

**UNITED STATES**

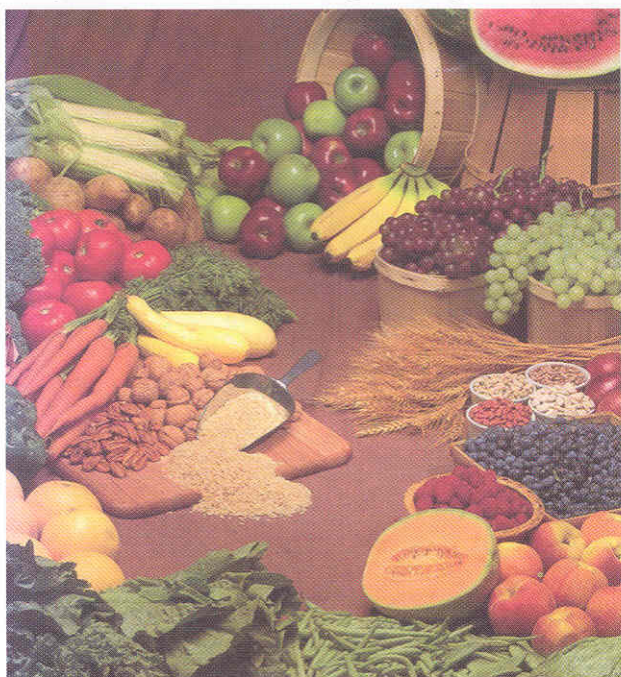


**POTATO  
GENEBANK**



Promoting the use of  
valuable genes found in  
potato germplasm  
to produce a more  
nutritious, less  
chemically dependent,  
more versatile, and  
profitable potato to feed  
an increasingly  
hungry world

**The National Plant Germplasm System** is a system of genebanks for wild and cultivated relatives of important crops. The facility responsible for potato is located in Sturgeon Bay, Wisconsin.



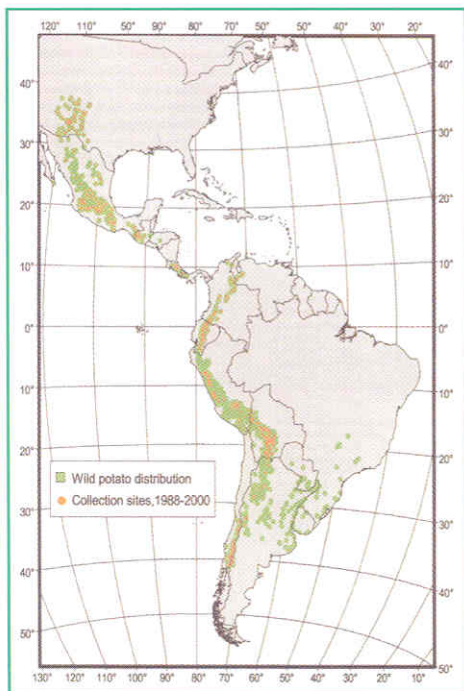
**POTATO** is the most important vegetable in the U.S. with a 3 billion dollar farm value and a 4 billion dollar chip industry. Potato is the 4th most important crop after rice, wheat and corn for providing calories to low income families around the world.



The U.S. Potato Genebank's mission is to **introduce, classify, preserve, evaluate, and distribute** the nearly 5000 samples of over 140 species currently maintained in the national collection.

## INTRODUCTION

About a dozen varieties constitute 90% of the U.S. potato acreage. Since potatoes are native only to South, Central and North America, expansion of the gene pool for U.S. potato breeding depends on the introduction of new germplasm. Genes needed for future use may become extinct if wild potatoes are not collected and preserved before the areas where they occur naturally are disturbed. For these reasons the Genebank has placed high priority on potato germplasm collecting.



Locations where wild potatoes have been reported, and where they were collected between 1988-2000.



## CLASSIFICATION

Classification into species groups is an important step in the evaluation and use of germplasm because similar useful traits are often found in similar species. Classification also helps breeders and other researchers predict the best breeding methods for incorporating particular traits of need and interest.



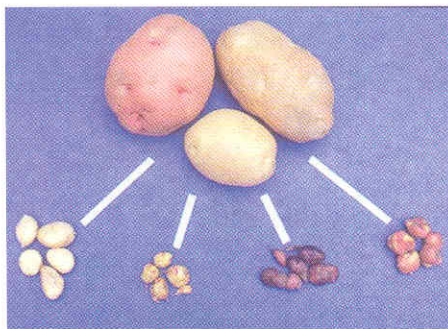
*S. acaule.*



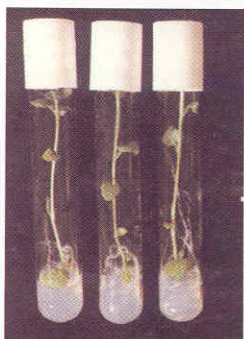
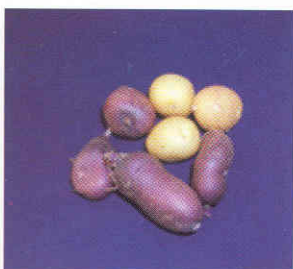
*S. sparsipilum.*

## PRESERVATION

The Potato Genebank maintains a “working collection” because it multiplies, evaluates and distributes germplasm. Although potatoes are a vegetatively propagated crop, most of the collection is preserved in the form of true seed. The state of the art seed processing and storage facilities at the Genebank allow seed collections to be stored for more than 25 years.



Wild potatoes, although small, are sources of valuable traits that can be bred into new varieties.



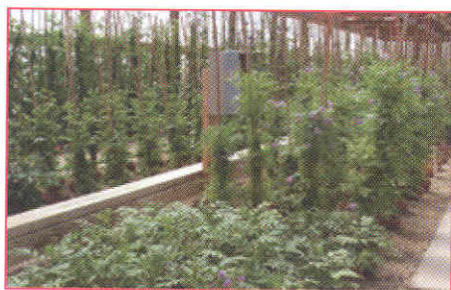
The Genebank distributes germplasm samples as true seed (5000 accessions), tubers (produced and distributed upon request), invitro clones of varieties (308 varieties), breeding stocks (186 clones), genetic stocks (198 clones), and two mapping populations.

## EVALUATION

Evaluation is an important step in making use of the related germplasm. New germplasm must be tested to identify its valuable traits. Data characterizing germplasm samples are organized and summarized in a computer database. These evaluation data are also incorporated into the USDA germplasm computer network, Germplasm Resources Information Network (GRIN) <http://www.ars-grin.gov>, making up-to-date information immediately accessible to any cooperator.



Late blight field trial in Toluca, Mexico. Late blight resistance in A9509-34, from J101 (a somatic hybrid of *S. bulbocastanum*), is compared to the common variety *Alpha*.



Seed increase of *Solanum* species in a screen house at the Genebank in Sturgeon Bay.

## DISTRIBUTION

The U.S. Potato Genebank collection is the national collection of the U.S. and, like all U.S. National Plant Germplasm System collections, distributes germplasm freely to researchers worldwide. Thus, small samples are distributed free and postage-paid to any bona-fide requester within or outside the U.S. Most distributions are used for breeding and breeding-related studies of genetics, cytogenetics, pathology, physiology, taxonomy, entomology, nematology, horticulture, biochemistry, and/or food science.



Colorful *Solanum andigena* tubers, commonly grown in the Andes Mountains of South America.

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