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## The influence of herding land allocation on stocking rates and herding income in Alxa League , Inner Mongolia

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**Key words :** land allocation , herding , grassland degradation

**Introduction** Degradation caused by overgrazing is a serious problem in Chinese grasslands . High stocking rates are often associated with overgrazing . This paper investigates the link between Grassland User Rights (GUR) allocation , stocking rates and net annual returns to households .

**Materials and methods** The study area comprised four communities : Gong Da Lai (GDL) , Hatuhuduge (HAT) , Mengenbulage (MEN) and Narenbulage (NAR) in Alxa League , Inner Mongolia . Data sets were compiled from available official records . For each community , stocking rates and net annual financial returns for each household were compared to GUR allocations . Stocking rates were calculated as small stock unit equivalents per 100 hectares . GUR allocations were arranged in incremental 400 ha groupings , and the mean stocking rate and mean annual net return for the households that fell within each grouping were tabulated (see below) .

**Results and discussion** The right hand column of the table presents the statistical significance for the overall relationships between household GUR allocations , stocking rate and net annual financial return in each community . The figures in the remainder of the table represent the mean stocking rates and net financial return values for the households within each GUR allocation group . Groupings of GUR allocations are shown in hectares .

**Table 1** Mean stocking rates for households within each of the Grassland User Rights allocation categories .

GUR	< 400 ha	400-800	800-1200	1200-1600	1600-2000	2000-2400	2400-2800	2800-3200	> 3200	
GDL		26.3	35.2	10.9	13.7	12.8	16.8		6.0	p < 0.2
HAT	41.6	26.7	16.3	14.6	16.4	10.7	12.5	4.9		p=0.02
MEN		27.6	17.1	18.1	23.9		7.6			p=0.04
NAR	57.8	30.7	21.4	3.0			11.0		8.0	p=0.005

**Table 2** Net annual return for households within each of the Grassland User Rights allocation categories .

GDL		4155	10220	7387	8857	9373	11000		10264	NS
HAT	5425	7155	10234	12690	13430	13665	14830	6500		p < 0.05
MEN		11428	14669	12760	16439		8703			NS
NAR	2767	5241	7815	1726			16280		8155	p=0.06

Land allocation between households in the study gachas is inequitable . Households with the smallest land allocations generally have the highest stocking rates and the lowest annual net incomes .

**Conclusions** It appears that stocking rates are controlled by perceptions of livestock numbers required to make a reasonable household income rather than by concerns for land condition . Assuming that high stocking rates are leading to degradation , control of land degradation under grazing is unlikely to occur until herding households have adequate land allocations to allow lower stocking rates in line with land capability . Since high stocking rates are likely to be a major contributor to grassland degradation , and as small land allocations appear to be making some herders poorer than their neighbours who have larger land allocations , it is respectfully suggested that land allocations under GUR be reviewed to assess whether inequitable land allocation is common , and to propose a minimum size for GUR allocation according to land capability to sustain grazing .