Did You Know?

Hog Island sheep at Mount Vernon, VA.

ARS maintains the National Plant Germplasm System and National Animal Germplasm Program, comprising genebanks like the National Center for Genetic Resources Preservation. These genebanks help preserve genetic diversity of agriculturally important plants, animals, and microbes. Heirloom varieties are included among the thousands of samples of tomatoes, apples, grapes, and other fruits, vegetables, plants and animal germplasm in these collections. Heirloom varieties are older varieties that our grandparents may have grown. ARS scientists are finding that these historical treasures might have important characteristics needed for today's crops and livestock to meet current agricultural production needs—like adapting to extreme weather conditions, diseases, insect pests, and of course, satisfying high consumer demands.

The importance of some of ARS's heirloom germplasm collections has increased with the discovery of valuable genes for plant and animal breeding that can be re-incorporated into modern varieties. In some crops, breeding efforts might have narrowed diversity, and the genes from heirloom varieties can be restored to provide important traits.

In one example, ARS helped return to cultivation Carolina Gold, a rice variety that was the gold standard in colonial America. Carolina Gold was known for its lovely subtle gold patina when milled correctly and observed in sunlight. ARS researchers used DNA markers to help purify rice samples until they had seed of the real heirloom variety. Today, Carolina Gold is grown under organic production conditions that resemble methods used in the colonial era, and it is sold at a premium price as a niche market crop.

Heirloom animal breeds are also part of ARS's collections. Scientists have collected and preserved biological material from two rare sheep breeds—Hog Island and Leicester Longwool. Both Hog Island and Leicester Longwool sheep came from breeds raised during the colonial era—before the advent of modern breeds. They are smaller than today's sheep, with less meat and coarser wool, but they have other characteristics that newer breeds lack. Today, fewer than 200 registered Hog Island sheep remain, 54 of which currently live at George Washington's Mount Vernon in Virginia.

ARS scientists use a variety of high-tech storage techniques to ensure these cool jewels are preserved for decades to come. One such tool is cryopreservation, which involves keeping plant or animal germplasm alive by storing it at extremely low (below-freezing) temperatures. When needed, samples can be thawed and the germplasm can be used to grow out a plant or animal from the past. ARS scientists were pioneers in cryopreservation technology, and that tradition continues, making it possible to preserve these genetic gems!

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