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Eurotier November 2014

One of the 26 buildings housing displays at Eurotier 2014

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Eurotier, held every two years in Hannover, Germany, with 2,360 exhibitors and 156,000 visitors is the largest livestock production tradeshow in Europe. By comparison many Canadian pork producers have attended World Pork Expo in Des Moines, Iowa (next show June 3-5, 2015), which has 441 exhibitors and 20,000 attendees. Eurotier claims 1,100 visitors from North America and 1,300 from South & Central America. There were 20 of the 26 large buildings on the show grounds used for the show. Pig equipment and genetics made up about 2.5 of these; feed and feed additives comprised three more buildings. The quality of exhibit was very high end with some companies estimating they had approaching a $1 million USD in the show. For example, Big Dutchman had a multi-site booth with the equipment setup to simulate actual barn use and representing all areas of the barn.

The local German pig industry is currently (November 2014) under some price pressure. The loss of the Russian market has caused a recent drop in pork prices and it appears that overall net income is negative but this situation is only quite recent. The Genesus Report indicates losses of $5-28/pig were shared with them by European producers. The trend of piglets moving from the Netherlands and Denmark being finished in Germany continues. The previous year producers had marginally good financial results as feed prices normalized. Although building

(Eurotier...*Continued on page 6)*

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Successfully Feeding Lentils to Finishing Pigs

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Saskatchewan is the world's leading exporter of lentils, and the world's second largest producer (Government of Saskatchewan, 2014). In 2014, approximately 1.64 million tonnes of lentils were produced in Saskatchewan, which was 87% of the previous year's production (Stats Canada, Sept 2014). Lentil production in Saskatchewan is nothing short of a success story, increasing production more than 100% since 2008 has provided valuable jobs throughout the province.

Lentils, primarily grown for export (mainly to India), can be downgraded due to chipping, wrinkling or staining, which may be a result of adverse growing conditions. As of November, it was estimated that 40% of the 2014 Saskatchewan lentil crop, or 0.66 mmt, will be graded as sample salvage quality. If 10% of lentil production in Canada is considered unacceptable for export, 0.19 million tonnes would be available for feed each year. If included at 10% of the diet, this would feed more than 4.5 million pigs from weaning to market.

However, information on the feeding value of lentils, regardless of quality, is sparse. A study conducted at PSC was designed to characterize the nutritive composition, including digestibility and energy concentration, of feed-grade (cull) lentils for growing pigs. We conducted two studies at PSC. The first study determined the amount and digestibility of energy and amino acids in two samples of lentils. In the second study we used these values to formulate diets for growing and finishing pigs. We assume that if the pigs grow as expected, then the nutrient values determined in the first experiment are correct for that category of pig.

Table 1: Ingredient composition of experimental diets for the growth validation trial

	Grower[1]		*Finisher*[1]	
Ingredient, % as fed	***0%***	***30%***	***0%***	***30%***
Feed lentils (grade 3)	*0.00*	*30.00*	*0.00*	*30.00*
Wheat	*71.15*	*42.13*	*15.20*	*45.60*
Barley	*0.00*	*4.53*	*61.02*	*9.78*
Soybean meal	*25.00*	*17.90*	*19.00*	*9.60*
Canola oil	*1.40*	*3.00*	*3.00*	*3.00*
Mono-dicalcium P	*0.80*	*0.93*	*0.43*	*0.53*
Limestone	*0.93*	*0.83*	*0.70*	*0.83*
Salt	*0.40*	*0.40*	*0.40*	*0.40*
Mineral and vitamin premix	*0.25*	*0.25*	*0.25*	*0.25*
L-Lysine	*0.07*	-	-	-
DL-methionine	-	*0.03*	-	-

[1] *Diets formulated with lentils included at 10 and 20% were intermediate.*

Nutrient Digestibility

Ten barrows (initial weight 35 to 40 kg), were surgically fitted with T-cannulas at the terminal ileum. Two lentil samples (feed grade 2 (red) and 3 (feed)) were incorporated at two inclusion levels (15 and 30%) into a wheat/barley-based control diet. Five treatment diets (2 lentil samples at 2 inclusion levels, plus 1 control diet) were randomly assigned to 2 pigs in each of three replicates, providing 6 pigs per treatment overall. Each replicate lasted 9 days and consisted of 4 days of dietary adaptation, followed by 3 days of faecal collection and 2 days of digesta collection.

Growth Validation In this experiment, 200 growing (initial weight, 35 kg) and 200 finishing (initial weight, 90 kg) pigs received a diet with feed lentils (grade 3) included at 0, 10, 20 or 30%. All diets were wheat and barley based, and formulated to be isocaloric and isonitrogenous, based on the results of the digestibility experiment (Table 1) and met all the nutrient requirements of growing and finishing pigs (NRC, 2012). Growth rate, feed intake and feed efficiency were measured throughout the trial, which lasted for 4 weeks..

Results

The chemical composition and determined DE and NE values are shown in Table 2. Crude protein content was comparable between these two samples; however the red lentils sample contained 25% more crude fibre and 45% less total fat than the sample of feed lentils. Values from the NRC (2012) are provided for reference. The lack of data on lentils is evident as the NRC (2012) bases their data on a single sample. This sample was lower in fibre, higher in fat, protein and energy relative to those tested in the current trial. The calculated DE and NE content of the feed lentils was slightly higher than the red lentils, while both are lower than the sample described in the NRC (2012), a reflection of the lower fibre content of that sample.

Table 3 shows the measured amino acid content two lentil samples. This table also shows the amount of apparently digestible amino acids based on digestibility coefficients obtained in the first experiment. Ileal amino acid digestibility of the red lentils sample was 60 to 70% of the feed lentils, possibly a reflection of the higher fibre content of the red lentil sample.

Overall, we observed no adverse effects of including up to 30% feed lentils (feed grade 3) into the diets of growing or finishing pigs, when the diets were balanced properly to meet the nutrient requirements of the animals. In fact, we saw an increase in ADG in finishing pigs as dietary inclusion of feed lentils increased. As expected, we did observe gender differences, with barrows having greater ADG and ADFI, but gilts and barrows responded similarly to the inclusion of lentils in the diet.

Discussion

In these trials, the maximum inclusion level was 30%. We did observe a potential effect of inclusion level. Amino acid digestibility was decreased at the 30% level relative to 15% inclusion. For this reason, we would caution the inclusion of cull lentils beyond 30% of the diet, but with properly formulated diets, 30% can be used without adversely affecting performance.

> "Lentils can be included up to 30% in grower-finisher diets"

Table 2: Chemical and nutritive composition of red and feed lentils (as fed)

	Feed Grade 2	Feed Grade 3	NRC 2012 (n=1)
Moisture, %	11.5	11.0	10.0
Dry matter, %	88.5	89.0	90.0
Crude protein,	21.8	23.3	26.0
Crude fibre, %	4.0	3.2	ND[2]
Fat, %	0.6	1.1	1.3
Ash, %	2.2	2.6	2.8
Starch, %	40.7	37.5	4.2
Acid detergent fibre, %	5.7	5.5	3.0
Gross energy, kcal/kg	3458.0	3516.0	4483.0
Digestible energy, kcal/kg[1]	2895.0	2990.0	3540.0
Net energy, kcal/kg[1]	2021.0	2086.0	2437.0

[1]Values calculated from experimental determination of digestibility.
[2]Not determined.

Table 3: Amino acid composition of Red and Feed lentils (g AA/100 g, all as fed basis)

	Feed Grade 2[1]		Feed Grade 3[2]	
	Total	AID3	Total	AID3
Dry Matter	88.5		89.0	
Aspartic Acid	2.74	0.85	2.61	1.65
Threonine	0.85	0.35	0.80	0.61
Serine	1.05	0.56	0.93	0.77
Glutamic acid	3.68	1.98	3.55	2.54
Proline	0.87	0.39	0.86	0.56
Glycine	0.97	0.27	0.94	0.42
Alanine	0.99	0.28	0.99	0.64
Cysteine	0.23	0.06	0.22	0.15
Valine	1.14	0.28	1.14	0.52
Methionine	0.19	0.10	0.18	0.14
Isoleucine	0.98	0.26	0.99	0.46
Leucine	1.74	0.60	1.68	1.06
Tyrosine	0.70	0.23	0.67	0.42
Phenylalanine	1.15	0.31	1.14	0.68
Lysine	1.65	0.52	1.61	1.01
Histidine	0.65	0.29	0.61	0.40
Arginine	1.83	0.90	1.88	1.34
Tryptophan	0.14	0.05	0.15	0.05

[1]Red lentils were classed as feed grade 2
[2]Feed lentils were classed as feed grade 3
[3]AID = apparent ileal digestible

Differences between the two lentils samples are interesting. We only had one sample of each type, therefore ***we can't conclude from this study if differences between varieties exist, or just a sample difference***. However, it is apparent, that fibre analysis will assist nutritionists with an estimation of the energy content.

In a previous study (Landero et al., 2012), human grade green lentils were included into the diets of starter pigs (9 to 20 kg). They observed that inclusion levels beyond 22.5% had negative effects on growth, without impacting feed intake. In our study, pigs were older, and appear to be able to tolerate larger amounts of lentils without impacting performance. The lentils used in our study were feed grade (cull) lentils, not human food grade lentils. The lentils, however, are down-graded for appearance, which does not necessarily impact nutritive value.

Improved growth of the finishing pigs as lentil inclusion (into their diets) increased may indicate that the nutritive value of the lentil sample was under-estimated for this class of pig. Digestibility coefficients were obtained in younger pigs and it has been shown in other studies that these values under-estimate digestibility in older pigs

The Bottom Line:

Results from this project provide the hog industry with information needed to properly formulate diets using feed grade lentils. The full nutritive value, including DE, NE, and amino acid digestibility, of the samples used in this study allows producers to include cull lentils into rations with confidence. As evidenced in the validation study, when diets were formulated using the nutritive value information, and were balanced to meet the requirements of the age of the pig, no adverse effects were observed on performance.

Effect of Grouping Sows by Parity in ESF Housing on Welfare and Productivity

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While group housing can provide benefits to the sow related to increased fitness and freedom of movement, sows can also experience increased aggression and limited access to feed if the groups are improperly managed. ESF systems have the benefit of controlling individual feed portions and sows generally have low aggression due to limited feed competition; however, young or subordinate sows may experience competition for access to the feeder throughout gestation. Low-ranking sows in ESF systems receive more aggression and injuries, reduced production, gain access to the ESF later in the daily feeding cycle, and are displaced from feeding more often. In static groups, high-ranking sows eat earlier in the feeding cycle and for longer. The use of ESF systems is becoming more common in North America, therefore information on how to manage low-ranking sows in these systems is needed, and will benefit sow welfare and productivity.

The study objectives were to:

1) Determine if younger sows (parity 1 or 2) will receive less aggression and injury during gestation when managed in uniform parity groups than in mixed groups, and what impact this has on production.
2) Determine the effect of mixed and uniform parity grouping treatments on sow feeding behavior, measures of welfare and productivity.

By examining different grouping strategies, this study explores a range of management practises that can be used in ESF systems.

Methodology

Uniform low, medium and high parity groups were formed during gestation, and compared to control groups of mixed parity. Groups consisted of 60 sows each, with one ESF feeder per group. Low parity treatment groups were comprised of parity 2 sows, medium groups included parities 3-4, and high parity included sows over parity 5. The control group consisted of parities 2-8. Sows were mixed at 5 weeks gestation. They were placed in a mixing pen for 1 week, and then moved to gestation pens until farrowing. The ESF system (Nedap Velos, NL) recorded daily feeding behaviours and feed amounts throughout gestation. Body condition scores, sow weights, skin lesion and gait scores were taken periodically throughout gestation. As well, sow backfat thickness was measured on a sub-sample of 20% of sows, equally distributed across parity and treatment. Standard production measures at farrowing were collected, as were piglet weights from a sub-sample (27%) of litters. Sows with lameness score ≥2 were removed from the study and placed in relief pens and provided care based on the farm's procedures. All sow removals due to lameness or other health considerations were recorded. For the data collection to timeline see Figure 1.

Results and Discussion

Feeding behaviour

The average daily meal length per sow ranged from 15 to 20 minutes. No significant difference was found in feeding duration among the treatments, however the uniform low parity group initially took longer to eat (20 min). After

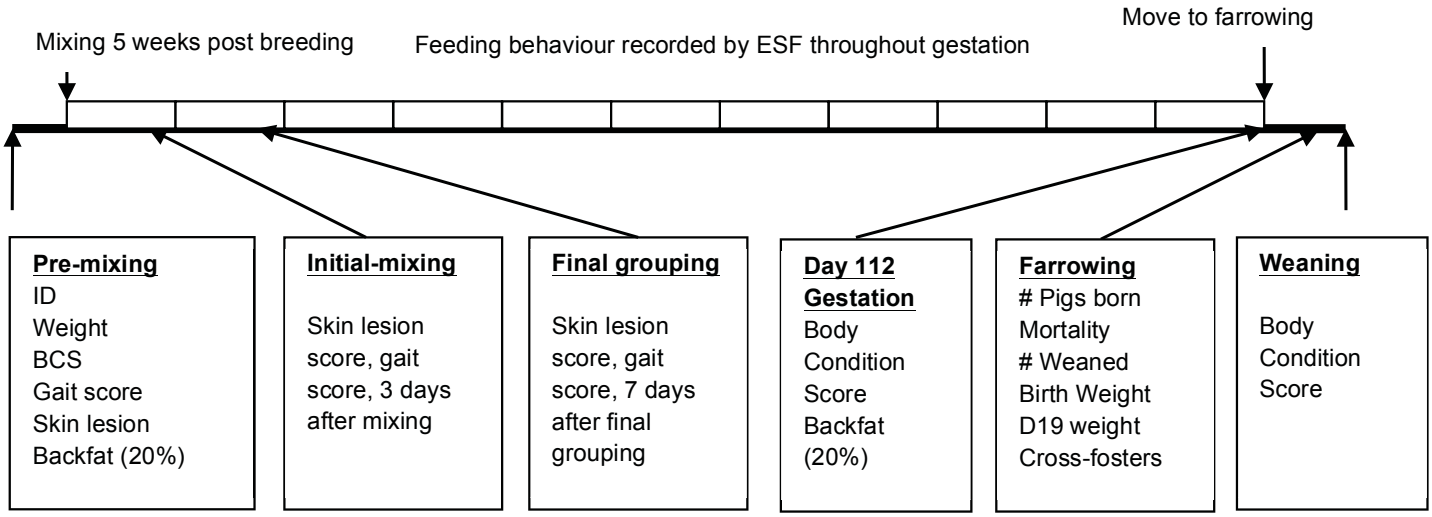


Figure 1. Timeline of experimental procedures used for data collection.

Table 1. Changes in sow backfat (mm) between 5 and 15 weeks gestation, showing interactions among treatments within parity score, (n = 262).

Parity Score*									
1		2				3			P- value
Treatment		Treatment				Treatment			
Mixed	Low	Mixed	Low	Medium	High	Mixed	Medium	High	
-4.12a	0.22bc	-0.45bc	0.99c	0.87c	0.50bc	0.17bc	1.99bc	-0.64b	<0.05

**Within a parity score, where superscripts differ, P<0.05*

two weeks in ESF, feeding times for the low parity group had reduced to 17 minutes. The longer initial feeding times for young sows may reflect their lack of familiarity with the system, or greater time spent exploring the feeder.

Correlations between feeding time and sow weight and parity showed that sows with higher bodyweight (r = 0.13, P<0.01) and parity (r = 0.07, P<0.01) fed later in the daily feeding cycle. Previous studies found the opposite, with younger sows eating significantly later in the daily feeding cycle than old or intermediate sows. The reasons behind this difference are unclear, and further analysis is planned.

Backfat was used as a performance indicator in this study. It was found that sows with a greater backfat thickness entered the ESF earlier in the feeding cycle (r_s=-0.14, P<0.05) and had a longer feeding duration (r_s=0.15, P<0.05). These results indicate that the more successful sows eat earlier in the feeding cycle, and have a longer feeding duration.

Effects of grouping on sow production

Among the treatments, there were no significant differences in the total number of piglets born alive or mummified piglets. Differences were found in the number of stillborn piglets, pre-weaning mortality up to 5 days of age and the number of piglets weaned (P<0.05). Uniform high parity sows had fewer total piglets born, higher piglet mortality and fewer piglets weaned. This is likely due to differences in productivity due to sow age, rather than a result of the treatment. Ongoing analysis will examine differences in the number of sows removed per treatment over the course of gestation due to low BCS, injury and lameness.

Backfat

There were significant interactions between treatment and parity score on changes in backfat recorded between 5 and 15 weeks gestation (Table 1). Young sows (parity 2) lost 4.12 mm of backfat on average when in mixed groups, while in the uniform treatment these sows had an average gain of 0.22 mm. Although parity 3 and 4 sows did not fare significantly better in uniform groups, these sows did show positive gains in backfat instead of loss when in uniform groups. High parity sows were the only ones to gain back fat in the mixed group, which indicates that high parity sows may be dominating access to the ESF system, reducing the ability of younger parity sows to feed at regular intervals, or at preferred times of day in mixed groups.

> "Well-being of younger sows may be better in uniform groups, and that competition may be less in uniform groups"

Table 1 shows changes in sow backfat (mm) between 5 and 15 weeks gestation, showing interactions among treatments within parity score, (n = 262).

Effects of group type (mixed vs uniform) on sow welfare

Sow lameness

Sows in the mixed parity group had a significantly greater increase in lameness between the pre-mixing assessment and day 3 after mixing (P<0.01), and also during the period from premixing to seven days after final grouping (P<0.05), compared to the uniform treatment groups. This indicates there was a greater risk of lameness following mixing when sows were housed in mixed parity groups, and that housing sows in uniform groups helped to reduce the severity of lameness that developed as a result of mixing.

Lesion scores

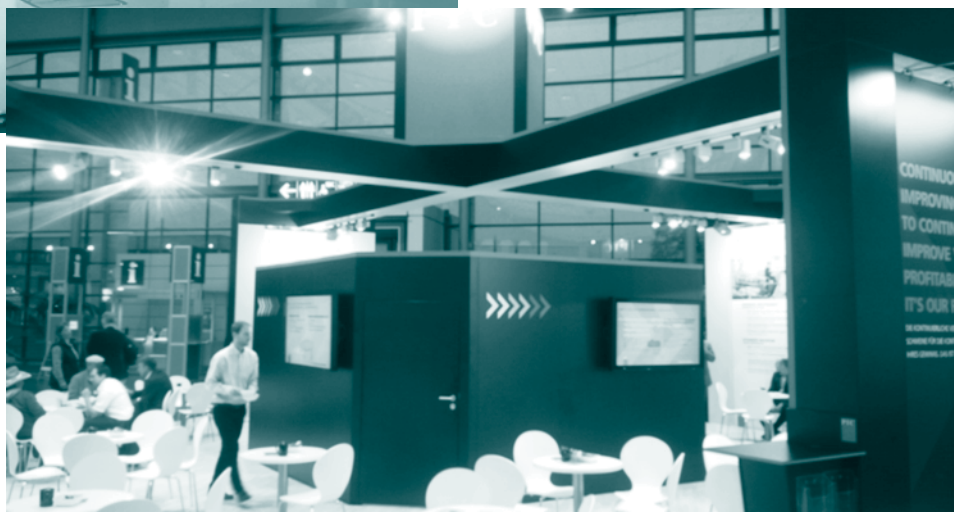
In all groups, lesion scores increased from premixing to five days post-mixing, and then decreased. This indicates there was little ongoing aggression or injury due to competition for ESF entry once the group hierarchy was established. Lesion score data suggests that injuries from aggression were largely related to sow age, with younger sows receiving more injuries. Sows in the uniform low parity group had the highest injury scores. Medium and mixed parity groups had intermediate lesion scores, and groups of uniform high parity sows had the lowest level of injuries at day 5 following mixing (P<0.001).

The Bottom Line

Housing sows in uniform groups helped to reduce the severity of lameness developing as a result of mixing. The increases in backfat over gestation also suggest that the well-being of younger sows may be better in uniform groups, and competition may be less in uniform groups. The practice of managing gilts separately is already a common practice, and the results indicate that parity 1 and 2 sows may also benefit from this practice. While productivity of sows in uniform groups was equivalent to that of mixed groups, the study followed sows through one gestation, *there may be longer term effects on sow longevity*. Additional research would be needed to confirm this. The higher injury scores found in low parity sows appear to be related to the social ability of younger pigs, rather than grouping, and thus management practices that improve sociability of gilts (e.g. increased socialisation by repeated mixing before breeding) may be a further area of research to be examined.

Results suggest that housing sows in uniform groups in ESF systems may be a positive strategy for the management of group housed sows. The large herd (≥ 6,000 sows) sizes found in North America make it possible to consider grouping sows by parity in these systems.

Two of the many large exhibits at Eurotier 2014



(Eurotier...Continued from page 1)

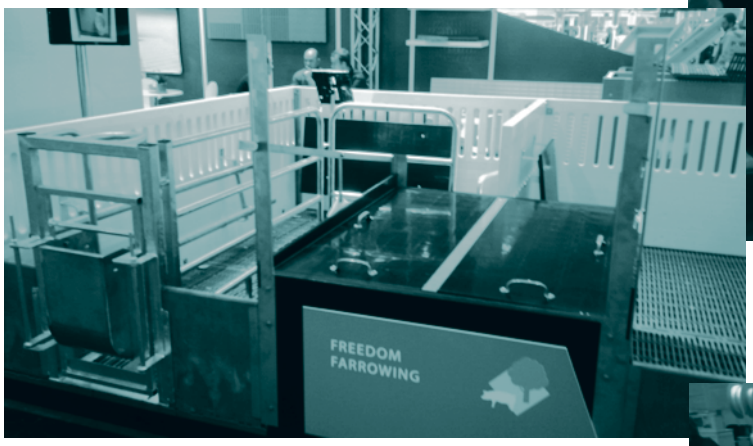
construction seemed limited there was some finisher spaces being constructed in Germany, with new sow barn construction in Germany being rare. Instead this industry is relying on other countries to maintain the EU sow population and German producers focus on finishing pigs for what appears to be a large, efficient packing/processing industry. The main reason given for lack of sow herd growth in Germany is the increasing regulatory requirements for sow housing. When you looked at the tradeshow booths you would get the impression the sow farm was going through a building boom as suppliers jockeyed for position to show 'freedom style' farrowing pens but more on that later.

International representation was diverse in both exhibitors and attendees. The influence of China was apparent in both exhibitors and visitors. Many manufacturers from China had penning, flooring and equipment on display. Most had a relationship with local suppliers as a manufacturer for European equipment companies but had started producing their own line of product, which they were selling at substantially less cost. Most Chinese exhibitors I spoke to were attending their

Traditional farrowing crate design provides additional space by rotating one of the side panels vertically (photo 1 above). See photo 2 (right) where both side panels have been rotated to provide maximum space. Uden crate is 6 m², costs 1600 Euro including the floor.

Egebjerg International (recently merged with ACO Funki) Welsafe farrowing pen (2.4m square) and can fit into existing farrowing crate footprint. The Schauer Combibox (not shown) is a similar design allowing the stockperson to farrow the sow in a restricted or open pen as required to account for restless nature of the individual sow.

Big Dutchman farrowing pen



Freedom Farrowing pen, 2.28x3.35m

Schippers Hycare farrowing pen concept, winner of the Innovation Gold Award at Eurotier 2014

first Eurotier show. Chinese pork dynamics are difficult to understand, due to disease and prices well below cost of production. For the past 18 months there has been a liquidation of about 5 million sows (the Canadian total herd is 1.3 million sows) and these losses are occurring across the country in primarily small holdings and associated with the massive migration of people from rural to urban areas. On the other hand the larger corporate farms were reporting growth or plans to grow and were quick to remind you that financially, they had been experiencing very good profitability for much of the past 5 years. The high pork prices they had experienced, often boosted by losses to disease, caused temporary and localized pork prices to triple. There was some Russian participation (Eurotier website claiming 900 Russian attendees) and the exhibitors reporting current Russian pork profits of $90-100 USD per market hog fueling expansion in that country. This combined with a government initiative that has been ongoing for the past 3-5 years to increase agricultural production to meet domestic food needs means there is growth in the large corporate-style farm sector in Russia.

Genetics

The genetics suppliers had impressive tradeshow booths, many measuring perhaps 50ftx50ft, which included beverage bars, food and food service staff in addition to technical and sales staff. According to Genesus (Canadian supplier) the dominant EU company is Danbred and the reason is prolific female lines. The theme in that booth was 35 pigs per sow per year! I didn't see the emphasis on sow lifetime productivity I expected. The EU market seems to be experiencing the same rush for greater number of piglets weaned as North America and sow herd turnover of 50% was considered acceptable to support the genetic improvement being made. Topigs-Norsvin having undergone a recent merger (summer 2014) is a major player, and PIC (based on the size of the booth) was demonstrating significant market share. The trend to heavier hogs in the UK, Spain and the Netherlands in particular is a major shift. I saw this in 2011 in

(Eurotier...Continued on page 8)

(Eurotier...Continued from page 7)

the UK and confirmed the trend continues with liveweights traditionally of 90kg now pushing over 110kg. Although we might consider this light by North American standards of 125-135kg live weight, it is a major shift in EU when uncastrated animals, such as is the practice in the UK, are raised in mixed sex groups.

Traditional farrowing crate design provides additional space for larger litters by rotating one of the side panels vertically (photo 1, page 6). See photo 2 (page 6) of a Von Osch Uden crate where both side panels have been rotated to provide maximum space. Uden crate is 6 m^2, costs 1600 Euro including the floor. The predominance of the Pietrain breed for more than a decade has produced a very lean carcass, and there has been consumer pushback on product eating quality. Perhaps that is why synthetic lines now have a significant Duroc component. It wasn't clear how the producer would get paid for producing pork with different eating qualities such as more intramuscular fat. Also the dominance of processed product in this market (cured hams and processed meats) is much different than the fresh pork market in North America. The EU approach to processed meats where fat is added to meet specific product specifications seems to be the preferred method of getting the desired end product quality.

Welfare

As a theme, welfare dominated the equipment portion of the show. There were multiple manufacturers of ESF feeders and free-access stalls. The dominant innovation was the free-farrowing pen, virtually every manufacturer had something to participate in this market. I saw 12 different manufacturers with equipment on display. Only a few had any research; the approach seemed to be to implement a mechanical update on an existing farrowing crate product such as moveable crate sides and launch the product as quickly as possible. The lowest cost 'fix' I saw was the Uden standard farrowing crate that the sides of the crate rotated vertically out of the way.

The advice provided on when to give more room to the sow varied by sales representative, and the original thought behind the crate (protection of the piglet) was receiving minimal attention. Other aspects of welfare included numerous toys for installing in the pen and the straw/wooden post holders first seen in the Agromek tradeshow (Denmark in 2008) were pretty standard offerings now by multiple manufacturers.

'Toys' for stimulating interest in grower-finisher pens

The five freedoms as currently expressed are (source: Farm Animal Welfare Committee, UK):

1. Freedom from hunger or thirst by ready access to fresh water and a diet to maintain full health and vigour
2. Freedom from discomfort by providing an appropriate environment including shelter and a comfortable resting area
3. Freedom from pain, injury or disease by prevention or rapid diagnosis and treatment
4. Freedom to express (most) normal behaviour by providing sufficient space, proper facilities and company of the animal's own kind
5. Freedom from fear and distress by ensuring conditions and treatment which avoid mental suffering

The definition of 'welfare' seemed to be using the '5 freedoms' approach. This UK-based approach has been misquoted and repackaged to meet individual agendas and which for the past several years has been narrowly focused on a gestating sow's ability to 'have freedom to turn around'. I reproduce these '5 freedoms' here as a refresher because both in Europe and Canada this is used as a benchmark for how the welfare movement will continue to challenge intensive livestock production and how production systems should be prepared to respond with new equipment and husbandry techniques.

Innovations

The innovations in equipment and facilities I saw included the very simple to the very expensive and complex. The following is a list of 'a Baker's dozen innovations' that caught my attention. Prairie Swine Centre is following up on many of these to assess their potential for the Canadian pork industry.

1) **Health of the Piglet** – the Hycare system from Schippers in the Netherlands was the Eurotier Gold Medal Innovation Award winner this year. I showed the youtube video clip at the Saskatchewan Pork Industry Symposium in November this year https://www.youtube.com/watch?v=0RzAOOotHv0. The Schippers research farm has taken on a mission to eliminate the negative impact of 'freedom

from disease' and make it simpler for the stockperson to manage the sow and litter. They point to early results of 1000 grams a day of growth at 25 kg BW as proof that the pig can achieve much better performance when sanitation is better.

2) **Piglet treatment device** – also a Schippers product, is now commercially available. The concept is the stockperson holds the pig with both hands and allows the one-stop mechanical station to inject iron and/or vaccine, and apply an ear tag. The device had a 12,000 Euro price tag.

Heating sensing creep canopy

3) **Toys for sows in stalls** – small equipment rubber tires (6 inches in diameter) and poly-fiberglass donuts half the size of a submarine sandwich that can clamp onto the front or side bar of a gestation crate provided individual sow anti-boredom device.

4) **Visual scanning of pigs to estimate bodyweight** – the concept and early designs I have seen in several countries, including Canada, for over 10 years but this equipment (optiSCAN) looks to be on the verge of being produced for commercial sale by spring 2015 with a price tag of 11,000 Euro. The device is light weight, possibly 2.5 kg, mobile as it straps to operator, and claims an accuracy of +/- 2%.

5) **Automated AI Management System** – PigWatch from Romain, QC has developed the system with a Spanish partner. The bar with infrared sensor determines the amount of movement of the weaned sow. The system analyzes the movement and sends a message to the stockperson (green LED light) when to breed the sow. "When it flashes green don't think or hesitate just inseminate the sow".

6) **Whole plant corn silage for pigs** – this Gold Medal winner is developed by Big Dutchman and uses a macerator to chop silage (may also be suitable for potatoes or other food processing waste products) then pump the mixture into a PEF (Pulsed Electric Field) that disrupts the plant cell wall. The focus was to allow high fibre diets, that promote gut health, to also provide easily digested nutrients. Available commercially for 40,000 Euro unit capable of feeding a 2,000 hd finisher barn. Claiming 1.53 Euro better net income per pig marketed.

7) **Transparent creep lids** – these were very popular at the show yet we have not seen them in North America. The concept is simple, and makes it easy to view piglets and observe the level of sanitation in the creep area without physically opening each creep lid.

8) **ACO Funki eHeating system** – showed a eHeating system built into the creep lid and radiating down on piglets. The claim was a 50% reduction in energy use. An unrelated company was building an 'intelligent canopy' that would sense surface temperature under the canopy and adjust the power to deliver the creep setpoint temperature, providing an ideal environment for piglets and reducing energy costs 60% compared to a standard covered creep.

9) **Playfeeder.** Developed by Biofibre Damino to deliver oral powdered iron and creep feed as early as day 3. Shape and size claim to promote exploration by piglets.

10) **Farrowing Pens.** Many companies were introducing farrowing pens that claimed greater freedom for the sow. Few had research to back up impact on sow mobility or piglet mortality impacts of their system.

11) **Culina cup system.** Weaning large litters at 4 weeks has caused a demand for milk substitute products. A cup and milk line concept has been used before; the innovation called Culina cup system delivers not just milk but a 20%DM pre-starter, and uses a mobile mixer to deliver "instant, homogenous, fresh, warm feed". Rent the machine for 150 Euro/mo

12) **A combination LED light and ionization is pioneered by Freshlight Agri** – their literature has broiler growth data that credits improved performance through a 30% reduction in volatile organic compounds. Additionally a more pleasant working environment for the stockperson, and a better growing environment for birds, resulting in lower animal mortality and reduced antibiotic use.

13) **LifeSaver 2** – Prairie Swine Centre has been working with the manufacturer on LifeSaver 1, and a prototype of version 2 was showcased. This is a system for training and monitoring farrowing room staff on very large farms, and is especially useful for farms that practice 24 hour supervision. The handheld device allows birth data (live, still born, dead, etc) to be entered once on the device at time of farrowing event, then downloaded directly to the computer. In the farrowing room, a series of three lights alert stockperson to check the sow at preset intervals to improve born alive performance.

The next Eurotier show is November 2016 and I would encourage Canadian pork producers to make plans to attend this educational event.

It's Still all about Biosecurity

Henry Gavareau, DVM.
Warman Veterinary Services

PED remains a very serious and significant risk to swine producers in Western Canada. Over the last few weeks several new clinical cases have been reported in Quebec and Ontario and in the US around 50 new cases are reported weekly. From the US perspective the good news is they are not seeing the rise in positive cases that was experienced in December 2013; however many farms are now positive and the level of environmental contamination with PED virus is a concern. Fortunately in Canada, the number of cases of PED remains relatively low. Dr. Chris Byra Manager of CSHIN, reports that 78 positive farms have been reported since January, 2013 when the first PED cases occurred in Canada. Over the last four months, two positive farms were reported in September, October had one case, November had two positive farms reported and for the first two weeks of December two positive farms were identified.

For western Canada at the farm level, we need to focus on BIOSECURITY and keeping the virus out of and away from the pigs and barns. Pig manure containing virus is the main source of infection. The most significant risk for the farms remains transportation; contaminated trailers/trucks bringing the virus onto clean farms is leading to infection of the herd. This can be directly through the loading/unloading of pigs or in winter indirectly as the virus is trapped in snow and ice falls off trailers and is inadvertently tracked into barns.

Reducing Risk Associated with Transport

- By ensuring the sanitation of trucks and trailers has removed or killed all PED virus;
- By having biosecure loading/unloading procedures;
- By restricting visitor access and
- By having a biosecure barn entry procedure

The risk of feed ingredients in the spread of PED continues to be assessed and evaluated. Initially spray dried plasma was focused on, but now other protein products like meat meal and bone meal are being evaluated for PED contamination. Potentially the contamination of cereal grains with pig manure is a risk that needs evaluation as well.

In addition, CSHIN, provincial agencies, and producer groups have been instrumental in developing and initiating monitoring and biosecurity programs to help producers manage the risk of PED infection occurring on farms. Over the last 11 months provincial surveillance programs have been put in place for environmental monitoring of high risk zones where the PED virus is most likely to be discovered early; packing plants, truck washes and assembly yards. Regular environmental sampling at these locations for PED virus facilitates early detection of the virus and trace back when necessary. These programs continue to be developed and reviewed on a regular basis; most recently a transportation audit program has been proposed for implementation. Reporting and sharing PED results both from the provincial surveillance projects and CSHIN have given producers and veterinarian's timely information on what is happening in regards to PED activity in Canada. With winter weather upon

us it remains critical for everybody connected to the hog industry to be vigilante and help prevent the spread of the PED virus---BIOSECURITY.

Over the last 11 months several veterinary diagnostic labs in Canada have developed expertize to rapidly identify coronaviruses (PEDv, TGEv, and delta corona virus) from samples submitted for testing. This gives our industry an improved ability to respond to questions and concerns regarding contamination and infections. We now know that there may be three similar corona viruses involved in what we typically call a PED break; the majority of PED cases reported are due to infection with the classical virus which was first identified in the US and Canada. However, two less common strains of corona virus which cause milder diarrheas in the piglets have been identified as well; delta corona virus and the "Ohio" strain of the classical virus. Immunity to one strain of these viruses may not give protection to the other strains of coronaviruses and therefore farms do risk re-infection. There is no doubt that keeping farms clean and free of all these viruses is to your advantage--BIOSECURITY

"The most significant risk for pork producers remains transportation"

Over the last 11 months we have learned that positive PED sites can be cleaned up successfully and restocked with negative pigs. Sanitation/ disinfection protocols developed for nursery and finisher barns have resulted in these individual units being able to return to full production after being emptied, washed, disinfected, and dried thoroughly. Sow barns and farrow-to-finish facilities have been more challenging to decontaminate successfully although expertise in managing and understanding PED virus infections has improved to the point where some of the sow units are getting close to reporting they have returned to negative status. While it may become technically possible to convert a PED positive farrow-to-finish unit to PED negative status, the costs associated with this is significant and negative farms should focus on maintaining their negative status--- for the farms it's STILL all about BIOSECURITY .

Improving Your Barn Environment

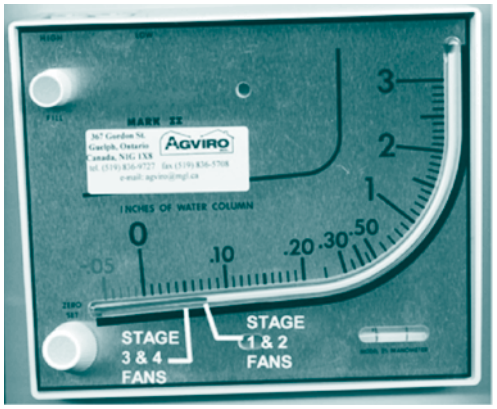
An Article from PorkInsight

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 can 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 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.

(Improving Your Barn...Continued on page 12)

Personal Profiles

Megan Strawford

Megan's career in agriculture began in 1999, when she enrolled in the College of Agriculture at the University of Saskatchewan. The final summer before she graduated, Megan got a job at a 600 sow farrow-to-finish farm, where she fell in love with pigs. After completing her Bachelor of Science degree, Megan was invited by Dr. Harold Gonyou to work as a summer student for the Ethology Program at the Prairie Swine Centre. In September 2003, Megan began working on her Masters degree in Applied Ethology under the supervision of Dr. Gonyou. Megan's thesis topic was "Social Factors that Affect the Behaviour and Productivity of Gestating Sows in an Electronic Sow Feeding System". While completing her Masters, Megan began working part-time for the Contract Research program at the Prairie Swine Centre and upon completing her Masters in February 2006, continued to happily work as the Assistant Manager of the Contract Research program. In November 2008 Megan said farewell to her beloved pigs to assume the role of Project Manager for Drs. Trever Crowe, Hank Classen and Phyllis Shand poultry transportation research group. This venture into uncharted territory not only taught Megan all about chickens and turkeys, the collaborative approach introduced her to the fields of agricultural engineering and meat science. Despite their charm, chickens and turkeys could never replace her one true love, pigs, so in September 2014, Megan flew the coop and came to once again roost at the Prairie Swine Centre in the newly created position of Research Coordinator and Manager of Contract Research Services.

(Improving Your Barn.....Continued from page 11)

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.
20) Consider the installation of windows to improve the environment for management. They add very little to heat load and can provide a psychological lift.
21) 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.
22) 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.

Coming Events

PSC Producer Meeting
March 24, 2015
Swift Current, Saskatchewan

PSC Producer Meeting
March 26, 2015
Lethbridge, Alberta

PSC Producer Meeting
March 27, 2015
Red Deer, Alberta

2015 LivestockCare Conference
March 26-27, 2015
Calgary, Alberta

London Swine Conference
April 1-2, 2015
London, Ontario

PSC Producer Meeting
April 22, 2015
Niverville, Manitoba

PSC Producer Meeting
April 23, 2015
Portage la Prairie, Manitoba

World Pork Expo
June 3-5, 2015
Des Moines, Iowa

PRAIRIE SWINE CENTRE

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