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Effect of community grazing regulation on degraded grasslands in Inner Mongolia

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Introduction Grassland degradation associated with over-grazing became a problem in northern China following distribution of communal livestock to households .Flocks expanded due to market price pressure from wool in the late eighties and cashmere in the nineties (Auld *ist* 1996) ,peaking in 1995 (Table 1) .Allocation to households of "user rights" for specific areas of grassland did not halt the loss of perennial plant cover and topsoil .

Materials and methods This paper presents data collected in Balin Youqi county in Chifeng Prefecture Inner Mongolia (Auld *ist* 2005) .As a consequence of grazing pressure on the fragile aeolian landscape ,in 2000 82% of grassland in the county was assessed as degraded .In response government officials and herders agreed to introduce grazing restrictions with a target of 684 ,000 ha of protected natural grassland by 2005 ,affecting most of the 50 ,000 predominantly Mongolian families dependent on livestock production .These families grazed sheep ,goats or cattle ,and where possible grew crops ,usually maize ,to provide supplemental livestock feed .From 2002 most grassland in the county was progressively closed to grazing ,depending on the capacity of households to produce some grain ,straw or grass hay for pen-feeding .Grazing was banned for only 45-60 days during the spring growth period in areas unable to produce grain .

Results Trends in grassland condition over four years of restricted grazing were positive (Table 1) ,as livestock pressure was reduced (Table 2) ,and herder household income was maintained during the period (Table 3) .

Table 1 Productivity and grassland condition changes at four key Balin Youqi county landscape sites .

Grassland type	Biomass kg/ha		Number of spp		% ground cover	
	2001	2004	2001	2004	2001	2004
Sandy grassland	1845	2550	4	7	35	75
Mountain meadow	3015	4470	11	15	80	95
Plateau grassland	1365	2970	6	10	20	46
Lowland marshland	7800	14 820	3	9	81	89

Table 2 Changes in livestock numbers for Balin Youqi County .

Livestock enterprise	1995	2000	2003	2005
Total beef cattle	144600	126520	82395	74706
Total goats	831502	798333	1 017 342	659061
Total sheep	422192	326089	276529	253559
Total livestock units	1 976 694	1 757 022	1 705 846	1 286 150

Table 3 Enterprise characteristics and changes in household income for sample Balin Youqi villages .

Village	Chaganwusu		Harigental		Baoriwusu	
Year	2001	2004	2001	2004	2001	2004
No of households(hh)	301	306	437	437	168	170
Av .Ha grassland/ hh	15a		28		18	
Av .cattle/ hh	9 .0	9 .6	1 .7	1 .6	1 .9	2 .5
Av .sheep/ hh	26	20	9	13	19	24
Av .goats/hh	32	33	40	26	33	30
Av .Income/hh RMB	5325	8373	5835	7157	7095	6834

Conclusions The program appeared to be successful in the short-term ,based on government application of regulation incentives , and assistance measures .Livestock numbers were reduced ,and herders forced to improve livestock management and nutrition , increasing quality of product and marketing flexibility .The changes also stimulated more efficient fodder conservation methods , and the concept of fodder as a commodity .The clear demonstration that grassland degradation may be reversible generated positive attitudes in communities with grassland cultural and economic attachment .

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