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Nutritional Adequacy of Triticale¹ for Finishing Swine

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Summary

An experiment involving 81 finishing pigs was conducted to determine the nutritional adequacy of triticale for finishing swine. Pigs fed triticale alone gained significantly ($P < .05$) slower than pigs fed any other diets. Adding 0.1% L-lysine to triticale significantly ($P < .05$) increased daily gain. There were no significant differences in daily gain, feed intake, or feed:gain ratio between pigs fed triticale + lysine, triticale + soybean meal, milo + soybean meal or wheat + soybean meal. Differences in backfat thickness, loin-eye area, length or percentage of lean cuts in the carcass were not significant. Lysine is the first limiting amino acid in triticale for finishing swine. The lysine in triticale may not be totally available to pigs.

Procedures

Eighty-one pigs averaging 107 pounds were randomly assigned to treatments based on breed, sex and initial weight. Pigs were housed in a totally-slatted finishing unit. Each 6' x 15' pen contained an automatic waterer and self-feeder. These diets were evaluated: (1) triticale alone; (2) triticale + 0.1% L-lysine; (3) triticale + soybean meal; (4) milo + soybean meal; (5) wheat + soybean meal. Diets 1, 4 and 5 contained the same level of lysine. All diets had identical mineral, vitamin, and antibiotic additions, and were fed in pellet form. The amino acid composition of the triticale (Lucky Jack Select) is shown in table 12. Composition of the diets are shown in table 13. Pigs were individually removed for slaughter when they weighed 210 ± 5 pounds.

Results and Discussion

Performance data are summarized in table 14. Pigs fed triticale alone gained significantly ($P < .05$) slower than pigs fed any other diets. Differences in daily gain, feed intake or feed:gain ratio were not significant among pigs fed triticale + lysine, triticale + soybean meal, milo + soybean meal or wheat + soybean meal. Carcass data are summarized in table 15. There were no significant treatment differences in backfat thickness, loin-eye area, length or percentage of lean cuts in the carcass.

¹Triticale (Lucky Jack Select) supplied by Jack Gorsuch, Wichita, Kansas.

The response to 0.1% added L-lysine suggests that lysine is the first limiting amino acid in triticale for finishing pigs and that the lysine in triticale may not be totally available to pigs.

Table 12. Amino Acid Analysis of Lucky Jack Select Triticale

Amino Acid	% Sample (as is) ^a
Lysine	0.567
Histidine	0.401
Arginine	0.953
Threonine	0.553
Serine	0.789
Glutamic Acid	4.905
Proline	1.652
Glycine	0.732
Alanine	0.745
Valine	0.821
Methionine	0.263
Isoleucine	0.602
Leucine	1.176
Tyrosine	0.530
Phenylalanine	0.791
Crude protein, %	16.70

^aMoisture content of sample was 9.30%.

Table 13. Composition in Percentage of Indicated Diets

Grain Supplement	Triticale None	Triticale Lysine	Tritigale SBM ^a	Milo ^b SBM ^a	Wheat ^c SBM ^a
Grain	96.2	96.072	92.7	84.2	88.2
Soybean meal	----	-----	3.5	12.0	8.0
Dicalcium phosphate	1.5	1.5	1.5	1.5	1.5
Limestone	0.8	0.8	0.8	0.8	0.8
Salt	0.5	0.5	0.5	0.5	0.5
Vitamin, trace mineral and antibiotic premix	1.0	1.0	1.0	1.0	1.0
L-lysine·HCL ^d		0.128			
	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>
Lysine, %	0.55	0.63	0.63	0.55	0.55
Crude protein, %	16.06	16.06	17.04	12.61	14.83

^aSoybean oil meal 44.0% crude protein.

^bMilo 8.70% protein, moisture content 14.60%.

^cWheat 12.90% protein, moisture content 10.80%

^dL-lysine·HCL (feed grade 98%) supplied by Merck Chemical Company, Rahway, New Jersey.

Table 14. Summary of Performance Data of Finishing Pigs

Grain Supplement	Triticale None	Triticale Lysine	Triticale SBM	Milo SBM	Wheat SBM
Number of pigs	18	18	9	18	18
Initial wt., lbs.	107.1	108.1	107.4	106.6	106.8
Daily gain, lbs.	1.52 ^a	1.68 ^b	1.66 ^b	1.71 ^b	1.64 ^b
Daily feed intake, lbs.	5.07 ^a	5.31 ^a	5.15 ^a	5.43 ^a	5.24 ^a
Feed/gain	3.33 ^a	3.16 ^a	3.10 ^a	3.18 ^a	3.17 ^a

^{a,b} Means on the same line with different superscripts differ significantly ($P < .05$)

Table 15. Summary of Carcass Data from Pigs Fed Indicated Diet^a

Grain Supplement	Triticale	Triticale Lysine	Milo SBM	Wheat SBM
Slaughter, wt.	211.4	213.3	214.1	212.2
Backfat thickness, in.	1.08	1.20	1.21	1.20
Carcass length, in.	29.92	29.53	29.44	30.01
Loin-eye area, in. ²	5.04	5.29	5.17	4.93
Lean cuts, %	61.75	61.05	60.76	61.40

^a Each value is the mean for 10 pigs. No significant difference due to treatment.