



Hops haven't always grown successfully in North Carolina, but promising new varieties like NC1601 (this page) are helping breweries like Sierra Nevada (opposite) brew beer that is more locally sourced than ever.

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A NEW BREED OF BEER

Thanks to researchers with NC State Extension, North Carolinians can now enjoy beer made with local hops, ushering in a new era for the farm-to-glass movement.

written by AARON REUBEN / *photography by* TIM ROBISON

Every week, Carriann and Jon Schneider of Sideways Farm & Brewery make one or two new limited-release beers using as many ingredients from their farm as possible — which now include hops.

THE SUN CREEPS OUT FROM behind the clouds to warm a gentle slope on the edge of a mountain valley in Etowah, 30 minutes south of Asheville. Chickens, ducks, goats, and sheep nibble and wander under the watchful gaze of a Great Pyrenees named Winter. Below their feet, dormant in the soil, rests one of the most exciting new crops in North Carolina: hops.

On the valley floor in the distance, the great slanted roof of Sideways Farm & Brewery emerges from a field of wildflowers. In the past, says Sideways co-owner, farmer, and brewer Jon Schneider, “we tried a lot of different [hops] varieties. They all do bad.”

But that’s changing.

Sideways is one of the region’s most dedicated producers of “estate beers,” or beers made primarily from ingredients grown on a brewer’s property. Sideways grows ancient grains for its malt — beer’s rich and sweet backbone — and rows of herbs and fruit to add bitterness and

flavor. “[It seems like] so many breweries today are producing an industrial product,” says Carriann Schneider, Jon’s wife and co-owner. “Our mission is to return beer to its agricultural roots.”

With fertile fields of blackberries, blueberries, elderberries, figs, orange balm, lemon balm, juniper, and other beer ingredients, the Schneiders are succeeding — mostly. They can’t, for the life of them, grow productive hops.

Hops is the common name for the *Humulus lupulus* plant, whose fragrant flower cones are the No. 1 bittering and flavoring agent for beer — the agent most responsible for that beer-like taste that many know and love. The Schneiders share their struggle with all would-be hops farmers in the South. They can grow tall, luscious hops vines — or bines — with bright, broad leaves. But when it comes time to harvest, they get hardly any cones.





Qu has become an expert breeder of hops in North Carolina. Hops provide flavor, aroma, and bitterness to beer — all necessary to balance the flavor of the malt upon which the beverage is built.

“We always loved visiting wineries on vacations and seeing the grapes,” Jon says. He wants his customers to have that same experience with hops. “We want to have people get out and see things growing.”

The Schneiders have been trying to grow hops in their valley for nearly a decade. It was the first crop they planted. They tried American hops, English hops, hops from the Czech Republic. All failed. Until recently, Jon says, “if anyone asked us, we told them, *Don’t bother growing it here.*”

Now, thanks to the work of a North Carolina State Extension researcher in nearby Mills River, Sideways has four rows of a new North Carolina hops variety that was painstakingly tailor-made to rival the ones grown in the rest of the world. They are productive here. Improbably productive. “We should get a lot from these rows,” Jon says proudly.

TWENTY MINUTES TO THE NORTH, ON A VALLEY RIDGE near the French Broad River, Dr. Luping Qu’s more established commercial hops grow in long, vertical, undulating bines that will reach 20 feet tall. His oldest hops yard consists of five rows of sun-weathered black locust poles strung with metal wires. He bends briefly to test a rusty hand crank, which can be used to raise the metal wires as the hops grow and lower them again when harvest time comes.

Qu, an affable and energetic hops specialist with NC State Extension’s Alternative Crops and Organics Program, has unlocked the secret to growing hops in North Carolina. Raised in northeastern China, he’s an unlikely hero for North Carolina’s legions of small, craft, and home brewers who have been desperately trying to grow their own hops for years.

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A plant breeder with the studious air of an academic and the tough hands of a gardener, Qu is enamored with medicinal herbs. He has not, historically, been particularly excited about beer — its production or its consumption. Originally recruited by the program’s lead, Dr. Jeanine Davis, to work on a variety of emerging crops, Qu has surprised his coworkers — and himself — by becoming one of the South’s preeminent hops breeders.

That North Carolina should have any hops breeders at all is nothing short of miraculous, as hops plants — unlike some other vines, like kudzu — do not grow well here. Hops have a lot of challenges in North Carolina — humidity, excessive rain, profligate pests — but their biggest problem involves the length of our summer days. The hops we love are adapted to the northern climates of Central Europe and, more recently, the

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Pacific Northwest. There, summer days last nearly two hours longer than in North Carolina. Because of that, our hops make fewer cones.

Or, at least, they used to.

Through years of selective breeding, Qu has successfully created hops that produce more cones throughout the summer. Each year, he would select a few members of the hops varieties that did the best that season — producing the longest side arms and plump cones — and cross-breed them to generate newer, ever more “North Carolina” plants that would, in turn, do a little better the next season.

Now, nearly a decade into this effort, Qu has



At the Mountain Horticultural Crops Research and Extension Center in Mills River, (above, from left) Katie Learn, Qu, and Margaret Bloomquist have been working to grow hops plants that, come harvesttime, will produce plentiful cones.



hops varieties with production levels comparable to those of hops in the Pacific Northwest. These new hops can be grown successfully in the South but may also be useful for growers in other states, who are having to contend with hotter temperatures and more extreme precipitation every year.

To Scott Jennings, innovation brewmaster at Sierra Nevada’s Mills River outpost, that is a big deal. “Sustainable practices are in our DNA,” Jennings says. “We incorporate local hops as much as possible, but because of our scale, we can’t even begin to meet our hops demand from local or East Coast suppliers.”

Sierra Nevada is a “hops-focused” brewery, an inheritance that harkens back to 1980, when founder Ken Grossman decided to brew what became the first hops-forward beer since Prohibition to be commercially successful in America: the “Pale Ale,” which you can still enjoy today. According to company lore, that decision helped launch America’s craft-beer movement. “From a global beer history perspective, it was certainly not the first time that was done,” Jennings says, but “at that time, it was absolutely earth-shattering.”

Like most breweries in the country, Sierra Nevada sources its hops from the Pacific Northwest,

some 2,500 miles away. For the thousands of craft brewers in the South, like Jennings, that's an extraordinary limitation on their ability to lower their carbon footprint and brew local beer. It also places the nation's hops supplies at risk if climate-driven changes make the Pacific Northwest less hospitable to hops in the coming years.

"Now, we've got native North Carolina hops," Jennings says. Ones growing so close to Sierra Nevada, in fact, that "you can almost see them from here."

ACROSS THE RIVER FROM SIERRA NEVADA, the wind has begun to rattle the bines in Qu's hops yard. Qu moves with sure footing to his last row, which overlooks NC State Extension workers tending to tomato crops in a valley below. His eyes alight on a special bine at the far end of the row. It's not very tall, but it's noticeably dense with clumps of sun-dried cones that catch the breeze and jangle the hanging wire. Qu tugs off a cone. "NC1707 is relatively short," he says, referring to the variety by the numeric code that he gave the hops at conception, "but the yield is good."

The beer it produces — also uniquely North Carolinian — is good, too, he says.

Jon Schneider is one of the hops farmers who first approached Jeanine Davis for help in the early 2010s. Today, he grows his own hops using Qu's latest varieties, supplemented by hefty, fragrant bags delivered from Qu's hillside bines.

Jon was able to produce several truly local beers this season, using hops hand-grown and -harvested by Qu and his team. In particular, Jon designed his beer to take advantage of the unique characteristics of Qu's most promising hop varieties, NC1601 and NC1707. NC1707 produced a delightful, fruity golden ale; NC1601 made for a spicier, warmer, more rounded beer.

Jon is pleased with the outcome. He can now envision a time when we will treasure certain years' hops and beer vintages the way we treasure wine,

keeping a bottle of our favorite 2022 pilsner, for example. "In the wine industry, it's kind of a special thing to know that the grapes had changed from year to year," he says. That could be the future of North Carolina hops, too.

Qu is glad to have been part of the effort to bring hops to North Carolina. Since coming to the United States with his wife 30 years ago to pursue his PhD, he has mastered his field of study and worked on crops in five different U.S. states, from coast to coast. Always, he was driven by a love of science, time outdoors, and working with his hands.

Davis says that Qu has created a legacy in his adopted state, where he settled down for good 20 years ago. "He has kept the hope for a North Carolina hops industry alive," she says, noting that Qu has constantly planted, weeded, harvested, fundraised, and analyzed hops data for the better part of a decade. "He's been a one-man show. When he takes on a project, he doesn't stop until the work is done."

With humility, Qu concedes that his recent breakthrough is exciting. "We've looked forward to this day for a long time," he says. Does Qu, who doesn't usually care for beer, enjoy the one that his homegrown hops produced — hops that may ultimately make farming hops viable in the South? "I feel that the beer is pretty good" he says, and laughs. More importantly, "Everybody else says that it's a good beer, too." **Os**

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