

# From Sheep to Summit: Natural Fibers Find a Future at USU

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By Stacie Denetsosie



On my grandmother's homestead on the Navajo Reservation, I woke at dawn. This was the early 2000s, and she kept 50 head of Navajo-Churro sheep outside her door. These sheep had been in our family for generations and were prized for their wool and for hardiness on the harsh arid desert.

My grandmother called up her daughters and granddaughters to help shear each spring. We went to work, clipping buoyant fibers and leaving behind fluffy furrows of wool that surrounded us like dirty nests. At the time I had little technical knowledge of these fibers but understood they were important—more than important—to my family. For Diné weavers, wool is not just a resource for spinning, weaving or selling—it is an object of cultural and spiritual importance, central to the stories that tell us who we are.

Today, the U.S. wool industry looks very different than it did from that view in the red-rock desert. Once a leader in wool production and export, the country has largely fallen

off the global production map. But at Utah State University, efforts are underway to bring wool and natural fibers back into priority focus.

The Outdoor Product Design & Development Program (OPDD), now a decade old, launched the Natural Fiber Hub and an annual summit with a goal to connect innovators, producers, and researchers of natural fibers like wool, cotton, and hemp.

"There's incredible work happening across campus in natural materials," said Chase Anderson, a program leader. That work is not limited to traditional textiles. USU researchers are re-imagining the future of textiles with spider silk, hagfish proteins, and hemp.

"Combine that with unique companies the state hosts—like the International Down and Feather Lab—and USU is well-positioned to lead the charge in fiber research and innovation," Anderson said.

This year's summit featured several faculty members on the forefront of textile innovation. Justin Jones, an associate professor of biology at USU, leads research on biomaterials, studying spider silk and hagfish threads to create strong fibers, work that includes collaboration with the Department of Defense. USU plant scientist, Professor Bruce Bugbee, a renowned specialist in hemp and medical cannabis research, is partnering with the USDA to make industrial hemp production more sustainable. And biological engineering Associate Professor Elizabeth Vargis is exploring hagfish protein fibers that could one day be used in medical implants designed to work more naturally with the human body. These are just a few of USU faculty who are engaged in textile-related research.

With the availability of nanofibers and high-performance synthetic fabrics, why would today's product designers and students consider going old school? What advantage is there to working with natural fibers?

USU's Sheep and Goat Specialist, Chad Page, argues the answer is practical and future minded.

"Wool does what synthetics can't," Page said. "Wool also manages moisture, resists odor, biodegrades naturally, and is inherently flame resistant—why the Navy long relied on wool uniforms and why the U.S. military remains the world's largest wool purchaser."

Wool once made up half the value of a sheep, Page noted, but today most producers earn just five to ten percent of revenue from wool. As sheep numbers fell nationwide,

infrastructure—scouring facilities, mills, and distribution networks declined with it.

But Page foresees Utah's comeback.

"Utah is now the second-largest wool-producing state, and I like to think of us as the last stronghold for true range operations," Page said. "Ranchers here are entrepreneurs. That mindset makes this a perfect place to push the industry into the future."

For me, the story always circles back to my grandmother's flock—those Navajo-Churro sheep bleating from corrals in the early morning dew. Utah State University carries that thread forward, weaving a warp for future innovators to revive and reimagine natural fibers and their uses.

Long recognized as a hub for sheep science, ranching, and fiber research, USU is now doubling down on that legacy, a reminder that the strength of wool lies not only in its fiber, but in the traditions and futures it continues to weave together.

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