

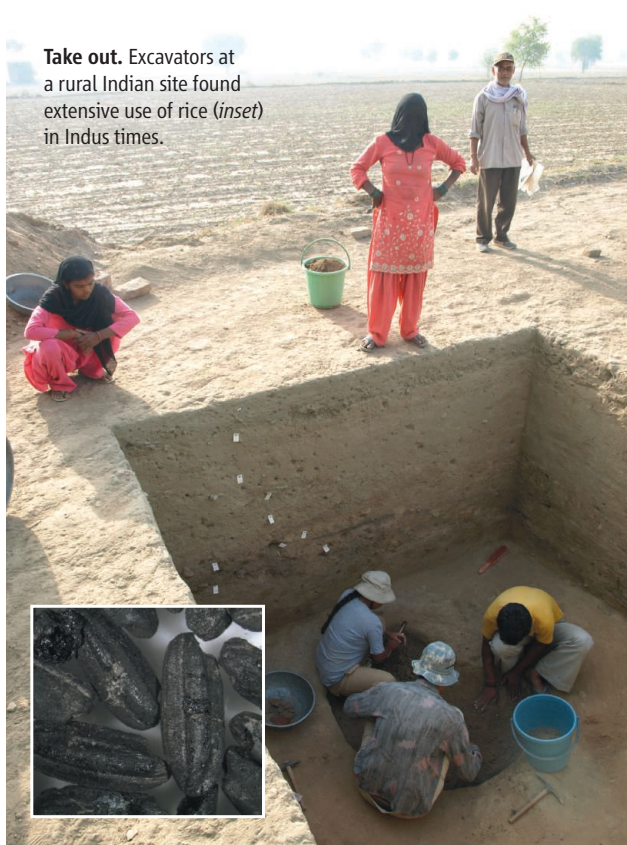
The Ingredients for a 4000-Year-Old Proto-Curry

When cooks in the ancient Indus River civilization prepared their meals 4000 years ago, the results may not have been much different from what you might order today in an Indian restaurant. Recent studies presented at the meeting found a surprisingly diverse Indus diet that incorporated spices such as ginger and turmeric, beans such as lentils and mung, grains such as rice and millet, and even bananas. An explosion in food-related studies, thanks to both new tools and new interest in rural villages, provides exciting clues to day-to-day life in the Indus, says Indus expert Jonathan Mark Kenoyer of the University of Wisconsin, Madison, who was not directly involved in the studies.

With Egypt and Mesopotamia, the Indus was among the first urban civilizations, centered on today's Pakistan and India. The Indus people built a half-dozen massive cities around 2500 B.C.E. that mostly fell into ruin after 1800 B.C.E. No Indus texts have been deciphered, however, and few images found, leaving scholars with fundamental questions about how the people lived, worked, and worshipped. But some of their traditions, including food preparation, may live on.

Archaeologists have long spotted burnt grains such as wheat, barley, and millet at Indus sites, but identifying vegetables, fruits, nuts, roots, and tubers has been more challenging. Researchers are increasingly using phytoliths—the mineral secretions left by plants—to identify specific plant remains, as well as starch grain analysis (*Science*, 2 July 2010, p. 28). Plants store starch granules as food, and the microscopic leftovers can be identified by researchers. For example, anthropologists Arunima Kashyap and Steve Weber of Washington State University, Vancouver, in Canada analyzed starch grains from human teeth from the ancient town of Farmana, west of Delhi, and found remains of cooked ginger and turmeric. They also found those ingredients inside a cooking pot. Dated to between 2500 and 2200 B.C.E., the finds are the first time either spice has been identified in the Indus. Cow teeth from Pakistan's Harappa—a major Indus city—yielded the

Take out. Excavators at a rural Indian site found extensive use of rice (*inset*) in Indus times.



same material. "It's like India today," Weber says. "Cattle wander around eating trash," including the remains of cooked meals. In some Indian regions such as the western province of Gujarat, some families still leave food remains outside the house as a ritual offering to cattle.

Whether or not these spices represent the earliest curry is not clear: Kashyap and Weber note that what makes curry is disputed even today. Black pepper and chili peppers, for example, are common in the dish today but were later imports to India.

Even bananas, not known to have been cultivated here until late medieval times, have turned up at three scattered Indus sites. A team led by Marco Madella, a Barcelona archaeologist with the Spanish National Research Council, found phytoliths of banana on grinding stones at Farmana. Phytoliths at the site of Loteshwar in Gujarat and at Kot Diji in the Indus heartland in Pakistan were also found. "I'm not confident in saying it was cultivated," Madella says. "But clearly the Indus people were in direct contact with people to the east,"

where the plant grew wild.

Indus farmers also grew a surprisingly wide array of grains and beans. Many archaeologists once thought that the society depended primarily on crops such as wheat and barley, which were planted in winter. But new data from rural villages challenge that idea. Examining two sites near today's Masudpur, west of Delhi, University of Cambridge archaeologist Jennifer Bates compared carbonized seed and phytolith density per liter of soil near hearths to determine the relative abundance of crops by period and site. Bates found that both villages practiced summer and winter cropping, and both ate wheat, barley, millet, and rice from early Indus times, as shown by nearby pottery; she also identified lentils and mung beans. Rice has long been assumed to be only a late addition in the Indus, yet one village apparently ate more rice than wheat or barley, although millet dominated.

Many of these crops have uses in addition to pleasing Indus palates, Kenoyer notes. Burned bananas produce salt, ginger can treat illness, and turmeric is used for both poultices and dyeing cloth. The data may also shed light on how specialized and exotic foods reflected class differences, he says.

—A.L.

Diving Into the Indian Ocean's Past

Nearly 15 years ago, two fishers in the waters off the southern coast of Sri Lanka hauled up a stone slab etched with ancient Hindu symbols. During a brief 2008 dive, archaeologists retrieved pottery and glass ingots. Then, in December 2011, with funding from the U.S. National Endowment for the Humanities and other sources, researchers began the first systematic dives to examine what appears to be the oldest known shipwreck in the Indian Ocean, radiocarbon dated to between the 2nd and 1st centuries B.C.E. Because almost nothing was known about seafaring in this time and place, the wreck promises to remake our understanding of the region and era, says team