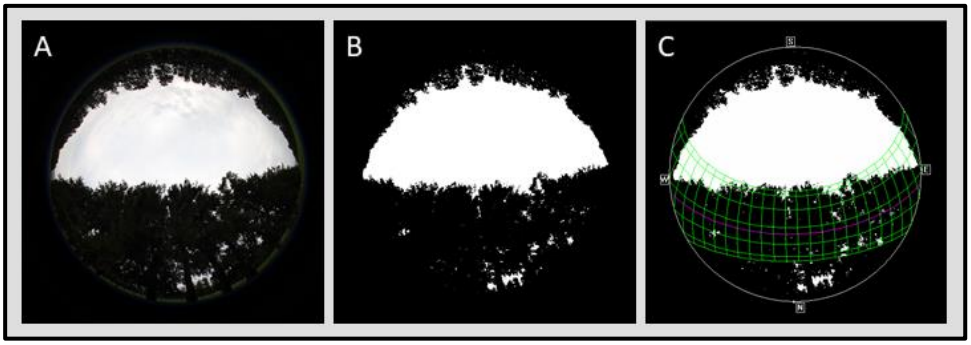
Chair of Forest Growth and Dendroecology - Master Thesis Offer

The modelling of shade cast in windbreak agroforestry systems by *Casuarina cunninghamiana* in South Africa.



The research project '[Agroforestry in Southern Africa - new pathways of innovative land use systems under a changing climate (ASAP)]' targets the application of agroforestry systems as a suitable response to the impacts of climate change.

In agriculture it is often important to reduce crop water demands through agro-engineering measures which directly influences soil evaporation and crop transpiration. The use of windbreaks significantly influences the near-ground wind field and thermal energy. The shade cast by the windbreak can result in longer moisture retention due to reduced evapotranspiration, but may also hinder crop growth by reducing incoming solar radiation. For this reason, we aim to form a better understanding of the shade cast by windbreaks based on windbreak size.

Task: Using a new dataset from South Africa (116 transects, 1732 data points, 2 sites) consisting of hemispherical photos and basic tree parameters (no supplementary field work required), the task will be to analyse the data to create a model based on real and simulated data describing the on-ground shading effect as a result of physical tree parameters. This work aims to increase the resolution of decision support tools available to farmers when planning agroforestry systems.

Your skills:

- Aptitude for data analyses and modelling
- Experience of statistical modelling and photo manipulation, previous experience with R is a distinct advantage
- Ability to work independently, to solve problems and to use initiative
- A high level of written English (thesis is suggested to be written and submitted in English)

What the Chair of Forest Growth and Dendroecology can offer:

- The opportunity to work within and contribute to the output of a large agroforestry research project
- A workstation PC and office space if required, use of analytical software for data processing (e.g. hemiview)
- Support and guidance from experienced agroforesters

To express your interest and to discuss this further please contact:

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