Growing and Consuming Food in Ancient Ceren

Story and Photographs
by Payson Sheets

Much of northern Central America was devastated by a cataclysmic volcanic eruption, probably during the fourth century A.D. What had been a verdant tropical landscape dotted with agricultural villages and some large ceremonial centers, with their elegant pyramids and palaces, was suddenly transformed into a white desert by immense amounts of fine volcanic ash. The source was a vent that opened up under Lake Ilopango.

The combination of the violence of the eruption and the explosions of steam (from hot magma contacting lake water) resulted in one of the most violent eruptions that Central America has ever experienced.

A bulldozer cut exposing the columns and floor of Structure 1 at Ceren, under the volcanic ash of the Loma Caldera volcanic eruption. The white volcanic ash below the building is from the earlier Ilopango eruption that devastated much of Central America. The fertile soil prior to the Ilopango eruption is visible as the dark layer at the bottom.
Before our excavations at Ceren, most specialists in Mesoamerica would have expected the diet of a small village of commoners to have been largely maize (Indian corn) with some beans, a bit of squash, some chilies, and occasionally some other species of food. Their diet was actually quite varied, based on the foodstuffs grown in their gardens and fields and stored in their buildings. A very unusual archaeological site, Ceren is the perfect place to investigate ancient diet because the Loma Caldera volcanic eruption preserved the crops in gardens, fields, and orchards, as well as flowers, weeds, bushes, and trees.

But how exactly were all the plants preserved? A volcanic vent opened under the Rio Suco, the large river that drains the Zapotitán valley. This point was only half a mile north of Ceren, at the Loma Caldera volcanic vent.

The earliest eruption stage would have been noisy, with screeching from the steam indicating danger. Apparently that was enough warning, as everyone fled the village, at least as far as we can tell to date. Then, the explosive component of the eruption began when the hot magma rushing upward contacted the river water and resulted in a violent steam explosion, blasting a cloud of steam and fine volcanic ash in all directions. That fine, moist ash plastered itself around corn plants, trees, and everything else in the area. It dripped somewhat firm and hard, and when the encased plants decomposed shortly after the eruption, hollow spaces were preserved from the seventh century—and were still there when we began to excavate the site in 1978. When students from the University of Colorado and I were excavating through the Loma Caldera volcanic ash, we often came across those hollow cavities where a plant had been.

Various foods stored in buildings, we can reconstruct with more accuracy than at most archaeological sites what the ancient inhabitants ate and drank.

AWASH IN TIMING

Dating the Loma Caldera eruption has highlighted some of the ironies of archaeological time control—we have been more successful in pinpointing the smaller units of the month, and even the time of day, than we have been in determining what year the caldera occurred. The many radiocarbon samples we have dated indicate it probably happened in the early to middle seventh century A.D., but we may never know the exact year. However, the seasonally sensitive plants all indicate that the eruption occurred in the middle of the rainy season, in August. And as we study the patterns of artifacts in the houses, they indicate that the evening meal has just been served but the dishes have not been washed, telling us the eruption occurred around 6 P.M. TO 7 P.M.

The kitchen garden of Household 1 had crops growing on neat ridges, and alternating species in a pattern I call "sown biodiversity." On one ridge were some manioc plants that look like small trees with huge carbohydrate-rich roots underground. The next ridge was loaded with malanga (Xanthosoma), another root crop that provided much more carbohydrates to Ceren residents than did manioc. In fact, malanga is second only to maize in total calories provided. The next ridge had flowers, followed by the final ridge with a medicinal plant whose sap is a mild antibiotic.

Beyond the kitchen garden, and fully surrounding each household, were the milpas where Cerenians grew corn, year
after year, beginning early in the rainy season. Three or four maize seeds were planted together atop low ridges, and they grew as a cluster. Almost every maize stalk had a single ear, and from the size of the ears and maize kernels we calculate the dry-weight maize productivity at about 5,000 kis per hectar (over 27,000 pounds per acre). This is extraordinarily high productivity, which we attribute to fertilization by people’s personal waste as well as kitchen scraps and wood ash from the hearths. It also resulted from the fertile soils developed from volcanic ash, and the abundant precipitation (average 1,700 mm, or 67 inches, per year). While this productivity figure is accurate for the cornfield adjacent to the household, we cannot assume that the entire cornfield matched this productivity level. The productivity probably drops moving away from the household, as less fertilizer would be applied farther away. Also, animals and birds would eat more maize farther from the active household, and if people from other households wiped corn, they would do it more from the peripheries.

The Cerezans were just harvesting their first maize crop when the eruption struck and encombed the site. Right before that eruption, villagers were beginning the interplanting of beans and maize, a common practice in traditional agricultural areas of Central America today. (Beans fix nitrogen for the next maize crop and maize is nitrogen demanding.) It is probable that, had the eruption not occurred, squash would also have been interplanted between the mature corn plants and the young beans. Abundant corn, beans, and squash have been found stored in household buildings.

Household 4 at Ceren had a large garden plot for special foods. The people grew chilies in great amounts, probably enough to supply the entire village. They also produced chocolate, grown on cacao trees. The nearby Structure 4 had cacao seeds stored in four different ceramic vessels. One of those also contained chili seeds, presumably indicating the first step toward making a mole sauce. In other cases, the ancient Cerezans probably sweetened their chocolate beverage with honey. The Household 4 residents also ground cotton seeds, presumably to obtain oil for cooking.

The combination of corn, beans, and squash, with carbohydrates from manioc and especially maniga, and vitamins and minerals from chilies, provided a virtually complete diet from a nutritional standpoint. Tree fruits, including nance, avocado, and guayaba, were also important to the diet. Villagers ate protein in the forms of deer, dog, and occasionally monkey. Frequently, it must have had maniga in its as well, and occasionally manico. It likely also contained meat upon occasion, but not as regular fare.

Cerenians used the first three fingers of their hands to scrape the food from the bowl and take it to their mouths. They drank water out of their cylindrical vessels, but on special occasions they would drink chocolate or maize from these same vessels. The four-legged plates for serving tamales were not as common in households as were the bowls or cylindrical drinking vessels, and that probably indicates that the bowls were eaten less often. The elegance of decoration of the plates probably indicates that they were a special- occasion food, and were probably stuffed with deer meat or protein from one of the other sources available to them.

There have been many surprises from the excavation of the ancient Ceren village, and many of them involve food and drink. The diversity and abundance of foods in a commoner village are far greater than we expected to encounter. Cerenians would have had to produce significant surpluses to exchange for all their colorful decorated serving vessels, imported from far away. This can only indicate the importance of sharing food and drink within the household, certainly a glue that held the family together generation after generation.

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Payson Sheets received his Ph.D. from the University of Pennsylvania in 1974, working on the very end of the Tikal project and especially on the Chalchuapa project. He was supervised by Dr. William Coe and Dr. Robert Sharer, respectively and respectfully. Sheets has directed research projects in Panama, Costa Rica, and El Salvador, investigating the relationships among people, societies, tropical environments, resources, and explosives, volatile, and explosive volcanic processes. He teaches at the University of Colorado in Boulder.