

Wean Finish Buildings

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Optimizing throughput of facilities is critical for maximizing the gross and net revenue of swine operations. During the past decade pig flow alterations have occurred as the industry strives to optimize facility utilization and incorporate segregated production. The industry is transforming from facilities which included breeding/gestation, farrowing, hot nursery, cold nursery, grower, and finishing to facilities which included breeding/gestation, farrowing, single stage nursery, and single stage grow/finish to a system which includes breeding/gestation, farrowing, single stage nursery/finishing.

Table 1 compares the generally accepted space per pig with various facilities.

Stage	Traditional	Single Stage Nursery	Wean Finish
Not Nursery	.14 - .19 sq. m.	.25 - .27 sq. m.	N/A
Cold Nursery	.25 - .27 sq. m.	N/A	N/A
Grower	.43 - .48 sq. m.	N/A	N/A
Finishing	.68 - .76 sq. m.	.68 - .76 sq. m.	.68 - .76 sq. m.

Wean - finish buildings (single stage wean - market) are becoming an accepted method of pig flow. These facilities have been reported at previous AASP meetings. Performance data continues to accumulate to support that these buildings and pig flow are economically viable compared to the typical nursery and finishing phases. The concept and implementation of single stage wean - market facilities began more than four years ago. As success was identified, numerous buildings were constructed in 1996 utilizing this flow. In these facilities, pigs are weaned directly into a finishing style building and remain until slaughter. The weaning age is similar to other production methods at less than 21 days.

The wean - finish facilities have undergone several minor alterations since the original design but generally are typical finishing buildings including:

- Total concrete slats.
- Tunnel ventilation.
- Shallow or deep pit.

The building alterations compared to a typical finishing building:

- Zone heating.
- Gating.
- Comfort mats.

The slot width should be at least one inch. The pigs quickly learn to walk on top of the slat and avoid entrapment. This slot width permits the pigs to remove their legs without restraint during the first 24 - 48 hours post entry.

Zone heating is provided by heat lamps suspended over each pen. The heat lamps are used from 1 - 3 weeks post entry depending on environmental temperature and season. A few barns have incorporated gas infrared for the zone heating using either individual pen gas infrareds (SBM)¹ or tube infrareds (Detroit Radiant Heaters)²

The gates have additional horizontal bars or vertical rods to prevent pig movement between pens.

Comfort mats are placed in the pens to provide an area for feeding and collection of the zone heating. The most common types of rubber mats are from Quality Confinement³, or stainless steel pans from Farmweld⁴. These are usually kept in the pens for 1 - 2 weeks.

The feeders are traditional style dry finishing feeders. Wet/dry feeders have not been used. The waterers are either nipples or cups.

The single flow of pigs weaned to market has these advantages and disadvantages:

Advantages

- Lower transportation costs.
- Lower labor costs for cleaning/disinfecting.
- Lower pig stress.
- Improved performance.
- Increased facility flexibility. (Double load July 1st - August 31st)
- Increased facility utilization days.

Disadvantages:

- Increased facility cost.
- Less efficient facility square footage utilization.

Performance

Table 2

#Hd In	Au Wt (lb)	#Hd Sold	Au Mkt Wt (lbs)	Mortality (%)	Junk (%)	FE	Days	ADG
28,934	9.1	27,939	252.7	3.1	0.51	2.54	167	1.51

Table 3

#Hd In	Au Wt (lb)	#Hd Sold	Au Mkt Wt (lbs)	Mortality (%)	Junk (%)	FE	Days	ADG
3,659	9.3	3,480	256.8	4.9	0.2	2.36	160	1.54

Some systems have been loading the wean - finish buildings at 150% of finish capacity and removing the lighter 50%, 8 - 12 weeks post placement. This increases the pounds generated per square foot of building, and increases the return for the contract finisher. This flow works well if there is traditional 500 - 1000 head to fill from the wean - finish building. This allows extra time for the light weight pigs to achieve market weight but the removal causes resocialization in pens which has an undetermined cost at this point.

The flexibility of wean - finish versus a nursery and separate finishing is the ability to load 150% - 300% of capacity with weaned pigs for a short period if a health change has occurred in sow unit. Second, if the wean - finish buildings are normally 100% filled they can be 200% filled for 8 - 12 weeks during hot weather to sustain a stable market weight.

Cost Benefit

The construction costs are similar to the typical finishing buildings. The operational costs are slightly higher than a finisher because of comfort mats and zone heating. Some producers are using a combination of plaster flooring in six foot of the pen rather than total concrete slats.

The typical Midwest construction costs are the following:

Facility	Time Capacity	Space (sq.m./hd)	Cost(US\$)/space
Nursery	8 weeks	.28	\$120/space
Finishing	18 weeks	.7	\$160/space
Wean - Finish	26 weeks	.7	\$160/space

There is wide variation of costs depending on style, equipment, size, and total capacity per site. The wean - finish building costs the same as a finishing building.

A comparison was done using Biofin⁵ and a cash flow model⁶. The single stage wean - market facilities have an additional cost of \$0.50 - \$0.70 per pig. These models give no credit for the advantages listed previously in this article or anticipated improvement in feed/gain suggested in Table 2 and 3.

In summary, single fill wean - finish buildings offer a potentially lower cost flow with more flexibility than the typical system.

¹SBM, Lifetime Products, Kewanee, IL (800) 369-5365

²Detroit Radiant, 21400 Hoover Road, Warren, MI 48089 (810) 756-0950

³Quality Confinement, P.O. Box 581, Schuyler, NE 68611 (800) 433-6340

⁴Farmweld, R.R. 2, Box 17, Teutopolis, IL 62467 (217) 857-6422

⁵Biofin, Dr. Gary Dial, University of Minnesota, St. Paul, MN 55108 (612) 625-1730

⁶Team Pork, Dr. Carl Watson, Iowa State University, Ames, IO 50011, (515) 294-4496

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TEAMPork: Swine Facility Feasibility Analysis

4000 Sow "Commercial" Swine Unit

Farrow to Finish Operation with Nursery-Finish Buildings

Prepared by: Carl WATSON

Swine Production Enterprise Budget

Revenues/Income	Percent of Each Sold	Animals Sold per Litter	Head Marketed	cwt.	Revenue per Head Marketed	Price/Unit	Percent of Total Revenue	TOTAL REVENUE
Market Barrows	48.88%	4.08	37,878	2.68	\$121.81	\$48.73	48.02%	\$4,878,880
Market Sows	48.48%	4.28	39,217	2.88	\$121.73	\$48.73	50.08%	\$4,773,781
"Lights"	0.00%	0.44	4,047	0.00	\$0.00	\$38.88	0.00%	\$0
Feeder Pigs	0.00%	0.00	0	0.00	\$0.00	\$40.03	0.00%	\$0
Weaner Pigs	0.00%	0.00	0	0.00	\$0.00	\$0.00	0.00%	\$0
Cull Sows	Sow	0.13	1187	3.78	\$141.48	\$37.73	1.78%	\$168,333
Cull Sows	Boar	0.01	94	4.88	\$147.71	\$32.83	0.14%	\$13,811
Composite Animals Produced:		Composite Litter Size	Total Animals Sold	Wgt. Avg. cwt. produced	Wgt. Avg. Price/Head	Wgt. Avg. Price/cwt.	Wgt. Avg. Price/Liter	TOTAL REVENUE
		2.83	82,324	2.85	\$118.88	\$48.15	\$1,038.88	\$9,838,488

VARIABLE COSTS

Feed Costs	Amount of Diet Input	Price/Unit	Total Annual				
			Costs	Head Marketed	Cost/cwt.	Cost/Liter	Percent
Corn	1,082,177 Bushel	\$2.40	\$2,622,225	\$38.71	\$12.08	\$274.38	31.48%
Protein Source	6,348 Tons	\$190.00	\$1,209,888	\$14.88	\$5.78	\$130.98	15.02%
Limestone	6,468 cwt.	\$16.80	\$109,421	\$1.28	\$0.31	\$11.38	1.33%
Dicalcium Phosphate	6,648 cwt.	\$27.50	\$182,753	\$2.22	\$0.87	\$19.88	2.28%
All Other Feed Ingredients			\$142,898	\$1.74	\$0.68	\$15.88	1.78%
Grain, Mix, and Deliver Costs			\$171,842	\$2.08	\$0.82	\$18.88	2.13%
Total Feed Costs			\$4,333,828	\$52.70	\$20.70	\$478.88	54.04%

Other Non-Feed Variable Costs	Annual Costs	Head Marketed	Cost/cwt.	Cost/Liter	Percent
Utility Costs	\$184,880	\$2.24	\$0.88	\$18.88	2.38%
Marketing/Transportation	\$184,880	\$1.88	\$0.78	\$17.88	2.04%
Building Repair and Maintenance	\$124,787	\$1.82	\$0.88	\$13.88	1.58%
Equipment Repair and Maintenance	\$87,823	\$0.78	\$0.28	\$8.88	0.72%
Supplies	\$188,880	\$1.31	\$0.52	\$11.75	1.35%
Veterinary Consultation	\$188,880	\$1.31	\$0.52	\$11.75	1.35%
Veterinary Products (all feed & nonfeed medicines)	\$244,880	\$2.87	\$1.17	\$28.81	3.04%
Breeding Costs (including Replacement Breeding Stock)	\$248,881	\$2.82	\$1.18	\$28.88	2.98%
Truck and Auto Expenses	\$112,880	\$1.38	\$0.53	\$12.17	1.48%
Contract Fee (Dollars per Head)	\$8	\$0.00	\$0.00	\$0.00	0.00%
Rent per Pig Space	\$8	\$0.00	\$0.00	\$0.00	0.00%
Professional Fees (non veterinary)	\$28,880	\$0.38	\$0.12	\$3.72	0.37%
Record-Keeping System	\$8,880	\$0.11	\$0.04	\$0.98	0.11%
Manure Management	\$184,880	\$1.28	\$0.68	\$11.38	1.38%
Miscellaneous	\$48,880	\$0.48	\$0.18	\$4.35	0.50%
Family Living Expenses	\$8	\$0.00	\$0.00	\$0.00	0.00%
Other	\$8	\$0.00	\$0.00	\$0.00	0.00%
Interest on Line of Credit (LOC) - Operating Loan	\$43,381	\$0.53	\$0.21	\$4.78	0.54%
Interest on Intermediate-Term Breeding Stock Loan	\$17,842	\$0.21	\$0.08	\$1.88	0.21%
Other	\$8	\$0.00	\$0.00	\$0.00	0.00%
Other	\$8	\$0.00	\$0.00	\$0.00	0.00%
Total Other Non-Feed Variable Costs	\$2,421,114	\$29.44	\$11.88	\$283.04	30.16%
Total Feed Costs (from above)	\$4,333,828	\$52.70	\$20.70	\$478.88	54.04%

TOTAL VARIABLE COSTS	\$6,754,938	\$82.14	\$32.58	\$761.92	84.20%
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FIXED COSTS

Machinery, Equipment, and Facility Depreciation	Annual Costs	Head Marketed	Cost/cwt.	Cost/Liter	Percent
Interest on Long-Term Facility Debt	\$289,120	\$10.84	\$4.28	\$88.82	11.11%
Insurance and Property Taxes	\$114,148	\$5.18	\$1.24	\$28.23	3.24%
	\$114,148	\$1.38	\$0.58	\$12.48	1.48%
TOTAL FIXED COSTS	\$1,288,887	\$16.38	\$6.84	\$137.44	18.77%

TOTAL ALL VARIABLE AND FIXED COSTS	Annual Costs	Head Marketed	Cost/cwt.	Cost/Liter	Percent
	\$8,029,908	\$97.33	\$39.42	\$899.36	100.00%
GROSS MARGIN ABOVE ALL VARIABLE AND FIXED COSTS	\$1,818,581	\$18.43	\$8.88	\$184.88	

BREAK-EVEN SELLING PRICE FOR VARIABLE COSTS	PER HEAD	PER CWT.	PER LITTER	PER SOW
	\$82.14	\$32.28	\$735.88	\$1,838
BREAK-EVEN SELLING PRICE FOR ALL VARIABLE AND FIXED COSTS	PER HEAD	PER CWT.	PER LITTER	PER SOW
	\$97.82	\$38.38	\$871.88	\$2,048

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TEAMPork: Swine Facility Feasibility Analysis

4000 Sow "Commercial" Swine Unit Farrow to Finish Operation

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Swine Production Enterprise Budget

Revenue/Expense	Percent of Each Sold	Animals Sold per Litter	Head Marketed	wt.	Revenue per Head Marketed	Price/Unit	Percent of Total Revenue	TOTAL REVENUE
Market Barrows	48.88%	4.09	37,678	2.66	\$121.61	\$45.73	48.02%	\$4,578,350
Market Gilts	48.48%	4.38	39,217	2.98	\$121.73	\$45.70	50.06%	\$4,773,791
"Litters"	8.00%	0.44	4,047	0.00	\$0.00	\$38.00	0.00%	\$0
Feeder Pigs	8.00%	0.00	0	0.00	\$0.00	\$40.00	0.00%	\$0
Wearer Pigs	8.00%	0.00	0	0.00	\$0.00	\$0.00	0.00%	\$0
Cull Sows	Sow	0.19	1197	3.78	\$141.48	\$37.73	1.78%	\$169,338
Cull Boars	Boar	0.01	94	4.50	\$147.71	\$32.80	0.14%	\$13,911
Composite Animals Produced:								
		Composite Litter Size	Total Animals Sold	Wtd. Avg. wt. produced	Wgt. Avg. Price/head	Wgt. Avg. Price/lwt.	Wgt. Avg. Price/liter	TOTAL REVENUE
		8.00	82,934	2.98	\$116.98	\$45.16	\$1,028.98	\$9,558,488

VARIABLE COSTS

Feed Costs	Amount of Diet Input	Price/Unit
Corn	1,052,177 Bushel	\$2.40
Protein Source	8,348 Tons	\$180.00
Limestone	8,460 cwt.	\$18.00
Dicalcium Phosphate	8,848 cwt.	\$27.00
All Other Feed Ingredients		
Grain, Mix, and Dairer Costs		
Total Feed Costs		

Total Annual Costs	Head Marketed	Cost/wt.	Cost/liter	Percent
\$2,088,000	698.71	\$19.89	\$274.93	20.92%
\$1,988,000	714.00	\$27.99	\$138.29	14.78%
\$154,251	11.30	\$13.51	\$11.34	1.30%
\$159,708	22.28	\$7.17	\$19.48	2.34%
\$149,888	11.74	\$12.76	\$18.60	1.78%
\$177,612	28.40	\$6.25	\$28.02	2.09%
\$4,333,825	188.70	\$22.78	\$478.08	53.06%

Other Non-Feed Variable Costs

Labor (including benefits)		
Utility Costs		
Marketing/Transportation		
Building Repair and Maintenance		
Equipment Repair and Maintenance		
Supplies		
Veterinary Consultation		
Veterinary Products (all food & rurland medicines)		
Breeding Costs (including Replacement Breeding Stock)		
Trust and Auto Expenses		
Contract Fee (Dollars per Head)		
Rent per Pig Space		
Professional Fees (non veterinary)		
Record-Keeping System		
Nursery Managers		
Miscellaneous		
Family Living Expenses		
Other		
Interest on Line of Credit (LOC) - Operating Loan		
Interest on Intermediate-Term Breeding Stock Loan		
Other		
Other		

Annual Costs	Head Marketed	Cost/wt.	Cost/liter	Percent
\$208,000	\$18.11	\$4.71	\$21.28	18.78%
\$184,000	\$2.94	\$5.98	\$78.88	8.20%
\$184,000	\$1.90	\$6.78	\$17.88	2.01%
\$134,937	\$1.87	\$8.00	\$14.00	1.68%
\$82,878	\$8.77	\$8.20	\$8.01	0.79%
\$188,000	\$1.31	\$8.33	\$11.73	1.33%
\$188,000	\$1.31	\$8.33	\$11.73	1.33%
\$244,000	\$2.87	\$1.17	\$8.01	2.89%
\$240,881	\$2.82	\$1.15	\$8.00	2.84%
\$112,000	\$1.38	\$8.83	\$12.17	1.37%
\$0	\$8.00	\$8.00	\$8.00	0.00%
\$0	\$8.00	\$8.00	\$8.00	0.00%
\$18,000	\$2.30	\$8.11	\$2.77	0.31%
\$8,888	\$8.11	\$8.04	\$8.00	0.10%
\$104,888	\$1.28	\$8.88	\$11.88	1.27%
\$40,888	\$8.00	\$8.11	\$4.00	0.82%
\$0	\$8.00	\$8.00	\$8.00	0.00%
\$0	\$8.00	\$8.00	\$8.00	0.00%
\$18,000	\$8.11	\$8.11	\$8.11	0.82%
\$17,942	\$8.11	\$8.08	\$1.00	0.11%
\$0	\$8.00	\$8.00	\$8.00	0.00%
\$0	\$8.00	\$8.00	\$8.00	0.00%

Total Other Non-Feed Variable Costs
 Total Feed Costs (from above)

\$2,444,388	\$28.72	\$11.67	\$288.48	28.92%
\$4,333,825	\$22.78	\$20.78	\$478.08	53.06%

TOTAL VARIABLE COSTS

\$6,778,111	\$82.48	\$32.37	\$758.56	68.98%
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FIXED COSTS

Machinery, Equipment, and Facility Depreciation
 Interest on Long-Term Facility Debt
 Insurance and Property Taxes

\$778,128	\$11.28	\$4.97	\$188.37	11.28%
\$388,888	\$5.48	\$1.37	\$4.44	3.87%
\$138,816	\$1.82	\$8.80	\$12.88	1.82%

TOTAL FIXED COSTS

\$1,305,832	\$16.58	\$6.64	\$185.69	12.82%
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TOTAL ALL VARIABLE AND FIXED COSTS
 GROSS MARGIN ABOVE ALL VARIABLE AND FIXED COSTS

Annual Costs	Head Marketed	Cost/wt.	Cost/liter	Percent
\$8,083,943	698.33	\$38.91	\$897.48	100.00%
\$1,305,832	\$16.58	\$6.18	\$185.69	

BREAK-EVEN SELLING PRICE FOR VARIABLE COSTS
 BREAK-EVEN SELLING PRICE FOR ALL VARIABLE AND FIXED COSTS

PER HEAD	PER CWT.	PER LITTER	PER SOW
\$22.48	\$22.37	\$758.48	\$1,088
\$28.33	\$28.91	\$897.28	\$8,443