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## Warming Andes stymies Peruvian potato farmers

Eliza Barclay, Chronicle Foreign Service

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**(10-05) 04:00 PDT Coyllur, Peru** -- For the first half of his life, potato farmer Gregorio Huanuco used the same formula that had dictated the survival of his ancestors for generations.

Huanuco, 48, waited for rains to fall on his small parcel of land to sustain his crops of potatoes as well as various tubers and quinoa. When ripened, his family ate what they needed and sold the surplus in the nearby central city of Huaraz.

But by 1990, Huanuco began noting strange climatic patterns in this village of 500 residents at 11,000 feet in the Andean Cordillera Blanca. They included battering hailstorms, months without rain and warmer winters. By 2005, the quirky weather became more consistent and included a fungus that blanketed his potato crops. Huanuco now worries about earning enough to put food on the table and buy school books for his three children.

"Before, we planted all year long, any month we wanted to," Huanuco said while eyeing a tiny potato plot. "Now we only get water a few times a year and cannot plant as much, and the pests and diseases keep coming."

Most climatologists blame global warming for Huanuco's woes.

"Climate change is bringing new and more frequent diseases during the harvest," said Cesar Portocarrero, a civil engineer who has been studying the effects of global warming on the Peruvian Andes for decades. "As plagues and temperatures increase, farmers are forced to go higher and higher up the mountains to avoid them. Eventually they'll have nowhere to go."

One of the big losers is the 1.8 million potato farmers like Huanuco, who depend on predictable climate. Most are ill prepared to handle new pests and diseases that have materialized as temperature and rainfall patterns have shifted, agronomists say.

A 2006 study published in the journal *Science*, showed that between 1939 and 1998 temperatures in the Andes increased more than two times the global average. And according to a September 2007 study on climate change by the Overseas Development Institute, a British think tank, countries like Peru can avoid a decline in exports and living standards by shifting technical support from produce vulnerable to climate change like potatoes to more drought-resistant crops.

Peruvian President Alan Garcia, however, has opted to stick with the potato as a way to alleviate poverty by increasing production for domestic and external markets, and has pledged to provide more technical assistance for potato growers. Even though small farmers' yields have decreased because of climate change, the Garcia administration is pushing farmers both large and small to grow more potatoes. As a result, Peru produced 3.2 million tons in 2007, up from 2.9 million tons in 2004, according to the Exporters Association of Peru.

The Lima-based International Potato Center, which is devoted to the investigation and genetic conservation of the potato, is also working to improve marketing and assist poor farmers in improving yields while the Agriculture Ministry is working to determine which traditional tubers would best survive global warming.

"The future is in traditional crops that farmers already know," said Donato Sandoval, a ministry agronomist who says such time-honored crops as olluco may best resist global warming (olluco is a yellowish tuber domesticated by pre-Incan populations).

But the export potential of olluco and other traditional tubers remains questionable until farmers are given adequate capital and technical know-how to produce large quantities, says Sandoval.

"We know that climate change means we need to try new things, but we don't know how to do it," said Tito Guillen, the 27-year-old mayor of Coyllur.

Guillen, Huanuco and other local farmers recently began working with a Lima-based nongovernmental organization called Practical Solutions Technologies Defying Poverty to experiment with drip irrigation and rainwater techniques.

The World Bank has also launched a climate change adaptation pilot project, financing seeds, fertilizers and pesticides for growing and exporting alternative crops.

"The highland regions and potato farmers of Peru are largely ignored by the government," said Practical Solution's Miluska Ordoñez. "If we don't push the agrarian problems to the forefront, these areas are going to disappear. People are already leaving because the local climactic conditions aren't allowing them to survive and stay on their land."

In the meantime, Huanuco hopes to learn different farming practices that will eventually allow him to return to the old days of producing enough produce to feed his family and sell the surplus.

"We are suffering now, but we are learning that we have to change," he said.

## **Peru and the potato**

Potato experts point to genetic studies showing that all potatoes currently eaten in the world

originated more than 10,000 years ago from a single ancestor, *Solanum brevicaule*, found on the Peruvian side of Lake Titicaca.

Currently, there are 3,000 varieties worldwide of which 2,000 are found in Peru.

In 1553, Pedro Cieza de Leon wrote the first European description of the potato in his "Chronicles of Peru." Around the same time, the potato was introduced in Spain under its Incan language name, *papa*.

But Europeans refused to eat potatoes, using them for livestock feed until a French chemist named Antoine-Augustin Parmentier began serving tasty potato dishes at his lavish banquets in the mid-1700s. Thanks to Parmentier - who learned to eat potatoes while languishing in a Prussian prison - the Paris Faculty of Medicine declared the tubers as an edible food in 1772.

As part of an international strategy to boost the profile, production and trade of the potato, the U.N. Food and Agriculture Organization has designated 2008 the International Year of the Potato.

At the same time, the Peruvian government is promoting the potato as a way to alleviate poverty by increasing production for internal and external markets. Moved by research that shows the potato produces more calories per pound than increasingly expensive grains, the government has opened a campaign to replace white bread made from wheat with potato bread in schools.

E-mail Eliza Barclay at [foreign@sfchronicle.com](mailto:foreign@sfchronicle.com).

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