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Feed Flavors in Swine Starter Rations

R. H. Hines

Summary

Nursing litters given a choice of flavored or unflavored diets responded by consuming more flavored diet. Pre-weaning feeding did alter the preference patterns of the post-weaned pigs. Pigs fed only basal ration as creep exhibited a varied preference pattern during the post-weaning preference trial. Pigs with access to flavored diet during the creep period exhibited a continued preference for the flavored diet during the post-weaning phase. Average daily feed intake, average daily gain, and the feed/gain ratios were similar for post-weaned pigs offered only flavored or control diet regardless of the pre-weaning treatment.

Introduction

The objectives of this study were to determine if: (a) adding flavor to the control diet would increase daily feed intake of starter rations, (b) young pigs have a preference for a flavored diet, (c) pigs offered a flavored or an unflavored diet during the pre-weaning phase would continue to show a preference toward their initial diet after weaning.

Procedures

Pre-weaning phase. When pigs were two weeks old, nine litters were offered both flavored and control diets; five litters, only the flavored diet; and five litters only the control diet. Pigs were weighed at two and four weeks of age. Feed consumption per litter during the two weeks was measured.

Post-weaning phase-Preference study. Two groups (16 and 11 pigs) were randomly selected from the litters offered both the control and flavored diets during pre-weaning. Two other groups (10 and 11 pigs) were randomly selected from those offered only the flavored diet, and another two groups (11 and 9 pigs) were randomly selected from those litters offered only the control diets during the pre-weaning phase.

In all six preference pens, two, two-hole self feeders were used to offer the pigs either the flavored or control diets. Feeders were rotated each day to prevent habit or nearness to waterers from biasing the results. Each pen of pigs had access to two automatic waterers.

Pigs were housed in the controlled-environment nursery of the KSU Swine Research facility. Pens were separated by solid partitions. Floors are concrete slats with 1-inch slotting above an oxidation ditch. Each pen is 11' X 10'.

Each preference trial was for four weeks. Total pounds of each type of feed consumed were recorded. Each feeder was emptied weekly to maintain fresh diets in the feeders.

Post-weaning phase-Growth trials. Twenty weaned pigs from litters offered both control and flavored diets, twenty pigs offered only the control diet and twenty pigs offered only the flavored diet during the pre-weaning phase were allotted to the following two treatments with replicates: (a) control ration, (b) control ration plus 1lb. of flavor.

Pigs were housed in 5' X 11' pens with an automatic waterer and a two-hole self-feeder. The feeding trial was four weeks.

Results and Discussion

Pre-weaning performances of litters are presented in Table 8.2. The nine litters offered both the control and flavored diet exhibited a slight preference for the flavored diet. A similar intake pattern was shown by those litters offered either the flavored or control diets. Pig weights at four weeks were similar for all pigs regardless of treatment. Feed consumption of the entire group of litters was less than normally observed, however, there was no apparent reason for this result. Although the differences in feed intake were small, the trend is the same as observed previously at this station in that pigs consumed more of the flavored diet than of the control diet.

Results of the post-weaning preference trials are shown in Tables 8.3, 8.4, and 8.5. Pigs fed only the control ration during the pre-weaning period exhibited a mixed preference pattern, in that one group exhibited preference for the control diet, whereas the second group showed a preference for the flavored ration. The latter group consumed equal amounts of the flavored and control diet the first two weeks followed by a definite preference the second two weeks. Pigs offered the flavored ration during the pre-weaning period exhibited a continued preference for the flavored diet by consuming 1.8 times more of this diet.

The results of the post-weaning growth study are presented in Tables 8.6, 8.7, and 8.8. Although small differences did occur from one group to another, the average rate of gain, average daily feed intake, pounds of feed per pound of gain did not differ significantly. In Table 8.9 a grand summary is presented concerning the two treatments.

Table 8.1. Control Diets

Ingredient, lbs./ton	Diet	
	Pre-wean ^a	Post-wean ^b
Gr. yellow corn	624	1010
St. rolled oat groats	300	200
Soybean meal (44%)	420	300
Meat and bone scraps (50%)	---	95
Alfalfa meal (17%)	---	50
Sugar	200	---
Dried whey	300	300
Edible fat	100	---
Dicalcium phosphate	24	10
Limestone	8	10
Salt	4	5
VTM premix ^c	20	20

^aFlavored diet prepared by adding 2 lbs. of Pig Krave^d.

^bFlavored diet prepared by adding 1 lb. of Pig Krave^d.

^cPremix contains: Vit a-5,000,000 IU; Vit D₃-600,000IU; Vit B₁₂-20 mg; Niacin-48 gms.; Riboflavin-16gms; d-pantothenic acid-32 gms.; Choline chloride-160 gms.; Vit E-9, 680 IU; trace mineral 908 gms; terranycin-100 gms.; furazolidone-100 gms.; and arsanilic acid-90 gms.

^dSupplied by Feed Flavors, Inc., Wheeling, Illinois.

Table 8.2. Pre-weaning Performance of Pigs Fed Indicated Rations

Treatment	Control	Flavor	Access to Both	
			Control	Flavor
No. litters	5	5	9	
No. pigs	40	38	69	
14 day wt/pig, lbs.	7.2	7.3	7.8	
28 day wt/pig, lbs.	12.8	12.5	12.6	
Feed consumed/litter/2 wks, lbs.	2.96	3.34	2.22	2.71
Feed consumed/pig/2 wks, lb.	.37	.44	.29	.35

Table 8.3. Post-weaning Consumption of Control or Flavored Ration by Pigs Offered Only Control Diet During the Pre-weaning Phase

<u>Lbs. feed consumed/4 wks.</u>	Diet	
	<u>Control</u>	<u>Flavor</u>
Group 1 (11 pigs)	618	43
Group 2 (9 pigs)	<u>100</u>	<u>203</u>
Total	718	246

Table 8.4. Post-weaning Consumption of Control or Flavored Ration by Pigs Offered Only Flavored Diet During Pre-weaning Phase

<u>Lbs. feed consumed/4 wks.</u>	Diet	
	<u>Control</u>	<u>Flavor</u>
Group 1 (10 pigs)	210	334
Group 2 (11 pigs)	<u>94</u>	<u>280</u>
Total	304	614

Table 8.5. Post-weaning Consumption of Control or Flavored Ration by Pigs Offered Both Control and Flavored Diets During the Pre-weaning Phase

<u>Lbs. feed consumed/4 wks.</u>	Diet	
	<u>Control</u>	<u>Flavor</u>
Group 1 (16 pigs)	413	864
Group 2 (11 pigs)	<u>334</u>	<u>468</u>
Total	747	1332

Table 8.6. Post-weaning Performance of Pigs Offered Only Control Diet During Phase I. (four week trial, 5 pigs per replicate)

Treatment	Control	Flavor
Avg. da. gain, ^a lbs.		
Rep. 1 ^b	1.39	1.50
Rep. 2 ^b	.97	1.08
	<u>1.18</u>	<u>1.29</u>
Avg. da. feed, lbs.		
Rep. 1	2.93	2.92
Rep. 2	1.89	2.09
	<u>2.41</u>	<u>2.50</u>
Feed/gain		
Rep. 1	2.10	1.95
Rep. 2	1.95	1.94
	<u>2.02</u>	<u>1.94</u>

^aAverage initial weight, 42 lbs.

^bAverage initial weight, 19 lbs.

Table 8.7. Post-weaning Performance of Pigs Offered Only Flavored Diet During Phase I. (four week trial, 5 pigs per pen)

Treatment	Control	Flavor
Avg. da. gain, ^a lbs.		
Rep. 1 ^b	1.44	1.41
Rep. 2 ^b	.68	.74
	<u>1.06</u>	<u>1.07</u>
Avg. da. feed, lbs.		
Rep. 1	2.87	2.88
Rep. 2	1.61	1.56
	<u>2.24</u>	<u>2.22</u>
Feed/gain		
Rep. 1	1.99	2.05
Rep. 2	2.35	2.10
	<u>2.17</u>	<u>2.08</u>

^aAverage initial weight, 36 lbs.

^bAverage initial weight, 18 lbs.

Table 8.8. Post-weaning Performance of Pigs Offered Both Control and Flavored Diets During Phase I. (four week trial, 5 pigs per pen)

Treatment	Control	Flavor
Avg. da. gain, lbs.		
Rep. 1 ^a	1.38	1.41
Rep. 2 ^b	<u>1.44</u>	<u>1.36</u>
	1.41	1.38
Avg. da. feed, lbs.		
Rep. 1	2.86	2.96
Rep. 2	<u>2.86</u>	<u>2.78</u>
	2.86	2.87
Feed/gain		
Rep. 1	2.08	2.10
Rep. 2	<u>1.99</u>	<u>2.04</u>
	2.03	2.07

^aAverage initial weight, 40 lbs.

^bAverage initial weight, 36 lbs.

Table 8.9. Summary of Post-weaning Performance of Pigs Fed Control and Flavored Diets (four week trial)

Diet	Control	Flavor
No. pigs	30	30
Avg. initial wt., lbs.	32.4	31.4
Avg. final wt., lbs.	66.7	66.4
Avg. daily gain, lbs.	1.21	1.24
Avg. daily feed intake, lbs.	2.50	2.53
Feed/gain	2.07	2.04