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"Development on the margin"

Predicting the Potential Future Geographic Distribution of *Striga* under Climate and Land Use Change

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Abstract

As parasitic weeds of the genus *Striga* (Orobanchaceae) are a major constraint to agriculture of the semi-arid regions in sub-Saharan Africa, Striga´s actual and future distribution needs to be estimated urgently, in order to better and more efficiently target available *Striga* management strategies. Using innovative GIS-based modelling complemented by greenhouse and field studies, our research aims to better understand the present geographic distribution of *Striga* species and to predict potential future expansion areas of these dangerous weeds. Parameters determining the presence or absence of *Striga* were analysed and available data complemented by new studies on *Striga* ecology and seed bank dynamics gained in green house and field studies at the University of Hohenheim and ICRISAT, Mali.

Based on the present geographic distribution and the factors affecting it, different climate and land use projections have been applied to indicate areas that will be(come) susceptible to *Striga* in future. Climate envelope models have been used to identify areas where climate conditions are expected to change into suitable ranges for the spreading of *Striga* subpopulations from different regions of Africa.

The outputs of this approach will directly support and target crop improvement research and variety (maize, sorghum, pearl millet) dissemination in Striga-affected areas, and provide important decision support tools for technology development and integrated *Striga* management strategies.

The aim of our work presented here is to provide the necessary information to fill in the current knowledge gaps in *Striga* research considering its geographic distribution and the effects of climate change on this distribution patterns.

Keywords: Climate change, parasitic weeds, potential distribution, *Striga*

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