

## Boom in quinoa demand stresses Bolivia highlands

LA PAZ, Bolivia –

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The growing global demand for quinoa by health food enthusiasts isn't just raising prices for the Andean "super grain" and living standards among Bolivian farmers. Quinoa fever is running up against physical limits.

The scramble to grow more is prompting Bolivian farmers to abandon traditional land management practices, endangering the fragile ecosystem of the arid highlands, agronomists say.

Quinoa currently fetches as much as \$3,200 a ton, up nearly threefold from five years ago — a surge fed by "foodies" making quinoa a hot health-food product based on its high content of protein and amino acids. It's also gluten free. Though used like a grain, quinoa is actually an edible seed.

The United Nations has designated 2013 as the International Year of Quinoa, and Bolivian President Evo Morales planned to be at a special session of the world body in New York on Wednesday along with Peru's first lady, Nadine Heredia, to celebrate. Their countries are the world's two biggest producers.

Quinoa has been cultivated in the Andean highlands since at least 3000 B.C., growing natively from Chile north to Colombia. It grows best at high altitudes in climates with cool days and even cooler nights.

In December, Morales mounted a tractor and plowed furrows into the soil of his highlands hometown, Orinoca, to promote quinoa as sowing season got under way. Townspeople sacrificed a llama to ask Pachamama, or Mother Earth, for a good harvest.

But last week, Morales was out chastising farmers for having planted quinoa in pastures where llamas traditionally graze. Without the llamas' manure, little would grow in the arid highlands more than two miles (three kilometers) high where the most prized variety of quinoa originates.

"Quinoa goes hand in hand with the natural fertilizer that llamas produce and there must be a nutritional crossing between the two," said Rossmary Jaldin, an expert in the crop.

Bolivia's deputy minister of rural development, Victor Hugo Vasquez, said 30 percent of his country's 70,000 quinoa producers are now children of peasants who left the farm but have been drawn back by high quinoa prices.

He and the president of Bolivia's National Association of Quinoa Producers, Juan Crispin, say many of the growers don't follow traditional farming methods and are depleting soils because they don't rotate crops.

"We're not going to work with them," said Vasquez. "We are not going to help them."

Morales' government declared quinoa a strategic priority two years ago and has since disbursed \$10 million in credits for increasing yields to cash in on the boom.

The country's quinoa crop expanded from 240 square miles (63,000 hectares) in 2009 to 400 square miles (104,000 hectares) last year, when it produced a total of 58,000 metric tons, according to the Rural Development Ministry. That is more than 40 times the production in 2000.

The United States imports 52 percent of Bolivian quinoa while 24 percent goes to Europe, where France and the Netherlands are big buyers.

Peru, meantime, raised its production to 43,640 metric tons last year from 29,640 tons in 2009 and exported \$30 million worth, up 20 percent from the previous year.

Their gains have caught the attention of potential competitors. Farmers are beginning to plant quinoa in other countries, including Canada, Australia, China, India and Paraguay. A few thousand acres are harvested in a highland valley of the U.S. state of Colorado and also in Minnesota.

Bolivian farmers are complaining to their government that they need harvesting machinery since most of their quinoa is harvested by hand. Morales' administration has invited South Korean engineers to design the desired machines.

Duane Johnson, a former Colorado state agronomist who helped introduce quinoa to the United States three decades ago, said quinoa can be commercially planted and harvested just like grain.

"It's just the size of millet," said Johnson, who now lives in Bigfork, Montana. "I think the problem you get into in South America is getting enough land to justify a combine."

When he was growing quinoa in the late 1980s, the United States accounted for 37 percent of the world's quinoa crop, Johnson said. Today, it has about 2 percent, he said.

Environmental concerns about the expansion of quinoa in Bolivia aren't the only problems that experts see.

Near Lake Titicaca, in some of the highlands' most fertile soils, quinoa is now showing up where it hadn't before been planted, replacing potatoes, beans and oats in some fields.

Experts fear that trend could harm food stocks in this poor nation where one in five children suffers from chronic malnutrition.

And with quinoa now costing three times as much as rice in La Paz markets, it isn't eaten much by Bolivians. Its consumption averages a little more than a kilogram, (2.2 pounds) per year for each Bolivian.

The U.N. Food and Agriculture Organization hopes to promote more use of quinoa at home by promoting the serving of quinoa in subsidized school breakfasts.

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Associated Press writers Carlos Valdez in La Paz and Carla Salazar and Frank Bajak in Lima, Peru, contributed to this report.

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