UNH Kiwiberry Breeding and Research Program

UNH’s kiwiberry breeding and research program secures USDA grant to test varieties on commercial farms

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UNH’s kiwiberry vineyard – located at the Woodman Horticultural Research Farm in Durham, NH – spans nearly two acres of farmland. The vineyard is seen here in the center of the photo.
Established in 2013 by Iago Hale, an associate professor of specialty crop improvement at UNH's New Hampshire Agricultural Experiment Station, the kiwiberry breeding and research program has evaluated more than 4,000 kiwiberry breeding lines to date and made nearly 20 advanced selections that are undergoing replicated evaluation for potential commercial release. The UNH kiwiberry vineyard occupies nearly two acres at the Woodman Horticultural Research Farm (https://colsa.unh.edu/facility/woodman-horticultural-research-farm#tour) in Durham. Hale has also published a widely accessed online production guide for kiwiberry growers in the Northeast (https://www.noreastkiwiberries.com/).

New England SARE Grant Goals

- Train 42 specialty crop farmers throughout the Northeast in kiwiberry production and help them establish pilot vineyards on their farms.
- Evaluate some of UNH's advanced kiwiberry breeding selections through on-farm trials at these pilot vineyards, gathering farmer feedback to identify superior varieties suited to the region.
- Facilitate the development of a regional community of practice around this emerging crop and remove barriers to adoption among farmers interested in diversifying with kiwiberries.

On a cool spring New England day in 2013, young kiwiberry vines were planted at the University of New Hampshire's Woodman Horticultural Research Farm (https://colsa.unh.edu/facility/woodman-horticultural-research-farm), beginning a now-decade old research breeding program for a crop that may one day be commonplace in the region's agricultural production. Led by New Hampshire Agricultural Experiment Station (https://colsa.unh.edu/new-hampshire-agricultural-experiment-station) (NHAES) scientist Iago Hale (https://colsa.unh.edu/person/iago-hale), the kiwiberry research program's goal is to develop varieties that are both highly adapted to grow in the northeast and have flavor and nutritional characteristics sought out by consumers. And while the crop breeding program has developed and evaluated over 4,000 breeding lines and prioritized 18 for potential commercialization, the scientific process has reached a watershed point: Which varieties will do best across a highly diverse set of farms and locations in the northeast?

Now, thanks in part to a grant from the USDA's Northeast Sustainable Agriculture Research and Education (https://northeast.sare.org/) (NE SARE) program awarded in April 2023, Hale is taking the UNH's kiwiberry breeding and research program on the road by distributing vines to regional specialty crop farmers. The effort involves providing 42 specialty crop farmers—located throughout New England, as well as in Maryland, New York, New Jersey and Pennsylvania—with vines from UNH's breeding program as well as training farmers in planting and maintaining the vines, harvesting, post-harvest handling, and marketing the fruit. In addition to establishing new on-farm pilot enterprises and the first formal kiwiberry farmer network in the region, the work of these select farmers will directly inform kiwiberry research and commercialization efforts at UNH.

"The specialty crop producers in our region are eager to innovate, and an entirely novel crop like kiwiberry represents a great opportunity to diversify their operations and distinguish themselves in the market," said Hale, associate professor in the department of agriculture, nutrition, and food systems at the UNH College of Life Sciences and Agriculture. "But new enterprises are always risky, and a long-term perennial fruit crop like kiwiberry requires significant initial costs with a 4- to 5-year return on investment."

Hale added, "In such cases, it is essential that we find ways to help buffer farmers from such risks so that they can explore the potential of new enterprises. The funding from NE SARE is what makes this possible."

UNH's Kiwiberry Vineyard...From Humble Beginnings

When the first kiwiberry plants were grown and the first vineyard established at the UNH Woodman Horticultural Research Farm in 2013 (https://www.unh.edu/unhtoday/2015/12/fresh-local-kiwis), little was known about this underutilized crop that Hale envisioned as potentially adding value to New England farm operations. The region is home to many small, specialty crop farms—in New Hampshire, for example, the average farm size is approximately 105 acres—that often face higher production and marketing costs, and often cannot take on additional uncertainty of incorporating new crops with limited supporting information.

According to Anton Bekkerman, director of the NH Agricultural Experiment Station, starting a breeding program for a novel crop involves risk and a significant initial investment of time, effort and funding. However, Agricultural Experiment Stations—which support world-class scientists to conduct long-term research—enable a well-calculated risk, buttressed by rigorous research, to turn such ideas into successful innovations.

"With projects like UNH's kiwiberry breeding and research program, there's often no guarantee that it will lead to a commercial product," said Bekkerman. "However, it's programs like this, and the scientists leading them, that produce discoveries that our farmers and regional food systems can benefit from."

"It's exciting to see this breeding program ask the natural next question: Can the successes seen on a research farm be generalized across commercial operations?" he added.
Kiwiberries: A New Opportunity for Regional Farmers

“Our smaller Northeastern farms can use kiwiberries to really make their businesses stand out, providing fresh fruit directly to consumers or to value-added producers for use in various products, like beverages, sauces and jams and jellies...And they can do this with just a few vines, or by growing hundreds of vines across an acre or more.” ~ Iago Hale (https://www.unh.edu/unhtoday/node/241), associate professor of Agriculture, Nutrition and Food Systems

Laura Bartlett and her father, Carl Bartlett, manage Kenyon Acres farm (https://www.kenyonacres.com/) in Northfield, NH. In addition to beekeeping and raising
Kenyon Acres (https://www.kenyonacres.com/) of Northfield, NH, planted 12 kiwiberry vines from the UNH vineyard this year. Kiwiberries offers this fourth-generation farm, which has been operating continuously for nearly a century, a new possible venture as well as the opportunity to contribute to the growing kiwiberry research at UNH, said Laura Bartlett, marketing manager and farm laborer with Kenyon Acres.

“I’d never heard of kiwiberries until 2016, when I tried kiwiberry wine and loved it,” Bartlett added. “So when I saw the request for farms to participate in the kiwiberry program, I jumped at the opportunity.”

Morgan Hill, head of Mount Cabot Maple (https://www.mountcabotmaple.com/) in Lancaster, NH, cites a similar reason: The chance to grow their offerings and complement existing operations.

“We want to grow our farm by diversifying our forestry and agricultural practices beyond sugaring with a focus on niche products that support our agrotourism projects,” Hill said. “A kiwiberry vineyard would be a delicious and peculiar novelty for visitors to our region and provide a sweet new seasonal flavor to our offerings on the mountain.”

**Kiwiberries: A Perennial Plant Supporting Soil Health**

As perennial plants, kiwiberries offer soil health benefits over annual crops and can be grown on less-than-ideal land with slopes and rocky soil. And when properly trained (https://www.noreastkiwiberries.com/production-guide/vine-management/)—or directed along trellises (https://www.noreastkiwiberries.com/production-guide/vineyard-establishment/)—with horizontal fruit-bearing canopies approximately 6 feet above the ground, kiwiberry plants offer space and shade underneath for growing complementary understory crops and/or raising small livestock like chickens. In this way, kiwiberries can serve as a profitable keystone component in a portfolio of diverse production systems, said Hale.

“Our smaller Northeastern farms can use kiwiberries to really make their businesses stand out, providing fresh fruit directly to consumers or to value-added producers for use in various products, like beverages, sauces and jams and jellies,” Hale added. “And they can do this with just a few vines, or by growing hundreds of vines across an acre or more.”

“But to get there, we first need to provide hands-on training to farmers interested in cultivating this exciting crop—with 42 small pilot vineyards now underway across the region, we’re well on our way.”

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A new partnership between UNH and Hartmann’s Plant Company in Michigan aims to ensure that every bite of a kiwiberry is as delicious as the next one, a level of product control essential to growing the commercial kiwiberry market.

Kiwiberries and Climate Smart Diversification

This material is based upon work that is supported by the National Institute of Food and Agriculture, U.S.

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