THE U.S. POTATO GENEBANK

Potatoes are a popular and important crop.

Potatoes are the most widely grown and consumed vegetable in the U.S. and they have a big impact on the economy, environment, and human health.

Potatoes are a popular food choice because they are versatile, filling, nutrient-dense, tasty, and affordable.

To meet the high demand for potatoes, farmers need improved varieties.

Though U.S. production has grown impressively in the past five years, challenges like climate change, diseases, and pests continue to threaten potato yields and quality.

The U.S. Potato Genebank provides essential resources.

A **genebank** is a collection of seeds and other plant reproductive material. This genetic material is called **germplasm**. Genebanks preserve these collected resources and provide access to them. Since 1947, researchers, breeders, and farmers have used genetic material and data from the U.S. Potato Genebank to research and cultivate new potato varieties that are desirable to growers, processors, and consumers.

A team of scientists from land-grant universities across the nation coordinate the genebank and ensure it offers the best resources to support potato research and cultivation now and in the future.

The value of potato production in the U.S. totals nearly $4 billion per year. This includes fries, chips, dehydrated and frozen potato products, and other uses..

Potatoes contain nutrients like folate and potassium that can help prevent costly and potentially fatal diseases like brain defects, high blood pressure, and strokes.

*The U.S. Potato Genebank houses **5,852 unique plant samples** covering **89 species**. The genebank is the only practical source of exotic potato germplasm for researchers and breeders in the U.S. Over 70% of potato varieties grown in the U.S.—and all potato varieties released in the past five years—used genetic material from the genebank.*

The genebank acquires and preserves genetic material.

The U.S. Potato Genebank is at the forefront of developing and testing new techniques and tools for collecting and preserving germplasm.

Genebank staff assess gaps in the collection and collect new potato germplasm across the U.S. and internationally. This makes potato research and breeding more efficient because individual scientists do not need to travel or deal with quarantines to bring in plant material.

The staff also preserve germplasm through propagation, on-site and remote backup collections, and innovative quarantine and sanitation methods to contain infections.

Genebank staff classify and evaluate genetic material.

Genebank staff have created a standard classification system that makes the right germplasm easier to find. They also screen for and characterize novel traits in exotic germplasm. For example, they are cooperating with state and federal scientists in Colorado, Texas, New York, and Washington to screen germplasm for resistance to zebra chip and dickeya--two serious new potato diseases.

The genebank delivers genetic material and data.

The genebank provides up-to-date, centralized data about germplasm availability, taxonomic relationships, and traits. This information is available online 24/7. Genebank staff also advise researchers on the selection of germplasm and appropriate research methods and tools.

In 2019, the genebank distributed a total of 6,659 units of germplasm to 183 orders in 34 states and 3,383 units of germplasm to 10 other countries.

How have genebank data and genetic material been used?

Genebank germplasm and technology are advancing the revolutionary remaking of potato as a crop that can be propagated by seeds. Typically, potatoes have to be grown from sprouted tubers or tuber pieces. True seeds can be stored for longer periods of time and have less potential for disease.

Genebank resources have led to new potato breeding lines and varieties with desirable qualities for growers, including:

- Cold-tolerance and frost-resistance
- Drought tolerance
- Durable resistance to diseases like late blight, verticillium, and scab
- Potent nematode resistance (Washington State University; Oregon State University)

Scientists have been able to breed potatoes with traits that benefit human health, such as increased:

- Folate, which helps prevent birth defects (Oregon State University)
- Potassium, which helps muscles and nerves function and protects against stroke, kidney stones, and osteoporosis
- Natural appetite-suppressing protein
- Resistance to tuber greening, which produces a compound that can be toxic to consumers (University of Idaho; USDA-ARS, Aberdeen, Idaho)

Genebank discoveries have also led to more appealing potatoes. For example, researchers identified better stocks for golden flesh, which is appealing to consumers and processors.

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Learn more: bit.ly/MRF-NRSP6