



Study 2: Effect of feeding on the ground on feed waste under typical winter-feeding conditions.

Background:

Feed is commonly fed on the ground to cattle over winter. How much feed is wasted from cattle mixing the feed into the snow?

In 2004, Alberta Agriculture, Food and Rural Development began a project to measure the losses that occur when feeding dry hay, either processed or unrolled, on the ground versus hay processed into portable feed bunks.

The feeding project was done in conjunction with the Western Forage Beef Group at the Agriculture and Agri-Food Canada research station in Lacombe. The experiment was conducted in February 2005.

Materials and Methods:

- A bale processor and a truck-mounted bale unroller placed dry hay onto tarps covered with snow.
- 1,250 pounds of meadow brome hay was fed daily to 55 bred heifers. This amount restricted the feed supplied to 90% of expected intake.
- Snow, ice, wasted feed and manure were gathered at least 24 hours after the feeding event.
- The material was dried, manure removed and weighed for total loss.
- The wasted feed was sieved over a 3/4 inch screen and weighed to determine amount of fine and coarse material.
- Nutrient quality was established from coarse and fine material collected at the time of feed delivery.
- The feeding processes were repeated four times.

Results:

Total feed losses:
Processed onto the snow 19%
Unrolled onto the snow 12%
Processed into the feed bunk 0%

Figure 1 summarizes the pounds of feed provided and amount of feed lost by particle size:

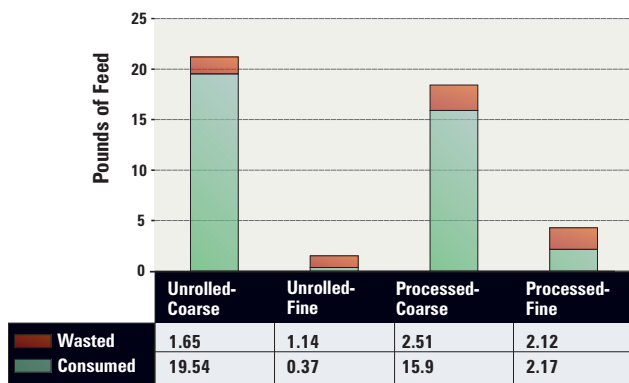


Figure 1. Pounds of feed supplied versus consumed by delivery system.

All feed was analyzed for nutrient levels according to particle size. Measurements were made for protein, fiber and macro minerals. Refer to Figures 2 and 3.

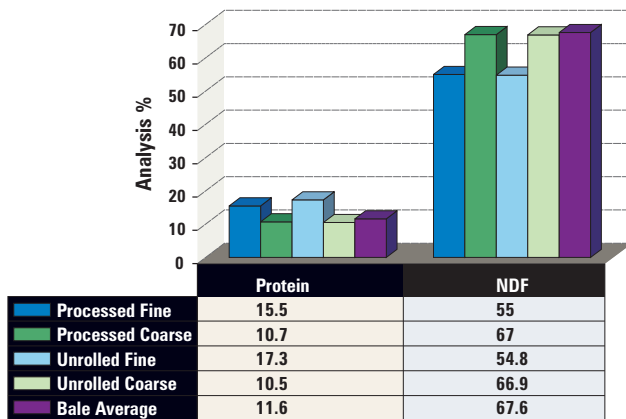


Figure 2. Protein and fiber per cent

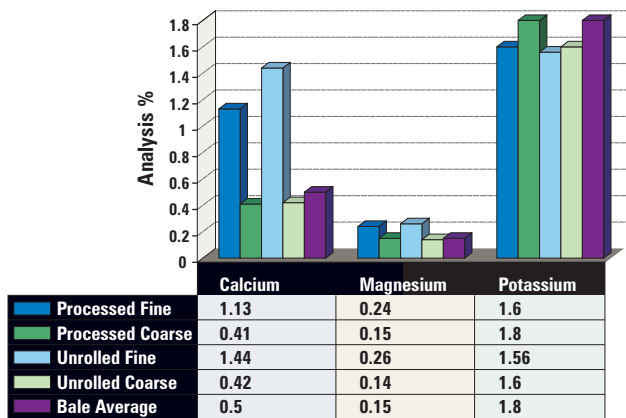


Figure 3. Calcium, phosphorus and magnesium

Conclusions:

- Both feed quantity and quality are lost when feeding on snow. A loss of fine materials results in cows consuming a lower quality ration than what is placed onto the snow.
- Lower forage quality due to fine material loss can reduce animal performance. Rations may need to be adjusted accordingly.
- Losses of magnesium and calcium in the fine material create the potential for winter tetany to occur.
- Field observations supported findings from Study 1, showing fines at the bottom of the windrow.

Take-home message:

To minimize loss of feed and feed quality, use a portable feed bunk or other method to prevent feed trampling.

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