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## Barriers to using feed balance systems for range livestock production—Case study at Dacha Village ,Sunan County of Gansu province

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**Key words :** herder , Income , expenditure , feed balance , impact

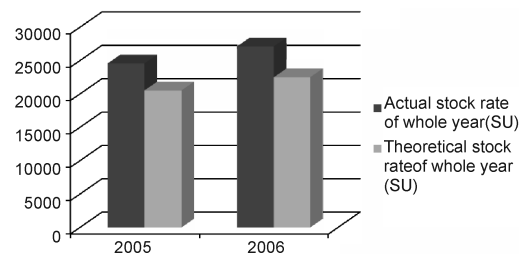
**Introduction** The feed-balance was one of the important approaches to address the rangeland degradation problem (Yang et al . , 2005) . Reducing the number of animals is the first step in achieving feed balance because the opportunities to increase feed supply on rangeland is limited and the area suitable for growing artificial pasture is small . However , developing the process and defining the responsibilities for implementing stocking rate reductions is challenging . This paper uses a simple analysis of survey data to identify the impact of stocking rate reductions on household income . Based on our analysis we provide some suggestions on how to improve the current feed balance system .

**Materials and methods** This study was undertaken in Dacha village which was located in Dahe Township ,Sunan County , Gansu Province . Dacha village was typical of the Qilian Mountains area of Hexi Corridor region with serious overgrazing problems . The landform was characterized by steep slopes This study used interviews with 30 herding households (HHs) which represented 30% of herding families in Dacha Village . The structured interviews were designed to collect the following information : production methods , area of rangeland and artificial pasture , number of livestock , income and expenditure for livestock enterprises . The information was entered into a database .

**Results** The average number of sheep units (SU) equivalents/HH on hand prior to sale was 482 sheep units SU . The annual turn off of sheep and yak averaged 102 SU/HH . Average sales of livestock products was CNY 23805 accounted for 90% of HH income . Regular HH expenditure which averaged CNY 14317 accounted for between 54% and 67% depending on 2005 and 2006 (Table 1) . A serious overgrazing problem existed in surveyed HHs with a 40% deficit in the feed balance (Figure 1) . The analysis at surveyed HHs covering 2005 and 2006 indicated that the average number of animals on hand prior to sale was 482 SU/HH , 81 SU more than the sustainable stocking rate standard , which is estimated at 401 SU/HH . Livestock production was the major income source for herders to cover their living cost . To reduce degradation through stocking rate reduction to achieve feed balance , herders could only generate a net income of 5304 Yuan in 3rd year based on the assumption that 1 SU was valued at CNY 233 , average turn off rate was 21% and without any irregular household expenditure . The households can't afford their livelihood if consider to build infrastructures , such as fence , warm shed , etc . this needs to be rewritten in short sentences so as to produce clarity . Maybe the other option is to replace Table 1 and Figure 1 with a text , so that the author can get a chance to put the flow of ideas in words .

**Table 1** Income and expenditure of surveyed HHs (Unit : CNY/HH) .

| Items                                | 2005  | 2006  |
|--------------------------------------|-------|-------|
| Income from livestock activities     | 25027 | 24037 |
| Income from non-livestock activities | 1789  | 2265  |
| Regular household expenditure        | 14065 | 14569 |
| Irregular household expenditure      | 6823  | 12467 |



**Figure 1** Result of feed balance of surveyed HHs .

**Conclusions** Overstocking was a serious problem at Dacha Village . Its current level exceeds the recommended carrying capacity by 40% . Under the traditional livestock management system , a herder HH income was low and they relied on increasing in livestock numbers to maintain their livelihood when faced with increasing input costs . This meant that any reduction in livestock numbers would impose negative impacts on subsistence herders unless heavily subsidized by government funds . However , even if government subsidized livestock reductions were possible , appropriate threshold stocking rates that maintain a sustainable feed balance need to be established for rangeland types based on their current condition . This would require government and technical agencies to set up collaborative teams to provide accurate feed balance information using effective rangeland monitoring protocols .

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Yang Li , Hou Xiangyang , Forage Livestock Balance Management and Sustainable Utilization of Grassland , [J] , China Agricultural Economic review , 2005 Vol . 3 :NO . 4 , 453-46 .