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Nutritional Value of Triticale for Growing Swine¹

Gary L. Allee and R. H. Hines

Summary

One hundred thirty-five pigs averaging 57 pounds were used to determine the feeding value of triticale and the influence of physical form (meal or pellet) on the performance of growing pigs. Triticale replaced 20, 40, 60, 80, or 100% of the milo in a 16.5% crude protein, milo-soybean diet. Level of triticale had no significant effect on feed intake, daily gain, or feed:gain ratio. Pigs fed triticale supplemented with soybean meal (isonitrogenous with control) and the pigs fed triticale supplemented with 0.2% L-lysine gained significantly ($P < .05$) slower than pigs fed the control diet. Physical form (meal or pellet) had no significant effect on feed intake, daily gain, or feed:gain ratio. The results indicate that triticale can be substituted on a weight basis in diets for growing pigs but not on a protein basis.

Procedures

One hundred thirty-five pigs averaging 57 pounds were randomly assigned, from outcome groups formed on the basis of breed, sex, and initial weight, to one of these treatments:

- 1) Control diet (milo-soybean meal, 16.5% crude protein)
- 2) Triticale replacing 20% of the milo
- 3) Triticale replacing 40% of the milo
- 4) Triticale replacing 60% of the milo
- 5) Triticale replacing 80% of the milo
- 6) Triticale replacing 100% of the milo
- 7) Triticale replacing 100% of the milo and fed in meal form
- 8) Triticale and soybean meal (isonitrogenous with control diet)
- 9) Triticale and 0.2% L-lysine (lysine, equal to lysine in control diet)

The amino acid analysis of the triticale employed in this experiment is shown in table 8. Composition of the experimental diets is shown in table 9. Pigs were housed in an environment controlled nursery with 7 or 8 in a 6' x 11' pen. The experiment lasted 28 days.

¹Triticale (Select 203) supplied by Fas-Gro Seed Corp.
Wichita, Kansas

Results and Discussion

Replacing various amounts of milo with triticale on a weight basis in growing pig diets had no significant effect on feed intake, daily gain, or feed:gain ratio (table 10).

Data in table 11 show the performance of pigs fed diets containing triticale when formulated on an equal-protein basis. Pigs fed triticale supplemented with soybean meal (isonitrogenous with control) and pigs fed triticale supplemented with 0.2% L-lysine (lysine equal to control) gained significantly slower ($P < .05$) than pigs fed the control diet. These results indicate that triticale can be substituted on a weight basis in diets for growing pigs, but not on a protein or lysine basis. The results also suggest that lysine in triticale may not be totally available to growing pigs.

Table 8. Amino Acid Composition of Triticale^a

Amino Acid	% (as is)
Arginine	0.958
Histidine	0.389
Isoleucine	0.493
Leucine	1.056
Lysine	0.658
Methionine	0.230
Cystine	0.160
Phenylalanine	0.752
Tyrosine	0.467
Threonine	0.535
Tryptophan	0.240
Valine	0.764

^a Protein content, 13.90; moisture content 12.90.

Table 9. Composition of Diets (Percentage)

Diet	A	B	C	D	E	F	G	H	I
<u>Ingredient</u>									
Milo	73.4	58.7	44.0	29.4	14.7	----	----	----	----
Triticale	----	14.7	29.4	44.0	58.7	73.4	73.4	85.1	95.34
Soybean meal (44%)	22.2	22.2	22.2	22.2	22.2	22.2	22.2	10.5	-----
Dicalcium phosphate	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
Limestone	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Salt	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lysine supplement ^a	----	----	----	----	----	----	----	----	0.26
Vitamin, antibiotic and trace-mineral premix.	$\frac{1.0}{100.0}$	$\frac{1.0}{100.0}$	$\frac{1.0}{100.0}$	$\frac{1.0}{100.0}$	$\frac{1.0}{100.0}$	$\frac{1.0}{100.0}$	$\frac{1.0}{100.0}$	$\frac{1.0}{100.0}$	$\frac{1.0}{100.0}$
Protein level, % (Analyzed)	16.5	16.8	17.2	18.3	19.6	20.9	20.9	16.3	13.5

^a L-lysine - HCl (feed grade 98%) furnished by Merck Chemical Company, Rahway, New Jersey.

Table 10. Influence of Level of Triticale on Performance of Growing Pigs

Replacement of Milo with triticale, %	0	20	40	60	80	100	100
Physical form	Pellet	Pellet	Pellet	Pellet	Pellet	Pellet	Meal
Number of pigs	15	15	15	15	15	15	15
Initial weight, lbs.	58.1	58.0	59.0	57.1	57.7	59.2	59.8
Daily gain, lbs.	1.45	1.42	1.48	1.48	1.55	1.42	1.46
Feed intake, lbs.	3.32	3.31	3.36	3.24	3.36	3.27	3.50
Feed/gain	2.29	2.33	2.27	2.19	2.17	2.30	2.40

Table 11. Triticale in Growing Pigs' Diets Formulated on an Equal-protein or Equal-lysine Basis.

Grain Supplement Protein (analyzed), % Lysine, %	Milo SBM 16.5 0.82	Triticale SBM 16.3 0.90	Triticale Lysine 13.5 0.82
Number of pigs	16	16	16
Initial weight, lbs.	58.0	59.1	57.5
Daily gain, lbs.	1.45 ^a	1.23 ^b	1.22 ^b
Feed intake, lbs.	3.32	3.16	3.25
Feed/gain	3.32	2.57	2.66

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