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Financial model evaluating five-month sow farm closures

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Contemplating PRRS stabilization at some of our existing sow farms we considered several strategies, one of the scenarios considered was a 5-month sow farm closure for herd replacements. This financial model was intended to be simple and accounted for life cycle performance variables before, during and after the closure.

The farm considered for the closure had traditionally struggled with liveborn per litter performance (**Figure 1-2**) and the PRRS status had historically been unstable (**Figure 3-4**). The herd average liveborn per litter over the time frame reviewed was 10.0 versus a company average of 10.74 over the same period.

In June 2003, in conjunction with 2 other sites we made these farms a parity managed system. Farm 1 was increased from 1,800 sows farrow to feeder pig to 2,500 sows farrow to wean, raising replacements on site. Farm

2 was increased from 2,100 sows farrow to feeder pig to 2,500 sows farrow to wean. Farm 3, subject farm, is a 5,000 sow farm with a nursery on-site but not connected. Farm 1 received replacement gilts from the multiplier at 60 pounds and raised them in its own finisher and developer. After the gilts had farrowed, (now P1's) and weaned they were moved to Farms 2 & 3.

Prior to the decision of closing Farm 3 to herd replacements Farm 1 had been producing negative piglets. We suspected that with the additional time that the eventual

Figure 1: 2003 Livebirths/litter

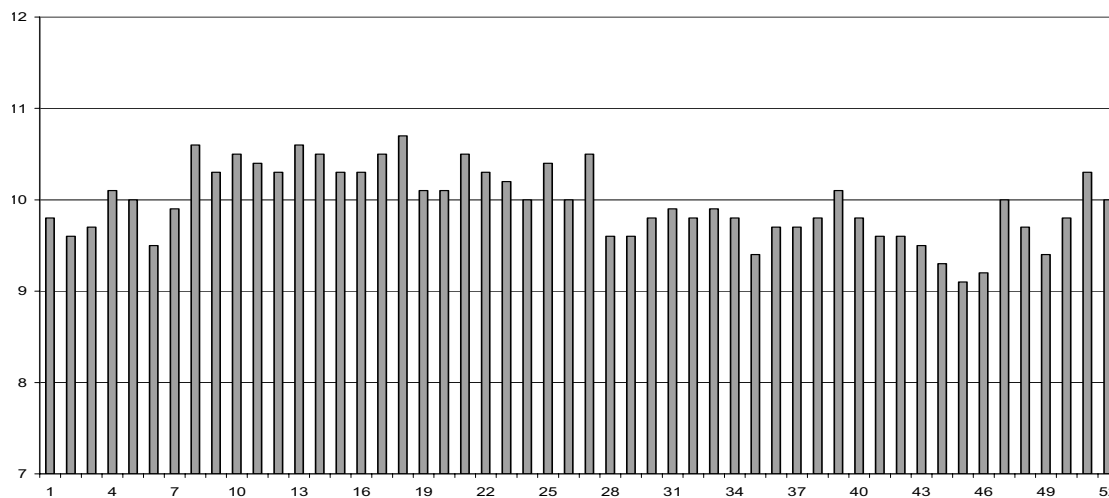
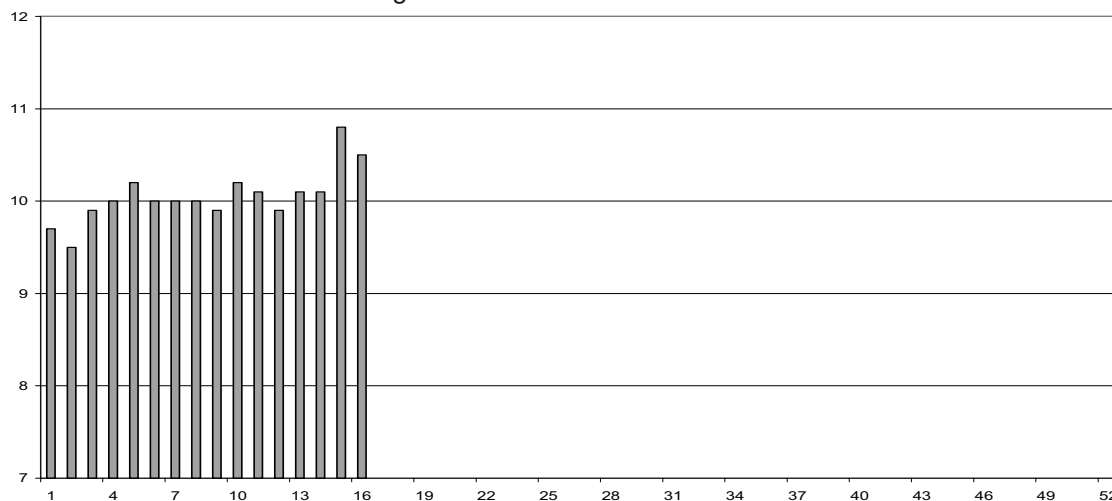


Figure 2: 2004 Livebirths/litter



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Figure 3: % PRRS positive

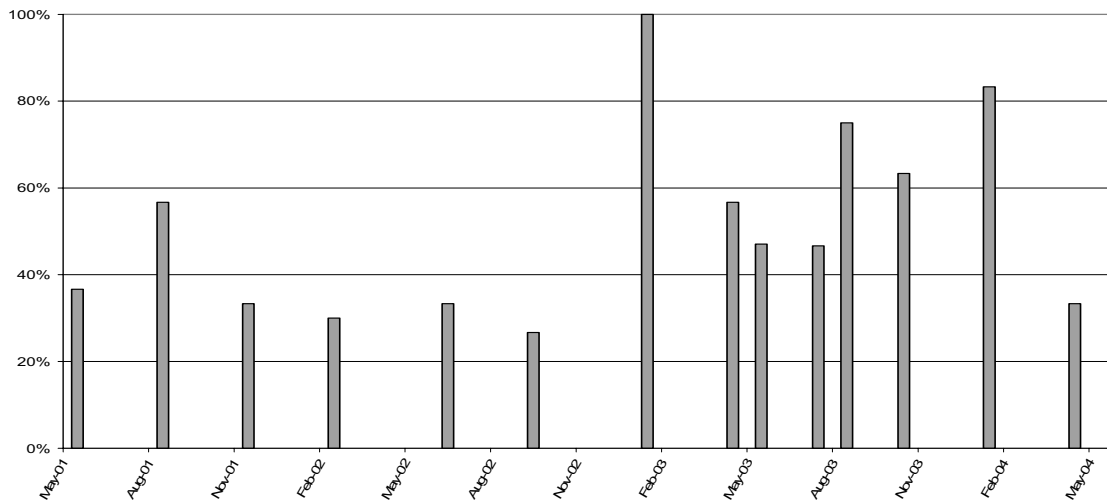
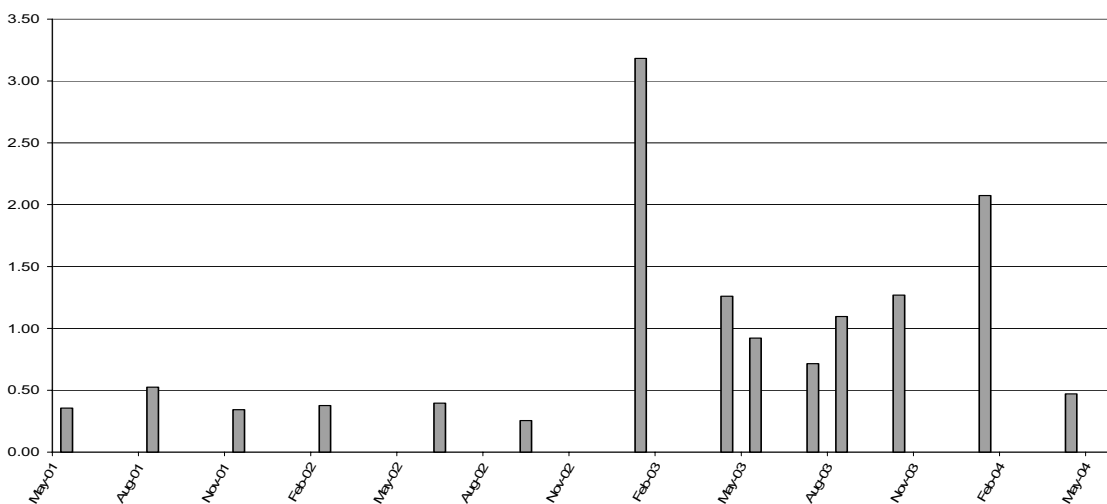


Figure 4: Average PRRS S/P ratio



replacements were going to have at Farm 1, we could be shipping PRRS stable and maybe negative P1 sows.

The first step in the “Herd closure affect on pig flow” sheet is to enter estimates into the input cells for sow herd size, duration of herd closure, estimated number of sows removed from the herd during the closure and weeks to increase the sow herd to the original herd size (**Figure 5**). The model then estimates, by week, the number of sows in the population based on a linear reduction or increase, depending on the length of the herd closure. A farrowings per sow per year and piglets weaned per litter number is then assigned to calculate the number of piglets weaned per week. These performance numbers are assigned as PRRS stable and unstable.

The “Cash flow” sheet has input cells for nursery/finisher deathloss, cull percentage, slaughter weights for market

hogs and culls, market price for slaughter hogs, non-feed weaned pig cost before closure, daily sow feed intake, sow feed cost per ton, wean weight, additional cost/animal introduced from a breeding project, wean to finish spaces, cost per space for wean to finish barns, vet med cost per pig sold, slaughter transport per pig sold, management support per pig sold and feed cost per pound of gain wean to finish (**Figure 6**). Wean weight and Vet cost per pig sold can be adjusted based on PRRS stable and unstable.

The “Cash flow” sheet, during the inputting of the variables, calculates the weekly change of gross profit (loss)/week during the herd closure, sow herd ramp up and post closure periods. Using these gross profit (loss)/week numbers, a calculation is made as to the cost associated during the herd closure and a yearly sum post closure.

Figure 5: Herd closure affect on pig flow

*Input cells are inside the box

		Sow Herd Size	Pigs weaned		Sow Herd Size	Pigs weaned	
Input Data							
Maximum Sow Herd size	5,000	Week 0	5,000	2,054	Week 31	4,879	2,004
Duration of herd closure - weeks	20	Week 1	4,987	2,048	Week 32	4,892	2,009
Sow inventory reduction during closure	270	Week 2	4,973	2,043	Week 33	4,906	2,015
Duration of sow herd ramp up - weeks	20	Week 3	4,960	2,037	Week 34	4,919	2,021
Farrowings per sow/year PRRS unstable	2.40	Week 4	4,946	2,032	Week 35	4,933	2,026
Farrowings per sow/year PRRS stable	2.40	Week 5	4,933	2,026	Week 36	4,946	2,032
Weaned per litter, PRRS unstable	8.90	Week 6	4,919	2,021	Week 37	4,960	2,037
Weaned per litter PRRS stable	9.20	Week 7	4,906	2,015	Week 38	4,973	2,043
		Week 8	4,892	2,009	Week 39	4,987	2,048
		Week 9	4,879	2,004	Week 40	5,000	2,054
		Week 10	4,865	1,998	Week 41	5,000	2,123
		Week 11	4,852	1,993	Week 42	5,000	2,123
		Week 12	4,838	1,987	Week 43	5,000	2,123
		Week 13	4,825	1,982	Week 44	5,000	2,123
		Week 14	4,811	1,976	Week 45	5,000	2,123
		Week 15	4,798	1,971	Week 46	5,000	2,123
		Week 16	4,784	1,965	Week 47	5,000	2,123
		Week 17	4,771	1,960	Week 48	5,000	2,123
		Week 18	4,757	1,954	Week 49	5,000	2,123
		Week 19	4,744	1,948	Week 50	5,000	2,123
		Week 20	4,730	1,943	Week 51	5,000	2,123
		Week 21	4,714	1,938	Week 52	5,000	2,123
		Week 22	4,701	1,933	Week 53	5,000	2,123
		Week 23	4,687	1,928	Week 54	5,000	2,123
		Week 24	4,674	1,923	Week 55	5,000	2,123
		Week 25	4,660	1,918	Week 56	5,000	2,123
		Week 26	4,647	1,913	Week 57	5,000	2,123
		Week 27	4,633	1,908	Week 58	5,000	2,123
		Week 28	4,620	1,903	Week 59	5,000	2,123
		Week 29	4,606	1,898	Week 60	5,000	2,123
		Week 30	4,593	1,893	Week 61	5,000	2,123
Average Pigs Weaned per Week							
Herd Closed	1,996						
Sow Herd Ramp Up	2,001						
Post Closure	2,123						
Average Sow Herd Size							
Herd Closed	4,858						
Sow Herd Ramp Up	4,872						
Post Closure	5,000						

Figure 6: Cash flow

*Input cells are inside the boxes

	PRRS unstable Do Nothing	Herd closure period		PRRS stable?? Post Closure
		Herd Closed	Sow Herd Ramp Up	
Average sow herd size	5,000	4,858	4,872	5,000
Pigs in/week	2,054	1,996	2,001	2,123
*Nur/Fin D.L.	6.50%	6.50%	6.50%	5.00%
Pigs sold	1,920	1,866	1,871	2,017
% culls	1.00%	1.00%	1.00%	0.75%
No.1 slt	1,901	1,847	1,852	2,002
Slit wt / pig	285	285	285	285
Culls sold	19	19	19	15
Cull weight / pig	180	180	180	180
No.1 slit price/pound liveweight	\$0.45	\$0.45	\$0.45	\$0.45
cull price (40%) of live price	\$0.18	\$0.18	\$0.18	\$0.18
Gross Rev	\$244,443.74	\$237,513.76	\$238,173.76	\$257,220.47
Wean pig cost (non sow feed)	\$18.00	\$18.53	\$18.47	\$17.41
Wean pig cost (sow feed)	\$7.48	\$7.48	\$7.48	\$7.23
Wean pig total cost (Delivered)	\$25.48	\$26.00	\$25.95	\$24.65
Avg daily sow feed intake	6.25	\$6.25	\$6.25	\$6.25
Avg sow feed cost per ton	\$140.00	\$140.00	\$140.00	\$140.00
Wean weight per pig	12	12	12	12
Additional cost per animal introduced (off-site breeding project)	\$0.00	\$0.00	\$0.00	\$0.00
Wean to finish spaces	60,000	60,000	60,000	60,000
Cost per wean to finish space/yr	\$38.00	\$38.00	\$38.00	\$38.00
Vet med cost per pig sold W2F	\$3.00	\$3.00	\$3.00	\$3.00
Slaughter transport per pig sold	\$3.00	\$3.00	\$3.00	\$3.00
Management support per W2F space	\$1.30	\$1.30	\$1.30	\$1.30
Feed cost/pound of gain W2F	\$0.165	\$0.165	\$0.165	\$0.165
Total COP	\$196,093	\$192,825	\$193,137	\$201,274
COP/pound sold	\$0.36	\$0.36	\$0.36	\$0.35
Gross Profit per week	\$48,350	\$44,688	\$45,037	\$55,947
Gross profit (loss) weekly versus "Do Nothing"		(\$3,662)	(\$3,313)	\$7,597
Annualized change post herd closure				\$395,025
Cost of herd closure			(\$278,998)	
Estimated time to payback (years)			0.71	

PRRS stable column assumes that there is no new finishing for the extra pigs produced

The cash flows expects that there will be no benefit of the herd closure until after the sow herd is ramped back up to the original sow herd size. This strategy affects pigs weaned per litter, farrowings per sow per year, nursery/finisher deathloss and cull pig percentages. I have also assumed that there won't be a need for any additional wean to finish spaces post closure. Vet costs can be changed during the different stages of closure to compensate for any additional expenses incurred during the closure or in the case of the post closure time, any savings per pig marketed.

Success of a five-month herd closure is being determined on whether or not the herds stay negative for PRRS

