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## Introduction

Many uncertainties exist concerning the quantification of the carbon sequestration potential in savannah ecosystems. Biomass and carbon pools are highly variable within the different vegetation types of this zonal ecosystem, and very often most basic and sufficient accurate information related to biomass dynamics are not available. In order to quantify carbon sequestration potential in savannahs, a non-destructive method to determine high-resolution data of leaf area index (LAI) and above-ground biomass (AGB) is needed.



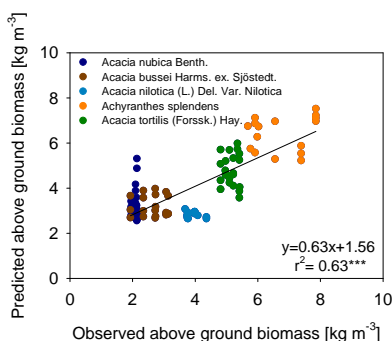
## Conclusions and Outlook

- Optical LAI measurements can be used for a rough estimation of above ground biomass.
- For a robust estimation, a more accurate method is needed.
- Data analysis is still ongoing and measurements in different canopy layers will be taken into account.
- Results will be compared with results obtained with allometric equations in order to evaluate our findings.

## Results and Discussion

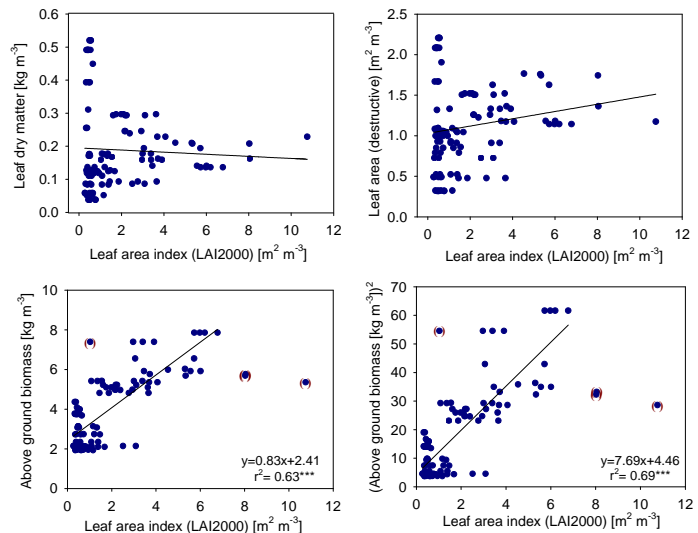
- Optical measurements were neither correlated with leaf dry matter nor with leaf area determined via destructive samplings.
- Correlations between optical measurements and total above ground dry matter were highly significant, whereupon higher correlation coefficient was found for squared values of above ground biomass.

- For the observed woody species, leaf area development is not reflected in the optical LAI measurements.
- For a rough estimation of above ground biomass, optical LAI measurements can be used.



- Prediction of above ground biomass using the quadratic approach led to good results considering all species combined.
- For individual species, the used approach is not yet adequate, since only a very rough estimation of above ground biomass was possible within one season.

- Information on species-specific seasonal dynamics of leaf growth is needed for a more precise correlation considering individual species.



## Materials and Methods

The experiment was conducted in a thorn-shrub savannah ecosystem in southern Ethiopia, representative for the African Sahel-Zone with bimodal rainfall distribution. Optical (LAI2000) and destructive LAI and above ground biomass measurements were taken from 5 dominant shrub and tree species in weekly intervals during one rainy season. Results of multiple biomass harvestings were correlated with the non-destructive optical method.

