

no external visible symptoms of distress, it would appear logical that further closure of the urinary passage might result in symptoms similar to that produced by a blockage of the passage by urinary calculi. The extreme swelling of the Cowper's glands may be responsible for difficulty in passage of fecal material and could possibly result in considerable straining with resulting prolapse of the rectum. Further studies are being continued on those animals either dying from the symptoms indicated or showing symptoms sufficient to cause death. The possible serious effect of the indiscriminate use of this hormone-like material in lamb fattening should deter any commercial feeders from using it until further experimental work has indicated that it can be used safely without danger from heavy losses.

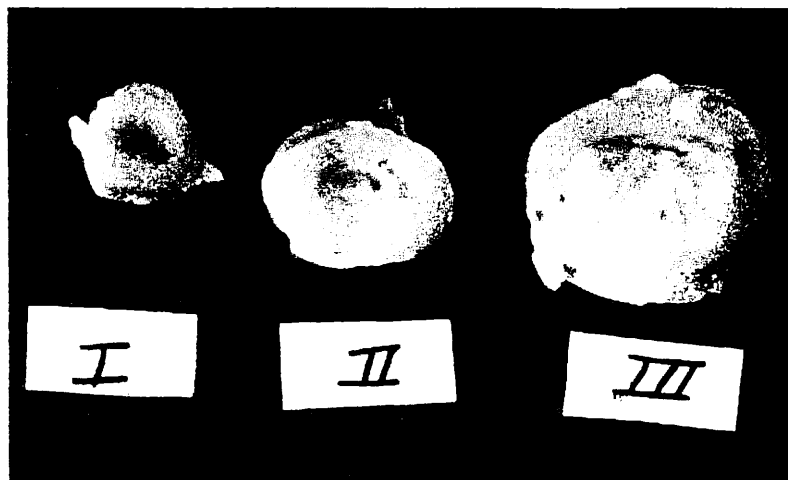


Fig. 6.—Cross section through the urethra and surrounding prostate tissue of lambs; (I) receiving no treatment; (II) receiving one stilbestrol implant; and (III) receiving two stilbestrol implants. Note the almost complete closure of the lumen of the urethra in the treated lambs.

### Project Commercial 108: Salt Research with Feeder Lambs

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Experiments designed to test the need and value of salt in the rations of feeder lambs have been conducted by the Kansas Agricultural Experiment Station for the past three years. The tests have shown that feedlot gains and feedlot efficiency are reduced when supplemental salt is withheld from the rations of fattening lambs in the feedlot. When the lambs were all slaughtered after a uniform feeding period, the lambs receiving no salt had lower yielding and lower grading carcasses than the lambs given salt.

Digestion trials and mineral balance studies have shown that the deprivation of supplemental salt slightly lowers feed digestibility of all feed components other than fat; depletes the animal body of sodium;

decreases water consumption and urine excretion; and dehydrates the body fluids.

Most range feeder lambs haven't had salt during their movement from the range to the feedlot and should be gradually accustomed to salt. Since many lamb feeders have felt that salt wasn't necessary during the 80 to 120 day feeding period, they haven't provided supplemental salt for their lambs. The tests at Kansas State College clearly demonstrate the need and advisability of salt in lamb-fattening rations even though the feeding period is of short duration.

### Project State 347: Adaptability of Breeds of Rams and Breed Types of Range Ewes to Market Lamb Production in Kansas

T. Donald Bell and Lewis A. Holland

During the fall of 1951, ewe lambs representing the three types of ewes commonly used in Kansas were secured from southern Utah. One-third of these 140 lambs were of straight Rambouillet or fine-wool breeding and similar to Texas ewes; one-third of the lambs were sired by Columbia rams out of Columbia x Rambouillet ewes and were similar to the Northwestern whiteface crossbred ewes commonly obtained from the Northwestern range area; and one-third of the lambs were sired by Suffolk rams and out of whiteface crossbred ewes and were similar to Northwestern blackface ewes. These ewes will be maintained at the College as long as their productive life will permit and careful records will be kept of their wool production as well as their lamb production when mated to different breeds of rams. Other factors of economic importance, such as longevity and the ability to produce early lambs, will be studied.

During the summer of 1952, the ewes of each of the three types were randomly divided into four groups and bred to Hampshire, Suffolk, Southdown, and Shropshire yearling rams. During the summer of 1953 the breeding procedure will be repeated but a new set of yearling rams of all breeds will be used and the ewes will be rotated so they are bred to different breeds of rams.

The data obtained from the different types of ewes and different breeds of rams are summarized in the two following tables. Lamb production figures are subject to tremendous variation and there should be no definite conclusions drawn from these preliminary findings. Additional information concerning final market weights and market grades will be obtained from this year's lamb crop and similar information will be gathered from the lamb crops of the several following years before any definite conclusions are drawn.

Grease fleece weights are less subject to variation and the yearling grease fleece weights should be a fairly good estimate of future wool production. Date of lambing figures also should be fairly reliable indicators of comparative ability to breed and lamb early. Most sheepmen have believed that the finewools would lamb earlier than the other types but they have thought also that the whiteface crossbreds would probably lamb earlier than the blackface crossbreds. This year's data failed to confirm this opinion.

Table 5.—Comparative Wool and Lamb Production of Ewes of Three Different Types.

Types of ewes	Grease fleece weight	Average lambing date	Average birth weight of lambs		Average weight of lambs on April 8
			Single	Twins	
Blackface crossbreds ....	6.8	Jan. 20	10.0	8.1	50.3

Rambouillets (Finewools) .....	8.5	Jan. 21	10.1	8.4	58.5
Whiteface crossbreds ..	10.0	Feb. 3	10.6	10.5	51.9

Table 6.—Comparative Lamb Production of Rams of Different Breeds

Breed of sire of lambs .....	Birth weight		Average weight of lambs on April 8
	Single	Twins	
Hampshire .....	11.1	7.9	60.3
Suffolk .....	10.8	9.0	58.2
Southdown .....	9.3	—	53.6
Shropshire .....	10.1	8.1	40.5

## Project 110: Swine Feeding Investigations

### EXPERIMENT I

#### The Effect of Antibiotics (Aureomycin-B<sub>12</sub> Supplement) on Weanling Pigs in the Dry Lot

C. E. Aubel

The use of antibiotics in swine nutrition has received much attention the last few years. Research has shown that different vitamin B<sub>12</sub>-antibiotic supplements stimulate gains and improve feed efficiency in growing and fattening swine. One problem arising from its use is the relative efficiency of the B<sub>12</sub>-antibiotic supplement in plant protein supplement diets and in mixed plant and animal protein supplement diets.

An experiment was recently conducted at this station to supply information on two points. First, how much does the addition of an antibiotic improve an all-plant protein supplement or diet, and how much does it improve a mixed protein supplement of plant and animal protein for weanling pigs? The second point to get information on was whether it was necessary to feed the antibiotics to pigs after they weighed 100 pounds.

The antibiotic used in this experiment was aureomycin fed as Aurofac and it was mixed in the protein supplements at the rate of 3 pounds to 100 pounds. Six lots of 42-pound fall pigs were fed in the dry lot. They were self-fed free choice on shelled corn, a protein supplement, and a mineral mixture. The mineral mixture was made up of equal parts ground limestone, steamed bonemeal, and salt.

Lots 1, 2, and 3 received only soybean meal as a protein supplement; Lot 2 received aureomycin in the supplement until the pigs reached 100 pounds in weight and then they were fed only the soybean meal. Lot 3 received aureomycin in their protein supplement throughout the experiment, until the pigs were finished at a weight of 200 pounds.

Lots 4, 5, and 6 received as a protein supplement a mixture of 4 parts tankage, 4 parts soybean meal, 1 part linseed meal, and 1 part alfalfa meal. Lot 5 received aureomycin in the supplement until the pigs reached 100 pounds in weight, and then they were fed only the mixed protein supplement; Lot 6 received aureomycin in their protein supplement throughout the experiment until the pigs were finished.

The following table gives a summary of the results of this experiment:

Table 7.—The Effect of Antibiotics (Aureomycin-B<sub>12</sub> Supplement) on Weanling Pigs in the Drylot

Ration fed .....	(self-fed) Shelled corn, alfalfa hay, mineral mixture					
	Soybean oil meal	Soybean oil meal, aureo-B <sub>12</sub> to 100 lbs.	Soybean oil meal, aureo-B <sub>12</sub> to finish	Protein mixed supplt.	Protein mixed supplt., aureo-B <sub>12</sub> to 100 lbs.	Protein mixed supplt., aureo-B <sub>12</sub> to finish
Lot number .....	1	2	3	4	5	6
No. pigs in lot ....	9	10	10	10	10	10
Av. initial wt./pig .....	43.95	42.85	43.00	42.35	42.65	42.50
Av. final wt./pig	179.88	200.30	205.00	196.90	196.60	210.30
Av. total gain per pig .....	135.96	157.45	162.00	154.55	153.95	167.80
Av. daily gain per pig .....	1.40	1.62	1.67	1.59	1.58	1.72
Av. daily ration per pig:						
Corn .....	3.55	4.78	4.72	5.20	4.98	5.34
Alfalfa hay ....	.05	.03	.05	.03	.04	.04
Protein supplt.	1.03	1.15	1.12	.85	.80	.82
Feed consumed per 100 lbs. gain:						
Corn .....	253.33	294.69	283.02	326.43	314.38	308.99
Alfalfa hay ....	.36	.21	.32	.22	.25	.23
Protein supplt.	73.95	71.45	67.28	53.38	50.99	47.67
Mineral mix ..	.13	.12	.08	.06	.05	.05
Feed cost per 100 lbs. gain ....	\$11.60	\$13.22	\$13.01	\$13.24	\$13.05	\$12.94

Feed prices charged: Shelled corn, \$1.86 per bushel; soybean meal, \$86 per ton; soybean oil meal with Aurofac, \$110 per ton; alfalfa hay, \$50 per ton; mixed protein supplement in Lots 5 and 6, \$90.80 per ton; mineral mixture, 3c per lb.; mixed protein supplement with Aurofac in Lots 5 and 6, \$112.20 per ton; Aurofac, 43c per lb.

### Observations

When aureomycin was added to a soybean meal protein supplement ration and fed to pigs only until they reached a weight of 100 pounds, the rate of gain was increased, as was also the feed required per 100 pounds gain. When the antibiotic was fed in the supplement throughout the experiment, it further increased the gains and slightly lowered the feed requirements. The gains were satisfactory in both lots receiving the antibiotics.

The mixed plant and animal protein supplement without an antibiotic as fed in Lot 4 produced more rapid daily gains than did the plant protein supplement alone, soybean meal, as fed in Lot 1.

When the antibiotic was added to the mixed protein supplement in Lot 5, until the pigs reached 100 pounds, the rate of gain was unchanged but the feed requirements were slightly lowered. When the antibiotic was fed in the supplement throughout the experiment, the rate of gain was markedly increased and the feed requirements decreased.

It is evident from these results that aureomycin added to the ration,