

Improving Alfalfa Feeding Quality for Ruminants: Achievements and Perspectives

Huyghe C.

(National Institute for Agronomic Research, Paris, France)

Abstract: The main quality traits to be considered in alfalfa for feeding ruminants are the protein content and its solubility, the forage digestibility and the dietary fiber content. These traits are influenced by the sward composition, the choice of the variety, the crop management and especially the harvest stage and harvest technologies. Alfalfa may be grown as pure stands or mixed with perennial grasses. The potential benefits of mixtures include an increase in biomass production with no N fertilizer, a better use of the protein by ruminants, if the grasses have high soluble carbohydrate content and finally a better forage conservation as silage or haylage. The drawbacks are a lower average protein content and moreover the inconsistency of the sward composition over seasons and over years. Genetics and variety have a large influence on forage quality. At a given development stage and biomass production, variety may change the protein content and ADF content as well as the biomass yield per se. This will be documented through the achievements in genotyping and phenotyping, but also through the changes observed on the French national alfalfa variety catalogue where protein and ADF contents have been considered during the registration process since more than 10 years. Practices influence the quality mainly through the harvest stage and the dry matter accumulation. For protein content and digestibility, dilution curves may be drawn. For the dietary fiber content and quantities, patterns are more complex. Finally harvest technologies are essential for quality of alfalfa forage. Grazing offers a limited potential in alfalfa because of bloating risks. Hay-making, haylage production and dehydration may be compared for their impact on protein content, protein digestibility and dry matter digestibility. Overall, dehydration proved to be the best technology for alfalfa feeding quality, as it preserves all the leaf tissues and reduces protein solubility in the rumen. Its worldwide development requires to implement innovations to reduce the energy cost.