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FISH SOLUBLES IN RATIONS FOR EARLY WEANED PIGS

L. M. Anderson, R. W. Seerley and R. C. Wahlstrom

This experiment was a continuation of a project covering several aspects of the nutrition of young pigs. The results of previous work reported at the 1966 Swine Field Day (A.S. Series 66-21) showed that a simple corn-soybean meal fortified ration was equal to a more complex diet that also contained rolled oats, dried skimmilk and sugar. Therefore, the current experiment was designed to compare a basal corn-soybean meal type ration with a similar ration containing 3% fish solubles. Fish solubles are a good source of high quality protein and also may contain an unidentified growth factor(s). The experiment was designed to study the effect of fish solubles on palatability of the ration as well as its effect on growth and feed conversion.

Experimental Procedure

Three trials were conducted to compare the two rations when fed separately and simultaneously to pigs weaned at 3 weeks of age and fed for 6 weeks. The treatments were:

- Lot 1 - S-2 ration (corn-soybean meal)
- Lot 2 - S-3 ration (corn-soybean meal + 3% fish solubles)
- Lot 3 - S-2 and S-3 rations simultaneously in separate feeders

The composition of the rations is shown in table 1. In trial 1 all of the pigs remained inside during the entire period. In the second and third trials, which were conducted simultaneously, the pigs were allowed to go outside on adjacent concrete floored pens. Water and feed were provided ad libitum. In an effort to keep the feed fresh, small amounts of ground feed were placed in the feeders frequently. Pigs were weighed weekly and weekly feed consumption data were collected.

Table 1. Composition of Rations

	S-2	S-3
Gr. shelled corn	690	685
Soybean meal (50%)	275	250
Fish solubles	--	30
Dicalcium phosphate	20	20
Limestone	6	6
T. M. salt	5	5
Trace mineral	0.5	0.5
Vitamin-antibiotic premix <sup>a</sup>	+	+

<sup>a</sup> Premix provided 1135 I.U. vitamin A, 340 I.U. vitamin D, 4 mg. riboflavin, 8 mg. pantothenic acid, 16 mg. niacin, 20 mg. choline, 10 mcg. vitamin B<sub>12</sub>, 40 mg. chlortetracycline, 4.0 mg. sulfamethazine and 20 mg. penicillin per lb. of ration.

### Results

Results of the experiment are reported in tables 2 and 3. Because of the excessive feed wastage in trial 1 the results of this trial are discussed separately.

In trial 1, pigs fed the ration containing fish solubles gained about 6% faster than those fed the corn-soybean meal ration while those pigs having access to both rations gained approximately 20% faster than the corn-soybean meal group and 13% faster than the pigs fed the fish solubles ration. It would appear that the difference in daily gains might be due to increased feed consumption even though there was excessive feed wastage in these pens.

Feed conversion was considerably better for the pigs fed the corn-soybean meal ration. However, the feed efficiency of the other two lots was not an accurate figure because of the feed wastage.

In trials 2 and 3 all lots of pigs gained very similarly except for those pigs fed the two rations simultaneously in trial 3. This lot of pigs gained only 0.81 lb. per day compared to 0.97 to 1.03 lb. for the other five lots. This group of pigs appeared to have more trouble adjusting to the weaning stress.

Feed consumption and feed efficiency were more variable between trials. In trial 2 pigs fed the corn-soybean meal ration consumed less feed but were more efficient in feed conversion than those pigs fed the fish meal ration while in trial 3 the reverse was true with more of the corn-soybean meal ration being consumed than the ration with fish solubles and feed efficiency favored those pigs fed the fish solubles. In both trials the rations fed simultaneously were consumed in greater quantities than when either was fed alone. Pigs fed both rations also had the highest feed requirement of all lots in both trials.

Table 2. Results of Fish Solubles in Creep Ration (Trial 1)

	S-2 Corn-soybean meal	S-3 Corn-soy- fish solubles	S-2 and S-3 simulta- neously
Number of pigs	6	6	6
Av. initial wt., lb.	12.8	12.9	12.8
Av. final wt., lb.	48.8	51.0	56.2
Av. daily gain, lb.	0.86	0.91	1.03
Av. daily feed, lb.	1.60	2.22	2.72
Av. feed per lb. gain, lb.	1.87	2.45	2.63

Table 3. Effect of Fish Solubles in Creep Ration (Trials 2 and 3)

	Trial	S-2 Corn-soy	S-3 Fish sol.	S-2 and S-3 simulta- neously
Number of pigs	2	6	6	6
	3	6	6	5
Av. initial wt., lb.	2	17.3	17.2	17.0
	3	15.3	15.0	16.2
Av. final wt., lb.	2	59.5	58.0	60.2
	3	56.3	56.7	50.2
Av. daily gain, lb.	2	1.00	0.97	1.03
	3	0.98	0.99	0.81
	Av.	0.99	0.98	0.93
Av. daily feed, lb.	2	1.85	1.94	2.29
	3	2.02	1.72	2.03
	Av.	1.93	1.83	2.18
Av. feed per lb. gain, lb.	2	1.84	1.99	2.23
	3	2.06	1.74	2.50
	Av.	1.95	1.86	2.34

Another aspect of this study was the performance of the pigs for one feed over another feed when both were fed simultaneously. Figure 1 shows the consumption pattern for the 6 week period. As can be seen from the graph the pigs seemed to prefer the ration containing fish solubles until about the fourth week and then showed a sharp reduction in this preference. The corn-soybean meal ration was not really consumed to any great extent until between the fourth and fifth weeks. However, there seemed to be a sharp increase in their preference for this ration as the pigs grew older. This might suggest that the pigs might prefer a change of ration after about four weeks. These trials indicate that a ration that is preferred when offered simultaneously with other rations may not be consumed in greater amounts when each ration is fed alone.

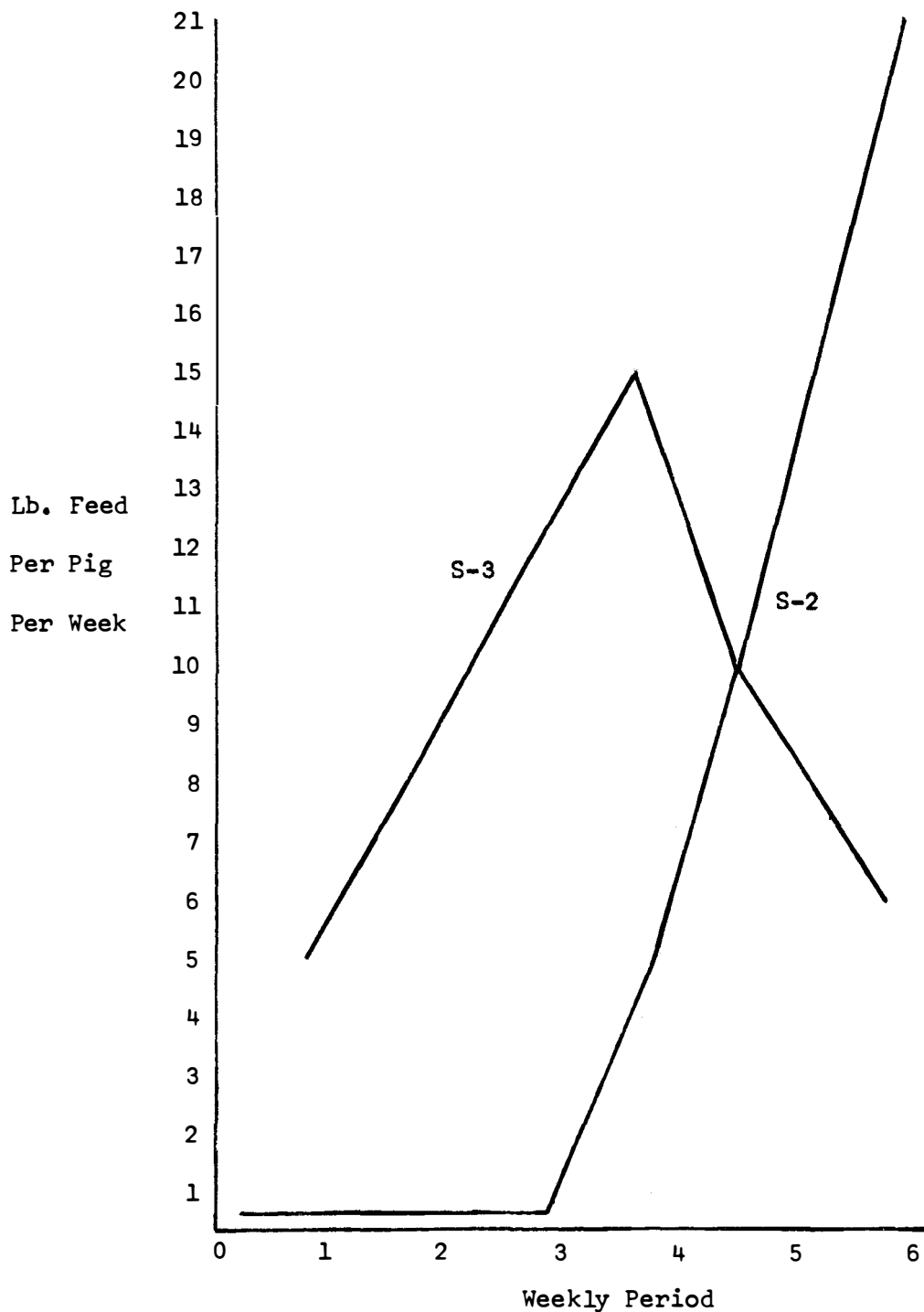


Figure 1. Average feed consumption by pigs fed both rations simultaneously.