Report: Climate change to shift Kenya's breadbaskets

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Kenyan farmers and agriculture officials need to prepare for a possible geographic shift in maize production as climate change threatens to make some areas of the country much less productive for cultivation while simultaneously making others more maize-friendly, according to a new report prepared by the International Food Policy Research Institute (IFPRI) and the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA).

The report, released today by the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) at a high-level event with Kenya's agriculture and environment ministries, finds that overall, Kenyan farmers—who make up 75 percent of the country's labor force—may not only survive, but could even thrive in the face of climate change. The authors caution that there is a "low adaptive capacity" in Kenya's farming sector due to limited economic resources, heavy reliance on rainfed agriculture, frequent droughts and floods, and general poverty. But they believe there are reasons to be optimistic.

"As long as we offer farmers the right services and policies now, and more options in what they grow and where they grow it, Kenya can make a major transformation in its ability to cope with the changing climate," said Timothy Thomas, a research fellow at IFPRI and co-author of the analysis. "Climate predictions for Kenya's most important crop, for example, tell us where maize farmers may need to shift to other crops, where they might need to introduce drought-resistant varieties, and even new areas where maize can grow."

The assessment of how shifting weather patterns could alter farming and food security in Kenya between now and 2050 is one chapter in an upcoming book produced by IFPRI and CCAFS, East African Agriculture and Climate Change, which examines country-by-country how future growing conditions, as well as shifting demographics, could affect crop production and food security. The chapter on Kenya will help frame Kenya's landmark National Adaptation Planning (NAP) conference that gets underway today in Naivasha.

The NAP meeting is a collaborative effort organized by CCAFS and Kenya's agriculture and environment ministries. It is the first in what is expected to be a series of consultations to consider how Kenya should proactively deal with food production challenges and opportunities presented by climate change. It is attracting representatives from government, farmer organizations, research institutes, agriculture-oriented industries, and civil society groups who are seeking consensus on agriculture-related actions to be included in Kenya's National Climate Change Action Plan (NCCAP).

Crop models reveal opportunities for Kenyan agriculture

Predictions produced in the analysis of how climate change will affect farming in Kenya employed data from four different climate models to assess the impact on crop yields at over 6,000 locations.

One model revealed a potentially worrisome scenario: rising temperatures could make maize production impractical in parts of the Rift Valley Province and cause yields in Coast Province to fall as much as 25 percent. Another model offered a very different scenario. It showed growing conditions actually improving throughout the country, boosting maize yields everywhere, "including large areas with a yield increase of more than 25 percent." Notably, all models showed rainfall increasing in certain arid and semi-arid regions of Kenya, such as Kitui,

Samburu and Isiolo counties, which would allow maize to be grown in places that previously have been too dry to support the crop. Also, models showed that some areas in higher elevations, which may have been too cold for maize to thrive in the past, would be warm enough for maize to grow in the future.

"Despite the uncertainties, the science clearly shows us that big changes are likely to occur and we need to have a number of options available so farmers can adapt to the new conditions they will encounter," said Michael Waithaka, a co-author of the report, who leads the Policy Analysis and Advocacy Program at ASARECA. "The best way to do that is to strengthen the agricultural research institutes, so they can develop new varieties and other innovations, and also support the extension services that are crucial to delivering new ideas and practices to farmers," Waithaka added.

For example, Waithaka noted that if climate change stunts maize production in parts of Kenya, one option would be to help farmers migrate to new maize-friendly areas. Another option might be to help farmers find better crops to grow in their current locations. Waithaka said that, overall, it is important to help farmers improve their practices, diversify their crops, and adopt new varieties so they can boost food production even as growing conditions change.

The analysis also offers a mix of good news and bad news for another important food crop: wheat. It shows a potential for wheat yields to fall in areas north of Mount Kenya and east of Mount Elgon while increasing in "a small area of the Central Rift Valley and neighboring Central Province."

Partners support "Climate Smart Villages" to prepare farmers

CCAFS is already working with the Kenyan government and other

partners to ensure farmers are in a position to adapt to any changes that might occur. Researchers, development partners, and farmers have recently established "Climate Smart Villages" across East Africa. One climate smart village established in 2011 in Western Kenya's Nyando Basin—one of the most food insecure regions of Kenya that is prone to droughts and flooding—is already seeing the benefits. Farmers are now using faster maturing Gala goats, red Maasai sheep and chickens, along with improved cassava varieties that resist a deadly virus. They also are growing high-value crops like tomatoes, onions and watermelons.

The Climate Smart Villages initiative is testing a range of crops, technologies and farming methods that are best suited for a particular community. Eventually, they could be adopted by farmers throughout Kenya to boost overall food production even in the face of more difficult growing conditions. For example, CCAFS is working with the Kenya Agricultural Research Institute (KARI) and the Ministry of Agriculture to introduce sorghum, pigeon peas, cowpeas, green grams and sweet potatoes to supplement maize and other traditional staples.

"By supporting the creation of climate-smart villages and pursuing this very inclusive adaptation planning process, Kenya is leading by example for how we can ensure African farmers are prepared for climate change," said James Kinyangi, CCAFS regional program leader for East Africa. "Kenya's leadership in adaptation planning is particularly important," he added, "given that international negotiations to mitigate the effect of climate change by reducing greenhouse gas emissions are basically at a stand-still."

Provided by CGIAR