



Beef Cattle Handbook



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Feeding Value of Lightweight Barley

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Barley grown under drought conditions is often lighter in test weight than barley grown under normal moisture conditions. Lightweight barley kernels tend to be smaller and less plump, and contain a higher percentage of hull than normal weight barley kernels. The feeding value of lightweight barley for cattle depends on how much the test weight has been reduced.

Barley Feed Value for Cattle

Montana researchers have evaluated the feeding value of barley ranging in test weight from 42 to 51 pounds per bushel for finishing yearling steers. Table 1 shows the average composition of the different test weight barleys.

Crude protein content increased as barley test weight decreased from 51 to 42 pounds. The lightweight barley had slightly more fiber than heavyweight barley. Calculated total digestible nutrients (TDN) decreased slightly as bushel weight decreased. In a subsequent feeding trial, average daily gain decreased and the amount of feed required per unit of gain increased as barley test weight decreased. Consequently, feed cost per pound of gain increased as barley bushel weight decreased. Efficiency or economy of gain in feedlot animals is related to energy intake. To maximize gain, energy intake must be maximized. Small differences in energy content between feed ingredients in feedlot finishing rations can have an economical impact on the efficiency of gain.

Lightweight barley is less dense than heavyweight barley. Therefore, one pound of a 42 pound barley would take up more area than a heavyweight barley.

Table 1. Composition of Barley.

Nutrient	Barley bushel weight (lb./bu.)			
	51	49	45	42
Crude protein (%)	9.2	10.4	10.6	11.0
Fiber (%)	8.5	7.6	8.9	9.6
Estimated TDN (%)	82.3	82.1	81.9	81.7

These differences in density may affect feed intake in fattening rations. The light barley would be bulkier than the heavyweight barley and animals would probably consume less of the lighter weight barley per day. Also, cost of transportation would be higher with lighter weight barley since less total weight would be hauled on a truck and trailer.

The effect of feeding lightweight barley to cows, however, is difficult to anticipate. Breeding animals are fed diets high in forage and low in concentrate or grains. Based on the calculated TDN values in Table 1, the difference between highest and lowest bushel weight is not great enough to expect much difference in performance, when fed to ewes or cows in the form of a supplement. In fact, lightweight barley contained more protein than the heavy test weight barleys. Reduced performance, however, is probable with extremely lightweight barley (test weights in the 30s) as the nutritional content would probably be similar to that of barley chaff.

In summary, barley bushel weight may affect performance of feedlot animals and influence transportation cost, but probably will not adversely affect performance

of ewes or cows with limited gains until test weights become extremely low.

Pricing Barley

A method of pricing barley based on bushel weight is shown in Table 2.

For test weights below 42 lb-per bushel, a value of 80 percent should be used. Significant growth depression should be expected if the test weight is less than 42 lb-per bushel. Researchers have shown in tests with swine that pelleting will increase the feeding value of lightweight barley. However, the cost of pelleting will need to be taken into consideration when pricing the lightweight barley.

Table 2. Barley Bushel Weight and Price Adjustment Factors.

Bushel weight (lb.)	42	44	46	48	50	51
Adjustment factors	.88	.92	.96	1.0	1.04	1.06

Example:

Average selling price barley is \$120 per ton (48 lb per bu.; \$2.88 per bu.)

1. Bushel weight is 50 lb.

Calculated value: $120 \times 1.04 = \$124.80$ per ton (\$3.12 per bu.)

2. Bushel weight is 42 lb.

Calculated value: $120 \times .88 = \$105.60$ per ton (\$2.22 per bu.)

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