

## Drought Rearranges Kingdoms

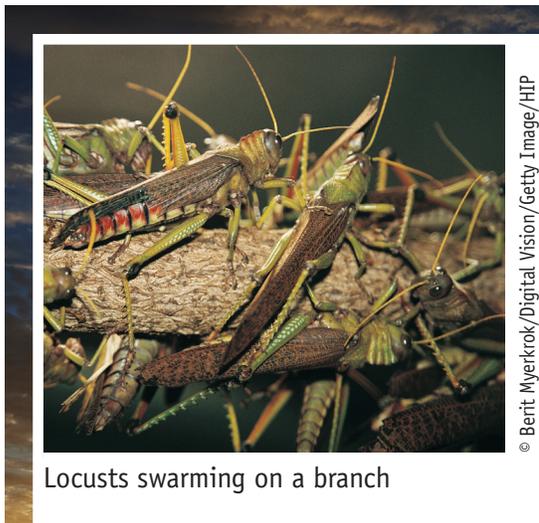
by Susan Kegel

“Voracious locusts. Soaring millet prices. An ever-increasing number of corpses lining the streets.” Such was the news in China in 1640, when the country was in the middle of a seven-year drought. But, actually, the area had been unusually dry for the preceding 100 years.

### Desperation Sets In

Historical records tell of three major droughts during this period, as well as a severe cold spell in 1629 that lasted for 14 years. A famine began in 1632, followed three years later by swarms of locusts. The dry weather turned to full-scale drought in 1637. By 1640, people were so desperate that they were eating tree bark and even corpses.

Manchuria, to the north, also suffered from the cold and drought and even stopped paying its annual tribute to China. Angered, the emperor of China sent in his army, which led to a long and costly war. But the Chinese were experiencing other difficulties as well. Because of the drought, the people had no money to pay their taxes, so the emperor could not pay the military. Some soldiers fled to find food



Locusts swarming on a branch

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elsewhere, some turned to crime, and others rebelled. With the country in chaos, the weakened government was no match for the Manchurians, who overthrew the Ming dynasty in 1644 and founded the Qing dynasty. The Ming dynasty disaster is typical of severe droughts around the world. Crops wither and die, causing food shortages for people and livestock, which, in turn, lead to escalating prices for what food remains. As the economy grinds to a halt, people can no longer pay their taxes, leading the government, in many cases, to stop functioning. The land dries out so severely that the soil turns to dust and blows away. Forest fires, epidemics, and plagues of locusts are common. Unlike tornados, hurricanes, and other bad weather, droughts affect everyone for hundreds of miles, and the effects can last for years. In addition, people have few options. They can move away or they can rebel

against their government in the hope that new leadership will fix the problem.

### **'Year of Hunger'**

In Mexico, for example, the people chose rebellion. In 1786, Mexico had not yet gained its independence from Spain, and there was such a severe drought that people called it "the year of hunger." Just three years later, another drought occurred. This time, an entire lake dried up to the extent that new land was exposed and neighboring villages quarreled among themselves over what

belonged to whom. When the summer rains did not come in 1808, and then again in 1809, the people knew what to expect. Many starved or died from disease, while many others scoured the countryside for edible weeds or turned to crime. Meanwhile, the Spanish government, weakened because



Rye, wheat, and millet grains

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of the constant wars in Europe, fell to the French ruler Napoleon. However, when Napoleon put his brother on the Spanish throne in 1810, the starving Mexican peasants saw an opportunity to rebel. After joining together to fight the foreign king, they finally won independence from Spain in 1821. Scientists suspect that the droughts in China and Mexico had a similar cause. Unusually warm temperatures in the Pacific Ocean, a climate pattern known as El Niño, have caused drought not just in those two countries, but also in southern Peru, Bolivia, Brazil, Australia, Indonesia, parts of Africa, and India.

## Welcome Monsoons

In India, in a normal year, temperatures start rising in February and the land dries out. By April, it can be as hot as 110 degrees every day. Dust covers everything in a grey tone, even obscuring the sky. People long for the monsoon rains that bring relief from the months of sweltering heat. Then, around June, clouds start to appear each morning. Finally, one day, the clouds grow larger and darker, and suddenly it pours. The change is instantaneous. The streets and trees are washed clean. People greet the rain with great joy. Children rush outside to play and dance for hours in the rain with their friends. The monsoon season, which runs from June to September, brings 80 percent of India's annual rainfall. When the rains do not come, the result is catastrophic for the farmers. Nine drought-induced famines in India between 1685 and 1899 killed more than 70 million people, including 600,000 deaths during Mexico's "year of hunger."

## New Not Always Best

When new types of seeds and fertilizers were developed and became available in the 1960s, Indians hoped to prevent such famines. Using this Green Revolution technology, the Punjab region in northern India tripled its food production. But there are side effects. The new seeds require lots of water and fertilizers. So, when farmers began planting a month earlier to get the seeds growing before the rains came, the amount of water needed to irrigate the lands nearly doubled. Too much water, however, brings poisonous mineral salts up from lower soils, and the nitrogen in the fertilizers filters down and contaminates the water. In the process, the soil loses its natural fertility, and so the plants need even more fertilizer. As a result, after using these practices for 30 years, 100 times the amount of fertilizer produced only five times as much food. Today, some Indian farmers are turning to the ancient practice of rainwater harvesting. They

use small, semi-circular dams to collect water from rain-fed streams. The water forms a pond and soaks into the ground instead of running off. This method not only prevents the soil from drying out, but it also replenishes the wells. So, even if a village receives less than three inches of rain, it has enough water to grow crops. Throughout India, there are about 140,000 such reservoirs that can be cleaned regularly and put back into use, giving hope that future famines can be prevented with such environmentally friendly practices.

*Susan Kegel is a freelance writer living in Redmond, Washington, where El Nino can bring dry winters and below normal snowpack in the mountains, causing summer drought.*

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