



**Institute of Agricultural Sciences in the Tropics (Hans-Ruthenberg-Institute)  
(490)**

**Master thesis**

***Assessing the economic potential and land-use  
changes of Conservation Agriculture practices in  
northern Namibia – A multiperiod modeling  
approach***

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**Subjected by**

**Lutz-Heiner Otto**

**Hochbruckstraße 11, 70599 Stuttgart**

**Mat. Number: 529895**

**1. Supervisor: Prof. Thomas Berger**

**2. Supervisor: Prof. Folkard Asch**

**Hohenheim**

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## **Abstract**

Agriculture in northern Namibia is identified as being severely threatened by climate related changes. Therefore, food security in Namibia is also under threat, since most Namibians live in northern communal lands, depending largely on subsistence agriculture. Agricultural activity in this area is mainly rain-fed and a decrease in precipitation may thus increase rural poverty and food insecurity. Applying low-cost climate adapted cultivation methods is a promising strategy to combat adverse climatic impacts. The GIZ Namibia started the project “Adaptation of agriculture to climate change in Northern Namibia”, which will focus on training small-holder farmers on climate-adapted cultivation practices especially Conservation Agriculture (CA). In this framework, the thesis conducted a socio-economic assessment of a typical small-holder farm and designed a computer model which simulated real-world farming practices. The data was attained through field interviews and secondary sources from involved stakeholders. The single agent computer simulation model was constructed with the help of the software MPMASQL. The model simulating changes in farming practices and income as CA is applied over the years. Results show, that CA can have positive economic effects for the modeled farmstead. An uncertainty analysis however indicates that results are susceptible to crop yield responses and increases in labor time spend on weeding.