

SUPPLEMENTING HOG RATIONS WITH AMINO ACIDS

Hog rations formulated from oats and barley and supplemented with soybean oilmeal have proven to be practical and efficient at this station. This is due primarily because soybean oilmeal is high in two amino acids that are deficient in both oats and barley. These two amino acids, lysine and methionine, are essential for the growing-fattening pig. Since both amino acids are available commercially, their addition to oats-barley rations should yield results comparable to supplements based on soybean oilmeal.

Although the cost of the amino acids is relatively high, the advantage of using them to replace soybean oilmeal would (1) allow more utilization of home grown barley and oats (2) reduce transportation costs (less pounds to transport) (3) remove the variability of the supply of soybean oilmeal due to a bad crop year.

With this in mind, a trial was initiated in May, 1970 and continued in 1971 to compare rations based on barley and oats supplemented with either soybean oilmeal or commercial lysine and methionine. A check ration not supplemented was also fed.

In this trial pigs of two different starting weights were fed, both under confinement and under pasture conditions. Pastures used were spring seeded winter wheat. All rations were processed in a grinder-mixer equipped with a 3/16 inch screen and were self-fed in the meal form. The pigs had access to automatic waterers and were wormed at the start of the trial.

The rations as fed in 1971 are shown in Table 3.

Table 3. Rations Used in Trials Comparing Soybean Oilmeal and Lysine-Methionine Supplements

	16% Protein Basic Ration	14% Protein Plus Lysine- Methionine Ration	Lysine- Methionine Ration	Check Ration
Oats (lbs.)	356	225	231	236
Barley (lbs.)	500	686.8	737.5	740
Soybean oilmeal 44% (lbs.)	120	60	----	----
Di calcium phosphate (lbs.)	9	9	9	9
Limestone (lbs.)	9	9	9	9
Trace mineral salt (lbs.)	5	5	5	5
Lyamine-50 (50% lysine) (lbs.)	----	3	6	----
D-L Methionine 99% (lbs.)	----	1.25	1.5	----
Vitamin B complex (lb.)	1	1	1	1
Vitamin A (20,000 U.S.P. / gm.)	30 gms.	30 gms.	30 gms.	30 gms.
Vitamin D ₃ (200,000 I.C.U. / gm.)	14 gms.	14 gms.	14 gms.	14 gms.
Zinc sulfate (gms.)	<u>180 gms.</u>	<u>180 gms.</u>	<u>180 gms.</u>	<u>180 gms.</u>
	1000+lbs.	1000+lbs.	1000+lbs.	1000+lbs.
Cost per ton	\$43.34	\$46.80	\$47.88	\$37.06

Table 4 shows the trial results for 1970-1971.

Table 4. Results of Feeding Rations Supplemented with Soybean Oilmeal or Lysine and Methionine

		Average Initial Weight	Average Final Weight	Days Fed	Average Daily Gain	Feed per Hundred Pound Gain	Cost per Hundred Pound Gain
16% Protein-Basic Ration:							
Concrete drylot							
Light	1970	35.2	205.7	127	1.34	407.0	\$ 9.16
	1971	38.8	204.6	114	1.46	404.7	\$ 9.19
	Avg.	<u>37.0</u>	<u>205.2</u>	<u>120</u>	<u>1.40</u>	<u>405.8</u>	<u>\$ 9.18</u>
Heavy	1970	48.5	215.3	108	1.54	436.3	\$ 9.82
	1971	48.6	221.3	114	1.51	392.5	\$ 8.91
	Avg.	<u>48.6</u>	<u>218.3</u>	<u>111</u>	<u>1.52</u>	<u>414.4</u>	<u>\$ 9.36</u>
Pasture							
Light	1970	35.0	217.1	119	1.53	363.5	\$8.18
	1971	36.3	203.5	124	1.35	383.1	\$8.70
	Avg.	<u>35.6</u>	<u>210.3</u>	<u>122</u>	<u>1.44</u>	<u>373.3</u>	<u>\$ 8.44</u>
Lysine and Methionine:							
Concrete drylot							
Light	1970	35.5	203.3	127	1.32	382.3	\$ 8.79
	1971	38.8	176.9	114	1.39	393.7	\$ 9.80
	Avg.	<u>37.2</u>	<u>190.1</u>	<u>120</u>	<u>1.36</u>	<u>388.0</u>	<u>\$ 9.30</u>
Heavy	1970	48.6	214.4	108	1.53	443.4	\$10.20
	1971	47.8	219.3	114	1.50	414.3	\$10.32
	Avg.	<u>48.2</u>	<u>216.8</u>	<u>111</u>	<u>1.52</u>	<u>428.8</u>	<u>\$10.26</u>
Pasture							
Light	1970	35.9	207.3	126	1.36	384.4	\$ 8.84
	1971	36.9	215.4	124	1.44	365.8	\$ 9.11
	Avg.	<u>36.4</u>	<u>211.4</u>	<u>125</u>	<u>1.40</u>	<u>375.1</u>	<u>\$ 8.98</u>
Check Ration:							
Concrete drylot							
Light	1970	34.6	169.2	127	1.06	500.7	\$ 8.96
	1971	39.3	193.4	140	1.10	515.8	\$10.06
	Avg.	<u>37.0</u>	<u>181.3</u>	<u>134</u>	<u>1.08</u>	<u>508.2</u>	<u>\$ 9.51</u>
Heavy	1970	48.4	196.8	108	1.37	469.7	\$8.41
	1971	48.5	198.1	114	1.31	452.8	\$ 8.83
	Avg.	<u>48.4</u>	<u>197.4</u>	<u>111</u>	<u>1.34</u>	<u>461.2</u>	<u>\$8.62</u>
Pasture							
Light	1970	35.0	218.9	147	1.25	456.8	\$ 8.18
	1971	34.3	183.3	124	1.20	367.0	\$7.16
	Avg.	<u>34.6</u>	<u>201.1</u>	<u>136</u>	<u>1.22</u>	<u>411.9</u>	<u>\$ 7.67</u>

Summary

It appears that the use of specific amino acid supplementation will give gains and feed efficiency equal to supplementation with soybean oilmeal. However, the cost was about \$1.00 per one hundred pounds gained higher, in 1971. The check ration (no protein supplement) was the cheapest ration to feed, however the gains were approximately 0.2 - 0.25 pounds per head per day slower. Also, the check ration required 60 pounds more feed per one hundred pounds gain than did the supplemented ration.

In 1971, 180 pounds of lysine and methionine plus barley gave nearly the same gains as 2,822 pounds of soybean oilmeal. Thus the pork producer can utilize additional locally grown barley and oats at about 75 pounds per pig produced.

Additional work is planned to improve economics and determine length of necessary supplementation.