

PROMOTING MINOR CROPS – STRIKING A BALANCE BETWEEN FORMAL AND INFORMAL, MODERN AND TRADITIONAL DIMENSIONS

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World-wide

- 30,000 edible plant species
- 7,000 used
- 30 spp. = 95% calories and protein
- 3 spp. (maize, rice, wheat) > 50% energy from plants

A large number of minor, underutilized, neglected species exist, with significant but underdeveloped potential for agriculture and food security.

Their conservation and use mostly pertain to a realm of highly informal, dynamic mechanisms which tends to remain separate from the formal frameworks directing most private or public interventions.



Latin America

A survey among PGREFA experts in the region highlighted 60 among genera and species of under-researched and under-utilized crops (graph to the right).



Minor species have been the target of a number of projects or interventions which apply different approaches (breeds and promotion). The common challenge is to bridge formal R&D approaches with the informal norms and practices which characterize minor crops. With this consideration in mind, some experiences in Latin America are reviewed and future opportunities discussed.

Market-based approaches

Promoting underutilized crops through niche market creation has often responded to emerging trends in developed countries (demand for healthy/organic foods). Although these developments have generated income and opportunities, the heavy reliance on any one species for the export market can marginalize smaller-scale farmers and turn the crop in question in yet another commodity, undermining its genetic diversity and its traditional role in sustainable agro-ecosystems.

Examples

After an initial phase (1980ies) of locally governed promotion of quinoa in the Southern Plains of the Bolivian Andes, the increasing demand on the export market turned the nascent value chain into one dominated by a tendency to industrialization and entry of large private firms in the business [1].

As of today, this is causing:

- genetic erosion (demand on international markets is focused on a limited set of traits encapsulated in the "Quinoa Real" ideotype)
- low domestic consumption (34% decrease over five years) with local families no longer able to afford a staple that has become a luxury (2 kg quinoa = 5 times 1 kg of rice)
- Soil erosion from intensification of quinoa cultivation and abandonment of traditional practices (rotation) and plots among communities for access to land [2].

Along different lines, in the highlands around Lake Titicaca, Bioversity-led projects have been working with a complex of Andean minor crops (quinoa, amaranth and cañihua) under an **agrobiodiversity-based market approach** [3]:

- 40 on farm varieties and another 40 from the national genbank, assessed in participatory evaluation trials
- rescue of traditional knowledge on cultivation, use (recipes), rituals
- differentiated processed products tested and developed with the involvement of local small businesses
- educational and awareness campaigns including in urban areas

An innovative approach which integrates multiple stakeholders from the conservation (national genbank), production (farmers) and commercial (small businesses) areas in the development of a sustainable value chain for **chili pepper diversity**, is being tested in another Bioversity-led project in Peru and Bolivia.

In an effort to bridge between interests and needs of formal and informal sector actors, regular meetings of a multi-stakeholder platform are conducted, as a key instrument to promote dialogue and joint market based innovation.

Final considerations and future opportunities

More research is needed, aimed both at characterizing individual crops and varieties (nutritional, morphological, genetic, adaptive traits) as well as on cross-cutting themes such as informal seed systems, its dynamics and its interactions with formal mechanisms, socio-cultural and socio-economic aspects connected to minor crop conservation and development.

At the policy level, promoting minor crops without disrupting their traditional socio-ecological contents, will require creative and flexible institutional arrangements, capable of legitimizing informal norms and practices.

Decentralized research and decision making and empowerment of local, grass-root institutions can be a key step paving the way to plans and policies more relevant to promoting minor crops.

A central issue is to develop **seed registration or release** programs that include unique local and farmer-bred materials, allowing for bulked lines with fixed quality or adaptive traits and diversity for other traits.

Another broader area for intervention would be reorienting food production, consumption and marketing towards greater regionalization and reliance on local small-scale, diversity-rich farming systems. In Latin America, the strongly emerging concept and movement of **food sovereignty** can offer a solid basis on which to embed research and policy efforts on minor species, making their conservation and use more prominent in regional and national research and policy agendas.

Some elements of the dichotomy between formal and informal systems



Participatory research and crop development

Given the neglect of minor species and landraces by the "formal" research sector, the reliance on farmers in all phases from monitoring of genetic erosion, to germplasm testing and seed production is not only necessary but also a cost-effective and empowering exercise.

In Peru, regional public agricultural research stations are setting up a participatory programme of "conservative breeding", a method aimed at maintaining acceptable levels of background diversity in improved material. Subsequent development of farmer-friendly, decentralized seed multiplication and quality assurance schemes will inevitably challenge the principles of the national seed law (the formal system), designed in such a way to be applicable only to a narrow set of uniform varieties of crops adapted to large scale commercial agriculture [4].

Given the centrality of formal/informal seed system issues in the case of minor crops, different solutions have been tested. The **Quality Declared Seed (QDS) Scheme** [5], based on less demanding production procedures than full quality control systems has been applied successfully in native potato projects in Peru [6]. A combination of elements from the formal and informal systems is currently being tested on a number of species in the Andes (Andrade-Piedra, pers. comm.). Alternative seed multiplication and quality assurance schemes are being experimented in Ecuador, in association with the creation of **provincial seed banks and multiplication protocols** focused on minor crops [7].

Integrated, cross-sectoral public interventions

Minor crops are rarely mentioned in national food security, health or environmental policies. Nevertheless, they have a potential role to play, which could be made more explicit.

With funds from the International Treaty on PGRFA, Mesoamerican countries are initiating a highly participatory and multi-stakeholder dialogue (facilitated by Bioversity), to strategically establish synergies between the plant genetic resources and climate change adaptation plans, prioritizing R&D actions in a number of native gene pools which include underutilized species.

In the health sector, Bolivian authorities have started incorporating Andean grains in public policies for food distribution or school feeding in a number of Municipalities in an innovative, decentralized procurement scheme involving small producer groups. In Colombia, a similar initiative was included as an element of Bogotá's city food plan [9] which also opens public spaces to monthly farmers' markets.

Brazil's innovative Fome Zero (10) food security policy is based on decentralized arrangements to guarantee access to food and strengthen family farming. Municipalities are in charge of running State funded "restaurantes populares" [11] where locally sourced food is offered at "social" prices. Awareness on local underutilized species and their consumption could be explicitly promoted through such initiative, in turn stimulating the maintenance of crop diversity on-farm.

1. Luyckx, K., Camacho, J., Comberford, A. (2008) Del Andino al Sur: Perspectiva regional de la diversidad genética de la quinoa en la Cuenca Andina y el Corredor de la Sierra de la Cordillera Occidental. *Comunicación Científica* de la Universidad de Colombia, 10, 1-10.
2. Wesseler, D., K. Luyckx, K., Camacho, J., Comberford, A. (2008) Del Andino al Sur: Perspectiva regional de la diversidad genética de la quinoa en la Cuenca Andina y el Corredor de la Sierra de la Cordillera Occidental. *Comunicación Científica* de la Universidad de Colombia, 10, 1-10.
3. Luyckx, K., Camacho, J., Comberford, A. (2008) Del Andino al Sur: Perspectiva regional de la diversidad genética de la quinoa en la Cuenca Andina y el Corredor de la Sierra de la Cordillera Occidental. *Comunicación Científica* de la Universidad de Colombia, 10, 1-10.
4. Soto, A. and Soto, J. (in preparation) The evolution of participatory and decentralized approaches based on community-based seed systems in the Andean region of Peru.
5. FAO (2006) Quality Declared Seed Systems. Food and Agriculture Organization of the United Nations, Rome, Italy.
6. L. Noriega Lopez (2005) Plan de mejoramiento de la producción y el procesamiento de la quinoa en la zona de la Cordillera Occidental de Colombia. *Comunicación Científica* de la Universidad de Colombia, 10, 1-10.

7. Salvador, M., A. (2012) Calidad de la semilla de quinoa en la zona de la Cordillera Occidental. *Comunicación Científica* de la Universidad de Colombia, 22, Septiembre 2012.

8. C. Noriega Lopez, A. (2005) Calidad de la semilla de quinoa en la zona de la Cordillera Occidental. *Comunicación Científica* de la Universidad de Colombia, 10, 1-10.
9. C. Noriega Lopez, A. (2005) Calidad de la semilla de quinoa en la zona de la Cordillera Occidental. *Comunicación Científica* de la Universidad de Colombia, 10, 1-10.
10. Fome Zero (2006) Fome Zero: Programa de Erradicación da Fome e da Pobreza. *Comunicación Científica* de la Universidad de Colombia, 10, 1-10.
11. Fome Zero (2006) Fome Zero: Programa de Erradicación da Fome e da Pobreza. *Comunicación Científica* de la Universidad de Colombia, 10, 1-10.