

## Effect of intensity of maceration on digestibility and intake of alfalfa hay and silage fed to sheep

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A study was conducted to determine the influence of intensity of mechanical conditioning on the nutritive value of alfalfa conserved as hay or silage. Fresh alfalfa was mowed and conditioned at three levels of maceration prior to field wilting during 45 h for silage (29-39% DM) or 94 h for hay (87% DM, after barncuring), under light rain conditions during the first 2 d. The conditioning treatments were: control (conventional mowing-conditioning), light maceration (one passage through three knurled steel rolls), medium maceration (two passages), and intense maceration (three passages). Concentrations of NDF, ADF, hemicellulose, CP-ADF increased linearly ( $P < 0.001$ ) with the level of maceration. Silage pH, acetic acid, propionic acid, and butyric acid increased, while lactic acid decreased ( $P < 0.001$ ), with the level of maceration. The effective rumen degradabilities of DM, CP, and NDF, measured with fistulated cows, were not affected ( $P > 0.10$ ) by the level of mechanical conditioning. Forty-eight male sheep ( $46.8 \pm 6.7$  kg BW) were fed a 100% forage diet according to a completely randomized design with a 2 x 4 factorial arrangement of treatments (two storage methods and four levels of conditioning). Under restricted feeding, DM, NDF, ADF, and hemicellulose digestibilities decreased linearly ( $P < 0.001$ ) with the level of maceration. However, the digestibility of CP-NDF increased with the level of maceration; the effect was more important in hay than in silage ( $P < 0.001$  for the interaction). When silages were fed ad libitum to 24 sheep, daily DMI was 2.31, 2.88, 2.76, and 2.41% of BW and DM digestibility of was 60.8, 60.1, 56.2, and 46.7%, for control, light, medium, and intense maceration, respectively ( $P < 0.01$ ). The results suggest that light maceration increases DM intake while maintaining digestibility of forages fed to sheep. Because of humid conditions and potential soil contamination due to multiple windrow pickup, intense maceration caused severe nutrient loss, which might be avoided under dry field wilting and good storage conditions.

**Key Words:** Alfalfa, hay, silage, digestion, degradability, intake