

Evaluation of Low Test Weight Corn for Finishing Lambs

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Summary

The floods of 1993 caused the corn crop to be low in test weight. The following study was conducted to determine the relative feeding value of low test weight corn. The ability to feed this discounted corn to lambs could be a means of adding extra value to the discounted crop and lower the cost of lamb gain. Performance parameters indicated that low test weight corn was of equal value to normal test weight corn.

Materials and Methods

Three corn qualities with test weights of 43, 47, and 54 pounds per bushel were fed. Representative samples were analyzed, prior to the start of the study, for energy, protein, and mineral content. An additional subsample was submitted for toxicology evaluation at the Iowa State University Veterinary Toxicology Laboratory. Trace amounts of Vomitoxin and Zearalenone were observed in all test weight corn lots. Table 1 contains the nutrient parameters of the corn qualities fed. The ration fed was balanced to be equal in protein level and fed whole or rolled in combination with a custom formulated, pelleted protein supplement. Lambs received .25 pounds of alfalfa hay per head per day to insure against acidosis and maintain rumen health.

Lambs fed in this trial were fall born white face crosses. Lambs had an initial weight of 60 pounds. Lambs were housed at either 9 or 10 lambs per pen and were hand fed twice daily all they could eat to evaluate intake and sorting. Treatments were arranged in a 2 by 3 factorial design with 2 pens per treatment. Lambs were

fed for a 70 day period with body weights recorded biweekly.

Results

Lamb gains, intakes and feed efficiencies are listed in tables 3, 4, and 5, respectively. No significant interactions of test weight by ration form were observed for any of the parameters evaluated within any weigh period or for the entire trial. Physical form of the ration and test weight did not affect any of the performance parameters evaluated.

One can conclude from this study that low test weight corn is a viable feedstuff for lambs and may be an economical alternative if being discounted. Precautions should be taken to evaluate low test weight corn for toxins prior to feeding. Additionally corn should be tested for protein content to insure adequate protein content in the final ration.

The palatability of the lower test weight corn was less than the heavy corn. Rolling the ration tended to increase dustiness and lessen palatability. The lambs in the this study adapted to the low quality corn within seven days. Low test weight corn, if discounted, can be an excellent, economical feed for finishing lambs.

Implications

Rolled diets had more dust than whole grain diets and required approximately 7 days longer for lambs to reach full intakes. It was also observed that lower test weight corn tended to be more dusty with less initial palatability. Lamb performance was not effected by either ration form or corn test weight. When weather conditions create low quality grain, it can be used very economically in lamb finishing rations if it does not contain high levels mycotoxins.

Table 1. Composition of feeds fed for evaluating low test weight corn.

	Corn Test Weight			Alfalfa/ Grass Hay	Protein Supplement
	44	47	54		
% Moisture	12.3	12.0	9.7	10.0	9.7
CP*	7.83	7.33	9.61	15.7	48.6
NEm*	1.13	1.09	1.07	.66	1.0
NEg*	.71	.70	.69	.36	.68
Ca*	.02	.02	.04	.69	3.19
P*	.31	.24	.33	.31	.93

*DMB

Table 2. Diet composition and calculated nutrient densities evaluating low test weight corn.

	Low	Med	High
Corn	80	79.1	83.2
Protein Supp.	20	20.9	16.8
Crude Protein*	16.2	16.1	16.2
NEm*	1.12	1.08	1.07
NEg*	.70	.70	.63

*Calculated from Feedstuff Analysis

Table 3. Performance (ADG, lb/day) of lambs fed varying test weights of shelled corn*.

Lamb gain	High	Medium	Low	Whole	Rolled
Period 1	.68	.72	.73	.71	.70
Period 2	.86	.79	.85	.82	.83
Period 3	.73	.68	.70	.71	.70
Period 4	.79	.80	.79	.78	.81
Period 5	.72	.78	.68	.74	.74
Cumulative	.75	.75	.74	.75	.75

*Row means within corn test weight or ration form do not differ ($p>.1$).

Table 4. Daily feed intakes (pounds/head/day) by period for lambs fed varying test weights of shelled corn*.

Periods	High	Medium	Low	Whole	Rolled
Period 1	2.6	2.6	2.6	2.6	2.6
Period 2	3.1	3.1	3.2	3.1	3.1
Period 3	3.5	3.5	3.6	3.5	3.6
Period 4	3.7	3.8	3.7	3.6	3.9
Period 5	3.5	3.8	3.8	3.6	3.9
Cumulative	3.3	3.3	3.4	3.3	3.4

*Includes .25 lbs hay•hd•d

*Row means within corn test weight or ration form do not differ ($p>.1$)

Table 5. Feed efficiency by period for lambs fed varying test weight corn*.

Periods	High	Medium	Low	Whole	Rolled
Period 1	3.9	3.7	3.6	3.7	3.7
Period 2	3.6	4.0	3.8	3.8	3.8
Period 3	4.9	5.1	5.2	5.0	5.2
Period 4	4.7	4.8	4.8	4.7	4.8
Period 5	5.0	4.4	4.5	4.4	4.5
Cumulative	4.4	4.4	4.5	4.4	4.5

*Includes .25 lbs hay•hd•d

*Row means within corn test weight or ration form do not differ ($p>.1$)