

Kansas Agricultural Experiment Station Research Reports

Volume 0

Issue 1 *Cattleman's Day* (1993-2014)

Article 836

1990

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Recommended Citation

Brazle, F.K. and Coffey, K.P. (1990) "Value of rice mill feed as a feedstuff for backgrounding heifers," *Kansas Agricultural Experiment Station Research Reports*: Vol. 0: Iss. 1. <https://doi.org/10.4148/2378-5977.2239>

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Value of rice mill feed as a feedstuff for backgrounding heifers

Abstract

Stocker heifers were fed diets of either 67% rice mill feed + 33 % dehydrated alfalfa pellets (RA) or a 67% grain sorghum + 33% dehydrated alfalfa pellets (GA). The RA heifers consumed more feed daily but gained slower ($P < .05$), resulting in poorer feed efficiency. RA heifers also had a lower percentage shrink ($P < .05$) during the first 2 1/2 hr of simulated trucking. Rice mill feed is a poor feedstuff for growing calves when included in rations at high levels.

Keywords

Cattlemen's Day, 1990; Kansas Agricultural Experiment Station contribution; no. 90-361-S; Report of progress (Kansas State University. Agricultural Experiment Station and Cooperative Extension Service); 592; Beef; By-products; Rice mill feed; Backgrounding

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**VALUE OF RICE MILL FEED AS A FEEDSTUFF
FOR BACKGROUNDING HEIFERS**

F. K. Brazle¹ and K. P. Coffey²

Summary

Stocker heifers were fed diets of either 67% rice mill feed + 33 % dehydrated alfalfa pellets (RA) or a 67% grain sorghum + 33% dehydrated alfalfa pellets (GA). The RA heifers consumed more feed daily but gained slower (P<.05), resulting in poorer feed efficiency. RA heifers also had a lower percentage shrink (P<.05) during the first 2 1/2 hr of simulated trucking. Rice mill feed is a poor feedstuff for growing calves when included in rations at high levels.

(Key Words: By-products, Rice Mill Feed, Backgrounding.)

Introduction

Many by-products have been fed to growing cattle, often with variable results. Rice mill feed is a by-product that contains about 40% rice bran and 60% rice hulls. Our objective was to evaluate the nutritional value of rice mill feed in a backgrounding ration.

Experimental Procedures

Twenty-four heifers averaging 607 lb were randomly allotted to diets of either 67% rice mill feed + 33% dehydrated alfalfa pellets (RA) or 67% ground grain sorghum + 33% dehydrated alfalfa pellets (GA). Four heifers were assigned per pen (200 ft²/head) with three pens per treatment. They were fed to appetite for 60 d on the diets shown in Table 9.1, along with a 50% salt and 50% ground limestone mineral mix fed free-choice.

The starting and ending weights were obtained after the heifers had been held off feed for 12 hr. At the end of the trial, the heif-

Table 9.1. Composition of Heifer Growing Rations

| Ingredients | Rice mill feed + alfalfa | Grain sorghum + alfalfa |
|----------------------------|-----------------------------|----------------------------|
| | ----- lb per ton ----- | |
| Rice mill feed | 1,330 | — |
| Grain sorghum | — | 1,330 |
| Dehydrated alfalfa pellets | 660 | 660 |
| Salt | 10 | 10 |

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ers were weighed at 7:30 A.M., placed in a tight pen without feed or water, and individually weighed every 2 1/2 hr for 10 hr to simulate trucking shrink.

Dry matter digestibility, as well as rate and extent of digestion, were determined by in vitro techniques. The samples were analyzed for crude protein, neutral detergent fiber, acid detergent fiber, and acid detergent lignin. Data were subjected to analysis of variance, and results are reported as least squares means.

Results and Discussion

The RA heifers gained slower ($P < .05$), consumed 27% more feed, and had much poorer ($P < .05$) feed conversions than the GA heifers (Table 9.2). The rice mill feed contained more fiber and lignin and a lower 48-hr dry matter digestibility than either grain sorghum or alfalfa pellets (Table 9.3). The digestible fraction of rice mill feed was degraded fairly rapidly (less than 6 hr, Figure 9.1), which partially explains the excellent feed intake of heifers fed the RA diet. However, the total digestibility of rice mill feed was too low for economical stocker gains, when fed at the level used in this trial.

During the first 2 wk of the trial, the GA heifers showed signs of lactic acidosis, and one heifer was treated for this condition. The rapid rate of digestion of the grain sorghum (Table 9.3 and Figure 9.1) would explain the acidosis and could also explain the lower intake of the GA diet.

Both groups were fed 2 lb per head daily of long-stem prairie hay on days 48, 52, and 56 of the trial because of bloat. This would suggest that the roughage factor in both diets was not sufficient to sustain good rumen function. Even though the acid detergent fiber level of rice mill feed was similar to that of many roughages in cattle rations, the small particle size of this feed may limit its value as a roughage.

Table 9.2. Effect of Diet on Heifer Performance and Simulated Trucking Shrink

| Item | Rice mill feed + alfalfa | Grain sorghum + alfalfa |
|------------------|-----------------------------|----------------------------|
| No. heifers | 12 | 12 |
| Starting wt, lb | 602 | 612 |
| Daily gain, lb | .90 ^a | 1.63 ^b |
| Daily intake, lb | 16.53 ^a | 13.03 ^b |
| Feed/gain | 18.7 ^a | 7.97 ^b |
| Shrink, % | | |
| First 2.5 hr | 3.41 ^a | 3.98 ^b |
| Second 2.5 hr | 1.35 | 1.75 |
| Third 2.5 hr | 1.50 | 1.21 |
| Fourth 2.5 hr | 1.82 | 1.50 |
| Total 10 hr | 8.09 | 8.46 |

^{ab}Means in a row with unlike superscripts differ ($P < .05$).

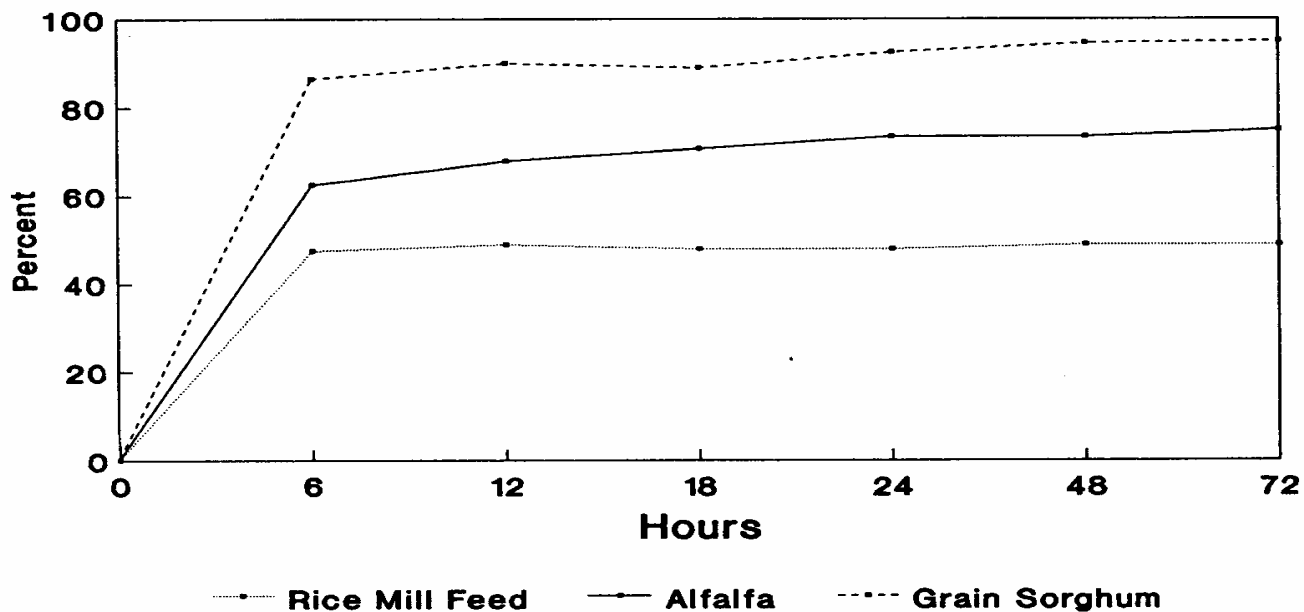


Figure 9.1. In Vitro Rate of Digestion of Feedstuffs

Table 9.3. Chemical Composition and In Vitro Digestibility of Feedstuffs

| Item | Dehy alfalfa | Grain sorghum | Rice mill feed |
|----------------------------|--------------|---------------|----------------|
| Neutral detergent fiber, % | 42.57 | 15.72 | 55.24 |
| Acid detergent fiber, % | 31.20 | 5.52 | 38.78 |
| Acid detergent lignin, % | 6.52 | .87 | 8.77 |
| 48-hr DM digestibility, % | 74.80 | 94.50 | 49.40 |
| Digestion rate, %/hr | 6.03 | 5.79 | .91 |