

AGRICULTURE

Mapping out a more secure food future

By bringing together information from multiple sources, IIASA's researchers and collaborators are developing more accurate maps of global cropland.

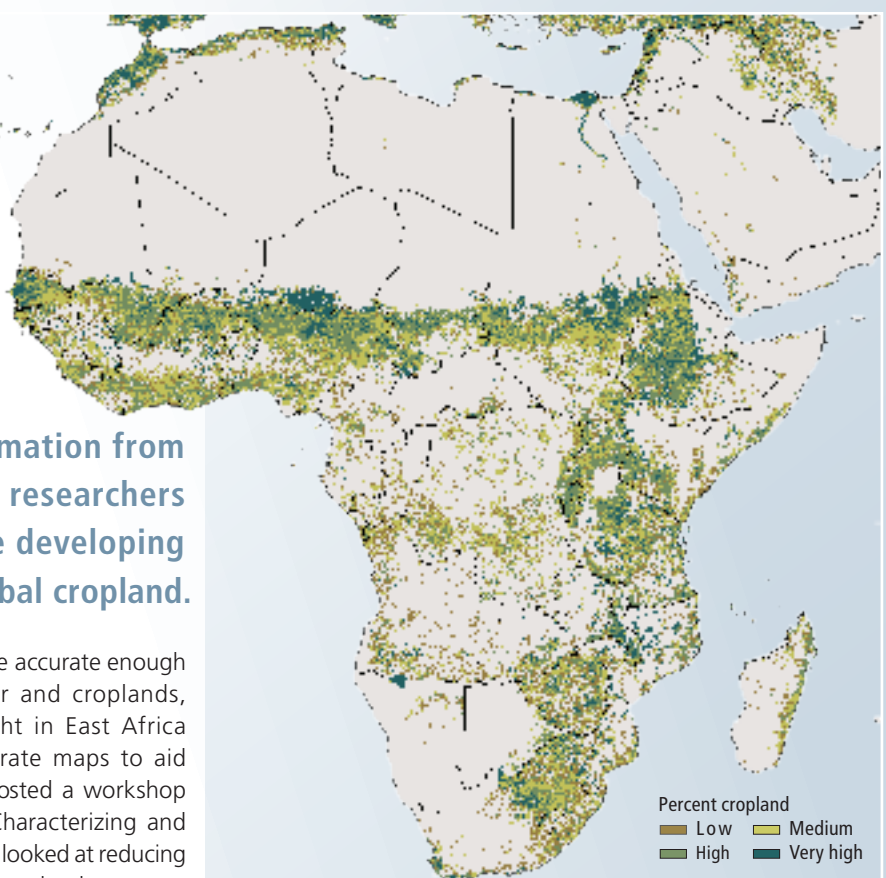
Existing mapping tools are failing to provide accurate enough information on the world's land cover and croplands, particularly in Africa. With the drought in East Africa highlighting the urgent need for accurate maps to aid agricultural decision making, IIASA co-hosted a workshop attended by over 70 international experts, "Characterizing and Validating Global Agricultural Land Cover," which looked at reducing inaccuracies in the mapping of croplands and rangelands.

Satellite imagery combined with ground-based data and spatial mapping tools can make an enormous difference to agricultural decision making from global to local levels. Accurate estimates of cropland are crucial to meeting the needs of the food security and land use modeling communities. Yet, existing global land cover tools fail even to provide consensus on the extent of cropland areas. One recent estimate puts the global area under cropland at between 1.22 and 1.71 billion hectares.

Encouraging developments, however, are on the horizon. These include the production of 30 million global land cover products by China and the USA, which are scheduled for release in December 2013, as well as the high-resolution spatial and temporal data that will be provided by the European Space Agency's Sentinel satellites at some point in the future. But as IIASA's Dr. Steffen Fritz points out: "While this progress is welcome, we need a solution that delivers more accurate cropland information in the short term."

This could be achieved, experts suggest, if the research and national map-making communities could be mobilized to share the data and products which already exist. "If national and regional products were to be made freely available, then an even more accurate cropland extent map could be developed for Africa and globally at minimal cost," Dr. Fritz explains.

Prior to the IIASA workshop which took place in June 2011, experts had contributed their own cropland maps and other geo-tagged data for use in the compilation of a new cropland extent map at a 1 km resolution to initiate the process of data sharing. At the workshop, international experts on remote sensing, land cover, land use, cropland and rangeland mapping, crop type



CROPLAND IN AFRICA The hybrid map of cropland in Africa will be a living product that is continuously updated when new and better land cover information becomes available.

mapping and area estimation discussed how to improve these maps, with an initial focus on African cropland.

IIASA researchers are currently leading a project to build this information into a "living," community-based consolidated cropland map for Africa. Using the products contributed by workshop participants, this map will be calibrated with national and subnational crop statistics. Validation will involve the wider community using crowd-sourced data from *agriculture.geo-wiki.org* and *Google Earth*. The first version of the map is expected to be published by the end of 2011 (download to be available from *geo-wiki.org*).

"This hybrid map will be a living product that will be continuously updated when new and better land cover information becomes available," explains IIASA's Linda See, co-organizer of the workshop. "The process of data sharing, which began with the workshop, should be seen as the start of a continuing process. The agricultural community is encouraged to take part by providing more national and regional data on croplands, both to help validate the product and to improve our current knowledge of how much cropland there is and where it is actually located." ■

Further information Characterizing and Validating Global Land Cover Workshop, IIASA 13–15 June 2011, Workshop Report. Available online at www.iiasa.ac.at/Research/FOR/IC/IIASAWorkshopReportJun2011.pdf.

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