From big to small: the significance of smallholder farms in the global food system

When many of us contemplate the role of agriculture in feeding 7.2 billion people, we picture large-scale, industrialised, and efficient systems that produce lots of food that is shipped around the world. Although those systems are relevant, they are only one dimension of what agriculture consists of, who feeds us, and where those farmers reside. Of the 570 million farms worldwide, 83% of which are in sub-Saharan Africa (9%) and Asia (74%), 475 million are smallholder farms (<2 hectares). These smallholder farms operate about 12% of the world’s agricultural land. They produce some of the major commodities consumed in the world and provide more than 70% of the food calories to people living in Asia and sub-Saharan Africa; yet many of these farmers are poor and somewhat neglected. These farmers lack the necessary capital for rural development and transformation, including natural, built, human, social, political, and financial capital.

A requisite exists to support all sizes of farms to ensure that a consistent, sustainable supply of diverse, nutritious, and safe foods are available and accessible to all through their food systems and environments. However, many question whether food systems—consisting of many actors in the agricultural food chain—are fulfilling human health and nutrition requirements. Looking at statistics, the state of the world’s food systems is bleak: roughly 793 million go to bed hungry, 125 million children under the age of five years are stunted, 21 billion adults are overweight and obese, and many are deficient in key micronutrients, particularly iron, zinc, and vitamin A. Poor diets play into these multiple burdens of malnutrition and are now considered the leading risk of the global burden of disease.

In this inaugural issue of Lancet Planetary Health, Mario Herrero and colleagues shed light on how smallholder farmers contribute to the quantity and quality of our global food supply. In their Article, they seek to better estimate where these farms are located, what agricultural commodities (plants, livestock, and fish) are produced from farms of different sizes, how diverse these commodities are, and what their relevance to nutrient production is.

First, they found that most large farms (>50 ha) are found in North America and South America, Australia, and New Zealand, and produce 75–100% of all cereal, livestock, and fruit in these regions, whereas small farms (<20 ha) found in sub-Saharan Africa, South Asia, southeast Asia, and China produce 75% of food commodities globally, and 50–65% of the production volume of major food groups. Very small farms (<2 ha) in the same region produce approximately 30% of most food commodities. Second, most of the commodities produced on small farms come from diverse landscapes, producing a variety of horticulture, roots, tubers, fish, and livestock, whereas most of the plantation-based crops, such as sugar and oil, are produced from less diverse landscapes, mainly large-scale farms. Finally, mixed production systems generate more diversity of key nutrients (zinc, iron, vitamins A and B12, and folate) essential for human health. Most global micronutrients (53–81%) and protein (57%) are produced on more diverse agricultural landscapes (H-index>1.5). One thing to note is that in farm landscapes with higher agricultural diversity and more nutrients generated from that diversity, farm size does not matter.

Herrero and colleagues’ findings show that the one-size-fits-all approach does not work for global food production. Both small and large farms play important roles in ensuring we have enough food that is diverse and nutrient-rich. While industrialised agriculture suggests domination of food systems, smallholder farms play a substantial role in maintaining the genetic diversity of our food supply, which results in both benefits and risk reductions against nutritional deficiencies, ecosystem degradation, and climate change. Herrero and colleagues argue that if we want to ensure that the global food supply remains diverse and generates a rich array of nutrients for human health, farm landscapes must also be diverse and serve multiple purposes.

However, the world is moving in the wrong direction. National food supplies have become more homogenous in the number of crops cultivated, which results in an interdependency among countries in accessing a diversity of foods and nutrients to meet human needs. Farm sizes are decreasing in Africa and Asia, and will continue to do...
As diminishing of genetic diversity across farms and decreasing land size is compounded by absolute poverty in rural places, will farmers abandon these small, yet diverse landscapes for off-farm opportunities or better livelihood strategies in urban centers?

Farmers grapple with many challenges: climate change, demographic shifts, migration, and food policy decisions, such as subsidies and trade, which affect decisions. Many smallholder farmers struggle to make ends meet, and historically, we have witnessed an urban bias and disinvestment in rural areas. It is crucial that we invest in smallholder farmers and their own rural transformation and human capital: we need to better connect rural farmers to markets, empower and engage women farmers, and jumpstart entrepreneurship among smallholder farmers. Food security and nutrition strategies are needed to ensure that farming families are healthy and capable of continuing to make important contributions to the overall dietary diversity of the world’s population.

Jessica Fanzo
John Hopkins Berman Institute of Bioethics, Nitze School of Advanced International Studies and Bloomberg School of Public Health, Johns Hopkins University, Baltimore, MD, USA
jfanzo1@jhu.edu

I declare no competing interest.

Copyright © The Author(s). Published by Elsevier Ltd. This is an Open Access article under the CC BY license.