

# Swine least cost rations for increasing efficiency and profitability

*J. A. Church and M. V. Boggess*

Realizing a profit from pork production challenges even the best hog managers. Animal health, housing, reproduction, genetics, and finances are all concerns that must be dealt with on a daily basis. In addition, nutrition can have a significant effect on the profitability of the swine enterprise.

Hogs should be fed a balanced ration that meets their nutrient requirements and contains the least expensive combination of available feedstuffs. This principle is called least cost rationing. Hogs fed least cost rations will perform to their physiological potential, and feed costs will be minimized.

Least cost rationing can enhance profitability, increase efficiency, and increase the success of the operation. Least cost rationing is a must for producers mixing their own feed and should strongly be considered by those purchasing complete feeds from feed dealers.

## Why use least cost rationing?

That's simple: It saves the producer money! Feed costs make up approximately 60 percent of the total cost of production. Therefore, it is important to use least cost rationing to efficiently meet the herd's nutritional requirements. Producers who use least cost rationing also are more in tune with the nutrient needs of their hogs, the composition of available feed ingredients, and the nutrient status of their rations.

Table 1 gives an example of three typical rations fed to finishing hogs in Idaho. Note the differences in cost per ton among the three rations.

Each of the three rations contains similar amounts of calcium carbonate, salt, and dicalcium phosphate. The main differences in cost per ton are in the selection of a grain or energy source and in the amount of soybean meal needed to balance the ration.

Ration 1 uses barley as the grain source, while ration 2 uses hard red winter wheat. The amount of soybean in the two rations is almost identical. Ration 1 is \$12.87 per ton cheaper

than ration 2 primarily because of the difference in cost between the barley and the hard red winter wheat. The barley cost is \$110 per ton and that of the red wheat is \$125 per ton.

Ration 3 uses corn at \$120 per ton as the grain source. At this price it appears to be competitive with both wheat and barley. However, corn has a lower level of protein than either barley or hard red wheat. In order to balance the corn-based ration, additional soybean is needed, which causes ration 3 to be more expensive than rations 1 or 2.

**Table 1. Three typical finishing rations fed in Idaho.**

Ingredient	Percent	lb/ton of ration	\$/ton of ingredient	\$/ton of ration
<b>Ration 1</b>				
Barley, grain	87.50	1,749	110.00	96.25
Soybean meal, solvent	10.60	212	230.00	24.38
Calcium carbonate	1.00	20	90.00	0.91
Salt	0.35	7	90.00	0.32
Dicalcium phosphate	0.45	9	350.00	1.58
Vitamin/trace minerals	0.10	3	1,266.00	1.90
Total	100.00	2,000		125.34
<b>Ration 2</b>				
Wheat, hard red	87.60	1,752	125.00	109.50
Soybean meal, solvent	10.40	208	230.00	23.92
Calcium carbonate	1.10	21	90.00	0.99
Salt	0.35	7	90.00	0.32
Dicalcium phosphate	0.45	9	350.00	1.58
Vitamin/trace minerals	0.10	3	1,266.00	1.90
Total	100.00	2,000		138.21
<b>Ration 3</b>				
Corn, dent yellow	83.40	1,666	120.00	99.96
Soybean meal, solvent	14.55	290	230.00	33.35
Calcium carbonate	0.85	17	90.00	0.77
Salt	0.35	7	90.00	0.32
Dicalcium phosphate	0.85	17	350.00	2.98
Vitamin/trace minerals	0.10	3	1,266.00	1.90
Total	100.00	2,000		139.28



A producer with 50 sows marketing 800 head of slaughter hogs annually could save \$5,214.00 by using ration 1 instead of ration 3. This is possible because the producer saves \$13.94 per ton of feed. According to the *1990 Iowa Swine Enterprise Records Program*, an average hog operation uses 378 pounds of feed per hundredweight (cwt) of pork marketed. If the 800 head of hogs were sold at an average weight of 240 pounds, along with 15 culled sows weighing 400 pounds each, 1,980 cwt would be produced during the year, requiring 374 tons of feed. Multiplying 374 times \$13.94 gives the difference in feed costs between rations 1 and 3 (\$5,214.00).

Thus, least cost rationing can help producers determine the ration that will meet their needs most cost effectively. Rations that are incorrectly balanced can lead to inefficiencies, which can increase feed costs. Increasing the whole herd feed efficiency by 25 pounds per cwt of pork produced can increase profits for a 50-sow enterprise by as much as \$3,500 per year.

Improper formulation of a ration can cost a producer in two ways. First is the use of ingredients that are not cost effective or unnecessarily increase the cost of the ration (right ration formula, wrong ingredients). Second is a less-than-optimal nutritional formula that does not meet the hog's basic requirements (right ingredients, wrong ration formula). These two effects may also combine, reducing enterprise profitability even more (wrong ingredients, wrong ration formula).

## Getting started with least cost rationing

To realize the benefits of balancing a ration at least cost, follow these steps:

1. Determine the class of hogs that will be fed (20 to 40 pounds, 40 to 110 pounds, 110 to 240 pounds, etc.).
2. Determine the nutrient requirements of the class of hogs that will be fed; use National Research Council recommendations, which are available at the University of Idaho Cooperative Extension System office in your county.
3. Consider the available energy sources and determine the price for each.

Feedstuff	Price/ton
a. Barley	_____
b. Wheat	_____
c. Corn	_____
d. Triticale	_____
e. Other	_____

4. If possible, have the potential energy feed ingredient tested to determine its nutrient profile, which should include an analysis of essential amino acids. Periodically test the final mixed feed to ensure consistent nutrient levels.
5. Determine if a premixed commercial protein supplement will be used or if the supplement will be developed as part of the ration.
6. Consider the available supplements and determine the price for each.

Supplement	Price/ton
a. Soybean meal	_____
b. Canola meal	_____
c. Meat and bone meal	_____
d. Cottonseed meal	_____
e. Fish meal	_____
f. Cull peas	_____
g. Other	_____

Commercial supplement	Price/ton
a. _____	_____
b. _____	_____
c. _____	_____

7. For a commercial supplement, try to obtain an amino acid analysis. Use NRC values if no analysis is available.
8. Contact your area Extension agricultural agent with swine responsibility to set up an appointment to analyze the proposed ration.

## University of Idaho least cost rations program assistance

The University of Idaho Cooperative Extension System has a swine least cost ration computer program. Extension professionals with swine responsibility are willing to calculate least cost rations for producers upon request, at no charge, for all classes of hogs. Producers wishing to use this service should complete the eight steps outlined under "Getting Started with Least Cost Rationing."

Producers using a premixed complete supplement should bring a copy of the ingredient tag when visiting the Extension office. Tags from vitamin and mineral supplements should also be provided.

Producers are encouraged to analyze the possibility of using alternative feedstuffs such as peas in place of soybean meal. Visit with your Extension agent about alternative feeds in your area.

### Extension personnel with swine responsibility:

District 1, northern Idaho	Jim Church (983-2667)
District 2, southwestern Idaho	John Henry (454-7461)
District 3, southcentral Idaho	Richard Garrard (678-9461)
District 4, eastern Idaho	Stan Gortsema (226-7621)
	Steve Harrison (547-3205)
State swine specialist	Mark Boggess (734-3600)

**The authors** — James A. Church, Extension agricultural agent, Idaho County, Grangeville, and Mark V. Boggess, Extension animal scientist, swine/beef cattle, Department of Animal and Veterinary Science, Twin Falls Research and Extension Center, University of Idaho.

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