

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



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Objective

Semi-arid savannahs in 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 herbaceous vegetation causes a significant reduction in economic value of rangelands and a decrease in human livelihoods. To develop sustainable grazing regimes

in these semi-arid systems, an understanding of **the relationships between disturbance by herbivores, drought stress and desired perennial grass vegetation** is highly requested.

Methods

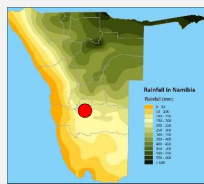
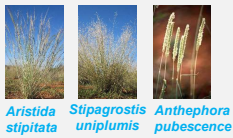


Figure 1. Location of the study area in Namibia, southern Africa

Age different (II, III)

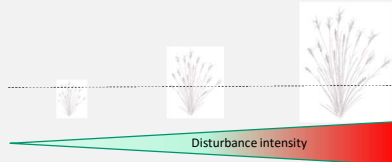


Figure 2. Time of clipping as a proxy for grazing intensity

Age constant (I)

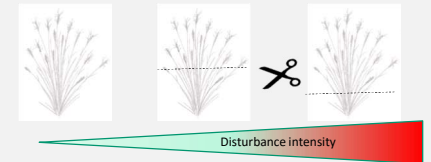
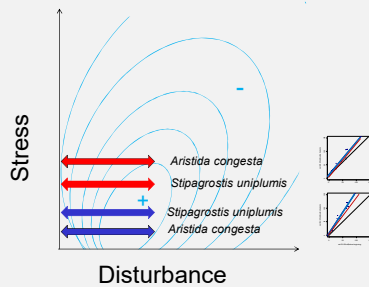


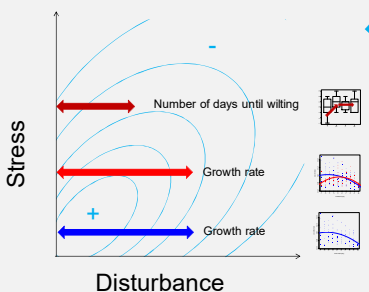
Figure 3. Clipping height as a proxy for grazing intensity

General models

Performance of adult tussocks



Performance of seedlings



Conclusion

- The recovery of palatable grasses from moderate grazing is possible in a short period of 5 weeks, even under drought stress conditions.

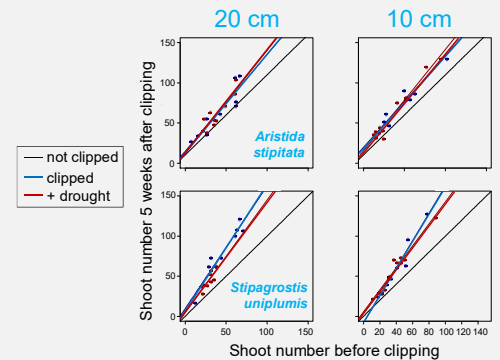
Results

- Shoot number increases with simulated moderate grazing for both species, but stronger for *S.uniplumis*
- Simulated moderate grazing resulted in compensation or even overcompensation of aboveground biomass (*not shown*)

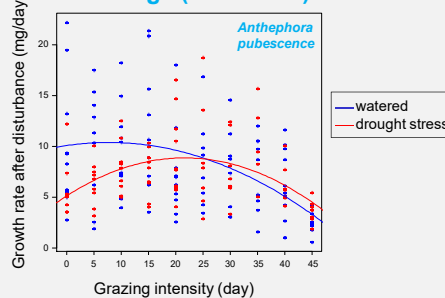
Moderate disturbance is stimulating growth !

- Drought stress has little to no effect on disturbance regrowth

(I) Clipping height of Adult tussocks



(II) Seedlings (2-8 weeks)

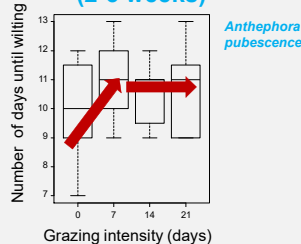


- Growth rate decreases across the gradient of grazing disturbance intensity

Strong disturbance = cautious regrowth

- Under drought, growth rate decreases unimodal with disturbance

(III) (2-5 weeks)



- Grazing disturbance intensity increases drought stress resistance

High regrowth after disturbance may cost stress resistance