

# Mechanical Processing of Barley Silage for Lactating Dairy Cows

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Mechanical processing systems are commonly used to process whole plant corn at the time of cutting prior to ensiling to cause kernel damage which improves starch utilization by the dairy cow. The objective of this study was to determine whether mechanically processing barley crop prior to ensiling could increase its nutritive value for lactating cows.

Twenty-four Holstein cows were randomly assigned to two treatments: 1) TMR containing regular barley silage, and 2) TMR containing mechanically processed barley silage. Whole crop barley (semi-dwarf cultivar, Duke) was harvested in a mid-dough stage of maturity using a 0.95-cm theoretical length of chop. The mechanical processing was done using an automatic roller mill (model: Jaguar 900, CLAAS Ltd., Hansewinkel, Germany) designed for processing of corn plants which was attached to the forage harvester. The rollers were adjusted to the smallest possible setting (i.e., 1-mm clearance). Barley silage supplied 41% of the dietary dry matter, with 5% chopped alfalfa hay and 54% barley based concentrate making up the rest.

Mechanical processing did not change the chemical composition of the barley silage, and only slight changes in physical characteristics due to processing were observed. Feeding mechanically processed barley silage had no significant effects on feed intake (21.7 kg/d), milk yield (33.9 kg/d), or milk protein (3.35%), but yield of 4% fat-corrected milk (29.7 vs. 31.7 kg/d) and milk fat concentration (3.30 vs. 3.57%) tended to increase compared with regular barley silage. Digestibility of dry matter and fibre in the gastrointestinal tract were not affected by mechanical processing of the barley silage, but starch digestibility tended to be improved.

**Take Home Message:** Mechanically processing barley silage caused small, positive improvements in the nutritive value of barley silage for lactating cows. However, the response to processing was less for barley silage than typically observed for corn silage because the size and structure of corn and barley grain kernels are quite different. With processing equipment designed for corn plants, it is difficult to set the rollers tight enough to cause substantial physical damage to barley kernels. However, it is possible that mechanical processing may be more effective for barley if the plants are in a more advanced stage of maturity than the mid-dough stage used in this study.