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Survival Strategies – When Every Penny Counts

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Introduction

It is a significant challenge to suggest how a Canadian pork producer in today's economic environment can turn a loss into a profit. Indeed the "perfect storm" of prices, exchange rate and input costs has made losses of $30-$50/hog the norm the last several months. It is the intent of this article to reinforce production practices backed by research and actual commercial practice that can produce savings of not just $2-3 per market animal but multiples of that. Too often do we hear "I am doing everything possible already" in reference to cutting costs. Production systems are living entities with fluctuations in productivity, management and staff that are overwhelmed with distractions daily, and procedures which evolve whether you want them to or not. There are opportunities, and every dollar saved is one less dollar borrowed under the present conditions. The following is a checklist to take to the barn and help you evaluate where the opportunities exist in your operation.

The focus is on the cost areas with the greatest potential for payback for the efforts invested with emphasis on lowest cost to implement ideas. These are in order of importance and relative size of annual expenditure: feed (52.7%), wages & benefits 11.2%, and utilities & fuel 4.7%. These three account for nearly 70% of all expenditures on a typical farm in western Canada in 2007. So our approach to addressing costs will be confined to these areas.

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Objectives of a feeding program

1. Maximize return over feed cost/pig sold
2. Maximize return over feed cost/year
3. Maximize expression of genetic potential
4. Achieve specific carcass characteristics
5. Achieve specific pork characteristics
6. Minimize operational losses

Action #1: Feeding program objectives must be clearly defined; Objectives can and indeed will change over time

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Figure 1. Objectives of the feeding program

Select phasing of the diets

Diet	Pig Wt., kg	Days	A.D.G., g/d	A.D.F., g/d	Feed, kg/pig
St #1	6	4	115	125	0.5
St #2	7 to 8	6	300	330	2.0
St #3	8 to 14	13	475	620	8
St #4	14 to 22	13	600	870	11
St #5	22 to 35	17	765	1,224	21
Gr #1	35 to 50	16	865	1,900	31
Gr #2	50 to 65	16	920	2,300	38
Fi #1	65 to 80	16	930	2,600	46
Fi #2	80 to 95	16	930	2,850	46
Fi #3	95 to 105	11	880	3,000	38
Fi #4	105 to Mkt	12	830	3,000	32

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Figure 2. Example of a Typical Western Canadian Feed Budget

Feed budget versus actual usage

Diet	Budget	Actual (5mo avg)
Wean diet	2.5	3.3*
Starter 1	8	9.1*
Starter 2	11	12.8*
Starter 3	21	23.4*
Grower 1	31	40.1*
Grower 2	38	43.3*
Barrow fin1	46	41.6
Barrow fin2	46	42.9
Barrow fin3	38	43.1*
Barrow fin-mkt	32	46.5*
Gilt fin1	46	48.0
Gilt fin2	46	46.6
Gilt fin3	36	46.1*
Gillt fin-mkt	30	47.4*
Gestation	37	18.1
Lactation	22	18.3
Cost/pig marketed	**$83.42**	**$89.35**

Difference $5.93

*Numbers are greater than 10% over budget

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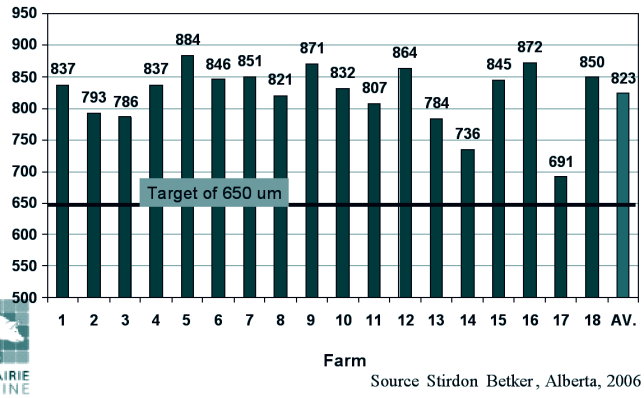
Figure 3. Reconciliation of actual feed usage versus budget

Average particle size by farm



Source Stirdon Betker, Alberta, 2006

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Figure 4. On-Farm survey of feed grain particle size

Feeding Program

This begins with defining the objective of the feeding program that can be any one of the six objectives in Figure 1. The purpose of defining the program makes it possible for the nutritionist to assist in diet formulation and ingredient selection to achieve that end. So the first opportunity for cost reduction is - Are we formulating to minimize operational losses? This includes a review of selecting optimum energy, defining lysine:energy ratios, define other amino acid levels to lysine, setting vitamin and mineral levels and making use of bargain ingredients. The outcome should be a feed budget similar to Figure 2. The regular matching of actual feed usage by diet type to the budget is the exercise in Figure 3 which shows that after a 5 month period in fact this 600 sow farrow-to-finish farm had excessive use of some of the most expensive diets on the farm and resulted in an average cost increase of almost $6 per market hog. But the owner thought they were doing "everything they could" because they had a competitive feed budget. The problem was not the budget but the fact it was not being adhered to for any number of reasons, perhaps as simple as not explaining to the person making or delivering the feed that the number of pigs in the nursery was below budget, in this case because of a PCVAD outbreak.

Other aspects of the feeding program that need to be evaluated include the energy content of the final diets and implementing the Net Energy system to seek further savings by crediting the most accurate energy value available to each ingredient. Reformulating frequently is important when commodity prices move up or down. Reformulating weekly would have been an advantage over the past several months.

Alternative feed ingredients at times can be the single largest opportunity to reduce feed costs. This includes co-products of the ethanol, bakery and food processing industries but also includes common ingredients like corn. Currently in western Canadian diets this change from wheat to corn could save as much as $2-4/pig marketed depending on your local cost of the two ingredients.

Once the diet has been formulated there are still opportunities to reduce costs by ensuring particle size stays within the 650-700 micron range to ensure optimum digestibility. Frequently due to screen wear, improper screen size, or hammer wear, the feeds milled on farm are significantly over the 700 micron threshold with the range more

typically 700-900 microns Figure 4. For every 100 microns under 700 the feed conversion improves 1.2%. With feed costs today of $100 per finished hog, moving from say a 3.0 F/G to a 2.96 F/G (the effect of 1.2% improvement, or 100 micron reduction in feed particle size) is worth $1.00 per pig marketed.

Other tips you will find on our Survival Strategies website are not new but bear repeating:

- Moving from 2 phases to 4 phase feeding programs can easily save $1-2/pig
- Trace minerals and vitamins can be removed from last three weeks of finishing diet (not for gilts for breeding or pigs on Paylean).
- Use of phytase and reduction of dicalcium phosphate in diet has saved $0.50 per pig or more

Marketing

Which is more important - breeding sows or shipping pigs? Although the question is not really which is more important it does point to the two areas where our people have a significant impact in our success as a production unit. Figure 5 shows one farm's analysis of how management and labour have to respond when market conditions change. The most profitable hog in May 2006 provided a carcass of 100-105 kg whereas that same farm maximized returns by dropping carcass weights 5kg in October 2007 and an additional 1-3 kg in February 2008. in response to declining hog prices and increasing feed prices. Once the new target weight is established, consistently hitting the target is important. Unfortunately many packers still report that only 66% of the hogs they receive fall into 'core'. This is unfortunate since weighing, marking and forecasting growth rates should allow the farm to hit 85-90% in core consistently. The loss due to this slippage is approaching $2.00 per hog marketed.

Utilities

Utilities are the third largest expense in pork production after feed and labour. This is a cost area that has seen significant increases across Canada over the past 5 years. In 2003 we did extensive analysis on the effect of ventilation rate, and set-point temperature adjustments that can save on energy costs. At the time we found losses of $1 per pig marketed were likely when a finishing barn was over-ventilated by just 10% in the winter. Today electricity prices are three times what we paid in 2003. Our opportunity for savings of up to $3 per hog marketed is possible by ensuring our ventilation systems are performing properly.

An extensive analysis of utility costs is being undertaken in a variety of barns across Saskatchewan. The initial results reported in Figure 6 show that the range of energy use is four fold across various farrow-to-finish operations. Although disappointing for those farms at the high end it does indicate that there is significant opportunity to reduce utility costs incurred by utilities by up to $3-5 per pig marketed. Some of the efficiencies can be contributed to:

- Limit use of heat lamps in farrowing and move to heat mats
- Move from incandescent to T-8 fluorescent bulbs
- Reduce the number of hours of light or amount of light in nursery and grow finish rooms
- When fans need replacing select for energy efficiency

> "Today electricity prices are three times what we paid in 2003. Our opportunity for savings of up to $3 per hog marketed is possible by ensuring our ventilation systems are performing properly."

Additional information will be forthcoming in this area as research uncovers the hidden profit robbers hiding in our utility bills.

Most farms don't receive a water bill but waste here also contributes to farm costs. Scientific and industry surveys both point to the fact that about 40% of the water delivered to the nipple is wasted due to nipple type, location and maintenance. This wasted water ends up as slurry and increases our

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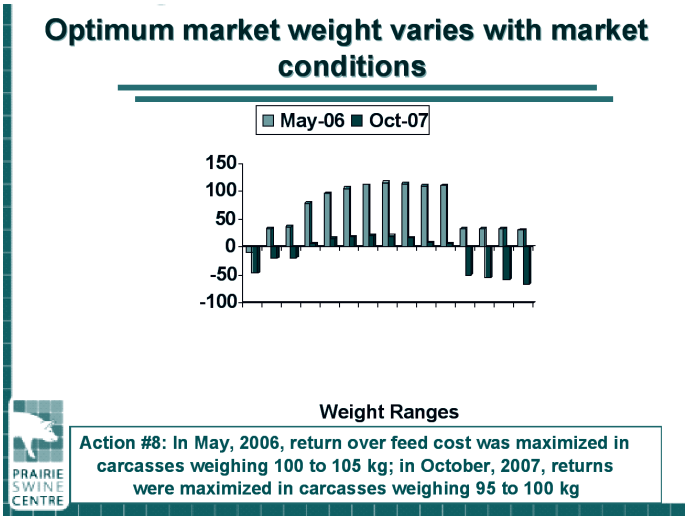
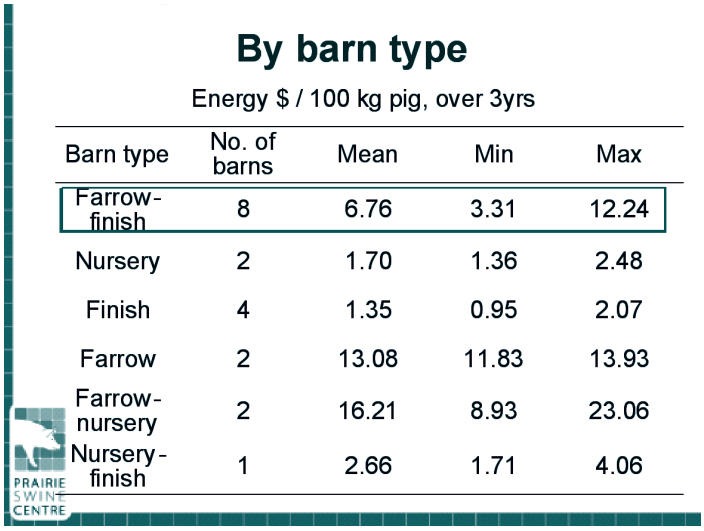


Figure 5. On farms analysis of carcass weight relative to returns at two time periods



Barn type	No. of barns	Mean	Min	Max
Farrow-finish	8	6.76	3.31	12.24
Nursery	2	1.70	1.36	2.48
Finish	4	1.35	0.95	2.07
Farrow	2	13.08	11.83	13.93
Farrow-nursery	2	16.21	8.93	23.06
Nursery-finish	1	2.66	1.71	4.06

Figure 6. Survey showing range in energy use across farm types

DDGS in Swine Nutrition

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Introduction

Distiller's dried grains with solubles (DDGS), a by-product of the rapidly increasing grain-based ethanol industry, are most commonly obtained from corn or wheat. Feed producers have many questions concerning the use of DDGS in swine rations including; product variability, information (or lack of) regarding their nutritional value and handling characteristics. Fortunately, for us, the swine industry and researchers in the U.S. have answered many of the questions surrounding the use of corn DDGS. For example, we refer you to an excellent paper by Hans Stein which can be found at http://www.livestocktrail.uiuc.edu/porknet/. Unfortunately, the same can't be said for wheat DDGS which may become more widely available in the future. This paper summarizes the current information available for both wheat and corn DDGS

1. Production and factors affecting quality

The grains are ground, cooked, processed with enzymes, and then fermented. The ethanol is distilled, and the residue, which forms the DDG is filtered and dried. The soluble fraction, isolated from the remaining liquid, is usually added back to the DDG, forming DDGS. The quality of the by-product will thus depend on the intensity of cooking, the rate and extent of starch hydrolysis, the quality of filtration and the amount and quality of solubles added to the distillers. The variation in quality of the DDGS is reflected by the color which varies from yellow (desirable) to dark brown (damaged) and by the odour, which varies from normal to "smoky" or "burnt". Processing techniques have been developed which can consistently produce a higher quality DDGS, however, variability in nutrient composition will remain an issue.

2. Composition and Nutritional value

The fermentation converts starch to ethanol, however, some starch remains (4 to 12% of the dry matter). DDGS are characterized by high protein and fibre contents (Table 1). Wheat DDGS contain higher protein and fibre and less oil than corn DDGS. Wheat distillers are also higher in calcium and phosphorus.

Analagous to the parent cereals, DDGS proteins are deficient in lysine. The amino acid content of wheat DDGS appears to be better balanced for swine than corn. The higher variation observed for the amino acid content of corn may be because more information was available for corn DDGS than wheat. The values presented in Table 1 are from 20 samples of corn DDGS but from only 3 wheat DDGS samples.

The energy content (DE and ME) of both corn and wheat DDGS is surprisingly high considering their low starch and high starch content. In fact

Table 1. Composition, energy value and digestible amino acids in DDGS

	Wheat DDGS	Corn DDGS
Dry matter		
Crude protein	404-445	282-303
Oil	29-37	72-128
NDF	286-303	242-322
ADF	116-211	242-322
Ash	44-53	38-48
Ca	1.4-1.6	0.7
P	8.5-9.5	6.1
Total amino acids		
Lysine	0.65-0.72	0.46-0.83
Methionine	0.69	0.45-0.61
Methionine/cysteine	1.65	0.72-1.31
Threonine	1.28-1.37	0.62-1.09
Tryptophan	0.44	0.13-0.25
Apparently digestible amino acids		
Lysine	0.29-0.42	0.13-0.4
Methionine	0.57	0.31-0.41
Threonine	0.81-0.93	0.39-0.64
Tryptophan	0.37	0.11-0.20
Digestible Energy (kcal/kg DM)	4,019	3,674-4,336
Net Energy (kcal/kg DM)	1,765-2,210	1,905-2,220

Sources: Widyaratne & Zijlstra (2007), Pedersen et al. (2007), Fastinger & Mahan (2006), Nyachoti et al. (2005)

Table 2. Growth performances of pigs fed graded levels of wheat DDGS

Pig weight	Source	Level of wheat DDGS					
25-52 kg	(a)	0	5	10	15	20	25
52-113kg	(b)	0	3	6	9	12	15
52-85kg	(c)	0					25
ADG (g)	(a)	810a	810a	770b	760b	750b	720c
	(b)	1050	1050	1020	1000	1060	1090
	(c)	1030a	-	-	-	-	966b
ADFI (g)	(a)	1500a	1550a	1470ab	1410b	1410b	1370b
	(b)	2870	2900	2860	2780	2840	2920
	(c)	2780		-	-	-	2650
Feed conversion	(a)	1.86	1.92	1.89	1.84	1.88	1.91
	(b)	2.74	2.78	2.80	2.81	2.70	2.66
	(c)	2.71	-	-	-	-	2.70

(a, b) control diet: wheat, soybean meal, iso-DE, total lysine
(c) 63% wheat, 25% peas, 7% soybean meal, iso-DE, SID lysine

reported values are comparable to those of the respective whole cereals! Corn DDGS have a high oil content and relatively low fibre content, as compared to wheat DDGS and the relatively high DE content of wheat DDGS is difficult to explain. DE overestimates the net energy (NE) content of feed ingredients which are high in protein and fibre, thus DE probably overestimates the real, or usable, energy content of DDGS for monogastrics. The NE is comparable to those of other by-products such as canola meal, and may be a factor which limits the use of DDGS for swine.

Amino acid digestibility may also be problematic. The apparent ileal digestibility of crude protein usually ranges between 60 and 70%, however, that of lysine is markedly lower. The scientific literature reports apparent ileal digestibilities of lysine ranging from 42 to 59% for wheat DDGS and from 25 to 52% for corn DDGS. This is probably due to the heat treatment. Stein suggests that, at least for corn DDGS, calculating the lysine:CP ratio indicates protein quality. This ratio should be greater than 2.80. The second essential amino acid with low digestibility is threonine, which is also the second limiting amino acid in cereals. Feed producers must thus be aware of these problems and formulate rations using ileal digestible, not total, amino acids.

A large part of the phosphorus in corn and wheat is in the form of phytic acid and unavailable to the pig. However, the fermentation process liberates the mineral and from 52 to 58% of the phosphorus of wheat DDGS and 50 to 68% of that from corn DDGS are available to the pig. The good news is that less inorganic phosphorus will be required; the bad news is that 30 % DDGS fulfills the P requirement for finishing pigs and diets can easily be over formulated with respect to P. Environmental issues will need to be addressed

> "The net energy of DDGS is comparable to those of other by-products such as canola meal, and may be a factor which limits the use of DDGS for swine."

3. Pig growth performances

The results of three growth studies carried out on growing pigs fed graded levels of wheat DDGS are detailed in Table 3. In the first experiment, Thacker et al. (2005) fed grower (25-52kg) and finisher (52-113kg) pigs with diets based on wheat and soybean meal and formulated in order to meet the DE and total lysine requirements. A decrease in growth rate was observed with levels of wheat DDGS exceeding 10% of the diet with grower pigs. These negative effects were not seen with the finishing pigs. The decrease can be attributed to the decrease in feed intake. Feed conversion was not affected. Widyaratne & Zijlstra (2007) observed lower growth rates in pigs fed 25% wheat DDGS, relative to a wheat, peas, soybean meal control despite formulating diets on a DE and a standardized ileal amino acid basis.

The results of two growth studies with corn DDGS are summarized in Table 3. In the first experiment, the growing pigs received graded levels of DDGS, at the expense of a control diet based on corn and soybean meal and the diets were balanced for DE and total lysine. A decrease was also observed with diets containing more than 10% DDGS. In this case, the reduction in growth doesn't appear to be the result of decreased feed intake. At higher levels of corn DDGS, Widyaratne & Zijlstra (2007) observed decreased feed intake and growth. Feed conversion was unaffected.

4. Incorporating DDGS in swine rations

DDGS obviously can't be directly incorporated into a ration as a substitute for the parent grain. Producers should calculate out the total cost of

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Table 3. Growth performances of pigs fed graded levels of corn DDGS

Pig weight	Source	Level of corn DDGS			
28-117 kg	(a)	0	10	20	30
52-85 kg	(b)	0			25
ADG (g)	(a)	862a	859a	827b	808b
	(b)	1030a			967b
ADFI (g)	(a)	2380	2370	2310	2350
	(b)	2780a			2650b
Feed conversion	(a)	2.78	2.78	2.78	2.94
	(b)	2.70			2.70

(a, b) control diet: wheat, soybean meal, iso-DE, total lysine
(c) 63% wheat, 25% peas, 7% soybean meal, iso-DE, SID lysine

Eating Behaviour In Large Groups: Learning How Pigs Perceive Their Environment

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As we studied how finisher pigs perform in large groups we have also studied their eating behaviour. Our reasons for this extend beyond our interest in feed intake, to questions we have on how pigs perceive their environment and the impact that could have on our management. For example, when we first started working with larger groups, in this case 80 pigs in a pen, two theories existed for how pigs interacted with this large space. One theory was that to avoid unfamiliar pigs and aggression, the animals would restrict their movement to a limited area of the pen. We would call this a territory. We used 8 feeders in the pen of 80 pigs, and spaced these evenly along one of the long walls of the rectangular pen. Of 60 pigs that we observed, 80% visited all 8 of the feeders during a 24-hr period. All of the pigs ate from at least 6 of the feeders. This eating behaviour demonstrated that the pigs were not territorial, but used the entire pen. The implication was that resources, such as feed and water, did not have to be located throughout the pen, but could be concentrated, perhaps in a food-court.

We continued our studies with slightly larger groups (108 pigs/pen) but retained the spacing of feeders equidistant along the length of the pen. The eating behaviour of pigs in large and small (18 pigs/pen) groups was remarkably similar with the exception of the first week after group formation. While pigs in large and small groups spent similar amounts of time eating during the first week, those in large groups visited feeders more often (35 times/day) than did those in small groups (25 times/day). Compare this to the 9 - 12 visits/day once group is established. As with the pigs in the previous study, the pigs in large groups were sampling many feeders each day. The first week after the groups were formed we saw both a reduction in average daily gain and an increase in feeder visits (but not total eating time) in large groups compared to small. We hypothesize that the need to investigate the entire pen during the first days in a large group led to many feeder visits, and contributed to a reduction in growth.

eating in a day (60.4 vs 55.7 min/day) and total feed intake (2.78 vs 2.82 kg/day) were similar in large and small groups. In this same study we superimposed a crowded treatment (k = 0.025) on the group sizes. Crowded pigs also reduced the number of visits to the feeder each day, but they did not increase the length of their visits or maintain their total eating time and feed intake. The crowded pigs demonstrated a loss of appetite compared to the pigs in large groups, even though both conditions resulted in fewer meals.

> "The pigs in large groups ate fewer (9.2 vs 11.7 meals/day) but longer meals (7.4 vs 5.3 min/meal)"

Moving on from our finding in the first study that pigs would use the entire pen, our next experimental set-up placed the feeders in the large group together near one end of the pen. Unlike the previous studies, pigs in the large group would have to travel farther from their lying area to the feeder than did the pigs in small groups. The eating behaviour of pigs in large groups changed. When the cost (effort) to get to a resource (feeder) increases, we would predict that animals would visit the resource less often, but the visits would be longer to compensate. This is what we saw in large groups. The pigs in large groups ate fewer (9.2 vs 11.7 meals/day) but longer meals (7.4 vs 5.3 min/meal), so that the total time spent

The Bottom Line

Our studies on eating behaviour of pigs in large groups have demonstrated that pigs make use of the entire pen, visiting most if not all feeders regularly. The inquisitiveness leading to this extensive use of the pen is evident in a large number of feeder visits during the first week, and may contribute to poor initial growth in the system. When feeders are concentrated in one area of the pen, making it more difficult to get to a feeder, pigs in large groups reduce their number of meals, but compensate by having longer meals. The adaptability of pigs in large groups allows us to broaden the scope of our management options to include not only large groups, but also concentrated feeding areas within the pen.

Survival Strategies ... cont'd from page 3

manure hauling costs by at least $0.70 per pig. The things to look for:

- In a recent survey 20-70% of nipples provided flow rates in excess of recommendations. This excess water is beyond the pigs capacity to consume it resulting in higher waste.
- Water disappearance is 34% less on wet/dry feeders compared to dry feeders and wall mount nipples.
- Nipples installed at 90° to the wall should be located at shoulder height, nipples located 45° to the wall should be located 2 inches above the shoulder (a well-positioned nipple will reduce water wastage to 25% of total volume delivered).

Productivity

When prices are low and losses are high, it is easy to turn our attention away from the demanding management of sow reproduction, "so what if we wean a few less pigs, they are not worth anything any way". However each pig does do its share to carry the overhead of all those fixed costs our barns incur (as long as pig prices cover the variable cost of production). Actually outside of the growing feed, and trucking, most costs are fixed in our systems so the impact of sow productivity can be profound, as long as variable costs are being met within your production system.

The Bottom Line

There are opportunities for savings on every farm in Canada. Finding these savings takes a methodical and careful process of comparing our targets to what we are actually achieving - doing this on a regular basis will frequently find opportunities to save. In today's ecnomics we found in excess of $15 or more per market hog. These savings don't all exist on all farms but some of these exist on all farms and it is our job to find them and correct them. Then next month look again and find those that escaped our gaze the first time, and be committed to doing it over and over again as we work to maintain margins in a challenging commodity market.

Survival Checklist

Action # 1	Feeding program objectives must be clearly defined; objectives can and indeed will change over time
Action #2	Selecting the correct dietary energy concentration can lower costs by $1 - $13 per pig
Action # 3	Adoption of Net Energy system of diet formulation can reduce feed costs by $1 and $5 per pig.
Action #4	Aggressive adoption of a variety of ingredients can reduce feed costs by up to $5 per pig
Action #5	Regular re-formulation of diets can reduce feed costs by $3 to $4 per pig.
Action #6	Track implementation of feed budget can reduce costs by $5 per pig.
Action #7	Cost of particle size deviation from target can exceed $1 per pig.
Action #8	In May 2006, return over feed cost was maximized in carcasses weighing 100-105 kg, in October 2007, that same farm found returns maximized in carcasses weighing 95-100 kg.
Action # 9	Achieving 85% in core, rather than 66% in core would increase return over feed costs by up to 41.80 per pig
Action #10	Increased sow productivity (from 22-28 p/s/y) can reduce breakeven $13/ckg or about 10%.
Action #11	Operating procedures and equipment can both contribute to excess power consumption. Turn lights off, switch to heat mats and reduce heatlamp use.
Action #12	Improper minimum ventilation (10% above requirement) adds up to $3 per pig
Action #13	On average 40% of water delivered to the nipple is wasted, that is an additional $0.70/pig in slurry hauling costs.

DDGS in Swine Nutrition ... cont'd from page 5

the ration with and without the DDGS to see if it is economically feasible. As mentioned above, the ration needs to be formulated using concentrations of digestible amino acids and available P.

Experience in the US has shown that, because of the high oil content, it may be necessary to limit the use of corn DDGS in late finishing rations. Some (but not all) research has demonstrated an issue with carcass quality.

There is some evidence that rations formulated with DDGS may tend to bridge more in bins and feeders and in fact, corn DDGS has in some instances formed a hard mass! Additionally, feeds containing DDGS are bulkier. Delivery and storage systems may require modification.

The Bottom Line

Corn and wheat DDGS are good sources of DE and total protein but their use in swine nutrition requires that the variability in amino acid digestibility be addressed. Increasing use of corn and wheat DDGS in Western Canada will depend upon availability and economics. Because of limited production, research and information regarding wheat DDGS seriously lags behind that of corn DDGS and it must be used cautiously.

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Personal Profile

Dr. Inam Haq

Dr. Haq was born and raised in Pakistan where about 70 percent of the entire population is involved directly or indirectly in the agriculture. After completing his degree in animal science, he continued his education leading to a master's degree in animal nutrition. Upon completion of his master's degree he worked for different organizations and remained involved in research on various aspects of animal production and nutrition. Later he moved to UK to pursue his Ph.D. degree. During his studies in the University of Reading, UK, he worked on invitro evaluation of feedstuffs to improve nutritive value. Later he, along with his wife Tehmina, moved to Canada. An opportunity in the Department of Health Science, University of Saskatoon, brought him to Saskatoon. Here he conducted a research study on the role of homocysteine in relation to hypertension in type 2 diabetic patients. After completing his research work in the department of Health Sciences, he moved to the commercial feed industry and started working as Animal Nutritionist with Western Alfalfa Milling in the small town of Norquay, located about 400 km south-east of Saskatoon. Here he got a chance to experience country living and rural life. In Western Alfalfa Milling he got involved with the nutritional aspects of ruminants and non-ruminants. He also got involved in utilization of dehydrated alfalfa pellets as soil nutrition and conducted research on impact of organic fertilizers on wheat and grass. During his working with Western Alfalfa, he visited different grower and finisher operations and became interested in swine production and nutrition. A research study was also conducted on the utilization of dehydrated alfalfa in the growing and finishing pigs in collaboration with the University of Saskatchewan. He later decided to get more experience on different aspects of swine production and management and therefore joined the Prairie Swine Centre as Research Assistant – Nutrition in May, 2007. He contributes to the different aspects of nutrition including protocol development, conduct of experiments, statistical analysis, report writing and publishing.

The current focus of Dr. Haq's research program is to study the fatty acid profile of subcutaneous fat of finishing swine after feeding diets based on extruded flaxseed meal. The research will lead to the opportunities of increasing omega-3 fatty acid content of pork.

Coming Events

Western Canadian Livestock Expo

April 16-17, 2008
Saskatoon, Saskatchewan

"When Every Penny Counts" Town Hall Meetings

Tuesday, April 22, 2008
Days Inn,
Swift Current, Saskatchewan

Thursday, April 24, 2008
Travelodge,
Saskatoon, Saskatchewan

PRAIRIE SWINE CENTRE

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