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Diets for Early Weaned Pigs

William G. Luce
Extension Swine Specialist

Charles V. Maxwell
Professor, Animal Science

The swine industry continues to move towards earlier weaning. Weaning at three weeks is becoming common in confinement production systems equipped with an environmentally controlled nursery. This trend is driven by economic factors such as increasing the numbers of pigs per sow per year and the need to minimize the capital cost of swine farrowing facilities by moving more sows through the facilities.

Two essential factors for early weaning are (1) the utilization of complex high nutrient, high density prestarter diets and (2) well designed, environmentally controlled nurseries. Recent research at Oklahoma State University and other universities has resulted in improved prestarter diets that enhance performance of early weaned pigs.

Phased Feeding

Nutritional requirements for early weaned pigs change rapidly during the early postweaning period. A phased feeding program is essential to minimize the postweaning lag problem and to get pigs started on a grain-soybean meal diet as quickly as possible. Complex diets as described in Table 1 are needed to achieve maximum feed intake and gain during postweaning in early weaned pigs.

Phase I

The Phase I diets as specified in Table 1 are to be fed for seven to ten days postweaning to pigs weaned 16 to 21 days, while pigs weaned at 28 days should receive the diet for only 3 to 4 days. However, the exact length of time pigs are fed Phase I diets may depend on the amount of time it takes the pigs to start consuming feed and recover from postweaning lag problems.

Suggested Phase I diets are shown in Table 2. The three diets in Table 2 are similar in nutritional composition. However, diets A, B, and C represent steps in decreasing cost with C being much cheaper than A. Lower cost diets may reduce performance, but differences may be small enough to justify feeding the less expensive diet. This is especially true when pigs are weaned at greater than 25 days of age. All of the diets are complex and most swine producers will find it difficult to purchase and store all the necessary ingredients in a feasible manner as compared to buying commercial pre-starter diets.

Phase II

After starting weaned pigs on a Phase I diet, moving as quickly as possible to a less expensive diet (Phase II) as described in Table 1 is important. This diet is designed to contain some of the palatability factors present in the Phase I diet and to get the pig exposed to soybean meal proteins. Phase II can usually be fed to early weaned pigs staring from day 4 to 10 postweaning. Starting time will vary depending upon age, weight and condition of pigs. It appears that one to two weeks of a Phase II diet is sufficient in most early weaning situations, however, a longer period of time may be required for light weight pigs. A suggested Phase II diet is presented in Table 3. This diet tends to be somewhat complex and many swine producers will find it difficult to purchase and store all the necessary ingredients in a feasible manner as compared to buying a similar commercial prestarter diet. A purchased base mix containing the more complex ingredients is another possibility as the diet can be fed successfully without pelleting.

Phase III

Pigs which have been fed the Phase I and II diets for approximately three to four weeks and weighing 25 pounds or more can be fed a less complex diet (Phase III) which is described in Table 1. Suggested Phase III starter diets are presented in Table 4. These diets should be fed until the pigs reach 45 pounds and are transferred to a growing diet. The four diets in Table 4 are similar in nutritional composition. However, diets A, B, C and D represent steps in decreasing cost with D being much cheaper than A. Lower cost diets may reduce performance, but differences may be small enough to justify feeding the less expensive diet.

Grower diets for pigs above 45 pounds are presented in OSU Extension Facts No. 3654, "Management of Growing-Finishing Swine" and "Swine Diets", PIH-23 in the Pork Industry Handbook.

Table 1. Three Phase Feeding System for Early Weaned Pigs.

Phase	Should Feed:	Diet Specifications
I	First 7 to 10 days for pig weaned at 16 to 21 days. First 3 to 4 days after 28 day weaning. A pig experiencing postweaning lag.	Pelleted feed (1/8 in. pellet). 4 to 5% plasma protein 20% whey (food grade) 5 to 10% dried skim milk (food grade). 4 to 6% cheese by-product 4 to 6% fish meal 4 to 6% soybean oil 18 to 20% crude protein 1.40% total lysine
II	From day 4 to 10 postweaning for 1 to 2 weeks. A weaned pig that has recovered from post-weaning lag. A weaned pig after it is consuming dry feed.	Feed can be in either pelleted or meal form. 10 to 20% whey (food grade). 4 to 7% fish meal (select menhaden). 2 to 2.5% blood meal (spray dried) Maximum of 8% soybean meal. 17 to 20% crude protein 1.30% total lysine.
III	Week 3 to 5 postweaning. A pig weighing between 25 and 45 lb. A postweaning pig readily consuming feed.	Grain-soybean meal diet. Feed can be either meal or pellet 18 to 20% crude protein 1.20% lysine.

Table 2. Phase I Prestarter Diets.

	Diet		
Ingredient, %	A	B	C
Corn, ground	39.035	48.175	41.385
Dried skim milk, food grade	10.00	5.00	10.00
Whey, edible grade or equivalent	20.00	25.00	20.00
Spray dried plasma protein	5.00	5.00	—
Oat groats	10.00	—	10.00
Fish meal, menhaden select grade	5.00	6.00	5.00
Cheese by product	5.00	5.00	5.00
Spray dried blood meal	—	—	2.75
Soybean oil	4.00	4.00	4.00
Dicalcium phosphate	1.10	0.90	0.95
Lysine, 78% L-Lysine	0.24	0.30	0.29
Copper sulfate	.10	.10	.10
Vitamin-trace mineral premix[a]	.50	.50	.50
Ethoxyquin	.025	.025	.025
Flavor additive[b]	+++	+++	+++
Antibiotic[c]	+++	+++	+++
Total	100.00	100.00	100.00
Calculated analysis			
Protein, %	19.59	18.29	18.90
Lysine, %	1.40	1.40	1.40
Tryptrophan, %	.26	.24	.24
Threonine, %	.93	.91	.85
Methionine + cystine	.76	.72	.69
Calcium, %	.95	.93	.91
Phosphorus, %	.83	.79	.81
Metabolizable, kcal/lb	1571	1571	1591

[a]See Table 5.
[b]Usually manufactured to be added at the rate of .05% of diet.
[c]Mecadox, Neo-terramycin, Lincomycin or other recommended antibiotics should be used.

Table 3. Phase II Prestarter Diet.

Ingredient, %	Percent	Lb/Ton
Corn, ground	60.395	1207.9
Whey, edible grade or equivalent	20.00	400.0
Soybean meal, 44%	5.70	114.0
Fishmeal, menhaden select grade	7.00	140.00
Spray dried blood meal	2.50	50.0
Soybean oil	2.00	40.0
Dicalcium phosphate	1.50	30.0
Lysine, 78% L-Lysine	.28	5.6
Copper sulfate	.10	2.0
Vitamin-trace mineral premix[a]	.50	10.00
Ethoxyquin	.025	.50
Flavor additive[b]	+++	+++
Antibiotic[c]	+++	+++
Total	100.00	2000.00
Calculated analysis		
Protein, %	17.05	
Lysine, %	1.30	
Tryptophan, %	.21	
Threonine, %	.77	
Methionine + Cystine, %	.62	
Calcium, %	.93	
Phosphorus, %	.84	
Metabalizable energy, kcal/lb	1525	

[a] **See Table 5.**
[b] Usually manufactured to be added at the rate of .05% of diet.
[c] Mecadox, Neo-terramycin or Lincomycin or other recommended antibiotics should be used.

Table 4. Phase III Starter Diets.

	Diet			
Ingredient, %	A	B	C	D
Corn, ground	1204	938	1117	1261
Oat groats	—	200	—	—
Soybean meal, 44%	450	600	620	670
Fish meal, menhadden	100	—	—	—
Dried whey	200	200	200	—
Lysine, 78% L-Lysine[a]	2	2	2	2
Calcium carbonate	10	16	16	18
Dicalcium phosphate	22	32	33	37
Salt	7	7	7	7
Vitamin-trace mineral mix[b]	5	5	5	5
Antibioticc	+	+	+	+
Total	2000	2000	2000	2000
Calculated analysis				
Protein, %	19.55	20.21	19.85	20.29
Lysine, %	1.20	1.20	1.20	1.20
Tryptophan, %	.25	.27	.26	.27
Threonine, %	.78	.78	.79	.77
Methionine + Cystine, %	.67	.63	.64	.65
Calcium, %	.86	.85	.86	.86
Phosphorus, %	.70	.70	.70	.70
Metabolizable energy, kcal/lb.	1477	1460	1458	1466

[a] Lysine, 78% L-Lysine can be omitted but, sixty lbs. of additional 44% soybean meal should then be added per ton of feed and yellow corn reduced by 58 lb. per ton of feed when this is done.
[b] **See Table 5.**
[c] Use an antibiotic of choice.

Table 5. Suggested Vitamin-Trace Mineral Mix[a,b]

Ingredient, %	Amount per pound premix
Vitamin A	900,000 IU
Vitamin D	100,000 IU
Vitamin E	5,000 IU
Vitamin K (Menadione)	660 mg
Riboflavin	1,200 mg
Pantothenic acid	4,500 mg
Niacin	7,000 mg
Vitamin B12	5 mg
Choline chloride	20,000 mg
Folic acid	300 mg
Biotin	40 mg
Copper	.4 %
Iodine	.008 %
Iron	4.0 %
Manganese	.8 %
Zinc	4.0 %
Selenium	.012 %

[a]Vitamin and trace mineral mixes may be purchased separately. This is advisable if a combination vitamin-trace mineral premix is to be stored longer than three to four months. Vitamins may lose their potency in the presence of trace minerals if stored for a prolonged period time.

[b]To be added at the rate of five pounds per ton of complete feed.

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