

Forage quality of cool season pasture species under two rotational grazing height regimes

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Introduction To optimize animal and pasture performance in management intensive grazing systems, pasture production and quality often must be compromised. Rotationally-stocking pastures at slightly taller grazing heights can increase pasture productivity, but lower forage quality may limit animal performance. Our objective was to compare the forage quality of common cool season pasture species in the Northeastern U.S., under two rotational grazing regimes defined by slightly different grass heights.

Materials and methods A Pennsylvania mixed species pasture was divided into four blocks, and two rotational-stocking treatments (“tall” and “short”) were randomly assigned to each block. Tall pastures were stocked with cattle when *Dactylis glomerata* L. extended height averaged 27 cm, cattle were removed when *Dactylis g.* residual height averaged 7 cm; short pastures were stocked when *Dactylis g.* height was 20 cm and grazed to a residual height of 5 cm. Before each grazing event, we cut 12 (1998) or 18 (1999) forage samples from each of four treatment paddocks at the grazing regime residual height, and separated them into: *Dactylis glomerata* L., *Poa pratensis* L., *Elytrigia repens* L. and *Taraxacum officinale* Weber. Crude protein (CP), and neutral detergent fiber (NDF) were determined with near infrared reflectance spectroscopy analysis. Samples were grouped into seasons defined as: spring) grazed before 27 June; summer) grazed before September 22; and autumn) grazed after September 21. Data were analyzed using the MIXED model of SAS with grazing regime, seasons, species, and the interaction terms as main fixed effects, and year as random.

Results The species x season interaction was significant for CP and NDF. Crude protein increased from spring to autumn in all species, but with different trends (Fig. 1a). In the three cool season grasses, NDF values tended to decrease from spring to autumn, while in *Taraxacum o.*, NDF tended to increase from spring to autumn (Fig 1b).

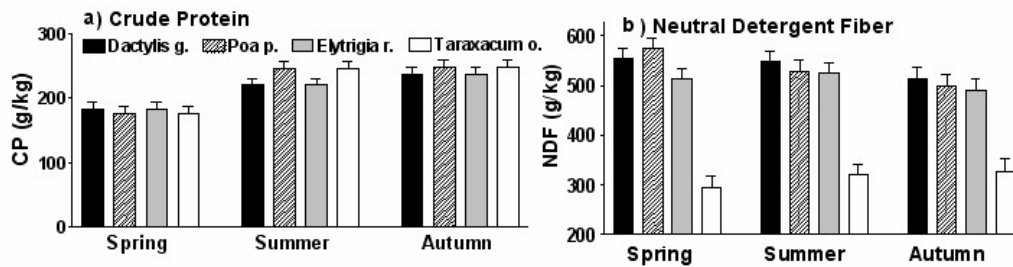


Figure 1 Crude protein (g/kg) and neutral detergent fiber (g/kg) in spring, summer, and autumn of *Dactylis glomerata*; solid bars, *Poa pratensis*: hatched bars, *Elytrigia repens*: grey bars, *Taraxacum officinale*: open bars

Grazing treatments significantly influenced species CP and NDF. On average, species grazed in short pastures had higher CP and lower NDF than species in tall pastures (243 vs. 218 g/kg, and 462 vs. 487 g/kg, respectively). Crude protein did not differ significantly among species. However, NDF of *Taraxacum o.* was significantly lower than the three cool season grasses (Table 1).

Table 1 Crude protein and neutral detergent fiber of the pasture species (** significantly different $p < 0.05$)

	<i>Dactylis g.</i>	s.e.	<i>Poa p.</i>	s.e.	<i>Elytrigia r.</i>	s.e.	<i>Taraxacum o.</i>	s.e.
Crude Protein	213	11	223	11	243	11	243	11
NDF	539	19	534	19	510	19	315	**

Conclusions Forage quality of “weedy” *Elytrigia repens* was similar to *Dactylis glomerata*. and *Poa pratensis*, and sometimes better than *Poa pratensis*. Compared to the desirable cool season grasses, the NDF of *Taraxacum officinale* was significantly lower, and CP was similar. The slightly taller pasture height grazing regimes resulted in an average species CP reduction of 27g/kg and an average species NDF increase of 25g/kg. These differences may influence animal performance, but are within forage quality values reported for intensively grazed pastures in the Northeastern U.S.