

# The Columbian Exchange

Explain the causes of the Columbian Exchange and its effects on the Eastern and Western Hemispheres.

AP World History - October 11, 2018



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## Introduction

Over the past few weeks we have been examining how the global network began and how it was held together. Through a combination of state and non-state actors, the Europeans used technology from around the world to build sea-based empires that were limited to the coastlines in Africa and Asia but were able to move inland in the Americas. Their wealth was acquired through moving Asian goods from one region to another or by using silver acquired from the Americas.

Along with these obvious economic impacts, there were also a variety of environmental impacts. The exchange of people, crops and livestock between Afro-Eurasia and the Americas was perhaps the largest in history. Entire populations and ecosystems were transformed through this process. The collective impact of these transfers is known as the “Columbian Exchange.” Over the course of the next few days we will examine a couple of examples of this process, starting with the potato.

### **How The Potato Changed The World by Charles Mann (Smithsonian Magazine)**

Hunger was a familiar presence in 17th- and 18th-century Europe. Cities were provisioned reasonably well in most years, their granaries carefully monitored, but country people teetered on a precipice. France, the historian Fernand Braudel once calculated, had 40 nationwide famines between 1500 and 1800, more than one per decade. This appalling figure is an underestimate, he wrote, “because it omits the hundreds and hundreds of local famines.” France was not exceptional; England had 17 national and big regional famines between 1523 and 1623. The continent simply could not reliably feed itself.

The potato changed all that. Every year, many farmers left fallow as much as half of their grain land, to rest the soil and fight weeds (which were plowed under in summer). Now smallholders could grow potatoes on the fallow land, controlling weeds by hoeing. Because potatoes were so productive, the effective result, in terms of calories, was to double Europe’s food supply.

“For the first time in the history of western Europe, a definitive solution had been found to the food problem,” the Belgian historian Christian Vandembroeke concluded in the 1970s. By the end of the 18th century, potatoes had become in much of Europe what they were in the Andes—a staple. Roughly 40 percent of the Irish ate no solid food other than potatoes; the figure was between 10 percent and 30 percent in the Netherlands, Belgium,

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Prussia and perhaps Poland. Routine famine almost disappeared in potato country, a 2,000-mile band that stretched from Ireland in the west to Russia's Ural Mountains in the east. At long last, the continent could produce its own dinner.

It was said that the Chincha Islands gave off a stench so intense they were difficult to approach. The Chinchas are a clutch of three dry, granitic islands 13 miles off the southern coast of Peru. Almost nothing grows on them. Their sole distinction is a population of seabirds, especially the Peruvian booby, the Peruvian pelican and the Peruvian cormorant. Attracted by the vast schools of fish along the coast, the birds have nested on the Chincha Islands for millennia. Over time they covered the islands with a layer of guano up to 150 feet thick.

Guano, the dried remains of birds' semisolid urine, makes excellent fertilizer—a mechanism for giving plants nitrogen, which they need to make chlorophyll, the green molecule that absorbs the sun's energy for photosynthesis. Although most of the atmosphere consists of nitrogen, the gas is made from two nitrogen atoms bonded so tightly to each other that plants cannot split them apart for use. As a result, plants seek usable nitrogen-containing compounds like ammonia and nitrates from the soil. Alas, soil bacteria constantly digest these substances, so they are always in lesser supply than farmers would like.

In 1840, the organic chemist Justus von Liebig published a pioneering treatise that explained how plants depend on nitrogen. Along the way, he extolled guano as an excellent source of it. Sophisticated farmers, many of them big landowners, raced to buy the stuff. Their yields doubled, even tripled. Fertility in a bag! Prosperity that could be bought in a store!

Guano set the template for modern agriculture. Ever since von Liebig, farmers have treated the land as a medium into which they dump bags of chemical nutrients brought in from far away so they can harvest high volumes for shipment to distant markets. To maximize crop yields, farmers plant ever-larger fields with a single crop—industrial monoculture, as it is called.

Before the potato (and corn), before intensive fertilization, European living standards were roughly equivalent to those in Cameroon and Bangladesh today. On average, European peasants ate less per day than hunting-and-gathering societies in Africa or the Amazon. The revolution begun by potatoes, corn and guano has allowed living standards to double or triple worldwide even as human numbers climbed from fewer than one billion in 1700 to some seven billion today.