

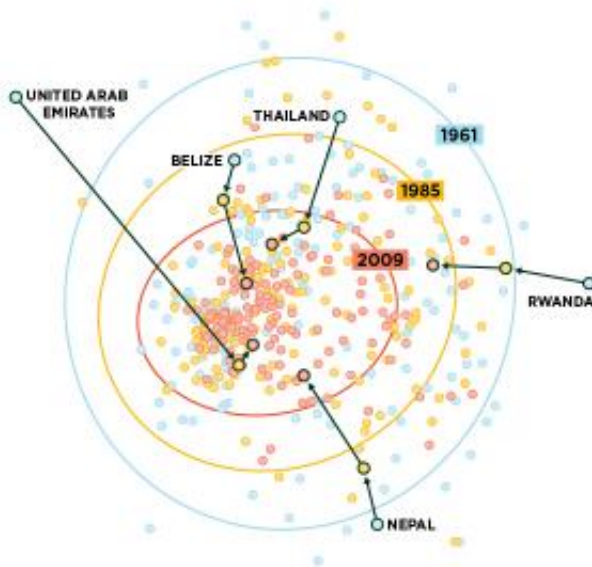
Increasing homogeneity of world food supplies warns of serious implications for farming and nutrition

March 3 2014

A study of the world's countries finds that over the last 50 years, diets have become ever more similar.

Each country's food supply composition in contribution to calories in:

1961 1985 2009



Source: Khoury et al. 2014. *Proc. Natl. Acad. Sci. USA*.

A study of the world's countries finds that over the last 50 years, diets have become ever more similar. This chart shows each country's food supply composition in contribution to calories in 1961, 1985, and 2009. Credit: Khoury et al. 2014. *Proc. Natl. Acad. Sci.*

A comprehensive new study of global food supplies confirms and thoroughly documents for the first time what experts have long suspected: over the last five decades, human diets around the world have grown ever more similar—by a global average of 36 percent—and the trend shows no signs of slowing, with major consequences for human nutrition and global food security.

"More people are consuming more calories, protein and fat, and they rely increasingly on a short list of major [food](#) crops, like wheat, maize and soybean, along with meat and dairy products, for most of their food," said lead author Colin Khoury, a scientist at the Colombia-based International Center for Tropical Agriculture (CIAT), which is a member of the CGIAR Consortium. "These foods are critical for combating world hunger, but relying on a global diet of such limited diversity obligates us to bolster the nutritional quality of the major crops, as consumption of other nutritious grains and vegetables declines."

The new study, published in the *Proceedings of the National Academy of Sciences*, suggests that growing reliance on a few food crops may also accelerate the worldwide rise in obesity, heart disease and diabetes, which are strongly affected by dietary change and have become major health problems, "even within countries still grappling with significant constraints in food availability." The study calls for urgent efforts to better inform consumers about diet-related diseases and to promote healthier, more diverse food alternatives.

The research reveals that the crops now predominant in diets around the world include several that were already quite important a half-century ago—such as wheat, rice, maize and potato. But the emerging "standard global food supply" described by the study also consists of energy-dense foods that have risen to global fame more recently, like soybean, sunflower oil and palm oil. Wheat is a major staple in 97.4 percent of countries and rice in 90.8 percent; soybean has become significant to

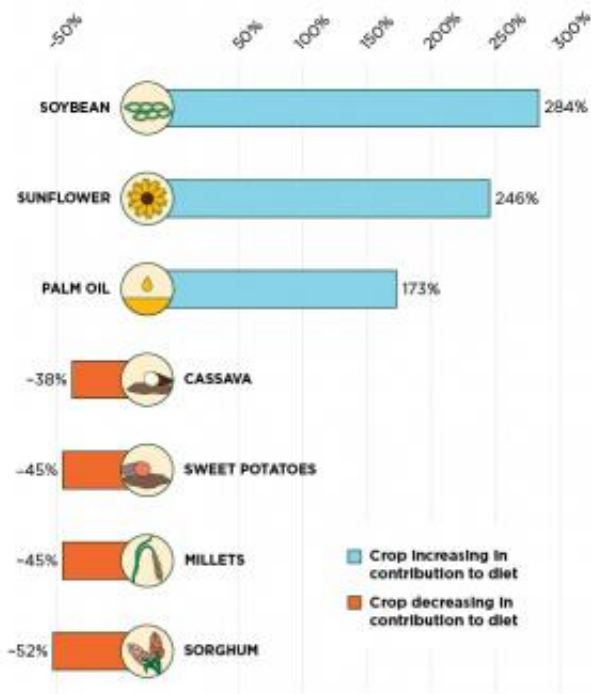
74.3 percent of countries.

In contrast, many crops of considerable regional importance—including cereals like sorghum, millets and rye, as well as root crops such as sweet potato, cassava and yam—have lost ground. Many other locally significant grain and vegetable crops—for which globally comparable data are not available—have suffered the same fate. For example, a nutritious tuber crop known as Oca, once grown widely in the Andean highlands, has declined significantly in this region both in cultivation and consumption.

Over the last 50 years, the global diet has shifted dramatically, including greater amounts of major oil crops and lesser quantities of regionally important staples.

Average change in the calories from crops in national diets worldwide, 1961-2009

Percent change in calorie contribution to diet



Source: Khoury et al. 2014, Proc. Natl. Acad. Sci. USA.

Over the last 50 years, the global diet has shifted dramatically, including greater amounts of major oil crops and lesser quantities of regionally important staples. This chart shows the average change in the calories from crops in national diets worldwide, 1961-2009. Credit: Khoury et al. 2014. *Proc. Natl. Acad. Sci.*

"Another danger of a more homogeneous global food basket is that it makes agriculture more vulnerable to major threats like drought, insect pests and diseases, which are likely to become worse in many parts of the world as a result of climate change," said Luigi Guarino, a study co-author and senior scientist at the Global Crop Diversity Trust, headquartered in Germany. "As the global population rises and the pressure increases on our global food system, so does our dependence on the global crops and production systems that feed us. The price of failure of any of these crops will become very high."

As the authors probed current trends in food consumption, they documented a curious paradox: as the human diet has become less diverse at the global level over the last 50 years, many countries, particularly in Africa and Asia, have actually widened their menu of major staple crops, while changing to more globalized diets.

"In East and Southeast Asia, several major foods—like wheat and potato—have gained importance alongside longstanding staples, like rice," Khoury noted. "But this expansion of major staple foods has come at the expense of the many diverse minor foods that used to figure importantly in people's diets."

The dietary changes documented in the study are driven by powerful social and economic forces. Rising incomes in developing countries, for example, have enabled more consumers to include larger quantities of animal products, oils and sugars in their diets. Moreover, urbanization in

these countries has encouraged greater consumption of processed and fast foods. Related developments, including trade liberalization, improved commodity transport, multinational food industries, and food safety standardization have further reinforced these trends.

"Countries experiencing rapid dietary change are also quickly seeing rises in the associated diseases of overabundance," said Khoury. "But hopeful trends are also apparent, as in Northern Europe, where evidence suggests that consumers are tending to buy more cereals and vegetables and less meat, oil and sugar."

The researchers single out five actions that are needed to foster diversity in food production and consumption and thus improve nutrition and food security:

- Actively promote the adoption of a wider range of varieties of the major crops worldwide to boost genetic diversity and thus reduce the vulnerability of the global food system in the face of challenges that include climate change, rising food demand, and increased water and land scarcity. This action is especially important for certain crops, like banana, for which production is dominated by a very few, widely grown commercial varieties.
- Support the conservation and use of diverse plant genetic resources—including farmers' traditional varieties and wild species related to crops—which are critical for broadening the genetic diversity of the major crops. Key measures needed are more vigorous implementation of the International Treaty on Plant Genetic Resources for Food and Agriculture to better safeguard and share these genetic resources internationally, and increased investment in crop breeding and related research.
- Enhance the nutritional quality of the major crops on which people depend—for example, through crop breeding to improve the content of micronutrients like iron and zinc—and make

supplementary vitamins and other nutrient sources more widely available.

- Promote alternative crops that can boost the resilience of farming and make human diets healthier through research aimed at making these crops more competitive in domestic and international markets. Key measures include identifying and conserving nutritious locally grown "neglected and underutilized" crops, fostering their production potential through crop breeding, and increasing their use through awareness raising and policy.
- Foster public awareness of the need for healthier diets, based on better decisions about what and how much we eat as well as the forms in which we consume food.

This comprehensive new study, relying on data from the Food and Agriculture Organization of the United Nations (FAO), encompassed more than 50 [crops](#) and over 150 countries (accounting for 98 percent of the world's population) during the period 1961-2009. In addition to CIAT and the Global Crop Diversity Trust, it involved researchers from Wageningen University in The Netherlands and the University of British Columbia in Canada.

"International agencies have hammered away in recent years with the message that agriculture must produce more food for over 9 billion people by 2050," said co-author Andy Jarvis, director of policy research at CIAT and leader for climate change adaptation with the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS), which CIAT leads. "Just as important is the message that we need a more diverse global food system. This is the best way, not only to combat hunger, malnutrition, and over-nutrition, but also to protect global food supplies against the impacts of global [climate change](#)."

More information: Increasing homogeneity in global food supplies and the implications for food security, *PNAS*,

www.pnas.org/cgi/doi/10.1073/pnas.1313490111

Provided by CGIAR Consortium

Citation: Increasing homogeneity of world food supplies warns of serious implications for farming and nutrition (2014, March 3) retrieved 11 September 2024 from <https://phys.org/news/2014-03-homogeneity-world-food-implications-farming.html>

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