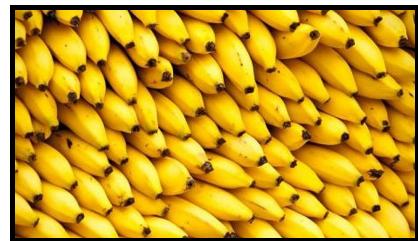


YES, WE MAY HAVE NO BANANAS

Banana experts say that the average American, about 40 years old, has eaten more than 10,000 bananas. Bananas were likely the first fruit you ate as an infant, and they may be the last fruit you eat in old age.



Americans eat more bananas per year than apples and oranges combined. In many other parts of the world, bananas – more than rice, more than potatoes – are what keep hundreds of millions of people alive.



The story of bananas is also about a disease spreading throughout the world's banana crop. As of yet there is no known cure. In a matter of decades, it could essentially wipe out the fruit that so many of us love and rely on.



A banana tree isn't a tree at all; it's the world's largest herb. The fruit itself is actually a giant berry. Most of us eat just a single kind of



banana, called the Cavendish, but over 1000 types of banana are found worldwide, including dozens of wild varieties, many no bigger than your pinky and filled with tooth-shattering seeds [RED DACCA from Australia and BLUE JAVA also ICE CREAM from Malaysia].

The banana originally migrated from Asia to Africa and finally to our breakfast tables, through Central and South America.

Bananas were one of the earliest plants to be cultivated by humans – farmed more than 7000 years ago. They are the world’s largest fruit crop and the fourth-largest product grown overall, after wheat, rice, and corn.



There is no fruit more consistent or reliable, which is one of the reasons we eat so many of them. A banana’s taste and appearance are as predictable as a Big Mac’s.

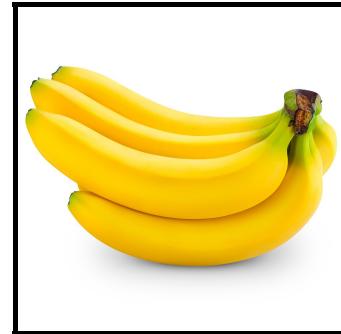


In ancient translations of the Bible, the “apple” consumed by Eve in the Garden of Eden is more suggestive of the banana. In the African nations surrounding Lake Victoria, the word for food is also the word for banana. In Central America, bananas built and

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toppled nations: a struggle to control the banana crop led to the overthrow of Guatemala's first democratically elected government in the 1950s. In the 1960s, banana companies – trying to regain plantations nationalized by Fidel Castro – allowed the CIA to use their freighters as part of the failed Bay of Pigs.

The banana that is dying, the Cavendish – the most popular single variety of fruit in the world – may have as few as 10 years, or as long as 100 years. It is the one that you and nearly everyone you know eats today. But it's not the fruit of your grandparents. That banana was called the Gros Michel, which translates as “Big Mike.”



Big Mike was more spectacular than our Cavendish. It was larger, creamier texture, and had a more intense, fruity taste. Until after World War II, it was the only banana Americans bought, ate, or thought of. But a disease discovered in Panama and named after that country began to ravage the crops.



Banana's vulnerability to Panama disease is because of what you find in every banana, or rather can't find – the banana has no seeds. One banana begets another similar

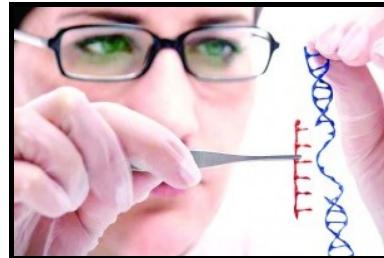
to taking a cutting from a rosebush, or runners in a strawberry patch – and multiplying it by a billion. The mother plant produces only one crop of fruit, and then sends out new growth to begin the next generation.



Every Cavendish is a CLONE, a genetic twin of every other, no matter where it is grown. Billions of identical twins means that what makes one banana sick makes every banana sick.



Since 2007, banana scientists have been trying to modify the fruit to make it disease resistant. Researchers are combing remote jungles for new, wild bananas; melding one banana with another and adding genetic material from altogether different fruits and vegetables.

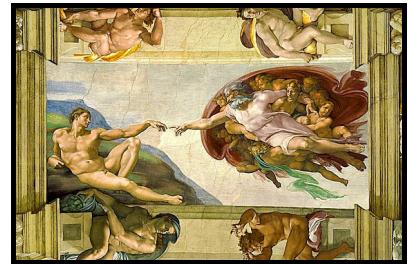


Even if genetic engineering succeeds, there's an excellent chance people won't want to eat or won't be allowed to eat bananas that gain newfound strength from the insertion of genes originally found in everything from radishes to fish. Such products are currently banned in much of the world. Right now, no one knows if the Cavendish can be saved.

And God Created the Banana

Our story properly begins when people – and bananas – were born. It is humanity’s oldest story. There may not be a single person who isn’t familiar with it. The odds, however, are also good that none of us gets it quite right.

In the beginning, God spent a week creating heaven and earth. Fruit appeared on day two. Man arrived after the sixth dawn. God created a companion for his progeny, and Adam and Eve became a couple. Their Eden was utopia. There was one significant warning: “You may freely eat of every tree in the garden,” God said, “but of the tree of knowledge of good and evil you shall not eat, for in the day that you eat it, you shall die.”



When she encountered the snake, Eve was easily convinced that the prohibited fruit was not poison, but a source of power selfishly guarded by God. A taste confirmed it: “The tree was good for food,” the Bible says, “and a delight for the eyes.” The first woman shared with her mate, and Adam, also, didn’t perish. Instead, the couple realized that they were naked, and



they fashioned clothes from leaves. God discovered the transgression and ... you know the rest.

Tradition holds that Eve's temptation was an apple, a piece of which lodged itself in Adam's throat, giving that particularly male anatomic feature its name.

It may come as a surprise to learn, that Hebrew text never identifies the type of fruit they consumed. In fact, the Hebrew uses a generic word [periy – per-ee] for “fruit” or “bloom.” When Eve understands it to be food [ma’akal – mah-ak-awl], the word simply means “edible.” The now-common representation of “apple” emerged around AD 400, when Jerome created the Vulgate Bible, a version of the book in Latin.



In 1455 Johannes Gutenberg invented movable type and published Jerome's version. When Jerome translated the Hebrew for fruit, he chose the Latin word malum, which can be translated as “apple.” When Renaissance artists referred to their Gutenberg bibles, they began painting apples into their Gardens of Eden.



The Koran also situates the banana in the sacred garden. There, Eden's forbidden tree is called the talh, an archaic Arabic word that scholars sometimes translate as “banana tree.”

The Bible locates Eden between four rivers. Two – the Tigris and Euphrates still exist today, flowing through Iraq and Iran. A Middle Eastern Eden would have been hospitable to bananas. Even today, the region is a growth center for the fruit. The same area is not terribly friendly to the apple, which grows there in limited quantities, and with the assistance of modern agriculture.



The Traveling Banana: Asia

The earliest human efforts to grow bananas in prehistory, travels the equator from India to Taiwan and coastal southern China before turning south. It include all of Southeast Asia, the Malay Peninsula, and the Philippines. The curve terminates at northern Australia, just west of the Great Barrier Reef.



Along here the first banana farms emerged. Kuk Swamp, a marshy patch



in Papua New Guinea, is one of the places people first started growing what they ate rather than searching for it, and created villages. People began to live with each other in an agricultural community. In 2002 researchers confirmed that this small, ancient village – one of the first on earth – grew bananas.



Through natural genetic mutation, two members of the banana family, the *Musa acuminata* and *Musa balbisiana* produced the sweet bananas we favor today. The *acuminata* produces flesh that is unpalatable, and the *balbisiana* produces too many seeds for enjoyable consumption, but together they make something quite different. Local farmers cultivated the crop they enjoyed – and it is a great oversimplification – but the rest is history. The same thing happened to corn, wheat, and rice in other parts of the world.



India has more varieties of the fruit found than anywhere else. Hindus call the fruit *kalpataru*, which means “virtuous plant.” Mystics chose banana

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plants to provide shade as they meditated; the fruit was believed to be an incarnation of Lakshmi, goddess of wealth, beauty, and wisdom.

India grows 20 percent of the world's bananas – about 17 million tons – each year. That's three times more than the number two banana-producing nation, Ecuador. Banana chips – over a hundred brands – are the nation's most popular snacks. The Indian banana is used as a substitute for tomatoes in ketchup.

More than 670 types of bananas, cultivated and wild, grow in the country. Thirty-two forest bananas are so rare that only a single plant or two has been discovered.

The country's favorite, Mysore, is described as a sweet-and-sour banana, with a skin no thicker than a few sheets of paper.



Husbands presented bananas to their new brides as a symbol of fertility.



The Traveling Banana: Africa

According to African lore, Kintu – not Adam – was the first human being. He lived alone, on the shores of Lake

Victoria, watched over by Gulu, the creator of the universe. Gulu allowed his daughter, Nambi, to marry the lonely herder. Kintu and Nambi carried a banana root on their travels, and though the fruit couldn't end all of humanity's suffering, it did well enough.



The Eden of Kintu and Nambi is modern Uganda, the nation that relies more immediately on bananas than anywhere else. Uganda grows 11 million tons of the fruit each year – more than 500 pounds per person annually – twenty times more than we peel and eat in the United States.



In some communities, a banana tree can be found in front of every household, grown for generations, feeding infants and grandparents: a century of nutrition in just a few square feet.



The Traveling Banana: The Americas

The banana may have arrived in our hemisphere by way of Easter Island. It's circumstantial, but Polynesian



sailors always carried bananas. Artifacts found near Ecuador's Bahia de Caraquez, include 1000 year old pottery, figurines, and personal-care items, are unlike anything else found in South America, but nearly identical to articles used in Asia at the same time.



In 2007 archaeologists working in Chile found 50 prehistoric chicken bones during a dig near the Arauco Peninsula – as close to Easter Island as any point in the Americas. DNA matched prehistoric chicken remains collected in Tonga and Samoa. Egg-laying chickens were a renewable food resources these Pacific wanderers always carried with them.



If the banana didn't arrive with Polynesians who were roasting chickens along the western edge of South America, then an alternate theory looks to 1400, when Portuguese sailors discovered the fruit in their travels to the African continent and populated the Canary Islands with their first banana plantations.



Bananas arrived in Africa from India through Arab traders who also gave the fruit its name.

Banana is Arabic for “finger” – individual bananas in a bunch are called fingers, and some fruit is finger-size. The bananas traveled westward on a ship under the charge of Tomas de Berlanga, a Portuguese Franciscan monk who brought them to the Caribbean island of Santo Domingo from the Canary Islands in the year 1516. Banana plantations were shipping the fruit from the Caribbean to Europe and the Americas by the early 1800s.

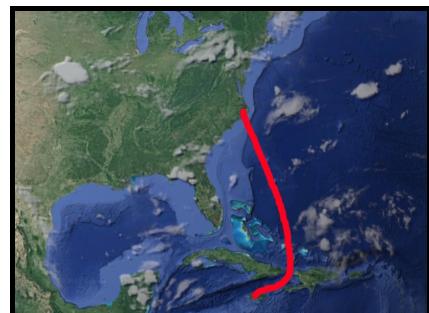


Bringing Bananas Home

Bananas were initially a luxury item in the United States – like caviar, consumed more for status than taste. The bananas North Americans ate were sold at a dime apiece – about two dollars today – and came peeled, sliced, and wrapped in foil, mostly to prevent the fruit’s suggestive shape from offending Victorian sensibilities.

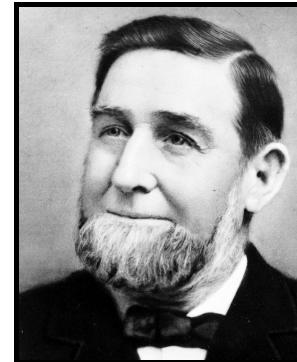


These early bananas came from Jamaica, a trip that could take three weeks, far beyond the average fruit’s



shelf life. But if the winds were right, a shipment of bananas could fetch a fine price.

Lorenzo Dow Baker, a Cape Cod sea captain, brought 160 bunches of bananas, hoping to keep them fresh on the voyage north, from Jamaica to Jersey City, NJ. Baker's banana career was a byproduct of a daring maritime escapade. In 1870, he sailed his ship, the Telegraph, to Venezuela's Orinoco river, carrying ten gold miners for the excavations near Ciudad Bolivar, 300 miles upstream. The journey upriver took three months. Baker deposited the prospectors at their destination, collected his pay – \$8,500 in gold, or about \$125,000 today – and turned toward home.



Baker put in for repairs at Jamaica. Heading north, he loaded a cargo of bananas, gambling he could make the mainland in two weeks. He kept the bananas on deck to expose them to cool air. He made it in eleven days, arriving with bananas fresh enough to wholesale at \$2 a bunch, netting him the current equivalent of \$6,400. Within a year, Baker was the biggest banana exporter in the Caribbean.



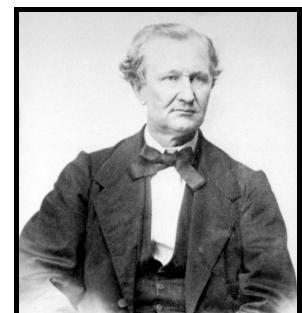
One of the beneficiaries of Baker's initiative was Andrew Preston, a 25 year-old New England produce buyer who couldn't keep enough of the tropical fruit in stock. They became partners in 1885, and with eight other investors they formed the world's first commercial banana company – Boston Fruit. It later operated as United Fruit. Today, it is known as Chiquita.



Preston and Baker brought consumers a highly perishable tropical product at an affordable price. The banana cost half as much as apples, and Americans couldn't get enough of the new fruit. But coordinating shipping between multiple islands was too costly. The enterprise – and the banana – needed to move west.

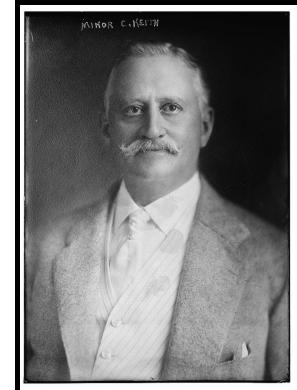
The Banana Republics

Henry Meiggs, an East Coast businessman, arrived in San Francisco during the 1849 gold rush, made a huge amount of money and defrauded his investors. Just ahead of the law, Meiggs headed to Chile, with \$500,000 dollars. He lost the money almost immediately in bad investments and had to pawn his watch in order to eat. His fortunes reversed when he contracted to build Chili's first railroad. He moved on to

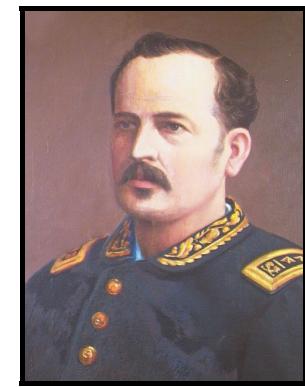


Peru, where, over the course of a decade, he laid over 1,200 miles of track.

In 1871, Meiggs brought his nephew, Minor Cooper Keith, to Costa Rica to oversee construction of a rail line between San Jose, the country's capital, and the port of Limon. Keith hired hundreds of Costa Rican workers. Nearly all of them died of yellow fever, malaria, dysentery, and dehydration. He contracted 2000 Italian immigrants. Conditions proved too rough and they deserted. Desperate for help, Keith enlisted prisoners from the jails in New Orleans. Only those with no hope of otherwise being released agreed to take on the assignment. Of the 700 who volunteered to work on the Costa Rican railroad – in return for a pardon after the project was finished – only 25 survived.

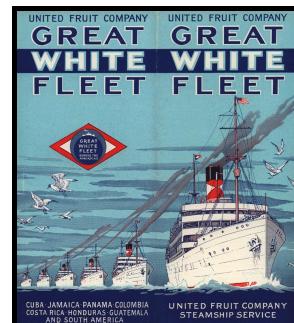
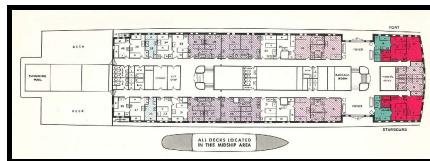


In a deal with Costa Rican president Prospero Fernandez Oreamuno – the first of many throughout the region that would earn nations the title “Banana Republic” – Oreamuno would supply a work force. Keith would build the railroad and get a 99 year concession to run the route, control the port at Limon, and 800,000 acres of land – tax free – adjacent to the tracks.



Keith planted bananas along the route, meant only to feed his workers. But he started shipping bananas to the US, even before the railroad was finished. Soon, the fruit he grew was worth more than the railroad.

Keith joined forces with Andrew Preston's and Lorenzo Baker's United Fruit company. One of their innovations used their refrigerated banana boats, the Great White Fleet – the color chosen to reflect sunlight, saving on cooling costs – to transport bananas to the United States, and convert the cargo vessels to luxury liners, offering cruises on return trips to the tropics, guaranteeing that boats would be full on both ends of the journey. Special vents, leading directly from the refrigerated holds, were installed in each passenger cabin. A guest could “turn on the cold” simply by sliding open a panel.



Are Banana Peels Funny?

On August 25, 1904, 23 year old David Strickler, a pharmacist and soda fountain operator at a drugstore in Latrobe, Pennsylvania, began serving a concoction



made of three scoops of ice cream nestled between halves of a banana. He charged ten cents, and had special boat-shaped dishes manufactured for serving the sundae.



His recipe was one banana, cut lengthwise; scoops of vanilla, chocolate, and strawberry ice cream; a drenching of chocolate, pineapple, and then strawberry sauce; and a final sprinkling of nuts and a trio of whipped cream dollops topped with cherries.

In 1907, a version of the delicacy appeared at a restaurant owned by E. R. Hazard, 275 miles away, in Wilmington, Ohio. Hazard called his creation a “banana split.” Both towns now claim to have been the birthplace of the confection.

Led by the banana split, a disposal of the remains of the popular fruit was in the early 20th century, becoming a problem. There was no place, other than the gutter, to discard the peel, and they quickly became a gooey mess. People actually did slip, fall, and sometimes injure themselves when they stepped on them.



What we know as a movie gag was real enough that in 1909 the St. Louis city council passed an ordinance

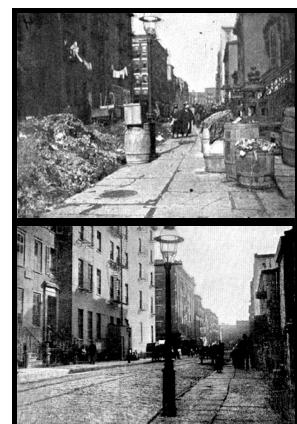
prohibiting persons from “throwing or casting” a “banana rind” on public streets or sidewalks. In a 1914 letter to his troops, British Boy Scout commissioner Roland Philipps suggested that a youngster’s daily good turn might “consist in moving a piece of banana peel from the pavement.”



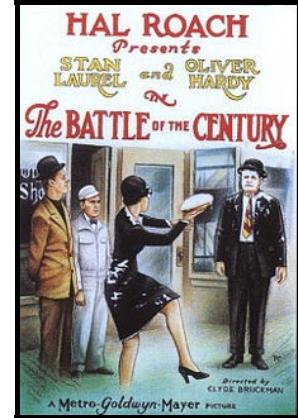
A study done in 1851 concluded that one-third of New York City’s deaths that year could have been prevented if basic sanitary measures had been in place. It would take 40 years but, George Waring, a former Civil War colonel, fashioned the city’s department of street sweeping. The wild pigs that once roamed the street, eating any organic matter they could find, were replaced by uniformed workers, who deposited the waste they collected into public composting facilities.



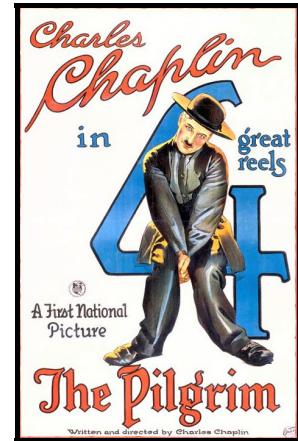
The program – in place by the mid 1890s – was the first large-scale recycling effort in the United States, with regulations strictly enforced by the New York Police Department. Sanitation workers were given a parade in 1896 for their success. The system was eliminated during a post-World War I cash crunch.



Over time, the sidewalk pratfall became less of a genuine hazard and more an element of slapstick comedy. Watching someone fly into the air and then go sprawling was funny – if it wasn’t you. The gag was reprised to the greatest and most chaotic effect in *The Battle of the Century* (1927), featuring Laurel and Hardy, where a banana peel launched the greatest pie-throwing melee in cinema history.



Charlie Chaplin, who featured a slip in *The Pilgrim*, released in 1923, understood that the joke got old quickly. A director once asked him, “How could I make a lady, walking down Fifth Avenue, slip on a banana peel and still get a laugh? It’s been done a million times. Do I show first the banana peel, then the lady approaching, then she slips? Or do I show the lady first, then the banana peel, and then she slips?”



Chaplin: “Neither. You show the lady approaching. Then show the banana peel; then show the lady and the banana peel together; then she steps OVER the banana peel and disappears down a manhole.”

Americans saw fewer discarded banana peels, but they ate more and more of the fruit.

Items we consider mealtime standards didn't exist until United Fruit invented them. Mothers were feeding mashed bananas to their babies, so United Fruit hired doctors to endorse the practice and launched advertisements.



In 1924, the company suggested that the perfect breakfast for a busy, modern family would consist of bananas sliced into corn flakes with milk. Packed inside cereal boxes were coupons redeemable for free bananas that the cereal companies, not the fruit importer, paid for.

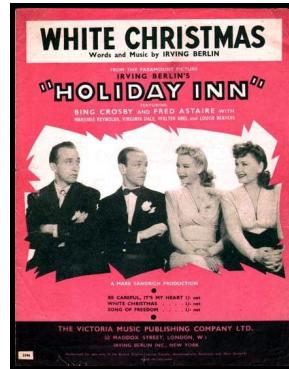


Not long after bananas added themselves as a third party in cereal and milk, the Panama disease became public. One headline in The New York Times read: “Banana Disease Ruins Plantations – No Remedy is Available.”

No Bananas Today

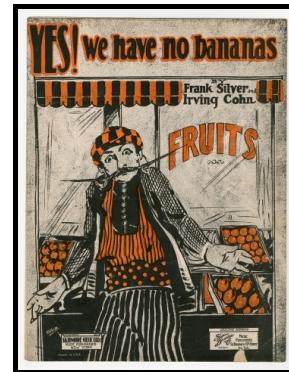
There were few signs at home of a banana shortage. The fruit had become so beloved that people began to sing songs about it.

It began in New York City's Tin Pan Alley. Most of the tens of thousands of songs produced by Tin Pan Alley are long forgotten. Those that remain in memory are classics: Irving Berlin's "God Bless America" and "White Christmas" along with George M. Cohan's "Give My Regards to Broadway."

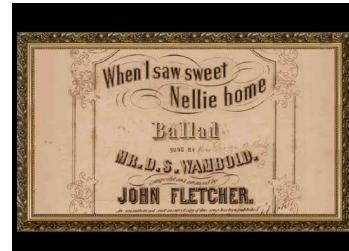


"Yes, We Have No Bananas" will never be viewed with such piety. But it was a much bigger sensation.

The song appeared in 1923 from composers Frank Silver [VOCAL] and Irving Cohn. The New York Times lamented that "97.3 percent of the great American Nation devotes itself zestfully and with unanimity to singing 'Yes, We Have No Bananas,'" and suggested the cause was "infantile regression," and "mob psychology."



The melody was adapted from an 1860s sheet-music hit called "When I Saw Sweet Nellie Home," which in turn was derived from Handel's "Hallelujah Chorus" (you can actually hear traces of the classical work in the banana song if you hum one,



then the other, in the same key: hal-le-lu-jah . . . yes- we-have-no).

The song asks, “Are bananas available?” The answer was, “Yes – they’re not.” A grocer with plenty of onions and cabbages [KA BAGG ES] as well as “all kinds” of fresh produce was unable to meet demand for what had become America’s favorite and most widely available fruit. “Yes, we have no bananas” was on its way to being the story of the grocer’s stock, not just a hit song.

The Panama Disease

In Honduras, the nation’s output dropped from 4.5 million to 1.9 million bunches during the first half of the 1920s. In 1931 Panama disease infected 15,000 acres in Jamaica and 50,000 in the nation of Panama, with the entire Atlantic coast of that nation now unable to sustain banana crops.

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Panama disease spread because of poor agricultural practices. It was transported by people. It was spread via water, running through the banana’s root systems, and transferred infected soil acre-by-acre



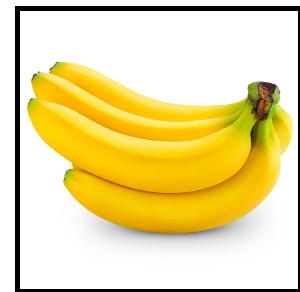
on truck tires, railroad wheels, bicycle tracks, and footprints.

Instead of quarantining infected areas and making sure that workers, trains, vehicles, and tools were cleaned and sanitized so they'd be prevented from spreading contaminated soil, producers went on as before. By the 1950s, the blight had gone global. In every case, the failure to enforce proper quarantine and isolation practices hastened the spread of the disease.



The banana industry knew it had to find a replacement banana for the Gros Michel.

The Cavendish, the Gros Michel's ultimate replacement came to East Africa from China or Vietnam around 1825. They were named for an English Duke who promoted their cultivation.



The Cavendish was entirely resistant to Panama disease. It also looked and tasted right. A ripe Cavendish wasn't exactly the same, either in the hand or on the palate, as Gros Michel. But it was close – and close counts in horse shoes, quoits, hand grenades, atomic bombs, first dates, and bananas.

The final Gros Michel bananas to reach the United States were sold in 1965. It can still be found in small amounts in Southeast Asia, and in parts of rural Africa.

The Golden Child

One of the first modern signs of trouble appeared in 1991 at a Malaysian farm. It turned out that Malaysia was maybe the worst place on earth to grow the Cavendish. Malaysia's wild banana population has been developing there longer than just about anywhere else in the world. The native bananas developed resistance to the diseases that grew along with them. The Cavendish had no such evolutionary defenses.



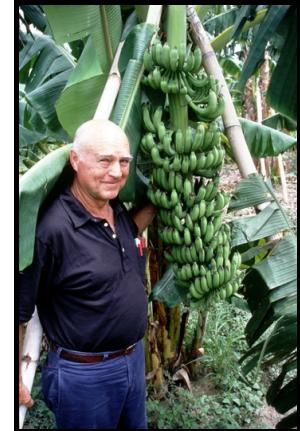
Banana bioengineering may be necessary to save the Cavendish, but it is an incredibly difficult task. In four decades, from the 1930s until the 1970s, scientists created nearly 20,000 hybrids, or about 400 times the number of edible varieties that emerged over 7,000 years of conventional human cultivation. In the last 50 years, that lottery long-shot banana has produced



between 20 and 25 viable banana varieties. That's a huge success story, given the odds.

How many are close enough to be considered as a Cavendish replacement? Just one.

Phil Rowe, the world's premier banana scientist, spent 40 years trying to breed the perfect banana. He summed up the frustrations of being a banana breeder as having to work with a plant that has no seeds to get it to produce seeds in order to develop a plant with no seeds.



Twenty years of work produced Goldfinger – so named because of its rich color. It may be world's dream banana. It never turns brown. The fruit remains firm and solid for far longer than the Cavendish does. Goldfinger is virtually immune to banana diseases.



But there is one over-riding attribute – those who have tasted it say it doesn't taste, or feel, like a Cavendish. The question is simple: If it doesn't taste like the Cavendish, does that mean it also doesn't taste like a banana?

Frankenbanana

Crossbreeding and biotechnology are both forms of genetic manipulation. The first has been effective and widespread for thousands and thousands of years. Changing life-forms by directly manipulating their DNA is new technology. Even so, in 2000, 90 percent of the corn Americans ate was bioengineered, as were more than half the soybeans, according to the U.S. Department of Agriculture.



But when the mechanics of banana biotechnology are explained, people become uncomfortable. Even scared. Yet, the truth is, the banana, this essential food, is in danger of fading away. Already, banana production in some parts of Africa is down by more than 60 percent, thanks to banana maladies.



“The bottom line,” says Rony Swennen, Leuven’s Laboratory of Tropical Crop Improvement, “is that bananas need biotechnology. That’s especially true for the Cavendish. I don’t see any other way to save it.”



**TEXT
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**It would be hard to build a banana
that resisted everything. But even
coming close could change the world.
The lab-made banana could be clean,
grown without pesticides, grown organically. It could be
grown – because it is stronger, and because stronger
means cheaper – according to fair-trade principles. It
could be the banana that finally reverses history, that
finally makes each bunch a guilt-free choice, even a
redeeming one, as we load them into our shopping carts,
as we argue over who first
sliced them into ice cream, as
we sing ridiculous songs
about them.**



**And on that note, let's close
with a musical salute to the fruit that changed the world.**