Amended 7/2/2007

Revised Estimated Returns Series Beginning in 2007

The Economics Department at Iowa State University has prepared monthly Estimated Returns to Feeding Livestock in Iowa since the 1960s. Each month the costs and returns are calculated based on a set of constant production assumptions and prices for inputs and outputs that change over time. These returns are not meant to represent any one operation, but rather serve as a barometer of profitability for hog and cattle feeders.

Periodically, the production assumptions are evaluated and revised to more accurately reflect the enterprises we try to represent. The last update was in 2000. We have again updated the technical coefficients beginning with January 2007. The following report describes the production systems modeled and compares the new assumptions to the previous ones. We also provide a comparison of how the new return series would have looked over the 2001-2006 period under the new verses old assumptions.

The big difference is in the hog enterprises. Previously, the model was developed to reflect a farm with approximately 160 sows farrow to finish on one site using a combination of facilities and primarily family labor. The new series is based on a 1,200 sow farrow to finish operation with multi-site production. The facilities are more expensive. Labor is more efficient, but at a higher wage rate. The hogs have better feed efficiency, heavier carcasses, and receive the "average hog" price rather than the "base price". As a result the new farrow to finish returns are higher than under the previous series. The cattle feedlot returns are lower than the previous series because of rising non-feed cost. The model reflects improved cattle performance, but higher facility and equipment cost, trucking expense, labor wages, and vet-med costs.

The detail assumptions and a brief discussion of the difference between the old and new series follows. We want to stress that the purpose of these monthly estimates is to monitor costs and returns from month to month and year to year. They are not intended to represent any one individual, but rather the industry in general.

There are several major changes in the estimated returns series beginning in 2007. First is the addition of a new series for tracking returns to finishing weaned 12 pound feeder pigs. Second, corn co-products, distillers grains with soluables have been added to finishing rations for both swine and cattle. Third, hog slaughter weights are now assumed to be 270 pounds, and fixed costs have been revisited in detail. Finally, one of the largest changes is an increase in wage rates for labor. Previously the assumed per hour wage rate was $7 and $8, respectively, for cattle and hog enterprises. Under the new assumptions labor has a cost of $22 per hour for both enterprises. This rate includes wage and benefits, and is pursuant to recent industry wage surveys. For information on these surveys visit the following websites.
http://www.econ.iastate.edu/research/publications/viewabstract.asp?pid=12615
http://agecon.unl.edu/mark/Papers/EC04-836.pdf

Swine Production

The swine series for returns to farrowing and finishing hogs and finishing feeder pigs were changed to better reflect current costs and revenues. Tables 1 and 2 contain a summary of changes in the swine estimated returns assumptions. The feed ration also was changed. Previously a soybean meal based supplement was used. The cost of this supplement was based on the price of soybean meal and an additional charge for other ingredients and handling. The new ration is based on corn, soybean meal, and a vitamins and minerals package. Dried distiller grain is also used in the hog finishing ration. Overall, feed efficiencies were improved to reflect increased growth and performance in the industry.

Table 1. Summary Previous and New Swine Assumption Coefficients, Farrowing

		Farrow to Finish		Farrow to Feeder	
		Previous	New	Previous	New
Corn fed	bushels	13	11.9	3	2.6
Soy Supplement	pounds	185		35	
Soybean Meal fed	pounds		143		60
Dried distiller grain	pounds		33		
Finish weight	pounds	260	270		
Facility & equipment	cost per head	$ 15.15	$ 14.21	$ 11.37	$ 7.49
Manure handling	cost per head	$ 2.80	$ 3.00	$ 1.00	$ 1.10
Feed grind & mix	cost per head	$ 3.19	$ 4.31	$ 0.74	$ 1.06
Utilities	cost per head	$ 3.57	$ 4.77	$ 2.54	$ 3.20
Labor	cost per head	$ 10.80	$ 11.43	$ 7.20	$ 8.59
Miscellaneous	cost per head	$ 3.50	$ 3.50	$ 1.50	$ 1.50
Animal health	cost per head	$ 3.40	$ 4.72	$ 2.49	$ 2.40
Transportation	cost per head	$ 2.00	$ *2.08	$ 1.50	$ *0.42

* These values are minimums and can increase.

Although some input costs do fluctuate, there are other costs that are assumed to remain constant. These include fixed costs, utilities, labor, manure and feed handling costs to name a few. Although assumed labor costs per hour were increased from $8 per hour to $22 per hour, labor requirements per hog or pig were lower because of increased efficiency. Assumed facility costs are now 20-30% higher per animal sold. The same rate of a penny per gallon is charged for manure handling, but this may be changed in the future as producers find new methods of gaining value from the nutrients in the manure. Feed delivery, grinding and mixing is assumed to cost $10 per ton. Utility costs to provide water, power, and heat have increased, with the new cost per head based on the amounts paid currently by producers. Animal health is based on an assumed health plan including vaccinations, parasite control and miscellaneous antibiotics and supplies commonly used on swine operations. Transportation costs were once assumed to be constant, but are now allowed to fluctuate with the current cost of diesel fuel. The transportation costs in Tables 1 and 2 are a minimum value to which a fuel charge is added.

Table 2. Summary Previous and New Swine Assumption Coefficients, Finishing

		Feeder to Finish		Wean to finish
		Previous	New	New
Corn fed	bushels	10	9.2	10.2
Soy Supplement	pounds	150		
Soybean Meal fed	pounds		87	120
Dried distiller grain	pounds		33	33
Finish weight	pounds	260	270	270
Facility & equipment	cost per head	$ 6.77	$ 6.82	$ 8.45
Waste handling	cost per head	$ 1.80	$ 1.90	$ 2.00
Feed grind & mix	cost per head	$ 2.44	$ 3.25	$ 3.68
Utilities	cost per head	$ 1.03	$ 1.57	$ 2.57
Labor	cost per head	$ 3.60	$ 2.75	$ 3.67
Miscellaneous	cost per head	$ 2.00	$ 2.00	$ 3.00
Animal health	cost per head	$ 0.91	$ 3.99	$ 4.15
Transportation	cost per head	$ 2.00	$ *1.69	$ *1.69

* These values are minimums and can increase.

Finishing weaned pigs is now a common practice in the swine feeding business. The new series for returns to finishing weaned pigs was added to parallel the series trending returns to finishing 50 pound feeder pigs. The differences between the two series include a different month in which the young pigs are purchased and additional production costs, some of which include additional facilities to care for weaned pigs, more health and nutrition costs, more death loss and more feed per pig finished.

Market hog sale values are now based upon the average Iowa-Southern Minnesota market hog price reported by USDA-AMS which includes premium and discounts; previously the 51-52% lean hog base price was used as the reference price. The value of the market hogs is now also adjusted to account for cull hog discounts. Feeder pigs are valued according to the National Direct Feeder Pig Report average price paid for delivered pigs in lots of 750 head or more.

In the farrow to finish series, the impact that changes in sow value have on monthly profits is still being tracked. The change in sow value continues to be the difference between the value of a sow at the current market value and the value of a breeding gilt 11 months previous. However, sows are now valued by the average national price for 450-499 pound sows rather than the average Sioux Falls, SD auction price paid for 300-500 pound sows. Replacement breeding gilts are now valued with a $75 premium over market price rather than with the $100 premium assumed previously. This premium reflects the additional cost associated with raising breeding gilts verses market gilts. The costs associated with a herd boars have been replaced with a cost per breeding based on the cost of semen and conception rates.

Under the new farrow to finish assumptions the 2006 feed costs and fixed costs would have been lower, while non feed variable costs would have been higher. Under the new

assumptions both total cost and revenues would have been higher. Table 3 compares the average costs, revenues, and returns to a swine farrow to finish enterprise during 2006 under the previous and new assumptions.

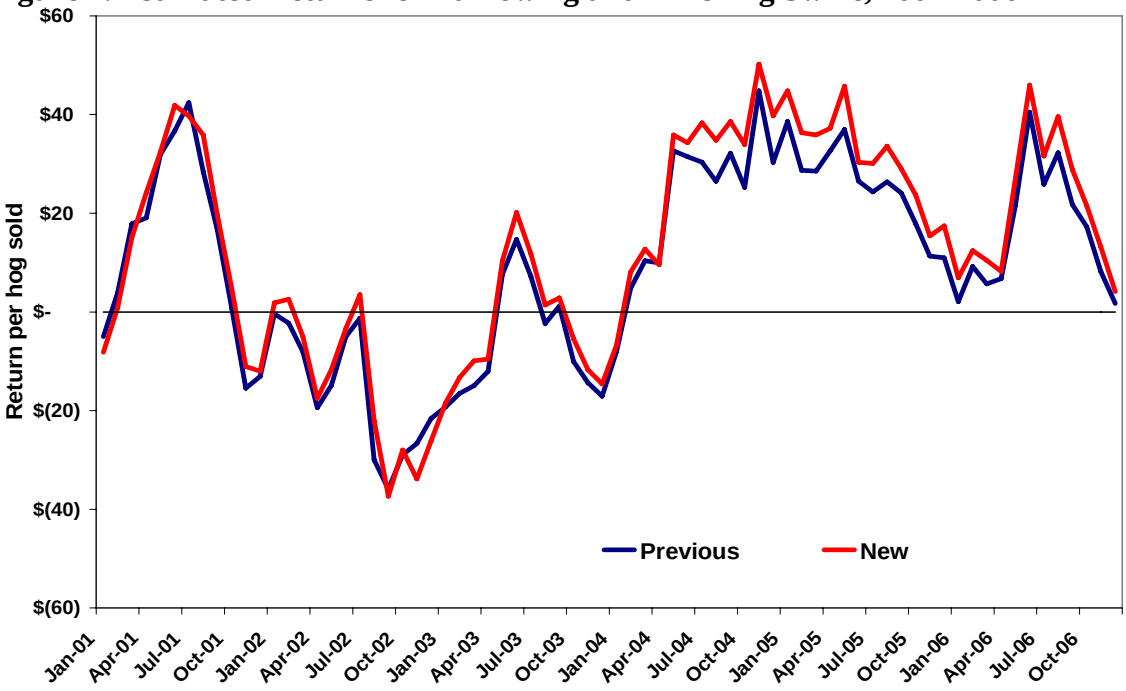
Table 3. Average Farrow to Finish Estimated Returns, New vs. Previous Assumptions

2006 under Previous Assumptions	
Corn	$26.26
Supplement	28.61
Total feed costs	$54.87
Non-feed variable costs	$22.77
Operating interest	1.34
Fixed costs	23.42
Total costs	$102.45
Change in Sow value	-2.08
US, 51-51% lean hog price	$46.40/cwt
Value of 260 pound hog	$120.65
Profit per hog	$16.07

2006 under New Assumptions	
Corn	$25.75
Soybean meal	12.60
Dried distiller grain	1.30
Vitamin & mineral	14.35
Total feed costs	$54.00
Non-feed variable costs	$39.54
Operating interest	2.73
Fixed costs	14.21
Total costs	$109.94
Change in Sow value	-1.17
Average market hog price	$48.19/cwt
Value of 270 pound hog	$130.12
Profit per hog	$19.01

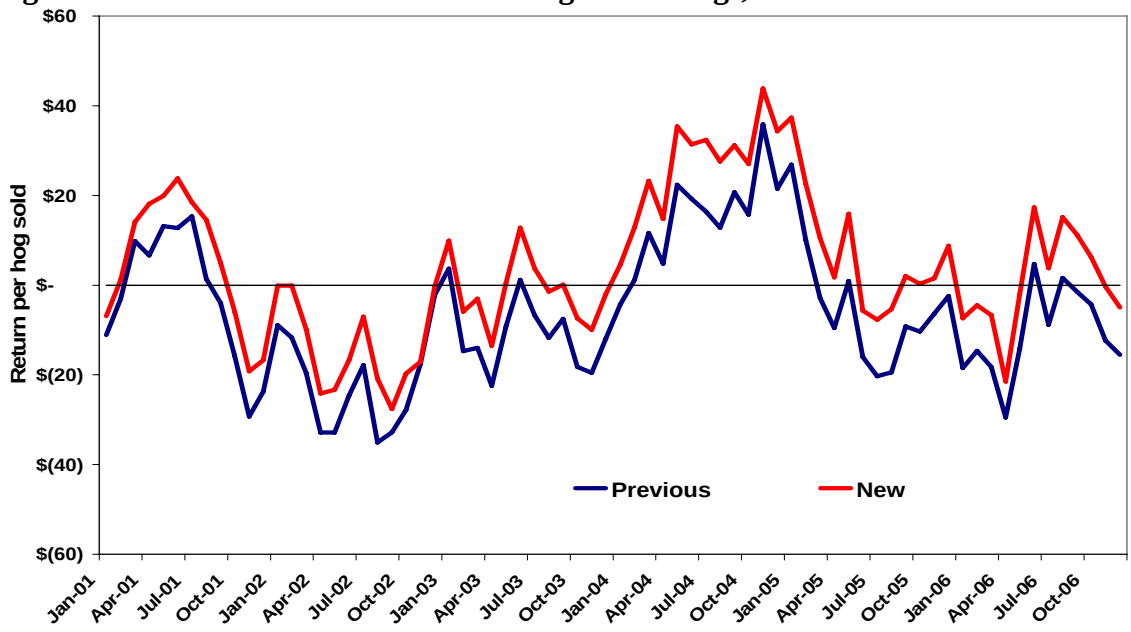
How will the new assumptions and methods of calculation impact the estimated returns to swine production? Figures 1 and 2 contain graphs of returns for farrow to finish and feeder pig finishing enterprises over the past 6 years.

Figure 1. Estimated Returns for Farrowing and Finishing Swine, 2001-2006



A notable difference between the returns under the previous and new assumptions is a slightly higher return under the new assumptions. There are multiple reasons for this happening, the first being the assumption that a heavier hog is being produced with slightly less feed. Second, market hogs will now be valued according to the average market hog price which is generally higher than the 51-52% lean hog base price, that was used other the previous assumptions. The average return for farrow to finish from 2001-2006 using the previous assumption was $9.22 per hog sold, but would have been $12.89 under the new assumptions.

Figure 2. Estimated Returns for Finishing Feeder Pigs, 2001-2006



The returns to finishing swine are greater under the new assumptions for many of the same reasons the farrow to finish estimated returns were higher. Changes in the assumed ration, feed cost, facility cost, sale weight and market hog price have lead to a slightly greater estimated profitability. The 2001-2006 average monthly return to finishing feeder pigs under the old assumptions was actually a loss of -$6.04 per feeder pig finished. Under the new assumptions the average return would have been a profit of $0.54 per hog sold.

Finishing weaned pigs is now a common practice in the swine feeding business. The new series for returns to finishing weaned pigs was added to parallel the series for returns to finishing 50 pound feeder pigs. The differences between the two series include a different month in which the young pigs are purchased and additional production costs such as facilities to care for weaned pigs, more health and nutrition costs, greater death loss and more feed consumed per pig finished. The estimated six year returns to finishing weaned pigs would have been a loss of -$2.10 per hog sold.

Beef Cattle Finishing

Table 4 contains a summary of what has changed in the returns for finishing cattle series. Previous feed consumption, input costs and other production assumptions are listed beside their new values. Some assumed costs that were once considered constant now have a variable value.

Table 4. Summary Previous and New Cattle Assumption Coefficients

		Finishing Calves		Finishing Yearlings	
		Previous	New	Previous	New
Corn fed	bushels	48.2	49.3	52	47.7
Silage fed	tons	2.45	-	1.5	-
Modified distiller grain fed	tons	-	1.025	-	0.907
Hay fed	tons	-	0.362	-	0.213
Days on feed	days	237	203	178	159
Feedlot and shelter	cost per head	$ 17.56	$ 18.98	$ 13.10	$ 14.87
Waste handling	cost per head	$ 4.52	$ 2.65	$ 3.38	$ 2.05
Labor	cost per head	$ 21.00	$ 40.08	$ 14.00	$ 30.98
Vet, med and implant	cost per head	$ 7.75	$ 12.00	$ 4.50	$ 11.38
Transportation	cost per head	$ 14.50	$ *13.99	$ 16.50	$ *17.24

* These values are minimums and can increase.

In the cattle diet, silage and some corn has been replaced with average quality hay and modified distiller grain and solubles. Daily gains have increased and time on feed is shorter. Animals are actually marketed in the month previous to what they have been in the past. Fixed costs are based on the facility costs in the Beef Feedlot Systems Manual, ISU publication PM 1867. Although not all assumptions in the feedlot handbook were adopted, some were applicable and were incorporated in the estimated return calculations and as noted in the general assumptions. New environmental requirements on large feedlots have increased the construction costs. Other changes include a new wage rate for labor, $7/hr increased to $22/hr, and labor requirements per animal finished have decreased. Dramatic fluctuations in fuel prices have made transportation costs more variable than in the past, so a fuel surcharge has been added to capture additional trucking cost.

The references for some input prices have also changed. Feeder cattle are now priced according to the average monthly combined Missouri steer auction price. The combined Oklahoma auction prices were used previously. In 2006, the average Missouri feeder cattle price tended to be slightly higher than the Oklahoma price. Table 5 contains the average prices, costs and revenues during 2006 under the previous and new assumptions. Corn and hay are valued at the USDA mid-month price. Modified distiller grain value is derived from the daily USDA Iowa Ethanol report, and the price of mineral supplement remains constant. Overhead costs have also increased, due primarily to higher labor and facility costs. Sale price and weight were not changed in the new assumptions.

Table 5. Average Steer Finishing Estimated Returns in 2006, New vs. Previous Assumptions

	2006 Finishing Calves		2006 Finishing Yearlings	
	Previous	New	Previous	New
Feeder cattle purchase price/cwt	$128.86	$130.41	$111.32	$112.68
Value per head	$708.73	$717.26	$834.90	$845.10
Corn	$95.25	$97.42	$104.65	$96.00
MDG		32.15		28.80
Hay		20.84		12.32
Mineral Supplement	10.56	16.64	10.56	12.61
Silage	43.57		27.17	
Protein, mineral supplement	9.56			
Total Feed cost	$158.94	$167.05	$142.38	$149.72
Non-feed variable costs	$59.15	$84.97	$43.10	$73.23
Operating interest	42.06	42.63	36.14	37.36
Death loss	14.17	14.35	8.34	8.43
Fixed costs	17.56	20.11	13.10	15.54
Total costs	$1,000.61	$1,046.37	$1,077.96	$1,129.38
Sale price/cwt	$85.47	$85.47	$85.47	$85.47
Value per head sold	$982.93	$982.93	$1,068.41	$1,068.41
Profit	-$17.68	-$63.44	-$13.44	-$60.98

Figure 3 is a graph of the monthly returns to finishing 550 pound steer calves under the previous and the new assumptions since 2001. In general the new assumptions have depressed profitability. The average monthly profit per head under the old assumptions was $45 from 2001-2006, but under the new assumptions the average profit would have been $1.62. Increased operating costs are the biggest change in the new assumptions, a large portion of which was the increased cost of labor.

Figure 4 is a graph comparing the returns to finishing 750 pound yearling steers over the past six years under the new and previous assumptions. The cost of finishing yearlings has also gone up with the change in feed ration, increased cost of production and higher facility costs. The facilities in which calves and yearlings are finished are identical, and the rate of turn over in cattle inventory creates the difference in facility costs per head finished.

The decreased average profitability projected by the new estimated returns for cattle finishing is the result of several factors. Some of the previous assumptions used assumed formulas to determine feed costs, which may have under valued a feed source. Commodity feed sources in the new series are valued according to USDA reports. Facility costs have increased not only with the price of materials, but also with planning and additional environmental requirements. Other cost increases such as trucking, health, and machinery have also added to the cost of finishing cattle. Finally, increased labor cost from $7 to $22 per hour is a primary factor in the increased cost of production. The cost of labor includes paying another individual to complete all cattle care, feeding, repairs and management. Therefore, the final estimated profit or loss is a return to ownership.

Figure 3. Estimated Returns from Finishing Steer Calves, 2001-2006

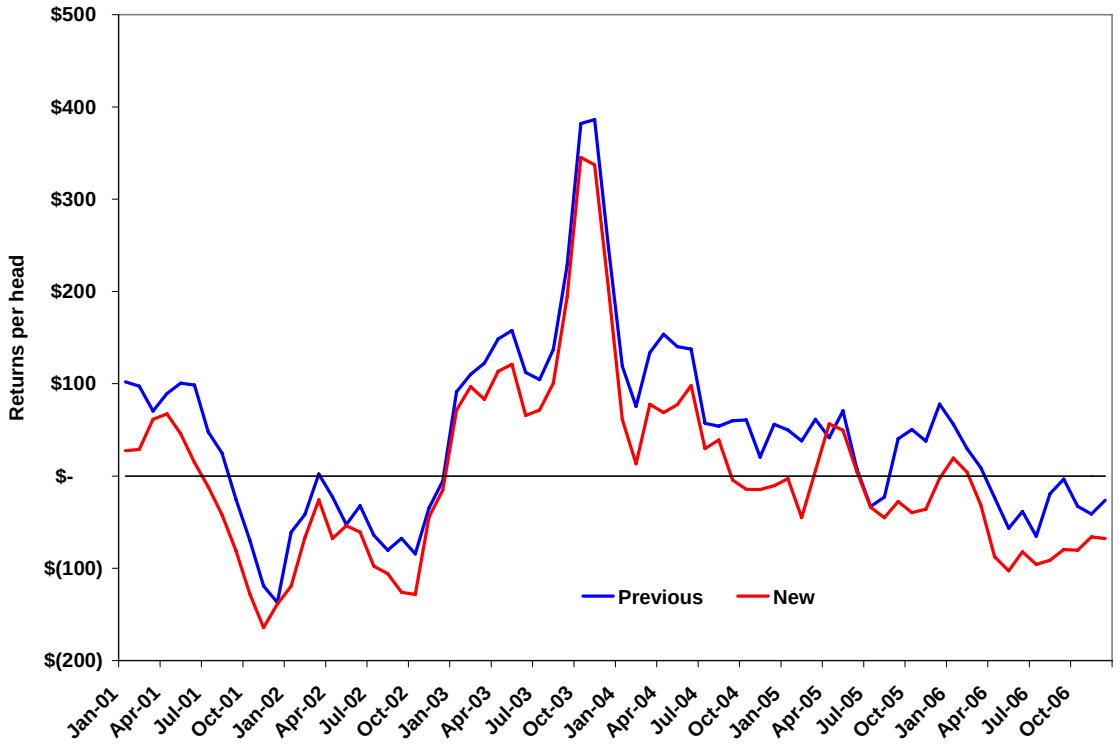


Figure 4. Estimated Returns from Finishing Yearling Steers, 2001-2006