

# THE *Current*

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[Shelly Leachman](#)

## **Avocado cultivation's ancient origins hold lessons for a changing climate**

Lauded for its health benefits and adored as a topping for toast, the humble avocado is a certified A-lister of the produce world. It's also a powerful economic engine: avocado farming today is a multibillion-dollar industry with global significance.

Yet the backstory of this celebrated superfood has been murky. Until now.

New research from anthropologists [Amber VanDerwarker](#) and [Doug Kennett](#) of UC Santa Barbara elucidates the history of avocado domestication, highlighting a prominent tree crop of major economic importance. Their paper is published in the Proceedings of the National Academy of Sciences.

"Our work shows that indigenous farmers selected bigger and thicker-skinned avocados through time that made these nutritious fruits more productive and easier to transport," said Kennett, who specializes in environmental archaeology and human behavioral ecology. "These intentionally selected characteristics promoted their widespread use in Central and South America that set the stage for their global economic importance today."

The researchers' results show that people in Central America were already tending wild avocados as much as 11,000 years ago and, added Kennett, that people were intentionally selecting for larger and more robust avocados by 7,500 years ago.

“Plant cultivation and domestication underpins the formation of agricultural systems, the global expansion of human populations and ultimately the formation of larger cities and nation-states,” he said. “While we have gained a lot of knowledge about the significance of cereal grains like wheat, rice and corn historically, we now know that more than 2,000 economically important plants were domesticated worldwide over the past 12,000 years, including the avocado.”

Using a sequence of well-dated desiccated and carbonized avocado remains from El Gigante rockshelter in western Honduras, first author VanDerwarker and Kennett defined an early, previously unknown locus of the fruit’s domestication. They also made an unexpected discovery: avocados were being farmed there even before maize.

“El Gigante residents had already domesticated avocados by the time maize arrived in the region,” VanDerwarker, director of UCSB’s Integrative Subsistence Lab, said of the study’s “biggest surprise.” “This completely alters our understanding of Mesoamerican agriculture — traditionally seen as maize transforming foragers into farmers upon its arrival to a new location. But our case study shows that ancient Hondurans were already farmers as they were fully engaged in tree cultivation upon maize’s arrival.”

The research furthers understanding of ancient arboriculture, while suggesting significant implications for biodiversity now — and in the future. El Gigante’s avocado remains also have the potential of providing an important source of genetic information in the context of climate change, the study stated.

Today, when some 90% of the avocado industry is dominated by a single variety — the Hass avocado — “there are mounting concerns over their vulnerability to disease and climate change,” the authors said, given the trees’ “restricted global gene pool.”

“Today’s avocados are primarily grown through cloned populations. That’s a risky endeavor in an era of unprecedented climate unpredictability,” said VanDerwarker. “If all plants are genetically the same, then they are all equally susceptible to the exact same limitations — for example, a new disease or an unprecedented megadrought could wipe out an entire variety.

“Our research shows that people successfully grew avocados via seedlings for thousands of years, and much of that genetic diversity is preserved in relict

populations throughout Mexico and Central America,” she continued. “Developing new varieties through seed selection of modern domesticates and wild relict populations growing throughout Central America may provide more success in adapting trees to these changing landscapes than clonal propagation alone.”

Media Contact

**Shelly Leachman**

Editorial Director

(805) 893-2191

[sleachman@ucsb.edu](mailto:sleachman@ucsb.edu)

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