Barn Efficiency: Your Role in Driving Costs Down

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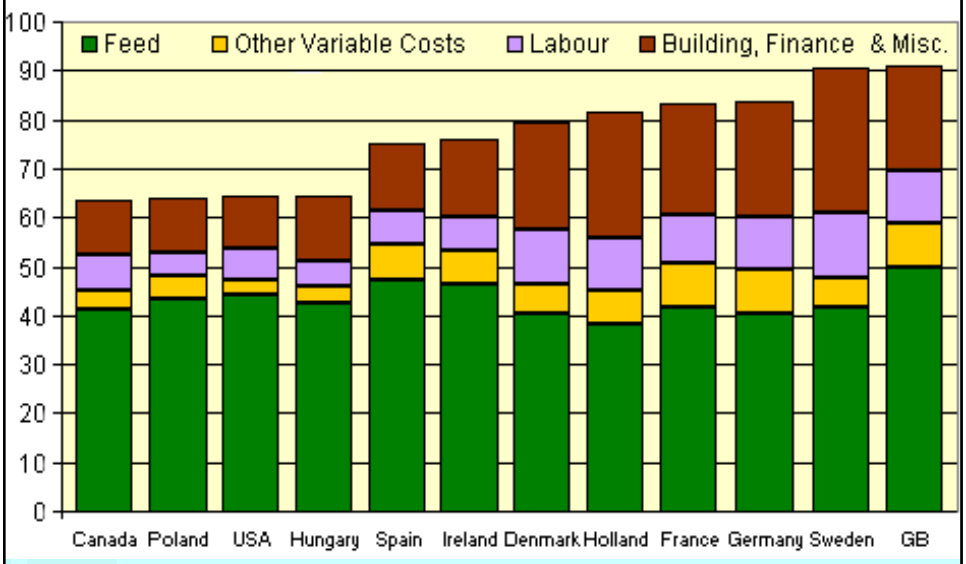
Prairie Swine Centre

OUR COMMON GOAL

Produce a high quality pork product while achieving the highest possible net income in a manner acceptable to our society

Comparative Costs of Production



Presented as UK pence per kg dressed weight. Source: MLC, 2000

FEEDING FOR OPTIMUM CARCASS AND PORK QUALITY

As our industry moves forward,

there will be <u>less emphasis</u> on

productivity and performance indicators

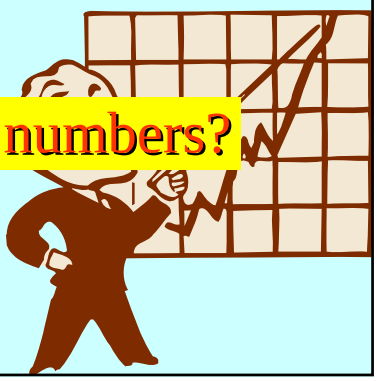
and <u>more emphasis</u> on

financial indicators

WHAT GETS MEASURED GETS MANAGED

WHAT GETS MEASURED GETS MANAGED

What are your key numbers?



RECIPE FOR SUCCESS

- Key number to achieve success
  - **Measurable**
  - **Influence it**
  - **Monitor it**

Take a moment to write down your three key numbers

Sample Cost of Production Budget

Item	Cost	Comments
Feed	65.00	45.2% Increasing, was below $60
Wages and benefits	15.50	9.4%
Amortization	15.00	10.4% Depends on age of barn(s)
Interest on LTD	10.00	7.0% Depends on debt load
Utilities	5.50	3.8%
Management fees	5.00	3.5%
Trucking	4.50	3.1%
Breeding stock	4.25	3.0%Does not include cull value
Property taxes/insurance	4.00	2.8%
A.I.	3.50	2.4%
Repairs and maintenance	3.00	2.1%
Vet. supplies and services	3.00	2.1%
Manure hauling	2.50	1.7%
Barn supplies	2.00	1.4%
Office and accounting	1.50	1.0%
Bank charges	1.50	1.0%
TOTAL	145.75	

Sample Cost of Production Budget

Item		Stockperson's Role
Feed	65.00	Feed wastage can increase by 10%
Wages and benefits	15.50	
Amortization	15.00	Affected by barn output
Interest on LTD	10.00	Affected by barn output
Utilities	5.50	Affected by barn output
Management fees	5.00	Affected by barn output
Trucking	4.50	
Breeding stock	4.25	Affected by sow herd productivity
Property taxes/insurance	4.00	Affected by barn output
A.I.	3.50	Affected by sow herd productivity
Repairs and maintenance	3.00	
Vet. supplies and services	3.00	
Manure hauling	2.50	
Barn supplies	2.00	
Office and accounting	1.50	
Bank charges	1.50	Affected by barn output
TOTAL	145.75	

TAKE HOME MESSAGE

- To reduce expenses, focus on items over which we have the most control
- Focus on items which have the greatest impact
- Focus on items that are easiest to change

Sample Cost of Production Budget

	Pigs/sow/year		
Item	**22**	**25**	**28**
Feed	**66.00**	**65.00**	**64.00**
Wages and benefits	**17.60**	**15.50**	**13.84**
Amortization	**17.00**	**15.00**	**13.40**
Interest on LTD	**11.40**	**10.00**	**9.00**
Utilities	**6.25**	**5.50**	**4.90**
Management fees	**5.70**	**5.00**	**4.46**
Trucking	**4.50**	**4.50**	**4.50**
Breeding stock	**4.85**	**4.25**	**3.80**
Property taxes/insurance	**4.50**	**4.00**	**3.60**
A.I.	**4.00**	**3.50**	**3.15**
Repairs and maintenance	**3.00**	**3.00**	**3.00**
Vet. supplies and services	**3.00**	**3.00**	**3.00**
Manure hauling	**2.50**	**2.50**	**2.50**
Barn supplies	**2.00**	**2.00**	**2.00**
Office and accounting	**1.70**	**1.50**	**1.35**
Bank charges	**1.50**	**1.50**	**1.50**

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Barn supplies	2.00	2.00	2.00
Office and accounting	1.70	1.50	1.35
Bank charges	1.50	1.50	1.50
TOTAL	**155.50**	**145.75**	**138.00**
Break-even	**$1.45/kg**	**$1.36/kg**	**$1.29/kg**

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Bank charges	1.50	1.50	1.50
TOTAL	**155.50**	**145.75**	**138.00**
Relative net income	**-**	**+$9.75/pig**	**+$17.50/pig**

Production Continuum

Breeding

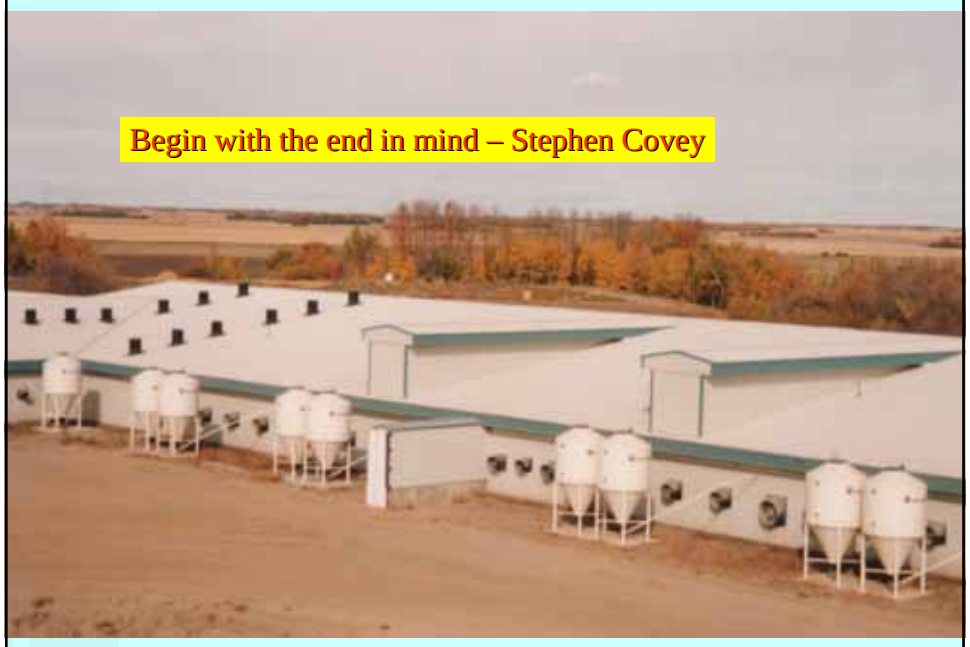
Farrowing

Nursery

Growout

TAKE HOME MESSAGE

- Nothing reduces cost of production in a farrow to finish farm like sow productivity.
- We each have a job to do, but cooperating on heavy breeding days, and farrowing days to get the extra help where it is needed is priceless.



IMPACT OF INCREASING ENERGY CONCENTRATION ON GROW-FINISH PERFORMANCE

DIET DE, Mcal/kg	3.09	3.24	3.34	3.42	3.57
Initial wt., kg	31.2	31.1	31.5	31.2	31.1
Final wt., kg	115.1	115.3	115.1	115.0	115.5
Daily gain, kg	1.00	1.01	1.03	1.03	1.03
Daily feed, kg	2.80	2.66	2.64	2.61	2.47
Feed conversion	**2.78**	**2.63**	**2.56**	**2.56**	**2.38**
Fat, mm	**16.8**	**17.8**	**18.3**	**18.6**	**19.4**
Loin, mm	61.7	60.6	62.7	60.3	61.1

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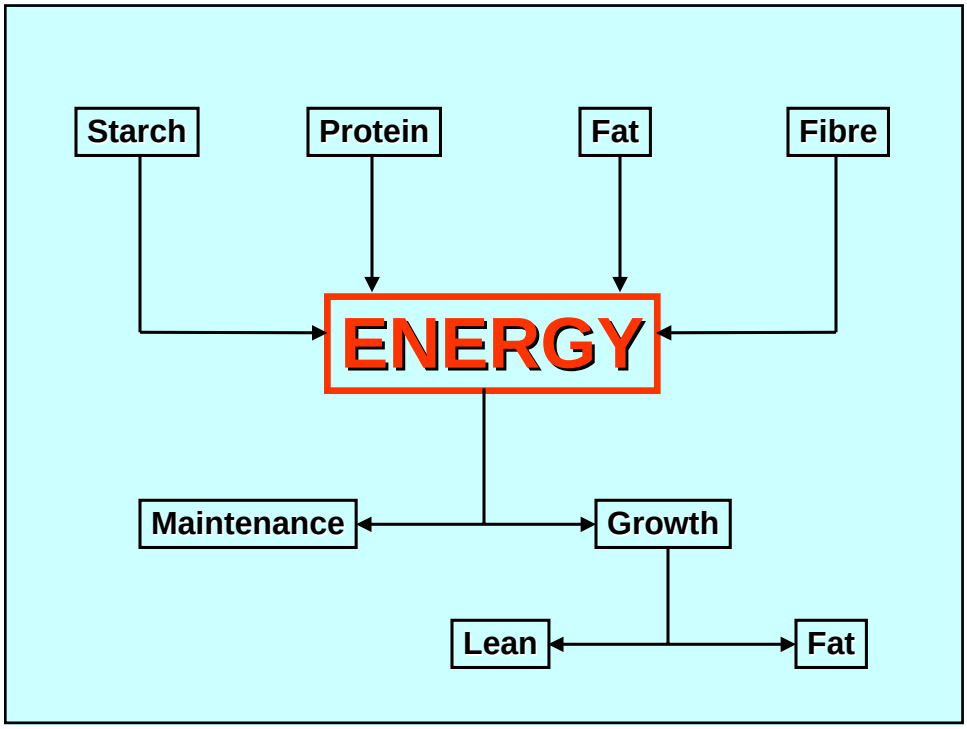
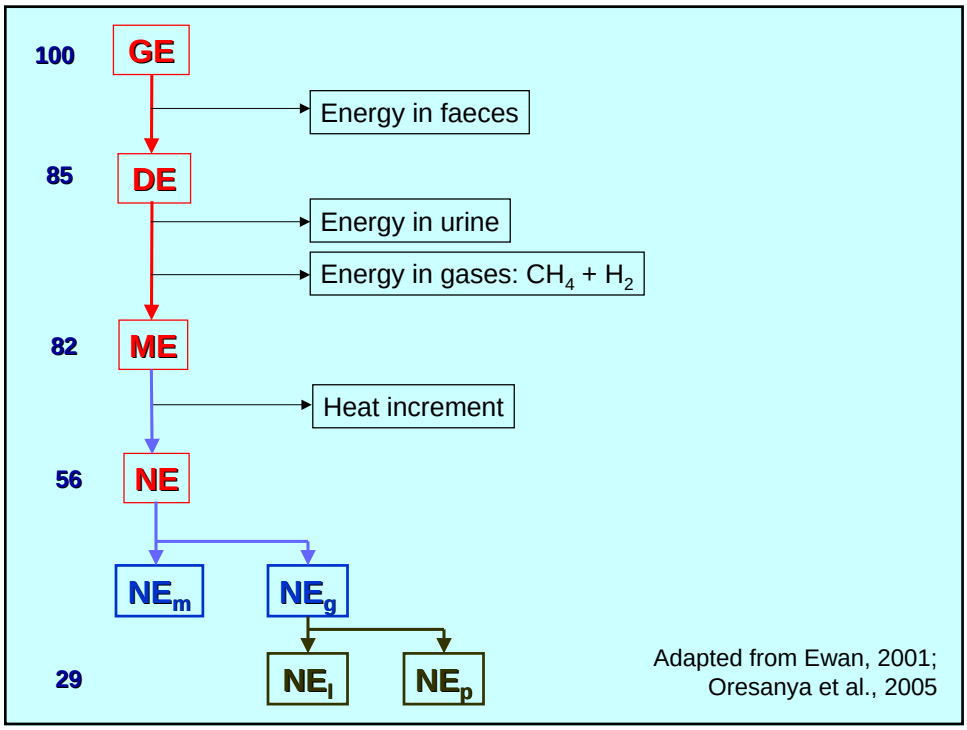
Initial wt., kg	31.2	31.1	31.5	31.2	31.1
Final wt., kg	115.1	115.3	115.1	115.0	115.5
Daily gain, kg	1.00	1.01	1.03	1.03	1.03
Daily feed, kg	2.80	2.66	2.64	2.61	2.47
Feed conversion	**2.78**	**2.63**	**2.56**	**2.56**	**2.38**
Fat, mm	**16.8**	**17.8**	**18.3**	**18.6**	**19.4**
Loin, mm	61.7	60.6	62.7	60.3	61.1

Feed cost/pig, $	**37.76**	**40.79**	**45.16**	**47.03**	**49.52**

The difference between 3.09 Mcal/kg and 3.57 Mcal/kg is worth more than $85,000 per year in a 2500 head finisher barn


Starch
Protein
Fat
Fibre
ENERGY
Maintenance
Growth
Lean
Fat


100
GE
Energy in faeces
85
DE
Energy in urine
Energy in gases: CH_4 + H_2
82
ME
Heat increment
56
NE
NE_m
NE_g
29
NE_l
NE_p
Adapted from Ewan, 2001;
Oresanya et al., 2005

TAKE HOME MESSAGE

- When feed energy prices rise – feed formulations will change
- If you are responsible for feeding program are you making the adjustments as needed?
- There are no magic fixes to diet formulation, only tools to help us fine tune matching nutrients to requirements.

Impact of Pig Growth Rate on Gross Margins

	Growth Rate, g/d		
	750	850	950
Ave. days to market	123	108	97
Barn turn, d	141	126	115
Barn turns/yr	2.6	2.9	3.2

Impact of Pig Growth Rate on Gross Margins

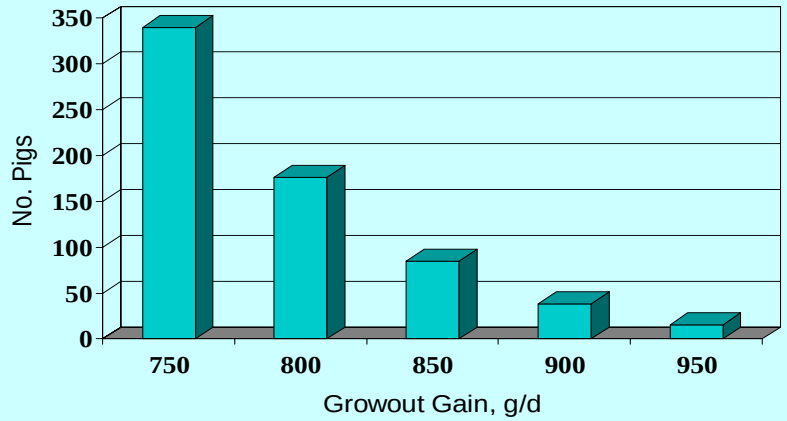
	Growth Rate, g/d		
	750	850	950
Ave. days to market	123	108	97
Barn turn, d	141	126	115
Barn turns/yr	2.6	2.9	3.2
Gross margin, $/pig	37.00	38.00	39.00
Gross margin, $/pig place	96.20	110.20	124.80

Impact of Pig Growth Rate on Gross Margins

	Growth Rate, g/d		
	750	850	950
Ave. days to market	123	108	97
Barn turn, d	141	126	115
Barn turns/yr	2.6	2.9	3.2
Gross margin, $/pig	37.00	38.00	39.00
Gross margin, $/pig place	96.20	110.20	124.80

The difference between 750 g/d and 950 g/d is worth more than $70,000 per year in a 2,500 head feeder barn!

Impact of Increased Growth Rate on Tail-End Pigs



Tail-enders are expressed as number of pigs per 1,000 head finished which, at 15 weeks, fall below minimum target market weight of 108 kg (85 kg dressed)

For every 50 g/d increase in growth rate, the portion of tail-enders is reduced by 50%.

Sensitivity Analysis: Nursery

What is the impact of various production parameters on breakeven cost?

$10/tonne change in price of wheat	$0.23/pig
$25/tonne change in the price of soymeal	$0.28/pig
Reduction in mortality by 1 percentage point	$0.55/pig
5% change in feed efficiency	$0.75/pig
5% change in growth rate	$1.75/pig

Assumes a typical 7 week nursery, from 6.5 kg to 30 kg, with a feed conversion of 1.55 and mortality of 2.5%. Value per pig expressed as change in breakeven cost of producing 10 week old feeder pig.

Feeder Management Options

Option #1

Starter diets are the most expensive we will feed; therefore, we must pay particular attention to keeping feeders adjusted tightly, because wastage is very expensive!

[This reflects the "keep costs down" argument.]

or

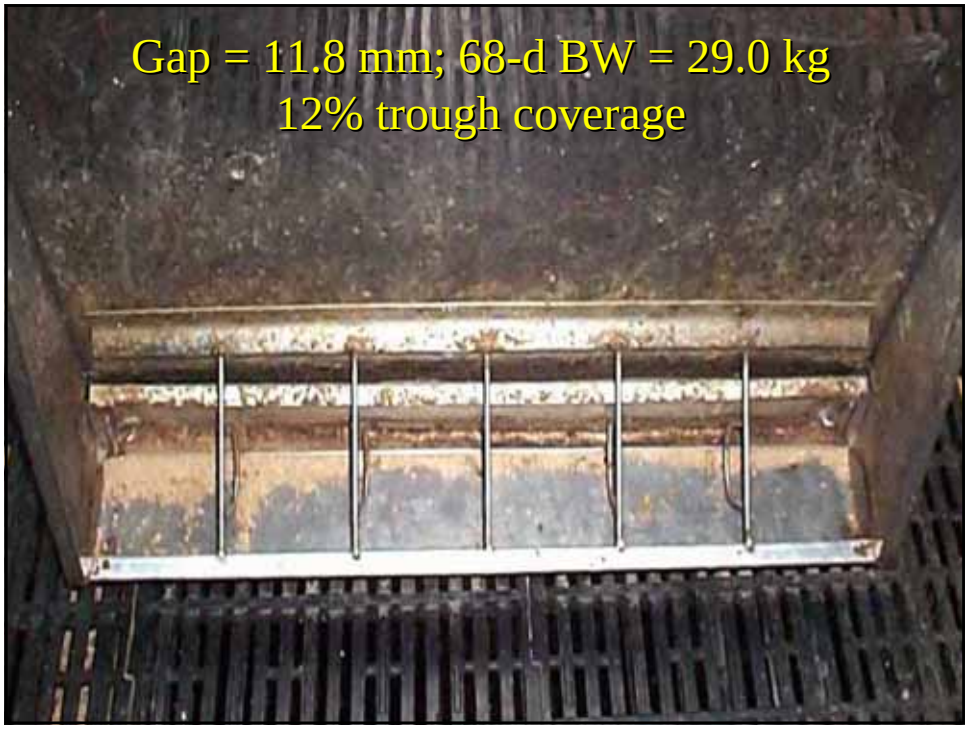
Option #2

Nursery performance is critical to overall success, so nursery feeders should be adjusted very loosely to encourage pigs to maximize feed intake and thus grow faster!

[This reflects the "maximize performance" argument.]

Feed intake varies by at least 35% among farms!


Gap = 9.2 mm; 68-d BW = 27.9 kg
6% trough coverage


Gap = 11.8 mm; 68-d BW = 29.0 kg
12% trough coverage


Gap = 17.9 mm; 68-d BW = 29.6 kg
37% trough coverage


Gap = 24.8 mm; 68-d BW = 29.5 kg
68% trough coverage


Gap = 31.5 mm; 68-d BW = 29.6 kg
91% trough coverage

TAKE HOME MESSAGE

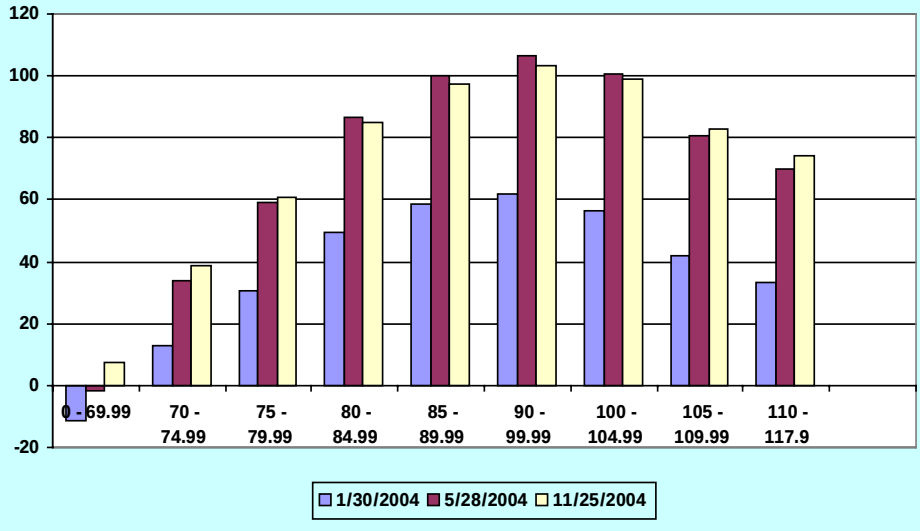
- Feed intake is very much under the control of the stockperson
- Maximizing feed intake in all phases of production is one of the most important responsibilities because it is a key contributor to success

LOAD SUMMARY: March 18/04

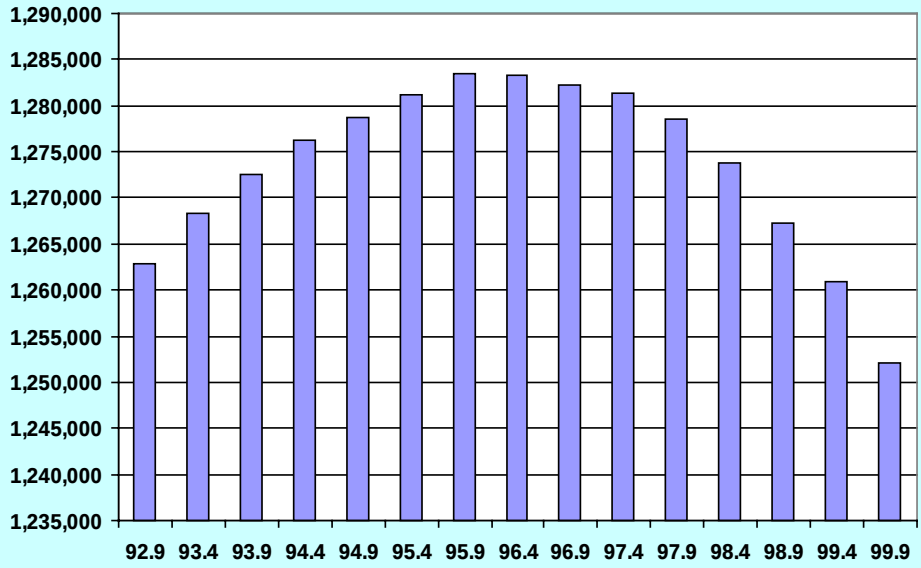
	Mean	In Core	Below Core
Number of pigs this load	169	143	26
Carcass weight, kg	88.7	89.6	83.4
Carcass index	111	111.8	106.6
Backfat, mm	18.9	19.0	18.4
Loin, mm	61.6	62.5	56.7
Value, $/pig	149.56	152.10	135.13
Return over feed, $/pig	110.19	112.10	99.32
Net income, $/pig	7.19	9.08	-3.68

Assume total cost of production is $145, or 1.37/kg for a 115 kg pig indexing 111

Margin Over Feed Cost at 3 Time Periods in 2004



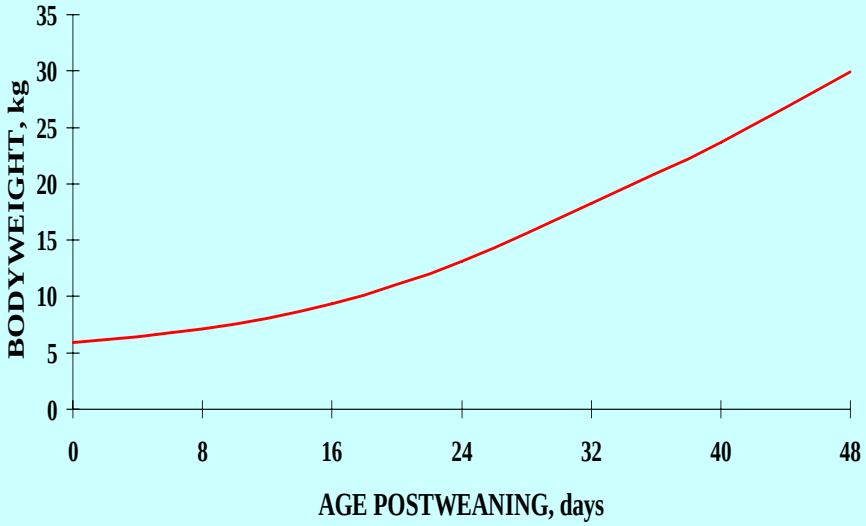
Annual Contribution to Margin Over Feed Cost for Selected Weight Distributions: 2004



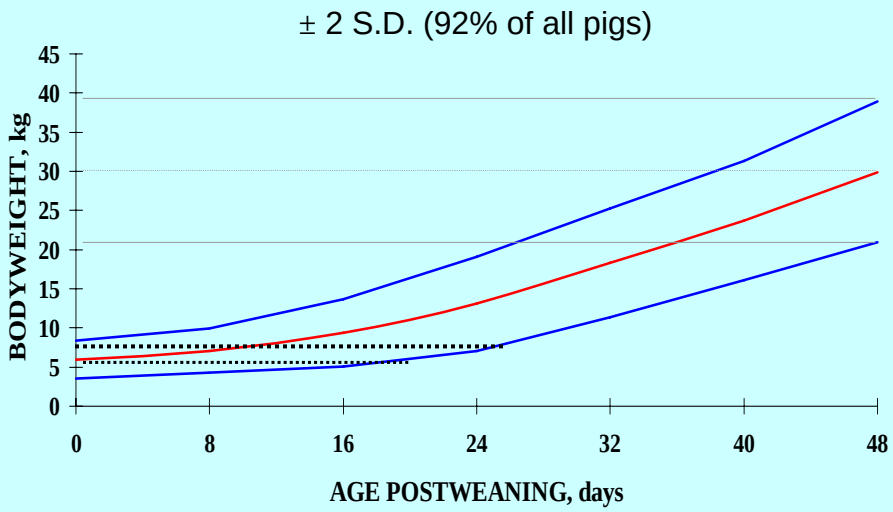
TAKE HOME MESSAGE

- Sort losses are measurable, predictable and manageable.
- Sorting pigs for market is not a pleasant job, but a good sort job helps to optimize revenues and a poor sort job negatively affects net income.
- Margin over feed is the best indicator, not index, not pig weight by itself, not packer ‘core’

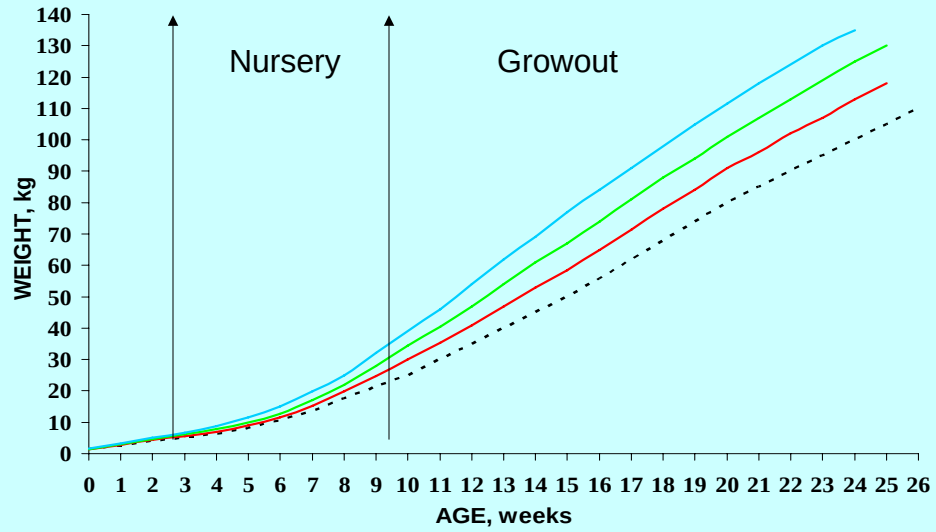
Theoretical Nursery Growth Curve



Realistic Nursery Growth Curve



Lifetime Growth Curves



GROWTH OF PIGS ACCORDING TO WEANING WEIGHT

Age	Week Marketed				
	21	22	23	24	25
			- kg -		
Number	49	71	113	115	62
21d	6.3	5.9	5.5	5.0	4.8
56d	22.8	20.9	20.0	18.8	17.5
77d	34.7	32.3	30.6	28.7	27.2
112d	68.3	64.5	61.3	57.3	53.7
140d	103.7	99.6	95.1	89.1	82.2
Ave. Mkt. Wt.	117.3	116.2	117.1	117.4	117.2

Another 32 pigs (25 females) out of 442 total pigs did not reach minimum market weight (113 kg) by 25 weeks

Source: Cooper et al., 2001

TAKE HOME MESSAGE

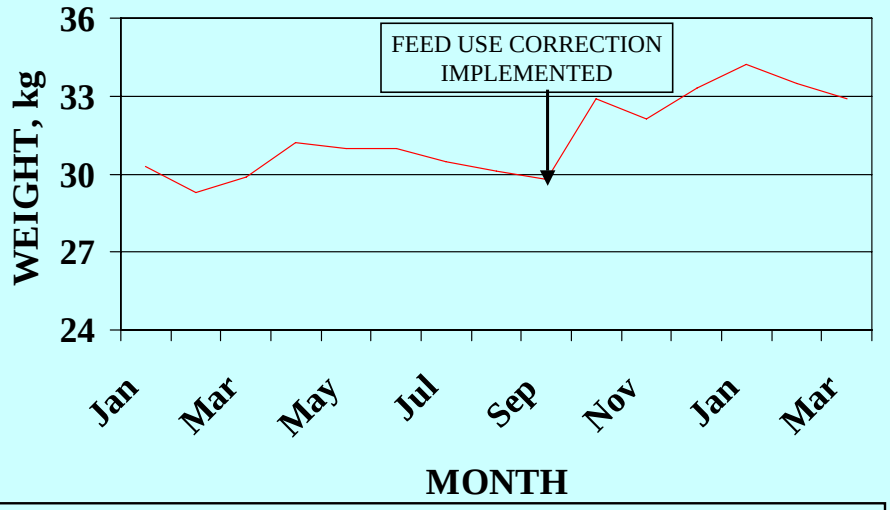
- What happens in one stage of production impacts later phases of production
- For every 1 kg in increased nursery exit weight there was a 1.9 kg increase in pig weight in grow-out at first pull
- Changes to management or barn must pay for themselves based on expected benefits in performance

Impact Of Feed Budget Management On Nursery Exit Wt.

	Prior to Correction	Following Correction	Target
No. Turns	12	2	
No. Pigs	2,673	540	
Phase 1 diet, kg	0.4	2.0	2.0
Phase 2 diet, kg	15.4	18.8	17
Phase 3 diet, kg	23.7	22.3	24
Entry age, days	19.2	19.2	19
Exit age, days	71.2	72.2	72
Entry wt., kg	6.0	6.2	6.5
Exit wt., kg	30.5	34.2	35

The additional Phase 1 and 2 diets increased feed cost by $2.87/pig. The extra weight increased grow-out net profit by $13,000 in a 2,500 head finisher barn.

Impact Of Correcting Actual Feed Use To That Specified By The Feed Budget



Prior to change, intake of Stage 1 nursery was below target. After correction, actual intake matched budget within 5% on a month to month basis.

Feed Budget Versus Actual Usage

Diet	Budget	Actual
Gilt developer	2	3.9
Gestation	34	41.5
Lactation	18	19.5
Starter 1	2	2.2
Starter 2	15	15.6
Starter 3	23	22.5
Grower	60	72.8
Finisher 1	90	94.3
Finisher 2	88	90.7
Cost	**$63.64**	**$69.87**

Corrected Feed Budget

Diet	Budget	Actual
Gilt developer	2	4.6
Gestation	34	39.6
Lactation	18	16.5
Starter 1	2	2.2
Starter 2	15	14.5
Starter 3	23	20.6
Grower	60	69.2
Finisher 1	90	87.7
Finisher 2	88	82.5
Cost	**$63.64**	**$64.83**

Correcting the feed budget increased net income by $75,000 per year on a 600 sow farrow-to-finish unit

TAKE HOME MESSAGE

- Feed budgets work
- Feed use audits are essential measure to staying on budget

ANIMAL HANDLING

Reference	Criteria	+ve treatment	Min treatment	-ve treatment
Hemsworth, 1981	ADG, 11-22 wk, g/d	709[a]	----	669[b]
Gonyou, 1986	ADG, 8-18 wk, g/d	897[b]	881[ab]	837[a]
Hemsworth, 1986	Preg. rate, gilts, %	88[b]	57[ab]	33[a]
Hemsworth, 1996	ADG, kg/d	0.97[ab]	1.05[b]	0.94[b]

TAKE HOME MESSAGE

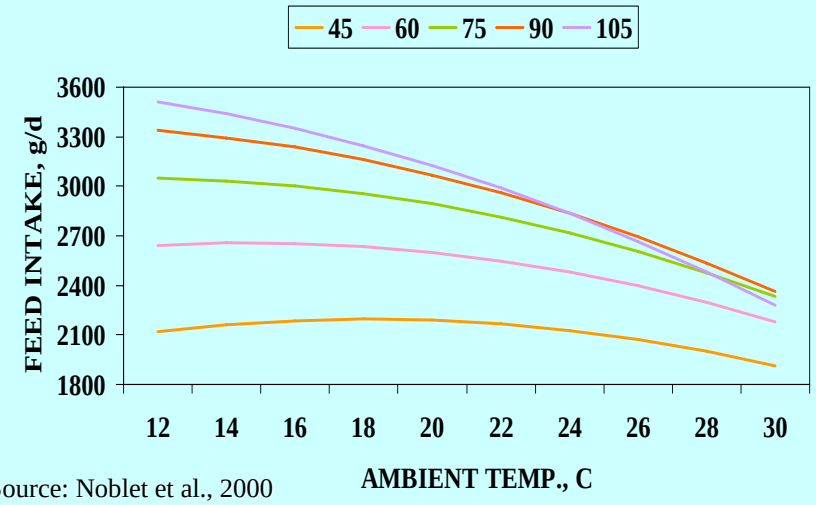
- Animal handling – it matters

Optimum ventilation settings reduce heating costs

	Heating Cost, $/pig			
Location	Montreal		Winnipeg	
Set-point	Hot	Correct	Hot	Correct
Ventilation				
Correct	0.65	0.25	1.09	0.62
20% Excessive	1.63	0.83	2.08	1.37

A 2°C increase in set point, combined with a 20% increase in ventilation rate, can increase heating costs by $10,000 per year in a 2,500 head feeder barn

Effects Of Elevated Ambient Temperature



Source: Noblet et al., 2000

TAKE HOME MESSAGE

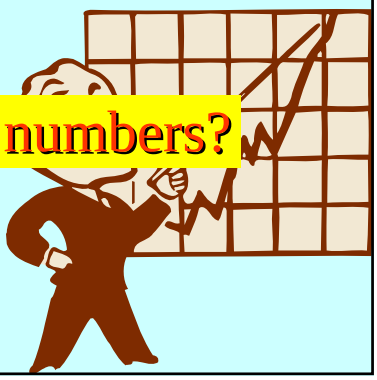
- Proper management of the ventilation system will optimize utility costs, animal comfort and animal performance.

TAKE HOME MESSAGE SUMMARY

- Focus on expenses over which you have the most control
- Focus on items which have the greatest impact or easiest to change
- Nothing reduces cost of production in a farrow to finish farm like sow productivity.
- We each have a job to do, cooperating on heavy days is priceless.
- When feed energy prices rise – feed formulations will change
- If you are responsible for feeding program are you making the adjustments as needed?
- Feed intake is very much under the control of the stockperson
- Sort losses are measurable, predictable and manageable.
- What happens in one stage of production impacts later phases of production
- Feed budgets work
- Feed use audits are essential measure to staying on budget
- Animal handling – it matters
- Proper management of the ventilation system will optimize utility costs, animal comfort and animal performance.

WHAT GETS MEASURED GETS MANAGED

What are your key numbers?



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PorkInsight

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On-Line Publications
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H_2S Awareness Training
- Learn more about about training opportunities
- Discover how H_2S training can benefit your organization
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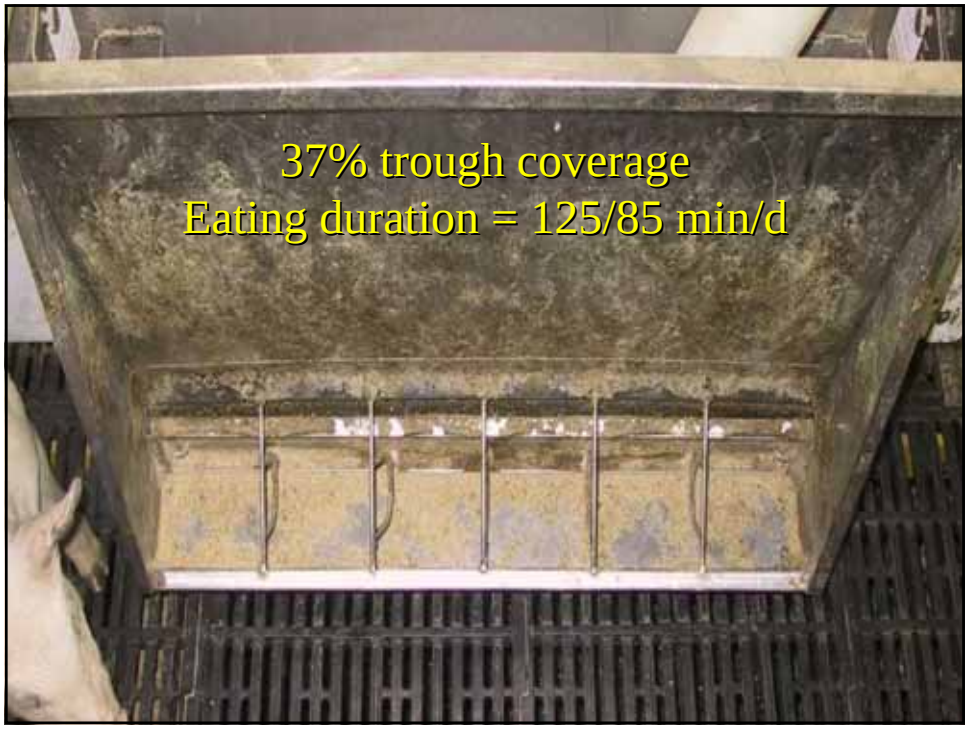
Looking for Ways to Reduce Your Cost of Production?

- We would like to take this opportunity to introduce **PorkInsight**, Prairieswine-ca new large chamber database that allows you to find what you want, when you want it. Formerly known as the Livestock Issues Resource Centre, **PorkInsight** has the type of information that will help your operation improve its bottom line.

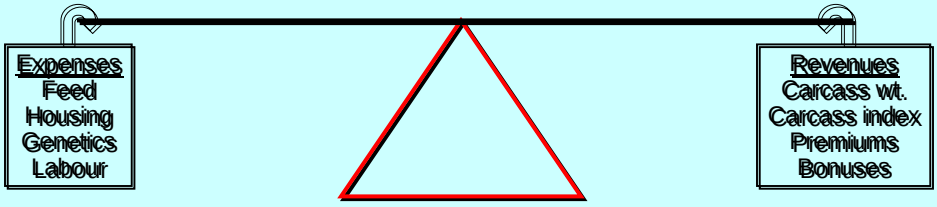

6% trough coverage;
Eating duration = 142/97 min/d


12% trough coverage
Eating duration = 118/90 min/d


37% trough coverage
Eating duration = 125/85 min/d


68% trough coverage
Eating duration = 116/79 min/d

OPTIMUM OR MAXIMUM CARCASS AND PORK QUALITY?



OPTIMUM OR MAXIMUM CARCASS AND PORK QUALITY?

Sometimes, more money is spent chasing improvements in carcass or pork quality than the marketplace is prepared to pay!

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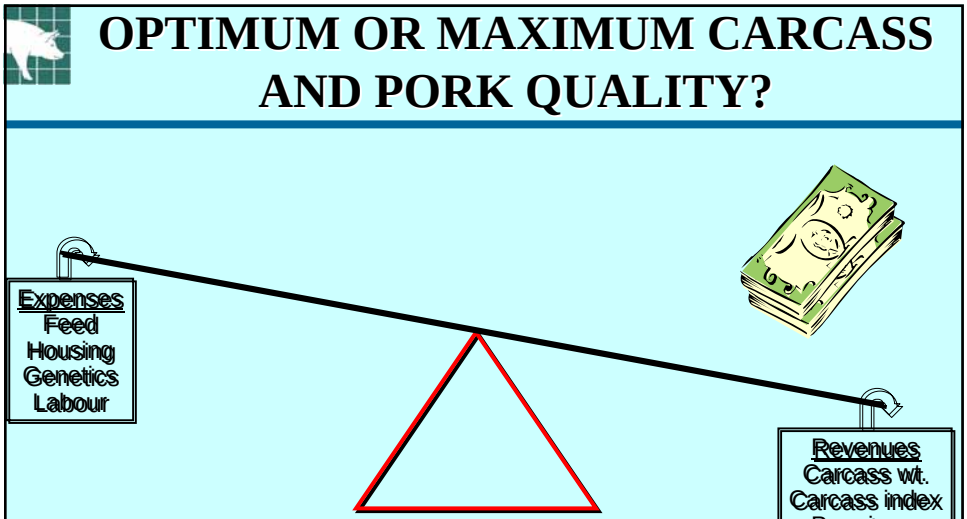

Optimizing revenues means earning additional revenue that exceeds the additional cost of the improved carcass or pork product

Performance of Grow-Finish Pigs According to Dietary Energy Level

NE, kcal/lb	1,000	1,000	1,045	1,090
Daily gain, lb	2.33	100	101.4	100.5
DE intake, kcal/d	7,962	100	98.8	97.1
ME intake, kcal/d	7,679	100	99.1	97.2
NE intake, kcal/d	**5,415**	**100**	**100.2**	**99.3**
Feed:Gain				
- kcal DE/lb gain	4.30	100	97.2	96.5
- kcal ME/lb gain	4.15	100	97.4	96.5
- kcal NE/lb gain	**2.93**	**100**	**98.5**	**98.6**

Source: Rijnen et al., 2004

NE tended to predict animal performance better, but the advantage was modest, in the range of ~2%.