



Peruvian farmers are seeing bigger potato crops after adding gypsum to their fields.

## PERU



### A simple sprinkle improves yields in potato's homeland

After proving he could increase the yields of some of Peru's most popular potato varieties, Jiwan Palta still had a tough panel of critics to face: the Peruvian women who had been growing, cooking and eating the potatoes their entire lives.

"Initially there was some concern. They have all kinds of potatoes—all sorts of colors and flavors and textures—and didn't want anything altered about them," says Palta, a CALS professor of horticulture. "We set up a taste test and they couldn't tell the difference. So then they were convinced."

Palta first visited Peru, the ancestral home of the potato, six years ago after becoming head of the UW-Madison Potato Breeding Program. He was accompanied by colleagues John Bamberg and Alfonso Del Rio. His original goal was to set up a research collaboration with scientists at Peru's International Potato Center (CIP) to improve frost tolerance in Wisconsin's commercial varieties. Researchers at CIP study and breed the region's stunning array of potato cultivars, which serves as a valuable genetic resource for potato breeders around the world.

But during a tour of the nation's potato fields, which are located in the highlands of the Andes and cultivated by poor subsistence farmers, Palta quickly identified a second project for his team.

"When I saw the mountains, I said, 'My goodness, those soils must be highly leached because of the high acidity and the way the rain washes down the slope of the fields,'" says Palta. "And it turned out the soils were very low in calcium, and that got

us thinking: Would these native potatoes—which don't yield a lot—respond to a simple calcium amendment?"

Earlier in his career, Palta cracked the mystery of how calcium gets inside potato tubers, where the nutrient is known to strengthen the integrity of the tuber's tissues, reducing internal defects and making potatoes last longer in storage. His findings led to a major change in the way calcium is applied to Wisconsin's potato fields.

In Peru, Palta decided to try adding gypsum powder—a cheap and locally available source of calcium—to the traditional Peruvian planting system. On his test plots, local farmers followed their regular procedure for the most part: placing a seed potato at the bottom of a hole and covering it with alpaca manure. But before piling dirt on top to form a "hill," they also added some white gypsum powder. At harvest time, Palta flew back to Peru to assess the results.

"On average we saw about a 25 percent increase in yield," says Palta. "We were startled because some varieties almost doubled in yield."

Palta is now partnering with CIP, Peruvian universities, non-governmental organizations and USAID on a variety of projects to expand his lab's work and spread its benefits to additional communities. Down the road, he hopes to help create and see distributed a "Top 10" list of popular native potatoes that benefit the most from extra calcium.

"It's such a joy to see that we can make a difference in the lives of poor Peruvians who depend so much on potato as a food," says Palta. "And for those who live near cities, perhaps some of them will even be able to sell their surplus."

—NICOLE MILLER MS'06