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“Competition for Resources in a Changing World:
New Drive for Rural Development”

Getting the Most Out of Scarce Water: Adapting Dryland Cereals to Forthcoming Agricultural Transitions in Sub-Saharan Africa

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Abstract

Times of major economic or environmental change cause change in agriculture. During such periods, new technologies such as crop varieties are needed, and research has the opportunity to make substantial positive impact. Such was the case during the green revolution in much of the world (except large parts of SS-Africa). A new period of agricultural transition is now coming up caused by several major changes that are a threat and, under certain conditions, an opportunity for Africa: climate change and associated variation of rainfall patterns, population growth, and rising prices of fossil fuels. All three contribute to rising grain prices on the world market which in turn aggravate food security problems. This is potentially disastrous for the urban poor, but not necessarily bad news for farmers. A new wave of intensification is likely, and along with it, the conversion of subsistence into commercial farming systems.

SS-Africa's vast savannahs are the continent's potential bread basket wherever political stability enables development of sustainable, commerce driven intensification. What are the crop adaptations and what are the crop ideotypes that need to be developed to foster such development? This paper presents some old, recent and new hypothetical breeding strategies for sorghum and maize for drought prone environments in West Africa, and discusses them in the light of the expected agricultural transitions. It describes summarily how drought escape, avoidance and tolerance mechanisms might be combined with desirable agronomic traits to provide best fit changing climate and production systems and objectives. On this basis, the author identifies physiological, genetic and agronomic research issues that should be tackled urgently because, once again, applied science may lag behind the rapidly changing reality on the ground.

Keywords: Agricultural change, Sub-Saharan Africa