



Implementation of a referential framework to evaluate the sustainable development of family farmers in the Southeast of Uruguay

Editor

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Implementación de un marco referencial para la evaluación del desarrollo sostenible de productores familiares del sudeste de Uruguay

Implementação de um suporte referencial para a avaliação do desenvolvimento sustentável dos produtores familiares do sudeste do Uruguai

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Abstract

This research aimed to explore means of evaluating a co-innovation and interinstitutional project for the sustainable development of family farmers in the Southeast of Uruguay (named FPTA 343) in order to finally implement an Evaluation Monitoring Framework (EMF) for assessing the accomplishment of the main actors' aims.

Data arose primarily from diagnoses of the social, technical and economic situation in the region, and interaction activities with farmers in the local groups, institutions and technicians (through interviews and workshops). Results demonstrated it is possible to adapt and implement an EMF, including the following steps:

1. Describing the region or formulating the problem, including values of the actors involved.
2. Discussing boundaries using multiple methodologies and theories (especially some that allow to explore sources of motivation, power, knowledge and legitimacy), and planning for rural sustainable development, considering the principles of "endogeneity".

Actors were able to actively participate by getting involved in the follow-up and evaluation of the project. The generation of shared spaces of dialogue is considered a starting point for the promotion of actions, contributing to farmers feeling subjects of the development to be encouraged, preventing identified issues of marginalisation and increasing their chances of sustainability. The most important contribution of this research is the creation of new ties, patterns and expectations, as well as the communication of new ways of appreciating extension, that could lead the generation of new purposes and goals.

Keywords: co-innovation, family farmers, rural extension, systems thinking, sustainability

Resumen

Esta investigación tuvo por objetivo explorar formas de evaluar un proyecto interinstitucional de coinnovación para el desarrollo sostenible de productores familiares de las Sierras del Este del Uruguay (denominado FPTA 343), para implementar un Marco de Evaluación y Seguimiento (MES) que permitiera constatar el cumplimiento de los objetivos de los principales actores.

Los datos surgieron principalmente de diagnósticos de la situación social, técnica y económica de la región y actividades de interacción con los productores en grupos, instituciones y técnicos locales (a través de entrevistas y talleres). Los resultados demostraron que es posible adaptar e implementar un MES, incluidos los siguientes puntos:

1. Describir la región o formular el problema, incluyendo valores de los actores involucrados.
2. Discutir el alcance de la intervención utilizando múltiples metodologías y teorías (especialmente algunas que permitan explorar fuentes de motivación, poder, conocimiento y legitimación), y planificar para el desarrollo rural sustentable, considerando los principios de «endogeneidad».

Los actores pudieron participar activamente en el seguimiento y la evaluación del proyecto. El logro de objetivos del FPTA desde 2017 se ha considerado satisfactorio y se identificaron áreas a mejorar, especialmente relacionadas con la comunicación, la congregación y el empoderamiento. La generación de espacios de diálogo compartidos se considera un punto de partida para la promoción de acciones, contribuyendo a que los productores se sientan sujetos del desarrollo a incentivar, evitando problemas de marginación y aumentando sus posibilidades de sostenibilidad. El aporte más importante de esta investigación es la creación de nuevos vínculos, patrones y expectativas, así como la comunicación de nuevas formas de apreciar la extensión, que podrían conducir a la generación de nuevas metas.

Palabras clave: coinnovación, productores familiares, extensión rural, pensamiento de sistemas, sustentabilidad



Resumo

O objetivo desta pesquisa foi analisar formas de avaliar um projeto de co-inovação interinstitucional para o desenvolvimento sustentável de pequenos produtores no sudeste do Uruguai (denominado FPTA 343) para implementar um Suporte de Avaliação e Monitoramento (SAM) que permitisse verificar o cumprimento dos objetivos dos principais atores.

Os dados surgiram principalmente de diagnósticos da situação social, técnica e econômica da região e de atividades de interação com produtores em grupos, instituições e técnicos locais (por meio de entrevistas e workshops).

Os resultados mostraram que é possível adaptar e implementar um SAM, considerando os seguintes pontos:

1. Descrever a região ou formular o problema, incluindo os valores dos atores envolvidos.
2. Discutir o âmbito da intervenção recorrendo diversas metodologias e teorias, especialmente algumas que permitam explorar fontes de motivação, poder, conhecimento e legitimação e planejar para o desenvolvimento rural sustentável, considerando os princípios da “endogeneidade”.

Os atores puderam participar ativamente do monitoramento e avaliação do projeto. O alcance dos objetivos do FPTA desde 2017 foi considerado satisfatório e foram identificadas áreas a melhorar, especialmente relacionadas à comunicação, congregação e empoderamento. A geração de espaços compartilhados de diálogo é considerada um ponto de início para a promoção de ações, ajudando os produtores a se sentirem sujeitos do desenvolvimento a ser incentivado, evitando problemas de marginalização e aumentando suas chances de sustentabilidade.

A contribuição mais importante desta pesquisa é a criação de novos vínculos, padrões e expectativas, bem como a comunicação de novas formas de valorizar a extensão, que podem levar à geração de novos propósitos e objetivos.

Palavras-chave: co-inovação, pequenos produtores, extensão rural, pensamento de sistemas, sustentabilidade

1. Introduction

According to FAO⁽¹⁾, sustainable agricultural growth and rural development can be reached through the access to natural assets, technology, competitive fair markets, and the information and infrastructure required to participate in these markets. However, especially in developing countries, there is an unfulfilled potential in agriculture due to the premature stage of technology, existence of market imperfections, incorrect function of institutions and natural monopolies. Therefore, rural (or regional) development has been identified as a non-trade priority in the debates on agriculture.

Regions have become a focus for policy, among other reasons, because of their problems of high unemployment, short incomes, low educational

achievements and low levels of service facility. In addition, globalisation and trade freedom have reduced the power of the nation state, making regions a relevant source of competitive advantage, for production, specialised knowledge and technological capacity⁽²⁾.

The processes of collective action and organisation of farmers constitute agents of rural development in territories. For Uruguayan livestock farming, particularly, collective strategies have been underutilized as a tool to overcome the structural limitations of productive factors and develop competitive advantages⁽³⁾. Currently, conceptual approaches recognize new meanings for rural extension. As Catullo and others⁽⁴⁾ postulate, in Latin America there is a new meaning and role for rural extension aimed at



promoting collective action through knowledge, learning and coordination platforms, which facilitate innovations in regional and territorial development processes.

In 2017, an interinstitutional co-innovation project (named FPTA 343) for the sustainable development of family farming in the Southeast of Uruguay was implemented as a rural extension and development initiative, since it aimed to strengthen individual and collective capacities (by increasing knowledge of available technology, improving decision-making processes, creating technical spaces for discussion and promoting the use of technical assistance), and support Rural Development Societies, particularly referring to the application of shared technologies. The institutions involved were the Uruguayan Public University (Udelar), the National Institute of Agricultural Research (INIA) and the “Instituto Plan Agropecuario” (IPA).

Co-innovation⁽⁵⁾ refers to an approach that reunites 3 components: complex systems theory; collective social learning, including all actors involved in the process (researchers as well); and active project monitoring and evaluation to plan reorientation of family farms.

This study is part of the aforementioned project and focuses on 5 participating groups of family farmers, located predominantly in the influence areas of the Rural Development Societies of San Carlos, Las Cañas and Garzón, part of a larger region called Sierras del Este in the state of Maldonado, Uruguay. FPTA 343 was organized in 5 components: description of the regional innovation system; promotion of grouping and training of livestock producers; support for farmers' organisations; improvement in their marketing processes, and implementation of a monitoring and evaluation system. Considering the advanced stage of the project in 2019, the contribution of our study relates to the last step.

According to Christoplos and others⁽⁶⁾, and considering the third component of the co-innovation approach, evaluating and monitoring is essential to the contribution of extension to rural livelihood. But how to assess the activities undertaken by an inter-institutional project for the sustainable development of family farming? For evaluators, a central question is whether the objectives were achieved; that is, do

customers have greater control over their farms, businesses, and livelihoods?⁽⁶⁾ To evaluate a rural extension project, it is essential to explore the transformation that different people (stakeholders) want to see and what it means to them⁽⁷⁾. The analysis should be around the relationships between stakeholders (participants and affected people), in agreement with the second component of co-innovation, and the things that need to be addressed to make significant changes.

Considering this subjectivity, various types of methods will allow clarifying values, exploring viewpoints, facilitating participation, visioning possible future scenarios, etc. Whether in the natural or social sciences, scientists need to accept that their practice is inevitably value-full (not neutral) and their research is just one part of their intervention⁽⁷⁾.

According to the US National Research Council⁽⁸⁾, for agricultural studies to take advantages of synergies that can arise from understanding the linkages between farming components and in the design of trade-offs, a systems or holistic approach should be endorsed. This is also pointed in the first component of the co-innovation approach⁽⁵⁾. In local situations, the usefulness of *Systems Thinking* is proven when the interconnection between ecological, social and personal problems demonstrates that none of these would be possible to solve if the problematic situation was not taken as a whole⁽⁹⁾.

The main purposes of the present study were, then: (i) to implement an Evaluation Monitoring Framework (EMF) based primarily on *Systems Thinking* (particularly Midgley's Systemic Intervention methodology) for assessing whether the activities carried out by the co-innovation project in the East of Uruguay (FPTA 343) are accomplishing the aims of the main actors; and (ii) to identify other initiatives that can contribute to the sustainable development of family farming in the region, considering an endogenous approach.

Endogenous means it comes from the centre of the society and reflects its values and vision of future⁽¹⁰⁾. Plummer and others⁽¹¹⁾ argue that neoclassical development models consider technological change as exogenous, while endogenous see it as internal, resulting from innovation and the aggregation of knowledge, which are key to meet economic



achievements and competitiveness. Beer and others⁽²⁾ referred to a “new regionalism” view that address the significance of local and regional institutions, regional social capital, collaboration, innovation and learning; being social capital generated through the relationships between people in the community working together, creating common norms, values and understandings that cope with the solving of shared problems. Particularly in marginalised communities, strong social capital is essential for the growth of centres of local business and households to place together the resources for employment and learning.

With this in mind, the expected outcomes were:

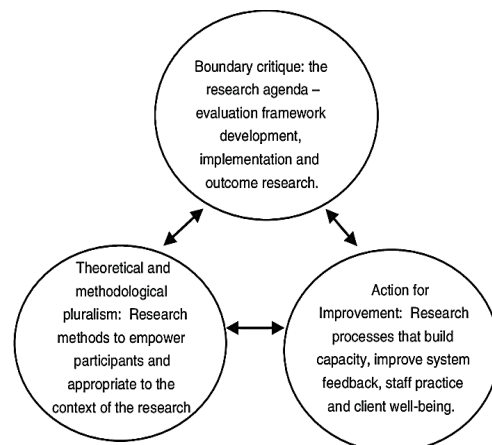
- (i) Providing a suitable framework for planners to really understand and discuss whether the problem is been tackled as a whole, demonstrating the relevance of the application of a soft and multimethodological approach for the evaluation of rural extension programs.
- (ii) Evaluating the project FPTA 343 for the purposes of learning, taking into account the implication of the context, conflicts and limitations, contributing to the creation of new expectations, new patterns and communication ways, which could be applicable to other interventions in the future.
- (iii) Encouraging the integration of actors (farmers, technicians, local societies and institutions) and accommodating ideas in shared spaces for the promotion of actions for innovation and sustainable development.

2. Methodology

2.1 Data collection and analysis

For the collection and analysis of information, a *Systems Thinking* approach was employed. Particularly, the focus was on one of these methodologies known as “Systemic Intervention”, which represents an approach by Midgley⁽¹²⁾ and is part of the “soft system methodologies”, generally used to tackle very complex problems involving social aspects. Midgley endorses the use of a variety of methodologies and methods (known as multi-methodical approach) for each step (Figure 1).

Figure 1. Model of Systemic Intervention



Source: Stephens⁽¹³⁾

Systemic Intervention main principles are:

1. Exploring boundaries —to understand and decide what issues and stakeholders are or should be included, excluded or marginalised in the analysis. A practical guideline was developed by Ulrich⁽¹⁴⁾ within his methodology Critical Systems Heuristics, which can be helpful for the contemplation on the ethics of tracing the boundaries.
2. Appreciating relationships —for understanding networks, interconnections and causality within and across systems, and, therefore, the consequences of interventions.
3. Thinking in terms of systems themselves, like organised wholes with properties that should not be analysed in isolation —to create viable and responsive organisations.
4. Understanding perspectives —for addressing conflicts that arise from the different ways in which stakeholders frame issues, exploring the multiple objectives they have, producing mutual understanding and agreeing solutions.

This research adapted some of Midgley’s holistic concepts and methods, in order to suggest recommendations for sustainable action, to a framework of 2 steps:

1. Describing or formulating the problem, including values of the actors involved.



2. Discussing boundaries using multiple methodologies and theories (especially some that allow to explore sources of motivation, power, knowledge and legitimacy), and planning for rural sustainable development, considering the principle of endogeneity.

“It takes a combination of semi-structured interviewing, problem mapping, interactive planning, critical systems heuristics, and viable system modelling to support stakeholders in both defining the issue and responding to it systemically”⁽¹²⁾.

Data for the first step (mostly quantitative) was provided by researchers from Udelar, who have been collecting and analysing it since the beginning of the project through diagnoses of the social, technical

and economic situation in the influence areas of the farmers’ local groups. Meanwhile, data for the second step resulted from interaction activities with farmers in the local groups, institutions and technicians (through interviews and workshops).

The population of research was integrated by farmers, directors and technicians of the three Rural Development Societies or organisations, and the representants of the institutions involved in the co-innovation project (INIA, IPA and Udelar) during the period from October 2019 to March 2020. Farmers were part of five groups in total: two belonging to the Rural Society of Garzón, other two to Las Cañas, and the last one to San Carlos (Table 1). Each group reunites between 8 to 10 farmers.

Table 1. Description of interviews and workshops undertaken

Society	Date	Description	Participants
Garzón	October 2019	2 nd group of farmers	4 farmers, 1 technician, and 1 agent from MGAP.
Las Cañas	October 2019	2 nd group of farmers	3 farmers, 1 technician, one agent from FAgro.
San Carlos	October 2019	1 st group of farmers	8 farmers, 1 technician, 1 agent from FAgro.
Garzón	November 2019	1 st group of farmers	5 farmers, 1 technician, 1 agent from FAgro.
San Carlos	November 2019	Council	7 members (2 are technicians).
Las Cañas	November 2019	Council	6 members (1 is also agent from FAgro).
San Carlos	November 2019	1 st group of farmers	8 farmers, 2 agents from FAgro.
Garzón, Las Cañas & San Carlos	December 2019	Technicians	4 technicians, 1 agent from INIA, 1 analyst of commercialization, 2 agents from FAgro.
Las Cañas	December 2019	2 nd group of farmers	5 farmers, 1 technician, 2 agents from FAgro.
Garzón	March 2020	Council	1 member.

Within the project, farmers’ groups meetings are organized in such a way that once a month each member is visited on their farm. Therefore, the space generated in the monthly meetings was used for interviews and workshops in order to avoid an extra effort for participation.

Evaluation also included attending to training and social instances which were part of the extension program. One useful way of doing social research is focusing on language, using some form of discourse analysis (with broad or narrow analysis of texts). For a real understanding it is also important to look



closely at what happens when people talk or write⁽¹⁵⁾. Structured questionnaires for interviews and workshops were designed together with the Faculty of Agronomy staff of Udelar. To explore sources of motivations, power, knowledge and legitimacy with Udelar’s members, the guideline was Ulrich’s Critical Systems Heuristics⁽¹⁴⁾, as recommended by Midgley. In addition, seven open questions, inspired on the main propositions (which will be extensively discussed) of the guide for assessment of extension programs by Christoplos and others⁽⁶⁾, were applied to all the population in person or by phone call:

- I. To what extent have the main objectives been achieved?
- II. What are my motivations to be part of the project?
- III. Are the extension services meeting the farmers’ demand?
- IV. Which have been the advantages and disadvantages of inter-institutionality?
- V. What communication tools can be appealing to farmers?
- VI. How to promote the sustainability of the groups?
- VII. How to promote local empowerment?

2.2 Transparency of data

Data not available: The data set that supports the results of this study is not publicly available.

3. Results and discussion

As described in the methodology, the adapted framework for evaluating and monitoring the co-innovation project includes two steps, which are presented and discussed below.

3.1 Describing the problem

Following guidelines for appropriate evaluation, this research made use of available information as a starting point to complement what the program actors are already working on, what might increase confidence, since the evaluator can be seen as a contribution to the ongoing learning process⁽⁶⁾.

A primary description of the rural system was meaningful to criticise and value the program’s objectives.

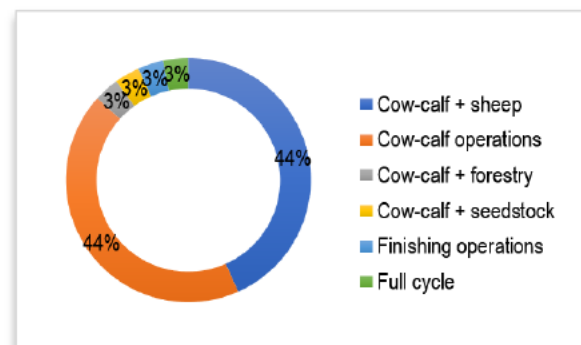
It was also a first approach (using quantitative tools) to gain insights of the farmers’ “worldviews”⁽¹⁶⁾, and to choose the qualitative methods which would lead the Systemic Intervention to evaluate the co-innovation project.

The low number of answers related to productive or economic data (Table 2), and low percentage of calculations (Figure 2) allow to start understanding why the institutions under study strive for training on data collection and analysis.

Table 2. Farmers' profile

	Number of answers	Average	Standard Deviation
Farm size (ha)	30	266.4	185.2
Sown pastures area (ha)	30	49.2	57.6
Number of workers	30	2.2	0.4
Number of family workers	30	1.9	0.5
Number of cows	16	161.7	117.7
Number of sheep	16	215.3	219.1
Meat production (kg/ha)	5	95.1	24.0
Income (US\$/ha)	4	92.0	35.1

Figure 2. Registration and calculation at the farm level





Farmers manage an average of 266(±185) ha each (Table 2), ranging from a minimum of 12 to a maximum of 780, what represents some variability and is lower than the average by livestock producers in the country (487 ha) and in the Southeast region (397 ha)⁽¹⁷⁾. 30% of them manage between 100 and 200 ha; whereas 13%, less than 100; and 43% between 200 and 500.

In addition, farmers own less cows than national average (0.60 vs 0.77 animals/ha) and more sheep (0.81 vs 0.55 animals/ha). This is probably linked to the lower fertility of the region soils, which are mainly superficial or medium, limiting grass production and making them more suitable for herd's grazing⁽¹⁸⁾.

The predominant system of cow-calf production (Figure 3) reflects the same reality, and represents 53% of the country's cattle farms⁽¹⁹⁾. Competition with cropping and forestry has caused a relocation of livestock production to marginalised areas where resources sustain more extensive production systems, promoting even more those "simpler" productive options⁽²⁰⁾. Finishing or full-cycle operations (which are more complex because they require more food to fully raise the animals) are still reserved for more productive soils in Uruguay, being applied to 7 and 18% of the total cattle land, respectively⁽¹⁹⁾, explaining their very low percentage in Sierra del Este.

Meat production of 95(±24) kg/ha (Table 1) accounts just for 5 farmers in the region, since most of them do not calculate it regularly. Similarly, the farmers' income of 92(±35) US\$/ha does not represent the entire region, because it is based on only 4 farms. As Figure 2 shows, not all farmers are open to share information, especially productive or economic data (either because they choose not to, or they do not have it), and many of them were absent during the meetings where data was collected.

Another relevant fact is that their region is, according to the government, one of the most vulnerable to climate change due to its low water storage capacity and a high proportion of installed family farmers⁽²¹⁾. Climate change and a slower innovation in Sierras del Este can be judged in two ways: as a disadvantage, or as an opportunity to value their alternative conservationist socio-technical model.

Figure 3. Sharing of resources between groups

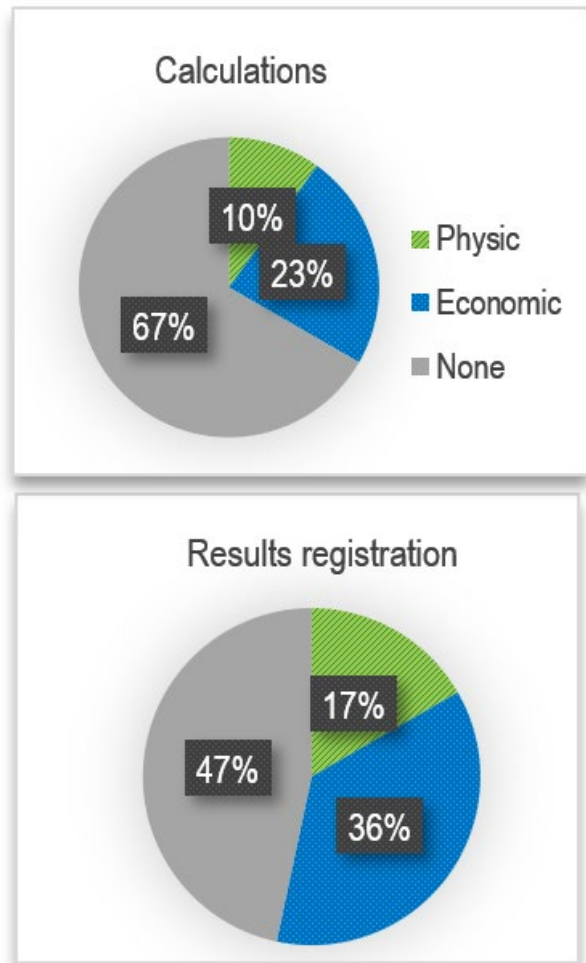
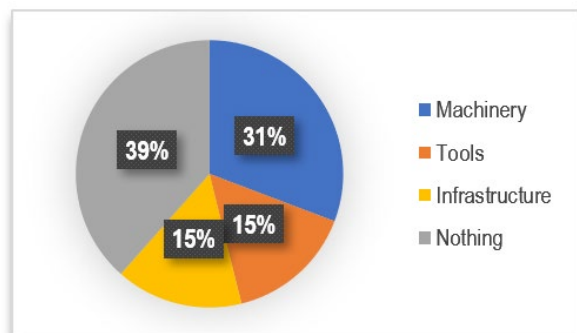


Figure 4. Production systems of farmers



However, valuing the regions' system requires to act collectively, what represents the biggest challenge since farmers still do not engage in



organisations, as reflected by the use of shared goods (Figure 4) or collective actions (Table 3).

Table 3. Farmers' previous engagement in local activities

Technical assistance	62%
Participation in groups	43%
Training	86%
Collective sales	0%

It can be appreciated that most farmers under study have participated in training instances and received technical assistance (86 and 62%, respectively). Nevertheless, engagement in farmers' groups is

43% and none of them ever participated in collective sales (0%). Moreover, in spite of being part of organisations which count with and promote the use of shared goods, 39% of farmers declare not to use them in common with others, explaining (again) the purposes of the co-innovation program⁽²²⁾.

3.2 Discussing on boundaries and planning

The answers of Ulrich's 12 questions⁽¹⁴⁾ to debate on the boundaries of the intervention by the team of the Faculty of Agronomy of Udelar are summarized in Tables 4, 5, 6 and 7 below. Two members gave and discussed their opinion. Comments on the last column invited to further debate among those involved, since the aims of the project have been established only by institutions. This fact gave rise to the formulation of other questions to include all the actors in the debate (the ones asked in interviews and workshops), to extend boundary critique on the social problem.

Table 4. Answers about sources of motivation

	1st opinion	2nd opinion	Discussion
Beneficiary and interests to be served	Rural family; Improve the quality of life through productive and economic-financial functioning.	Farmer and his family; Integral development (productive, economic and social) and improvement of social capital, strengthening organisations.	How do other participants benefit? They also represent interests.
Purpose and consequences	Contribute to the development of rural families; Trained farmers, functioning groups and strengthened organisations.	Provide tools that contribute to achieving development; Farmers open to change and improving their production, integrated to organisations to be actors of local development.	What does each farmer really want? Have they been asked?
Measure of success and improvement	- Farmer: available technological innovations. - Groups: use of technical assistance, incorporation of new practices into farm operations. - Organisations: maintenance of their actions, improvement in communication and social capital.	- Farmer: changes in their production processes and social integration. - Groups: consolidation with wide participation and exchange. - Organisations: improvement of intra-organisational and media communication, service to its members.	How would each actor evaluate their own success and that of others?



Table 5. Answers about sources of power

	1st opinion	2nd opinion	/
Decision-maker	Follow-up committee that plans and evaluates what has been done.	Follow-up committee, but many decisions rest on the team that carries out the project.	Are the committee members enough or should more people be involved?
Controlled resources and conditions of success	Activities carried out by the project and local human resources.	Involvement in the process; monitoring of the work of groups and technicians by organisations.	Idea: Use of "self-monitoring" and "self-assessment" tools.
Not controlled resources and conditions of success	The time of processes due to the changes of organisations' authorities and the rhythm of the farmers (different from the teams in charge of implementing).	Changes in the integration of organisations, which often do not allow an accumulation of learning.	Possibility of implementing a learning management program? With staff and training in this regard.

Table 6. Answers about sources of knowledge

	1st opinion	2nd opinion	Discussion
Professional or experts	Local technicians approved by organisations who handle fundamental theory and practice of production systems and can communicate and motivate.	Technicians from the participating institutions, or independents or from other organisations with the endorsement thereof.	Possibility of incorporating experts from other areas to address communication problems and promote articulation?
Expertise or relevant knowledge	Of technical assistance to livestock farmers: animal management, forage production, group dynamics management.	In livestock production and working with a rural, adapting business forms of work.	If integral development is intended, why only mention productive solutions?
Guarantor of success	Institutional participation and involvement. Objective evaluation of results.	Organisations strengthened with control over actions.	How would an objective evaluation look like?

Table 7. Answers about sources of legitimation

	1st opinion	2nd opinion	Discussion
Legitimate stakeholder to the interests of those affected but not involved	Other rural development actors (academic and non-academic), regional and national authorities involved.	Representative actors of the different integrated groups informed for the legitimate decision making to the representatives.	Possibility of giving greater participation to civil society in this type of projects?
Sources of emancipation of those affected by promises	In evaluating the results, improving the levels of organisations capacity and autonomy to make decisions.	In farmers' training, the strengthening of organisations, the relationship of the organisation with its environment and the participation in local development processes.	Are there established ethical guidelines? This could be worked on as a contribution to future similar projects.
Determining worldview and different visions of 'improvement'	Promote the development of all participants towards states in which we reach higher levels of autonomy.	Improvement of human, social and economic capital; strengthening the organisation; improvement of production as a result of innovation.	The visions of all actors could be mapped to build accommodation and ensure everyone can benefit in the process.



The questionnaire of seven questions gave most of the information of this study. Language was selected for analysis because it defines boundary judgements, having received great importance as a linker constructing both subject and object, since the final half of the 20th century by Western philosophy⁽²³⁾. In this sense, Maturana⁽²⁴⁾ argues that observation depends on the structure of a subject and the language he uses to build the observations. Participants in qualitative research were viewed both as “knowers”, since they carry the knowledge the researcher pursues to reveal, and “co-creators”, because they are expected to contribute with participatory action research⁽²³⁾.

3.2.1 Achievement of the main objectives of the project

The central question to evaluate any extension program is whether the objectives were achieved⁽⁶⁾. As previously exposed, the project objectives were about strengthening individual and collective capacities of farmers. Overall, positive speeches overcame negative ones. All the groups of participants (farmers, directors and technicians) made an exercise of cooperation to highlight the good aspects of the project until the date of the interview. Satisfaction is more related to the relationships between farmers and less to the relationships across different levels (farmers with societies or farmers with institutions). It also varies among groups as expected, since the groups are not in the same stage of maturity. According to Courdin and Sabourin⁽³⁾, groups generated from external sources (through the stimulation of public policies, for instance) might face greater difficulties in constructing rules and adapting to new ones, linked to the self-organisation capacity generated and the degree of confidence achieved.

Answers gave way to the exposition of problems related to the low power of congregation, adaptation to the methodology and tools that are being offered. As in other Latin-American territories, immature collaborative cultures might be affecting the role of systemic managers of generating trust and the achievement of the proposed collective objectives⁽²⁵⁾.

3.2.2 Motivations to participate

This question was key to identify other objectives and differences among stakeholders. Farmers

across all the societies agreed on the motivation of learning or sharing information, knowledge, experiences and personal concerns (such as family, health and pets care). High importance is given to the fellowship or friendship created within the groups. Also, there is a shared hope for innovation and economic improvement, but it seems to occupy a second place in the farmers' discourse. Meanwhile, the Councils of the Rural Societies give priority to technology and scientific knowledge, aiming to make them available to farmers, through training, talks and partnerships. Actors whose main objective is the search for profitability emerge in coexistence with family farmers⁽⁶⁾, which are mostly driven by emotions to choose one rationality over another⁽²⁴⁾, so it is relevant to acknowledge that their acts are shaped by feelings.

On the other hand, technicians appear to be in the middle of both positions as expected for their role as extension actors⁽²⁶⁾: interact with both professionals (to transform knowledge into free information) and farmers (to transform local information into learned knowledge for later action). To act as systemic “innovation brokers”⁽²⁷⁾ they need precisely to promote interdependent networks that collaborate and cooperate effectively⁽²⁵⁾.

3.2.3 Agreement between extension services and farmers' demand

Evaluation of extension must consider how well the chosen technicians represent the interests of the target clientele⁽⁶⁾. In this regard, farmers express to be glad, especially about the technicians' reports, management proposals, practical advice and the exchange between them. However, they suggest that more profit of technical assistance can be taken, through the evaluation of results and evolution, the incorporation of more data in the reports, adding more consultations and consolidating the program's aims. In addition, in some groups an absence of adaptation to the methodology can be observed, since they mention they do not use certain tool, or they do not understand certain technical references.

As for Councils, they recognize a “divorce with the farmer”: several members complain about farmers' behaviour (their lack of knowledge, interest, “business mentality” or economic purposes).



Marginalisation of farmers can be observed when they are subject to strong labelling or ritual treatment, raising conflict in the process of making decisions⁽²⁸⁾. Christoplos and others⁽⁶⁾, regarding this issue, suggest that working on communication skills enables to catalyse transition and to meet the demands of farmers.

Some technicians suggest: “We are not providing precisely what they need; a change of mindset is required; we must question the producer why he does what he does”, revealing a difficulty to understand the rural worker. Transparency of problems by bringing them to interviews and workshops for discussion is part of the evaluation that stimulate parties to learn from the strengths and weaknesses of the existing program and re-evaluate how the intervention impacts the overall innovation system⁽⁶⁾.

3.2.4 Advantages and disadvantages of inter-institutionality

As for main advantages, directors cited: local institutions (Rural Development Societies) could help scholars (from INIA, Udelar and IPA) to reach farmers; overlapping resources and projects could be avoided; the quality of technicians and the access of organisation to some tools has improved; knowledge is now united; there is a sense of regional cooperation because of the network they have constructed.

As disadvantages, directors defend that involvement has not been equal among institutions, and this is important to get positive results; according to some of them, sometimes the same efforts are still working separately in the region, what makes training repetitive and unappealing to farmers, and they still face difficulties to use a “common language” to address the farmer, not adapting to their idiosyncrasy. Again, it can be observed that the innovation system still faces immaturity in the sense of institutionality to generate collaborative cultures⁽⁴⁾. We point out that progress has been achieved in other regions by integrating multiple disciplines into rural extension work⁽²⁹⁾.

3.2.5 Communication tools

The following ideas were proposed within the farmers’ groups:

- Let interaction flow, without “imposing” strategies, respecting individual decisions.
- Calling farmers listed as associated to the Society, asking about their interests and their way of production; offering benefits.
- Insisting on fun instances of sharing, evaluations of meetings and thinking about the operation of the group during the first year. Establishing times, possibly by implementing a fixed calendar.
- Promoting advice from neighbours to neighbours and proposing new training topics.

These ideas follow the principle of endogeneity, considered vital for development, because they come from the centre of the groups, reflecting their desires⁽¹⁰⁾. However, local consciousness seems to not be expanded yet. To directors and technicians, the idea of events with food and economic benefits appears as appealing, but most of them criticised this interest. Their suggestions were linked to the use of external technology and being more practical and attractive in trainings.

3.2.6 Sustainability of the groups

Sustainability, in this case, refers to the conservation of human resource capacity, analysing what is required of organisations, extension managers, and extension staff, being its biggest challenge to ensure ownership⁽⁶⁾. Inside the groups of farmers, an emphasis was given to the respect for individual decisions, discussing together the possibilities of improvement (for example, change of productive orientation and different alternatives for grazing management), keeping the social component of meetings and the role of the technician, as well as insisting on more interaction (monthly meetings to maintain the dynamics, punctuality and communication). Technicians point out the importance of “not taking rules from other farmers but adapting them to the reality of each one”.

The possibility of arrangements to produce and sale together (new market strategies) was discussed. It is meaningful for evaluations to recognize markets, since extension may influence the “playing field” in order to promote more effective functions⁽⁶⁾. Moreover, there is a call for all of them to commitment and



to make a better use of common equipment available in the societies.

Directors' concerns relate to financing and order. The majority insist on the improvement of relationships between the societies and technicians and institutions. In some cases, it was clear that there was no motivation or willingness of continuity beyond the financial period.

As already discussed, the goal of extension should be precisely to create an enabling environment for actors to choose their own path to follow⁽⁶⁾. There is room to question the flexibility of the methodology, considering the vast diversity of farmers' profiles it deals with. If the objective is integral development, endogenous and systemic approaches should not be forgotten, and they defend that intervention should start inside the region, considering "the worlds" of the involved actors, especially the most affected by actions (undoubtedly farmers, in this case).

In this sense, technicians have already reflected, during the workshop, on having to adapt their hypotheses to the reality of the territory, the challenges of introducing assistance to the region with a different approach, including efficient use of available human resources, the importance of assessments during the project to improve on time, and the need to adapt to what farmers require with criteria. They maintained their idea of demonstrating farmers' an economic and social benefit, generating sympathy and incentives, and bringing "the worlds" of technicians and farmers closer, by promoting honesty, understanding, generating information on the processes that are taking place.

Technicians are considered key to maintain territorial development by strengthening the capacities of all the economic and social actors, with social inclusion and environmental sustainability, the promotion of collective actions (networking) and inter-institutional coordination⁽²⁵⁾.

3.2.7 Local empowerment

Farmers' replied with views of respect, cooperation, intervention, better-quality communication and partnerships. According to them, "the message riches higher among peers". Directors and technicians concluded, separately but similarly, that it is highly

important to start projecting for "the one who produces".

During an organised conference by the co-innovation project to share regional experiences of collective marketing (September 2019), many farmers have exposed their willingness to commit in such strategies in order to overcome the problems of market instability, scale and low productivity, land ownership, meeting standards and individuality. For that, mediation of the government, industry and other institutions, technical assistance and diversifying events were seen as crucial.

During the course of interviews, a shift in the speeches of professionals can be observed, what proves that participatory monitoring can motivate actors to think critically about their work and find ways to improve it⁽⁶⁾. Precisely, Midgley's Systemic Intervention⁽⁹⁾ invites actors to perceive methodology as changing and progressive, in a way they can continuously learn from others, using many different paradigms that can improve the means for intervention.

4. Conclusions

This study indicates that to evaluate a rural extension project it is convenient to explore the transformation that different people (stakeholders) want to see and what it means to them. The analysis should be around the relationships between stakeholders (participants and affected people), and the things that need to be addressed to make significant changes.

The several different interrelated methods and techniques employed reinforce the idea of theoretical and methodological pluralism. Synergy between boundary discussion and methodological pluralism can make possible that each part of Systemic Intervention corrects the potential weaknesses of the other.

Since the actors involved in the project under analysis come from very different contexts (not only the farmers, but also institutions and societies' profiles), what means having different purposes, this adaptation of Midgley's approach provides a suitable framework for planners to really understand and start tackling the problem as a whole.



Direct participation of farmers and institutions was considered key in the operation of the project, as the way to increase their chances of sustainability. The generation of shared analysis of problems as a starting point for the promotion of actions, as well as the participation of the stakeholders involved in the follow-up and evaluation, allow them to be part of the action, engaging in the process to be encouraged.

Overall, this research suggests a flexible framework for evaluation of rural extension programs. It represents a novelty in the application on Midgley's Systemic Intervention, never previously employed in rural contexts or in South America. Considering family farming is one of the main economic drivers in the region, and it faces great social and environmental challenges in a context of immature innovation and conflicts between stakeholders, this plural approach seems highly suitable to interpret other regional cases and promote their improvement. It involves engaging with raw data and diagnostic processes to produce new meanings, and it would allow each case of regional intervention to follow their own path with no general method for investigation.

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Author contribution statement

MM wrote the paper, collected the data, and conceived the analysis; JA, NR and VS provided data, supervised the analysis and corrected the writing.

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