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Winter is coming – supplementary feeding of cashmere goats as an adaptive strategy of mongolian herders

ALINA HAUS¹, GANTUYA JARGALSAIKHAN², BAIVAL BATKHISHIG³, JÜRGEN HUMMEL¹, EVA SCHLECHT⁴

¹University of Göttingen, Dept. of Animal Sciences, Ruminant Nutrition, Germany

²Mongolian University of Life Science, Research Institute of Animal Husbandry, Mongolia

³Nutag Action Research Institute, Mongolia

⁴University of Kassel / University of Göttingen, Animal Husbandry in the Tropics and Subtropics, Germany

Abstract

Winter disasters, named dzud in Mongolian, represent a major threat to Mongolian nomadic livestock production, causing high animal mortality. Its frequency is expected to increase due to climate change and long-term rangeland degradation driven by overgrazing. Herders have developed adaptive strategies over centuries, like supplementary feeding of livestock during winter and collaborative action. However, quantitative evidence on feeding management remains limited. This study examines how Mongolian herders use supplementary feeding as a coping strategy for poor forage availability during winter and how herder cooperatives can provide support during winter feed preparation. Data were collected in autumn 2022 from 21 households in two regions in Mongolia: Galuut Sum (GS), where livestock numbers exceeded rangeland carrying capacity (CC), and Khulunbuir Sum (KS), where CC was not exceeded. The collected data encompassed semi-structured interviews, feed sampling, laboratory nutrient analyses, and focus group discussions in both regions. During the time of the visit, herders in KS had nearly completed preparations (5-point scale from 0–100 %, median: 100 %), while households in GS had only just begun (median: 25 %, $p < 0.01$). Herders in KS prepared more hay per Mongolian Sheep Unit (MSU) (median: 38.4 kg/MSU) than those in GS (7.4 kg/MSU, $p < 0.01$), while wheat bran provision did not differ (2.1 kg/MSU in both regions). Hay quality was generally low, characterised by low crude protein (mean $\pm$ SD, 62 ± 13 g/kg DM) and high aNDF contents (715 ± 32 g/kg DM). The focus group discussions showed that herders in GS faced constraints for feed preparation, such as degraded rangelands, limited financial means, weak collaboration among herders, and poor market access. In contrast, herders in KS collaboratively harvested hay before winter and had no exceeding CC. Across both regions, prepared feed quantities were insufficient to sustain livestock throughout the winter, leaving pasture as the primary feed source. However, the study revealed great differences in adaptive capacity for winter hazards between the regions. Strengthening collaborative action among herders, improving access to input markets and aligning livestock numbers with rangeland CC are critical to enhancing resilience against winter disasters, particularly in overgrazed regions.

Keywords: Climate resilience, feed preparation, forage scarcity, pastoralism

Contact Address: Alina Haus, University of Göttingen, Dept. of Animal Sciences, Ruminant Nutrition, Kellnerweg 6, 37077 Göttingen, Germany, e-mail: alina.haus@uni-goettingen.de