

THE SCIENCE OF SPUDS

PENINSULA IS HOME TO U.S. POTATO GENE BANK

STORY BY JENNIFER WEST | PHOTOS BY HEIDI HODGES

Fort Knox has its gold. The Louvre has its Mona Lisa. But the Peninsular Agriculture Research Station in Sturgeon Bay? It has the U.S. Potato Genebank. Just consider it a repository for the potato industry's genetic treasures.

The men and women who work here are sort of like collectors, librarians and guardians all rolled into one. In their keep are the genetic building blocks of the spud world, a collection of about 100 wild and cultivated potato species that helps sustain and improve what could be considered the world's most important vegetable. After all, in this country alone, we produce about 30 billion pounds of potatoes each year, which is a lot of French fries and potato chips. And baked potatoes. And cheesy hash browns. And yummy, creamy potato salad on a warm summer day.

But back to genetics.

Without places like the U.S. Potato Genebank, that massive potato crop might not be so massive. And, heaven forbid, those potato chips you munch on might not be as crispy and that potato salad might not be as creamy.

"It's not a museum," says John Bamberg, director of the U.S. Potato Genebank. "Your federal government has been doing this for decades. A lot of people just don't know about genebanks."

The U.S. Potato Genebank is where potato research starts, where new potato varieties originate and where companies begin the work of creating disease-resistant or more nutrient-rich potatoes. Potato breeders request stock from the genebank, which is provided free, and then work toward building a better crop. From start to finish, that process could take 15 years or more as a variety is created, tested, grown, tested some more and then planted by growers and finally consumed by potato connoisseurs around the country.

"Our mantra has been to keep genes instead of genotypes," Bamberg says.

More than 40 such banks are scattered throughout the United States, but the only one in Wisconsin—and the only one devoted to potatoes—



John Bamberg, Director of the U.S. Potato Genebank, inspects a greenhouse filled with growing and blooming potato plants at the Peninsular Agriculture Research Station just north of Sturgeon Bay.

resides in Sturgeon Bay, which is no coincidence.

"Wisconsin is a potato state, and it has been for a long time," Bamberg says. "People recognized a need for a place like this, and if it was going to happen, Wisconsin was going to make it happen."

Although Wisconsin is most often associated with dairy, the huge potato fields of the sandy central zone account for a lot of spuds, making Wisconsin the third largest potato producer in the country behind Idaho and Washington.

But few people know the state is also a hub for potato scholars.

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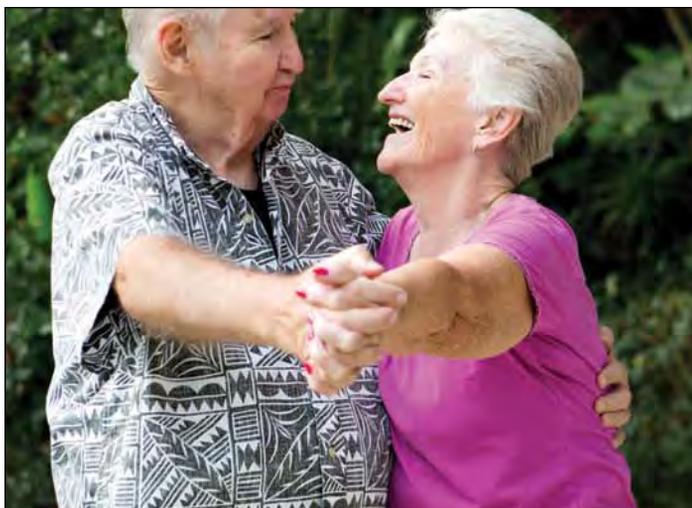
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The U.S. Potato Genebank is intertwined with UW-Madison, arguably the world's center for potato breeding research. As part of its College of Agriculture and Life Sciences, the university runs 13 experimental farms, or research stations, across the state. The Sturgeon Bay research facility, which primarily focuses on fruit crops, seemed the perfect place for potato safekeeping.

"People thought this would be a good climate, and they thought there would be less disease pressure here," Bamberg says. "They also thought it prudent to have a place that was far away from the potato-producing areas in Wisconsin."

So since the late 1940s, the Sturgeon Bay facility has gathered and guarded the potato genes of the world and helped the agricultural world produce and create a better food supply.

You can thank the U.S. Potato Genebank for familiar favorites such as the Yukon Gold. That delicious, golden-fleshed buttery spud, which is ever-so-tasty roasted and mashed, can trace its roots back to Sturgeon Bay, where its grandparent, *Solanum phureja*, was stored. In fact, about 70 percent of all potatoes grown in the United States contain germplasm from the Door County genebank in their pedigrees.

You can also thank the U.S. Potato Genebank for subtle improvements in our potato friend. For instance, research at the genebank might eventually make your spud selection at the grocery store a little prettier. A recent study, accepted by the American Journal of Potato Research, looked at the greening properties of potato stock. Greening of potato skin is something no one really wants. In fact, some studies estimate about 15 percent of the U.S. potato crop is lost each year thanks to those unsightly skins. Produce departments



(Far left) Potato seed clusters hang on vibrant plants in the greenhouse. (Left and center) Carefully-grown and categorized potato seedlings are removed from test tubes and transplanted into soil in the genebank lab. (Right) Bags of tiny potatoes show the impressive diversity of the potato plant. (Far right) A lush potato plant is temporarily removed from its planter showing the young potato tubers growing in the soil.

and consumers often discard green-skinned taters, so by evaluating stock, researchers hope to create a better potato and decrease food waste. And all of that begins at the U.S. Potato Genebank.

“We’re really the other end of the spectrum (from the growers). We’re doing the evaluation to see what the potential is for every potato,” Bamberg says. “We do a very basic type of research, and if it has potential, there might be some type of breeder who may be open to that. We want to open the door.”

Recently, the U.S. Potato Genebank has forged a strong relationship with its counterpart in Lima, Peru. Latin America is the birthplace of the potato, and Bamberg says the U.S. Potato Genebank is returning the favor by aiding research there.

“We’re building cooperation with them and trying to address some of their problems,” he says.

That partnership has spilled into the Door County community, too, where high school Spanish students in the Southern Door

school district get to tour the genebank while learning about potatoes, Latin America and the connection between food, farm and community.

“Door County is really a good area to be in,” Bamberg says, “People are thoughtful and educated around here. When visitors stop in, they always have a cleverness and appreciation for what we do, which is gratifying.”

Next time you drive through Sturgeon Bay, consider stopping in at the potato greenhouses of the U.S. Potato Genebank. Meet the people who safeguard the building blocks of our food supply, and learn a little more about the food you eat each day.

“It’s a very, very hard job to produce the absolutely beautiful food that’s available in our grocery stores,” Bamberg says. “Somebody had to put a lot of work into that.”

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