

ANIMAL INDUSTRY

Manitoba Swine Update

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Sanitation for Straw Based Pig Rearing Systems

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Straw-based pig rearing systems are gaining popularity, mainly because they lower start-up costs and are easier to get approved for site location.

Manitoba exports large numbers of weanlings that could potentially be finished and marketed in the province. If the pressure continues on grain producers to diversify into livestock, then straw-based production of pigs could be considered a good fit.

For those who have been producing pigs in this manner for a while, refining the operation becomes the priority. Following are some observations and comments on sanitation for straw based systems.

Even though these structures appear crude, there are opportunities to improve sanitation. Proper sanitation includes thorough removal of straw and manure and cleaning the planks and the feeding area. Occasionally manure sticks to planks and should be manually removed. Empty all feeders because feed builds up in

corners and hardens. This material can allow bacteria to build up. If newly stocked pigs eat it, scours can develop.

Waterers need to be thoroughly cleaned, along with accumulated feed and debris from the float chamber. Wash empty feeders, the outside of the waterers and power wash concrete pads. Water use in the shelters should be minimal to reduce downward movement of nutrients into the soil bed. Accumulated nutrients can remain in the straw pack and some may penetrate a few inches into the soil. Remove this nutrient rich band with the straw pack and replace with fresh material once annually. The fresh material is added to prevent water from running into shelters after rain or snowmelt.

Once the cleaning is complete, apply disinfectant to all surfaces pigs come into contact with. Pay special attention to feeders, waterers, concrete pads and all wooden surfaces. A backpack sprayer is ideal for this task. It allows a thorough soak of disinfectant without adding excess moisture. Tarps and

hoops should be power washed yearly in warm weather before the straw pack is removed to get rid of dust. Excess moisture will be absorbed by the straw and removed during clean out.

Wood is difficult to clean and disinfect due to its rough surface. Allowing the boards to dry between groups of pigs and thorough removal of surface debris is important. Applying disinfectant afterwards reduces surface bacteria and prevents high doses of bacteria affecting new pigs through casual chewing or licking of the boards. Bacteria deeper in the wood poses less threat than surface manure or straw does.

Producers using surface water should chlorinate all drinking water. This has been a source of problems in the past where water stored in dugouts is contaminated with bacteria, causing scours in young pigs. Chlorinating usually deals with this problem.

These steps will dramatically reduce the likelihood of a group of newly stocked weanlings getting scours. They also make the farm CQA compliant.

The Potential for Using Pea Protein Isolates in Diets for Early-weaned Pigs

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Current interest in swine nutrition is to identify inexpensive protein sources that could replace spray dried porcine plasma (SDPP), an expensive feedstuff used in diets for early-weaned pigs. Current research at the University of Manitoba is evaluating the use of processed plant protein sources such as pea protein isolate (PPI), a

locally produced feedstuff with a high protein content and a balance of essential amino acids similar to SDPP (Figure 1), as an alternative to SDPP. Particularly important is its high content of lysine, often the first limiting amino acid in swine diets. The other essential amino acids such as threonine and methionine plus cysteine that are limiting can be inexpensively supplemented. On the basis of these analyses it is possible to readily formulate a diet containing PPI for early-weaned pigs.

Based on these results, a series of experiments were conducted to

determine growth performance of piglets weaned at 10 days of age and fed diets containing PPI, PPI+egg yolk antibodies (EYA) or SDPP for two weeks. Diets contained wheat, oat groats, soy bean meal, and fishmeal as the main ingredients. All nutrients were supplied in recommended amounts. In week 2, pigs were challenged with a strain of *E. coli* known to cause diarrhea in piglets.

As shown in Figure 2, feeding early-weaned pigs diets containing PPI plus EYA during day 0 to 14 post-weaning supported growth performance similar to SDPP. Another important finding in these studies is that supplementing weanling pig diets with EYA prevents gastrointestinal disorders associated with *E. coli* infection thus allowing utilization of processed plant proteins such as pea protein isolates in diets for early-weaned pigs. This will not only reduce the cost of feeding early-weaned pigs, but also offers a means for managing post-weaning diarrhea, which is a major problem in the management of early-weaned pigs.

In conclusion, the results of this research show that PPI can be used in diets for early-weaned pigs. However, further research is required to identify strategies to optimize the use of feed ingredients such as PPI in piglet diets. We acknowledge funding and support from Manitoba Pork Council, ARDI and Nutratech Manitoba Inc.

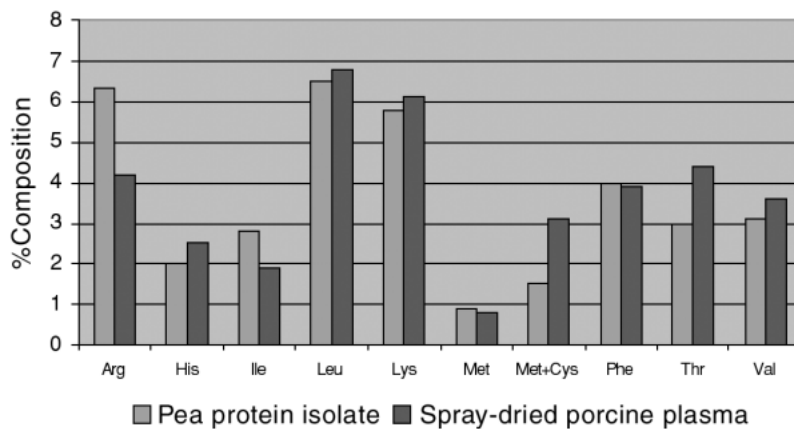


Figure 1. Comparative amino acid composition of pea protein isolate and spray-dried porcine plasma

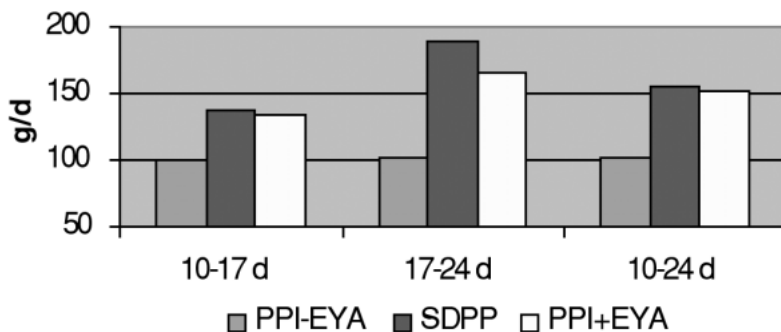


Figure 2. Growth performance (g/d) of early-weaned pigs from 10 to 24 days of age

Profit Drivers in the Hog Industry

By: Mike Yacentiuk
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The North American hog industry has experienced a period of profit during the past number of years. However, recollection of conditions in 1998 and 1999 remind us that profitability may not always be present and swine farmers should diligently manage their farms to ensure long-term viability.

At a recent swine industry conference, a paper was presented that addressed the most important aspects of hog production, those affecting profitability and identifying areas where management energy should be focused. Although many of the comments presented below have been discussed in this publication before, it is increasingly important to review and apply these points on an ongoing basis.

1. **Cost of Production** - Every cost must be clearly and accurately documented, measured against the industry and constantly analyzed for possible reduction. Cost reduction should not lower profitability.
2. **Throughput** - Increasing productivity spreads a farm's fixed costs over more animals or saleable pork to lower the per-unit cost. Throughput should be driven by profits. Increasing the cost of production

to increase productivity may inadvertently reduce profits.

3. **Marketing** - Market prices are driven by forces generally out of the control of most farmers. Therefore, focus on areas within your influence. Market hogs in the appropriate weight range and quality required by the processor. Employ risk reductions such as forward pricing or cost of production contracts.
4. **Genetics and Herd Health** - Genetics supply the production and carcass parameters that will influence the cost of production as well as marketing premiums and discounts. In addition, most diseases are introduced into a herd with incoming stock. There has been much debate recently, precipitated by disease outbreaks in Europe, about closed herd systems and in-house gilt multiplication.
5. **Networking** - It may be difficult to achieve the cost advantages and increased bargaining power of larger farms without being part of a system. These systems could be in the form of buying co-operatives, production clubs, marketing systems or, ideally, all of the above.
6. **Labour** - Many swine farms are increasingly hiring professional labor. It is paramount to profits for farmers to attract and retain high quality managers and technicians. This generally includes review of areas such as competitive salaries and benefits, acceptable work environments and staff-training investments.
7. **Outside Forces** - Farmers should be aware of and understand forces such as animal welfare and environmental sustainability and how these forces could affect the long-term profitability of their farms.
8. **Technology** - Split-sex feeding, all-in/all-out production, phase feeding and artificial insemination are some technologies that should be used. Also consider ensuring that barn design has system flexibility to adopt upcoming technologies or adapt to changes in feeding regimes and market conditions.
9. **Information** - Information and knowledge from others is a major driver of profitability. Work with an advisor to discuss and evaluate all aspects of your farming operation.
10. **Constant Review** - Challenge the current system. Scrutinize all costs for new ways to increase profits and improve the barn working environment.

For more information, contact your nearest Manitoba Agriculture and Food swine specialist.

Hog Manure is a Flexible Fertility Option for Forages

By: *Tim Friesen*

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As the importance of livestock and forages increases on the prairies, more Manitoba producers are using hog manure as a source of fertility for perennial forages. A recent project near Killarney examined effects of manure application method and timing on performance of tame and native pastures. Results suggest strong forage yield and quality improvements in response to fertilization with liquid hog manure.

Manure and soil analysis were used to match manure application rates to anticipated crop nutrient uptake. Application rates ranged from 5000 to 7500 gallons per acre. Treatments included surface application, surface application following soil aeration and injection via an Aerway unit. June 21 and July 19 were selected as application dates. Forage samples were collected on August 20 and 21.

On tame pasture (tall fescue-alfalfa mixture), early-applied

manure appeared to cause dramatic yield improvements over the unfertilized check, while native pasture showed moderate yield improvements. Due to dry conditions later in the growing season, nutrients applied in July had little effect on forage yield.

While yield responses appeared variable, forage quality was improved consistently for all treatments. On tame pasture, crude protein levels on manure-fertilized treatments averaged 4.4 per cent higher than the unfertilized check. Fertilization of native pasture resulted in 7.7 per cent more protein than the unfertilized check. Total Digestible Nutrient (TDN%) values, which indicate the percentage of a feed that can be used for energy, were also improved by the added fertility. Major and trace mineral profiles were also consistently improved.

Yield and quality improvements aside, another advantage of using hog manure on forages is the option to apply during the growing season. The current

demonstration showed efficient, immediate use of manure nutrients by the actively growing forage crop. Despite the addition of up to 135 pounds per acre of nitrogen and 24 pounds per acre of phosphorous, soil nutrient levels had reverted to a deficient state following the growing season. For the custom manure applicator, the benefits of working on forage land include an extension of the practical application season beyond traditional spring and fall demand peaks.

For more information on improving forage performance by using hog manure as a source of fertility, contact your local Manitoba Agriculture and Food office.

Treatment	Application Rate (gallons/acre)	Yield (lbs/acre)	TDN %	Protein %
Tame Pasture				
1-1: aerated & surface applied (June 21)	6000	6146	64.20	16.1
1-2: surface applied only (June 21)	6000	2901	65.30	16
1-3: Aerway injector (July 19)	5000	2018	64.80	16.4
1-4: check - no manure	0	1788	62.10	11.8
Native Pasture				
2-1: check - no manure	0	1789	57.00	9.9
2-2: Aerway injector (July 19)	5500	1410	63.60	17.7
2-3: aerated & surface applied (June 21)	7500	2063	62.40	16.5
2-4: surface applied (June 21)	7500	2400	64.00	17.3

Upcoming Events

Mark your calendar for the following events:

Hog Days is scheduled for December 5 and 6, 2001 at the Keystone Centre in Brandon. For more information, please contact *Brian Cotton* at 204-726-6357.

The **Manitoba Swine Seminar** is scheduled for January 30 and 31, 2002 at the Best Western – Victoria Inn in Winnipeg. For more information, please contact *Dr. Ian Seddon, Manitoba Swine Seminar co-chair*, at 204-945-0353.

