



ATSAF - CGIAR++ Junior Scientists Program Final Report

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Title: Assessing the Relevance of Local Market Channels for Potato Diversity on the Peruvian Andes

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The Peruvian Andes, considered as hotspot of agrobiodiversity, hosts an estimated number of 2,500 – 3,000 potato varieties, which are mainly maintained by family farmers through their continuous cultivation. Although the motivations for conserving varieties are mainly cultural, they are also economically driven. The persistence of agrobiodiversity relies on the ability of farmers to secure their livelihoods through the commercialization of their produce. Located in remote and poorly connected areas, potato farmers must travel long distances and pay high transport costs. In this context, local markets held weekly in villages, represent the main marketing channel for family farmers and often their only source of income.

Local markets, commonly conceptualized as “informal”, are market spaces, which provide direct access for peasant producer. They take place on a weekly basis in the streets or centers of towns and villages. They represent an important element of regional food supply by providing a source of fresh, high-quality food. Besides their relevance for food security, markets are of cultural significance, as they host traditional festivities of the Andes and provide space for non-monetized exchange of produce (barter), also known as “truque”.



Figure 1-3: Local markets in the Peruvian Andes

Source: Gio Chavez Rural Photography

Market-Linkage is an essential aspect for the maintenance of agrobiodiversity as it enables the economic viability of family agriculture. However, the marketing dimensions of agrobiodiversity, as well as the link between agrobiodiversity and their marketing dynamics remain widely unexplored. Existing studies showed that agrobiodiversity tends to decrease with improved market access. Notably, the term market is often generalized, lacking differentiation between various forms and channels. Their significance for the persistence of family agriculture is often not considered.

In regards of the research gap outlined above, this empirical study set out to understand the heterogeneity of local market channels and assess their relevance for supporting family farmers agrobiodiversity by focusing on the main produce of high Andean farmers – **the potato**. For this, I carried out a cross-case comparison of (**n=35**) markets located across 10 study areas in the Peruvian Andes along the traditional

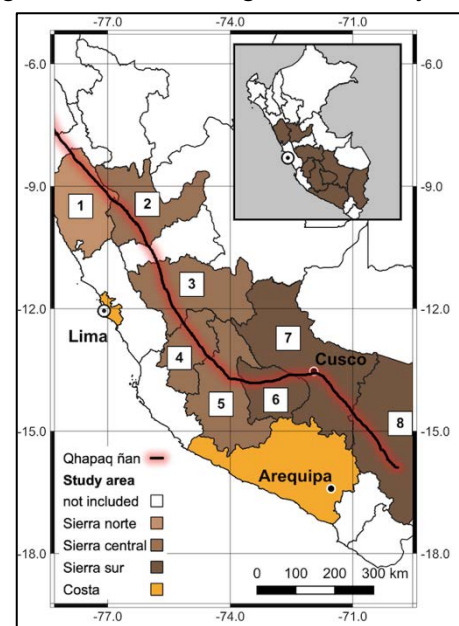


Figure 4: Study area

road network, the Qhapac Ñan.

By applying a mixed methodology, I measured the occurrence of varietal diversity in different markets, which make up the Andean food network, and identified market aspects driving higher levels of potato diversity. Thereafter, I assessed the market-linkage conditions for potatoes and scrutinized the characteristics of markets, which support family farmers' agrobiodiversity systems. The data was captured by means of participatory mapping techniques. Participatory mapping refers to a method in which the local community is integrated in the process of knowledge co-creation, which is increasingly appealing for pursuing farmer-based agrobiodiversity research in collaboration with local communities. By applying this method, farmers and traders supported in the identification of 150 potato varieties.



Figure 5-6: Participatory mapping of potato varieties in markets

Overall, higher levels of potato diversity were recorded at local markets involving predominantly local producers, displaying thereby associative processes and a stronger social fabric. Lower diversity was observed at local markets located in potato production hotspots.

The results demonstrate that the market-linkage of potato diversity is mainly determined by spatial factors, as well as aspects related to accessibility, consumer awareness, and fair pricing. Market-based organizational processes are key for enabling a fair retribution for producers. Although market linkage is crucial for sustaining farmers' livelihoods, the occurrence of native potatoes at markets remains marginal, contrasted to the modern potato varieties that dominate the markets. The study emphasizes the need to strengthen market-linkage of family farmers' produce by fostering associativity processes within the existing network of localized markets.

This study features a collaboration with ATSAF Academy scholar Giovanna Chavez-Miguel, working with the Leibniz Centre for Agricultural Landscape Research (ZALF) in Germany and the International Potato Center (CIP) in Peru. In her research, she set out to understand the network of local markets, which she conceptualized as a corridor of territorialized food systems and intra-ecological exchange and investigated their significance for agrobiodiversity and local economies. As a sub-study of this project, this research takes a deeper look into the marketing aspects of agrobiodiversity, specifically

potato diversity. The two research centers serve the institutional affiliation in both Germany and Peru and provide supervision and methodological support for this study.

During the fieldwork, I was guided by Ms. Chavez-Miguel. Her extensive knowledge and expertise in local markets within the Peruvian Andes proved instrumental in providing substantial support during this period. Our collaboration was characterized by a symbiotic research approach. Thereby, I pursued a quantitative methodology, complemented by Ms. Chavez-Miguel's qualitative approach. The synergistic combination of these approaches facilitated the creation of a comprehensive dataset on local markets, offering diverse perspectives. Moreover, Ms. Chavez-Miguel played a crucial role in supporting the implementation of the participatory mapping by effectively addressing language barriers and enhancing the depth of the research. Importantly, her support extended beyond the fieldwork phase, encompassing the close supervision of the data analysis process.



Figure 7-9: Potato varieties captured in markets

The fieldwork was conducted from June to August 2022. Peru's capital Lima was selected as starting point, where we spent several days to prepare the fieldwork. Subsequently, we proceed to the first study area, Huaraz, located in the department of Ancash and approximately 500km north of Lima. Continuing from Huaraz, the fieldwork extended southward to the Bolivian border, encompassing 10 different study areas on the Peruvian Andes that expand over an area of 2,500 km. In each study area, we strategically selected an urban center, mostly the department's capital, for both research activities and accommodations throughout our stay. The selection of markets for our sample followed an inductive research approach, involving interviews with members of the local peasant community to identify relevant market spaces within each respective study area. To travel the distances between markets and study areas, public transport was predominantly utilized, underscoring the practical considerations and logistical aspects of the extensive fieldwork endeavor.

A typical day at the market started with our early arrival in the morning. The size of the market dictates our subsequent course of action. For small markets, Ms. Chavez-Miguel and I worked together, while for larger markets we divided the tasks. I focused on the quantitative analysis, encompassing tasks such as the counting of market stalls and their classification based on attributes of both produce and

traders. Simultaneously, Ms. Chavez-Miguel undertook the interview process with potato traders, systematically documenting the specific varieties of potatoes being offered for sale. This division of labor ensured a comprehensive and efficient approach to the data collection. After concluding the data collection, we frequently partook in meals at the markets, providing an enriching opportunity to experience the local cuisine, with a particular emphasis on the diverse varieties of potatoes. Since Ms. Chavez-Miguel employs an innovative film-based methodology for her research, we subsequently documented the markets and their environments with photos and videos.

My personal experience at the markets were notably positive, characterized by the friendly and open-hearted people with whom I interacted. On one occasion, a family invited us for dinner in her home. On another occasion, a family engaged in potato farming extended an invitation for us to visit their farm and spend an entire day with them at the market. These experiences were singular and left a lasting impression on my personal engagement with this research context.



Figure 10: Family farmers selling their potato diversity in local markets
Source: Gio Chavez Rural Photography

However, I was facing many challenges during the fieldwork. Inaccurate information regarding the timing and location of markets was a recurring issue, leading us to arrive on the wrong day. Additionally, we experienced several car breakdowns necessitated adjustments to our travel routes. Despite the logistical hurdles, the greatest challenge remained the language barriers on the markets. A large proportion of family farmers were native Quechua speaking, significantly complicating the implementation of the participatory mapping of potato varieties. In addition, the local nomenclature for many potato varieties was predominantly in Quechua and exhibited regional variances, posing considerable difficulties in the accurate identification of these varieties.

The International Potato Center (CIP) offered me crucial support to overcome the challenges encountered during the fieldwork. Dr. Stef de Haan, in particular, provided invaluable assistance, leveraging his expertise to facilitate a comprehensive scientific understanding of the dynamics in local



markets. In addition to his scientific supervision, Dr. Stef de Haan enabled the connections with local non-governmental organizations (NGO's), notably the Grupo Yanapai, which have long been active in the field of agrobiodiversity systems of Andean farmers. This collaboration provided me significant insights. Post-fieldwork, Dr. Stef de Haan continued to provide substantial support. His involvement extended to aiding in the methodological analysis and facilitating connections with fellow CIP researchers engaged in similar research topics. Moreover, his personal expertise proved instrumental in the identification of potato varieties and provided me with valuable internal datasets from CIP.

The scheduled second fieldwork, intended for spring 2023 with the objective of documenting potato varieties in markets before the harvest season to conduct a comparative analysis of on-market diversity in two points of time, was regrettably canceled. The decision was made by the occurrence of violent demonstrations subsequent to the deposition of the Peruvian president, directly affecting the study area located at the core of the disturbances. Despite the initial disappointment stemming from the cancellation, the existing dataset was sufficient to complete the research project and my master's thesis. Moreover, I was able to expedite the data processing, enabling me to accompany Ms. Chavez Miguel to two conferences. These conferences, namely the Tropentag 2023 in Berlin, Germany, and the SeedNL conference at the University of Wageningen, Netherlands, provided valuable platforms to present the research findings.

At a personal level, I am sincerely grateful for this invaluable experience. I thank ATSAF e.V. for the support I have received through the ATSAF Junior scholarship during my academic journey. This scholarship has played a pivotal role in shaping my academic path. Furthermore, I want to express my sincere gratitude to my supervisors, PD Dr. Stefan Sieber (ZALF, Humboldt University of Berlin), Dr. Stef de Haan (CIP), and Dr. Matthias Baumann (Humboldt University of Berlin) for their guidance. I extend my heartfelt thanks to Giovanna Chavez-Miguel (ZALF, CIP) for being an exceptional mentor and for contributing significantly to my academic and professional journey. This experience gave me a fruitful basis for my future career, which I would appreciate to continue in this research field.