Tropentag, September 18-21, 2016, Vienna, Austria

"Solidarity in a competing world — fair use of resources"

How Does Grazing Work in Semiarid Savannahs? – Responses of Desirable Perennial Grasses to Clipping and Water

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Abstract

Semi-arid savannahs of southern Africa have been used for cattle grazing for decades. In many areas, unsustainable high stocking rates have led to severe shrub encroachment. The increase of woody shrubs at the cost of palatable plant species causes a significant reduction in economic value and can be considered a threat to livelihoods. It also leads to habitat loss for many species and fragmentation with major implications for biodiversity dynamics and functions. Therefore, alternative sustainable grazing regimes must be developed together with an understanding of how desired perennial grasses respond to different patterns of grazing and drought.

At a commercial cattle farm in the southern Kalahari we designed a 20 times replicated clipping-experiment using *Stipagrostis uniplumis* and *Aristida stipitata* which are two of the main palatable perennial grass species in the area. Grass tussocks were clipped at four different heights in combination with watering. Re-growth was determined after 6 weeks. In particular, we analysed accumulated green biomass and number of tillers. Independent of species, at low clipping height the simulated grazing resulted in up to 95 % reduced aboveground biomass compared to a non-clipped control. The grass individuals were not able to reach the initial average weight during the 6 weeks period. Only the growth rate significantly increased. In contrast, at moderate clipping heights the simulated grazing resulted in an obvious compensation or even overcompensation of aboveground biomass. Additional water had no stimulating effect. We conclude that the recovery of palatable grasses is possible in a short period of 6 weeks even under drought conditions, but strongly depends on grazing height.

Keywords: Aboveground biomass, compensational growth, grazing, perennial grasses, rangelands, savannah

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