Swine

In the experiments reported here purebred Durocs, Poland Chinas and crosses of those breeds were used. So far as possible breeds were equalized among treatments. Further, each litter of pigs was equally represented among the dietary treatments.

All growing-finishing animals were confined to pens on concrete floors. Pens and equipment were cleaned and disinfected between experiments. For identification, buildings are designated by letter. Building W has pens approximately 6 × 8 feet, with adjacent outside concrete area of comparable size. In this unit water was provided three times daily in troughs in the outside pens. Building M is an open-front (south exposure) shed with pens of 8 × 30 feet. Building T is an open-front (south exposure) unit having pens 4 × 16 feet. In the latter two approximately one third the length of each pen was under roof, and automatic, nonfreezing waterers were used.

During the summer mist-spray for cooling was used during daylight hours when temperature was 80° F. and higher. In the winter, bedding, either wood shavings or straw, was used only as necessary to maintain dry sleeping areas. No supplemental heat was provided.

Composition of control rations is shown in Tables 41 and 42. Respective rations were available in self-feeders at all times.

Table 41
Composition of control starter rations in experiments for pigs weaned at 4 weeks.

Ration no.	S-43E	S-43K
Ingredient	%	%
Ground yellow corn	37.75	38.25
Rolled oats	13.10	13.00
Soybean oil meal[1]	19.00	19.00
Dried skim milk	10.00	10.00
Fish meal[2]	5.00	5.00
Sugar	10.00	10.00
Animal fat	2.00	2.00
Dicalcium phosphate	1.00	1.00
Ground limestone	1.00	1.00
Trace mineral mix[3]	0.05	0.05
Salt	0.50	0.50
Vitamin mix[4]	0.20	0.20
Antibiotic	0.40[5]	....
	100.00	100.00
Calculated crude protein, %	20.0	20.0

1. Solvent-processed soybean oil meal guaranteed to contain a minimum of 44% crude protein.

2. Menhaden fish meal.

3. Contained, in %, manganese, 10; iron 10; calcium, 12 to 14; zinc, 5; iodine, 0.3; copper, 0.1; and cobalt, 0.1.

4. Contained, per pound, 241 mgs. riboflavin, 720 mgs. niacin, 480 mgs. pantothenic acid, 17 gms. choline chloride, 660 mcg. vitamin B_{12}, 30,000 I.U. of vitamin D, and 150,000 I.U. of vitamin A.

5. Forty mgs. of chlortetracycline (aureomycin) provided per pound of ration.

Table 42
Composition of control rations in experiments with growing-finishing swine.

Ration no.	S-69, 71, 74, 76	S-70	S-70A	S-70B	S-76I
Ingredient	%	%	%	%	%
Ground milo	77.5	89.0	....	....	....
Ground wheat	....	....	83.5	90.5	96.5
Soybean oil meal[1]	19.0	7.0	13.0	6.0	....
Dicalcium phosphate	1.0	1.0	1.0	1.0	1.0
Ground limestone	1.0	1.0	1.0	1.0	1.0
Trace mineralized salt[2]	0.5	0.5	0.5	0.5	0.5
Vitamin-antibiotic premix[3]	1.0	1.0	1.0	1.0	1.0
Calculated crude protein, %[4]	16.0	12.0	16.0	14.0	12.0

1. Solvent-processed soybean oil meal guaranteed to contain not less than 41% crude protein.

2. Contained, in %, salt, 97; zinc, 0.8; manganese, 0.4; iron, 0.33; copper, 0.018; iodine, 0.011; and cobalt, 0.022. In certain experiments salt plus the trace mineral premix shown in footnote 2 of Table 41 was used.

3. Contained 15,000 I.U. vitamin D_3, 250,000 I.U. vitamin A, 5.12 gms. choline chloride, 212 mgs. riboflavin, 636 mgs. niacin, 424 mgs. pantothenic acid, 530 mcgs. vitamin B_{12}, and 1 gm. antibiotic per pound.

4. Figures determined on the basis of guaranteed protein content of soybean oil meal and average protein values for milo and wheat.

Feed Additives in Swine Rations

Continual investigation of the use of feed additives in swine rations is essential to determine (1) the current effectiveness of additives regularly used, (2) the merit of newer products made available for investigational purposes and (3) the efficacy of various combinations of additives (new and old).

Results of five experiments are reported here.

I. Flavoring Compounds and Wood Molasses in Growing-finishing Rations.

B. A. Koch and D. W. Loeppke

Two flavoring compounds, monosodium glutamate (MSG) and flance, were used separately and in combination in rations for growing-finishing swine. Wood molasses, a source of energy, was used with the two flavoring compounds.

Experimental Procedure

Sixty-three pigs were used. Each pen of 9 pigs was confined to a concrete-floored pen in building M. Feed and water were available at all times.

All rations were pelleted, with the test ingredients replacing sorghum grain in the formulation.

Results

Table 43 shows considerable variation in performance among the different groups. None of the combinations of flavoring compounds alone or in combination appeared to affect feed consumption.

Table 43

Effects of monosodium glutamate, flance and wood molasses separately and in combination on performance of growing-finishing swine, June 1 to July 28, 1964.

Lot no.	1	2	3	4	5	6	8	7
Ration	S-68	S-68A	S-68B	S-68C	S-68	S-68-D	S-68F	S-68E
MSG[1]	....	0.3%	....	....	....	0.3%	....	0.3%
Flance[2]	....	....	0.05%	....	....	0.05%	0.05%	0.05%
Wood molasses	....	....	....	5.0%	....	....	5.0%	5.0%
No. of pigs	9	9	9	9	9	9	9	9
Av. initial wt., lbs.	52	50	50	53	53	49	50	50
Av. final wt., lbs.	173	167	170	175	175	163	162	155
Av. daily gain, lbs.:								
First 28 days[3]	1.64	1.46	1.64	1.75	1.71	1.38	1.56	1.30 (1.44)[4]
Last 40 days	1.87	1.90	1.85	1.82	1.85	1.89	1.72	1.72 (1.77)
Total 68 days	1.78	1.72	1.77	1.79	1.79	1.68	1.65	1.55 (1.63)
Av. daily feed, lbs.[5]	4.88	4.68	4.38	5.21	4.96	4.47	4.48	4.49
Feed per lb. of gain, lbs.[5]	2.74	2.72	2.47	2.91	2.77	2.66	2.71	2.90

1. Monosodium glutamate.
2. Flance, flavoring compound.
3. From start to about 95 pounds.
4. Figures in parentheses represent average of 8 pigs; 1 poor-doing pig excluded.
5. For the 68-day period.

II. Comparison of Feed Additives in Rations for Growing-finishing Swine.[1]

B. A. Koch and D. W. Loeppke

Seventy-two pigs were used. They averaged about 50 pounds each at the start of the experiment. During the first 28 days the pigs that received a diet containing Aureo S.P.-250 (100 gms. chlortetracycline, 100 gms. sulfamethazine and 50 gms. penicillin per ton of feed) gained about 13% faster than pigs on diets containing either chlortetracycline or tylosin at 10 gms. per ton of feed.

Table 44 shows the results for the 105-day test.

When either chlortetracycline or tylosin at 10 gms. per ton of feed replaced Aureo S.P.-250, the initial advantage in growth rate was not maintained and average performance was similar for all treatments.

Performance of the different breeds is summarized in Table 45.

1. Contribution No. 331, Department of Animal Husbandry, Kansas Agricultural Experiment Station, Manhattan.

Table 44

Response of growing-finishing swine to indicated feed additives, February 25 to June 9, 1964.

Additive	No. of pigs[1]	Av. daily gain	Feed eff.	Age at 200 lbs.	Carcass length	Carcass grade #1	Carcass grade #2
		lbs.	lbs.	days	in.	#1	#2
Aureomycin[2]	23	1.69	308	167	29.0	22	1
Tylosin[3]	24	1.73	298	164	29.3	20	4
A.S.P.-250[4]	20	1.74	306	164	29.5	19	1
+ Aureomycin[4]	10	1.82	314	159	30.3	9	1
+ Tylosin[4]	10	1.65	298	166	28.7	10	0

1. Six pens of 4 pigs each started on each treatment. Five pigs were removed for reasons not related to dietary treatment.
2. Ten grams of chlortetracycline per ton of feed.
3. Ten grams of tylosin per ton of feed.
4. Two hundred fifty grams of Aureo S.P.-250 per ton of feed for the first 28 days; either 10 grams per ton of aureomycin or tylosin for the remainder of the trial.

Table 45

Durocs, Poland Chinas and Crossbreds fed under similar conditions on concrete, February 25, 1964, to June 9, 1964.

Breed	No. of pigs	Av. daily gain	Feed eff.	Age at 200 lbs.	Carcass length	Carcass grade #1	Carcass grade #2
		lbs.	lbs.	days	in.	#1	#2
Durocs							
Barrows	19	1.83	313	164	29.6	15	4
Gilts	3	1.79	313	166	30.2	3	0
Poland Chinas							
Barrows	9	1.68	299	163	28.9	9	0
Gilts	14	1.55	299	168	28.5	14	0
Crossbreds							
Barrows	10	1.90	300	158	30.0	8	2
Gilts	8	1.63	300	167	29.3	8	0
Overall average							
Barrows	38	1.81		162	29.5	32	6
Gilts	25	1.60		167	29.0	25	0
Both	63	1.73	305	164	29.2	57	6

1. Barrows and gilts were fed together.