

Independencia women seek indepe

Over the centuries, the people of the Andes have domesticated a multitude of extremely hardy and nutritious crops. The chisiya mama or "mother of all grains" is quinoa, a cereal which is one of the best sources of vegetable protein known in the world. However, under colonial and modern influences, new foods such as wheat-based noodles have become popular. Some village women in Bolivia have successfully experimented with small-scale production of healthier noodles using their indigenous cereal, quinoa.



tures for their standard 12.5 kg batch:

- Popular noodles made of wheat flour, water, salt, oil and no eggs;
- Integral noodles made of a mixture of 50% wheat flour, 50% quinoa flour, salt, twice as much oil, and 6 eggs;
- Alimenticio noodles made of 70% quinoa/tarwi flour and 30% wheat flour, salt, oil as above and 12 eggs. There is usually no more than 10% tarwi in the quinoa/tarwi mixture because, despite the washing, tarwi still brings a somewhat bitter taste to the noodles.

The women's first problem was that they had no experience in noodle making. They had always bought the noodles which were transported into the area from Cochabamba city. Together with the wife of the coordinator of the local Centro Cultural Ayopayamanta (CCA), some of the women travelled to Cochabamba (a trip of 6 hours one way) where they could learn what ingredients and equipment they needed and could see how noodles were prepared using hand-operated machines.

Starting up business

Back in Independencia, the women rented a small house. Here they met in the afternoons until late in the evenings, after they had completed their work at home, and prepared the noodle batter. Because there was not enough room in the rented building to dry the noodles, the women took them home and laid them on the floor of their homes to dry. They initially bought the quinoa from local farmers but, as they gradually increased noodle production and needed more quinoa, they began to obtain it at the closest town market in Oruwo in exchange for their potatoes. They found that they could thus obtain more quinoa than if they bought it for cash gained from potato sales.

With the aid of the CCA coordinator, the women applied to the German organisation ASW (Aktionsgemeinschaft Solidarische Welt) for assistance in establishing their small enterprise. In 1991 they received enough funds to be able to buy and renovate a building in Independencia. This consisted of a sales room, an office, a small motor room, space for storing grain, a large production room and a drying area. They also had a water system installed to permit more hygienic produc-

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The women's group in Ayopaya are now using a machine to make noodles from a mixture of quinoa (Inca wheat) and conventional wheat flour. (Photo: CCA)

Quinoa (*Chenopodium quinoa*), which was domesticated in the Andes perhaps as early as 5000 years ago, is an extraordinarily nutritious cereal. Not only does the grain have a high protein content (16-20%) but this protein is rich in the essential amino acids lysine, methionine and cystine, making it a good complement to foods from other cereals and legumes. Quinoa can grow in cold, high regions (2500-4000 m), on poorly drained land and under very dry conditions (NRC 1989).

Quinoa has long been a staple food in the Bolivian highlands. But colonial influences and modernisation have changed food habits. Barley - a less nutritious grain - was introduced by the Spanish and supplanted quinoa in many parts of the Andes. With the increasing imports of wheat and its products, many Bolivians are eating bread and noodles made from wheat.

These new foods have also reached Andean villages, where people are buying more and more of such imported foods, rather than what can be grown in their own area. This not only means that local agriculture and the local economy are devalued and degraded. It also means that the villagers become dependent on fluctuations in imports and their prices.

On the other hand, many Bolivians have grown to like noodles and want to continue eating them. A group of women in Independencia in Ayopaya Province

(Department of Cochabamba) wondered if it might be possible to make noodles out of the indigenous Andes cereals. The local processing of local products would cut back on imports into the area, encourage farmers to continue (or start again) to grow the traditional Andean crops and - of most importance to the women - give them a source of income close to their homes.

Quinoa-tarwi-wheat mixtures

In 1990 the group of 25 women and schoolgirls decided to establish a small noodle factory, "Fideos El Carmen", under their own management. They wanted to make good, tasty food using local products as much as possible, but they found that they had to mix the local quinoa flour with some wheat flour in order to gain the right consistency of batter for noodles.

They also experimented with including some flour of tarwi or Andean lupin (*Lupinus mutabilis*), an indigenous plant with over 40% protein content in the grain. It is a very drought-resistant legume plant which can be grown on marginal land to prepare the soil for a more demanding crop. However, its seeds are bitter. The women have to soak them in running water for several days to wash out the bitter alkaloids.

The "El Carmen" women are currently making noodles with three different mix-

dependence: making Andean noodles

tion. Later that year, by building a protective roof behind the building, they created even more space for drying noodles.

Appropriate mechanisation?

Another problem was milling. As the seed coat of quinoa contains bitter substances (mainly saponins), the seeds need to be washed or milled to remove this layer. Washing is tedious and time-consuming work. The women considered buying a mill and using it not only for noodle making but also to generate additional income by grinding grain for other women.

They decided against a diesel-driven mill, as it runs too quickly and becomes too hot, and the flour ground in such mills does not keep as well as the flour milled between stones. They now make arrangements with a man in a nearby village who owns a water-driven mill with two large grinding stones.

To cut the noodles, the women first used a small manual machine which makes only one type of noodle. After they learned how to operate this, they wanted to broaden their palette of products to offer what people in the area are used to buying from the city. Also with the aid of ASW, the women obtained a more versatile noodle machine from Italy. However, they do not seem to have given much thought to what they will do if the machine breaks down or if spare parts are needed. An expert from Cochabamba came to the village to show them how to use the machine, but it will probably be difficult to find good maintenance services.

Brown is healthy

At the moment, the noodles produced by the "El Carmen" group are still slightly more expensive than those coming from Cochabamba. Nevertheless, the noodles are selling well to customers with whom the women have direct contact. Marketing further afield and more anonymously is made more difficult by the fact that the noodles made with quinoa - especially those with 70% quinoa flour - are brownish. The women use only natural colouring agents and inform their customers that brown noodles are more nutritious than the white ones made only of wheat. But they have not been able to spread this knowledge to a wider public beyond their village.

If the women want to increase production, they will have to invest more time and energy in marketing beyond the village, even as far as Cochabamba, and will have to join forces with groups which can educate consumers about the food value of quinoa products. It is also important that the women build up good contacts with a larger number of local farmers, encourage them to grow more quinoa and tarwi, and

possibly even arrange contracts with them to ensure supply of ingredients for their noodle enterprise.

Gaining business experience

Few women in the village can write, and none had any knowledge of bookkeeping when "El Carmen" was started. A woman working in an office in Cochabamba has been coming back to the village at irregular intervals to do the correspondence and bookkeeping for the "El Carmen" group. By working together with the women, she is teaching them how to do this themselves.

The "El Carmen" group has been successful in experimenting with different mixtures of imported and local flour to produce noodles on a (small) commercial scale. However, the women still need to

gain much more experience in managing the procurement of ingredients and the marketing of their products, and in assessing the feasibility of different investments, such as in machinery. Are there other women's groups involved in similar small-scale agroprocessing ventures, from whom they could learn?

Reference

- NRC (National Research Council). 1989. **Lost crops of the Incas: little-known plants of the Andes with promise for worldwide cultivation.** National Academy Press, Washington DC. 415 pp. Available from: BOSTID, 2101 Constitution Ave NW, Washington DC 20418, USA.

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Photo: CCA

The group of musicians Ayopayamanta raises funds for village projects by entertaining Europeans with Andean music and informing them about Andean culture and Ayopayans' efforts to improve their lives.

Self-help project funding

In Bolivia, we have been hearing about development aid since the mid-70s. Much money has been spent trying to improve agriculture and infrastructure. Yet most Bolivians are still battling for day-to-day survival. The donors wait in vain for their projects to be continued by the local people in "self-determined" and "sustainable" development. They encourage us to take our own initiative - but only along a path they choose for us. Otherwise, the funds cease to flow.

Ayopaya, in the central Andes, chose to take its own path. Ayopaya Province is rich in culture. In and around the capital Independencia are 52 village communities which still retain their indigenous social organisation and ways of living. These people have set their own goal: Better living conditions for all!

The Cultural Centre Ayopayamanta (CCA) was founded in January 1986 by some young

Ayopayans wanting to revalorise our culture: our music, our dances, our handicrafts and other forms of art. This culture has been maintained by local people for generations. Any benefits gained from "marketing" the culture belong to them.

CCA started a group, called Ayopayamanta, made up of six musicians who make concert tours in Europe, for about 3 months every year or two. Besides entertaining Europeans with Andean music, they inform them about Andean culture (musical instruments, foods, costumes, customs) and about Ayopayans' efforts to improve our own lives. The revenues from these concert tours and contacts with solidarity groups, church groups and private donors are brought back to finance Ayopaya's own development projects.

These include initiatives of women's groups, such as in making quinoa noodles, supporting the local farming cooperative and building a multipurpose community hall. To improve the health situation, simple gravity-based drinking-water systems are being built by hand. The water can also be used to irrigate gardens. CCA is experimenting with solar collectors for warm water and electricity. In the Centre, young Ayopayans are trained in traditional crafts, like making musical instruments. Many of these are sold while Ayopayamanta is on tour.

CCA has a small cultural and technical library for students, both young and old. It holds seminars about the history, culture and daily reality of Ayopaya and a yearly festival of indigenous music. It also has a library of video films, including films made by CCA about local traditions. These are shown not only in the Centre but also in the villages.

In this way, Ayopaya maintains its independence and self-determination and ensures the sustainability of its sociocultural institutions and development efforts. Ayopaya gains funds for projects not by holding out hands for alms, but rather by proudly presenting and celebrating our own culture.

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