Breeding Pipeline: PROINPA Quinoa 1997-2017

**New context**

2014-2016: Large drop in the quinoa price from $7.27/kilo to $5.48 USD mostly due to increase in conventional production in Peru that is sold on the black market in Bolivia and resold as organic. There is growing concern among consumers about the organic, including sustainable, qualities of quinoa, as well as growing global competition.

**Integrate global and local**

**More appropriate variety testing and release systems that test varieties under targeted conditions**

2014: Follow up with select farmers who had bought or received quinoa seed showed that the performance of the varieties was between good and very good depending on the presence of frost and late sowing (yields ranged from 780-1230 kg/ha using a combination of 6 varieties in 9 sites). Different improved varieties and landraces did well in different areas.

**Achieve detectable, heritable variation for traits of interest among progeny generated**

2015: 27 genotypes and 18 lines were evaluated. Combining of mildew resistance and precocity traits has proved elusive.

PROINPA has generated 8 varieties of quinoa mostly with mildew resistant or early maturing varieties

**Farmer access to high quality, diverse seed varieties**

2004-2014 18 T of quinoa seed was produced of 14 varieties by communities and research stations in 3 eco-zones, which will cover 3000 ha. Variety x location information is provided.

**Context**

2003-2014: The quinoa “boom” saw this marginal crop transform into a major export, with resulting increased income for farmers but also negative externalities from intensive quinoa monocultures, mainly loss of soil health.

**Availability of characterized diversity from inter/national collections**

PROINPA saved the national germplasm collection of quinoa during a reform period in the late 90s when agencies were being dismantled, and added to it to build a collection with 3700 accessions, which was delivered to the new NARI, INIAF in 2010. Proinpa has maintained a germplasm collection of 800 landraces.

**Promote specific niches**

The demand for seed has decreased. Certified seed vendors say they have had the most luck selling to State agencies. The demand for mildew resistant seeds is especially depressed because mildew attacks in less traditional areas, where farmers don’t tend to plant if prices are not good.

**Incentivize, support & reinforce farmer participation to ensure responsiveness to farmers’ needs, knowledge, problems, concerns & constraints**

**Multi-environment trial methodologies and protocols**

2015: Project created a Quinoa monitoring network of 323 representative quinoa growers across 190 communities in the southern and central altiplano, in order to monitor the diversity of quinoa management to help inform options x context decisions. In 2016 the number of members in the network went down to 245 and in 2017 down to 220, of these, 54 are involved in an active Farmer Research Network; the rest just respond to phonecalls asking for monitoring information.

The lack of interest in the network is because there is no benefit perceived by farmers, like training and technical assistance. In 2018 it is hoped that an APP will be better able to provide useful information to farmers.

**Value heterogeneity: build on and enhance diversity**

**Reciprocity: build trust based on shared interests & honest interactions**

**Avoid doing harm**

Moises, a farmer from Joco Pampa, presents the quinoa varieties he has been testing and says “now I don’t just plant and harvest. I want to know.” Photo credit: Claire Nicklin

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