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Author(s): Claudia Urdanivia

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## Andean Quinoa

Local Farmers in a Global Market

*Claudia Urdanivia*

On a particularly sunny, windy morning, I met with Eddy<sup>1</sup> and his elderly parents in Puno, Peru, near Lake Titicaca. Eddy discussed the agrarian practices, knowledge and traditions of Aymara peasant communities in Puno, but he was most enthusiastic about the quinoa varieties he cultivated with his parents on their modest parcels of land. The small collection of quinoa varieties Eddy and his mother displayed were unlike anything available at health food stores and supermarkets in the United States—the vivid hues of quinoa grains ranged from a translucent shade of white to deep mustard, light pink and dark red. Even the sizes of the grains varied, unlike the uniform, packaged quinoa products sold abroad. In a mix of Spanish and Aymara, Eddy’s parents joined the conversation to explain the ways that these quinoa varieties could be prepared. Because he and his parents conserve seeds and maintain crop diversity in their fields, including the cultivation of traditional varieties of quinoa, Eddy is known as a conservationist. Conservationist farmers help preserve this age-old Andean crop, as the worldwide market favors a homogenous final product of only a few commercial varieties. Local farmers in Puno who produce quinoa and sell their

crop encounter worthy prospects and problematic trade-offs as they engage with growing national and international markets. While farmers in Puno continue to sell their quinoa at local market fairs, the global demand for the crop and market interactions influence their agricultural practices, land use and the range of crop diversity in their fields. Furthermore, as local farmers find spaces of empowerment through quinoa’s market expansion, they may face a new set of challenges also.

### The Sacred Crop

Quinoa has been transformed from a little-known Andean crop mainly grown in Bolivia, Peru and Ecuador to an international “superfood” touted for its health benefits and culinary versatility.<sup>2</sup> The plant can grow in an array of agroecological zones and has a wide adaptability to adverse climate, low rainfall and poor soil conditions (FAO 2011). In Peru, the dramatic expansion of quinoa onto the global market has increased its exportation, which has grown at an annual rate of 47.8 percent from the period 2002–2013 (INEI 2014). Considered a sacred crop by the Incas and stigmatized as a “food for the Indians” after the Spanish conquest, quinoa was replaced by crops

**Stigmatized as a “food for the Indians” after the Spanish conquest, quinoa was replaced by crops such as wheat and barley.**

such as wheat and barley as a popular local staple. Over the course of the 20th century, overall quinoa production experienced a decline as subsidized wheat from the United States flooded Peru and other Andean countries (Hellin and Higman 2001). Simultaneously, dietary patterns began changing among the rural populations in the Peruvian Andean highlands. Nonetheless, quinoa maintained its importance in the indigenous and peasant households that produced and consumed it. Family farmers from Andean communities have valued quinoa because of its nutritional importance, medicinal and ritual uses and historic connections to agrarian traditions in the Peruvian Andes. Outside of rural households, rural migrants in urban areas and occasional middle-class households, quinoa remained on the periphery. During the last three decades, however, quinoa has slowly emerged into the mainstream as scientists and rural development specialists hailed its nutritious properties, farmers in neighboring Bolivia formed associations and cooperatives to take advantage of a growing quinoa market and consumers abroad sought healthier food choices.

### Quinoa Agrobiodiversity

Through local knowledge and agrarian traditions, Andean farmers have maintained quinoa agrobiodiversity in their fields. Agrobiodiversity helps mitigate risks from adverse climatic events, provides resilience to different agroecological conditions, offers some resistance to diseases and pests and provides nutritional diversity for family

farmers (Tapia and De La Torre 1998). However, rural communities have experienced a decline in quinoa agrobiodiversity for reasons such as greater market integration, increased intervention of projects to promote improved varieties, climate catastrophes and changing dietary habits (Canahua et al. 2002). Conservationist farmers, who are often integrated into markets, have also chosen to become caretakers of crop diversity.

I interviewed conservationist farmers as part of my 2012 fieldwork on local-level implications of the growing market for quinoa. I found that they treated quinoa diversity maintenance and management as an artistic, fulfilling and challenging endeavor. Eddy explained that he and his family carefully plant small quantities of the diverse seeds in a specific parcel of land, adjacent to but separate from commercial varieties. He mentioned that each of the traditional varieties in his collection is well adapted to diverse regions and could thrive under different conditions, but because he is conserving them, he plants them close to home so that he can watch over them.

Other conservationists use similar management strategies, including Don Felix, a well-known conservationist from a predominantly Quechua rural community. Felix maintains a vast collection of 50 traditional varieties. In fact, I visited Felix on the day he was set to collaborate with Puno's regional station of the *Instituto Nacional de Innovación Agraria* (INIA) to use his farm as a site for on-farm quinoa landrace<sup>3</sup> conservation. This event had Felix and his wife, Apolonia, running up and down their farm to plant the quinoa with their field hands and graze their animals. Don Felix stated

that without his wife, it would be impossible to maintain his substantial collection. As a team, they carefully monitor the quinoa plants throughout the agricultural season to ensure that the varieties do not cross-pollinate, that the plants mature well and that the best panicles are conserved for seed.

Like their fellow farmers, conservationists plant commercial varieties and benefit from the commercial sales of their crop, but they also dedicate time and land to preserving traditional varieties. The conservationists have obtained these seeds through different means, including exchanges with other farmers, attending seed fairs, collaborating in projects with an NGO or INIA and from their family collections. The farmers I spoke with identified economic and cultural reasons for becoming conservationists and maintaining quinoa landraces in their fields, including sense of place and cultural identity. They also cited individual motivations; in their narratives, conservationists evoked themes of loss, of sharing both seeds and knowledge with others and of educating the public about the multiple culinary uses of quinoa varieties that are mostly unknown beyond Puno's rural communities. In addition, some conservationists talked about their curiosity about crop diversity or the prestige related to conservation as motivators. Finally, while no farmer directly stated that she or he conserved landraces for profit, an economic component surfaced in some of their narratives. For instance, Don Felix explained that his passion for conservation was fueled by a desire to explore crop diversity, but he later found that selling seeds to other farmers and interested buyers was profitable as well. Many conservationists also display their

quinoa varieties at agricultural and biodiversity fairs organized by municipal or regional governments, local NGOs and farmers' associations. Through these fairs, farmers are able to gain a presence at local, regional or even national levels.

Interestingly, most of the conservationists said they do not consume the landraces, cultivating them strictly for conservation. This differed from the general population of family farmers I interviewed; those who cultivate a few traditional varieties reported that they consume or sell these. Maintaining crop diversity as a function of risk insurance or harvest security was largely absent from the conservationists' narratives. Instead, several conservationists and other family farmers mentioned that they plant various commercial varieties and landraces that have commercial success to prevent an entire harvest from being lost. And the theme of loss took on a different meaning as Eddy described his incentive for conservation:

It's just that we don't want the varieties to be lost—the landraces, especially the little quinoas of many colors. Of pink, red, yellow colors—we don't want them to be lost. We want to save them for future generations. That is our objective ... to save these and for these to be passed on for other agrarian experiences and for other families' experience as well.

## Agricultural Practices and Land Use

A few days after learning about agrarian practices and quinoa landraces, I revisited Eddy and his family to observe the planting

of quinoa. At Eddy's small farm, I came to appreciate the labor of planting with the use of a *yunta*, or yoke. To set up the yoke, Eddy and his father rounded up young oxen that would be working the fields for the first time. They elaborately tied the wooden crosspiece over the neck of the first and then the second ox, and finally attached the wooden plow. In just two minutes, Eddy's 78-year-old father had successfully set up the yoke and plow. Over the course of the next two hours, Eddy and his father planted a little less than a quarter hectare of quinoa, with Eddy's father leading the yoke while Eddy followed along, planting the quinoa seeds in the furrows. This activity required Eddy's father's strength and coordination to pull and guide the oxen, as well as Eddy's skill and precision in planting the tiny seeds.

The yoke is among the agricultural traditions that farmers in the Andean highlands employ to begin their sowing season, and many farmers engage with modern practices

also during cultivation. For instance, some smallholders who own or rent lands in flat terrains rent a tractor and an operator to prepare the soil and some months later use the yoke for planting. Family farmers with larger landholdings use the tractor for the preparation of soils as well as the planting. The use of such machinery depends on factors such as topography and resources; farmers in higher elevations who own tiny plots of land on steep hillsides may be able to use only hand tools.

Other practices that shift between traditional and modern are seed saving and purchasing. While conservationist farmers are known for conserving varieties and saving seeds, seed saving is not a practice unique to them. Most family farmers save their seeds for the next year's harvest. Although a majority of family farmers I interviewed mainly plant commercial varieties, they use seeds that have been passed down in their families or obtained from community members. On occasion, farmers also obtained seeds from a local NGO or at local market fairs. The use of high quality and certified seeds, particularly for commercial varieties, has received substantial attention from rural development workers and researchers in Peru. These are favored among workers and researchers because they heighten yield and quality. Purchasing high quality seeds can sometimes prove to be difficult due to the lack of seed availability or the additional cost. At the time of my



*Eddy and his father set up the yoke at their farm before sowing the quinoa.*

research, purchasing high-quality seeds was largely restricted to farmers involved in a farmers' association or affiliated with local NGOs. However, this practice may increase as certified seeds become more available.

With the market expansion of quinoa, some farmers have also been able to intensify their production to generate more commercial sales. In Puno, researchers have documented changes in traditional crop rotation systems vital to the health of the soils and the

natural managements of pests, and note that the intensification of quinoa production may have impacts on these systems (Soto et al. 2012). Crop rotation sequences in Puno are complex and vary within agroecological zones and communities. Typically, the potato is annually rotated with quinoa, followed by Andean tubers or Andean grains, then a cereal (such as barley). Finally, legumes are planted or the soil is placed in a brief fallow period. According to my conversations with farmers, traditional crop rotation systems and fallow periods remain important; farmers do not appear to have altered their land-use practices dramatically, although there was a wide range of responses concerning how much land to devote to quinoa production. A few farmers have made notable changes to their individual landholdings. Two organic-certified family farmers with larger landholdings have intensified their production and altered their crop rotation sequence by planting quinoa



*A farmer uses the wind to winnow her quinoa in order to separate the grain from the chaff.*

on land used formerly for grazing. They began the sequence with quinoa instead of potato, opting for the possibility to plant quinoa in the same plot for several years. Meanwhile, a few smallholders who did not have sufficient land available to expand quinoa cultivation stated they might reduce other crops in their individual landholdings to increase quinoa production.

Communal landholdings, at least for now, appear to offer a different outcome. One type of agrarian space in Puno where crop rotation is alternated with periods of fallow and grazing is known as an *aynoka* in Aymara communities. Similar agrarian systems exist in Quechua communities in Puno. An *aynoka* is a collection of plots across several sectors in communally controlled lands where each family maintains individual plots, typically distant from the home and managed by the peasant communities (Canahua et al. 2002). All the Aymara farmers I interviewed who maintain plots in

aynokas have continued the crop rotation system because it is a traditional practice, and they do not wish to be sanctioned by the community group. Traditional agricultural spaces such as aynokas play a fundamental role in Andean agriculture, as they preserve traditional knowledge and communal land management and ensure that quinoa is not planted as a monoculture. Aynokas remain important to farmers, but these lands have also experienced changes in recent decades, with a significant reduction in fallow periods.

Aynokas have played an essential role in bringing Eddy's collection of quinoa varieties to life. As he walked through communal fields in surrounding and more distant communities, he saw different quinoa landraces, obtained permission from the farmer to harvest a few seeds and brought these back to his farm. While Eddy and his parents have a keen appreciation for traditional agricultural knowledge, they have worked also with the *Centro de Investigacion de Recursos Naturales y Medio Ambiente* (CIRNMA), an NGO, to learn innovative organic methods to restore the health of their soil. Eddy's soil had depleted through time due to the use of chemical fertilizers. Ironically, his father used these products in the past at the behest of other agricultural projects.

Interventions by agricultural rural development projects among indigenous and peasant communities in Peru have mixed results, as the methods and knowledge from a particular project may not translate to fit the specific needs of a community. However, in the case of organic quinoa production, farmers appear to approve of this method ei-

ther because it is perceived to be lucrative in the long term, better for the soil or healthy for the body. Over the past decade, groups of farmers in Puno have shifted towards, or are transitioning to, organically certified quinoa production with the support of NGOs such as CIRNMA and the quinoa cooperative in Puno. Such organizations provide training, workshops, certification subsidies or funding for projects such as acquiring small-scale harvest technology. Many farmers indicated to me that their traditional way of producing quinoa has always been "natural" or "organic." However, if provided with support, farmers are choosing to undertake the lengthy organic certification process.

## Opportunities

With the global quinoa boom, organic quinoa production is among the new venues of opportunity that have opened up for Andean farmers who market their crop. Market expansion has also helped foster farmers' associations, allowed producers to earn a more stable price for their crop and created spaces of empowerment for marginalized communities. The farmers I interviewed sell their product at small, intermediate or large scales. For instance, independent farmers who mainly directed their quinoa for home consumption sold only the surplus to the local marketplace. As with any agricultural product, the income earned from quinoa is just one of the many ways farmers sustain their lives, and like other crops, quinoa is vulnerable to major loss due to drought, hail or frost. Farmers



*Quinoa dishes prepared by a farmers' association for sale at a local agriculture and agro-industry fair.*

to display these recipes. One family told me they enjoyed participating in fairs because it motivated them and allowed the public to meet the real producers of quinoa. Finally, farmers who belong to the associations and the *Cooperativa Agroindustrial Cabana Ltda. (COOPAIN)*, the only quinoa cooperative in Puno, can receive ongoing technical assistance. Young people affiliated with COOPAIN can also take advantage of opportunities for leadership training.

who do have a decent harvest told me they have used their earnings from quinoa sales for their children's education, including school supplies and uniforms, to buy fodder for cattle, to purchase crafts and foods in the local marketplace and for miscellaneous expenses. Some of the family farmers with the largest landholdings who make the most profit have been able to invest in higher education for their children and in upgrading the infrastructure of their homes.

A few farmers and their associations also focus on turning raw quinoa into processed products such as cookies and nectars. For example, Eddy is part of a farmers' association that sells these types of products at agricultural fairs and other marketplaces. Several independent farmers who belong to community-based groups have received training from CIRNMA about nutrition and the preparation of various quinoa-based dishes. As a result, they were able to participate in local and regional fairs and contests

## Thoughts for the Future

Interviews with quinoa producers in Puno reveal the heterogeneous, complex and often contradictory experiences of market expansion. The benefits of producing and marketing quinoa often extend beyond material gains. Quinoa's popularity has helped to empower small-scale agriculturalists, including female farmers who can gain recognition through various leadership positions they acquire in their associations. Two female farmers in this study were association presidents and several other female farmers held positions as promoters of their associations. For certain farmers, quinoa also represents the opportunity to share their knowledge with others and to engage in small-scale entrepreneurial activities.

At the same time, farmers may encounter challenges brought by the future implications of shifting land use practices, increas-



ing mechanization, decline in traditional knowledge and a preference for commercially standardized varieties. Moreover, farmers may be limited in their ability to successfully sell their crops, as membership in a farmers' association does not necessarily guarantee that farmers will meet their expectations of finding interested buyers from agroindustry firms or other companies and developing market connections. At times, farmers only sell to the local market where the product will most likely circulate locally or regionally but may ultimately travel further. In this instance, farmers will never know their harvest's destination in the global market. Even some of the organic farmers I talked to experienced this challenge, along with the added uncertainty of not knowing whether they can renew their costly organic certification in the future without outside financial support. Farmers must produce a consistently high-quality product and develop business and marketing skills as well to benefit from greater market opportunities. Although many of the farmers I interviewed were affiliated with NGOs, a municipal government program or private companies that assist them with training, the general population of farmers who cultivate quinoa in Puno may not be connected to any type of agricultural project, have access to small-scale processing technology or be familiar with specific market criteria. And in spite of the Peruvian government's proposed initiatives to use quinoa production as a springboard for rural development, these efforts may not reach small farmers with marginal landholdings and few resources.

Transformations in quinoa production and commercialization truly demonstrate

the depth and breadth of global connection for small-scale farmers in the Andes. Beyond the local impacts for farmers, other issues under debate include the escalating price of quinoa and its declining consumption among low-income people in both urban and rural areas of Peru and Bolivia. As this "superfood" travels from seeds cultivated by local farmers to the tables of national and international consumers, it will be important to track how farmers negotiate the multiple roles of quinoa as an indigenous crop and emergent commodity.

## Notes

Photos by Claudia Urdanivia.

1. All farmers have been assigned pseudonyms, while actual names are used for other individuals, organizations and places.
2. Quinoa is also grown to a smaller extent in Colombia, Chile and Argentina.
3. There are various definitions for the term "landrace." The anthropologist Stephen Brush describes landraces as "locally adapted varieties that are named, selected, and maintained by farmers in different regions ... characterized by genetic and phenotypic variability within named types." (Brush 2004). In this essay, I use the terms traditional varieties and landraces synonymously.

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**Claudia Urdanivia** holds an MA in anthropology from Hunter College, CUNY. She is program operations manager at City Green, a nonprofit environmental organization dedicated to facilitating the establishment of urban farms and gardens.