes, previously produced four times a year we now produce just 2 issues. Recognizing that the knowledge is still needed we have added four pages to each issue, increased emphasis on our website and the PorkInsight searchable database to help you find that knowledge easily. The Annual Report is also available on-line, saving many dollars in printing, but still providing essential knowledge.

As a unique part of the pork industry infrastructure in Canada, the Centre has acted to protect our core business of developing and sharing new knowledge to assist pork producers in their search for better, more economical performance, improved meat quality, understanding and modifying the impact on the environment, the health and safety of our people and the welfare of the pig. This has meant that PSC Elstow Research Farm operations (600 sow FF) have been suspended because that barn's business plan was no longer viable. Seeking further reductions we have reviewed and decreased staff positions, renegotiated with suppliers, in short rethinking the need for our every action.

A new program 'Friends of the Centre' has been developed by pork producers who want to help and there will be more details coming out on this soon. Although the entire value chain in pork benefits from a strong research foundation, typically the primary producer has been the most involved in supporting production-related research through an established funding check-off process. This new program would allow other suppliers in the pork value chain to participate directly.

Lastly our management team is seeking your input as we redefine the role we serve within an evolving pork industry. The preferred way to discover this would be through meeting with you, but time and distance simply don't allow that to happen. We have developed what we hope is the next best thing, a short on-line questionnaire that will help us determine your view of the future and seek your guidance on Prairie Swine Centre's role in helping you realize that future.

Please go to www.prairieswine.ca and click on the Vision of the Future Survey. You will be asked for you opinion on some key questions about the future of the industry. This only takes 4-5 minutes and will be an essential part of our planning process.

Thank you for your continued support!
Lee Whittington
President/CEO (Acting)

Publication # 40010021

Vehicle Design Impact on the Transportation of Hogs

Pigs on truck. The belt includes a heart rate monitor.

Harold W. Gonyou

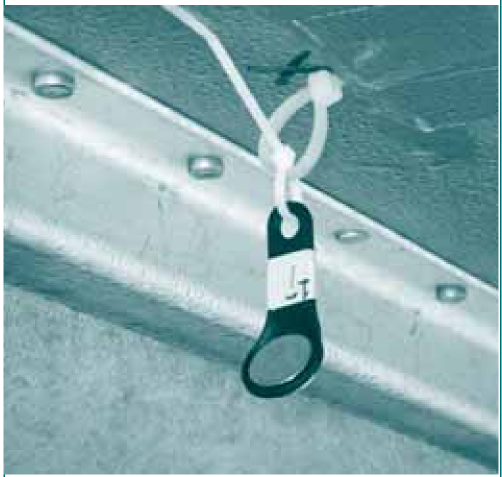
Harold W. Gonyou and Stephanie M. Hayne, Prairie Swine Centre
Trever Crowe, University of Saskatchewan
Nora Lewis, University of Manitoba
Emily Tamminga, Renee Bergeron, Tina Widowski and Cate Dewy, University of Guelph
Luigi Faucitano and Stephanie Torrey, AAFC Lennoxville
Jorge Andres Correa, University of Laval

Death losses during transportation in Canada may be low (0.10%), but the total loss amounts to approximately 16,000 pigs per year. In addition, other pigs arrive at the processing plant as 'suspect' animals due to fatigue, and may need to be euthanized at the plant. We know that the rate of loss is higher during the summer months, and it differs with farm of origin, and transporters. It is generally acknowledged that some compartments on trucks are worse than others in terms of death losses, but there is no universal agreement on which compartments these are and the magnitude of the differences.

Besides the loss of pigs, there may also be an economic loss due to poor meat quality arising from stressful handling and transportation, and this could be more substantial than the death losses. Little is known about the quality of meat coming from different compartments in a vehicle, nor about differences in environmental conditions among compartments.

We have organized a collaborative project with researchers at several universities and research stations to study the effect of handling and transport on the physiological and behavioural responses of pigs, and on meat quality. Our collaborators include Drs. Trever Crowe (Saskatchewan), Nora Lewis (Manitoba), Renee Bergeron, Tina Widowski, Cate Dewey (Guelph), Stephanie Torrey and Luigi Faucitano (AAFC, Lennoxville). Currently, two graduate students, Jorge Andres Correa and Emily Tamminga, are working on the project under the supervision of Drs. Faucitano and Widowski, respectively.

The initial phase of the project involved collecting information under standard transportation conditions in both Quebec and western Canada, in both summer and winter. We tracked 36 truck loads of pigs. Our data includes the behaviour of pigs during loading, transport, at unloading and in lairage, in addition to the thermal conditions within each compartment of the truck at each stage of the process, the core body temperature of pigs from barn to lairage, the heart rate of pigs from the barn to unloading or to lairage (in Quebec), certain blood parameters indicative of stress, and meat quality up to 24 hr after slaughter.



Temperature and humidity sensor attached to ceiling of a vehicle compartment.

During the project we modified and validated new methods for monitoring heart rate and core body temperature. Heart rate was recorded using Polar heart rate monitors, similar to those used by athletes, held in place with saddle cinches. The monitors were programmed and placed on the pigs several hours before loading at the farm. We were able to collect recordings for up to 11 hrs of handling and transport. We placed heart rate monitors on approximately 15% of the pigs, with at least two animals equipped within each compartment.

We measured core body temperature by bolusing the pigs with temperature loggers (i-button temperature sensor) and recovered these from the digestive tracts after slaughter. These loggers have previously been used in poultry transport work at the University of Saskatchewan. The loggers are about 1.2 cm in diameter and can be programmed to record temperature for several days. Again, these were administered to the same 15% of the pigs that were equipped with heart rate monitors several hours before loading. We collected the grey offal from these pigs at the plant and searched the stomach, caecum and intestines for the temperature loggers. The majority of the loggers were found in the stomach, others in the caecum, and a few in the intestines. We recovered approximately 85% of the devices.

To date, our analysis has been limited to the summer trials in Quebec. The pigs were market weight (approx. 120 kg), and had been fed Paylean during the final three weeks of the growth period. Loading density on the vehicles was 0.41 m^2/pig, equivalent to a k value of 0.017 $m^2/kg^{0.667}$ (4.4 ft^2). Pigs were loaded using paddles and herding boards only. No electric prods were used at the farm, on the truck, or at the plant. We used both a three-deck pot-belly trailer with internal ramps (six loads of 228 pigs) and a double-deck trailer without ramps (top deck lifted by hydraulics; six loads of 85 pigs). The pot-belly trailer was specifically designed to transport pigs. The ramp to the upper deck had a less severe slope than a typical dual-purpose (cattle and pigs) pot-belly, and the front compartment of the middle deck was reached without first climbing up to the top deck, as is the case in many dual-purpose trailers. Pigs were loaded early in the morning and transported for two hours to the plant where they were promptly unloaded. After two hours of lairage, which included sprinkling, the pigs were slaughtered.

The temperature within the truck compartments reached its highest level during either the wait at the farm after loading and before departure (averaging between 24 and 30°C), or at the plant after arrival prior to unloading (averaging between 26 and 30°C). During the actual transport the temperatures in all compartments averaged between 24 and 27°C. In the pot-belly trailer, the hottest compartment while waiting at the farm was the front of the middle level. After the vehicles arrived at the processing plant, the temperatures in the upper level of compartments increased by 3 degrees within a few minutes.

Core body temperatures for pigs were highest when the truck was waiting to leave the farm. Because the pot-belly of the trailer was always loaded first, core temperatures during the on-farm waiting period were higher in the pot-belly

Meat quality assessment.

(40.62°C) than the double-deck (40.15°C) pigs. The highest core temperatures were found in pigs on the upper deck of the pot-belly while still at the farm. Core temperatures dropped somewhat during transport (40.18°C), and fell below pre-loading temperatures (to 39.82°C) once they were sprinkled with water in lairage. It is not clear if the higher core body temperatures in pigs on the top deck are due to the greater exertion required to climb to that deck, or to the high environmental temperatures encountered there during the long stationary period.

Pigs were unloaded by compartment at the abattoir and driven into lairage pens segregated by truck compartment. Behaviour during unloading (slips and falls), time to unload each compartment (adjusted for number of pigs per compartment), latency to rest (75% of pen lying) and total time lying during the first hour of lairage were observed. Accounting for the number of pigs, unloading from the pot-belly took longer than from the double-deck (2.9±0.1 vs 2.1±0.2 sec/pig), but there was no difference in the number of slips and falls during unloading. During lairage, there was no difference between trucks in the time taken for 75% of the pigs to lie down, approximately 35 min for both vehicles, but pigs from the double-deck tended to spend more time lying than pigs from the pot-belly trailer (51 vs 45% of time lying). Although trailer design did not influence latency to rest, pigs from the pot-belly took longer to

Vehicle Design Impact ... cont'd on page 11

Pigs unloaded from a pot belly trailer took approximately 27% longer when compared to a double deck trailer.

i-button temperature sensor after recovery from digestive tract of a pig.

Twenty Three Steps to An Improved Barn Environment

Ron MacDonald, P.Eng.
AgViro, Guelph, Ontario

MANURE MANAGEMENT

1) Repair and replace penning, flooring, etc. which causes spilled water, or manure and urine to lie on floors and alleyways. This raises ammonia and humidity levels in the winter and reduces the room temperature, as it takes energy to evaporate this liquid.

2) Check slats and penning support ledges for locations where manure can build-up. This provides a haven for flies and causes similar problems to 1) above.

3) Never allow manure to build up closer than 12" to the bottom of the slats. Gas begins to enter the confinement area and effect performance if manure builds up beyond this level.

4) Check for leaks through manure pump out ports, under manure pit dividers, etc. Air entering rooms this way increases gas production from the manure and can cause extreme health problems.

5) Flush manure from gravity flow pits within 15-20 days maximum. Recharge the pits with a few inches of fresh/wash water to absorb ammonia and reduce potential for solids build up.

6) Ensure radiant heat lamps direct heat onto solid pads. Light passing through slats will heat the manure below and increase gas production.

VENTILATION

7) If there is a pit tube/duct ventilation system, be sure to check it periodically for solids/manure build-up.

8) Repair leaking waterers immediately. Keep replacements handy.

9) Verify adequate flow at water nipples to see if there are problems. Check during high flow times. Since 70 % of water is consumed during feeding, morning or late afternoon is best. If some form of water based cooling is used, it will mean the heaviest load occurs during late afternoon; check when the cooling system is operating.

10) Ensure that the mechanical ventilation system is performing as required. Use a static pressure gauge to adjust air inlets; Set @ 0.04" in the summer, 0.08" in the winter.

11) Verify inlet openings are correct with a velocity meter such as the Dwyer High Air Speed Indicator.

12) Ensure inlets are of good quality and properly located to mix fresh air uniformly and reduce drafts.

13) Adjust minimum winter ventilation to achieve a relative humidity (RH)of 50-70% . Too high causes health problems from air-borne pathogens. Too low wastes increase heating costs and can also cause health problems. An inexpensive digital relative humidity instrument is a good device for checking relative humidity as well as temperature.

14) Verify heaters, fans/shutters and controls are all maintained.

15) If air is drawn in from the attic in summer, ensure temperature rise is less than

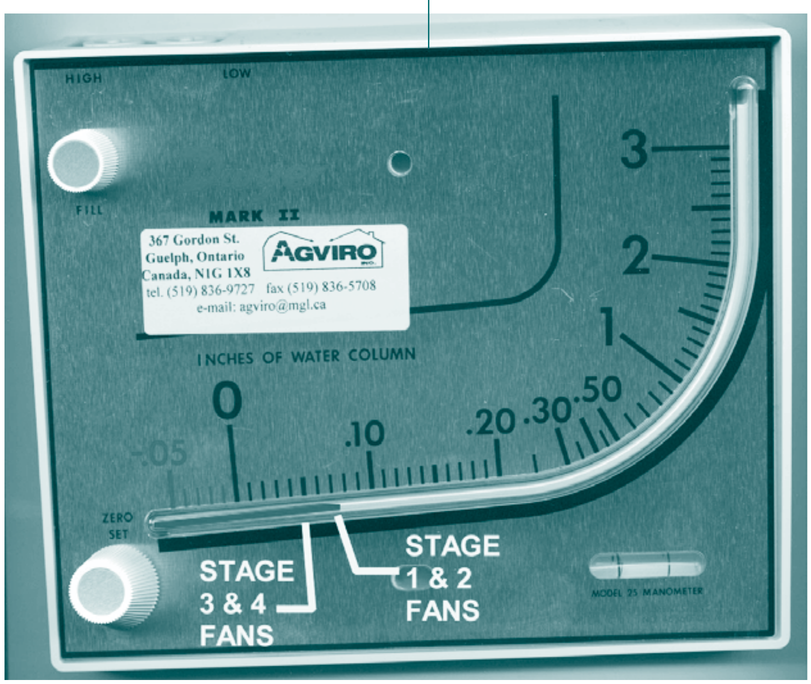


Figure 1: A static pressure gauge is required in every room

1.5 °C. Exterior roof sheathing should be white, or a layer of insulation on the underside of the roof will also help to reduce solar heat gain.

16) Check and maintain insulation levels. It not only reduces heat load on the building, it reduces the thermal environment effects due to reduced radiation (winter) and excessive radiation (summer).

17) Consider some form of cooling appropriate to the type of production room; spray cooling, evaporative cooling pads, stirring fans, tunnel ventilation, earth tube cooling, etc. A 3-7 °C cooling benefit with a resulting improved feed consumption is achievable.

18) Monitor temperature with a good quality digital maximum/minimum thermometer in every room. Older style mercury thermometers do not respond quickly enough.

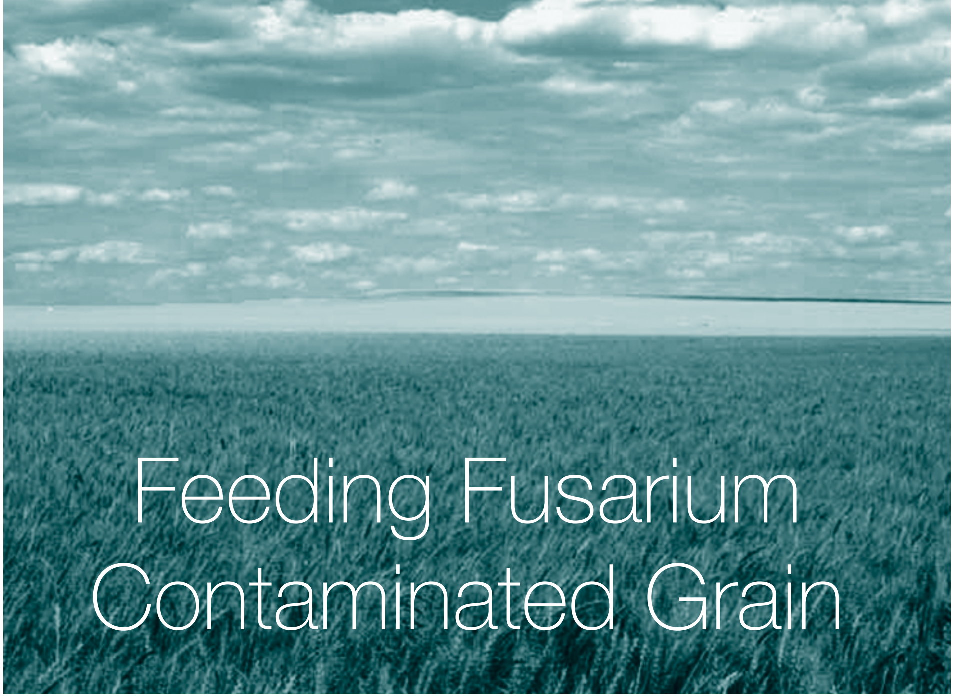
MISCELLANEOUS

19) Ensure pigs receive adequate light for at least 10 h/d (Recommended Code of Practise for the Care and Handling of Farm Animals (Pigs)). Use fluorescent tube fixtures or high intensity discharge (HID) to achieve this economically. Paint walls and ceilings white. Keep surfaces and lighting fixtures clean to ensure maximum reflectivity.

21) Consider the installation of windows to improve the environment for management. They add very little to heat load and can provide a psychological lift.

22) Install a good quality alarm system. It should be independent of controls, be battery backed up and lightning protected, and managed so that response to alarm is less than 15 minutes. A back up generator or other emergency contingency plan should be well formulated in advance to reduce potential for animal suffering and loss. It should operate off all minimum ventilation fans and hi/low temperature in each room.

23) Conduct a " Barn Health Audit" on the manure, ventilation, and lighting systems at least every spring and fall. Consider having independent experts out to conduct the audit for you.



Feeding Fusarium Contaminated Grain

Ken Engele, BSA
Summary of articles
in Pork Insight

Fusarium head blight occurs when the right combination of environmental conditions exist. This includes rainfall immediately prior to heading in addition to ample heat and humidity throughout the flowering period. Several species of Fusarium have been identified to cause head blight of which a few produce mycotoxins. Throughout western Canada *fusarium graminearum* is the most common, and represents the principal toxin producing DON (deoxynivalenol or vomatoxin).

Research at the University of Manitoba has indicated that DON levels exceeding 1 to 2ppm have been shown to suppress feed intake in addition to reducing average daily gain. While different species react differently to levels of DON in their diets, in pigs it is efficiently absorbed, poorly metabolized, and excreted slowly when compared to other species. Therefore making pigs quite susceptible to DON.

What can be done about feeding DON contaminated grain to pigs?

Agriculture Canada has set forth the following guidelines in feeding DON contaminated grain to swine: (guidelines for DON intake are based on a 100% dry matter basis for the complete ration)

- feeding DON at levels above 1ppm in complete feed will result in some degree of feed refusal
- 5% feed refusal can be expected when levels of 1-2ppm are reported
- 25% feed refusal can be expected when DON exceeds 4ppm
- Vomiting is a rare occurrence, however can occur when DON is present at extremely elevated levels, greater than 20ppm
- Try and avoid feeding DON contaminated to weanling pigs, as they are more susceptible to elevated levels of DON. Feed refusal has been reported with levels less than 1ppm in weanling pigs
- Effects of DON on reproductive performance are not fully understood, therefore as a precautionary measure DON levels should be keep under 1ppm to minimize potential impacts on performance

Sampling and testing is another crucial component in determining a safe feeding program. When sampling grain, the general rule of thumb is, the more samples the better. Test results for DON will always experience a degree of variation because the mycotoxin we are testing for is not evenly distributed throughout storage, in addition DON will vary throughout the field.

When feeding pigs with any level of known DON in the complete feed one should take great care and watch animal performance, as a reduction in feed intake may indicate DON levels are higher than what test results may report.

For more information on Fusarium or DON, please visit PorkInsight for detailed research reports.

PorkInsight
The Knowledge Network

PRAIRIE SWINE CENTRE

Pork Insight @ www.prairieswine.ca

Recommended Setpoint Temperatures

For Various Ages of Pigs

	Heating Season		Cooling Season	
Body Weight	Solid Floor	Slatted Floor	Solid Floor	Slatted Floor
	- Weanling -		- Weanling -	
7kg	26	28	29	26
20kg	23	24	26	22
	- Growout -		- Growout -	
25kg	21	23	24	22
30kg	20	22	22	20
35kg	19	20	21	18
40kg	17	19	20	17
45kg	16	17	18	16
50kg	15	16	17	15

55kg	14	15	17	15
60kg	14	15	17	15
70kg	14	15	17	15
80kg	14	15	17	15
90kg	14	15	17	15
100kg	14	15	17	15

IMPACT OF TEMPERATURE

- Newly weaned piglets and grower pigs moved from the nursery, it is recommended the setpoint temperature be 1-2^0C higher than the value in the table for the first couple of days. When pigs change housing status they are subjected to stresses of a new environment and diet. Stress usually causes a reduction in feed intake and therefore a reduction in internal body temperature.
- Changing setpoint temperatures must always be accompanied by a corresponding adjustment to the minimum ventilation rate.
- Temperature increases water requirements. For every 1^0C above 20^0C results in a sow drinking 0.2L more water each day.
- Temperature impacts Average Daily Gain. For every 1^0C above its comfort zone esults in a 3 grams/day reduction in average daily gain.

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Can we feed mycotoxin contaminated feed to pigs?

A.D. Beaulieu, J.F. Patience and D. Gillis
Prairie Swine Centre, Inc.

Denise Beaulieu

Deoxynivalenol (DON) is a mycotoxin produced by fungi which may contaminate cereal grains, including barley and wheat. The contamination is especially problematic when wet, warm conditions prevail during the growing season. The ingestion of grain that is severely contaminated by DON will cause overt symptoms such as vomiting (hence the common name "vomitoxin"). Less dramatic, but more frequently observed symptoms, reduced feed intake and growth, will result when pigs consume feed with a lower concentration of the mycotoxin. The Canadian Feed Inspection Agency suggests that 1 ppm mycotoxin in feed is a safe upper limit for swine.

There are several feed additives available which reportedly reduce the impact of the mycotoxin on the pig. Modes of action vary, and include; binding the mycotoxin in the gut and preventing absorption, chemically transforming the toxin to decrease its toxicity, or enhancing immune system function.

The overall objective of this experiment was to determine the effect of several feed additives on the performance of nursery pigs fed diets contaminated with DON. The additives are listed in Table 1, as "Ing. A to Ing H". The additives were included in the diets according to the manufacturers' directions.

We used 5 nurseries for this experiment, 24 pens per nursery and 4 pigs per pen. Pigs were fed starter diets for 14 days before being offered the treatment diets (BW 9.02 ± 0.36 kg) for the next 14 days. All starter diets contained in-feed antibiotics.

Treatment diets were formulated to meet or exceed all requirements for pigs of this age. A positive control diet contained no contaminated corn, while the negative control diet was formulated with contaminated corn but no feed additives. Samples of corn which were pre-analyzed and shown to contain DON were used for 70% of the corn (35% in the final diet) in diets 2 to 12 to provide 2 ppm DON in the final diet. This concentration was chosen because a preliminary experiment indicated this amount would cause a measurable reduction in feed intake but would not be fatal.

Performance results are shown in Table 1. Pigs on the positive control tended to be heavier than those on the negative control by day 22 (0.50 kg, $P = 0.09$). Overall, pigs consuming diets contaminated with DON had reduced ADG and ADFI compared to those consuming the positive control diet free of DON ($P < 0.001$). Weekly measurements of body weight and feed intake showed that the decline in feed intake preceded the decline in growth (data not shown).

Average daily gain and ADFI of pigs on the positive control was superior to those consuming the DON contaminated diet, regardless of the feed additive used. None of the feed additives ameliorated the effects of DON on feed intake or gain. Feed efficiency was unaffected by treatment ($P > 0.05$).

Based on a literature search and our preliminary experiment which indicated that 2 ppm would elicit a detectable decrease in feed intake but was non-fatal, we formulated the treatment diets to this level. Analyses of the diets indicated a mean concentration in the DON containing diets of 1.99 ppm, however, the individual diet concentrations ranged from 1.57 to 2.61 ppm.

One tonne totes of contaminated corn were initially sampled from about 10 different locations within each tote to a depth of about 1 metre. These samples, composited by tote, were sent to two different labs for analyses for DON and moulds. The results were extremely variable, within and between the labs. Results from lab "A" ranged from 2.4 to 5.5 ppm with a mean of 4.5 while the results from lab "B" were 2.2 to 9.6 ppm and a mean of 6.9. We didn't use the totes which displayed the most variability, however, the DON concentrations in our diets were still quite variable (Table 1).

Table 1. Analyzed concentrations of DON in treatment diets and effect on performance of nursery pigs (initial BW 9.02 kg).

Trt #	Treatment	DON ppm	BW Day 22[a]	ADG, kg/d	ADFI, kg/d	Gain:Feed
1.	Positive control[b]	Neg[c]	21.72	0.58	0.88	0.67
2.	Negative controld	1.57	21.10	0.55	0.80	0.69
3.	Trt 2 + Ing. A	1.33	20.83[e]	0.54[e]	0.75[e]	0.72
4.	Trt 2 + Ing. B	1.75	21.27	0.56	0.80[e]	0.71
5.	Trt 2 + Ing. C	1.95	20.74[e]	0.53[e]	0.80[e]	0.68
6.	Trt 2 + Ing. D	1.76	20.75[e]	0.53[e]	0.79[e]	0.69
7.	Trt 2 + Ing. E	1.81	20.74[e]	0.53[e]	0.78[e]	0.69
8.	Trt 2 + Ing. F	1.87	21.06	0.55	0.80	0.69
9.	Trt 2 + Ing. G	2.09	21.03	0.55[e]	0.79[e]	0.69
10.	Trt 2 + Ing. H	2.56	20.46[e]	0.52[e]	0.74[e]	0.71
11.	Trt 2 + Ing. F + G	2.61	20.46[e]	0.52[e]	0.76[e]	0.69
12.	Trt 2 + Ing. E + B	2.57	20.33[e,f]	0.52[e]	0.75[e]	0.69
Statistics						
	SEM		0.25	0.01	0.03	0.02
	Overall P value		0.009	0.009	0.11	0.81
	P value		0.09	0.08	0.06	0.36
	P value (Contrast)		0.0004	0.0003	0.0008	0.13
	P value (Contrast)		0.20	0.20	0.35	0.77

[a]Day 22 of the experiment, day 36 post-weaning.
[b]Used exclusively non-contaminated corn.
[c]Negligible
[d]Formulated to contain 2 ppm DON
[e]Different from Trt 1, (positive control; $P < 0.05$).
[f]Different from Trt 2, (negative control; $P < 0.05$).

The above illustrates the difficulty of working with mycotoxins. Obtaining representative samples for mycotoxin testing is very difficult, however it is imperative that a good sample is obtained or the results will be irrelevant. It has been estimated that almost 90% of the error associated with mycotoxin testing can be attributed to the method used to obtain the original sample. Because contamination within a field may be localized, a truck-load which has come directly from a field at harvest is likely to contain only discrete areas of contamination. Moreover, mycotoxin contaminated grains are heavier, thus within a truckload or during storage, some stratification may occur.

The Grain Inspection, Packers and Stockyards Administration (GIPSA) of the USDA only recognizes samples which have been obtained using a probe. Moreover, at least 4 samples should be taken from each lot, preferably 7 to 9, depending on the size and thickness of the trailer. A 2000 to 2500 gram sample should be obtained. This sample should be ground and then subsampled to obtain the approximately 100 gram sample required by the lab. Producers are advised to contact the laboratory they will be using for the analyses to obtain specific sampling procedures and amounts required.

No feed additive was successful in mitigating the impact of DON on feed intake or performance

The Bottom Line

When nursery pigs were fed diets contaminated with approximately 2 ppm DON, feed intake declined by 10 % and growth by 7%. None of the feed additives mitigated this response, however, actual concentrations of DON in the test diets varied. This variability is an illustration of the difficulties inherent in correct sampling and analysis for mycotoxins.

Acknowledgements:
Strategic funding provided by Sask Pork, Alberta Pork, Manitoba Pork Council and Saskatchewan Agriculture and Food Development Fund.

The Effect of Ergot on the Performance of Weanling Pigs

T.F. Oresanya, J.F. Patience, R.T. Zijlstra, A.D. Beaulieu, D.M. Middleton , B.R. Blakley , and D.A. Gillis

Summary

Ergot contains numerous poisonous substances (alkaloids), which upon ingestion by animals may lead to poor growth rate, decreased feed consumption and poor feed efficiency. The effect will depend on the age or physiological stage of the animal, and the amount consumed. The results obtained in this study indicate that the consumption of diets containing more than 0.10% high alkaloid ergot by weanling pigs severely reduces growth rate, and feed consumption and efficiency.

Ergot infection in cereal grains, especially wheat, is of great economic importance. An ergot infection may not result in reduced grain yield but will reduce quality due to the replacement of grain kernels with a number of poisonous alkaloid-containing ergot sclerotia. These grains may end up as feedstuff in swine diets. Ergot ingestion may impair growth and development. Also, the plasma concentration of certain hormones, especially prolactin may be reduced. However, information is lacking on the safe inclusion level of ergot in the diet of the weanling pig. This experiment was conducted to investigate the impact on performance of including ergot-contaminated wheat in the diet of weaned pigs and determine the level that can safely be included in the diet.

Ground ergot sclerotia were added to diets at 0% (control), 0.05%, 0.10%, 0.25%, 0.50%, and 1.00% (weight basis). Ground wheat ergot sclerotia contained 1880 mg alkaloid/kg with ergocristine, ergotamine, ergosine, ergocryptine and ergocornine constituting 40, 36, 11, 7, and 6%, respectively. Thus, diets contained 0.00, 1.04, 2.07, 5.21, 10.41, and 20.82 mg alkaloid/kg, respectively. Each diet was fed to 8 pens of 4 pigs (2 barrows and 2 gilts) for 4 wk. Average daily gain and feed efficiency were calculated from the performance data. Prolactin analysis was conducted on serum samples collected from pigs on d 28. Regression analysis was used to determine the effect of ergot level on performance and serum prolactin concentration.

A sample of wheat contaminated with ergot.

Average daily gain was similar for pigs that consumed diets up to 0.10% ergot, but was depressed at higher levels ($P < 0.001$) (Figure 1). The effects were most pronounced in weeks 1 and 2 with pigs fed the 1.00% ergot gaining 82 and 38% less than control (211 vs. 39 g/d, and 432 vs. 269 g/d, wk 1 and 2, respectively (Figure 1). Average daily feed intake was decreased over the entire period ($P < 0.05$) but was unaffected by ergot during wk 1 and 2 ($P > 0.20$) (Figure 2). Feed efficiency (gain:feed ratio) was increased at low levels of ergot inclusion but was reduced with ergot levels above 0.10% (0.685 vs. 0.435, 0.10% vs. 1.00%). Serum prolactin concentration was reduced at all levels of ergot ($P < 0.0001$) (Figure 3). The maximum level of alkaloids that can be

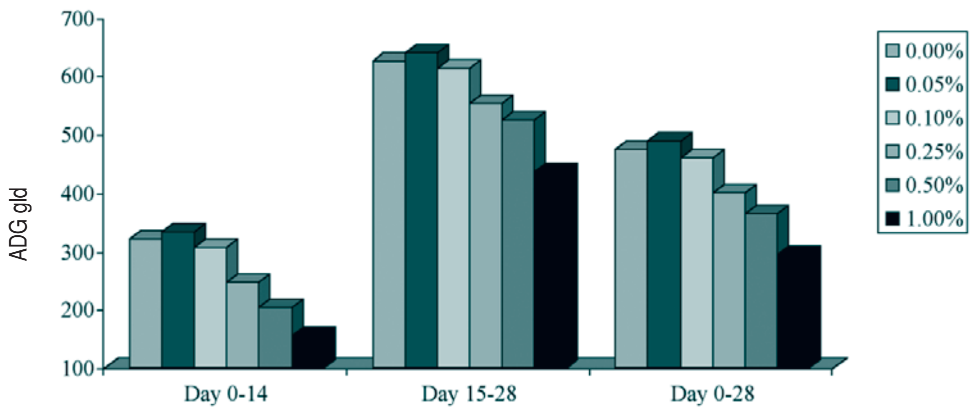

Figure 1. The effect of level of dietary ergot on ADG of piglets ($P < 0.001$, all periods).

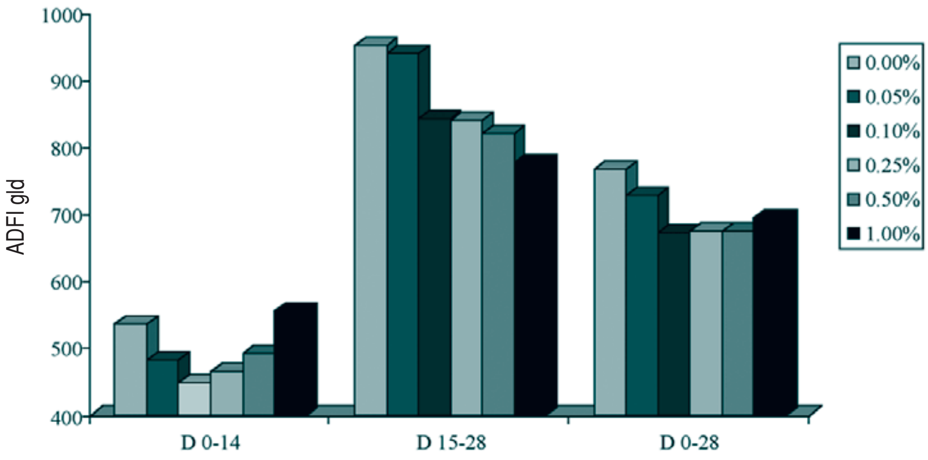

Figure 2. The effect of level of dietary ergot on ADFI of piglets (P>0.05, d 0-14; P<0.05 d 15-28 and d 0-28).

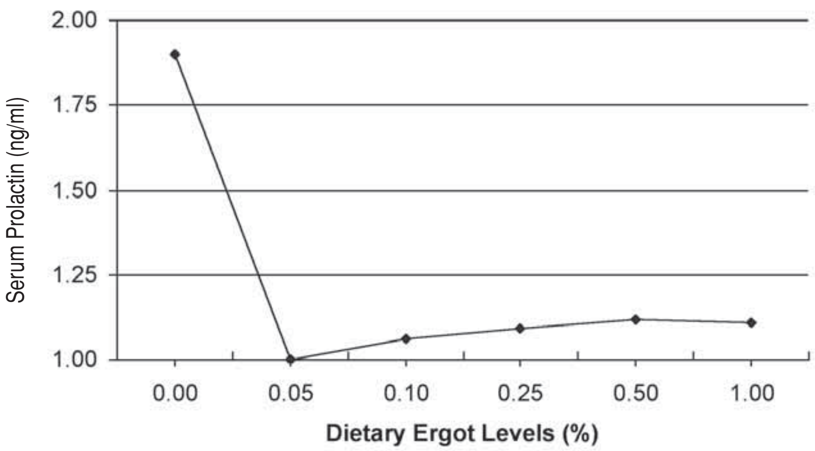

Figure 3. The effect of level of dietary ergot on serum prolactin concentration of piglets (P < 0.0001).

Grains containing 1% ergot should not represent more than 10% of the diet.

included in weanling pig diets without adverse effects on ADG and feed efficiency was 2.31 mg alkaloid/kg. This is based on the alkaloid content and profile of ergot sclerotia used in this study and corresponds to 0.12 g ergot sclerotia per 100 g diet.

The Bottom Line

Feeding high levels of ergot alkaloid caused severe reductions in the growth performance of weanling pigs. Prolonged exposure depressed feed intake. Serum prolactin concentration was depressed which indicates that ergot may impair normal mammary gland development in gilts. When the level of ergot in wheat is known, the level that can be used in weanling pig diet can be calculated. For example, wheat contaminated with 1.0% ergot, should not comprise more than 10% of the diets of weanling pigs.

Acknowledgement

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Vehicle Design Impact ... cont'd from page 1

unload and spent less time lying in lairage. The higher activity in the lairage pen tended to result in higher levels of CPK and lactate, indicators of physical stress, at slaughter. Further analyses will determine the effect of location within the truck on behaviour.

On arrival at the plant, the number of dead-on-arrival (DOA), downers (NANI) and pigs with rectal prolapse was noted. A higher incidence of DOA (0.44 vs 0.20 %) and NANI (0.51 vs 0.20 %), and pigs showing rectal prolapse on arrival (0.29 vs 0.20 %) was observed in the pot-belly trailer. However, insufficient animals were involved in the study to determine differences among compartments for these low-incidence parameters.

The quality of the longissimus dorsi muscle was classified as pale, soft and exudative (PSE); moderate PSE, red, firm and non-exudative (RFN or normal); pale, firm and non-exudative (PFN); red, soft and exudative (RSE); moderate DFD and dark, firm and dry (DFD); based on muscle pH, light reflectance (colour), and drip loss measured at 24 h post-mortem. Meat quality was good overall, with most loins falling into the RFN class. Meat quality did not differ between the two vehicles, but within the pot-belly trailer, the incidence of DFD pork, indicative of chronic stress, was seen in the loins of pigs from the upper and lower decks (19%).

The Bottom Line

The summer Quebec trials involved the hottest conditions we encountered in the study. Although we have yet to conduct conclusive correlation analyses, high temperatures within the compartment, high core body temperatures, and poorer meat quality were all most common in the upper deck of the pot-belly vehicle. Factors that affect meat quality may differ in summer and winter, and between the short hauls in Quebec (2 hr) and longer hauls in western Canada (8 hr). Our analysis of the data continues, and we will shortly begin the second phase of the study to find ways of alleviating the stressors we observed.

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Personal Profile

Bob Korol

Bob Korol was born in Saskatoon but grew up in Rosetown, Saskatchewan. In 1978 he enrolled at the U of S to obtain a commerce degree. In 1982 Bob went to play Hockey in Germany but still attended classes part time at the U of S. He finished his commerce degree in 1984 but continued to play hockey in Germany until 1985. Bob lived in the United Kingdom from 1986 until 2008, but retired from hockey in 1995. When Bob retired from hockey he worked for the local government (FIFE Council) in the United Kingdom. In 2000 Bob attended the University of Scotland part-time and obtained his Masters in Business Administration. In 2005 he qualified to be a Chartered Accountant in the United Kingdom. Bob returned to Canada in March 2008 and joined the Prairie Swine Centre as the Manager of Finance and Administration. In May of 2008 he received his Canadian Certified Management Accountant designation.

Bob's wife Dawn is a Registered Nurse and they have two kids, Micheal (11) and Sophie (7). (Kids are starting to adjust to their new life in Canada).

Coming Events

Banff Pork Seminar
January 20-23, 2008
Banff, AB

Manitoba Swine Seminar
February 4-5, 2009
Winnipeg, MB

Alberta Pork Congress
Red Deer, Alberta
March 18-19, 2009

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