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FREE-CHOICE FEEDING WITH COMBINATIONS OF
L-LYSINE, METHIONINE AND FAT IN PROTEIN SUPPLEMENT¹

R. W. Seerley

The trend in feeding growing-finishing swine seems to be toward feeding a complete mixed ration. However, many swine producers prefer to feed shelled corn and protein supplement free-choice. There are advantages and disadvantages to both methods and either method can be used for profitable production. Recent major emphasis on research has been on complete rations. More research is needed on additives in protein supplements which are formulated for free-choice feeding. The following experiment was designed to compare complete mixed rations and free-choice rations with combinations of L-lysine, methionine and yellow grease.

Experimental Procedure

Seventy weanling purebred and crossbred pigs were allotted into 7 pens of 10 pigs each. Pigs were allotted by weight, litter, sex and general appearance. The experimental treatments were:

- Lot 1. Complete mixed ration
- Lot 2. Shelled corn plus protein supplement (free-choice)
- Lot 3. As 2 plus 0.4% methionine
- Lot 4. As 2 plus 0.4% lysine
- Lot 5. As 2 plus 0.4% lysine plus 0.4% methionine
- Lot 6. As 2 plus 0.4% lysine plus 0.4% methionine plus 5% fat
- Lot 7. As 2 plus 0.4% lysine plus 5% fat.

Rations and protein supplement are listed in Table 1. Methionine, lysine, and fat were added to the protein supplement. In lots 6 and 7, the lysine, methionine and fat percentages were slightly lower than indicated above due to the added fat. Also the crude protein content of the supplement fed to lots 6 and 7 analyzed approximately 2% lower than the supplement fed to the other lots. Hygromycin was included in the complete mixed grower ration. Lots 2 through 7 were wormed with piperazine two weeks after the start of the experiment. Feeders were checked three times weekly and the feeder plates were adjusted and cups were cleaned when necessary. Pigs were weighed bi-weekly.

¹L-lysine was supplied by Merck and Company, Rahway, New Jersey and methionine by Monsanto Chemical Company, St. Louis, Missouri. Certain ration ingredients were supplied by Merck and Company, Rahway, New Jersey, American Cyanamid Company, Princeton, New Jersey, Eli Lilly and Company, Greenfield, Indiana and Nopco Chemical Company, Newark, New Jersey.

TABLE 1. COMPOSITION OF RATIONS

Ingredient.	Complete	Mixed Ration	Protein
	to 110 lbs.	after 110 lbs.	Supplement
	lbs.	lbs.	lbs.
Shelled corn	804	894	---
Soybean meal (44%)	130	65	657
Tankage (60%)	50	25	150
Alfalfa meal (17%)	---	---	100
Dicalcium phosphate	4	4	20
Limestone	5	5	40
T.M. salt, hi zinc	5	5	25
B vitamin mix, Merck 92	0.5	0.5	2
Vitamin B ₁₂ , Merck 20	0.25	0.25	1.5
Vitamin A and D, Quadrex 10	0.2	0.2	0.5
Aurofac 10	1.0	0.5	3.0
Hygromix 8	0.75	-----	---

Results and Discussion

Table 2 summarizes the experiment. All free-choice fed lots gained as well or better than pigs fed a complete mixed ration up to 110 pounds bodyweight. However, by the end of the experiment, pigs fed the complete mixed ration had faster average daily gains than the free-choice-fed pigs. Growth rate was not increased by the supplementation of lysine or methionine. Yellow grease in the ration did not increase growth, decrease supplement consumption or improve feed efficiency.

All free-choice fed pigs ate more protein than pigs fed the complete mixed ration. Over-consumption of protein supplement frequently occurs when it is provided free-choice. The additives may have decreased supplement consumption as pigs in Lots 3, 4, 5, and 7 consumed less supplement than lot 2.

Feed efficiency was excellent for all lots. The range was from 2.79 (lot 6) to 3.18 (lot 2) pounds of feed required per pound of gain. Since lot 6 had lysine, methionine and fat added to the protein supplement, possibly the additives helped improve feed efficiency. However, a contradiction is that feed efficiency in lot 7 (lysine and fat) was only slightly better than the pigs fed free-choice without additives. In general, pigs fed one or both amino acids had better feed conversion thus, balance of amino acid may have been improved.

High protein consumption and the cost of amino acids and fat were largely responsible for increased feed cost per 100 pounds gain in lots 4, 5, 6 and 7. Over-consumption of protein supplement increased the feed cost per pound of gain in lot 2.

Pigs fed free-choice (lot 2) and pigs fed the complete mixed ration performed approximately the same. The two methods of feeding were comparable in this experiment.

TABLE 2 SUMMARY, FREE-CHOICE FEEDING EXPERIMENT W/WO L-LYSINE, METHIONINE, FAT

Lot Number	1 complete mix	2 F-C ¹	3 F-C Meth.	4 F-C Lysine	5 F-C Lysine Meth.	6 F-C Lysine Meth. Fat	7 F-C Lysine Fat
No. pigs	1 ^a	10	10	10	10	10	10
Av. initial wt., lb.	40.4	40.4	40.4	40.4	40.5	40.4	40.4
Av. final wt., lb.	202.2	198.8	197.2	205.7	205.8	201.9	199.4
Days on experiment	96	96	103	103	103	100	100
Av. daily gain, lb.							
to 110 lb.	1.29	1.34	1.34 ²	1.44	1.38	1.32	1.29
entire experiment	1.69	1.65	1.52 ²	1.60	1.60	1.62	1.59
Av. Daily feed							
corn, lb.	4.48 ³	4.08	3.82	3.77	3.85	3.38	3.92
suppl. lb.	.72 ³	1.17	.82	.98	.86	1.13	1.06
total, lb.	5.20	5.25	4.64	4.75	4.71	4.51	4.98
Feed per lb., gain, lb.	3.08	3.18	3.05	2.96	2.93	2.79	3.14
Feed cost per 100 lb. gain. ⁴	\$7.62	\$7.76	\$7.34	\$7.71	\$7.65	\$8.28	\$8.44

¹F-C---Free-choice

²Performance of one pig was poor in the latter part of the experiment. Excluding this pig the average daily gain was

³Calculated

⁴Prices used: Corn \$1.85 cwt., supplement - \$4.50 cwt, lysine - \$2.50 per pound, methionine - \$1.25 per pound, yellow grease - 8¢ per pound.