

# Beet Pulp in All-Barley Rations

W. A. HARRIS<sup>1</sup>

*Received for publication March 13, 1964*

## Introduction

The sugar beet industry has never hesitated to maintain that molasses-dried-pulp for fattening livestock is just as good as grain. This has never been a misguided loyalty, for dozens of feeding tests can be pointed to and practical experiences with a variety of rations, that sustained and nurtured this faith.

But the man who buys the feed doesn't do so on faith alone. He wants proof that competitive materials can't do a better job for him, and sometimes it is necessary to have good proof.

About five years ago the strong position of dried pulp, as a ration component, was threatened. The "all-barley" ration was being widely extolled and was gaining in popularity in some areas.

Barley apparently has enough fiber in the hull to satisfy ruminant requirements for roughage, provided it is rolled—to maintain a coarse physical structure—rather than ground. A commercial supplement had to be used, of course, that supplied lacking vitamins and minerals (and proteins). Usually stilbestrol was incorporated in the supplement to help things along. But it worked. Cattle finished out well, with fast gains and excellent feed conversion to show good economy of gain.

If the method were to gain widespread acceptance as it was originally promoted, beet pulp would lose position in the feed trade simply by being ignored as a ration component. It became necessary to let our feeders know that pulp could fit into this scheme as well as into a normal feeding regime. At that time there was no experimental evidence (as there is now) to back up any recommendations that might be made.

Yet pulp looked like a natural component for a "non-roughage" ration. It is high in crude fiber. Most of it differs from barley fiber in being highly digestible, but the amounts of non-digestible fiber in barley and pulp are not far apart. And it is known that pulp does have some roughage value.

It seemed reasonable to think that pulp would replace part of the barley in this "all-barley" ration and again prove itself to be a money-saver.

Faith in such beliefs was put to test on November 6, 1959, with a feeding trial at the experimental lots of Holly Sugar Corporation in Torrington, Wyoming.

---

<sup>1</sup> Research Chemist, Holly Sugar Corporation, Colorado Springs, Colorado.

### Experimental

A large purchase of yearling whiteface cattle received at the yards was placed on full feed of alfalfa, dried beet pulp, and cottonseed cake. Grain was gradually substituted for alfalfa and pulp until all animals were receiving about 6 pounds of grain at the end of three weeks.

At this time, animals that appeared to deviate far from average in conformity were rejected. All other steers were individually weighed and divided to the experimental pens according to weight. Thus any steer of a particular starting weight in the experimental pen had its counterpart in the control pen. Each pen had 15 steers with an average weight of 793 pounds.

The supplement was changed to 2 pounds per head per day of Purina Special 32% Steer Fatena for both pens. This supplied 10 mg of stilbestrol. Hay was gradually withdrawn and barley substituted during the next three weeks. At this time the control "all-barley" pen was receiving only rolled barley and the supplement; the experimental pen was receiving  $\frac{1}{2}$  barley and  $\frac{1}{2}$  pulp with the supplement. Feeds were not premixed.

Monthly weights were taken until the experiment was terminated, after 171 days. After an overnight stand, final weights were taken on April 26, 1960, and a 4% paper shrink was applied to arrive at net weight figures. The cattle were slaughtered, on consignment, at Swift's plant in Scottsbluff, Nebraska.

### Results

No off-feed or other difficulties were seen on the feedlot. One steer in the control pen did show signs of founder in the latter weeks of the test.

A difference in the two rations was evident from start to finish. Steers on the pulp-barley combination consistently ate  $\frac{3}{4}$  to  $1\frac{1}{2}$  pounds more feed daily than did the all-barley cattle. The result was a faster rate of gain all the way through.

Final results are summarized in Table 1. The pulp-barley pen showed higher feed consumption, faster gain, better feed utilization, lower dressing %, better grade and more profit.

Actually an excess fill of the pulp-barley cattle at the terminal weighing may have given the indication of poorer dressing percent. Adjustment for this difference would amount to 3.5 pounds per head. This would indicate the true comparative gains perhaps should have been 2.46 and 2.62, and the conversion of feed would be identical.

The results completely justified confidence in beet pulp. For once again, and under conditions foreign to its normal use, beet pulp proved that it is difficult indeed to find a ration that cannot be improved by its addition.

Table 1.—Pulp-barley vs. all-barley in "non-roughage" rations.

	Pen 16 (control) all-barley ration	Pen 15 barley-pulp ration
Avg. Intial Weight .....	793.3	793.3
Avg. Final Net Weight (using 4% shrink) .....	1213.4	1245.4
Avg. Total Gain .....	420.1	452.1
Avg. Net Daily Gain .....	2.46	2.64
Avg. Daily Feed		
Rolled barley .....	17.57	9.33
Dried Molasses Beet Pulp .....	—	9.37
32% Special Steer Fatena .....	1.99	1.99
Ground Alfalfa* .....	0.41	0.65
Salt .....	0.022	0.022
Mineral .....	0.035	0.022
Avg. Lbs. Feed Per Lb. Gain .....	8.10	8.04
Avg.** Feed Cost Per Lb. Gain .....	16.19	15.44
Avg. Dressing % .....	63.64	63.15
Grade, No. of Steers in		
U. S. Good .....	5	3
U. S. Choice .....	10	12
Net Profit Per Steer Over Control .....	—	\$6.42

\*Hay fed during 1st three weeks.

\*\*Feed prices used: Pulp, \$32.50/T; Rolled Barley, \$1.75/100#; Fatena, \$86/T; Hay, \$25/T; Salt, \$27.50/T; Mineral, \$5.20/100.

### Summary

Fifteen head of 793 pound Hereford steers were fed 171 days on an "all-barley" ration and their performance compared with that of 15 similar steers fed with 1:1 pulp:barley.

The pulp:barley combination gave superior feedlot performance and equal or better carcass quality. Net profit was increased with the pulp-barley feed.