Science Societies

A new way of teaching ancient foodways

By Kristen Coyne

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Indigenous Foodways, CSA News

Information about Native American food and farming practices has largely been absent from college curricula. Yet Indigenous food pathways, or foodways, with their focus on the connection between what we eat and where it comes from, offer important lessons in sustainability and community that contrast with Eurocentric approaches.

Faculty at the University of Wisconsin–Madison sought to address this gap by developing and offering a new class on Indigenous foodways. The class featured instructors recruited from Upper Great Lakes Tribes who presented hand-on lessons that underscored the sacred connection between food and land in their cultures.

At a time when universities are working to repair relationships with Native American communities, the course provides insights into how to move

forward successfully.

The day felt like a premonition. It was late winter, cold, and the limbs of the maples, box elders, and black walnuts were still bare in the corner of the University of Wisconsin–Madison (UW-Madison) Arboretum where the students and instructors gathered. The birds, perhaps feeling the coming spring in their slight bones, ventured occasional notes; musicians tuning before the concert. The sun, though wan, suggested a warmth ahead.

"The forest is sort of slowly waking up," recalls **Claire Luby**, then a UW-Madison faculty associate and now a research geneticist with the USDA-ARS. "It hasn't woken up completely, but it has started to."

Skunkbush sumac berries grown at Navajo Agricultural Products Industry in northwestern New Mexico. The traditional food is in high demand in the area for use in traditional puddings and other dishes. Photo by Rae DeGroat/NAPI.

That afternoon in March 2020, the trees were reawakening in a different sense, as well. They were being tapped for syrup for the first time since the 1930s when the arboretum was founded with the vision of re-establishing the land to its pre-European settler state. But redacted from that vision was the Ho-Chunk Nation, whose ancestral lands include most of southern Wisconsin and who had been

forced off many decades before.

The tapping demonstration was part of “Horticulture 380: Indigenous Foodways,” a novel course that took undergrads out of the classroom to see food in a different way, one tightly bound to the land. The class contrasted how Native Americans have traditionally cultivated, harvested, prepared, and shared food with Eurocentric approaches, and in so doing, challenged conventional views of horticulture.

“This class didn’t necessarily fit what is often defined as horticulture,” explains Luby, first author on a *Natural Sciences Education* article (**https://doi.org/10.1002/nse2.20072**) describing the course. “There was really both a demand and desire from students to be learning different perspectives on what counts as horticulture.”

To develop and teach the class, Luby teamed up with UW-Madison plant breeder **Irwin Goldman** and **Dan Cornelius**, outreach program manager for the university's Great Lakes Indigenous Law Center and a member of the Oneida Nation who has long been active growing, promoting, and educating about Indigenous foods.

"In our traditional horticulture curriculum, we approach it in a very technological way," says Goldman, a 30-year veteran of the department. "Sometimes we approach it in a crop commodity sort of way, so we might have a class on herbaceous ornamental plants or vegetables or fruits or grain crops. Whereas the Indigenous piece extends into so many different realms—the spiritual realm, the sustainability realm—in ways that we haven't had our curriculum reflect."

The class was a first step by the department to correct that historic omission. It was experiential by design, engaging not just minds but also the senses and heart. At the arboretum, students took in the scent of earth newly exposed by melting snow and the sweet, mineral taste of sap straight from the tree. At a spearfishing demonstration on frozen Lake Mendota, they grappled with

the news that state officials had denied the guest teacher, a former president of the Ho-Chunk Nation, authorization to spear any actual fish on his Tribe's ancestral land.

"You know, we can talk about recognition of Ho-Chunk territory, land acknowledgments, whatever people do that, honestly, have pretty minimal meaning and are more of a symbolic, make-themselves-feel-good type of a thing," says Cornelius, whose many hats include serving as technical assistance specialist for the **Intertribal Agriculture Council**. "Well, that question—'What does it mean to recognize Ho-Chunk territory?'—brings a different meaning when you've got the [Wisconsin Department of Natural Resources] saying that, no, you cannot spear."

Students continue to find new, often difficult meanings through the class, which is still offered every spring. But the course was also created to serve the Upper Great Lakes Tribes by helping them preserve their food heritage. The effort coincides with a growing awareness nationwide of traditional food pathways and ancient wisdom that, some hope, could help us all mitigate climate change and other modern problems threatening agriculture today.

In a demonstration during UW-Madison's Horticulture 380 class, dried corn is mixed with an alkali solution. Called nixtamalization, the

Seeds of Change and Pent-Up Appetites

process makes the kernels tastier, more nutritious, and easier to grind. Photo by Irwin Goldman.

The metaphorical seeds for Horticulture 380 were also actual seeds—for corn, squash, beans, and other Native American vegetables and fruits. In 2018, Goldman, Cornelius, and Luby received a UW-Madison **grant** to launch a **seed stewardship initiative** that trained new Native American farmers and spawned the first iteration of the course. The programs promoted seed sovereignty, or a community's right to control, preserve, and protect its own seeds. The concept undergirds the broader idea of food sovereignty among Native Americans and other **Indigenous peoples worldwide**.

Seeds are potent symbols for American Indians, Cornelius says, and a connection back to ancestors. He grows several varieties of Native corn on his southern Wisconsin farm and notes that the supply of one favorite, Mohawk red bread corn, had dwindled down to a few ears at one point.

"The seeds are a lot of the inspiration to get people excited and back into growing," he says. "It just means something different to grow a seed that your grandma used to grow and maybe had been lost from your community."

The concepts of seed and food sovereignty are increasingly familiar to scientists, policymakers, and the general public, thanks in part to the work of "**Sioux Chef" Sean Sherman** and botanist **Robin Wall Kimmerer**, author of the best-selling **Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge & the Teachings of Plants**, one of the assigned texts in Horticulture 380.

Agronomist Renae Pablo, a member of the Navajo Nation, has observed this uptick of interest in her community and at her company, **Navajo Agricultural Products Industry** (NAPI) in northwestern New Mexico. The company focuses on conventional

livestock feed and crops like alfalfa, hybrid corn, pinto beans, wheat, and potatoes. But several years ago, NAPI began to cultivate Native corns and skunkbush sumac. It gradually built up its store of corn seeds and expanded its acreage while also planting and tending sumac bushes until they were mature enough to harvest. The company dried and ground the berries and trimmed branches for basket making.

A braid of Indigenous maize. Photo by Irwin Goldman.

There was, apparently, a pent-up demand for these products, which sell out every season and are prohibitively time-consuming to make for many in the community, says Pablo, an ASA and SSSA member.

"We're just trying to make it more accessible for the Navajo people," Pablo says. The company is now working on adding Navajo tea to its product line.

Nursing homes, senior centers, and foodbanks purchase the Native foods for traditional dishes like sumac pudding while younger customers are using it more creatively. "People are out there infusing sumac into sodas, lemonades, and French fry sauces, and we had one individual that wanted to try it like a lip gloss type thing," Pablo says. "The demand is changing. A lot of people are coming back to the traditional foods that our ancestors grew up on."

This resurgence appears to coincide with an increase in the number of Native American farmers. According to the USDA's **2017 Census of Agriculture** (the most recent available), 2.3% of U.S. farmers are Native American or Alaska Natives, up 10% from the 2013 survey and outpacing growth among other farmers. And in late 2021, the USDA launched the **Indigenous Food Sovereignty Initiative** to serve those producers.

Meanwhile, there is growing scientific and public awareness that the sustainable practices and philosophies associated with Native American foodways **could help the nation adapt to climate change**.

Wild rice used in University of Wisconsin–Madison's Horticulture 380 class. Photo by Irwin Goldman.

The role that universities play in this space, particularly land grant universities, is complex. Many are acknowledging their **tainted origin stories** and taking steps to repair broken relationships. Some, including **UW-Madison**, have appointed tribal relations directors; a growing number are **granting free tuition to Native Americans**. These measures are intended to improve **enrollment and graduation rates** that are lower than the overall U.S. population, a situation compounded by the **functional invisibility** of Native Americans on campus and in the culture at large, according to the American Indian College Fund.

Luby and her co-authors targeted the issues at the curricular level, an effort they say was long overdue. "In the history of our department," they note in their paper, "there had been essentially no research or teaching that had integrated the horticultural and agricultural practices of the Indigenous peoples."

Also overlooked had been Indigenous partners. Although a key mission of land grant universities is to work with farmers in their states, few Native Americans have been on the receiving end of UW-Madison's ag services, Goldman says. "This is something that we've missed. So, it's wonderful to think about how we can bring that back."

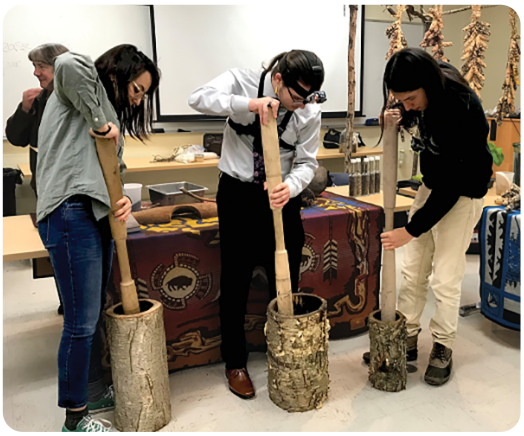
For Horticulture 380, that meant finding experts among the state's 12 federally recognized Tribes to help teach the class and compensating them for their time and expertise.

Ditching the Desks

What made the class effective was not just what was taught and who taught it, but also how and where that instruction happened. When Cornelius walked into the assigned classroom on the first day in 2020, he took one look at the bolted-down desks and knew they wouldn't work.

"That's not going to be a format that's conducive to hands-on learning and education," Cornelius recalls thinking. "Beyond that, why are we inside a classroom in the building in the first place? If we really want to learn about food sovereignty, this isn't something you're just going to learn from reading a book or getting lectured to in a classroom."

The students did often meet indoors—in a different room with moveable chairs and desks. They also read and discussed texts and wrote papers. But the curriculum included numerous outdoor classes where they tapped trees, learned about spearfishing, and helped butcher a deer. Although outdoor and indoor activities alike were cut short by the pandemic in 2020, in subsequent terms, students have met in a Native lodge built on campus and shared meals at a fire circle.



Students use hand-built birch wood mortars to grind corn during a UW-Madison class on Indigenous foodways. Photo by Dan Cornelius.

The underlying lesson: This food comes from the land, not a grocery store. In contrast to cultures that view wild animals and plants as resources that people have a right to take, Native Americans see them in terms of relationships—living things they are responsible for.

"Why don't I already know about this?" was a question the instructors heard frequently, Goldman says. The knowledge gap was particularly striking because, by law, **public schools in Wisconsin are required to teach the history, culture, and sovereignty of the tribes in the state**.

The class was as much a learning experience for its creators as for students. They learned they needed more and better outdoor spaces (hence the lodge incorporated in subsequent semesters) and that partnerships with the region's tribes were critical. Goldman noted that the university recently launched an **extension program for maple syrup producers** that in part targets Native Americans.

"The agriculture extension people have traditionally served conventional agriculture in the state," Goldman says. "When the extension service is now actively engaged with Indigenous communities about food production, this is really a change."

Creating Connections to People and Places

The class continues to attract students every spring—no surprise, says Goldman, who has observed growing interest in the topic.

“In the last decade, I think this has had much, much greater visibility. It’s on more people’s radar now,” he says. “Part of this is sovereignty movements inside Indigenous communities, or with allies of Indigenous communities, that have become more prominent. Some of it is a big effort that Indigenous people are making to produce food that goes into regular markets. It’s *amazing* what is out there.”

Supporting Indigenous Scientists in the Societies

As a seasoned soil scientist, Jessica Davis knows a lot about fertilizers and soil fertility management. About history—until quite recently—not so much.

“I took no history at all in college or grad school,” says Davis, now a professor of pulse agronomy at Colorado State University (CSU). “None. Zero.”

It was only a few years ago that Davis realized what a terrible mistake that was. She was reading an **expose in High Country News** detailing how land grant universities like her own had been founded on land expropriated from Native Americans. She was stunned and ashamed to learn that history and the long-term consequences of the large-scale land grab.

“My sheer ignorance was exposed. I never even thought to ask where the land came from until reading that article,” says Davis, who is of European descent.

Since then, Davis has taken a CSU class on Native American history and decided that, as a long-time member of the Societies, she wanted to do something to support her Indigenous colleagues. She is now helping to form a new specialty group within the Societies, Native American and Alaska Native Scientists and Allies (NAANSA). The group is for students and professionals in academia, agriculture,

and extension, specifically Indigenous individuals and allies. Although Davis is helping to kick-start the group, she hopes to step back to a supporting role once Indigenous Society members take the helm.

Davis says the new group's focus will be support, advocacy, and education with an emphasis on the unique challenges, contributions, and experiences of Native Americans and Alaska Natives in science and agriculture.

Davis says her own work has suffered from her poor understanding of other cultures.

"The word 'culture' is right there in 'agriculture,' and when we study agriculture, we need to be thinking about it from cultural and historical points of view," she says. "I think it's really important for us in our three Societies to wrestle with this, to learn more about it, and to try to use a Native American lens in our work in teaching and research and outreach."

Anyone interested in participating can join NAANSA at **www.agronomy.org/my-account/specialty-and-working-groups** or email Davis at jessica.davis@colostate.edu. The group plans to gather at the Annual Meeting in Baltimore on 8 November, from 5 to 6 pm, at the Society and Diversity Showcase.

Cornelius is experiencing this trend from the inside. Through his work with the Intertribal Agricultural Council, for example, he helped launch last year a **Tribal Elder Food Box Program** that buys food from Indigenous farmers and distributes it to seniors in the community. This year, their funding more than doubled, allowing them to expand from 3 to all 12 tribes.

“This is really supporting our producers by being able to offer fair prices, fair compensation, recognition of all the work that goes into producing food—but also being able to keep it right in our communities, feeding our elders,” Cornelius says. “Our elders are able to eat food that they grew up eating, have those flavors they grew up eating, share it with their families and the youth.”

Guest instructors Jon Greendeer (far left) of the Ho-Chunk Tribe and Greg Johnson (far right) show students how to butcher and prepare a deer during a class on Indigenous foodways at the UW-Madison. Photo by Dan Cornelius.

When she was a youth, New Mexico agronomist Pablo learned to make traditional Navajo dishes with her grandmother, knowledge she now passes down to other women and girls. She takes particular pride in teaching how to make Navajo cake, an important part of the coming-of-age ceremony for young women. Working together, the women prepare the batter—white and yellow corn, raisins, and wheat germ—then dig a shallow pit in the ground and line it with corn husks. They then pour the batter in, cover it, build a fire on top, and let it bake overnight.

“Each family makes theirs different,” Pablo explains. “I think what I enjoy the most is when my nieces and my sister come to help me because it’s the way my grandma taught us to do it. They’re kind of like my little team because it’s a time-consuming process. That’s the part I enjoy: That they’re going to carry it on with them.”

With hands-on experiences like maple tapping, the Horticulture 380 instructors hope to sow in their students those same kind of sensory memories, memories that underscore the relationships among people, food, and place. Luby herself still vividly

recalls that first-time-in-a-century tapping from 2020: Steam billowing from evaporators, sap dripping into buckets, Cornelius showing how to insert the old wooden stiles and explaining the need to limit the harvest, so that the trees thrive for many seasons to come.

For Luby, the most rewarding connections that came out of the course were the ones built with Indigenous experts.

“You can certainly do versions of a class like this without having all of those,” Luby says. “But I think that this particular class is unique because of the connections that Dan, especially, brought.”

Dig deeper

Read the original *Natural Sciences Education* article, “Learning From the Land: Developing a Course on Indigenous Foodways,” here: **https://doi.org/10.1002/nse2.20072**.

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