Almost everybody eats a lot more than their grandparents did, and it’s more diverse

Global food supplies are on average more than 500 calories per day, per person, larger than they were 50 years ago. They are also more diverse—on both a larger list of different food crops, and a more equal contribution to food supplies from each of those crops. Food supplies that were primarily based on single staples a half century ago, for instance rice in Southeast Asia, diversifed over time to include other staples such as wheat and maize. The same was true for sorghum- and millet-based diets in sub-Saharan Africa, and maize-based diets in Latin America. Nicaragua (Figure 1), for example, reported a 52% increase from 1961 to 2009 in the number of crops contributing to calories in the national food supply, diversifying in particular by incorporating more rice, wheat, soybean, palm oil, and other oil crops.

One big caveat: we were only able to assess crops reported in FAO national food supply data, which are limited to measuring 52 crop-specific foods. While these include the most important crops globally, they certainly don’t cover all the plants that people eat. Crops not explicitly listed are either thrown into general categories such as “cereals, other” or aren’t measured at all, especially if they are only produced on a small scale, for local markets or in home gardens. We need better statistics about what people eat around the world, especially since studies have shown that many locally relevant crops that are invisible in global statistics are disappearing from the market.

Comparing countries’ current food supplies, we found that both the most and the least diverse were largely nations in Africa and Asia, and on small islands. Looking both at the number and the relative contribution of each of the plants listed in each nation’s food supply, Cameroon (Figure 2), Nigeria and Grenada had the world’s most diverse food supplies with regard to calories. Afghanistan, Bangladesh, and Cambodia, meanwhile, had the least, with Afghanistan listing only 38 plants, and with 74% of these calories from wheat alone.

Countries’ food supplies have become much more similar

As countries’ food supplies became more diverse, particularly by increasing the consumption of exotic crops that originated in distant regions of the planet, the global food supply became much more similar. African, Asian, and Pacific island countries remain the furthest distance from this convergence, and pull the current global average diet (center) a small distance away from the main cluster (Figure 3). In the current decade, the nations that most closely reflect the global average diet include Cape Verde, Colombia, and Peru. While the figure clearly shows that there is no such thing, in reality, as a global average diet, the movement of countries over time closer to this center bolsters the argument that a global average diet has more validity now that it did 50 years ago.

Crop immigrants are key to increasing dietary diversity

If there were crop “winners” over the past 50 years, among these would be the “mega-crops” (wheat, rice, maize and sugar), which maintained their global importance. The biggest winners, though, were oils such as soybean, palm, sunflower and rapeseed, which progressed from regional significance to global dominance as contributors to calories and fat over five decades (Figure 3). As the winners came to take more precedence in food supplies around the world, traditional cereals such as sorghum, millets, and eye, and starchy roots such as cassava, sweet potatoes, and yam, were marginalized.

The diversification of countries’ food supplies over the past 50 years seems to have largely come about by introducing exotic crops that were originally domesticated in far-flung regions of the world. For example, traditional rice-based diets in Southeast Asia diversified to include more non-traditional staples such as wheat (originally from West Asia) and maize (Mesoamerica). In related research on the origins of food crops, we found that about 69% of plants consumed around the world are “foreign” in the sense that they originated elsewhere. Countries’ consumption of crop “immigrants” significantly increased over the past five decades, especially in nations that developed new agricultural production industries based on these exotic plants. Brazil’s investment in the cultivation of soybean, a crop with origins in East Asia, massively increased the availability of the crop - and of vegetable oil in general - in the country’s food supply, while marginalizing traditional plant fats such as groundnut/peanut (Figure 4).

The comprehensive study of changing diversity in national food supplies encompassed more than 50 crops and over 150 countries (accounting for 98 percent of the world’s population) during the period 1961-2009. A collaboration between CIAT, the Crop Trust, Wageningen University, and the University of British Columbia, the project was funded by the Crop Trust. The work was originally published in PNAS: Khoury et al. 2014. Increasing homogeneity in global food supplies and the implications for food security. PNAS 111(11): 4001-4006. doi: 10.1073/pnas.1313496111.

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