

# Rumen Undegradable Protein from Grass.

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Rations for lactating dairy cattle should supply adequate amounts of rumen undegradable protein (RUP) without oversupplying rumen degradable protein (RDP). Forage grasses have many different types of protein with differing abilities to withstand ruminal degradation. Non-protein nitrogen (NPN) is very rapidly degraded in the rumen whereas true protein (TP) consists of a range of proteins, some of which are rapidly degraded while others may escape ruminal degradation.

Although most proteins from forage grasses are RDPs, we are examining whether altering nitrogen (N) fertilizer regimes and harvest schedules can increase the percentage of RUP in forage grasses. Plots of orchardgrass, tall fescue, and perennial rye grasses were given 0, 200, or 400 kg/ha/annum of N fertilizer. The plots were harvested and grasses ensiled. Fresh and ensiled grasses were analyzed for yield, crude protein (CP), true protein (TP), and neutral detergent fibre (NDF). Fresh and ensiled grasses were incubated in the rumens of ruminally cannulated cows to examine dry matter and protein degradations.

Results indicate that in orchardgrass, decreasing N fertilization and delaying harvest will increase the proportion of TP in harvested grass. Consequently, NPN is reduced.

Altering N availability and utilization provides opportunities to increase production efficiency and reduce environmental pollution.