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## The impact of climate change on the main staple crops in West Africa

### Details

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Section	<a href="#">Global Environmental Change</a>
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Identifier	GC13A-0950
Authors	<a href="#">Sultan, B*, Universite Pierre et Marie Curie, LOCEAN, Paris Cedex 05, France</a> <a href="#">Philippe, R, Cired, Nogent sur Marne, France</a> <a href="#">Baron, C, CIRAD, Montpellier, France</a>
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### Abstract

Adaptation of agriculture to climate change requires urgent improvement of our understanding of climate impacts on crop yields, particularly in tropical regions where climate directly threatens food security. However past studies report large uncertainties because of inconsistency between climate scenarios and limited representation of the prevailing cereal production systems. More than six years of trials and surveys in Africa enabled the design of SARRA-H, a process-based crop model able to represent accurately the diversity of farmers' cultivars and practices for the two main staple crops, sorghum and millet. Conducting more than 7,000 simulations, we find that, although uncertain, future climate and potential impacts will be very different from what was observed in the recent history because of the adverse role of temperature reducing crop yields whether rainfall increases or decreases. Results demonstrate that cultivars with a high yield potential and a short, nearly constant growth cycle, as pursued by most sorghum and millet breeders until recently to reduce the yield gap in West Africa, will be less adapted to climate change than traditional cultivars selected by farmers for centuries. Breeding strategies need therefore to address the trade-off between intensification of cropping systems and resilience to climate change.

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