

# Environmental Change & Maize Innovation in Kenya: Exploring Pathways In and Out of Maize

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## 5 Orphans or Siblings? Opportunities and Constraints in Alternative Dryland Staple Crops

**Sorghum, millet, cowpea, pigeon pea and green grams: these resilient plants once dominated smallholder farms in the drought-prone regions of Eastern Kenya. But in the last 50 years these 'orphan crops' – as they are known today – have been all but replaced by a single crop: maize.**

There are many reasons why maize has displaced a suite of crops far better suited to dryland environments. Today, maize is economically, culturally and politically, the most important crop in Kenya. But for small-scale farmers in semi-arid areas, dependence on maize increases vulnerability to shocks and stresses. This became clear in recent years, when periods of extended drought and post-election violence and its aftermath left families in Eastern Kenya without maize and therefore without food.

Findings from STEPS research suggests that barriers to promoting the cultivation and consumption of these dryland crops may have been overstated. Dryland crops should not be thought of as 'orphans', but rather as 'siblings', grown in small quantities alongside maize on small plots of land. And while people do express a preference for maize consumption, our findings point to the pivotal role of markets in facilitating or constraining the adoption of these crops.

### CLIMATE CHANGE: AN OPPORTUNITY TO RE-THINK 'ORPHAN CROPS'

Climatic conditions and rainfall patterns are becoming increasingly difficult to predict in areas of Kenya already accustomed to periodic drought. Among participants in our multi-criteria mapping interviews there was a clear consensus across all sectors that pathways based on expanded cultivation of dryland crops were preferable to those based primarily on maize, particularly in the context of climate change and variability. Amongst farmers, these pathways rated particularly highly against

'stress tolerance' issues, as Figure 1 (on page 3) shows. Even among policy-makers and practitioners whose mandate includes the promotion of, or support for, maize agriculture, these 'alternative' pathways were rated surprisingly highly. Furthermore, policy-makers, science managers, and farmers alike stressed the fact that dryland crop farming is far less uncertain and unambiguously beneficial than maize agriculture.

### 'TRADITIONAL' CROPS, NEW PATHWAYS: DRYLAND CROPS AS CASH CROPS

Our research has revealed diverse pathways based on dryland crops: from intercropping for subsistence to new opportunities for cash cropping. For example, Farming Inputs Promotions Services (FIPS) have for some time been promoting cowpea and pigeon pea as cash crops, targeting new niche markets among urban consumers. In Eastern Kenya, a new market has recently opened up for sorghum. Farmers are organising themselves in response to a demand from a local brewery for a variety of sorghum that can be

#### Box 1: SORGHUM AS A CASH CROP

"Kenya's beer industry is turning to sorghum in an effort to reduce its longstanding reliance on the more expensive barley. Already, brewers have started substituting some of their imported raw materials in partnership with local sorghum farmers. Leading producer East African Breweries Ltd (EABL) and Equity Bank, the country's fastest growing bank, have joined hands to help farmers in arid regions grow sorghum for commercial purposes. Under the partnership, the bank will provide credit to farmers while EABL will guarantee a market for the crop .... Mr Mwangi [of Equity Bank] said local brewing firms have been reluctant to use sorghum – a hardy grain that yields considerably well in minimal rainfall and poor soils – because they were not sure that farmers could guarantee consistent supply."

Kitavi Mutua. Equity, KBL bank on sorghum for higher beer sales. 10 April 2009. [www.theeastafrican.co.ke](http://www.theeastafrican.co.ke)



*Sorghum farmers in Sakai.*

used in its processing (see Box 1). These examples show that there are a range of options based on dryland crops to suit the livelihood needs of different farmers. In each case, farmers can use the income to buy maize for family consumption. The challenges here are twofold. Firstly, farmers need to be confident there will be a market for their produce. Secondly, they need to be equally confident that when the time comes to purchase maize, it will be available and affordable.

However, while farmers with higher incomes are prepared to experiment with sorghum as a cash crop, many lower-income farmers are yet to be convinced. This point is particularly well represented by Figure 2, below, where the red arrows highlight the different market and economic barriers to success as perceived by low-income and high-income farmers.

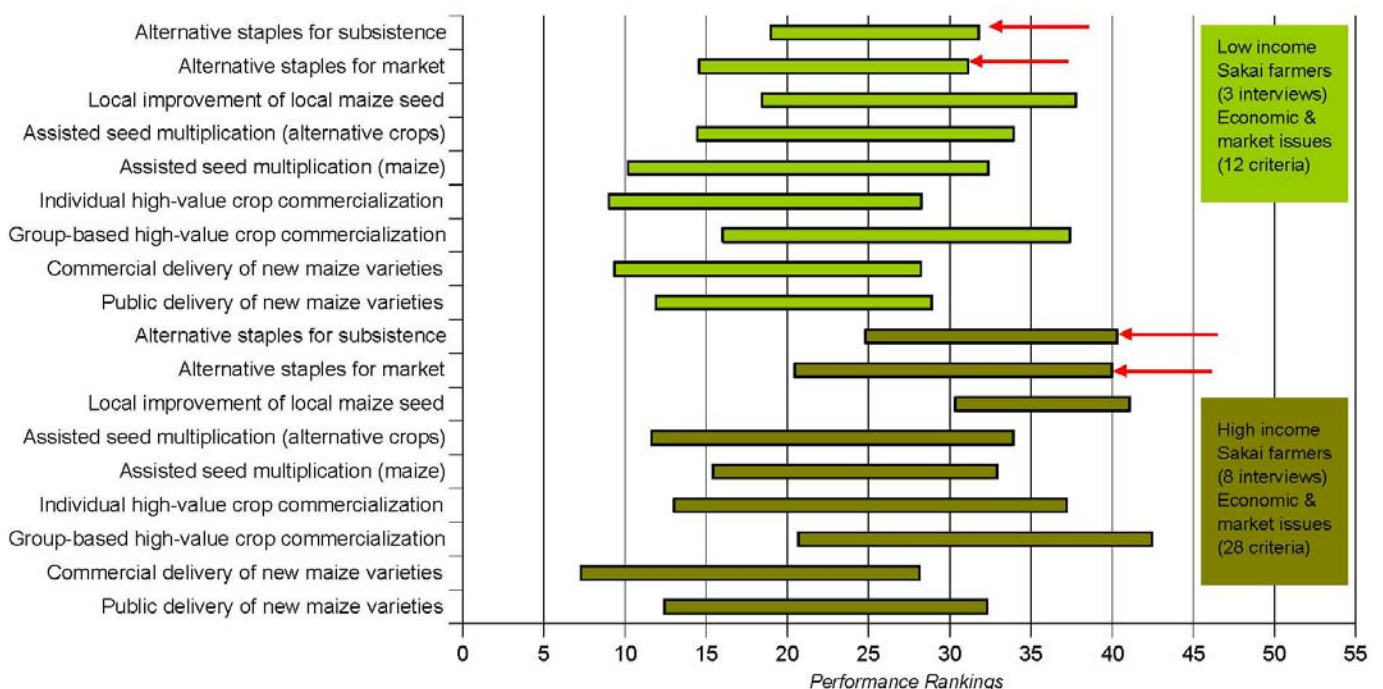
Those with higher incomes believed there to be greater potential for success in the pathways that had a diversity of crops, including alternative staples being sold at market. Moreover, they expressed less concern over the barriers to getting to market, and focussed more on the changes in behaviour that a market orientation in the pathway would lead them to adopt. Low-income farmers, on the other hand, were less enthusiastic because they believed there to be fewer market opportunities to sell alternative crops in comparison with maize and “the returns on investment would be too low” (low-income youth farmer, Sakai).

**POLICY IMPLICATIONS: FOCUS ON MARKETS, NOT PREFERENCES**

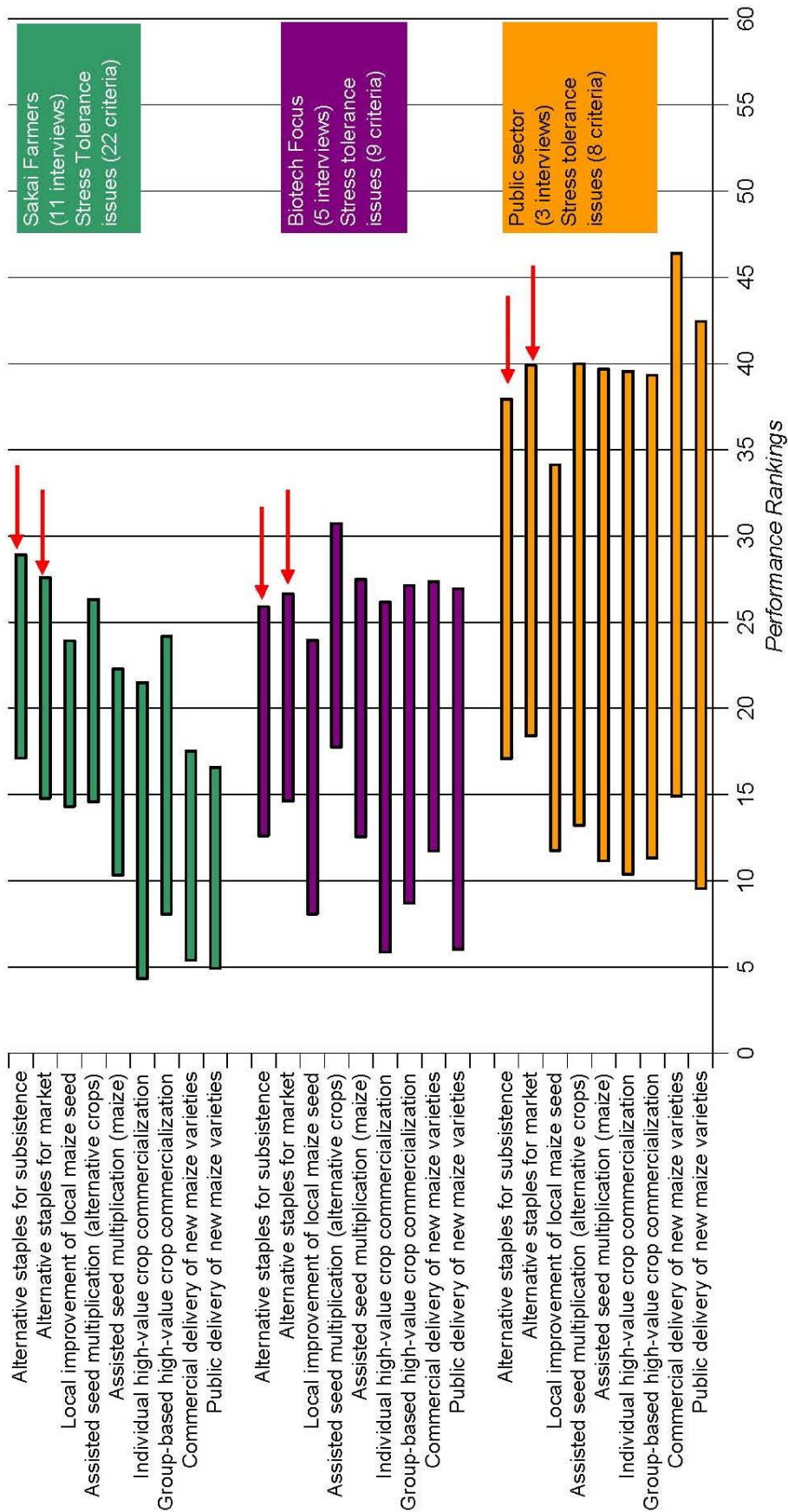
Pathways based on dryland crops, whether for subsistence or ‘farming as a business’, offer new opportunities to small-scale farmers in semi-arid areas of Eastern Kenya. Today, a shift in government policy away from maize, in favour of ‘rice, wheat, indigenous root crops like yams, cassava, sweet potatoes and arrow roots; and traditional cereals like millet and sorghum that are more suited to drier climate’ is an opportunity to be seized. (George Omondi. Kenya: Drought forces shift from maize to other cereals. 2 Oct 2009 <http://allafrica.com>)

A key challenge is to gain the confidence of lower-income farmers in emerging markets for these crops. It is these farmers who have the most to gain from these pathways out of the vulnerability of maize-dependence, towards more sustainable livelihood options.

**Figure 2: Performance rankings by low-income and high-income Sakai farmers of the nine pathways against economic and market criteria**



**Figure 1: Performance rankings by Sakai farmers, biotechnology focused and public-sector seed specialists, of the nine pathways under against the criteria of stress tolerance**



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