

both pelleted and unpelleted increased the daily rate of gain and reduced the feed consumed per 100 pounds gain.

5. Grinding, mixing, and pelleting costs were not computed but should be considered when applying these results.

The Value of Antibiotics, Aureomycin B₁₂ Supplement (Aurofac 2A) and Vitamin B₁₂ Premix (Fortafeed 2-49-C) in the Protein Supplement for Fattening Spring Pigs in the Dry Lot in Summer (Project 110, Test 3).

C. E. Aubel

In 1955-56 experiments were designed with swine to secure information on the maximum use of alfalfa meal in protein supplemental mixtures as a substitute for pasture in the dry lot, since pastures for swine in Kansas are often poor, inadequate, or unavailable.

The pigs in these tests received with their grain mixed protein supplements which contained varying quantities of alfalfa meal.

The mixed protein supplement that gave best results for the two years tested was one of 4 parts tankage, 4 parts soybean meal, and 3 parts alfalfa meal.

From time to time there come on the market new substances, chemical and otherwise, that added to a ration increase gains and feed efficiency.

To the efficient protein supplement of the two years preceding, antibiotics and a vitamin B₁₂ premix were added to see if the 4 parts tankage, 4 parts soybean meal, and 3 parts alfalfa meal protein mixture would then produce more efficient gains.

In this test four lots of pigs were self-fed shelled corn and a mixed protein supplement. Each lot contained 10 pigs.

Lot 1 pigs were placed on sudangrass pasture and self-fed a protein supplement made up of 4 parts tankage, 4 parts soybean meal, 1 part cottonseed meal, and 1 part alfalfa meal.

Lot 2 was fed in dry lot and received a mixed protein supplement of 4 parts tankage, 4 parts soybean meal, and 3 parts alfalfa meal.

Lot 3 was fed in dry lot and received the same protein supplement as lot 2 except that 15 pounds of Fortafeed 2-49-C, a vitamin B₁₂ premix, was added per ton to the protein mixture.

Lot 4 was fed in dry lot, received the same protein supplement as lot 3, with 15 pounds of Aureomycin B₁₂ (Aurofac 2A) added per ton of protein mixture.

Table 1 gives the results of this experiment.

Observations

In this experiment pigs in lots 1, 2, and 3 made almost exactly the same daily gains: 1.47, 1.48, and 1.49 pounds each, respectively. Lot 4 (receiving both vitamin B₁₂ premix and Aureomycin B₁₂) gained 1.58 pounds each daily.

Somewhat less total feed was consumed by dry lot fed pigs that got increased alfalfa meal than by pigs allowed pasture (See Table 3).

The results of this experiment confirm that increased alfalfa meal in the protein supplement increases efficiency in dry-lot feeding, and the addition of an antibiotic and vitamin B₁₂ increases efficiency still further.

Table 3

The Effect of Antibiotics, Aureomycin B₁₂ Supplement (Aurofac 2A) and Vitamin B₁₂ Premix (Fortafeed 2-49-C) in the Protein Supplement for Fattening Swine in Dry Lot in Summer and Compared with Sudangrass Pasture Feeding.

June 13, 1956, to September 19, 1956—98 days.

Lot number	Shelled corn, sudangrass pasture Mixed protein supplement: 4 parts tankage 4 parts soybean meal 1 part cottonseed meal 1 part alfalfa meal	Shelled corn, mixed protein supplement consisting of 4 parts tankage, 4 parts soybean meal, 3 parts alfalfa meal In dry lot		
		15 lbs. 2-49-C and 15 lbs. Aurofac 2A added per ton	15 lbs. 2-49-C added per ton	15 lbs. 2-49-C and 15 lbs. Aurofac 2A added per ton
1	2	3	4	
Number pigs in lot	10	10	10	10
Av. initial wt. per pigs, lbs.	56.90	57.20	57.10	57.20
Av. final wt. per pig, lbs.	201.70	192.00	193.20	212.50
Av. total gain per pig, lbs.	144.80	145.80	146.10	155.30
Av. daily gain per pig, lbs.	1.47	1.48	1.49	1.58
Av. daily ration per pig, lbs.:				
Shelled corn	4.36	4.21	4.13	4.62
Protein supplement	.69	.67	.66	.60
Lbs. feed per 100 lbs. gain per pig:				
Shelled corn	295.37	283.33	277.27	292.07
Protein supplement	46.96	45.06	44.81	38.24

The Value of Furazolidone nf-180 and Terramycin Antibiotic in the Rations of Fattening Pigs in the Dry Lot (Project 110, Test 4).

C. E. Aubel

One of the most critical problems of the swine industry is disease. Antibiotics have been demonstrated to be effective in keeping some diseases at a low level. The nitrofurans have shown good results for certain specific diseases in poultry. Their effect in swine feeding is little known, for few experiments have been carried on feeding them to swine.

This experiment was initiated to study the effect of furazolidone nf-180 in rations for growing and fattening swine.

In this test four lots of fall pigs were self-fed free choice a basal ration of shelled corn and a mixed protein supplement in dry lot in winter. The mixed protein supplement was made up of 4 parts tankage, 4 parts soybean meal, 1 part linseed meal, and 1 part alfalfa meal.

Lot 1 pigs received no nitrofurans. They were self-fed the basal ration, a mixed protein supplement, and shelled corn.

Lot 2 pigs received shelled corn and a mixed protein supplement to which had been added nf-180 at the rate of 4½ pounds per ton. This supplied it to the pig at the rate of about 50 gms. per ton of total feed.

Lot 3 pigs received shelled corn and a mixed protein supplement to which had been added nf-180 at the rate of 2¼ pounds per ton. This supplied it to pigs at the rate of about 25 gms. each per total feed.

Lot 4 pigs received shelled corn and a mixed protein to which had been added Bi-Con TM-10 at the rate of 4½ pounds to a ton.

(Table 4 gives the results of this experiment.)

Acknowledgement is made to Hess & Clark, Inc., Ashland, Ohio, for supplying the furazolidone nf-180 for this experiment, and to Chas. Pfizer and Co., Terre Haute, Ind., for the Terramycin-B₁₂ supplement, Bi-Con TM-10.

Observations

In this experiment the pigs that received the nf-180, furazolidone supplement made slower gains than the pigs receiving no drug or those receiving Terramycin-B₂ antibiotic. The pigs receiving the 50-gm. level in lot 2 required more corn and more protein supplement per 100 pounds gain than did the pigs in lot 1 that received no furazolidone. Those on the 25-gm. level, lot 3, required 3.09 pounds corn less per 100 pounds gain but 5.9 pounds more protein supplement than the pigs in lot 1. When the performance of the pigs in lots 2 and 3, that were fed furazolidone, were compared with the antibiotic-terramycin-fed lot, lot 4, the differences were even wider. The terramycin lot made the fastest gains and the most economical use of their feed.

In conclusion it may be said that no advantage was noted in gains or in feed consumption under the conditions of this experiment by adding nf-180 to a ration of shelled corn and a mixed protein supplement to growing pigs.

Table 4

The Value of Furazolidone nf-180 and Terramycin Antibiotic in the Rations of Fattening Pigs in the Dry Lot.

December 1, 1956, to February 27, 1957—89 days.

Basal ration fed: Shelled corn, mixed protein supplement, in the dry lot	Basal	Basal + nf-180 50 gms. per ton level	Basal + nf-180 25 gms. per ton level	Basal + Bi-Con TM-10
Lot number	1	2	3	4
Number pigs in lot	10	10	10	10
Av. initial wt. per pig, lbs.	56.70	56.70	56.50	56.90
Av. final wt. per pig, lbs.	198.70	196.00	189.50	201.60
Av. total gain per pig, lbs.	142.00	139.30	133.00	144.70
Av. daily gain per pig, lbs.	1.59	1.56	1.49	1.62
Av. daily ration per pig, lbs.:				
Shelled corn	4.94	5.02	4.58	4.73
Protein supplement56	.57	.62	.57
Lbs. feed per 100 lbs. gain per pig:				
Shelled corn	309.85	321.24	306.76	291.01
Protein supplement	35.63	36.82	41.50	35.24

The Value of Progen, Arsanilic Acid, and Terramycin Antibiotic in the Ration of Fattening Pigs in Dry Lot (Project 110, Test 5).

C. E. Aubel

The use of arsanilic acid in swine rations has been receiving experimental attention for several years. It follows the use of arsenicals that have been used in medical practice hundreds of years. Fowler's solution containing 1 percent arsenic trioxide, a cheap but toxic inorganic arsenic, was first used as a tonic to improve the appearance and well-being of animals. The toxic properties of trioxide, however, greatly limited its use except as a general tonic in veterinary practice.

At the turn of the century, arsenic in the form of arsanilic acid was found to be much less toxic than the trioxide and was effective as "magic bullets" in the health of poultry. This, with its long known tonic properties, has brought it to the attention of swine feeders and has added it to the long list of disease fighters for pigs.

Studies up to this time indicate arsanilic acid to be a useful antibacterial

Acknowledgement is made to the Abbott Laboratories, North Chicago, Ill., for supplying the Progen, Arsanilic Acid supplement for this experiment, and to Chas. Pfizer and Co., Inc., Terre Haute, Ind., for supplying the Terramycin-B₂ supplement, Bi-Con TM-10.

agent in the ration of swine of different ages. It is particularly effective in treatment of bloody dysentery or bloody scours in swine.

The Food and Drug Administration has approved arsanilic acid concentrates which are fed on a free-choice basis with grain. Few experiments have been conducted on this method of feeding the arsonic acids.

This experiment was designed to obtain information on the use of arsanilic acid in supplements fed free choice to growing fattening pigs to evaluate it in its effectiveness in the growing ration.

In this test four lots of fall pigs were self-fed shelled corn and a mixed protein supplement in dry lot in winter. The mixed protein supplement was made up of 4 parts tankage, 4 parts soybean meal, 1 part linseed meal, 1 part alfalfa meal.

Lot 1 pigs received no supplement, except the mixed protein supplement with the basal ration.

Lot 2 pigs received the basal ration with Bi-Con TM-10, Terramycin antibiotic B₂ supplement mixed with the protein supplement at the rate of 4 1/2 pounds per ton.

Lot 3 pigs received arsanilic acid supplement as Progen mixed with the protein supplement at the rate of 3 pounds of Progen per ton. This supplied it to the pigs at the rate of about 90 gms. per ton of total feed.

Lot 4 pigs received arsanilic acid supplement as Progen at the rate of 3 pounds per ton and Bi-Con TM-10 Terramycin antibiotic B₂ supplement at the rate of 4 1/2 pounds per ton, plus protein.

Table 5 gives the results of this experiment.

Table 5

The Value of Progen, Arsanilic Acid, and Terramycin Antibiotic in the Rations of Fattening Pigs in Dry Lot.

December 1, 1956, to February 27, 1957—89 days.

Basal ration fed: Shelled corn, mixed protein supplement	Basal	Basal + Bi-Con TM-10	Basal + Progen, 90 gms. to ton	Basal + Progen + Bi-Con TM-10
Lot number	1	2	3	4
Number pigs in lot	10	10	10	10
Av. initial wt. per pig, lbs.	56.70	56.90	56.70	56.80
Av. final wt. per pig, lbs.	198.70	201.60	196.10	198.50
Av. total wt. per pig, lbs.	142.00	144.70	139.40	141.70
Av. daily gain per pig, lbs.	1.59	1.62	1.44	1.59
Av. daily ration per pig, lbs.:				
Shelled corn	4.94	4.73	4.82	4.71
Protein supplement56	.57	.60	.57
Lbs. feed per 100 lbs. gain per pig:				
Shelled corn	309.85	291.01	308.32	296.25
Protein supplement	35.63	35.24	38.59	36.20

Observations

In this experiment pigs that received the arsanilic acid alone made the poorest gains of all the lots, only 1.44 pounds per head per day. The pigs receiving no arsanilic acid gained 1.59 pounds, those that received Terramycin gained 1.62 pounds, and those that received Terramycin and arsanilic acid gained 1.59 pounds.

The feed consumption was lowest in the lots receiving the antibiotic, lots 2 and 4, and the highest in lot 3 that received the arsanilic acid.

When arsanilic acid and terramycin were both added to the ration, a good response was achieved but not so good as when terramycin was added alone.