

Smallholders' global food production underestimated

By [Munyaradzi Makoni](#)

19 Dec 2018

The proportion of smallholder farms globally may be much larger than previously thought, suggesting that their current contribution to global food production could be underestimated, a crowdsourcing study reveals.



Farmer irrigating vegetables in Mali ©Tingju Zhu/IFPRI

According to previous studies, smallholder farms — agricultural fields less than around two hectares in size — make up between 12 and 24% of the global agricultural area. But the findings of a study published in *Global Change Biology* last month (22 November) show that smallholder farms form up to 40% of the global agricultural area.

"We found that in Africa and Asia smallholder farms occupy up to 78% and 72% of total agricultural area respectively," says Myroslava Lesiv, a co-author of the study and a mathematician in ecosystems services and management at the International Institute for Applied Systems Analysis, Austria.

Lesiv tells SciDev.Net that in Latin America highest coverage of smallholder farms could be up to 47% in Colombia, 70% in Ecuador and 80% in Peru.

Researchers conducted a field size dataset collection campaign in June 2017, lasting four weeks, with participants visually interpreting very high-resolution satellite imagery from Google Maps and Bing using the Geo-Wiki application.

Lesiv says they improved the quality control mechanism and introduced field measuring tools to improve the accuracy of the data collected, making it now also possible to estimate the percentage of different field sizes at a global and continental scale as well as nationally.

Food security, systems and nutrition diversity

The researchers collected around 130,000 unique samples from the entire world rather than 13,000 collected during the 2011 campaign for 55 countries. Small-scale farming in communities in Africa where most of the people earn living and livelihoods from the practice could benefit from the data.

According to Lesiv, scientists can use the data to make recommendations to policymakers on food security, food systems and nutrition diversity. "We have filled the gaps in available information on global field size distribution by covering countries where no statistical surveys were carried out and no mapping has been done with the help of remote sensing," she explains.

African countries such as Ethiopia, Mali, Nigeria and Tanzania along with China, India and Indonesia, tend to have many small agricultural fields, the study found.

"Such a large share of smallholder farms in these countries indicates that there are many people living in poverty and have low nutritional diversity," explains Lesiv.

David Neves, senior researcher at the Institute for Poverty, Land and Agrarian Studies at the University of the Western Cape, South Africa, says that African policymakers would need to respond challenges faced by increased number of smallholders to help increase food production.

Estimating and mapping agricultural field size

Joseph W. Glauber, senior research fellow at US-based International Food Policy Research Institute, tells SciDev.Net: "The structural issue does not surprise me given the large land mass in Asia and Africa where many of the smallholders are located," adding that it would be more interesting to see the percentage of global production accounted for by smallholders.

The study presents an interesting new methodology for estimating and mapping agricultural field size globally, says Jean-Philippe Audinet, lead technical specialist at the International Fund for Agricultural Development.

"However, we are not convinced by the comparison with other estimates of prevalence of smallholder farms based on the FAO world census of agriculture," explains Audinet. "The figure of 4% of area of all fields being small fields may be true but we would suggest caution in interpreting the results of this study as the discovery of a new continent of smallholder farms."

This [piece](#) was produced by [SciDev.Net's sub-Saharan Africa](#) English desk.

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Munyaradzi Makoni is a freelance science Journalist from Zimbabwe but is currently based in South Africa. He has been a journalist for SciDev.Net since the 1990s, cutting himself as one of the most consistent and exemplary writers for the outlet.