



"The Newspaper That Cares About Rural Life"

Farm Country

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The Country Today SECTION

Drawing interest, paying dividends

U.S. Potato Genebank in eastern Wisconsin a repository of world's potato varieties

SURGEON BAY — On a global scale, the U.S. Potato Genebank in Door County pays valuable interest and dividends on a daily basis.

Housed in modest buildings adjacent to the UW Peninsular Agricultural Research Station north of Sturgeon Bay on Highway 42,

For more information about the U.S. Potato Genebank, visit www.ars-grin.gov/n6.

the 62-year-old facility is a repository for most of the world's identified potatoes. The collection includes wild potatoes discovered in the United States,

Central America and South America over the past several decades.

The hunt is still on for more wild potatoes, whose genes may become extinct if they are not found and collected before their natural habitat is disturbed.

New potato varieties are developed to counter cultural production stresses from drought, disease and pests and to yield more efficiently with fewer chemicals and fertilizers. Wild potatoes may unlock some of those challenges.

Collecting in South American countries has been stopped now as countries realize the potential value of wild potatoes.

"The reason is that pharmaceutical companies could find a certain gene or chemical in wild potatoes," said Max Martin, genebank program director. The home country likely would like a cut out of the potential if it turned out to be a lucrative deal, he added.

Species in the collection date back 30 to 40 years, he said.

"Now we've gone back and re-collected in those areas and compare those same genetics of plants that lived out in the wild 30 to 40 years ago and plants that have lived in our genebank 30 to 40 years," Martin said.

As the home of the world's largest collection of potato species, the U.S. Department of Agriculture genebank is at the research farm, where UW researchers conduct trials and tests on potato genetics.

New and improved potatoes quite likely have their foundation in genes found in wild potatoes and collected by researchers over the years.

The source of many species now is confirmed by technology such as global positioning systems.

John Bamberg, director of the genebank, regularly visits public lands in the southwestern United States, taking untraveled paths in hopes of finding more wild potatoes.

Wild potatoes in the U.S. typically are found in Texas, New Mexico, Arizona and Utah.



The U.S. Potato Genebank near Sturgeon Bay houses more than 5,000 samples of more than 150 potato varieties. Max Martin, left, genebank program director, and John Bamberg, genebank director, gathered data that's published and analyzed in many scientific papers.

Bamberg said he recently received an e-mail from a colleague noting that DNA research on a Native American from 1,000 years ago traced potatoes in the diet through scratching tartar off the individual's teeth.

To foster potato improvement, the genebank's mission is to introduce, classify, preserve, evaluate and distribute potato samples maintained in the collection.

Last year germplasm from the genebank was distributed to 27 countries and 33 states. Materials are sent to the USDA's agricultural research facility at Beltsville, Md., and then sent worldwide.

Wild potatoes usually are much smaller than commercial potatoes. They may hold a gene that when crossed with other varieties could dramatically alter the role of potatoes in the diet through hybrid vigor.

Worldwide, potatoes rank as the third most popular food for human consumption, following rice and wheat.

While potatoes might be taken for granted, their role as a foodstuff is ever-changing. That includes beefing up the nutrient content of potatoes.

"If you are female and you happen to have low bone density, a high-calcium, high-potassium



Potato researcher Max Martin displayed a potato plant where tiny tubers grow above ground, just like a tomato plant.

potato might be designed," Martin said.

Other valuable traits sought might be spuds that are more

tolerant to drought, insects or disease.

Bamberg said the unique collection of potato germplasm represents maximum diversity.

"Part of our job is to explore for the unknown, to maintain, evaluate and describe this maximum diversity," he said. "You can't plan what you are going to find."

Plant breeders are working to upgrade potatoes by scaling back sugar and starch content while increasing protein content.

That alone might be the impetus for higher potato consumption in the U.S., Bamberg said, because per capita consumption has been trending downward.

How potatoes grow in changing climate conditions represents another area of research, Bamberg said.

"The idea of climate change is something new," he said. "It doesn't really present a new idea for the genebank because that's been our job ever since we started. If you have climate change you are going to have more widespread and less predictable things going on in

production."

Changes in weather also bring into play other factors, he said, such as where bugs live, where their hosts are, how they interact with chemicals used on them and other variables.

"We don't know what we are keeping here but we are keeping the maximum diversity," Bamberg said. "Hopefully, whatever the new problem issue comes up, there will be something here to solve it."

Other investigative efforts aim to produce a potato with a high antioxidant content.

"We had a cooperator working on nutrition and he asked us if we had a certain cultivar from Peru," Bamberg said. "We started screening some of the material we had after evaluating records for colored tubers."

Subsequently, he said, the genebank planted different varieties and through a screening process discovered one variety high in antioxidants, Bamberg said.

"We're pretty excited about that one," he said.

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Max Martin displayed a selection of seeds available to plant breeders worldwide for free. The steel unit behind Martin contains all of the seeds at the genebank. Backup seeds are stored in Fort Collins, Colo.

Story and photos by Judy Brown