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Effects of grazing and mowing on vegetation characteristic in *Leymus chinensis* grassland

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Key words: *Leymus chinensis*, vegetation characteristic, grazing, mowing

Introduction Grazing and mowing are primary methods for utilization of grasslands, but they also greatly influence grassland ecosystem and population characteristics. Grazing and mowing can affect plant-species composition, species richness and productivity (Connell, 1978; Belsky, 1986).

Materials and methods The site was located at the south of the Xilingol-steppe grassland, where grazing and mowing are the principal means of land utilization. Mean annual rainfall was 297 mm and the soil type was chestnut. The site was dominated by perennial native grasses (80%) such as *Leymus chinensis*, *Poa annua* and *Stipa grandis*. Total species quantity (S: species/m²), coverage (C), dominance (D) and density (D': tillers of grasses, plants of other species/m²) were measured in August 2005; Community diversity was estimated by species richness (Margale index), diversity (Shannon-Wiener index) and evenness (Pielou index).

Results Mowing was more effective than grazing at increasing perennial herbage coverage and dominance, but mowing decreased total species quantity and density. All annual herbage indices were higher for grazing than for mowing (Table 1). This was mainly due to an increased number of tillers with grazing. Species richness, diversity and evenness were higher after grazing than with mowing (Figure 1). Grazing also increased species diversity but reduced dominance of *Leymus chinensis*.

Table 1 Species characteristic under different utilized ways.

life form	mowing				grazing			
	S	C	D'	D	S	C	D'	D
PH	24	94.7	892	94.8	27	88.7	1649	93.7
AH	1	0.7	0.2	0.58	3	7.76	6.9	3.93

Note: PH: perennial herbage; AH: annual herbage

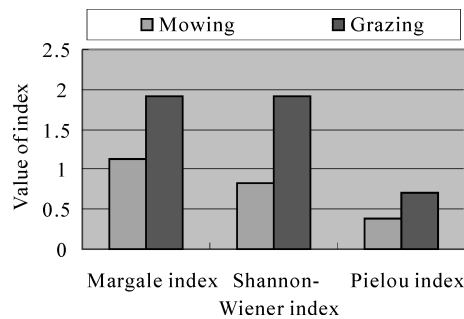


Figure 1 Diversity of community under different utilized ways.

Conclusions Effects of different utilization methods of grassland vegetation were described. Mowing led to increased coverage and dominance of perennial herbage compared to grazing, but grazing increased species quantity and diversity. Grazing increased species richness, diversity and evenness when compared to mowing. Grazing also increased the diversity of plant species, and reduced the dominance of *Leymus chinensis*, which lowered overall palatability of these pastures for livestock.

References

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