EXPERIMENT II - Winter - 1947

The Use of Mustard Seed Oil Meal As a Protein Supplement for Fattening Pigs in the Dry Lot

C. E. Aubel

Protein supplements are essential to profitable pork production whether it be the maintenance of the breeding herd, growing the pigs, or fattening pigs for market. Previous tests at this station have shown the advantage and profit in feeding tankage and other protein supplements with corn or other grains when pigs are fed in the dry lot or on pasture.

About a year ago the Department of Animal Husbandry was asked to conduct some experimental feeding tests with mustard seed oil meal. This meal was being produced in a Kansas seed oil extraction plant by expressing the oil from wild mustard seed. The seed had been shipped from northern wheat growing areas, where it had been separated from Spring wheat, which it contaminated very badly. There was a considerable potential supply of this seed and the meal or residue remaining from the oil extraction contained considerable protein, so it was thought that it might have considerable value as a protein supplement for livestock. Consequently the Department of Animal Husbandry became interested and carried on some feeding experiments.

By reason of the fact that no information was at hand concerning its use and palatability in pig feeding, it was thought advisable to feed a test lot along with last summer's experiment. The results for this are found under the data for Experiment I on a preceding page. Also on a preceding page is found the chemical analysis of the mustard seed oil meal and an analysis of the digester tankage with which it was compared.

The first time mustard seed oil meal was fed, it was used as the only protein supplement. The pigs, however, were on alfalfa pasture. It was clearly shown from this feeding that mustard seed meal could not be used as the only protein supplement, as the pigs would not eat it.

From these results it was clear that if the meal were to be used efficiently it would be necessary to mix it with other protein supplements. Consequently, last winter an experiment was set up to determine the value of the meal when mixed in different proportions with tankage and other protein feeds.

Experimental Procedure:

Since it had been demonstrated that mustard seed meal could not be fed alone as the protein supplement to corn in fattening pigs, it was decided to feed it mixed in different proportions with tankage, and to mix other protein supplements with the tankage and mustard seed meal in an attempt to determine how much could be fed in the ration. All lots were self-fed shelled corn. Alfalfa hay was self-fed in all lots except Lot 5. The protein supplement mixtures aside from tankage in the control lot, Lot 1, were as follows, all

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Credit is due R. B. Cathcart for weighing and allotting the pigs used in this experiment.

The mustard seed oil meal used in this experiment was furnished through the courtesy of the Kansas Soybean Mills, Inc., Emporia, Kansas.

self-fed. Lot 2 received a protein mixture of tankage, 90 percent and mustard seed, 10 percent. Lot 3 received tankage, 75 percent and mustard seed, 25 percent; and Lot 4 received tankage, 50 percent and mustard seed, 50 percent. Lot 5 received a more complex protein supplement mixture of tankage, 40 percent; mustard seed, 40 percent; cottonseed meal, 10 percent; and alfalfa meal, 10 percent.

The following table gives a summary of the feeding record of this experiment.

EXPERIMENT II - Winter - 1947

The Comparative Value of Mustard Seed Oil Meal in Protein Feed Mixtures As a Supplement to Shelled Corn for Fattening Fall Pigs in the Dry Lot

C. E. Aubel

(December 20, 1946 to April 9, 1947 - 110 Days)

Ration	Shelled Corn (self-fed)				
	Tankage Alfalfa hay (self-fed)	Tankage 90% Mustard seed 10% Alfalfa hay (self-fed)	Tankage 75% Mustard seed 25% Alfalfa hay (self-fed)	Tankage 50% Mustard seed 50% Alfalfa hay (self-fed)	Tankage 40% Mustard seed 40% Cottonseed meal 10% Alfalfa meal 10% (self-fed)
Lot Number	1	2	3	4	5
Number pigs in lot	10	9	10	10	10
Av. initial weight per pig	Pounds 67.45	Pounds 67.00	Pounds 68.00	Pounds 68.10	Pounds 68.20
Av. final weight per pig	262.50	253.20	261.65	249.60	252.50
Av. total gain per pig	195.05	186.25	193.65	181.50	184.30
Av. daily gain per pig	1.77	1.69	1.76	1.65	1.67
Av. daily ration per pig:					
Shelled corn	7.12	6.35	6.47	6.34	5.97
Tankage	.45	.56	.49	.32	----
Protein supplement	----	----	----	----	.64
Alfalfa hay	.27	.30	.18	.31	.21
Mustard seed meal	----	.06	.16	.32	----
Feed consumed per 100 pounds gain:					
Shelled corn	401.84	381.50	372.57	385.50	356.59
Tankage	25.63	33.02	27.69	19.66	----
Protein supplement	----	----	----	----	38.25
Alfalfa hay	15.27	18.97	10.58	18.84	12.91
Mustard seed meal	----	3.66	9.23	19.66	----
Feed cost per 100 pounds gain:	$11.77	$11.85	$11.33	$11.53	$10.61

FEED PRICES CHARGED: Shelled corn, $1.40 per bushel; Tankage, $120.00 per ton; Alfalfa hay, $25.00 per ton; Mustard seed meal, $50.00 per ton; Protein supplement, $4.00 per hundred pounds, (used in Lot 5).

METHODS OF FEEDING: All lots were self-fed shelled corn; alfalfa hay was self-fed to all lots except Lot 5. The protein supplements were mixed in the proportions indicated and self-fed in a separate compartment.

OBSERVATIONS AND CONCLUSIONS

1. Mustard seed oil meal when mixed with tankage and other protein supplements and self-fed free choice proved to be an excellent protein feed for fattening pigs.

2. In all lots but one (lot 2) where the mustard seed meal was fed, the gains were somewhat cheaper than where tankage alone was fed; but the gains were not quite so rapid.

3. The mustard seed meal mixtures seemed equally palatable to the pigs at all times. None seemed to be in any way neglected nor did any mixture seem to be especially preferred.

4. The lot receiving the mixture of tankage, 50 percent and mustard seed, 50 percent made the smallest daily gain of all the lots, but made more economical gains than the lot receiving tankage alone.

5. The lot receiving the mixture 75 percent tankage and 25 percent mustard seed made almost as rapid gains as the lot receiving tankage alone, but at 44 cents cheaper per hundred pounds gain.

6. Lot 6, which received the more complex protein mixture with mustard seed meal, made the most economical gains of all. The daily gains were somewhat smaller than those of the lot receiving tankage alone as the supplement.