Greenhouse sheds for increasing livestock bodyweight in Taipusi, Inner Mongolia

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Introduction

Grasslands in many developing countries around the world are suffering from degradation, principally as a result of greater grazing pressure from increasing livestock numbers (Kemp and Michalk 2007). In Taipusi County (41°35 to 42°10′N; 114°51′ to 115°49′ E) of the Inner Mongolia Autonomous Region, traditional winter grazing on pastures with virtually no herbage mass is thought to be exacerbating the grassland condition, as well as being counter-productive to animal production (Zheng *et al*. 2010). This paper describes a feasibility study of utilizing existing sheds to house sheep during the winter.

Materials and Methods

Forty Mongolian Mutton Cross ewes from two farms (Group A) grazed pastures, the traditional method throughout the winter of 2009 and the spring of 2010 (from 28 November to 20 May). Another 40 ewes of the same breed (Group B) were kept inside greenhouse sheds during the same period. The greenhouses were made by replacing the original brick roof of existing brick-walled sheds with a new roof made of daylight tiles. An electric furnace was placed in the greenhouse to improve the night temperature.

Results and Discussion

Group A ewes lost on average 5 kg more bodyweight than Group B ewes during the winter (P<0.05, Table 1). Group B lambs gained on average 2.26 kg more bodyweight than Group A lambs during the experimental period (P<0.05, Table 2).

Conclusions

The results show that changing the traditional grazing management and using greenhouse sheds during winter and early spring will increase the bodyweight of ewes and lambs. The proposed strategy has a potential to achieve higher animal productivity, especially improve night temperatures of the greenhouse sheds. Options such as glass walls and in room heating are currently being investigated, and then the costs and benefits of the traditional and shed systems will be evaluated.

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References

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Table 1. Body weight changes of ewes in greenhouse sheds and grazing system.

	Group A (n=40)	Group B (n=40)	T Test
November	44.28±1.04	45.39±1.22	P>0.05
December	42.74±0.79	42.25±1.32	P>0.05
January	42.58±0.89	47.53±0.97	P<0.05
February	44.42±0.93	50.05±1.11	P<0.05
March	37.07±0.83	43.51±1.08	P<0.05
April	32.57±0.72	38.75±0.94	P<0.05
Bodyweight gain (kg)	-11.7	-6.6	P<0.05

Table 2. The birth weight, one-month weight and weight gain of lamb in greenhouse sheds and grazing system.

	Group A	Group B	T Test
Birth weight (kg)	3.35±0.07	4.10±0.15	P<0.05
Month weight (kg)	11.34±0.44	14.34±0.86	P<0.05
Weight gain (kg)	7.99±0.43	10.25±0.74	P<0.05