

Where Did Your Favorite Food Come From?

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STORY AT-A-GLANCE

- › In the 1920s, Russian scientist Nikolai Vavilov developed a theory that crops must have originated in the regions of the world where they appear in the greatest diversity
- › A study by a team from the International Center for Tropical Agriculture (CIAT) used Vavilov's theories, genetics, botany, diet statistics from food production in 177 countries and other sources to expand on the initial research
- › Over the last 50 years, "local foods" have blended, and the "standard global diet" now depends on a much smaller number of basic crops for more of its food, potentially leaving food sources vulnerable should there be a global crisis

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Have you ever wondered what our ancestors ate and where their foods came from? How many food-based plants grew wild, and how many of these foods were improved through cultivation? Another question is how is it possible that some of the same foods that grew wild in South America have also been available to sustain huge numbers of people in China, Russia and India?

A comprehensive study, called "Origins of Food Crops Connect Countries Worldwide,"¹ tackled these concepts on a grand scale by determining, for the most part, where many of our planet's main food crops originated.

In many areas of the world, researchers found that some plants intermingled with domesticated or cultivated varieties. Several nearly identical foods appear to have

originated in different areas of the world, perhaps because some seed crops were carried to new regions thousands of years ago.

Lead researcher Colin Khoury, who studies plants at the International Center for Tropical Agriculture (CIAT) in Colombia, working with the U.S. Department of Agriculture (USDA), said their calculations affirmed what they were already convinced of – that "our entire **food system** is completely global."²

As a basis for their research, the team began piecing together what they already knew, based on the work of Russian scientist Nikolai Vavilov, who in the 1920s explored the ways specific geographical regions around the world contributed to the way people ate.

Where Did Our Food Crops Originate, and What's Changed?

Vavilov deduced that areas where crops were domesticated millennia ago, say in Eastern Asia or South America, produced greater diversity. As NPR explains it:³

"The region where a crop had been domesticated would be marked by the greatest diversity of that crop, because farmers there would have been selecting different types for the longest time. Diversity, along with the presence of that crop's wild relatives, marked the center of origin."

Using the genetics, phylogeography, botany and linguistics studies amassed by scientists over the last century, Khoury and his team set about identifying where the foods that sustained different cultures and successive generations had originated.

As a matter of fact, more than two-thirds of the crops eaten by people from any given geographical region originally came from someplace else – sometimes from far away or even another continent. **Thai chilies**, for instance, actually originated in Central America. Tomatoes, usually associated with Italy, came from the Andes Mountain area.

According to Encyclopedia Britannica,⁴ radiocarbon dating indicates that early agriculture might date back to about 8,000 B.C., if not earlier. The Fertile Crescent,

roughly encompassing the Middle East and the Mediterranean basin, has cultivated wheat and barley related to wild grasses since about the 9th century B.C.

The 'Globalized Diet'

Khoury's group found in earlier data and studies from the last decades that what has been thought of as an area's "local cuisine" has begun to blend. The "standard global diet" depends on a much smaller number of basic crops for a lot more of its food. As reported by NPR:⁵

"All over the world, people are eating a bigger variety of foods. But until now, no one had crunched the numbers to see whether global diets were overall getting less – or more – diverse ...

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."

The scientists found two trends that have begun impacting the calorie contribution to the collective diet, as well as other factors, and therefore peoples' overall health:

- In some areas of the world, people are eating a greater variety of foods and depend less on what their region has traditionally relied on for millennia as a main food source. For example, fewer people in China eat **rice**, while in the U.S., imported foods like coconut water and mangoes are now more commonplace.
- All over the globe, what we know as the "standard Western diet," including more wheat, potatoes and dairy products than most traditional diets, is available in every major city, from Cairo to Shanghai.

Simultaneously, "mega crops" such as tropically derived **palm oil** are becoming more similar to each other. NPR notes:⁶

"Smaller crops, meanwhile, are getting pushed aside. Sorghum and millet, for instance, are grown quite widely around the world, but they're losing out to corn

and soybeans. Other small crops that you only find in certain areas could disappear altogether."

Crunching the Numbers

Using Vavilov's original methods, Khoury's team of researchers mapped out the origins of 151 different crops over 23 geographical regions, comparing national statistics for food production and consumption in 177 countries. Their results revealed the food sources of a staggering 98.5% of the world's population.

They examined what farmers grew according to country, plotted whether the crops were original to the area or came from a foreign source, and found that foreign crops comprised 69% of most countries' food supply and farm production. Some crops, like [wheat](#), are grown today in more than one primary region of diversity.⁷

According to their research, they reported the regional importance of food in relation to calories, protein, fat, traditional crop production and the average percentage rate of certain foods' decline worldwide from 1961 through 2009.⁸ Some have gone up (+) and some have gone down (-):

Sorghum	-52%
Millet varieties	-45%
Sweet potatoes	-45%
Cassava	-38%

Meanwhile, crops that have increased in contribution to national diets worldwide, on average, include:

Soybeans	+284%
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Sunflower	+246%
Palm oil	+173%

Reasons for these trends, Khoury says, can be attributed to a number of factors, such as the rise of international trade, more people living in urban areas, greater access to supermarkets where foods from all over the world are available and less reliance on household or community gardens.

One of the problems these statistics presents is that, if the world's dependence on fewer mega crops perpetuates, vulnerability for a greater number of people presents itself; any one of them could be hit by disease (the potato famine in Ireland, for example) or a global disaster, such as earthquakes, tsunamis, floods and drought.

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The map Khoury and the researchers produced is a detailed "food origins" map, based on Vavilov's nearly century-old findings, showing whether foods originated in that region or from someplace else altogether. In the United States, for instance:⁹

"Diet depends on crops from the Mediterranean and West Asia, like wheat, barley, chickpea, almonds and others. Meanwhile, the U.S. farm economy is centered on soybeans from East Asia and maize from Mexico and Central America, as well as wheat and other crops from the Mediterranean.

The U.S. is itself the origin of sunflowers, which countries from Argentina to China grow and consume ... Regions far from centers of agricultural biodiversity, such as North America, northern Europe and Australia, are most dependent on foreign crops.

By the same token, countries in regions of diversity that are still growing and eating their traditional staples – for example, South Asia and West Africa – were least dependent on foreign crops."

Strawberries, blueberries, [cranberries](#), grapes, pumpkins and sunflowers are foods that originated in North America, but grapes are also grown in the Middle East, Eastern Europe, the Eastern Mediterranean and China. Pumpkins started out in the Americas.

Fat- and oil-producing crops have seen the greatest change. Soybeans from East Asia are now grown in Brazil, and oil palm from West Africa is grown in Malaysia and Indonesia. "Now we know just how much national diets and agricultural systems everywhere depend on crops that originated in other parts of the world," Khoury said.¹⁰

Looking at Foods Through the Lens of Science and History

While most encyclopedias say cherry tomatoes are from South America, freelance science writer Anna Wexler was surprised to find that Israel claimed the mini veggies for themselves. She broached the topic in "Seeding Controversy: Did Israel Invent the Cherry Tomato?"¹¹ which appeared in *Gastronomica* in mid-2016.

But tiny tomatoes growing in amazing abundance on each tomato branch originated in Peru, Ecuador or possibly Southern Chile, asserts Arthur Allen, author of "Ripe: The Search for the Perfect Tomato," and who was featured in a *Gastropodcast*.¹² "That's where the wild tomatoes grow, that's where the original plants came from," Allen said.

Other experts say they were domesticated in Mexico, not South America, so did people in Mexico breed tomatoes before conquistadors arrived? Gastronomist anthropologists say they enjoyed a large array of different types, colors, shapes and sizes of tomatoes.

Wexler says the Spanish probably carried seeds back with them when they left the New World, because mentions of the mini tomatoes turn up in books written by Europeans in the early 1600s. It's an unsolvable mystery, however.

For modern tomato enthusiasts, cherry tomatoes, which were simply absent from the scene, seemed to "show up" sometime in the last few decades. Where were they between Aztec Mexico and the 1980s? Food sleuths investigated whether they were forgotten, then resurrected, so to speak, by Israelis.

Nachum Kedar, Ph.D., and Haim Rabinowitch, Ph.D., professors at the Faculty of Agriculture at the Hebrew University of Jerusalem, have been credited with developing the cherry tomato in the 1970s. However, Rabinowitch acknowledged that the cherry tomato existed before the 1970s and '80s, but had never caught on because they weren't very flavorful.

He explained that he and other researchers "pioneered the introduction and utilization of genes, which could slow down the ripening process, i.e., extending the shelf life of the fruit" so it could remain attached to the plant longer to "accumulate more sugars and other components contributing to its good flavor."¹³

Perhaps the terms "originated" and "improved" are simple semantics where tasty cherry tomatoes are concerned, but whatever the food, how do we, as keepers of our planet's sustainability, protect our foods and food sources?

Seed Saving – Protecting What We Have Left

Seeds have been saved and shared between farmers almost since the beginning of time. But since 1970, 20,000 seed companies have been absorbed by mega-corporations like Monsanto, which in 2005 bought Seminis, the world's largest fruit and vegetable seed company, for \$1.4 billion.

Farmers all over the world are now forced to buy patented, genetically engineered seeds every year from companies like Monsanto (which, in 2018, has been acquired by Bayer). Saving these seeds is illegal because it's considered patent infringement.

It's urgent that those controlling our food sources – in many cases, you – understand that seeds, the original "manufacturing plant" of all the foods we need as the human race, remain viable. Seed saving is available to all of us. But hundreds of plant varieties are lost to us because the food industry has been more focused on profitability.

While multinational corporations controlling 82% of the world's seed market select seed varieties according to their own financial interests (75% of the vegetable seed market),

agrichemical monopolies, genetically engineered crops and gene patenting threaten our environment, health and very existence.

There have been victories, however. In a Court of Appeals decision, "Monsanto may not sue any contaminated farmer for patent infringement if the level of contamination is less than 1%."¹⁴ While that may not seem like much, even though the Supreme Court ruled in favor of Monsanto on the larger issue of patent protection, the lower appeals court ruling protects farmers with less than 1% contamination.

Sources and References

- ¹ [The Royal Society June 15, 2016](#)
- ^{2, 3, 8, 9, 10, 13} [NPR June 13, 2016](#)
- ⁴ [Encyclopedia Britannica August 23, 2024](#)
- ^{5, 6} [NPR March 4, 2014](#)
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- ¹¹ [Gastronomica February 2, 2016 \(Archived\)](#)
- ¹² [The Atlantic June 14, 2016](#)
- ¹⁴ [EcoWatch July 30, 2021](#)