



# Diets for Early Weaned Pigs

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The swine industry has largely gone to early weaning (3 weeks or earlier) especially in confinement production systems with environmentally controlled nurseries. Economic factors such as increasing the number of pigs per sow per year and the need to minimize the capital cost of swine farrowing units by moving more sows through the facilities has resulted in this change.

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 the postweaning period.

### Phase I

The Phase I diets as specified in Table 1 are to be fed for 7 to 10 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, which is usually from 4 to 10 days depending upon the age and/or weight of pigs at weaning.

Suggested Phase I diets are shown in Table 2. The three diets in Table 2 are similar in nutritional composition. All of the diets are 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 commercial prestarter 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 starting from day 4 to day 10 postweaning and should be fed to pigs weighing from 15 to 25 lbs. 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. Suggested Phase II diets are presented in Table 3. These diets tend to be somewhat complex and many swine producers may 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 lbs. 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 lbs. and are transferred to a growing diet. Diets E and F are lower cost diets than the others. 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 lbs. 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.**

<i>Phase</i>	<i>Should Feed:</i>	<i>Diet Specifications</i>
I	First 7 to 10 days for pig weaned at 16 to 21 days. First 3 to 4 days after 22 to 28 day weaning. A pig experiencing postweaning lag.	Pelleted feed (1/8 in. pellet). 18 to 20% crude protein 1.50% total lysine
II	Day 4 to 10 postweaning. 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. 17 to 20% crude protein 1.30-1.40 %* total lysine
III	Week 3 to 5 postweaning. A pig weighing between 25 and 45 lbs. A postweaning pig readily consuming feed.	Grain-soybean meal diet. Feed can be either meal or pellet 17 to 20% crude protein 1.15-1.20 %* lysine.

\*High performing pigs may need higher levels than the range shown

**Table 2. Suggested Phase I Prestarter Diets.**

<i>Ingredient, %</i>	<i>A</i>	<i>B</i>	<i>C</i>
Corn, yellow	585	771	709
Oat groats	200	—	200
Soybean oil	80	80	80
Soybean meal, 44% <sup>a</sup>	130	130	135
Fish meal, menhaden select grade	90	100	140
Lactose 200	200	200	—
Dried skim milk, food grade	100	105	145
Dried whey, edible grade	400	400	500
Spray died blood meal	40	40	50
Spray died plasma protein	120	120	—
Lysine, 78% L-Lysine	3	3	5
Dicalcium phosphate	40	39	24
Copper sulfate	2	2	2
Salt	5	5	5
Vitamin-trace mineral premix <sup>b</sup>	5	5	5
Antibiotic <sup>c</sup>	+++	+++	+++
Zinc oxide <sup>d</sup>	+++	+++	+++
<b>Total</b>	<b>2000</b>	<b>2000</b>	<b>2000</b>
<b>Calculated analysis</b>			
Protein, %	19.92	19.52	19.73
Lysine, %	1.50	1.50	1.50
Tryptophan, %	.28	.28	.25
Threonine, %	.93	.93	.87
Methionine + cystine	.71	.72	.69
Calcium, %	.96	.97	.98
Phosphorus, %	.86	.85	.85
Metabolizable, kcal/lb.	1542	1543	1546

<sup>a</sup> Soy protein concentrate or soy isolate can be utilized in place of soybean meal and may be preferred since they may have less potential for producing an immunological response.

<sup>b</sup> See Table 5.

<sup>c</sup> Mecadox, Neo-terramycin, Lincomycin or other recommended antibiotics should be used.

<sup>d</sup> Zinc oxide has been shown to improve performance and reduce scours in some research trials when fed at levels up to 3,000 ppm.

**Table 3. Suggested Phase II Prestarter Diet.**

<i>Ingredient, %</i>	<i>A</i>	<i>B</i>	<i>C</i>
Corn, yellow	1034	1152	765
Oat groats	—	—	300
Soybean oil	40	40	40
Soybean meal, 44%	335	165	305
Fishmeal, menhaden select grade	150	150	150
Dried whey, edible grade	400	400	400
Spray dried blood meal	—	50	—
Lysine, 78% L-Lysine	4	4	4
Calcium carbonate	1	—	3
Dicalcium phosphate	24	27	21
Copper sulfate	2	2	2
Salt	5	5	5
Vitamin-trace mineral premix <sup>a</sup>	5	5	5
Antibiotic <sup>b</sup>	+++	+++	+++
Zinc oxide <sup>c</sup>	+++	+++	+++
<b>Total</b>	<b>2000</b>	<b>2000</b>	<b>2000</b>
<b>Calculated analysis</b>			
Protein, %	18.94	17.95	19.51
Lysine, %	1.30	1.30	1.30
Lysine, %	.23	.23	.24
Tryptophan, %	.80	.78	.80
Threonine, %	.68	.65	.67
Methionine + Cystine, %	.90	.90	.91
Calcium, %	.81	.81	.80
Phosphorus, %	1511	1508	1513
Metabolizable energy, kcal/lb.			

<sup>a</sup> See Table 5.

<sup>b</sup> Mecadox, Neo-terramycin or Lincomycin or other recommended antibiotics should be used.

<sup>c</sup> Zinc oxide has been shown to improve performance and reduce scours in some research trials when fed at levels up to 3,000 ppm.

**Table 4. Suggested Phase III Starter Diets.**

<i>Ingredient, %</i>	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>
Corn, yellow	978	933	1152	1112	1296	1256
Oat groats	200	200	—	—	—	—
Fat (choice white grease)	—	40	—	40	—	40
Soybean meal, 44%	560	565	585	585	635	635
Dried whey, edible grade	200	200	200	200	—	—
Lysine, 78% L-Lysine	2	2	2	2	2	2
Calcium carbonate	14	13	13	13	14	14
Dicalcium phosphate	32	33	34	34	39	39
Copper sulfate	2	2	2	2	2	2
Salt	7	7	7	7	7	7
Vitamin-trace mineral mix <sup>a</sup>	5	5	5	5	5	5
Antibiotic <sup>b</sup>	+	+	+	+	+	+
<b>Total</b>	<b>2000</b>	<b>2000</b>	<b>2000</b>	<b>2000</b>	<b>2000</b>	<b>2000</b>
<b>Calculated analysis</b>						
Protein, %	19.36	19.28	19.07	18.90	19.48	19.31
Lysine, %	1.15	1.15	1.15	1.15	1.15	1.15
Tryptophan, %	.26	.25	.25	.25	.26	.26
Threonine, %	.76	.75	.76	.76	.75	.74
Methionine + Cystine, %	.62	.61	.62	.62	.63	.63
Calcium, %	.80	.80	.81	.80	.80	.80
Phosphorus, %	.70	.70	.70	.70	.71	.71
Metabolizable energy, kcal/lb.	1462	1502	1460	1501	1467	1508

<sup>a</sup> See Table 5.

<sup>b</sup> Use an antibiotic of choice.

**Table 5. Suggested Vitamin-Trace Mineral Mix<sup>a,b</sup>.**

<i>Ingredient, %</i>	<i>Amount per lb. premix</i>
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 %

<sup>a</sup> 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.

<sup>b</sup> To be added at the rate of 5 lbs. per ton of complete feed.

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