

Nutritional Studies With Sows and Litters in Confinement

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The successful rearing of pigs in the various confinement or semi-confinement systems in common use is dependent, to a large extent, on the nutritional adequacy of the rations fed. The critical time nutritionally is from breeding through weaning, particularly through farrowing and the nursing period. The development of large, well-grown litters to weaning age is essential to efficient production.

Work reported previously at this station indicated that pigs reared in confinement were somewhat smaller at weaning and had about 1.6 grams less hemoglobin per 100 cc. of blood than those raised on pasture, under good weather conditions. Under adverse weather conditions, fewer pigs were lost from seven to 42 days of age and the pigs were larger when reared in confinement. In general, sows have lost less weight during lactation when kept on pasture than when kept on confinement, even though both groups were self-fed the same ration.

Efforts to improve further both the creep ration for the pigs and the lactation ration for the sows were continued. In a recent test, five pounds of green alfalfa forage was fed to one-half of the sows and their litters from seven to 42 days post farrowing. First litter gilts were farrowed in a central farrowing house and moved with their litters to pens 6 x 30 feet in a concrete floored, open shed when the pigs were about seven days old. Lactation Ration 1 shown in Table 1 was self-fed to

Table 1.—Percentage Composition of Lactation Rations Fed to Sows in Confinement

Ration No. Ingredient	1 Percent	2 Percent
Milo (ground)	76.5	75.0
Soybean Meal (44%)	11.1	11.5
Alfalfa Meal (17%)	10.0	10.0
Dicalcium Phosphate	1.7	2.7
Calcium Carbonate	0.0	0.1
Salt	0.5	0.5
Vitamin Pre-Mix ¹	0.2	0.2
Total	100.0	100.0
	Calculated Percentage Composition	
T.D.N.	75.3	74.4
Protein	15.0	15.0
Calcium	0.83	1.2
Phosphorus	0.62	0.84

¹ Pre-Mix supplies the following per pound of mixed ration: Vitamins, D₂ 190 I.U.; B₁₂ 9.5 mcg.; riboflavin 1.2 mgs; pantothenic acid 5.0 mgs. Minerals, iron 15.0 mgs; copper 2.0 mgs; cobalt 0.88 mg; manganese 18.0 mgs; zinc 75 p.p.m.

all sows and the creep ration shown in Table 2 was available to all pigs from seven to 56 days of age. Water was available to the pigs in their creep at all times. An electrical heat bulb provided some heat in the creep during cold weather.

Table 2.—Percentage Composition of the Creep Ration Fed

Ingredients*	Percentage		
Corn (ground)	31.7		
Milo (ground)	32.0		
Soybean meal (44%)	12.4		
Fish meal (60%)	6.8		
Buttermilk, Dry	10.0		
Sugar (cane)	5.0		
Calcium Carbonate	0.5		
Dicalcium phosphate	0.5		
Salt	0.5		
Pre-Mix ¹	0.8		
Total	100.0		
Calculated Composition of the Total Mixed Ration			
	Vitamins per pound		
TDN	78.00%	Vitamin A (USP)	2000.0
Calcium	0.83	Vitamin D (I.U.)	180.0
Phosphorus	0.68	Panto Acid (mgs)	10.06
Protein	19.00	Riboflavin (mgs)	3.29
Lysine	1.09	B ₁₂ (mcg)	12.6
Isoleucine	1.08		
Threonine	0.73	Antibiotic (mgs/lb)	25.0
Tryptophan	0.23		

¹ Hygromix added at the rate of 5 pounds per ton.

In this trial both groups of sows and pigs performed quite satisfactorily. Average litter weaning weights of 375 and 388 pounds were obtained on the two groups. These differences are not of statistical significance. Neither the 42 day weaning weights or the 56 day weights of the pigs differed significantly due to ration treatment. Sows receiving the alfalfa forage in addition to being self-fed the regular ration consumed 0.7 pounds more ration per day and lost 22 pounds less weight during the period from seven to 42 days post farrowing, than those receiving only the regular lactation ration. This difference in weight lost by the sows is the only difference of importance in the response of the two groups.

In previous tests, a few sows became very stiff during late lactation and required several weeks recovery after weaning. In a recent test the calcium and phosphorus content of the ration was increased to determine if additional amounts of these two elements would be beneficial. Lactation rations 1 and 2 shown in Table 1 were fed. These sows and litters were handled as previously described. The results are summarized in Table 4.

Pigs in this test were troubled with scours at various times and weaned at much lighter weights than has been obtained on previous tests where similar pigs have been handled under similar conditions. Differences in individual pig and litter weaning weights were small and non-significant. Sows receiving the higher level of calcium and phosphorus ate about one pound less feed per day but lost about 11 pounds more weight from seven to 42 days post weaning than those on the ration containing the lower level of calcium and phosphorus. Blood samples were taken from these sows at the time the pigs were weaned on which calcium and phosphorus analyses are being made. This data is not available at this time. However, judging from the performance of the sows and pigs, the additional calcium and phosphorus was not needed.

Table 3.—The Supplemental Feeding of Green Alfalfa Forage to Lactating Sows and Their Pigs in Confinement

Ration:	1 Basal	2 Basal Alfalfa Forage
No. of sows and litters	7	9
No. of pigs	61	83
No. of pigs weaned per litter	8.7	9.2
Average weights		
Per pig—56 days	43.2	42.2
Per pig—42 days	28.9	28.1
Per litter—42 days	251.4	258.5
Per litter—56 days	375.8	388.2
Average weight loss by sows (lbs.)		
Farrowing to 7 days	56.0	57.4
7 to 42 days	66.6	44.3
Total to 42 days	122.6	101.7
Feed Consumption (lbs.)		
Per sow to 42 days	449.4	478.8
Per sow per day	10.7	11.4
Creep ration per litter	222.7	247.5
Creep ration per pig to 56 days	25.6	26.9
Feed Cost ¹ (\$)		
Per sow—farrowing to 42 days	9.44	10.05
Per pig—creep ration	0.95	1.00
Total feed cost per pig weaned— farrowing to weaning	2.04	2.09
Value of weight lost by sow ²	14.71	12.20
Feed cost per pig plus credit for weight loss per sow	3.73	3.42

¹ Does not include cost of alfalfa forage.

² Calculated at \$12.00 per cwt.

Table 4.—Performances of Sows and Pigs Retained in Confinement and Fed Rations Containing Two Levels of Calcium and Phosphorus

Lot No.: Ration Treatments:	1 Basal	2 Basal plus Cal. and Phos.
No. of sows and litters	11	11
Average No. pigs per litter		
7 days of age	9.0	9.1
42 days of age	7.8	8.4
56 days of age	7.8	8.4
Average Pig weights (lbs.)		
42 days	19.9	19.2
56 days	27.3	27.2
Average litter weight (lbs.)		
42 days	155.2	161.3
56 days	212.9	228.5
Average weight loss per sow (lbs.)		
Farrowing to 7 days	42.8	54.5
7 to 42 days	27.6	38.7
Total weight loss of sow	70.4	93.2
Average feed consumption (lbs.)		
Per sow to 42 days	480.9	435.6
Per sow per day	11.4	10.4
Per pig to 56 days	20.2	22.1
Feed cost (\$)		
Per sow—farrowing to 42 days	10.10	9.15
Per pig—creep ration only	.75	.82
Total feed cost per pig weaned— farrowing to weaning	2.05	1.91
Value of weight lost by sow ¹	8.95	10.44
Feed Cost per pig plus credit for weight lost by sow	3.13	3.15

¹ Weight cost per sow figured at \$12.00 per cwt.

Urea in Protein Supplements for Wintering Steer Calves Grazing Native Grass

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Cattle and sheep may utilize urea as a source of nitrogen (protein) because of the action of microorganisms in parts of the ruminant stomach. Efficient utilization of urea will result only when other nutrients are present in amounts needed by the microorganisms. These other nutrients are usually present in rations of fattening cattle. However, some of these nutrients may be lacking when cattle are wintered on dry native grass supplemented with a urea-containing feed.

Tests conducted at this station in recent years have indicated that urea is apparently not efficiently utilized by cattle wintered on dry