Forage Research Updates

Adapted by Paul Peterson, University of Minnesota Extension

QUEBEC - Quebec Scientists Recommend Cutting Alfalfa Between 4:00-6:00 PM

Increasing the nonstructural carbohydrate (NSC) concentration of forages improves nitrogen-use efficiency by dairy cows. Quebec scientists studied the diurnal variations of NSC concentration and other nutritive-value attributes in alfalfa to determine the best time during the day to cut alfalfa for maximum NSC concentration. Field-grown alfalfa was cut every two hours between 6:00 a.m.-8:00 p.m. on six different days around the early flower stage during spring and summer growth at two sites in Quebec (eastern Canada).

Alfalfa NSC concentration increased during the day in both spring and summer growth at both sites. This was due mainly to an increase in starch concentration along with a smaller increase in soluble carbohydrates. The extent of the daily increase of NSC concentration varied with growth cycles and sites, ranging from 1.5-4.2% units, and was accompanied by a decrease in N concentration of 0.1 to 0.2% units.

At one site where the increase in alfalfa NSC concentration with delayed cutting during the day was greater than 3% units, concentrations of ADF and NDF were decreased by 0.9 to 2.7 % units while digestibility increased 0.3 to 1.6 % units. Since greatest NSC concentrations were reached between 11-13 hours after sunrise, in eastern Canada, cutting alfalfa between 4:00-6:00 p.m. is recommended for maximum NSC.

Reference

C. Morin, G. Belanger, G. Tremblay, A. Bertrand, Y. Castonguay, R. Drapeau, R. Michaud, R. Berthiaume, and G. Allard. 2011. Diurnal variations of nonstructural carbohydrates and nutritive value in alfalfa. Crop Sci. 51:1297-1306.