Quality Seeds in Traditional Systems: Evidence in Household Consumption of Indigenous Crops in Peru

Nancy Pierina Benites Alfaro
National University of Engineering
pierinabenitesalfaro@gmail.com; nancy.benites.a@uni.pe

In Peru, traditional or ancestral production is concentrated in the Andes, in subsistence or highly vulnerable family agriculture where 95% of farmers use native seed, historically domesticated and selected each agricultural season with local criteria. These systems have gained global relevance due to the provision of food security, nutritional quality and adaption to climate change. Despite this, the quality of the seed of the traditional systems is not yet fully recognized in the Peruvian political and regulatory frameworks. It is denoted in agricultural policies, a synonymy in the terms of certified seed and quality seeds, and their promotion as the only alternative to achieve increasing yields in the field. Under this criterion, policy makers usually consider that seeds that do not come from a certified production system tend to reduce their yields.

In turn, there are barriers to the entry of native crops and their productive forms within the formal production system: first, the crops must be part of the cultivar registry, I which only some highly commercial native crops have been considered, such as the potato, quinoa, cocoa and some legumes. Second, there must be a demanding scientific file that evidence their forms of production for their entry into national registries. Given the vulnerability of these spaces, it is difficult to achieve a complete inclusion of many native crops. Figure 01.

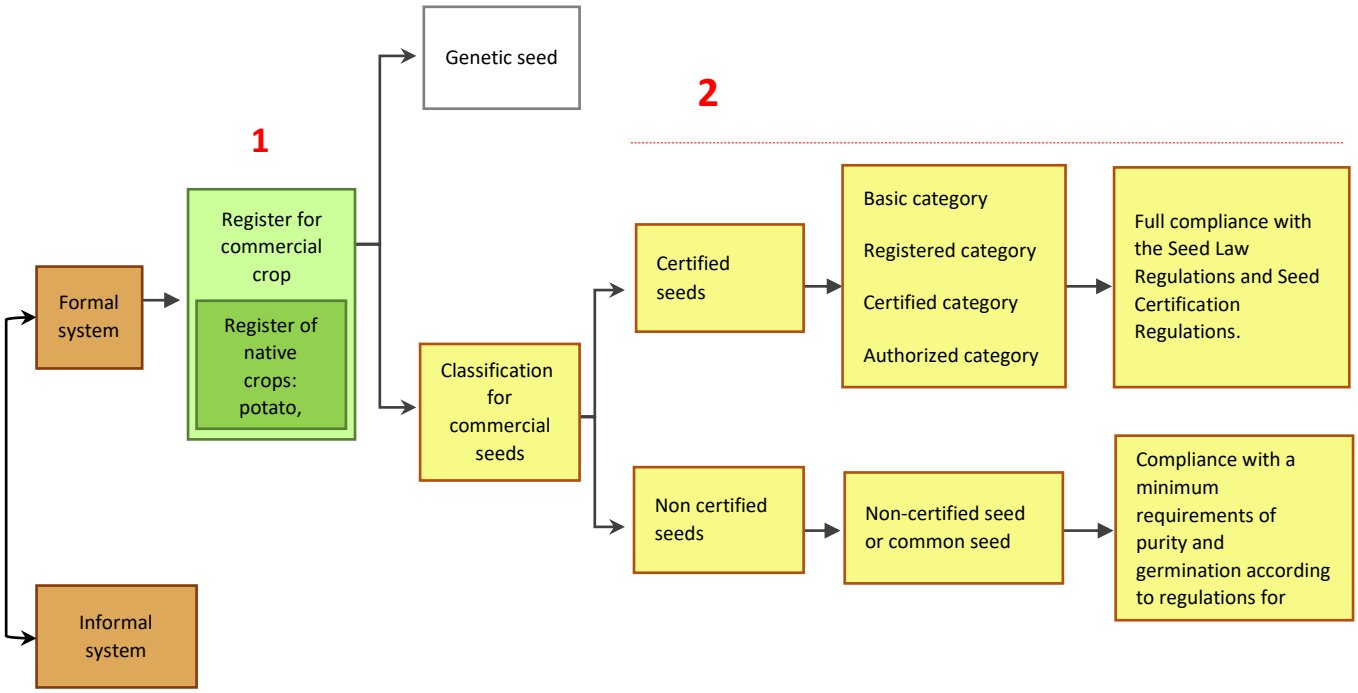
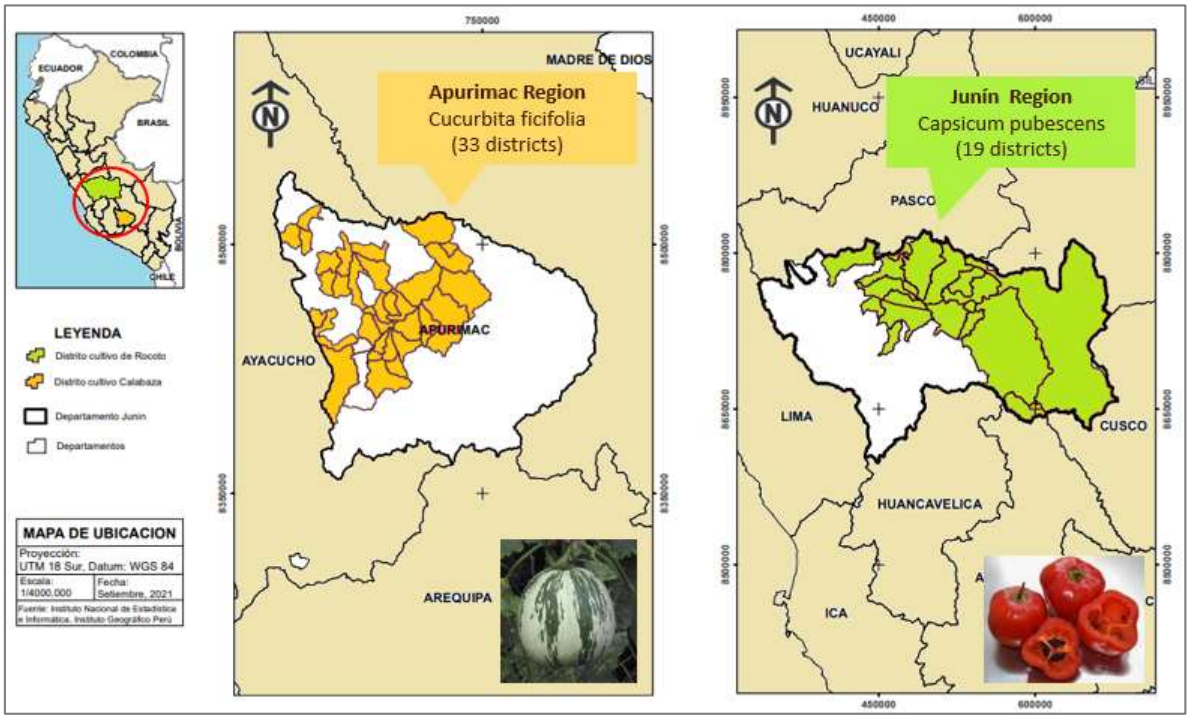


Figure 01: Seed certification process

Given this, it is worth asking whether traditional seed production systems really have diminishing returns that are detrimental to their quality. For this, the study has selected two crops: *cucurbita ficifolia* (pumpkin) and *capsicum pubecens* (hot pepper), two crops of high national diversity, exclusively traditional production systems, and a historical legacy linked to their gastronomic uses. The national spaces with the greatest diversity of both crops have been chose, both located in the Andes, in the southern zone in the case of *cucurbita ficifolia* and in the central Andes in the case of *capsicum pubecens*. Map 01.



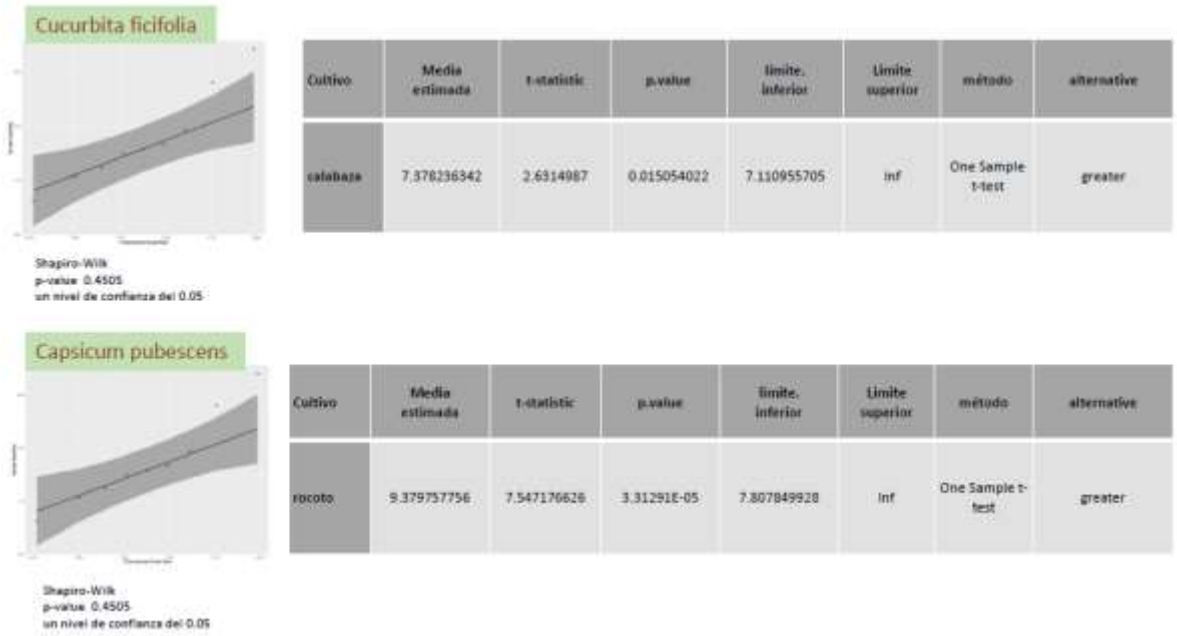
Map 01: Study Location

The study methodology considers a descriptive analysis of the cultivation spaces based on the 2019 national agrarian survey and the statistical inference analysis, the t-student test of a single sample and a single path was used to determine of the mean the sample was higher than the census mean (national agricultural census 2012).

The results show a radical growth of the surface of both crops: According to the trend analysis, it is evident that both crops show increasing yields. This growth does not respond to greater technical assistance, where the attention gaps are almost total in both crops. I particular, the care of safety remains the exclusive power of farmers. The social characteristics of both areas differ, in that the producers of farmers.

The social characteristics of both areas differ, in that the producers of cucurbita ficifolia are Quechua speakers and are mainly intended for self-consumption while the producers of capsicum pubecens are Spanish speakers who are mainly intended for the market. In both cases the production is carried out in dry land and is in charge of a population that exceeds 45 years.

The statistical results show a normal distribution in both crops, adjusted to the theoretical line. The Shapiro-Wilk normality test was also applied; with which it is not rejected that the data come from a normal distribution. The inference analysis shows I both cases that the estimated mean is significantly higher than the census mean. Figure 02.



Cultivo	Media estimada	t-statistic	p.value	limite. inferior	Limite superior	método	alternative
calabaza	7.378236342	2.6314987	0.015054022	7.110955705	inf	One Sample t-test	greater

Cultivo	Media estimada	t-statistic	p.value	limite. inferior	Limite superior	método	alternative
rocoto	9.379757756	7.547176626	3.31291E-05	7.807849928	inf	One Sample t-test	greater

Figure 02: statistical results

From the findings, it is concluded that there is evidence of growth in the yields of these two crops under traditional seed systems in the last ten years. This contradicts the definition of quality seed in the regulatory frameworks and the agricultural policy of Peru, that is there are seeds that area nor part of the formal systems, but have significant growth in yields despite not having technical assistance, and counting only with local selection criteria. For this reason, it is recommended to analyze other native crops and apply this evidence to carry political advocacy that recognizes the sustained yields of these production systems, as a quality criterion.

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