Feeding Oats to Bison…. Whole vs. Rolled?

Article by: Dr. Jayson Galbraith, Bison/Elk Specialist, Alberta Agriculture and Rural Development

To meet the high standards of bison carcass grading for export markets, bison are typically fed a grain based finishing ration. There are very few studies evaluating the most efficient or cost effective way to finish Bison. This article is a summary of a research project conducted in summer of 2012 at Green Horizon Farms, Lacombe, AB aimed at learning more about the best form of oats to feed bison during the finishing period.

Funding for the project was through the cooperating farm (Green Horizon Farms), the Alberta Livestock and Meat Agency with technical support from Alberta Agriculture and Rural Development.

What we set out to do:

The objectives of this study were to compare bison fed either whole oats or rolled oats and address the following:

1. A cost comparison of feeding rolled versus whole oats
2. Carcass evaluation and yield comparison between forms of oats fed
3. Track average daily gain (by pen) of rolled and whole oats
4. Set up pens at the feeding station for future research

In Beef, improved digestibility has been seen feeding rolled oats. Up to 10% has been reported (http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/beef11490#Processing%20Oat%20Grain). However, tests evaluating newer varieties of oats have concluded that for backgrounding cattle, processing oats is not required (http://www.wbdc.sk.ca/pdfs/fact_sheets/2008/2008_04_CDC%20SO%20I%20New%20Oat%20Variety.pdf. This background information prompted this study to learn about possible advantages of rolling oats before feeding them to bison rather than leaving them whole.

The Plan:

200 male bison, sorted into similar weight groups of 20 animals per pen, were assigned to be fed for approximately 200 days on either a whole oat (70-80% grain, 20-30% roughage) diet or a rolled oat diet (70-80% grain, 20-30% roughage) . Oats were rolled on-site through a roller mill (either a Renn PTO-driven roller mill, or an electric new concept stationary mill). Ten pens with twenty animals in each were constructed with pin-together panels. Performance on the feed was measured by tracking pen feed consumption, pen weight gain (weighed going into pens and immediately prior to slaughter), pen carcass grade, and dressing percentage carcass to live weight.

The experimental unit was each pen of 20 animals. The two treatment groups were whole and rolled oats (5 pens each). Recording pen live weight (going into pen and prior to

slaughter), pen weight gain, feed consumption by pen, hot hanging weight dressing percentage and carcass grade by pen allowed performance on the two diets to be compared.

A cost benefit analysis was done to determine if the extra cost of rolling oats results in benefits in improved gain, improved dressing percentage, or carcass grade scores.

All bison were slaughtered at Canadian Premium Meats and were graded by approved bison carcass graders.

What we found out:

- There was a $15.25 more cost per feeding for rolled oats
    - It took 8 minutes per load of 5000lbs total feed ration
- When rolling the oats, an electric stationary mill had cost benefits over a tractor PTO driven mill
- End live weights, carcass weights, carcass grades and dressing percentages showed no statistical difference between rolled and whole oats.

Table 1. Bison summary data whole versus rolled oats

Pen	Feed	Average pen live weight – Start (lbs.)	Average pen live weight – finish (lbs.)	Average Carcass weight – (lbs.)	Average dressing %
1	Rolled	789	854	457	54
2	Rolled	838	890	483	54
3	Rolled	864	950	526	55
4	Rolled	923	991	539	54
5	Rolled	952	1098	588	53
6	Whole	872	1019	566	56
7	Whole	793	894	485	54
8	Whole	854	937	516	55
9	Whole	919	998	545	55
10	Whole	935	1083	585	54

Table 1 summarizes the average pen starting and end weights, and their carcass weights. There was no statistical difference between the whole or rolled treatment groups in starting, end or carcass weights or the dressing percentage.

Animal health issues in the last third of the trial period affected the results that were able to be collected. Average daily gain by pen was not able to be completed due to the illness confounding pen intake. No statistical difference was found between the rolled and whole oat fed pens with respect to the end live weights, carcass weights or grades (Table 2), or dressing percentage. There was a $15.25 increased cost per feeding of rolled oats over whole. When rolling the oats, an electric stationary mill had cost benefits over a tractor PTO driven mill.

Table 2. Treatment (form of oats) and Bison carcass grade

Grade	Rolled % of carcasses	Rolled oats # of carcasses	Whole oats % of carcasses	Whole oats # of carcasses	*p-value*
A1	76.3%	70	76.8%	76	NS*
A2	16.3%	15	13.1%	13	NS
A3	1.1%	1	1%	1	NS
B	6.5%	6	9.1%	9	NS
Total		92		99	

*NS= not significantly different

A positive outcome of this study is the fact that there is a set of 10 pens ready for use in future feeding trials for bison in close proximity to a federally/EU inspected slaughter plant. The "real world set up" on an established operating bison feeding station is useful for research information to be easily transferred to producers.

Conclusion:

There are a couple roller mills for sale…. this study found no benefits in feeding rolled over whole oats in bison, and an increased cost to rolling the oats.