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Evaluation of L-Lysine Fortified Bulgar
Millfeed for Finishing Swine

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Summary

A growing-finishing ration that substituted 25% L-lysine fortified bulgar millfeed for 20% of the sorghum grain and 5% of soybean meal (44%) gave weight gains and feed:gain ratios for finishing swine similar to those with the control ration. But pigs receiving rations with the 25% bulgar millfeed replacing 15% of the sorghum grain and 10% of the soybean meal gained significantly ($P < .01$) slower and 25% less efficiently, so we did not evaluate using more than 25% of the bulgar millfeed in rations for finishing swine.

Procedure

L-lysine fortified bulgar millfeed when incorporated into swine growing-finishing ration was studied in four treatment groups, plus replicates, as follows:

1. (S-423) Control (milo-soybean meal fortified ration) (14.8% crude protein, .71% calculated lysine, 0% bulgar millfeed).
2. (S-423A) 25% bulgar millfeed replacing 5% soybean meal and 20% milo. (14.3% crude protein, .73% calculated lysine)
3. (S-423B) 25% bulgar millfeed replacing 10% soybean meal and 15% milo. (12.5% crude protein, .61% calculated lysine)
4. (Two-stage feeding) 423A - from approximately 85 lbs. to 150 lbs.
423B - from approximately 150 lbs. to 220 lbs.

Ten pigs per pen (a total of eighty pigs: Duroc, Hampshire, Yorkshire) were fed. The pigs were housed in an open-fronted, totally slatted finishing unit with each pen having an automatic waterer and a two-hole self-feeder.

Proximate analysis of the L-lysine fortified bulgar was crude protein 14.0%, ether extract 2.23%, fiber 5.40%, moisture 7.0%, calcium .08%, phosphorous .70%, L-lysine (.3% added) .87%.

Table 18. Composition of Experimental Rations

Rations	423	423A	423B
Ingredient: lbs./ton			
Sorghum grain	1572	1172	1272
Soybean meal (44%)	350	250	150
Bulgar millfeed		500	500
Dicalcium phosphate	28	28	28
Limestone	20	20	20
Salt	10	10	10
Vitm-premix ^a	20	20	20

^a Vitm-premix contains Vit. D 600,000 I.U.; Vit. A 5,000,000 I.U.; Riboflavin 8 grams; Niacin 12 grams; Pantothenic acid 8 grams; choline 40 grams; Vit. E 40,000 I.U.; Vit. B₁₂ 20,000 mcg.; Zn 50 ppm; Fe 100 ppm; Cu 10 ppm; chlortetracycline 100 gms.; sulfamethazine 100 gms.; and penicillin 50 gms.

The composition of the rations fed (as pellets) are shown in table 18.

Results and Discussion

Data for the first 42 days of the feeding trial are presented in table 19. Pigs receiving the 423B ration required approximately 80 lbs. more feed to gain 100 lbs. Pigs in both replications of 423B seemed to be very irritable and considerable tail biting was observed. Pigs on the two-stage feeding plan received ration 423A the first 42 days.

Data for the final 28 days are presented in table 20. Pigs on the two-stage plan were switched to ration 423B; their rate of gain declined. Also pounds of feed required per pound of gain increased. They became more irritable. Several days of hot weather (90°F) reduced the rate of gain of all pigs. Those receiving the control or the 423A rations gain at similar rates during the hot weather.

Data in table 21 that summarize the entire feeding period indicate that 500 lbs. of L-lysine fortified bulgar millfeed can be substituted for 400 lbs. of sorghum grain and 100 lbs. of soybean meal in a one-ton finishing ration. Pigs receiving the 423B ration grew at a significantly slower rate and required approximately 25% more feed to put on a pound of gain.

The pigs on the two stage feeding program performed satisfactorily during phase I; however, during the last 28 days of the trial the rate of gain of these pigs declined significantly.

The utilization of larger amounts of bulgar millfeed (500 lbs./ton) was not evaluated in this study. Additional research is needed to determine the amount of bulgar millfeed that is optimal in swine rations.

Table 19. Bulgar Mill Feed for Swine Finishing Rations

Phase I. First 42 days of feeding trial
10 pigs per pen for each replicate

Ration	423	423A	423B	Two stages
<u>Int. wt.</u>				
Rep. I	86.3	84.6	85.4	87.6
Rep. II	86.9	86.5	84.4	86.3
Avg:	86.6	85.5	84.9	86.9
<u>Wt. after 42 days</u>				
Rep. I	155.2	151.9	126.5	154.4
Rep. II	155.0	152.8	137.7	149.7
Avg:	155.1	152.3	132.1	152.1
<u>Avg. daily gain, lbs.</u>				
Rep. I	1.64	1.60	.98	1.59
Rep. II	1.62	1.58	1.28	1.51
Avg.	1.63	1.59	1.12	1.55
<u>Avg. daily feed, lbs.</u>				
Rep. I	4.74	4.53	3.92	4.47
Rep. II	4.55	4.54	4.24	4.26
Avg.	4.64	4.53	4.08	4.36
<u>Feed/gain</u>				
Rep. I	2.89	2.83	3.97	2.81
Rep. II	2.81	2.88	3.32	2.82
Avg:	2.85	2.85	3.65	2.82

Table 20. Bulgar Mill Feed for Swine Finishing Rations

Phase II. Final 28 days of feeding trial
Switched treatment (two stage group) to 423B

Ration	423	423A	423B	Two stages
<u>Int. wt., lbs.</u>				
Rep. I	155.2	151.9	125.7 ^a	154.4
Rep. II	<u>155.0</u>	<u>152.8</u>	<u>135.7^b</u>	<u>149.7</u>
Avg:	<u>155.1</u>	<u>152.3</u>	<u>131.0</u>	<u>152.1</u>
<u>Wt. after 28 days, lbs.</u>				
Rep. I	193.1	186.9	154.6	185.8
Rep. II	<u>189.2</u>	<u>190.3</u>	<u>164.5</u>	<u>179.4</u>
Avg:	<u>191.2</u>	<u>188.6</u>	<u>159.5</u>	<u>182.6</u>
<u>Avg. daily gain, lbs.</u>				
Rep. I	1.35	1.25	1.03	1.12
Rep. II	<u>1.22</u>	<u>1.34</u>	<u>1.03</u>	<u>1.06</u>
Avg:	<u>1.28</u>	<u>1.30</u>	<u>1.03</u>	<u>1.09</u>
<u>Avg. daily feed, lbs.</u>				
Rep. I	4.59	4.25	3.75	4.33
Rep. II	<u>4.38</u>	<u>4.54</u>	<u>3.91</u>	<u>3.98</u>
Avg:	<u>4.48</u>	<u>4.39</u>	<u>3.83</u>	<u>4.15</u>
<u>Feed/gain</u>				
Rep. I	3.39	3.40	3.64	3.86
Rep. II	<u>3.58</u>	<u>3.39</u>	<u>3.79</u>	<u>3.75</u>
Avg:	<u>3.48</u>	<u>3.39</u>	<u>3.71</u>	<u>3.80</u>

^{a, b} Removed 2 and 1 pigs, respectively, from trials because of tail biting problems.

Table 21. Bulgar Mill Feed for Swine Finishing Rations

Summary: 70 day feeding period

Rations	423	423A	423B	Two stages
<u>Initial wt., lbs.</u>				
Rep. I	86.3	84.6	85.4	87.6
Rep. II	86.9	86.5	84.4	86.3
Avg:	<u>86.6</u>	<u>85.5</u>	<u>84.9</u>	<u>86.9</u>
<u>Final wt., lbs.</u>				
Rep. I	193.1	186.9	154.6 ^a	185.8
Rep. II	189.2	190.3	164.5 ^b	179.4
Avg:	<u>191.2</u>	<u>188.6</u>	<u>159.5</u>	<u>182.6</u>
<u>Avg. daily gain, lbs.</u>				
Rep. I	1.53	1.46	1.00	1.40
Rep. II	1.46	1.48	1.18	1.33
Avg:	<u>1.49</u>	<u>1.47</u>	<u>1.09</u>	<u>1.36</u>
<u>Avg. daily feed, lbs.</u>				
Rep. I	4.67	4.42	3.80	4.42
Rep. II	4.46	4.54	3.47	4.15
Avg:	<u>4.56</u>	<u>4.48</u>	<u>3.63</u>	<u>4.28</u>
<u>Feed/gain</u>				
Rep. I	3.06	3.02	3.82	3.15
Rep. II	3.06	3.06	4.12	3.12
Avg:	<u>3.06</u>	<u>3.04</u>	<u>3.97</u>	<u>3.13</u>