

## FOUR FEEDING SYSTEMS FOR GROWING-FINISHING SWINE

D.G. Landblom, J.L. Nelson and T.J. Conlon

AGNET computer service, which provides the capability of formulating least cost swine rations, is available to North Dakota swine producers through their county extension agents.

This trial is designed to determine the adaptability of the Nebraska based computer for the formulation of rations with North Dakota grown feed grains and for North Dakota climatic conditions; and, to work out the modifications necessary to make the system work for North Dakota producers. The trial compares least cost computer formulated rations with three other feeding options.

Previous work at this station has shown that growing-finishing rations for swine based on two-thirds barley and one-third oats properly supplemented with soybean meal, minerals and vitamins and formulated to contain 16% protein in the grower phase and 14% protein in the finisher phase, produce good, economical gain when fed to pigs raised weighing from 40 to 230 pounds.

Crossbred feeder pigs raised at the Dickinson Station weighing 35-60 pounds were allotted by sex and sire into uniform replicated feeding groups.

Prior to the start of the trial all pigs were wormed with Atgard and vaccinated for erysipelas, and at approximately 100 pounds the pigs were rewormed and continued on feed until finished.

The rations compared were as follows:

- a) Grower-finisher rations formulated with the aid of the AGNET computer service.
- b) Commercial pelleted grower-finisher ration purchased locally and fed according to the manufacturer's directions.
- c) Grower-finisher rations formulated using home-grown grains and a commercially prepared protein concentrate.
- d) Grower-finisher ration recommended by the Dickinson Station, prepared using home-grown grains, soybean meal, vitamins and minerals.

The pigs were housed in concrete floored pens equipped with pole shed shelters, automatic waterers and were self-fed.

Each group of pigs stayed on feed until an average pen weight of 220 pounds was reached, at which time all barrows were sold locally at Western Livestock Company. All gilts were retained for breeding purposes.

**Table 1. Grower Ration Composition Fed During the Summer – 1980**

Ingredients	Grower Ration Types				
	GTA Developer Complete Pelleted	AGNET	Dickinson Basic	GTA Commercial Supplement	
	40-70 lbs.	50-80 lbs.	40-120 lbs.	40-70	70-125
Oats – lbs.	-	-	285	-	-
Barley – lbs.	-	752	572	825	875
Soybean Oil Meal – lbs.	-	140	120	-	-
Alfalfa – lbs.	-	74	-	-	-
Limestone – lbs.	-	6	11	-	-
Di-Calcium Phosphate – lbs.	-	12	6	-	-
Trace Mineral Salt – lbs.	-	6	5	-	-
dl Methionine – lbs.	-	0.8	-	-	-
GTA Vita Pack – lbs.	-	9.2	-	-	-
GTA Six in One Supplement	-	-	-	175	125
B-Vitamin Complex – lbs.	-	-	1	-	-
Vitamin A – gms.	-	-	30	-	-
Vitamin D – gms.	-	-	14	-	-
Zinc Sulfate – gms.	-	-	<u>180</u>	-	-
Cost/1000# including processing	1,000	1,000	1,000	1,000	1,000
@ \$10/Ton	\$84.40	\$75.77	\$67.03	\$73.27	\$68.62

**Table 2. Finishing Ration Composition Fed During Summer – 1980**

Ingredients	Finisher Ration Types			
	GTA Finisher Complete Pelleted	AGNET	Dickinson Basic	GTA Commercial Supplement
	70 lbs-Market	80 lbs-Market	120 lbs-Market	125 lbs-Market
Oats	-	-	285	-
Barley	-	800	613	912.5
Soybean Oil Meal	-	70	80	-
Alfalfa	-	98	-	-
Di-Calcium	-	6	6	-
Limestone	-	10	10	-
Trace Mineral Salt	-	6	5	-
B-Vitamin Complex	-	-	1	-
Vitamin A – gms.	-	-	30	-
Vitamin D – gms.	-	-	14	-
Zinc Sulfate – gms.	-	-	180	-
GTA Six in One	-	-	-	75
GTA Swine Mineral-10	-	-	-	10
GTA Hi Vita	-	-	-	<u>2.5</u>
Cost/1000# including processing	1,000	1,000	1,000	1,000
@ \$10/Ton	\$68.00	\$70.48	\$64.52	\$66.74

**Table 3. Performance of Pigs Fed Four Ration Types During Summer of 1980**

	<b>GTA Commercial Pellet</b>		<b>AGNET Ration</b>		<b>Dickinson Basic</b>		<b>GTA Commercial Supplement</b>	
<b>Performance:</b>								
Lot No.	2	7	5	8	3	6	1	4
No. head	7	6 <sup>1/</sup>	7	7	6 <sup>2/</sup>	7	7	7
Days fed	103	103	103	103	103	103	103	103
Avg. Finished Weight	224.1	215.8	214.9	193.1	216.3	196.4	191.7	205.6
Avg. Starting Weight	43.4	45.0	42.3	43.4	42.8	43.1	43.4	41.0
Gain Weight	180.7	170.8	172.6	149.7	173.5	153.3	148.3	164.6
Avg. Daily Gain	1.75	1.65	1.67	1.45	1.68	1.48	1.43	1.59
Two Lot Combined Average	1.71 lbs/day		1.56 lbs/day		1.58 lbs/day		1.51 lbs/day	
<b>Feed Data:</b>								
Total lbs/head	579	495	641	527	555	480	622	666
lbs/head/day	5.6	4.8	6.2	5.1	5.4	4.7	6.04	6.47
lbs of feed/lb gain	3.2	2.9	3.7	3.5	3.20	3.13	4.19	4.05
<b>Feed Cost's:</b>								
Developer, \$	-	-	-	-	-	-	10.55	10.60
Grower, \$	12.06	12.06	10.72	10.74	21.17	19.17	11.52	11.28
Finisher, \$	29.63	23.97	35.22	27.14	15.45	12.54	20.74	23.84
Total Feed Cost Per Pig	\$41.69	\$36.03	\$45.94	\$37.88	\$36.62	\$31.71	\$42.81	\$45.72
Avg. Feed Cost Per Cwt Gain	\$23.07	\$21.09	\$26.62	\$25.30	\$21.11	\$20.68	\$28.87	\$27.78

<sup>1/</sup> One gilt removed after 51 days on trial due to arthritic condition.

<sup>2/</sup> One barrow died on Aug. 9<sup>th</sup> after 39 days on trial.

**Table 4. Performance of Pigs Fed Four Ration Types During Summer of 1980**

	<b>GTA Commercial Pellet</b>		<b>AGNET Ration</b>		<b>Dickinson Basic</b>		<b>GTA Commercial Supplement</b>	
<b>Economics:</b>								
Lot No.	2	7	5	8	3	6	1	4
Gross return @ 35¢/lb.	\$78.44	\$75.53	\$75.22	\$67.59	\$75.71	\$68.74	\$67.10	\$71.96
Feeder Pig Cost, \$	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00
Feed Cost/hd., \$	41.69	36.03	45.94	37.88	36.62	31.71	42.81	45.72
Net Return/Pig, \$	6.75	9.50	-0.72	-0.29	9.09	7.03	-5.71	-3.76
Avg. net return both lots	\$8.13		\$-0.51		\$8.06		\$-4.74	

Table 5. Three Year Summary of Four Feeding Systems for Swine

	GTA Commercial Pellet		AGNET Ration		Dickinson Basic Ration		GTA Commercial Supplement	
	Barrows	Gilts	Barrows	Gilts	Barrows	Gilts	Barrows	Gilts
<b>Avg. Daily Gain:</b>								
1978	1.72	1.55	1.61	1.35	1.45	1.53	1.43	1.37
1979	1.52	1.65	1.45	1.58	1.40	1.45	1.43	--
1980	<u>1.75</u>	<u>1.66</u>	<u>1.67</u>	<u>1.45</u>	<u>1.68</u>	<u>1.48</u>	<u>1.43</u>	<u>1.59</u>
3-Yr. Avg.	1.66	1.62	1.58	1.46	1.51	1.49	1.43	1.48
<b>Feed Consumption Per Pig Per Day:</b>								
1978	5.7	5.5	6.2	5.8	5.9	5.7	5.6	5.9
1979	4.5	5.3	5.6	6.1	5.3	4.9	5.5	--
1980	<u>5.6</u>	<u>4.8</u>	<u>6.2</u>	<u>5.1</u>	<u>5.4</u>	<u>4.7</u>	<u>6.0</u>	<u>6.5</u>
3-Yr. Avg.	5.3	5.2	6.0	5.7	5.5	5.1	5.7	6.2
<b>Feed Efficiency Feed/lb. of Gain:</b>								
1978	3.31	3.55	3.85	4.29	4.06	3.74	4.08	4.13
1979	2.97	3.21	4.03	3.83	3.76	3.51	3.84	--
1980	<u>3.20</u>	<u>2.90</u>	<u>3.70</u>	<u>3.50</u>	<u>3.20</u>	<u>3.13</u>	<u>4.19</u>	<u>4.05</u>
3-Yr. Avg.	3.16	3.22	3.86	3.87	3.67	3.46	4.04	4.09

Table 6. Three Year Economic Summary of Four Feeding Systems for Swine

	GTA Commercial Pellet		AGNET Ration		Dickinson Basic Ration		GTA Commercial Supplement	
	Barrows	Gilts	Barrows	Gilts	Barrows	Gilts	Barrows	Gilts
<b>Net Return/Pig:</b>								
1978	19.84	15.33	21.87	17.13	16.26	22.70	18.63	14.98
1979	10.48	10.27	3.78	7.87	9.31	13.83	7.73	--
1980	<u>6.75</u>	<u>9.50</u>	<u>-0.72</u>	<u>-0.29</u>	<u>9.09</u>	<u>7.03</u>	<u>-5.71</u>	<u>-3.76</u>
3-Yr. Avg.	\$12.36	\$11.70	\$ 8.31	\$ 8.24	\$11.55	\$14.52	\$ 6.88	\$ 5.61

**Discussion:**

Pigs on trial in 1980 were not bothered by tail biting like they were in 1979, in the commercial supplement pens. One barrow died of acute pneumonia and one gilt was removed from the trial due to arthritic lameness. The alfalfa used in the AGNET formulated rations was pelleted and was not locally grown.

**Summary:**

The performance of all pigs on trial in 1980 was very satisfactory, with pigs fed the commercial pelleted ration averaging about one-fifth of a pound faster daily gains. The commercial supplemented ration returned the poorest feed efficiency, requiring slightly over four pounds of feed to produce a pound of gain. Perhaps the supplement overestimates the feeding value of barley, since feed efficiency was poor in all 3 years.

The least cost AGNET ration tended to over evaluate the feeding value of alfalfa, especially in the finishing phase. Producers should keep this in mind when formulating rations with the aid of the AGNET computer.

The basic barley-oat-soybean oil meal ration recommended by the Dickinson Experiment Station performed very satisfactorily and consistently during all 3 years of this trial, with the highest net returns of any ration fed.

Depending on time, labor and machinery available, swine producers can probably use any of the ration types to good advantage.