Peruvian potato farmers launch ambitious plan to send 1,500 varieties to Arctic seed vault

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As climate change and disease threaten potato farming in the tuber's ancestral home in the Peruvian Andes, potato preservationists today launched a major effort to safeguard more than 1,500 varieties by sending them to the Svalbard Global Seed Vault (SGSV) in the Arctic Circle within the next one-to-two years.

"Peruvian potato culture is under threat," said Alejandro Argumedo, a social activist with Asociación ANDES-IIED and a plant scientist at the Parque de la Papa (Potato Park), which will be sending its potatoes to Svalbard in partnership with the Global Crop Diversity Trust and the International Potato Center (CIP). "The work we begin today will guarantee the availability of our incredible potato diversity for future generations."

Covering over 10,000 hectares in Peru's Sacred Valley of the Incas, the Cusco Potato Park was established by six indigenous communities to protect biodiversity and ensure food security for communities in the region. The varieties at the Park include every imaginable shape, size and color—ranging from white to black through red, yellow and purple—and they represent a crucial part of the regional culture. Some have particular nutritional or food values—like the red moro boli, which is high in antioxidants, or the long, banana-shaped ttalaco, appropriate for distillation. Plant breeders from around the world draw on the Potato Park's collection to find traits for disease resistance, flavor or nutritional

attributes.

As befits a Valentine's Day announcement, one of the tubers that will be preserved is known as the "bride's potato." In Incan times, according to the curators of the Potato Park, the bride was supposed to peel one of these varieties to show she had the skills necessary to be a good wife.

The potato is by far the most important non-cereal crop in the world. It originated in the highlands of South America, where it has been consumed for more than 8,000 years. There are more than 4,000 varieties of native potato in the Andes, and it is the only region where a wide diversity of species and varieties are still cultivated and used. Over the last few decades there has been a dramatic decline in the cultivation of traditional varieties and some are on the verge of disappearing.

Climate change is likely to cause huge difficulties for those who farm the Potato Park, because of their weather-dependent farming systems.

"Climate change will mean that traditional methods of maintaining this collection can no longer provide absolute guarantees," said Lino Mamani, a Potato Park farmer and head of the Papa Arariwa ("Potato Guardians," in Quechua) collective. "Sending seeds to the Svalbard Global Seed Vault will help us to provide a valuable back-up collection. The Vault was built for the global community and we are going to use it."

Potatoes can be conserved in three ways: as botanical seeds, raw tubers and in vitro plantlets. Generally, conservation of material that is propagated vegetatively is more complicated and expensive than conserving crops in the form of seed. The Seed Vault is an unmanned cold storage facility, and can only accept shipments in the form of seed.

The first stage of the three-year project will involve training

conservation farmers or "papa arariwas" in pollination techniques to produce botanical potato seed. This seed will be dried and cleaned, then packaged in foil packages to preserve in medium- and long-term cold storage conditions.

Three sets of the seed will be produced. One set will be used by the Potato Park to develop climate-ready varieties of the native potatoes, which are increasingly threatened by rapid changes in weather patterns. The second set will be stored at the CIP genebank in Lima, and the third will be shipped and stored in the Seed Vault. All the sets of seed shall remain the property of the Potato Park at all times.

"The farming practices here in Peru are interwoven with our cultural rituals and practices. Our potatoes are therefore both a cultural and a biological legacy. Sending this collection to Svalbard is like sending our family members to a distant place for safekeeping, in case the rest of us need to be rescued by them in the future," said Argumedo of Asociación ANDES-IIED.

"This is a milestone in recognizing the importance of collaboration between communities and international institutions," said Cary Fowler of the Rome-based Global Crop Diversity Trust.

"The Potato Park highlights the active role that individual communities play in creating and conserving diversity," said Fowler. "This partnership demonstrates the critical importance of the Seed Vault in backing up conservation efforts of all kinds."

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