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Proper environment for young pigs after early weaning and the most desirable floor type for maximum performance of the young pig have not been established. The effectiveness of antibiotics under ideal conditions has been the subject of considerable discussion. The relationship between floor type and pig response to antibiotics at this stage of growth is still unclear. The four trials reported herein were designed to evaluate the effect of antibiotics on pig performance under controlled conditions, to evaluate the effect of several different types of floors on pig performance and, in one trial, to look at the interaction between antibiotics and floor types as measured by pig performance.

Experimental Procedure

Four trials were conducted during the past year to evaluate weanling pig response to different floor types and to the addition of Aureo SP-250 to their diets. In all trials, pigs were allotted to treatments on the basis of weight and ancestry at an average age of 4 weeks. The trials were conducted for either 4 or 5 weeks. The pigs were housed in the environmentally controlled swine room in the Animal Science Complex. Temperature was maintained at approximately 80° F at the beginning of the trials and was dropped to 75° near the end of the trials.

Trial 1

A 4-week study was conducted to evaluate pig response to 0 or 250 grams per ton of Aureo SP-250 added to an 18% protein starter diet. A total of 96 pigs averaging 16.7 pounds were allotted to 12 replications of the two treatments with four pigs per pen. The pens were concrete floored with steel mesh across a gutter in one end of the pen.

Trial 2

The antibiotic treatments of trial 1 were repeated in trial 2. In addition, pigs were placed in pens with either concrete floors as described in trial 1 or raised floors with plastic ("FILTER-EEZE") flooring. Ninety-six pigs averaging 19.0 pounds starting weight were allotted to six replications of the treatments which included the two floor types and 0 or 250 grams per ton additions of Aureo SP-250. The trial lasted 5 weeks.

Trial 3

Comparison of performance of pigs on concrete or plastic floors was the purpose of this 4-week trial. A total of 120 pigs, average weight of 18.3 pounds, were allotted to the 12 replications of the treatments with five pigs per pen. Several diets were fed to the pigs during the 4-week trial, but these were equalized across treatment to accurately evaluate performance due to floor type.

Trial 4

Performance of pigs placed on plastic floors and a vinyl coated, expanded metal flooring (SANI-DECK) was compared in this 4-week study. Twelve replications with five pigs per pen resulted in the allotment of 120 total pigs averaging 17.2 pounds. As in trial 3, several diets were used and they were equalized across the two floor treatments.

Results and Discussion

Trial 1

A summary of pig performance in this 4-week study is shown in table 1. No advantage was obtained from the addition of 250 grams of Aureo SP-250 to the pigs' diet. In fact, the controls actually performed better than the treated pigs. Pigs were continued on these diets to an average pig weight of 75 pounds. At that time performance was essentially equal between the two groups.

TABLE 1. PIG PERFORMANCE IN TRIAL 1[a]

Aureo SP-250, g/ton	0	250
Initial pig weight, lb	16.6	16.7
4-week pig weight, lb	31.3	28.7
Average daily gain, lb	.54	.43
Average daily feed, lb	1.11	.95
Feed/gain[b]	2.03	2.26

[a] Ninety-six pigs, 4 pigs per pen, 12 replications.
[b] P<.05.

Trial 2

Data from trial 2 were analyzed as a 2 x 2 factorial arrangement of 0 and 250 grams per ton of Aureo SP-250 and either concrete or raised plastic (FILTER-EEZE) floors. Tables 2 and 3, respectively, show the effect of floor type averaged across antibiotic level and the effect of antibiotics averaged across floor type.

The floor type had a significant effect on pig gain, daily feed consumption and efficiency of gain. Pigs on the raised plastic flooring gained faster (P<.05), consumed more feed daily (P<.01) and converted feed to gain more efficiently (P<.05) than pigs on the solid floor.

Pigs receiving Aureo SP-250 gained faster and consumed more feed than pigs on the control diet. They also tended to be more efficient, although this difference was not significant.

TABLE 2. EFFECT OF FLOOR TYPE ON PIG PERFORMANCE (TRIAL 2)

Floor type	Concrete	Plastic
Initial pig weight, lb	18.9	19.0
5-week pig weight, lb[a]	39.0	43.2
Average daily gain, lb[a]	.57	.68
Average daily feed, lb[b]	1.62	1.76
Feed/gain[a]	2.92	2.58

[a] P<.05.
[b] P<.01.

TABLE 3. EFFECT OF ANTIBIOTICS ON PIG PERFORMANCE (TRIAL 2)

Aureo SP-250, g/ton	0	250
Initial pig weight, lb	18.9	18.9
4-week pig weight, lb[b]	37.8	44.5
Average daily gain, lb[b]	.53	.73
Average daily feed, lb[a]	1.54	1.84
Feed/gain	2.94	2.56

[a] P<.05.
[b] P<.01.

The combined effects of floor type and antibiotic in trial 2 are shown in table 4. The best performance was obtained with pigs receiving antibiotic which were penned on the plastic floors. Performance of pigs penned on plastic floors and fed diets without antibiotics approached the performance level of pigs penned on concrete and fed diets containing antibiotic. The poorest performance was observed with pigs receiving no antibiotic in their diet and penned on concrete.

TABLE 4. COMBINED EFFECTS OF ANTIBIOTICS AND FLOOR TYPE TREATMENTS (TRIAL 2)[a]

Aureo SP-250, g/ton	0		250	
Floor type	Concrete	Plastic	Concrete	Plastic
Initial pig weight, lb	19.0	18.9	18.9	19.0
5-week pig weight, lb	35.7	39.9	42.4	46.6
Average daily gain, lb	.48	.59	.68	.79
Average daily feed, lb	1.52	1.58	1.76	1.96
Feed/gain	3.20	2.68	2.64	2.49

[a] Ninety-six pigs, four pigs per pen, six replications.

Trial 3

The results of trial 3 are shown in table 5. Unlike the previous trial, no differences were seen in average daily gain, daily feed and feed/gain when pigs were kept in pens with concrete or plastic floors.

TABLE 5. EFFECT OF FLOOR TYPE ON PIG PERFORMANCE[a]

Floor type	Concrete	Plastic
Initial weight, lb	18.3	18.3
4-week weight, lb	38.9	39.1
Average daily gain, lb	.73	.74
Average daily feed, lb	1.33	1.28
Feed/gain	1.83	1.75

[a] One hundred twenty pigs, five pigs per pen, 12 replications.

Trial 4

Table 6 shows a summary of pig performance on the two floor types used in trial 4. Pigs grown on the vinyl coated, expanded metal floors (SANI-DECK) gained significantly faster than those grown on the plastic (FILTER-EEZE) floors. Pigs housed on the vinyl coated, expanded metal floors also tended to consume more feed and were slightly more efficient, although these differences were not significant.

TABLE 6. EFFECT OF FLOOR TYPE ON PIG PERFORMANCE[a]

Floor type	Vinyl coated expanded metal	Plastic
Initial pig weight, lb	17.2	17.1
4-week pig weight, lb[b]	37.5	35.2
Average daily gain, lb[b]	.73	.65
Average daily feed, lb	1.32	1.23
Feed/gain	1.85	1.89

[a] One hundred twenty pigs, five pigs per pen, 12 replications.
[b] $P<.05$.

Summary

Five trials were conducted with 432 4-week-old pigs to evaluate the use of Aureo SP-250 and to test several floor types in nursery pens. In the two trials which compared Aureo SP-250 at 0 and 250 grams per ton, pigs responded to the antibiotics with higher gains and better feed efficiency in one trial and exhibited no response to the antibiotics in the other. Two trials compared concrete floored pens with raised plastic floored pens (FILTER-EEZE). In one trial, pigs performed significantly better on the plastic flooring and in the other trial no differences were observed. A final trial compared performance of pigs on plastic flooring with pigs on a vinyl coated expanded metal flooring (SANI-DECK). Significantly faster gain was observed with the use of the vinyl coated expanded metal flooring.

TABLE 2. SOW AND PIG PERFORMANCE AS AFFECTED BY TREATMENTS

	Control	XLP-30	Neo-Terra
No. of gilts	12	9	11
No. of sows	16	15	17
	Sow Weight, Lb		
110 days	469	480	475
After farrowing	444	452	445
21 days	439	420	437
	Birth		
Avg no. of live pigs	7.80	8.08	8.26
Avg no. of stillborn	.65	1.80	1.08
Avg. pig weight, lb	2.97	2.90	3.04
Avg litter weight, lb	22.9	23.5	25.1
	10 Days		
Avg no. of live pigs	5.43	5.06	6.09
Avg pig weight, lb	6.03	6.34	6.40
Avg litter weight, lb	37.8	36.7	42.5
	21 Days		
Avg no. of live pigs	5.21	4.87	6.06
Avg pig weight, lb	11.33	11.24	11.57
Avg litter weight, lb	67.5	62.3	74.6
Percent survival	66.8	62.6	73.4