

Factsheet midterm findings Global Challenges Programme Call 3



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Horticultural food systems based on ecologically intensive production and socio-economically sustainable value chains in the transition economies Chile and Uruguay (HortEco)

Summary

While consumption of vegetables in emerging economies falls well short of dietary recommendations, vegetable production contributes to environmental pollution and health risks. This project will engage with small farmers and organizations involved in low-or-no-pesticide production methods to investigate and support more effective production, knowledge sharing methods and collaborative value chains.

The aim of the HortEco project is to enhance sustainability of vegetable food systems in transitioning countries Chile and Uruguay. The objective is to contribute to improved sustainability of vegetable food systems in Chile and Uruguay by studying, supporting and knowledge-sharing on how to organize production and marketing of high-value, low-or-no-pesticide vegetables. The project adopts a food system approach, with focus on: (1) Ecologically intensive vegetable production; (2) Socio-economically sustainable horizontal and vertical value chain collaboration models; and (3) Change agents and their role in the transition to ecologically intensified food systems.

Interim research findings

HortEco researchers identified local organic and agro-ecological vegetable food systems as showing promise for scaling out low-or-no pesticide systems. Despite their potential, they remain relatively small and localized, they are not supported by conventional marketing channels, and they receive little institutional support compared with dominant industrial systems.

At the farm level, production-ecological analyses in Uruguay revealed that productivity gaps for four major vegetable crops were mostly explained by differences in cultural measures and not by differences in fertilizer and pesticide use. This suggests that just replacing chemical inputs by biological ones is insufficient, calling for systems redesign.

For value chains, analysis of Producer Organizations (POs) in Uruguay found five types of POs. Two in the conventional value chain and three in the organic one. Given the diversity of objectives of the POs, multiple solutions are needed to support them in transitions to more sustainable food systems. For example, public support for POs in the organic chains need to be increased to foster growth of this sector.

Intermediate outcomes achieved

The project addresses questions relevant for the local context and has therefore inherent impact potential. Showing where leverages exist for change to more sustainable vegetable food systems, in combination with a consortium that represents relevant societal partners, are promising ingredients for longer-term impact. The project has developed workshops on biocontrol, sustainable vegetable production, organic certification and strategies for supporting agro-ecological transitions. In addition, it has contributed to exchanges on low-or-no pesticide vegetable food systems between Chilean and Uruguayan partners. While HortEco has yet to mobilize indicators to measure changes in behaviour of actors, activities have contributed to strengthening organizations of producers and value chain actors working on research and innovation in low-or-no pesticide vegetables. Moreover, activities have contributed to bring together these previously disconnected actors to enable political influence, and enhance sharing of scientific and non-

scientific knowledge, experiences and skills. Despite the perceived contributions of HortEco, there are not yet Stories of Change to date. A video is in the making on the historical experiences of entrepreneurs in Uruguay, among which farmers, on agro-ecological transitions.

Messages to

A) Actors from private sector:

- Ecologically intensive production is a plausible approach for developing sustainable vegetable production systems.
- A redesign of the entire production system towards better utilization of ecological processes can help to avoid fertilizer and pesticide applications on a routine basis.

B) Civil society and practitioners organizations:

- Improving knowledge of change agents and their networks can support the transition to sustainable food systems.

C) Policy makers:

- There is diversity of food systems enacting multiple interpretations of sustainability. Unravelling this diversity can have value in supporting policy debates in view of sustainability transition pathways to be followed.
- Small, organic and agroecological food systems, might provide a better balance between the multiple social, economic and environmental goals if compared to dominant food systems.

Knowledge products

- Gaitán-Cremaschi D, Klerkx L, et al. (2019) [Characterizing diversity of food systems in view of sustainability transitions. A review. *Agronomy for sustainable development*, 39\(1\).](#)
- Groot Kormelink A, Bijman J, Trienekens J (2019) [Characterizing Producer Organizations: The case of organic versus conventional vegetables in Uruguay. *Journal of Rural Studies*, 69, 65-75.](#)
- Workshop [“Improvement of soil quality and reduction of agrochemical use in vegetable production systems: onion crop as a model”](#) (May 2019)
- Workshop [“Production, commercialization and Participatory Guarantee Systems: exchange of experiences between Chile and Uruguay”](#) (Feb 2019).
- Workshop [“Challenges and opportunities for organic certification in vegetable production”](#) (Oct 2018)
- Workshop “Integrated production in agriculture. Biological pest control” (May 2018).
- Workshop “Trajectories towards sustainable vegetable production systems” (Dec 2017).

Knowledge networks

In Chile, HortEco has been introduced to the National Horticultural Commission, the National Commission of Organic Agriculture and the National Federation of Agroecology. Moreover, HortEco has created links with farmer’s organizations (e.g. Tierra Viva), value chain initiatives (La Reina), public institutions at the national and regional level (e.g. ODEPA and INDAP), and research centers (Universidad de Chile and CET Yumbel).

In Uruguay, network meetings have resulted in a range of new connections for HortEco. For example, links with previous projects on chemical, integrated and organic pest management in tomato, links with technical advisors, connections with the Red of Agroecología and with public institutions such as DIGEGRA.

The food system approach of HortEco and the results of the project have been shared with the academic community through academic platforms and research networks (e.g. Research Gate and the Sustainability Transitions Research Network (STRN). New connections are being made with the CGIAR A4NH flagship programme on food systems and healthier diets and with the Wageningen Food Systems Think Tank.

Co-creation

The project has adopted a co-innovation approach, which combines elements of Complex Adaptive Systems thinking with Social Learning and Monitoring and Evaluation. The project is structured by an adaptive planning approach based on PIPA (Participatory Impacts Pathways Assessment). Elements are elaborated during Annual Meetings of the researchers and the non-research partners. The annual meeting results give rise to shorter analysis-and-design cycles during planning and implementation of actual interventions, such as workshops and network meetings. In addition, the Chilean and Uruguay teams are in regular contact with the postdoc/PhDs/MSc students and non-academic partners to continuously assess results and translate this in redefining objectives and planning of following capacity-building activities. This ensures that project outputs matches interests of all consortium partners and local stakeholders.

Consortium Partners

- [Wageningen UR: Farming Systems Ecology Group; Knowledge, Technology & Innovation Group; Business Management & Organisation; Rural Sociology Group](#) (NL)
- [Administrative Commission of the “Modelo Market” \(CAMM\); National Commission for Rural Development \(CNFR\); University of the Republic, Montevideo \(UdelaR\)](#) (Uruguay)
- [National Horticultural Commission \(ODEPA\); Hortach; Pontifical Catholic University of Valparaíso](#) (Chile)

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Project website

[F&BKP Research Project page](#)

