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**Presenter Information**

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## Grassland sustainability and livestock production in Taipusi Banner , Inner Mongolia

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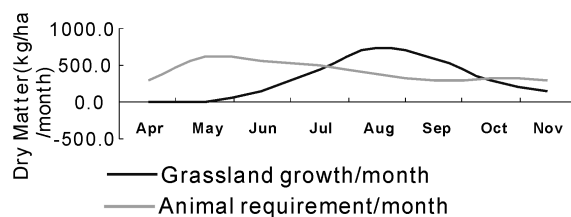
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**Key words :** grassland , degradation , grazing , stocking rate , livestock production

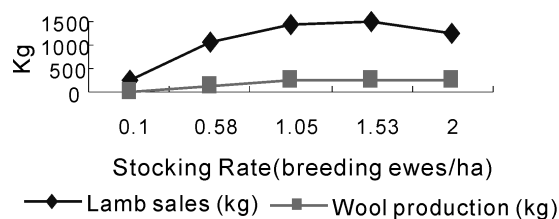
**Introduction** Livestock numbers on north China grasslands have increased dramatically as households seek to improve incomes . However in Taipusi Banner , Inner Mongolia , this has resulted in severe over-grazing and degradation to 70% of the 130 ,000 ha of typical steppe grassland . Current stocking rates are in excess of those recommended ( Houston *et al .* , 2004 ) . Sustainable grassland and livestock production requires a systems analysis of current farm practices and options .

**Materials and methods** The study region is Taipusi Banner of Inner Mongolia ( 114°51'-115°49' E , 41°35'-42°10' N , average annual precipitation ~400 mm , elevation 1325-1828 m , chestnut soil ) . The grassland is typical steppe and dominant species are *Stipa krylovii* , *Aneurolepidium chinense* , *Artemisia frigida* . Farm system models were used to analyse the current feed supply and demand and options for reducing stocking rates ( using linear programming ) . Six farms in a village of 30 were surveyed in detail to construct a typical ( synthetic ) farm system model ( Kemp , Jones and Takahashi , unpublished ) .

**Results and discussion** Grassland growth can only meet livestock maintenance demand from July to October ( Figure 1 ) once the grass is frosted animal requirements is not satisfied . Analysis over a range of stocking rates shows that meat and wool production reaches a maximum at ~1 ewes/ha ( Figure 2 ) , half that of the current stocking rate of 2.3 ewes/ha . The economic optimum would be between 0.5 and 1 ewes/ha as supplementary feed costs start to increase significantly from that range .



**Figure 1** Feed balance ( Dry Matter ) .



**Figure 2** Lamb and wool production per farm .

**Conclusions** Grassland production and livestock demand is out of balance . From the 60 years of stocking rate collected it was found that the stocking rate in Taipusi Banner is now about 2.3 ewes/ha up to 3 ewes/ha . At that level household incomes are less than at 1 ewe/ha . The economic justification to reduce stocking rates supports ecological data .

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### Reference

Houston , W . , Thorpe , J . , Han G . D . , Zhao M . , Li Q . F . , and Wang Q . G . ( 2004 ) . Framework for a range condition and stocking rate guide : Grassland areas of Inner Mongolia Autonomous Region . *Canada-China Sustainable Agricultural Development Project Report* .