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Featured Story

Championing the Sweet Potato

Nov. 16, 2012

Story Highlights

North Carolina is the nation's leading producer of sweet potatoes.

Thanks to a horizontal ventilation system pioneered in the 1980s by Dr. Mike Boyette, North Carolina sweet potato farmers can store and grow sweet potatoes year round.

Food scientists in the Department of Food, Bioprocessing and Nutrition Sciences found a way to purée sweet potatoes. A food-processing company, Yamco, LLC, was formed by farmers and uses this technology.

Digging Deeper

Curiosity piqued? Use these links to dive in and learn more about what's happening at NC State.

[Yamco, LLC](#)

[Michael D. Boyette](#)

[Department of Food, Bioprocessing and Nutrition Sciences](#)



Thanksgiving is busy for Bobby Vick. While completing his Ph.D. in the Department of Biological and Agricultural Engineering (BAE), he frequently visits Vick Family Farms, his uncle's homestead in Wilson, N.C. That's where the NC State student branch of the American Society of Biological and Agricultural Engineers (ASABE) buys the Covington sweet potatoes that are then sold for \$10 per box during its annual sweet potato sale. On Monday, Vick transported 2,000 pounds back to Weaver Laboratories to accommodate around 200 orders.

"Each year the sale becomes more popular as word spreads," Vick says while boxing the potatoes.

The sweet potato sale helps support ASABE professional development, says Brandon Miller, the organization's president. It also highlights NC State's role in helping North Carolina become the nation's leading sweet potato producer.

Last year North Carolina produced 47.5 percent of all U.S. sweet potatoes, according to North Carolina Department of Agriculture and Consumer Services data. In 1995, the N.C. General Assembly officially designated the sweet potato, which is gluten-free and rich in beta carotene, as the state vegetable. And Vick Family Farms, like most North Carolina farms, has increased its production considerably thanks to a storage system – pioneered in BAE – which allows sweet potatoes to be stored year-round.

"Our experts have transformed how sweet potatoes are handled and stored, thereby expanding our industry," Vick says.

Growing an Industry

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american society of biological and agricultural engineers, Department of biological and agricultural engineering, josip simunovic, michael boyette, sweet potatoes, van-den truong



Bobby Vick packages the Covington sweet potatoes grown on his uncle's farm.

Historically sweet potato farmers were limited to an August to late October harvest and, due to poor storage, the crop was mostly sold by January or February. Studies showed post-harvest sprout and rot caused by poor handling were responsible for the loss of half the nation's harvest.

Researchers like [Michael Boyette](#) helped counter this with [postharvest handling](#) bulletins explaining how to protect sweet potatoes, which are more delicate than Irish potatoes, during storage. The literature also promoted the old technique of curing. This requires briefly holding sweet potatoes at a relative humidity of 85 percent and 85 degrees Fahrenheit to improve the storage and taste. Covingtons are named after the late Henry Covington, a former faculty member. These are more uniform and hardy than other varieties, and were cultivated by BAE.

Boyette is also widely known for pioneering a horizontal negative ventilation storage technique (NVS) which helps farmers store and sell sweet potatoes year round.

"We have the most sophisticated storage for sweet potatoes in the world," Boyette says.



Vick Family Farms grow Covington sweet potatoes, a variety cultivated here at NC State, and grow sweet potatoes year round, thanks to Dr. Boyette's NVS system.

NVS uses a slight negative pressure to pull the ventilation air horizontally past the pallet bins. Mounted fans move air horizontally through the sweet potatoes. The original version, which Boyette first introduced in the 1980s, was crude but worked, giving sweet potatoes a longer storage life and year-round availability to consumers.

What fascinated Boyette most was the conditions he created with NVS were identical to how his father stored sweet

potatoes.

"We stored ours outside all winter in a potato hill, a slatted-wooden box with straw which was then covered with soil. NVS recreates those exact conditions of humidity and temperature."

As farmers embraced NVS, Boyette improved the technique and by the 1990s NVS was mainstream practice. Six companies now exist to install NVS systems across the state.

"Storing potatoes this way ultimately helped North Carolina outsell our competition. That's the essence of a land-grant university. Our ideas help the people," Boyette says.

Driving Innovation

NC State has also helped cultivate new sweet potato products. For instance, Bill Walter, retired professor of food science in the Department of Food, Bioprocessing and Nutrition Sciences, was an early advocate for making french fries from sweet potatoes.

Food scientists [Van Den Truong](#), [Josip Simunovic](#), [Gary Cartwright](#) and their team also found sweet potato purée nicely utilized the sweet potatoes left in the field post-harvest. The puree remains bright and nutritious for months, making it perfect

for coloring and sweetening drinks, foods and as a stand-alone ingredient for baby food and frozen dinners.

Four years ago the team licensed the puréeing technology to farmers who launched [Yamco, LLC](#), in Snow Hill, N.C. The food-processing company hires 40 local employees and has won multiple [awards](#).

Boyette applauds the progress and believes North Carolina can compete even more globally. China grows 85 percent of the world's sweet potatoes and uses them in numerous and surprising products like beer, liquor and even noodles, he says.

"We're not through with innovating yet."

RESPONSES (3 COMMENTS)



Evelyn Buck : November 16, 2012 at 4:26 pm

This is the first time I ever saw these sweet potatoes sold. Is it still possible to purchase them? Please let me know. Thank you. It was a wonderful article.



Bobby Vick : November 19, 2012 at 11:03 am

There are extra boxes of sweetpotatoes still available. Boxes will be available on a first-come-first-served basis Monday afternoon (Nov. 19) from 3 – 6 p.m. under the pavilion of Weaver Labs. If any are left after Monday, we will try to have a similar pick-up time on Tuesday.

If you have any questions, feel free to contact me at rvick@ncsu.edu.

Thanks



Ricky : November 24, 2012 at 1:06 am

For us in Indonesia, sweet potato or we call it "ubi" is become an alternative food for breakfast... We steam it, and serve with a cup of coffee...

Nice Article...

Thank yous

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