Tropentag, September 16-18, 2026, hybrid conference

"Towards multi-functional agro-ecosystems
promoting climate resilient futures"

Small-scale pastoral systems on a warteberg setting

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Abstract

Small-scale pastoral systems in hilly Warteberg landscapes require grazing strategies that maintain forage quality while preventing shrub encroachment and ensuring long-term pasture productivity. Goats are often introduced as pioneer grazers due to their browsing capacity, yet their combined use with cattle in low-intensity systems remains insufficiently documented. This study evaluated two grazing treatments over two consecutive years on comparable Warteberg pasture sites: (1) goat-only grazing, and (2) sequential grazing with goats followed by low-intensity cattle grazing. The objective was to assess potential differences in pasture composition and biomass production under these contrasting management approaches.

Vegetation surveys were conducted at the beginning and end of each grazing season, focusing on the relative abundance of grasses and herbaceous species. Across both years, botanical composition remained broadly similar between treatments, with no substantial shifts in the proportion of grasses versus herbs. This indicates that the introduction of cattle after initial goat grazing did not markedly alter the floristic balance of the pastures within the study period.

In contrast, pasture quantity showed a more pronounced treatment effect. While biomass production was comparable in the first year, the second year revealed a clear divergence: pastures managed with the goat-plus-cattle sequence produced approximately 250 kg dry matter (DM) per hectare more than goat-only pastures. This suggests that the complementary grazing behaviour of cattle—particularly their preference for grasses and their less selective foraging—may enhance regrowth dynamics or reduce competitive pressure among plant functional groups.

Overall, the results highlight that integrating low-intensity cattle grazing after goats can improve pasture productivity without compromising botanical composition. Such mixed-species strategies may offer a resilient and resource-efficient option for managing small-scale pastoral systems in Warteberg-type environments.

Keywords: Cattle, goats, livestock production, vegetation dynamics

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