

Early Farming Communities Often Ate Weeds, Other Wild Plants, Archaeologist Finds

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Thousands of years after the advent of agriculture, ancient farmers in India routinely foraged for wild plants — even weeds — when times got tough, a UCLA archaeologist has found.

In fact, they may have eaten a flower now used today in Hawaii for leis, a weed considered invasive in the American West and a relative of the acacia plant that now grows beside Southern California freeways, said Monica L. Smith, the article's author and an assistant professor in the UCLA Department of Anthropology and who also heads the South Asian archaeology laboratory at UCLA's Cotsen Institute of Archaeology.

The findings, which appear in the latest issue of the peer-reviewed journal *Economic Botany*, challenge conventional wisdom about the speed and extent to which agriculture eclipsed hunting and gathering, not just in India but elsewhere.

"People have this idea that once agriculture was introduced, food production became a steady source of calories," Smith said. "But it wasn't like someone flipped a switch and said, 'We're only using domesticated plants.' Even in societies that got a large amount of their calories from agriculture, people didn't give up their knowledge of wild plants. In the event of agricultural failures and when they needed extra produce for trade, they tended to fall back on their surrounding environment."

Smith, who has conducted field work in India for the past 12 years, got the idea for the research while conducting an archaeological survey at Kaundinyapura, a 300 B.C. to A.D. 400 agricultural hamlet about 400 miles east of Mumbai (Bombay).

As she surveyed the 17-acre site, pottery shards flecked with the mineral mica caught her eye. When she bent down to examine the sparkling shards, Smith also noticed bits of sandstone that had once served as mortars, pestles and other food-processing tools. Problem is that neither mica nor sandstone were available within 50 miles of the site.

"Inhabitants of Kaundinyapura must have traded with people closer to the sources of these raw goods," Smith said. "And with no natural resources to speak of, they would have had only crops that they raised themselves and natural resources that they gathered from their local environment."

Smith set out to determine down to the last calorie and acre how much the farmers would have had to raise of which crops in order to have enough surplus to trade for these and other goods.

She compared 50 years' worth of archaeological reports on similar sites of the Early Historic period (300 B.C. to A.D. 400) with elaborately detailed 19th-century agricultural reports kept by the British Colonial government.

While she had expected that crop failures and other dips in production would limit the ability of ancient farmers to trade in some years, Smith was surprised by what she found in the colonial documents. They showed that crop yields prior to today's mechanized farming fluctuated enormously, varying 400 per cent to 700 per cent from one year to the next.

"I thought that yields might vary by something on the order of 10 per cent to 25 per cent per year," Smith said. "I didn't expect to see fluctuations like these. Clearly, the farmers had pressing needs to seek out substitutes for domesticated plants."

During colonial times, inhabitants of these farming areas turned to a long list of wild plants and weeds in times of famine or during crop failures, according to records Smith found in the National Archives of India in New Delhi.

Poring over archaeological reports for 13 contemporaneous sites in the same region as Kaundinyapura, she discovered that tiny traces of many of these plants had survived against all odds into the 20th and 21st centuries to be identified by archaeologists.

"Most times in archaeological reports, wild plants aren't reported," she said. "Archaeobotanists will recognize domesticated plants right away, but everything else is dismissed as a useless weed."

In all, contemporary archaeologists have identified the remains of 34 plants that were still being grown in the 1800s, including lentils, beans, peas and wheat. Of the 34 plants, nine have no record of ever being grown as a crop, yet Europeans reported seeing them being foraged and consumed. Many, like the common castor bean, are considered weeds or, like *carthamus tinctoris*, ornamentals. Some of the wild plants that were consumed were even dangerous, such as the plant known as "lakh" that has a high calorie value, but results in paralysis for some people.

"There's probably a whole array of things people used to eat that's still escaping us, but using colonial records we get a much more robust view of how ancient people might have used the landscape," Smith said. "If you have total crop failure you need to be creative about finding substitutes."

Ancient literature from India also shows that people ate weeds in times of hardship, reflecting that the practice was long-lived.

A South Indian poem written about 2,000 years ago paints the scenario of "... the wife of the drummer with a lean and slender waist and bangled wrists whom cruel hunger gnawed did saltless cook the herb her sharp nails plucked from refuse heaps, and made a meal of it with poor relations, having closed the door ashamed to be seen by prying folk."

Indeed, Smith wonders if the findings might have relevance for today's concerns about the food supply.

"Agriculture has limited our creativity when it comes to responding to famine and global hunger," Smith said. "We tend to say, 'If only we could produce more potatoes or rice we'd be able to solve the problem.' But maybe instead of developing just one or two supergrains, we should be exploring other plants that enable us to have food variety."

Source: UCLA

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