

Corn Rations for Finishing Cattle

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Story in Brief

A finishing trial involving 40 heifers was conducted in which a whole corn (WC) finishing ration was compared with a rolled corn (RC) ration. Heifers were slaughtered when they appeared to reach slaughter grade and were fed an average of 103 days on WC vs 99 days on RC. Feedlot performance was almost identical on both treatments: Feed intake was 18.71 vs 19.02, daily gain 3.13 vs 3.18 and feed/lb. of gain 5.99 vs 5.99 on WC and RC, respectively. Moreover, all carcass characteristics were nearly identical on both treatments.

Digestion data on an 84% whole corn vs ground corn finishing ration showed dry matter (80.93 vs 81.97%), organic matter (81.74 vs 82.68%) and protein (78.99 vs 78.37%) digestibility to be similar.

Introduction

In recent years there has been much interest among cattle feeders in different methods of processing grains for finishing cattle. The interest has been supported by a need to obtain greater efficiency (less feed/pound of gain) from the grain fed and to reduce the need for expensive fuel or energy inputs, including labor. One area which has been of considerable interest among cattle feeders in the past few years is the feeding of whole corn vs processing the corn in some manner. Whole corn feeding is popular because of its simplicity and the lack of need for an elaborate processing facility. It is commonly believed by some high plains cattle feeders that cattle which are fed on whole corn will eat more, gain faster and reach market weight earlier. Others, however, continue to express some reluctance to feed whole corn because they feel that utilization by the cattle may be lower. In this study whole corn was compared with rolled in high concentrate finishing rations.

Materials and Methods

Forty Angus and Hereford yearling heifers averaging about 620 lb. were blocked by breed and weight and randomly allotted within block to 10 pens with 4 animals per pen and 5 pens per treatment. Thus, there were 2 treatments (whole vs rolled corn) with 5 pens and 20 animals per treatment. The composition of the rations fed is shown in Table 1. The

Table 1. Ration Composition.

Ingredient ¹	Percent
Corn, rolled	88.00
Cottonseed hulls	6.00
Soybean meal	3.34
Urea	0.69
Dehydrated alfalfa	0.38
Wheat midds	0.18
Calcium carbonate	0.54
Dicalcium phosphate	0.54
Salt, T M	0.33
Aureomycin	+
Vitamin A	+
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	100.00

¹ All ingredients other than corn and cottonseed hulls were combined into a pelleted supplement which was included at 6.0% of the ration.

rations consisted of 88% corn, 6% cottonseed hulls (CSH) and 6.0% pelleted supplement. All ingredients other than corn and CSH were combined into a pelleted supplement. The rations were fed in self feeders which were filled approximately every two weeks. The corn was fed either whole or rolled through an 18 x 36 inch heavy duty roller mill. Some roughage (6%) was included in the ration to provide about 1.0 lb. of roughage intake/head/day.

Several recent studies conducted in large commercial feedlots tend to suggest that somewhat better performance is obtained on whole corn rations when cattle receive about 1.0 lb. of roughage/head/day. Thus, 6% CSH was included. The heifers were implanted with Synovex-H prior to placing on feed. Initial and final weights were taken as shrunk weights, the animals being off feed and water for 12 hours.

Results and Discussion

Feedlot performance data are shown in Table 2. As noted, daily feed intake, gain and feed efficiency (lb. feed/lb. gain) were nearly identical on both treatments. The average time on feed was very similar being 103 days for cattle on whole corn vs 99 days on rolled corn. Twenty four cattle (14 on rolled corn and 10 on whole corn) were slaughtered after 93 days on feed and the remaining 16 cattle (6 on rolled corn and 10 on whole corn) after 114 days. Cattle were selected for slaughter on the basis of finish. As shown in Table 2, the carcass parameters were almost identical on both treatments.

Contrary to popular opinion the cattle on the whole corn ration in this study did not consume more daily feed or reach market weight any earlier than those on rolled corn. However, utilization of the whole corn ration was equal to the rolled corn ration, illustrating that whole

Table 2. Feedlot Performance and Carcass Merit of Cattle Fed Whole or Rolled Corn Rations.

Item	Whole Corn	Rolled Corn
No. heifers	20	20
Days on Feed	103	99
Initial live shrunk wt., lbs.	622	620
Final live shrunk wt., lbs.	943	933
Daily feed, lbs. ¹	18.71	19.01
Daily gain, lbs.	3.13	3.18
Feed/lb. gain, lbs. ¹	5.99	5.99
Dressing percent	61.99	61.82
Conformation	12.35	11.85
Marbling ³	14.15	14.15
KHP fat, percent	3.38	3.23
Carcass grade ²	9.70	9.70
Abscessed livers	6	6

¹ DM basis.

² U.S.D.A. grade converted to the following numerical designations: 7=low good, 8=avg. good, 9=high good, 10=low choice.

³ Marbling scores: 11=slight, 14=small, 17=modest.

corn is efficiently utilized by finishing cattle whenever the ration contains a low level of roughage. Other studies show that whole corn is well utilized when the ration contains less than about 20% roughage; with higher roughage levels than this, however, whole corn utilization appears to be poor. Hence, whole corn can not be expected to have good digestibility when fed on pasture programs or in diets containing relatively high levels of roughage.

Digestibility data in Table 3 further demonstrates that total digestibility is quite similar for dry matter (80.93 vs 81.97%), organic matter (81.74 vs 82.68%), and protein (78.99 vs 78.37%) on whole vs ground corn rations, respectively. These were high concentrate rations containing 84% corn, 10% roughage and 6% pelleted supplement—similar to those fed in the above feedlot trial. Recent data at Oklahoma suggests that digestibility of whole corn may be somewhat lower in the rumen than for rolled or ground corn, but that this is compensated for by a somewhat higher digestibility in the small intestine. However, while both whole and rolled corn have similar total digestibilities, both of these are somewhat lower in total dry matter and starch digestibility than corn

Table 3. Digestibility of Whole vs. Ground Corn Rations.

Digestibility	Percent Whole Corn	Percent Ground Corn
Dry matter	80.93	81.97
Organic matter	81.74	82.68
Protein	78.99	78.37

processed by some other methods—for example, steam flaking and high moisture processing. Nevertheless, corn does not appear to be improved by processing as much as sorghum, and in many instances, the small additional benefits obtained from elaborate processing of dry corn may not offset the additional costs incurred compared to feeding it in the whole form.

Effect of Dietary Buffers on Ruminal and Systemic Acidosis of Steers¹

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Story in Brief

Rations containing approximately 85% ground high-moisture, ensiled corn were fed to steers in such a way as to produce lactic acid acidosis, and three dietary buffers were evaluated in regard to their effect on ruminal and systemic acidosis. The buffers consisted of (1) 2% sodium bentonite, (2) 1% sodium bentonite plus 1% dolomitic limestone, and (3) 1% sodium bentonite plus 1% potassium bicarbonate (KHCO_3). Using ruminal pHs, lactic acid and glucose concentrations as indices of ruminal acidosis, the combination of sodium bentonite and KHCO_3 was most effective in reducing the degree of ruminal acidosis. The relative changes in the base excess values of blood samples indicated that a combination of either sodium bentonite plus dolomitic limestone or sodium bentonite plus KHCO_3 was beneficial in enabling the steers to return to a normal acid-base status at 24 hours post-feeding.

Introduction

The effects of acidosis in feedlot cattle may range from acute physiological alterations which result in death to the chronic condition of cattle being off feed for varying periods of time throughout the feeding period. From the standpoint of total death losses of feedlot cattle, death

¹ Supported by Grain Utilization Research Funds (Guymon, Oklahoma) and Farmland Industries, Kansas City, Missouri.