Feed Requirements for Maintenance and Gain of Bison Bulls Fed for Meat

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Producers are feeding bison bulls in a variety of scenarios in an effort to reduce cost of gain and achieve highest carcass values. Highly variable performance from winter feeding has been observed with subsequent gains for bison on grass or grain not evaluated. This project was undertaken as a pilot study to evaluate winter performance of bison fed poor quality grass hay in addition to graded levels of grain from December until March, and then fed grain free choice until marketed in October and November. Animal performance and economics are considered.

Bison bull calves (avg weight 490 lb, n=60) from one herd were weighed and placed on trial December 30, 1999. Six treatments (10 head/treatment) included free choice chopped grass hay fed in the fenceline bunk and graded levels of dry rolled corn grain and wheat midds (50-50) estimated at 0, 3, 6, 9, and 12 (essentially, free choice intake) pounds as fed per head daily. Chopped hay was also offered in the mixed diets and diets were fed to appetite. The sixth pen was equipped with one large round bale feeder with the same hay as offered other pens, and a creep feeder filled with the same corn/midds mixture. Bison were weighed in mid-March and all pens placed on ad lib grain diets with 2 pounds of chopped hay per head daily. This ration was fed until the trial terminated. Four weigh periods were scheduled to closely associate with winter, spring, summer, and fall seasons.

Gains were higher during the winter than anticipated, probably due to the mild weather, and the fact that the bulls had been adapted to diets with grain prior to the trial. A very predictable linear decrease in gain appears due to step reduction in grain during the winter feeding period. The 0% grain group on only poor quality hay lost .22 lb per day, and never did exhibit satisfactory compensatory gain. Positive gains were observed with the lowest level of grain indicating that the maintenance requirements with the quality of hay used required supplementation of approximately 1.5 lb of grain. There were no differences in the self-fed and the ad lib grain treatments. However, feed disappearance for self-fed bison includes any wasted or soiled feed not consumed.

Some compensatory effects for gain were observed once high grain diets were introduced to animals on limited winter energy. However, overall average gains for all treatments above the 0% grain appear to be similar with a range of 1.23 to 1.31 lbs per day including the wintering period.

Variation in cost per pound of gain ranges from $.41 for 25% and self-fed to $.44 for the 50%, and $.49 for the 0% grain. Further research with replicated treatments for statistical confidence would be valuable in determining nutrient requirements for bison.

Some grain should be fed during the winter to maintain positive gains and serve to warm-up bulls for later higher grain diets.

Bison bulls being fed for market (self feeder treatments).

Table 1. Weights, dry matter intake, and gain for bison bulls fed graded levels of energy during the winter and finishing diets following winter.

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Item	0% grain	25% grain	50% grain	75% grain	100% grain	Self-fed grain & hay
Initial wt, lb (29 Dec)	511.2	515.9	524.8	519.8	542.8	522.4
Final wt, lb	861.2	927.2	960.8	938.8	927.6	946.7
Total gain, lb	350.0	411.3	436.0	319.0	384.8	424.3
Days on feed	330	330	330	330	295	295
Feed intake, lb/day(DM)						
Winter	10.90	11.33	14.67	14.22	15.33	15.53
Post winter	15.85	15.67	17.01	16.75	17.10	19.56
Overall	14.63	14.62	16.49	16.17	16.73	19.16
Feed intake, %BW(DM)						
Winter	2.19	2.18	2.68	2.52	2.57	3.07
Post winter	2.56	2.33	2.34	2.21	2.17	2.50
Overall	2.47	2.29	2.43	2.29	2.28	2.66
Average daily gain, lb						
Winter	-.22	.245	.772	1.284	1.587	1.519
Post Winter	1.494	1.580	1.496	1.249	1.171	1.378
Overall	1.051	1.235	1.309	1.258	1.291	1.424
Feed cost/lb gain, $	.49	.41	.44	.43	.44	.41