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# ENZYME SUPPLEMENTATION OF SWINE RATIONS<sup>1/</sup>

Richard C. Wahlstrom

Enzymes are complex compounds which are present in the animal body and are responsible for chemical reactions in the animal. The digestive enzymes assist in the breakdown of food so that the various food nutrients are made available to be utilized by the animal. Poultry workers have shown that rations containing barley can be improved by the addition of enzymes.

The following experiment was conducted to study the value of adding enzymes to swine rations that contained corn and oats or grain sorghum as the cereal grain portion of the ration.

## Experimental Plan

Fourteen lots of 6 pigs each were used in this experiment. Purebred and crossbred pigs averaging about 34 pounds were allotted according to litter, weight and general condition. The pigs were self-fed mixed rations in concrete dry-lots. Two lots of pigs received each of the following treatments:

- Lot 1 - Basal ration 10
- Lot 2 - Basal ration 11
- Lot 3 - Basal ration 11 plus 5 pounds of Agrozyme per ton
- Lot 4 - Basal ration 12
- Lot 5 - Basal ration 12 plus 5 pounds of Agrozyme per ton
- Lot 6 - Basal ration 13
- Lot 7 - Basal ration 13 plus 5 pounds of Agrozyme per ton

The composition of the rations is given in table 1.

Table 1. Percentage Composition of Rations

<u>Basal Ration No.</u>	<u>Weaning to 100 lbs.</u>			
	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>
Ground yellow corn	82.6	43.3	29.22	---
Ground oats	---	43.3	58.44	---
Ground sorghum	---	---	---	86.25
Soybean oil meal	11.25	8.25	7.5	8.5
Tankage	4.5	3.3	3.0	3.4
Di-calcium phosphate	0.6	0.7	0.7	0.7
Trace mineral salt	0.5	0.5	0.5	0.5
Limestone	0.4	0.5	0.5	0.5
Vitamin-antibiotic <sup>a</sup>	0.15	0.15	0.15	0.15

<sup>1/</sup> Presented at South Dakota State College Swine Field Day, August 28, 1959.

100 to 200 lbs.

Ground yellow corn	90.0	47.25	31.95	---
Ground oats	---	47.25	63.9	---
Ground sorghum	---	---	---	94.45
Soybean oil meal	5.8	2.5	1.5	2.5
Tankage	2.3	1.0	0.6	1.0
Di-calcium phosphate	0.7	0.7	0.7	0.7
Trace mineral salt	0.5	0.5	0.5	0.5
Limestone	0.6	0.7	0.7	0.7
Vitamin-antibiotic <sup>a</sup>	0.15	0.15	0.15	0.15

a/ Furnished 1 mg. riboflavin, 2 mg. pantothenic acid, 4.5 mg. niacin, 5 mg. choline, 5 mcg. vitamin B<sub>12</sub> and 10 mg. Pro-Strep per lb.

Summary of Results

The results of this experiment are presented in table 2. Pigs fed ration 10 which contained corn as the only cereal grain had the highest rate of gain. During the first 45 day period these pigs gained 4% faster than those fed equal parts of corn and oats (ration 11), and over the entire period they gained 7% faster. Ration 12 (one part corn to 2 parts oats) produced gains approximately 6% slower than ration 11 but 23% greater than ration 13 (sorghum). Pigs fed the sorghum ration gained at a very poor rate particularly during the last part of the trial. It is possible that the quality of protein of this ration was not adequate after the rations were reduced in protein content. This appears to be the case since the pigs gained faster up to approximately 90 pounds, when the rations were changed, than they did during the last part of the experiment.

The addition of Agrozyme did not affect the performance of the pigs receiving ration 11. However, somewhat faster gains were obtained when rations 12 and 13 were supplemented with this enzyme. Feed consumption was slightly greater when Agrozyme was fed but feed efficiency did not seem to be altered.

Table 2. Results of Enzyme Supplementation of Rations for Growing-Finishing Swine (May 22-August 18, 1959)

Ration No. a/	10	11	11 plus Agrozyme	12	12 plus Agrozyme	13	13 plus Agrozyme
No. of pigs	12	12	12	12	12	12	12
Av. initial wt., lb.	34.1	34.2	34.4	34.2	34.3	34.4	34.2
Av. final wt., lb.	174.8	165.4	166.3	154.8	160.9	124.7	132.8
Av. daily gain, lb.							
First 45 days	1.46	1.39	1.41	1.25	1.28	1.16	1.27
To Aug. 18	1.65	1.53	1.54	1.41	1.48	1.06	1.15
Av. daily feed, lb. b/	3.87	3.65	3.70	3.45	3.53	3.40	3.60
Av. feed per 100 lb.							
Gain, lb. b/	265	262	262	276	276	294	283

a/ See Table 1 for explanation of rations.

b/ First 45 days of experiment only.