



Hops in the Southeast?

Locally produced beer flavors may be coming to brew near you.

By Kevin M. Folta



Hop plants are herbaceous perennials with large, deep-green leaves.

Wine is the deep-purple or pale-yellow liquid that resides in the stemmed, symmetrical glass, swirled and sniffed by those enjoying a solo glass or pairing it with a specific meal. Each type is consistent in broad characteristics, using age-old grape varieties, documented fermentation vessels and time-honored traditions. Wine types are recognized precisely by those with well-honed senses, down to the type of wood used in the barrel or the soil where the grapes were grown. Familiar forms of wine adopt subtle nuance from environment, management and production that add uniqueness to generally standardized products.

Contrast that against beer. Beer is a product of fermented grains, punctuated with the essences of hops — aromatic flowers that exude bitter, flavorful compounds. Beer is the stuff of ballgames and barrooms, and unlike in wine, diversity is king. Consumers search to find the new and unusual, and the rapid proliferation of microbreweries seeks new twists on the familiar themes.

There are many ways that a brewer can introduce variation into beer. All of the ingredients contribute unique notes to the final product. The types of grains used, the degree of roasting and the strains of yeast each impart unique flavors and aromas that contribute to the consumer's sensory experience. But among the most important notes in the mix are the spicy, bitter, citrus-plantlike flavors imparted by hops.

A BIT ABOUT THE PLANTS

What are hops? Hop plants are herbaceous perennials. They are vigorous, viny plants that originated in China. Wild plants migrated to Europe and North America, where they were

eventually domesticated. The flowers grow atop towering vines (called “bines”) that scale great trellises in production, and can be found everywhere from landscapes to building cover in the Pacific Northwest. The plants are dense with large, deep-green leaves that seek the sun in a typically cool and gray climate.

Plants occur as males and females, yet males offer no value to commercial production. Females produce pine cone-shaped flowers that are rich in hundreds of aromatic compounds such as alpha acids and essential oils, produced in specialized glands. These compounds provide the unique sensory experience of hops.

Plants bred would not be typically considered likely farm inhabitants of the southeastern United States, particularly in the hot, humid extremes of the Sunshine State. But there’s a demand for off-season production, and an interest in bold new flavors in beer. In response, everyone from brewpubs to homebrewers to university

plant breeders now seeks to identify, or perhaps invent, new varieties of hops that can stand up to the challenges of growth in a sub-tropical environment. Varieties are being evaluated in Georgia, North Carolina and Florida.

There is a demand to be met. Brewers and enthusiasts alike see something attractive in brewing beverages featuring local hops. Consumers appreciate something locally derived in their glass. They like to patronize a local brewery staffed by local workers. Producing a brew with locally-sourced ingredients makes logical sense, and the hops are the star of the show.

FLORIDA TRIALS

Zhanao Deng of the University of Florida/Institute of Food and Agricultural Sciences has taken to systematically analyzing existing varieties, hoping to find a chance match between existing genetics and the Florida soils and weather. Research plots at the Gulf Coast Research and Education Center (GCREC) outside of Tampa provide

the theater to test the compatibility of current hops varieties. His work is supported by the Florida Department of Agriculture and Consumer Services Specialty Crops Block Grant Program.

The results from Florida reflect expectations: Hops grow differently outside of their native range. Plants genetically accustomed to cool, wet weather and rich, organic soils are challenged to thrive in the area’s sandy soils, daily heat and warm, humid nights. The varieties tested so far produce spindly plants with fewer leaves, a significant departure from the lush green vertical forests of the Pacific Northwest. However, these trials have provided a treasure of insight into the plausibility of hop harvests in the Southeast, and they are actually producing the coveted flowers.

“Right now, the central problems are plant architecture and yields, but it is clear that some varieties perform better than others,” says Deng.

One of the other central problems is that the plants are sensitive to day

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Towering hop vines, which grow on trellises in production, are called bines.



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length, meaning they only set flowers after integrating seasonal cues from the environment. They need longer days to thrive, and currently that is an important consideration to realistic production in Florida. However, there are ways to mitigate that problem, such as using artificial lighting to illuminate the plants a few hours after dusk. Such applications could potentially trick the vines into bearing flowers destined to lend their essence to the pint glass.

But this is where management and inputs can help compensate for the genetics-environment mismatch. Appropriately timed application of fertilizers can make the bines more vigorous, improving production of the valuable hops flowers.

“The plants respond well to the right fertilizers, and proper watering is incredibly important,” says Shinsuke Aghara, an assistant professor at the GCREC. “We have learned a lot in a short time, about how to make these plants grow well and be productive outside of their normal range. It is like teaching a dog to dance. You don’t know it can’t do it until you’ve done the test.”

The first approach has been to attempt to grow candidates representing the available varieties in Florida conditions, hoping for a match. Alternatively, new varieties may be specifically bred that fit well with the challenging conditions of the warm Southeast.

Deng is planning the production of new varieties, making crosses to produce novel genetic combinations that may be better acclimated to local conditions. The process of variety development for a new geographical niche is slow, yet could be the most productive way to get that local hop kick into a southeastern-born brew.

The landscape of agriculture in the Southeast is becoming increasingly diverse as farmers seek new crops to diversify their profit centers and diffuse risk. Hops may offer a distinct opportunity to cultivate a high-value crop that serves a burgeoning local industry that caters to pleasing the sensory experiences of enthusiastic consumers. 🍷

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