CGIAR
RESEARCH PROGRAM ON
Climate Change, Agriculture and Food Security
CCAFS

CCAFS Mitigation Options Tool

An easy-to-use, free tool identifies opportunities for reducing emissions from agriculture.

Together, agriculture, forestry and land use change produce nearly a quarter of global greenhouse gas emissions — almost twice the emissions from transportation. Unlike other sectors, however, the land use sector has the potential not only to reduce emissions, but to reverse them. Healthy soil, trees and rangelands can serve as powerful carbon sinks. Yet shifting agricultural practices to mitigate climate change requires technical knowledge that most farmers and farm advisors lack.

To identify practices that reduce emissions and sequester carbon, farmers and other decision makers need to know the options available for specific production systems in specific locations, and they need to be able to compare the emissions associated with different choices. Obtaining and applying this information is a specialized and time-consuming task.

The CCAFS Mitigation Options Tool (CCAFS-MOT) offers decision makers a shortcut. This new decision-support tool is being developed by the University of Aberdeen and the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) to provide fast, accessible information on mitigation options for agriculture.

Fast facts

- The University of Aberdeen and CCAFS are developing a simple tool for practitioners to quickly identify and compare mitigation options for agriculture.
- The CCAFS-MOT tool takes account of current farming practices and growing conditions to suggest a wide range of mitigation options. It covers 34 crops, as well as livestock, agroforestry and rice systems.
- Future versions of the tool may include more information about production systems, yield assessments, adaptation benefits and other factors.
- The Excel-based tool is free and downloadable from the CCAFS website.

A calculator that provides options

CCAFS-MOT differs from existing agricultural greenhouse gas emissions calculators. Rather than estimating emissions from a given farm or practice, it suggests mitigation options that are well suited to the production system, soils and climatic conditions of the farm. The suggestions are based on empirical models and data from over a dozen different research studies.

Anyone can learn to use the tool in a few minutes. Users enter information into an Excel sheet about current local climate, soil characteristics and farming practices, and CCAFS-MOT then calculates the system's current emissions and identifies options for reducing them. The emissions for each mitigation option are ranked, allowing a quick comparison of their potential impact. Entering the data takes less than ten minutes for any one set of practices.

The tool is currently available in a test version. Once fully developed, CCAFS-MOT will compare the emissions savings from alternative practices with other benefits like yield improvements, cost-effectiveness and links to climate change adaptation. CCAFS is currently consulting with policy makers and practitioners around the world to ensure the final tool fits their information needs.

Testing the tool

The first version of CCAFS-MOT was created in 2013. Since then, the research team has shared the tool with governments, extension workers, producers' associations and NGOs, as well as researchers from CGIAR, academia and other institutions, and CCAFS-MOT has been refined based on their feedback. For example, some data

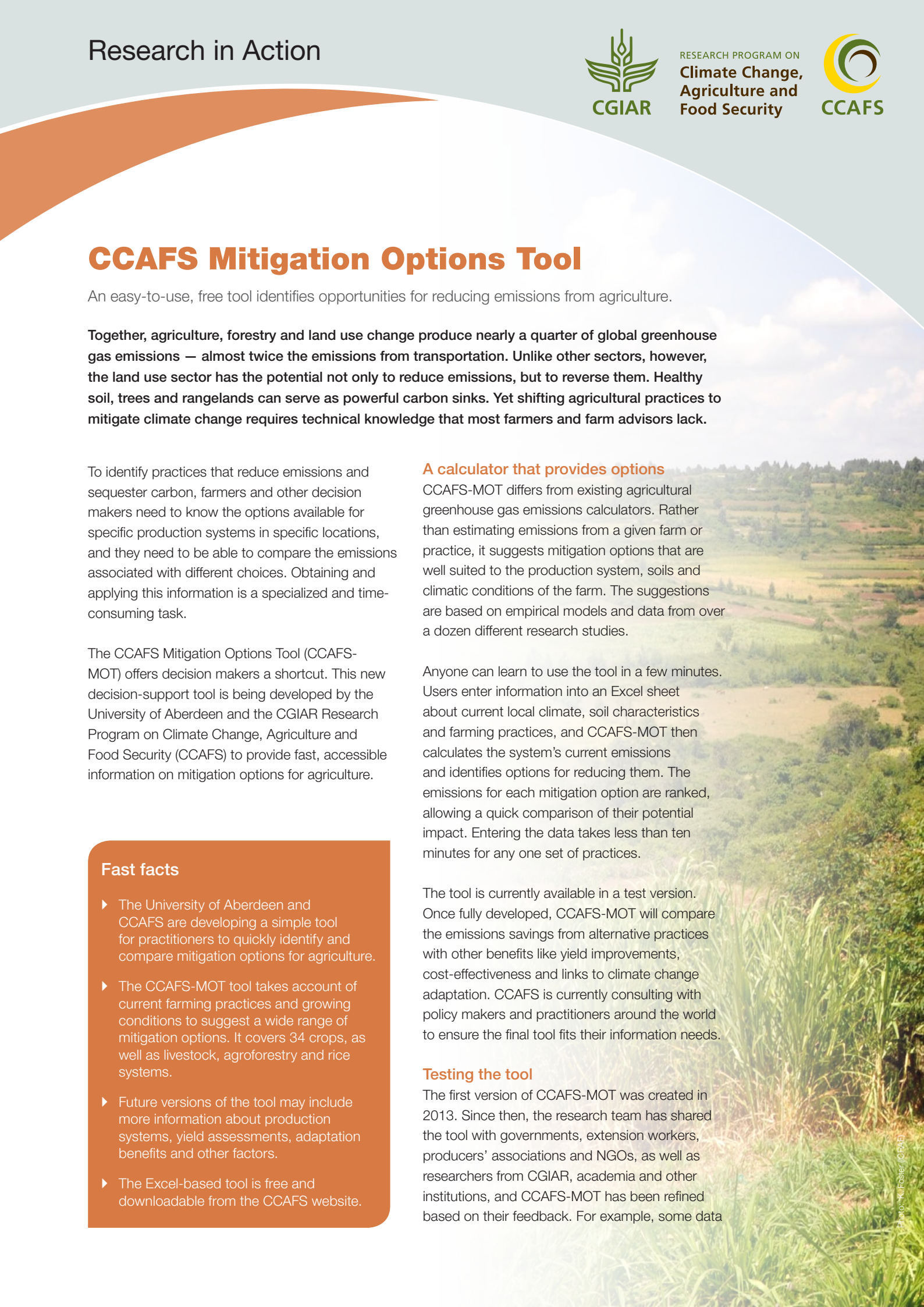
Photo: K. Foster (CIAT)

required by the original tool, such as soil pH or fertilizer usage, is not widely available. At the request of rural practitioners, CCAFS-MOT developers added a "simplified input" mode, which uses default values or simple multiple-choice questions for these items. Another user-driven change is the addition of a new section on tree crops, including cacao, coffee and palm.

Practitioners will also test CCAFS-MOT on the ground. For example, the Brazil-based NGO Imaflora plans to experiment with the tool, report back on their experience and provide suggestions for further improvements. These trial runs help to ensure that CCAFS-MOT offers effective support for designing farmer-friendly mitigation programmes.

Putting mitigation in context

The CCAFS-MOT team is gathering additional information to include in the tool's calculations and advice. For instance, they are coordinating with the International Center for Tropical Agriculture (CIAT), which has been developing a separate approach for evaluating adaptation options. The hope is to link the two tools.

CCAFS-MOT will be most useful, says team leader Diana Feliciano, if it can inspire solutions to the obstacles that keep people from adopting sustainable practices in agriculture. "These tools don't do anything on their own," says Feliciano. "They need to be used as a platform to discuss the problems and find the solution."

For example, integrating tree planting into cropping or livestock systems can sequester carbon, diversify the food supply and even fight drought and soil erosion. But it won't happen unless farmers see the benefits and have the skills, supportive policies and financing to make the transition. Feliciano explains, "You can't isolate a challenge like mitigation. Mitigation options need to fit into the wider context of food security and climate change adaptation."

Photo: IRRI

Gathering feedback

Instead of basing their tool on research from a single institution or location, CCAFS and the University of Aberdeen are soliciting the broadest possible feedback to make CCAFS-MOT more useful and accessible. Organizers have held international workshops in Rome and Lima, and national planners, practitioners, researchers and CCAFS project leaders have met in a series of webinars to review and comment on the tool.

Participants are interested in CCAFS-MOT for a variety of reasons. Some of the possibilities they mention include:

- The ability to estimate emissions and explore mitigation options for maize, rice, potato and livestock systems.
- The potential to link mitigation and adaptation strategies.
- An increased understanding of how agroforestry contributes to mitigation, with an eye toward applying for carbon credits.
- The capacity to compare the tool's calculated emissions with field measurements.

To find out more about the CCAFS Mitigation Options Tool please visit: http://ccafs.cgiar.org/ccafs-mot


Photo: IRRI

About CCAFS

The CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) is a strategic partnership of CGIAR and Future Earth, led by the International Center for Tropical Agriculture (CIAT). CCAFS brings together the world's best researchers in agricultural science, development research, climate science and earth system science, to identify and address the most important interactions, synergies and tradeoffs between climate change, agriculture and food security. www.ccafs.cgiar.org

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