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## Diet selection and intake of yak (*Bos grunniens*) in warm-and cold-season paddocks of *Potentilla fruticosa* rangeland in northern Qinghai-Tibetan Plateau

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**Key words :** yak, diet selection, intake, two-season-rotational grazing, alpine rangeland, Qinghai-Tibetan Plateau

**Introduction** Two-season-rotational grazing system between warm-and cold-season paddocks has been spreading as accompanied by the decline in nomadism in Qinghai-Tibetan Plateau. It was reported for this system that deterioration of vegetation was greater in warm-season paddock than in cold-season paddock (Li *et al.*, 2006; Li *et al.*, 2007). In this study, diet selection and intake of yak (*Bos grunniens*) cows were investigated in the rangeland of northern Qinghai-Tibetan Plateau to evaluate the two-season-rotational grazing system.

**Materials and methods** In warm-and cold-season paddocks (WSP and CSP, respectively) in *Potentilla fruticosa*-dominant alpine rangeland of Mengyuan Prefecture, Heibei State, Qinghai Province, vegetation was evaluated by line transect and quadrat methods. All of feces of 3 yak cows was collected during 3 consecutive days to evaluate diet selection by microscope technique and intake by AIA method in August and December, 2005.

**Results** Thirty seven species of plants appeared in WSP and 44 in CSP. Yak grazed 19 plant species in WSP and 16 in CSP. *Kobresia* spp in WSP and *Poa* spp in CSP were greatest in proportion in diet (PD) value but *Astragalus* spp was greatest among plant species in Preference index (PI) and Ivlev's electivity index (IEI) values in WSP and CSP (Table 1). PD value was significantly correlated with proportion in paddock value both in WSP and CSP ( $r=0.909$ ,  $r=0.934$ , respectively,  $p<0.0001$ ), however was low in correlation with PI and IEI ( $p>0.05$ ). Herbage intake of yak cow was 33.4 gDM/kgBW/day in WSP which was significantly greater than 20.5 gDM/kgBW/day in CSP ( $p<0.05$ ).

**Table 1** Selection by yaks of major herbaceous plants in rotationally grazed warm-and cold-season paddocks in *Potentilla fruticosa*-dominant alpine rangeland.

Species (genus)	Proportion in paddock <sup>1</sup>		Proportion in diet		Preference index		Ivlev's electivity index	
	WSP <sup>2</sup>	CSP <sup>2</sup>	WSP	CSP	WSP	CSP	WSP	CSP
<i>Kobresia</i> spp.	22.67	7.55	28.85	13.26	1.27	1.76	0.12	0.27
<i>Poa</i> spp.	13.94	24.07	22.09	35.92	1.58	1.49	0.23	0.20
<i>Ptilagrostis dichotoma</i>	6.99	2.91	6.95	2.28	0.99	0.78	0.00	-0.12
<i>Elymus nutans</i>	5.61	8.60	5.52	8.28	0.98	0.96	-0.01	-0.02
<i>Leontopodium nanum</i>	6.64	3.31	5.35	6.92	0.81	2.09	-0.11	0.35
<i>Astragalus</i> spp.	1.96	1.11	5.29	6.33	2.70	5.70	0.46	0.70
<i>Stipa purpurea</i>	2.25	9.45	5.21	14.06	2.32	1.49	0.40	0.20
<i>Lancea tibetica</i>	2.81	0.56	3.20	0	1.14	0.00	0.06	-1.00
<i>Polygonum</i> spp.	2.25	5.77	3.11	1.91	1.38	0.33	0.16	-0.50
<i>Carex</i> spp.	4.17	7.04	2.87	2.54	0.69	0.36	-0.18	-0.47
<i>Potentilla</i> spp.	9.29	2.79	2.79	1.36	0.30	0.49	-0.54	-0.34

<sup>1</sup>Importance value; <sup>2</sup>WSP: paddock grazed in warm seasons, and CSP: paddock grazed in cold seasons by yaks for over 20 years.

**Conclusions** It was suggested that diet selection by yak was affected by vegetation greater than palatability of plant species and herbage intake of yak was not sufficient for fertility especially in CSP.

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