

BARLEY

for
fattening cattle

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BARLEY is one of the best fattening feeds for cattle. Recent trials indicate that barley properly supplemented is equal to or even superior to corn.

North Dakota is the leading barley producing state in 1960, about 81,000,000 bushels. This is an available feed supply right at home.

Two-thirds of our feeder calves are sold out-of-state each year so feeders are available.

Most farmers have the time to feed cattle, and mechanization can reduce labor.

Elaborate equipment is not necessary. A feedbunk and a scoop shovel and you're in business.

By
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EXCELLENT RESULTS WITH STRAIGHT BARLEY RATIONS

Straight rolled barley with a protein-vitamin-mineral supplement and no roughage fattens yearling cattle rapidly. A commercial feed company developed this new idea of cattle feeding. Barley with 2 lbs. of special supplement produced consistent gains of up to 3 lbs. per head per day. No feeding difficulty was experienced.

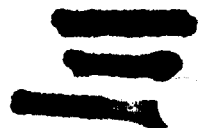
Summarized here are 4 trials that indicate straight barley to be an efficient feed that fits the needs of North Dakota feeders. Four of this company's trials averaged out as follows:

	<u>Ground Ear Corn</u>	<u>Rolled Barley</u>
Number of steers (4 tests).....	40	42
Average initial weight, lbs.	647	647
Average daily gain, lbs. (153 days).....	2.63	2.95
Feed per cwt. gain, lbs.	865	708
<u>Carcass grade</u>		
High choice.....	-	1
Av. choice.....	12	11
Low choice.....	4	6
High good.....	19	24
Av. good.....	3	-
Low good.....	2	-

These workers reported: "Differences in selling price, shipping shrink, dressing percent, carcass grade were small and insignificant even though slightly in favor of barley."

Research stations and cattle feeders have had the same kind of favorable results with straight barley properly supplemented.

- ★ Mike Murray, Reynolds, North Dakota, fed steam rolled barley and 1 pound of special 20% protein supplement to 232 yearling steers that gained 2.7 lbs. per head per day for 89 days and topped the St. Paul market.
- ★ Harold Hofstrand, Leeds, North Dakota, fed dry rolled barley and 1 lb. of 20% special supplement to 42 steers that gained 2.77 lbs. per day.
- ★ Kermit Rudel, Fessenden, North Dakota, fed dry rolled barley and 2 lbs. of special supplement to 106 steers that gained 2.69 lbs. per head per day for 70 days.



- ★ Harrington Bros., Minot, North Dakota, fed coarsely ground barley and 2 lbs. of special supplement to 5 steers for 103 days that gained 3.01 lbs. per head per day. Cost of gain was 13 to 14 cents per pound of gain as compared to 19 and 20 cents per pound for their usual ration.

These and other on-the-farm results indicate that barley properly supplemented can be fed steam rolled, dry rolled, or coarsely ground to produce low cost gains on yearling cattle.

WHY BARLEY IS AN EXCELLENT FATTENING FEED

BARLEY COMPOSITION *

	Protein %	TDN %	Calcium %	Phosphorus %	Vitamin A %
Barley has	12.7	77.7	0.06	0.40	0
800 lb. steer needs .	10.0	65.0	0.20	0.20	5,600 I. U.

NOTE — Barley contains more than the required percentage of protein, total digestible nutrients and phosphorus. However, it is low in calcium and it has no vitamin A.

FEED REQUIREMENTS IN POUNDS OF FEED TO FATTEN A 800 LB. YEARLING *

	Daily feed (lbs.)	Total protein (lbs.)	TDN (lbs.)	Calcium (grams)	Phosphorus (grams)	Vitamin A (units)
Required	22	2.2	14.3	20	20	5,600 **
Barley	22	2.8	17.1	6	40	None

Again note the ample protein and total digestible nutrients supplied by the barley.

* National Research Council Subcommittee on Beef Cattle Nutrition.

** Most feed authorities feel that 10,000 international units or more of vitamin A per head per day are a good safety precaution.

HOW TO FEED STRAIGHT BARLEY

1. Start cattle on all the roughage they will eat, preferably prairie or grass hay. Do not feed hay that has a large percentage of alfalfa.
2. Start barley at the rate of 1 lb. of grain per 100 lbs. of body weight. A 600 lb. feeder would start with 6 lbs. of barley per day. Provide about 20 inches of bunk space per animal while on limited feed.

3. Increase the barley at the rate of $\frac{1}{2}$ lb. per head per day until the cattle leave feed in the bunk. At this time they can be put on full-feed.
4. Feed the supplement at the recommended level from the first day on.
5. After 2 weeks, remove all roughage and continue to full-feed barley and supplement.

BARLEY FEEDING FACTS

1. The high rates of gain made with straight barley feeding have been produced with yearling cattle weighing over 500 lbs.
2. The average daily consumption of barley has been about 18 to 22 lbs. per head per day for an average feeding period.
3. For a quick, yet ample, estimate of feed needs, figure $\frac{1}{2}$ bushel barley per head per day for the number of days you expect to feed.
4. Supplement vitamin A at the rate of 10,000 international units per head per day. Plus 2,000 units vitamin D, daily.
5. In addition to the mineral in the feed, provide a high calcium all-purpose mineral, plus trace mineralized salt free-choice.

FEED PREPARATION

1. Good results have been reported from steam rolled, dry rolled and coarsely ground barley. Straight barley has been fed in self feeders, portable bunks or fence-line bunks with satisfactory results.
2. It is doubtful if it pays you to haul barley more than 20 miles for feed preparation.
3. If you process only your own feed, it likely will not pay to install a steam roller.
4. Before you buy expensive equipment, try some commercially prepared barley to see if you like it. See if it fits your feeding program.

The value of steam rolling has not been fully determined as to economy of gain. However, in 1945 the Arizona Experiment Station reported that steers fed steam rolled barley gained 0.29 lb. more per day than steers fed ground barley. In 1960 Arizona also reported steam rolled barley produced 6.5% increase in rate of gain over dry rolled barley and a 5% saving in feed required per unit of gain.

Steam rolling apparently increases the proportion of propionic acid at the expense of acetic acid. This is known to produce more efficient conversion of feed energy to body weight, according to Arizona researchers.

Pelleted barley gives excellent results, but the present cost of pelleting makes this feed preparation method too expensive.

STIFFNESS

In some instances, high grain rations cause stiffness of the front quarters. In barley-fed steers this has been referred to as "founder", but this may be an incorrect diagnosis. Most cases occur at the start of the feeding period. Death loss of as high as 10% has been reported. Stiffness has shown up in high corn rations, as well as in high barley rations.

Lack of vitamin A has been suggested as a contributing factor; however, massive doses of vitamin A in many instances have not brought about a cure.

There are several theories on the cause of stiffness:

1. Inhibiting or blocking action on vitamin A by something in the feed.
2. Nitrate or nitrite poisoning – (Read Missouri Bulletin 708).
3. Digestive disturbances, overeating, impaction, etc.
4. Founder

Advantages of straight barley feeding –

- Barley is available throughout North Dakota.
- Barley is economical to feed; gains are rapid; feed conversion is about 7.0 to 7.5 lbs. of feed per pound of gain.
- Straight barley is easy to feed; little equipment is needed.

BARLEY AND ROUGHAGE EXCELLENT FEED

If you have hay and silage, you can combine them with barley to make economical gains.

The Missouri Experiment Station reported economical gains for both calves and yearlings fed barley, corn silage, alfalfa hay and supplement.

Average daily ration	Calves	Yearlings
	Lbs.	Lbs.
Barley	10.5	12.8
Corn Silage	8.7	14.3
Alfalfa Hay	2.5	3.4
41% supplement	1.1	1.3

In the above trial, calves 370 lbs., gained 2.36 lbs. per head per day for 182 days. Average gain, 4 year's results, for yearlings was also 2.36 lbs. per head per day for a 130 day average feeding period.

SUPPLEMENTS

Feed protein, vitamin, mineral supplements at the rate suggested by the feed manufacturer. Some supplements are formulated to be fed at the rate of 2 lbs. per head per day, while others are to be fed at the rate of 1 lb. per head per day.

The need or value of extra protein has not been fully determined. However, if you get added results from feeding more protein at a rate that will more than offset the added cost, you should consider using it.

Remember — that feeding guides or standards are only averages and greater or lesser results from the suggested feeding levels may occur.

ACKNOWLEDGEMENT:

NDAC Experiment Station Animal Husbandry Department.
Ralston Purina Mills Research Department, Bulletin No. 3, Vol. 16.
University of Missouri, Agricultural Experiment Station, Bulletin 641, 1955.
Arizona Agricultural Experiment Station Bulletin 198, 1945,
National Research Council Publication 579.