Feeding the Porker for Profit[1]

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The greatest potential for increasing profits from a swine enterprise is in saving one more pig per litter. The average number saved per litter in North Dakota is about 6.7 pigs. This indicates a death loss of over 30 percent of the pigs farrowed. If the old rule of thumb is correct, it takes about five pigs per litter to pay for all costs, that is, to break even. The profits in production start with the sixth pig per litter. If one more pig can saved in each litter, the potential profits can be almost doubled.

There is no doubt that inadequate nutrition is one of the big factors responsible for this high death loss. Probably the most critical period in the feeding of swine is during the pregnancy period. It is during this period that the little pig gets its start in life. Lack of vitamins, minerals, or protein quantity and quality, handicaps the newborn pig by reducing its resistance to disease and parasites, reducing growth rate and feed efficiency, and even reducing livability.

It is likely the borderline deficiencies are even more costly to the swine producer than severe deficiencies because the symptoms are not easily recognized and the pigs live but never make normal growth or use their feed efficiently.

Unlike cattle and sheep, pigs depend on their daily ration for vitamin and protein needs. Cattle and sheep get their B-complex vitamins and amino acids supplied constantly by rumen bacteria. Pigs must get these nutrients from their daily diet. There is no appreciable body storage of the B-complex vitamins or amino acids. Thus, an outbreak of a disease may actually be the result of faulty nutrition because it tends to lower resistance. A little pig which is laid upon by the sow may have died because poor nutrition did not give him the well-being and responsiveness to get out of the way.

Cereal grains, the main ingredient of sow rations, are not rich sources of some of the necessary vitamins. Neither can common protein supplements such as tankage or soybean meal be depended upon to contain enough vitamins. Good alfalfa hay has been considered a good source of many vitamins. However, in recent years there have been reasons to doubt that alfalfa always supplied all necessary vitamins.

The experiments reported here were designed to answer the question—Do gestation rations containing natural feedstuffs supplemented with protein, minerals, fat-soluble vitamins and 25 percent alfalfa always provide enough of the B-complex vitamins?

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Experiment I

Twenty gilts of the Duroc and Berkshire breeds were allotted into two groups. These gilts were bred to two boars of opposite breeds to help minimize the effect of the boar on litter size. The basal ration self-fed in ground, mixed form was as follows—corn, 15; oats, 30; barley, 20; alfalfa (sun cured, ground), 25, and supplement, 10. The difference in the two rations was in the supplements. The composition of the supplements is given in table I.

TABLE I.—**Formula of Supplements.**

	Supplement I	Supplement II
Blood meal	10	10
Meat scraps	40	40
Soybean oilmeal	20	20
Limestone	7.5	7.5
Bonemeal	7.5	7.5
Trace mineralized salt	5.0	5.0
Vitamin supplements	0.3	2.5
A and D	yes	yes
B complex	no	yes
Corn	9.7	7.5
	100.0	100.0

As seen in table I, both rations were fortified with vitamins A and D in amounts to slightly exceed the requirements as given by the National Research Council Bulletin, No. 295. Both rations furnished about 15 percent total protein. Ration II, containing supplement II, received in addition the following B-complex vitamins: riboflavin, 1 mgm/lb. of ration; pantothenic acid, 2 mgms/lb.; niacin, 3 mgm/lb.; choline, 10 mgm/lb., and B_{12}, 10 micrograms per pound. With these additions it was calculated that ration II would adequately meet or slightly exceed the suggested requirements of 1.2, 4.5, 5 and 400 milligrams, and 10 micrograms, respectively, per pound of ration. Both lots of gilts received the same rations during lactation. Thus, the differences in litters are due to the gestation rations.

The results from this experiment are presented in table II.

TABLE II.—**Effect of Adding B-complex Vitamins to Gestation Rations for Gilts.**

	I Without B-Vitamin	II With B-Vitamin
Number of sows placed on experiment	10	10
Number of sows farrowed	8	8
Average litter weight at birth	24.2	33.4
Average number of pigs born	8.2	10.1
Average birth weight of pig	2.96	3.29
Average score at birth	1.16	1.25
Average number pigs at 21 days	6.30	8.43
Average litter weight at 21 days	79.6	102.0
Average pig weight at 21 days	12.58	12.12
Livability—		
Percent raised of pigs born	77.5	88.2
Percent raised of live pigs born	84.4	93.6

Only 8 of the 10 gilts in each lot farrowed. The gilts in the B-complex vitamin supplemented lot farrowed an average of two more pigs per litter which were one-third pound heavier at birth. Even more important is the fact that the vitamin supplemented gilts raised 88.2 percent of their pigs whereas the unsupplemented gilts raised only 77.5 percent. In other words, the supplemented gilts had litters averaging 102 pounds at 21 days compared with 79.6 pounds for the unsupplemented group.

Experiment II

The results from experiment I indicated a definite value from vitamin additions. However, the experiment was repeated because the number of sows per treatment was small. The rations for the gilts were changed slightly. The corn was left out and additional trace minerals were added to both supplements. Thus, the ration for this experiment was oats, 37.5; barley, 27.5; alfalfa, 25; and supplement, 10. The vitamin supplements were the same as in the previous experiments. Again, after farrowing all gilts were fed the same lactating ration and the differences are traceable to the gestation ration.

Sixteen gilts of two breeds and three crosses were used per lot. The same breeding system as in experiment I was used.

TABLE III.—**Effect of Adding B-Vitamins to Gestation Rations.**

	Lot I Without B-Vitamins	Lot II With B-Vitamins
Number sows placed on experiment	16	16
Number sows farrowed	14	14
Average litter weight at birth	23.7	23.9
Average number pigs born	9.00	8.50
Average birth weight of pigs	2.63	2.81
Average number pigs at 21 days	8.79	7.79
Average pig weight at 21 days	11.45	12.04
Average number pigs at 35 days	8.64	7.71
Average weight at 35 days	15.43	16.35

In this experiment the supplemented gilts (lot II) farrowed pigs which were 6.7 percent heavier at birth and about six percent heavier at 35 days of age. These differences are significant at the one percent level, indicating that the odds are 20 to 1 that this is not due to chance but due to treatment. However, simple averages show larger litters for the unsupplemented group. A closer look at the data (see table IV) shows this difference to be due to the Yorkshire gilts. Two of the Yorkshire gilts in the supplemented lot (lot II) farrowed twins and triplets giving the average for the Yorkshires in this group of only seven pigs per litter at birth compared with 10 pigs for the unsupplemented group.

Inasmuch as the other averages are in favor of the B-vitamin supplemented group, it is felt that the ration was not the cause for the small litters of twins and triplets. If the Yorkshires are omitted from the calculations, the supplemented group had seven percent larger litters at birth (9.1 vs. 8.5 born per litter).

TABLE IV.—**Gilt Performance by Breeding of Gilts.**

Breeding of Gilts	No. of Sows	Birth		21 Days		35 Days	
		No.	Wt.	No.	Wt.	No.	Wt.
		Lot 1—without B-vitamins					
Chester	3	6.66	2.59	6.66	10.95	6.33	15.95
Yorkshire X Duroc	4	10.00	2.93	10.00	12.43	9.75	16.27
Yorkshire	4	10.25	2.33	10.00	10.45	10.00	14.63
Berkshire X Duroc	1	8.00	3.00	8.00	10.13	8.00	16.00
Berkshire X Yorkshire	2	8.50	2.49	7.50	12.87	7.50	14.60
		Lot II—with B-vitamins					
Chester	3	7.33	2.99	6.33	12.26	6.33	16.57
Yorkshire X Duroc	4	10.75	2.87	10.00	12.63	10.00	16.95
Yorkshire	4	7.00	2.62	6.25	12.32	6.25	15.60
Berkshire X Duroc	1	10.00	3.00	10.00	10.70	9.00	16.22
Berkshire X Yorkshire	2	8.00	2.61	7.50	10.53	7.50	15.80
Percent heavier			6.72%		5.15%		5.98%

These experiments indicate the value of providing sufficient amounts of the B-complex vitamins for pregnant gilts and sows. The results further show that a breeder cannot depend upon 25 percent good sun cured alfalfa in the ration to provide all the vitamins necessary in adequate amounts. With the low current cost of adding those vitamins to a protein supplement, a swine producer cannot afford to omit these vitamins from the rations of pregnant gilts and sows bred to farrow in the spring.

TO SOLVE A CONCRETE PROBLEM

When pouring a concrete floor it is a good idea to put a well lapped cover of roll roofing of heavy duty grade over the area to be covered with concrete, according to engineers at Rutgers University. This will prevent moisture from coming to the surface and thus help prevent grain spoilage, and caking of fertilizer or molding of hay and dry forage that might be stored on concrete floors. It also keeps such floors drier and somewhat warmer for animals lying on it and may help solve the wet litter problem in poultry houses.

COOL SHOWER BATH GOOD FOR PIGS

At the University of Minnesota's branch experiment station at Waseca, experiments show that 500 growing hogs can gain a total of 1,000 pounds a day if they have access to cool showers during hot weather. A pig that gets too hot may eat so little he won't gain an ounce, but if there is a way to keep cool, hogs will gain as much in hot weather as at any other time. Pigs at 75 or 80 pounds will gain 2 pounds daily if they're kept cool, the experiments show.

COLD STORAGE SPACE HAS INCREASED

The 18th biennial survey on the amount of refrigerated warehouse space now available in this country shows that such space has increased by 65 million cubic feet since 1953 to a total of 813 million cubic feet as of Oct. 1, 1955. About 377 million cubic feet of it will hold temperatures at 0° F. or lower. The rest of it is for storage at 0° F. or above.