AGROECOLOGICAL TRANSITION IN THE BOLIVIAN HIGHLANDS THROUGH COLLECTIVE ACTION

This series explores praxis in agroecology transitions. Praxis is a critical concept in participatory research and action and can be understood as the dialectical interaction of theory/reflection and practice/action that opens the possibility for contributing to social transformation.

Produced by University of Vermont INSTITUTE FOR AGROECOLOGY

Summary

Transitioning away from agro-industrial agriculture requires elucidating the links between politics and agroecology, considering the latter not only as the result of physical and biological properties but also as a reflection of socio-cultural and power relations. Exploring instances of collective action offers a frame for better understanding motivations for and actions toward land-based agroecological transitions. This study examines social, environmental, and productive dynamics in communal territories of three Aymara communities: Chigani Alto, Villa Anta, and Cebollullo. To do this, we used the Agroecological Transitions Framework of the Institute of Agroecology (IfA) at the University of Vermont (UVM), complemented by a Participatory Action Research (PAR) approach.

At a Glance

- Agroecology offers sustainable food production solutions considering ecological and social contexts.
- Transitioning to agroecological food systems requires understanding socio-political dynamics alongside biophysical factors.
- Aymara communities in the Bolivian highlands engaged in community work through Participatory Action Research (PAR) using a UVM Agroecological Transitions Framework.
- Collaborative efforts between PROSUCO and UVM use PAR to diagnose, prioritize, plan, and implement actions.
- Community initiatives targeting soil health, water sources, and agrobiodiversity through collective action yield tangible results.
- Agroecological transitions involve complex changes beyond agriculture, requiring an understanding of local values and addressing internal and external factors for success.
- Collective action is the backbone of transitioning to agroecological food systems. A transdisciplinary and participatory approach serves as the linchpin that connects and organizes community efforts, ensuring a holistic and effective path toward territorial health and sustainability

Introduction

According to the Food and Agriculture Organization (FAO), projected growth in the world's population indicates the need to increase agricultural production by 60% by 2050 (FAO, 2015). If these models are correct, a subsequent question is how to ensure sufficient food access while also improving environmental practices. Agroecology presents a promising opportunity for achieving both of these ends. Agroecological transitions not only involve producing healthy food but also seek a socio-cultural and ecological transformation. As an emancipatory proposal, agroecology is positioned as a vision to establish just and sustainable ways of life, applying ecological principles to the design of agroecosystems (Caswell et al., 2021). In the Bolivian Andean context, the rich biological and socio-cultural diversity are indicators of the presence and relevance of a way of living and farming in which agroecology principles are manifested. Indigenous communities practice agriculture rooted in social structures and ancestral knowledge, maintaining a harmonious relationship with nature (Carrasco et al, 2021). However, the historical imposition of agro-industrial systems has created challenges for historically self-reliant and resilient communities. This brief presents research focusing on three Aymara communities in the Bolivian highlands, using the UVM Institute for Agroecology's (IfA), Agroecological Transitions Framework and a Participatory Action Research (PAR) approach. Chigani Alto, in the municipality of Santiago de Huata, stands out for its diversity in grazing and agricultural areas. Villa Anta, in Caquiaviri, is characterized by its dry puna topography and the presence of the Association of Agroecological Dairy Producers. Cebollullo, in Palca, specializes in agricultural production in the valley area.

Theoretical Framework

The proposed theoretical framework for understanding agroecological transitions highlights two approaches. The first approach is linear and describes an evolutionary process from the conventional use of inputs to ecological transformations and cultural changes (Gliessman, 2004). The second (Figure 1), developed by the UVM Institute of Agroecology (Anderson et al., 2022; Caswell et al., 2021), takes a non-linear, participatory, and transdisciplinary approach. This framework is based on experiences, identities, and cycles, encouraging the active participation of local communities in their transition processes. The agroecological transition is conceived as a planned process of collective action to achieve equitable food systems (Anderson et al., 2022). The IfA framework (Figure 1) focuses on the development of a collective perspective, the identification of actions, and their implementation and evaluation. This cyclical, multidirectional, and participatory approach harmonizes with cosmologies and historical processes understood and enacted by indigenous communities.

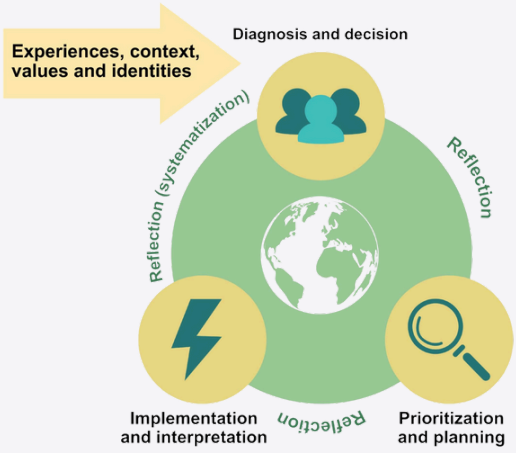

Figure 1. *Adapted by Silke Pérez Altamirano for the Memory for Agroecology for Life (2023).*

Sites and Methodological Approach

This study is the result of a collaboration between the Non-governmental organization (NGO) PROSUCO in Bolivia and the IfA. PROSUCO is committed to solving rural problems in Bolivia by integrating the innovative knowledge of farmers, with a focus on three communities: Chigani Alto, Villa Anta, and Cebollullo.

The research follows a PAR approach and uses the theoretical framework developed by Caswell et al. (2021) for agroecological transitions, which divides the transition process into three phases: 1) diagnosis and decision, 2) prioritization and planning, and 3) implementation and interpretation. The full cycle offers multiple opportunities to observe the interactions of 'micro-motives and macro-behaviors' (Schelling, 1978) and test the hypothesis that collective action is required for agroecological transitions.

For each site, participatory diagnosis included the evaluation of environmental functions and the health of the territory, considering soils, water, and vegetation cover. Prioritization and planning occurred through participatory workshops to understand the needs and challenges of the communities and establish specific work agendas. Project implementation was facilitated through the formation of working groups in each community, who then carried out agroecological practices with the support of PROSUCO and documented progress through regular visits.

Phase 1: Diagnosis of Environmental Functions and Agroecological Transitions

Diagnosing environmental functions by site revealed distinct organizational systems within each territory, according to social, environmental, and productive uses. Each community has a unique perception of the distribution of the territory by zones. This zonal approach facilitated the evaluation of environmental functions, using a traffic light-type assessment for variables such as water sources, soil, vegetation cover, and the state of productive plots.

Phase 2: Prioritization and Planning

The collective diagnosis of the territories made it possible to identify priorities for action in soil, water, agrobiodiversity, and vegetation cover. Following the agroecological transitions framework of Caswell et al. (2021), a participatory workshop was held in each community, with the presence of local authorities, leaders of organized groups, and interested producers. These workshops gathered economic, social, and cultural information, establishing specific agendas and working groups based on the needs and priorities of each community. The fivestep methodology, from the socialization of the diagnosis to the accompaniment of PROSUCO, guided the decision-making process and collective action (PROSUCO, 2023). Priorities identified included engaging farmers, to improve soil health, water, and agrobiodiversity. An interesting dynamic that emerged throughout the process revealed the capacity of the communities to work together and plan activities to improve their food system.

Phase 3: Implementation and Interpretation

In this phase, the following three collective actions stood out:

1. Soil Health Groups: This group focused on improving the quality of soil and organic matter, through the manufacture of bio inputs such as biol, sulpho calcium broth, vermiculture, and bokashi. Vermiculture was prized for easy integration into current practices. Significant improvements were observed in crops such as potatoes, quinoa, and chives in all three communities. In Cebollullo, the initial motivation was economic, due to the rise in prices of synthetic fertilizers, prioritizing the reduction and substitution of chemical inputs. The results showed improved production, less perishability, and a gradual reduction of specific costs in the use of inputs for fertility and pest control (35%) in chives. In this community, agriculture for the market and the lack of young producers is not a problem. One farmer described improved production and reduced costs as:

Image 1: *Making sulpho-calcium broth in Chives. Photo credit: Roly Cota. (2023).*

> *"Yes, natural production results, it yields better production and reduced costs. Now there are greener, more resistant plants, with the little disease compared to those that have not applied bio inputs"*
>
> - Interview with a farmer in Cebollullo, 2023

Image 2. *Ayni in Chigani Alto for the construction of the qutaña or water reservoir. Photo credit: Roly Cota (2022).*

2. Water Source Groups: All three communities identified the need to improve access to water. For example, in Chigani Alto, a qutaña (water reservoir) was built collectively to store water to provide irrigation to the plots. In Villa Anta, rainwater harvesting was implemented using ferrocement tanks for human and animal supply. Finally, in Cebollullo, community members organized around cleaning communal irrigation ditches.

3. Agrobiodiversity Groups: Through gatherings where community members compared varieties and discussed desired characteristics, participants experienced the importance of a diversity of seeds and plants. In Chigani Alto, the exploration extended to fruit trees (apples) and forests, in addition to Farmer Researcher Network tests, and the planting of crops such as tarwi (lupine), cañahua (Andean grain), quinoa, and grain oats (Image 3). In Chigani Alto and Villa Anta, a new variety of potatoes called "Jatun puka" was provided, which has a precocious habit, and can be harvested quickly. When also amended with bokashi, it requires less water for its development. In Villa Anta, the use of bokashi (Image 4) was promoted to complement the use of guano. The producers expressed satisfaction with their experiments because – in the words of one farmer "the potatoes came out large and without worms."

Image 3: Farmer from Chigani Alto harvesting oats. Photo credit:Roly Cota (2023).

Analysis of Collective Actions

As a result of this research, we have seen that agroecological transitions are not the result of a single isolated initiative, but of multiple activities and changes that require coordinated community action. In Chigani Alto, the construction of the qutaña was an example of unexpected collective work, where the entire community participated, demonstrating the importance of collaboration for the common benefit. In Cebollullo, communal work is regularly carried out to maintain roads and clean irrigation canals, with community work practices based on reciprocity such as mink'a (communal work) and ayni (labor exchange). In Villa Anta, the production of bokashi fertilizer was carried out through a dynamic of reciprocity, evidencing the importance of ayni (Wutich et al., 2017). The most significant experience was the implementation of forms of "ayni" in collective actions for the development of bio-inputs and the improvement of water sources. The interviews highlight farmers' positive perception of collective work and the importance of moving forward together to achieve faster and longerlasting results that benefit the territory and family plots. In summary, the analysis shows that collective actions have been critical to agroecological transitions in all three communities.

Discussion

Incorporating collective action into agroecology transitions offers new opportunities to support autonomous community transformations. In the selected communities, community action was key to agroecological transitions, facilitated by PROSUCO through a participatory approach. Communities identified priorities, such as improving soils and water resources, promoting the production of bio-inputs, and expanding their changes with the diversification of activities. Using the UVM Institute for Agroecology's transition framework allowed us to define goals and align around a common understanding of agroecology. The transition processes that took place in these communities also highlighted the importance of strengthening collective action joined to Andean traditional norms, such as ayni. Agroecological transitions are not linear or uniform, but complex processes that require adaptability and continuous learning from the perspective of communities. The lessons learned emphasize the need to address agroecological transitions with transdisciplinary approaches based on local values, fostering coalitions, prioritizing the collective, and – in this contextpromoting Andean cosmovision. Participatory research is valuable for understanding the context, defining goals and strategies, and analyzing learnings to achieve effective and sustainable transitions.

Image 4: *Communal bokashi making in Villa Anta. Photo credit: Roly Cota. (2023).*

Conclusions

Agroecological transitions are complex processes driven by communities and diverse actors. These transformations are not limited to changes in agricultural practices but encompass policies, social norms, food environments, and consumer cultures. The success of these transitions is affected by collective action and an understanding of the role of endogenous and exogenous factors. In the Bolivian Andean context, the application of this theoretical framework will continue to seek deeper understanding and catalyze processes of change towards fair and sustainable agrifood systems.

Full Article: https://revistas.flacsoandes.edu.ec/mundosplurales/article/view/6065

Carrasco-Torrontegui, Amaya, María Quispe, Renato Pardo, Maya Apaza, Roly Cota, Carlos Andrés Gallegos-Riofrío, Gabriela Bucini, Colin Anderson, Martha Caswell, y Ernesto Méndez. 2024. «Acción Colectiva Para La transición agroecológica En El Altiplano Boliviano». Mundos Plurales - Revista Latinoamericana De Políticas Y Acción Pública 11 (1):49-84. https://doi.org/10.17141/mundosplurales.1.2024.6065

REFERENCES:

Anderson, C.R., McCune, N., Buccini, G., Mendez, V.E., Carrasco, A., Caswell, M., Blume, S., & Ahmed, F. (2022). Working Together for Agroecology Transitions. Perspectives on Agroecology Transitions – No. 3. Agroecology and Livelihoods Collaborative (ALC), University of Vermont.

Carrasco-Torrontegui, A., Gallegos-Riofrío, C. A., Delgado-Espinoza, F., & Swanson, M. (2021). Climate change, food sovereignty, and ancestral farming technologies in the Andes. Current Developments in Nutrition, 5(Supplement_4), 54-60.

Caswell, M., Maden, R., McCune, N., Mendez, V. E., Bucini, G., Anderzen, J., ... & Juncos-Gautier, M. A. (2021). Amplifying Agroecology in Vermont: Principles and Processes to Foster Food Systems Sustainability.

Food and Agriculture Organization of the United Nations (FAO). 2015. "100 facts in 14 themes linking people, food, and the planet." Accessed July 28, 2019. 'http://www.fao.org/fileadmin/user_upload/mdg/100_facts/100facts_EN.pdf'
Gliessman, S. R. (2004). Agroecology and agroecosystems. Agroecosystems analysis, 43, 19-29.

PROSUCO. (2023). Work report of the first phase of the project.

Wutich, A., Beresford, M., & Carvajal, C. (2017). Ayni Real and imagined: reciprocity, indigenous institutions, and development discourses in contemporary Bolivia. The Journal of Latin American and Caribbean Anthropology, 22(3), 475-494.

Colophon

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Suggested citation: Carrasco-Torrontegui, A., Quispe, M., Pardo, R., Apaza, M., Cota, R., Gallegos-Riofrío, C.A., Bucini, G., Anderson, C., Caswell, M., McCune, N., & Méndez, E. (2024, September). *Agroecological transition in the Bolivian highlands through collective action.* Perspectives on Agroecology Transitions – No. 5. Agroecology and Livelihoods Collaborative (ALC), University of Vermont.

The UVM Institute for Agroecology (IFA) is seeding more equitable and sustainable food systems. IFA uses a systems approach that addresses the root causes of problems in the food system. We challenge the status quo by centering equity, participation and social transformation in our work. Through research, learning, action, and connecting across geographies, the IFA mobilizes knowledge to support agroecology research, practice and movements.

Created with the support of the **Collaborative Crop Research Program** of the McKnight Foundation. The Collaborative Crop Research Program (CCRP) is a program of the McKnight Foundation that has funded agricultural research since the 1980s. Working in three regional communities of practice (CoPs) in Africa and South America, CCRP projects generate technical and social innovations to improve nutrition, livelihoods, productivity, environmental sustainability, rural vibrancy, and equity for farming communities. CCRP engages in local, regional, national and global processes to support agroecology transitions.