Will 'eTubers' fly as fuel source?

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Researcher and entrepreneur Janice Ryan-Bohac shows one of her energy tubers to S.C. Agriculture Commissioner Hugh Weathers, whose agency gave her a renewable energy grant.

Scientist passionate about making sweet potatoes into ethanol

BY ROBERT BEHRE
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ELLOREE — As Janice Ryan-Bohac looks on, Jonathan Edwards steers straight over a long row of dying vines while his tractor's rear chain digger unearths sweet potatoes as big as bowling balls.

These are not meant for anyone's dinner table.

Instead, Ryan-Bohac, a Johns Island researcher and entrepreneur, hopes these potatoes will help answer one of the United States' most vexing economic and national security issues: its deep dependence on foreign oil.

The tubers being unearthed are a special breed that Ryan-Bohac created ultimately for conversion to ethanol.

The veteran plant researcher said the idea has been marinating in her mind since the Sept. 11, 2001, terrorist attacks. A few years later, she decided to retire early from the U.S. Department of Agriculture — where she became an expert on creating edible sweet potato varieties that could withstand disease and bugs —and start CAREnergy LLC, a company dedicated to growing sweet potatoes as a source of fuel.

Ryan-Bohac is growing sweet potatoes at three South Carolina farms this year as part of her biofuel energy project.

"There is no alternative that is this ready and cheap," she said.

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Sweet potatoes as fuel

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If she can convince enough farmers and investors that sweet potatoes can become an important source of energy, then her work also promises to transform some of South Carolina's struggling rural areas.

This day's harvest, done on just an acre and a half of a larger cotton and peanut farm, is one small step toward that goal.

But it's an important enough step that S.C. Commissioner of Agriculture Hugh Weathers stopped by just before Thanksgiving to check out her progress.

"It's time to find the right button to push to take it to the second level," he told her. "You're just a couple of steps away."

The reality

Ryan-Bohac is harvesting three separate fields planted with her special energy tuber, or "eTuber," as well as more conventional sweet potatoes.

At this Elloree farm, she looks on with interest as they are tilled from the ground.

"We might get a giant out of there, or two," she said. "That's the mystery. You can't see them until you dig them up."

But she is less concerned about breaking the record for the largest sweet potato than she is about the total yield — the weight of potatoes harvested per acre.

The energy tuber already has more starch per pound than an edible sweet potato. The eTuber is 33 percent dry matter and only 67 percent water. The Beauregard — one of the most popular edible sweet potato varieties — is more than 80 percent water.

The harvested potatoes are loaded manually onto plastic crates, which in turn are weighed and stored in two truck trailers on the farm.

Her bible is the 2007 book, "Energy Victory," by Robert Zubrin, and she has a signed copy chock full of Post-it notes.

"If we want to switch to biomass for electricity and crops for biofuel, we've got to engage farmers," she says. "Farmers have to feel like it's worthwhile for them."

Her demonstration includes not only this farm in Elloree but another in Darlington and her own farm in Smoaks.

Studying their relative yields of eTubers will help plow the field for further research on mechanization for harvesting and storing them, verifying the gallons of ethanol per acre, and possible uses of the by-products left over from distilling them into ethanol.

The next step

Weathers, whose department gave Ryan-Bohac a 2007 grant that is helping her work, is encouraging.

"If there are five steps between what you've got here and driving on ethanol, you're on step two or two-and-a-half now," he said.

Ryan-Bohac is convinced of the potential for sweet potatoes, but she knows she must convince others — everyone from farmers to engineers to those who would invest in a commercial-size ethanol factory.

She figures it will take about 18 months and $1 million to do the work, and her work so far has been funded by a state grant and her own savings.

"About the only way you can get this research done is with state and federal grants," she said.

So she has become a one-woman lobbying force, hauling her large sweet potato to presidential campaign stops, to the halls of Congress — even to the David Letterman show.

This month, she is scheduled to travel yet again to Washington to meet with South Carolina Republican U.S. Sen. Lindsey Graham's office and others who might help her. She is frustrated that most federal research money is going toward the study of cellulosic ethanol — such as sweet grass — rather than starch alternatives, such as sweet potatoes and sweet sorghum.

Weathers asked her to brief him about her visit, but he cautioned that while government grants could continue the work, the anti-spending mood in Washington and Columbia may make that less likely.

"My suggestion is to look at some private alternatives," he told her. "We're broke. It's time to stop spending money."

Ryan-Bohac knows that, but she also knows it can be difficult finding private foundations or backers. She hasn't managed to get her foot through the right door.

But she still has hope.

As her energy tubers appear on top of the freshly churned dirt, Ryan-Bohac smiles and notes that these big potatoes —which are shaped like everything from bowling balls to footballs to broken baseball bats and chubby snakes — aren't as appealing as the sweet potatoes on display at the local grocery store.

"Gosh, those are ugly, aren't they?" she said. "Only a mother could love them."