

Promoting the diversity of useful plants and animal breeds through marketing

The example of potato diversity in the Andes



There are around 4000 different varieties of potatoes worldwide. Photo: CIP

Only a few varieties of potatoes make up the vast majority of those produced in the world today. The only place where an unequalled diversity of varieties is being cultivated and used is the potato's place of origin, the Andes region of South America. It is estimated that there are approximately 4000 potato varieties worldwide, and of these more than 2000 are cultivated in the Peruvian Andes alone. The Andes varieties are red, blue or black; only a few have yellow or white flesh. They come in a wide range of sizes and irregular shapes. This diversity is a gene reservoir of inestimable value for global food security. But there has been a dramatic decline in the cultivation of traditional varieties over the past few decades, and many are on the verge of disappearing. And some can no longer be found outside of gene banks.

Our potatoes have little in common with those from the Andes region. Even today, most of the local varieties being used there are bitter, and contain substances that cannot be tolerated by the body, so they need to be pre-treated before being eaten.

The traditional value chain – producing *chuño* and *tunta*

To produce *chuño*, which are freeze-dried potatoes, the bitter potatoes are left to freeze at night for several days, and then they are sun-dried during the day. *Tunta* is made by adding moisture during this process, which results in even better removal of the bitter agents. The end products are not only tasty and popular, they also keep for months. Both products are consumed largely by those who pro-

duce them, and, since they are dried products, they can be easily transported and treated.

Buyers buy the bitter potatoes prepared as described from farmers and then sell them, sometimes through brokers, to wholesalers and retailers. From there they get to end consumers. To make *chuño* or *tunta*, potatoes need to be cleaned and sorted. This is done by the farmers, buyers or merchants. Suppliers of seed potatoes, fertilizer and pesticides are located upstream of potato production in the supply chain. Some links in this chain can be skipped over. For example, the farmers can produce their own seed potatoes or organic fertilizer, or they can sell their processed *chuño* or *tunta* directly to retailers.

A study done by Fundación PROINPA (Foundation for the Promotion and Research of Andean Projects) estimates that in the Bolivian highlands around 5600 family farms produce more than 5000 tons of *chuño* and *tunta* at a value of approximately USD 3.3 million annually. That translates into around USD 550 per family. In Peru, the amount produced is likely even a bit higher. *Chuño* and *tunta* production is therefore very economically significant for the Andes region and it is closely linked to preserving potato biodiversity.

The diversity of varieties, farming techniques, processing and food traditions make the potato both a staple food and a cultural artefact for rural populations. Accordingly, there are a variety of approaches for promoting traditional potato production and for preserving genetic biodiversity, which traditionally has been done by saving seed stock in gene banks and research institutions. But, increasingly, market-oriented approaches are also being developed.

Measures for promoting production and commercialisation

The traditional way to boost production has been improving the efficiency and productivity of cultivation, processing and storage. Virus-free seed stock, better plant protection and better fertilisation improve potato productivity. But farmers can only afford the increased costs associated with these measures if they can get higher market prices. So an objective of these types of measures is to ad-

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just the potatoes and potato product offerings to better meet demand. Networking producers with processors and producing a product of theoretically higher quality helps increase farmers' income, but these measures do not always also help preserve agrobiodiversity, as the following examples show.

The development of single-variety quality potatoes

In Bolivia, there are only 13 varieties of potatoes sold commercially, but small farmers are familiar with, and cultivate, hundreds of potato varieties. This contradiction can be explained by the fact that bulk potatoes are usually only available as a mixture of varieties, so a commercial "variety" necessarily consists of more than one biological variety. Neither consumers nor processors can distinguish all the varieties, which is why consumers are happy to pay more if they can get potatoes of uniform quality instead of a mixture of varieties of uncertain quality.

With support from the International Potato Centre (*Centro Internacional de la Papa, CIP*), single-variety potatoes packed in bags as part of the *Papa Andina* project have become established as a brand. They single-variety potatoes are either packed in 50 kg sacks for the wholesale trade or sold as *t'ika papa* in consumer-friendly pack sizes by the country's largest supermarket chain. However, this type of marketing only works for around 20 varieties of "non-bitter" potatoes.

So, while this approach boosts the incomes of a limited group of small farmers who have favourable farming conditions, it does little to preserve potato biodiversity.

Access to industrial potato processing

The producers of potato chips and french fries are very particular about potato shape and make-up, but they pay higher prices which is why *Papa Andina* put a lot of effort into helping small farmers get access to this market. By improving plant protection, organising farmers, and establishing a governing body for small-scale producers and industry representatives, farmers from several villages were able to get supply contracts. However, they had to limit themselves to two varieties of potatoes, which reduced the



Presentation of *chuño* as a typical Bolivian product at a trade fair.
Photo: GTZ



The *T'ika Papa Initiative* connects small farmers from the Andes with new urban markets.
Photo: André Devaux/CIP

biodiversity of potatoes being cultivated. Moreover, the larger farmers with more favourable production conditions had the advantage here, too, while industry was only interested in production from small farmers as a way to cover periods of increased demand.

The concentration in the value chain on several processors and highly standardised end products has a negative effect on potato biodiversity.

Development of new product lines for small farmers

So, *Papa Andina* developed entirely new products that are produced solely by small farmers: multi-coloured potato chips, and *chuño* and *tunta* as branded products.

Multi-coloured potato chips

The newly developed multi-coloured *Jalca Chips* are a mixture of around 30 different-coloured potato varieties put together by a processing and export company and sold in appropriate packaging as an high-end specialty food, for example at the airport in Lima.

Sales volumes are still extremely small, but by developing this product *Papa Andina* was able to create another value chain. Now there is a market for some potato varieties that previously had had no commercial viability outside of their region of origin.

Chuño and tunta produced by small farmers sold as a premium branded product

A similar approach was taken for the development of marketable *chuño* and *tunta*, which are sold in supermarkets under the brand names *La Llaveña* and *Chuño Blanco*. By maintaining recognised hygiene standards during processing and having appropriate packaging, premium branded products were developed that appeal to a new

group of buyers and garner higher prices. This is particularly interesting in terms of agrobiodiversity since these products represent one of the few ways to profit economically from bitter potatoes.

The development of these products has noticeably changed the value chain's structure. Originally, the cultivation and processing was done by farmer-run businesses, which sold the *chuño* and *tunta* directly, or via brokers, to consumers. The many and diverse parallel commercial relationships made it possible for there to be a range of product qualities and varieties used.

With the new branded products, though, all goods are being funnelled into one location where they are processed. This means, in this case only, that the products are sorted according to strict quality criteria and then pack-

aged. While previously a range of product qualities were offered to consumers, now there is only one quality. This standardised product is sold along with the traditional mixtures so that consumers still have the same selection they are used to.

Though, for the *chuño* and *tunta* branded products only a few dozen varieties are used and not, as with traditional production, hundreds. Again, this is to the detriment of the biodiversity of potatoes under cultivation. Like the multi-coloured potato chips, the new, packaged *chuño* and *tunta* products appeal to a new group of buyers.

Lengthening the value chain by adding new consumers and market niches with higher prices provides farmers with an opportunity to preserve the varieties used for these products and to earn higher incomes.

The Peruvian potato park

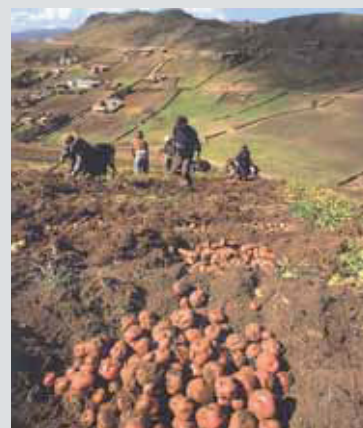
At the heart of the potato's area of origin in Peru, six Quechua villages banded together to create the *Parque de la Papa*, the potato park. Its objective is to preserve the landscape and the traditional way of life of the inhabitants. In this region around 1,200 different potato varieties are identified by name and used. A typical family farm grows 250 to 300 potato varieties. The park is being used not only to help preserve this astounding biodiversity, but also to re-introduce varieties to the region that have already disappeared. An agreement was signed with the International Potato Centre (CIP) for re-introducing 206 potato varieties. Reforestation and improving nutritional practices went hand in hand with the agricultural activities.

Its current status as a protected area, the development of agrotourism, a visitor centre with a potato show and restaurant, better commercialisation thanks to storage options and the selling of potato mixtures at the country's largest supermarket chain should ensure the continued existence of the project.

The establishment of the *Parque de la Papa* introduced new components to the existing value chain. The farmers are helped by scientists, who give them healthy seed stock of old potato varieties. Research institutions provided materials to help marketing efforts and to inform visitors and consumers. Tourists who eat at the restaurants in the villages and go on the guided tours are buying additional products or services from the farmers, which increases their income and, ultimately, helps preserve the old varieties.

But the additional sales opportunities in the park itself are not the only important thing. Agrotourism, official

commemorative days (such as Potato Day, which is celebrated on May 30), exhibits of varieties and cooking contests increase awareness among producers and consumers alike about the significance of the potato and its biodiversity.



Potato harvest in Peru.

Photo: CIP

Traditional potato production was long seen as backward and uninteresting, but today there is a greater understanding of the necessity of preserving the potato and its associated cultural traditions. This awareness increases the marketing opportunities for potatoes and potato products, whose properties are now better appreciated.

The establishment of the potato park also changed the legal situation and formalised existing cooperative agreements. An agreement signed by the six communities and the International Potato Centre sent an important message. Among other things the institute's gene bank gave certain varieties with all associated rights back to the farmers. The agreement is intended to ensure that the old potato varieties and knowledge associated with them remain available to the indigenous population in perpetuity. For their parts, the farmers agreed to help preserve these varieties.

Non-commercialisation measures

Market-oriented approaches can increase the income of small farmers, and they can also preserve biodiversity, at least to some degree, as is shown by the example of multi-coloured potato chips and the high-quality *chuño* and *tunta*. Exclusively endangered, rarer potato varieties are used to produce these products, so premium market opportunities were developed, although only for a few dozen varieties. Measured based on the overall biodiversity of agricultural plant varieties or animal species that need to be protected, market-oriented approaches almost always tend to decrease diversity on the market, and therefore they also reduce the diversity of cultivated plants or production animals.

To raise public awareness of the value and significance of agrobiodiversity and maintaining it, more is needed than marketing support. One successful example is the Peruvian potato park (*see box overleaf*).

The consequences of these measures

In addition to the effects of the individual measures described above, it is clear that while all of the projects are using very innovative approaches, none has had a big economic impact yet. The sponsored initiatives have not been able to be consolidated to the point that they could



The potato is the most important crop in Peru's agricultural sector. Annual per capita consumption of potatoes stands at around 63 kg and is rising. Photo: GTZ

survive on the free market without support. The number of farmers whose incomes went up is still low. To be truly viable in the marketplace, additional outside support is necessary, for example technical and administrative consulting and quality management.

The first preliminary market successes should not mislead us into thinking that a significant percentage of potato varieties can be preserved through long-term support of gene banks and subsidised farming alone.

The Issue Paper series "People, Food and Biodiversity" aims to:

- stimulate an interest in the conservation and sustainable use of biological diversity,
- present quickly and clearly concrete actions and experiences,
- explain new concepts and issues relating to the topic of biological diversity,
- encourage and stimulate the mainstreaming of this topic within development cooperation projects and programmes.

We look forward to your suggestions and experiences so as to enable us to improve this series.

Further information:

GTZ and GFU (2006): Value Chains for the Conservation of Biological Diversity for Food and Agriculture. Potatoes in the Andes, Ethiopian Coffee, Argan Oil from Morocco and Grasscutters in West Africa.

Asociación Andes: www.andes.org.pe

Papa Andina project: papandina.cip.cgiar.org

CIP: www.cipotato.org.

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