



Chocolate pralines on an assembly line at a candy factory in Switzerland. *Opposite page, inset:* Cocoa beans are inside these pods from the cacao tree.

A Short, Sweet History of Chocolate



1519

Montezuma, the Aztec ruler, serves a **cocoa drink called *xocoatl*** (*shoh-KWAH-tul*), which means “bitter water,” to Spanish conquistador Hernán Cortés (*left*). Cortés likes it enough to take it back to Spain with him.



Mid-1500s to Mid-1600s

With cinnamon and vanilla added to reduce the bitterness, **the cocoa drink becomes a treat for Spain’s nobility.** It later becomes popular throughout Europe—still only as a beverage and for the elite.

A CHOCOLATE SHORTAGE?

Why the world's favorite treat could get a lot more expensive—and harder to find

The next time you're eating a piece of chocolate, slow down and savor every bite. There could come a day when this relatively cheap treat is a lot more expensive and harder to find. That's because the rate at which people are gobbling up chocolate far outpaces the rate at which farmers can produce cocoa, its key ingredient.

Cocoa is the powder or paste made from dried, crushed cocoa beans, the seeds of the cacao (*kuh-KOW*) tree. You can wolf down a chocolate bar in seconds, but cocoa beans are a labor-intensive crop that is difficult to grow.

Last fall, two major chocolate companies—Mars Chocolate, based in New Jersey, and Barry Callebaut, based in Switzerland—issued

a warning. If people keep eating so much chocolate, they said, there won't be enough to go around.

That day could arrive sooner than you think. In 2013, the world consumed about 77,000 tons more cocoa than was produced. The two chocolate makers estimate that the global cocoa **deficit** could reach 1.1 million tons by 2020, and 2.2 million tons by 2030.

Choconomics

Like all products, chocolate is subject to the law of supply and demand, a basic principle of **economics**. When **demand** (the amount people want to buy) is greater than **supply** (the

amount available), prices tend to rise. When supply is greater than demand, prices tend to fall. Demand for cocoa has exceeded supply for the last two years.



When manufacturers have to pay more for raw materials, sooner or later they pass the costs on to consumers. That happened last summer, when Hershey's announced an 8 percent price hike, its first price increase since 2011. Other chocolate companies followed suit.

Despite the cocoa shortage, shoppers probably haven't noticed any reduction in chocolate-flavored products in stores. So far, food makers have been able to keep up. That's because cocoa-processing companies still have stockpiles to keep candy and food makers supplied. But those reserves are dwindling.

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Words to Know

- **deficit** (*n*): an amount that is less than the amount needed; a shortage
- **economics** (*n*): the science of how people produce, sell, and buy goods and services

1847

An English company blends cocoa and sugar to make the first edible solid chocolate. Milk chocolate is invented 29 years later, when Daniel Peter of Switzerland adds powdered milk for a less bitter taste.

1890s

Pennsylvanian Milton Snavely Hershey perfects a formula for the mass production of milk chocolate into edible bars. His "Hershey bar" transforms chocolate from an expensive candy for the wealthy to one most people can afford.



Today

Hershey's sells a lot of chocolate—about \$7 billion worth in 2013—most of it in the U.S. Mars, the world's biggest candy maker, had nearly \$18 billion in sales the same year.

Supply Is Down . . .

Why not just plant more cacao trees? That's easier said than done. Most cacao trees are grown on small family farms in poor countries. Forty percent of the global cocoa bean supply comes from Côte d'Ivoire alone (see p. 15).

Unlike growing corn or wheat, which can be planted in vast fields and harvested with machinery, harvesting cacao is a slow, painstaking process, all of it done by hand.

A cacao tree can produce up to 70 pods a year, each of which must be cut down and chopped open. The seeds are then collected and cleaned of the gooey white pulp that surrounds them. Those seeds—cocoa beans—are dried (see photo below) and fermented for at least a week. Then the farmer bags the beans

and ships them to companies that process the beans into the powder, paste, and liquid forms used by food and candy makers.

More trees would require more workers, but few cacao farmers can afford to pay a crew's wages. Instead, many rely on much cheaper slave labor (see sidebar below).

Cacao farmers also have to cope with plant diseases and insects that destroy crops. According to the International Cocoa Organization (ICCO), such blights cause "losses as high as 30 percent to 40 percent of global production." Frosty pod rot, a plant disease caused by a fungus, has stricken West African cacao crops in recent years. Unusually dry weather in Côte d'Ivoire (also known as Ivory Coast) and Ghana has also been a factor.

. . . and Demand Is Up

As these problems keep the global cocoa supply down, the global demand for chocolate is skyrocketing. One reason is that food companies keep coming up with new uses for cocoa. Chocolate seems to be everywhere these days, from chocolate cheddar cheese and chocolate pizza to chocolate-covered bacon, pretzels, and potato chips.

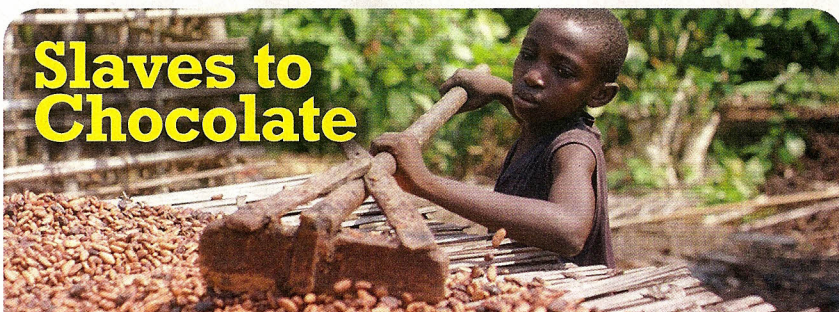
Another factor is the new and fast-growing middle class in China, the world's most populous nation. People there are developing a taste for many Western goods—including all things chocolate.

But so far, the Chinese, who eat only about 3.5 ounces of chocolate per capita (per person) per year, are no match for Western Europeans, who devour the most chocolate per capita (see p. 15). Americans eat about 12 pounds per capita a year.

The Bottom Line

Even with cocoa supplies tight in recent years, the chocolate industry takes in about \$110 billion a year and is investing in future production. Mars, the world's top-selling chocolate maker, just opened a state-of-the-art chocolate factory in Topeka, Kansas. Even when times are hard, people find a way to satisfy a sweet tooth. As Mike Wittman, a Mars executive, says, "Consumers really enjoy their small indulgences."

—Kathy Wilmore



Slaves to Chocolate

Lying to desperately poor parents in West Africa with false promises of a better life, slavers buy children and send them to cacao farms. Instead of earning wages as promised, the kids—most are 11 to 16, but some are younger—are forced to work 80 to 100 hours a week. They're provided with only the barest minimum of food and other necessities.

It's hard to be certain how many children are suffering this fate, but CNN reports that there may be as many as 800,000 in Côte d'Ivoire alone.

Harvesting cacao beans is dangerous work. Harvesters use sharp, heavy machetes to cut pods from cacao trees, then to hack them open to get at the seeds. A slip of the wrist can lead to terrible wounds. Children suffer such wounds more often than adults.

Child trafficking and slave labor are violations of international law. In 2001, major cocoa- and chocolate-producing companies agreed to work together to abolish such practices, but the problem persists. The current goal is to reduce the worst violations by 70 percent by 2020.



Which is more responsible for the rising demand for cocoa: candy and food companies or shoppers? Why?

Cocoa: Who Grows It, Who Eats It



SOURCES: ICCO Quarterly Bulletin, 2013-14; Statista

Top 5 Producers

COUNTRY	COCOA BEANS PRODUCED (TONS)	PER CAPITA GDP*
① Côte d'Ivoire	1,730,000	\$1,800
② Ghana	920,000	\$3,500
③ Indonesia	425,000	\$5,200
④ Nigeria	240,000	\$2,800
⑤ Brazil	210,000	\$12,100

SOURCES: ICCO Quarterly Bulletin, 2013-14; The World Factbook (CIA)

Top 5 Consumers

COUNTRY	CHOCOLATE CONSUMED (LB PER CAPITA)	PER CAPITA GDP
① Switzerland	23.4	\$54,800
② Germany	21.4	\$39,500
③ Norway	20.5	\$55,400
④ Austria	18.1	\$42,600
⑤ United Kingdom	17.6	\$37,300

SOURCES: Statista (2012); The World Factbook (CIA)

*GDP stands for gross domestic product; *per capita* means "per person." The amount is the value of all goods and services produced in a country in a year, divided by the population. It often is used as a measure of a nation's wealth.

Questions

- All the top chocolate-consuming countries are part of which continent?
- How much chocolate was eaten in 2012 in the country with the highest per capita GDP?
- How many tons of cocoa beans in total were produced by the African countries labeled?
- Which top consumer is northernmost?
- Ghana produced how many more tons of beans than the top producer in Asia?
- Which producing country is the wealthiest?
- U.S. per capita GDP of \$52,800 is closest to that of which country listed?
- Which country has a per capita GDP about 22 times that of Côte d'Ivoire?
- Why might top producers be so poor?
- All the top-producing countries are near the equator. What does that tell you about the type of climate needed for growing cacao trees?