Farmer-extensionist relationships and knowledge co-construction: Ethnographic case studies of public rural extension in central Chile

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A thesis presented in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Agriculture and Environment

Palmerston North, New Zealand

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2025

Abstract

This study explores how the relationship between small farmers and extensionists in central Chile shapes knowledge co-construction. While agricultural extension researchers increasingly recognize the importance of social-interpersonal relationships, there is little empirical and contextualized research exploring how this unfolds into practice. Through ethnographic methods, this research shows stories and descriptions from fieldwork, highlighting how farmers and extensionists organize their relationships and co-construct knowledge. While at an upper level, relationships are organized by structures and formal expectations drawn by policy and extension institutions, these constraints are navigated through interpersonal relationships. Findings reveal that farmers and extensionists build their relationships on trust and respect, usually leading to deeper layers like duty of care, commitment, and affection. This study maintains that relationships work as a mechanism that fosters social responsiveness and flexibility. Communication, as the ability to listen, enables a safe space to talk, providing better opportunities for the development of relationships and learning. In this research, knowledge is shown as a dialogic and negotiated, dynamic, subject to validity and contestation, and shaped by how actors perceive mutual trustworthiness. This study contributes to adding empirical evidence and insight that supports agricultural extension as a social phenomenon, where human relationships are core to understanding how extension programs happen at the level of implementation and knowledge co-constructed.

Acknowledgements

This research was financially supported by Agencia Nacional de Investigación y Desarrollo (ANID, Chile) as part of a doctoral scholarship awarded in 2020. I acknowledge my supervisors, Professors Janet Reid and Graeme MacRae, whose professional and caring support led to the completion of this research. Janet and Graeme treated me as a colleague and took my supervision brilliantly, with outstanding professionalism, patience, and care. As a newcomer in the PhD journey, I listened to the horror stories of other PhD students, and it seemed that supervisors emerged as a frequent topic among the commentators. Even scarier, a quick search showed me that the desertion rate of PhD students is around 50% worldwide. This was quite discouraging. Now and then, I can say that I am not contributing to raising these scary statistics anymore, and I credit this to you both. I have received all the support and guidance I needed and beyond – thank you.

In a way, this acknowledgement section supports the fundamental findings of this thesis, that knowledge is co-constructed, that relationships matter – that people matter. I am not surprised that after all this work, I feel this research itself is a co-construction with all the ones involved. In that sense, this is not only the products of my own. I especially acknowledge my parents, Marisol and Luciano, who believed in my skills and encouraged me to keep going. I also thank my wife, Esire Encina, whose love inspired me to do this PhD in the first place, to grow professionally and politically. This thesis is dedicated to them. I also thank all my colleagues in social sciences who contributed to this research. My friend Gonzalo Pavez, for all the endless philosophical talks – It is because of you that I got interested in ethnographic research. My cousin, Jose Ignacio Martinez, whose guidance and intellect was critical at the very first stage of this journey. I thank Paula Acuña, a Chilean feminist anthropologist who helped me to understand relationships, for her proofreading and emotional support. To Camila Merlo, for her unconditional love, source of inspiration, and friendship. To Lucas Tolchinsky and

Catalina Fierro, a lovely couple of anthropologist friends whom I met during fieldwork and who taught me so much about this discipline. To Caterina Riquelme and Patricio Vargas – thank you, my friends. Special thanks to the academics I talked to through this journey: Fernando Landini, Pelayo Benavides, Tomás Ibarra, Carolyn Morris, Trent Brown, and Paula Satizabal.

If you are planning to do a PhD, I am sorry to tell you that there is a significant amount of craziness in that decision. PhD students have to put themselves through – somehow - unreasonable amount of stress to meet the standards of academic production. If you are still keen to go on this tragicomic but rewarding adventure, take care of yourself and be aware of your mental health always. What's more, writing a thesis is hard, but it is not any harder than life itself – knowing the different social realities during fieldwork taught me that. I acknowledge all my participants, farmers, and extensionists – you are co-researchers of this thesis. Without your time and openness, this work wouldn’t be possible. I must thank you all for being part of this journey and helping me become an amateur anthropologist. I have been so fortunate that I have run out of words to express my gratitude.

Table of Contents

List of Figures

List of Tables

Abbreviations

AIS	Agricultural Information Systems
AKIS	Agricultural Knowledge and Information Systems
CLP	Chilean Currency ($561 CLP = $1 NZD)
EMBERAPA	Brazilian Institute of Agricultural Research
FAO	Food And Agriculture Organization
FOA	Annual Grant for Business Operations
GDP	Gross Domestic Product
INDAP	Nacional Institute of Agricultural Development
IICA	Inter-American Institute for Cooperation on Agriculture
INE	National Institute of Statistics
INIA	National Institute of Agricultural Research
INTA	National Institute of Agricultural Technology
IFP	Investment Grant
NZD	New Zealand Currency
PRODESAL	Local Development Program -Programa de Desarrollo Local
SAT	Technical Assistance Service – Servicio de Asistencia Técnica
TDR	Time Domain Reflectometry
T&V	Training and Visit
ODEPA	National Office of Agricultural Studies and Policy
U.S.	United States

Chapter 1 – Introduction

Research Context

Agriculture is an essential part of human society, intertwined with values, knowledge systems, rituals, food, and economic development. In the context of the global climate crisis, small-scale agriculture has received considerable attention for having positive contributions to sustainability, food security, and poverty reduction in developing countries. Public rural agricultural extension plays a central role in bridging public and private interests by supporting social reproduction of small farmers and their social role. Through a social constructivist stance, this study focuses on small-scale agricultural extension, exploring how the relationships between agricultural advisors and farmers shape knowledge co-construction.

Global crisis, agriculture, and campesinos

Over the last two decades, agriculture has received increasing scholarly attention, especially in the context of a global climate and humanitarian crisis (Gozzini et al., 2022; Kabir et al., 2024; Lehner & Rosenberg, 2022). While agriculture is a primary industry in many countries where technical, scientific, and economic knowledge prevails, other non-industrial – but significant – forms of agriculture need to be viewed in a different light. Smallholder agriculture, food sovereignty, and environmental justice are examples that need to be seen beyond a purely scientific, technical level, or economic analysis. Even though agricultural 'hard' sciences and newer technologies significantly contributed to safeguarding sustainable, safe, and quality agricultural products, these alone are not a complete answer to resolve the climatic-environmental crisis. In turn, the green revolution has had many downsides, one of which is that technology and sustainability do not always correlate (Altieri, 2009, p. 34; Röling & Van De Fliert, 1994, p.

98). Hence, the environmental agricultural crisis is not just a technical problem but also a humanitarian one (Escobar, 2019; United Nations, 2021).

Some scholars consider that small farming activities contribute to positive externalities for food production, sustainability, and the environment, highlighting the social importance (Altieri & Funes-Monzote, 2012; Koohafkan & Altieri, 2011; Van der Ploeg, 2017a). The campesinos, a common name for Latin American peasants or small farmers who hold less than one acre of land, produce together up to 90 percent of the continent's food supply (Kiers et al., 2008, p. 8). Yet, in Latin America, smallholders only control 30 percent of the cultivable land (Altieri & Toledo, 2011, p. 174) while producing the majority of the agricultural goods. Since food security is part of a global agenda (Van der Ploeg, 2017b) , the social reproduction of the campesino comes as a main concern because of its social vulnerability (Devine et al., 2020). For such reasons, countries all over the world, particularly in Latin America, there is vested interest in preserving the campesino and small farming activities (Aguirre, 2012; Landini, 2016c), and for many developing countries, the policy mechanisms and strategies direct attention to agricultural extension services.

Modern rural agricultural extension services

Agricultural extension services are traditionally understood as all means of assistance and support to farmers through technical advice (Christoplos, 2010, p. 2). Agricultural extension comprises a variety of advisory services provided to a wide variety of farmers, ranging from subsistence to industrial agriculture. Recent research associates agricultural extension services with a facilitatory role, assisting farmers with agricultural technical knowledge and other forms of advice (e.g., financial, organizational) (Kilelu et al., 2014). Agricultural extension services are often carried out by agricultural advisors, commonly called (in Latin America) agricultural extensionists (Landini, 2015, 2016d).

Agricultural extension research offers a broad body of scientific production comprising different understandings of how knowledge, advice, and development are conceived and practiced. In a more traditional view of agricultural extension, advice and assistance were seen as a transfer, implying a vertical flow of knowledge, assuming farmers as passive receivers of technology (e.g., hybrid seeds) and technical knowledge (Black, 2000; Swanson et al., 1997, p. 5). For some scholars, the idea of transfer is outdated, while most social research appears to be underpinned by modern perspectives, like constructivist ideas in education and human development (Black, 2000; Boon, 2010).

Top-down models of development, like the Training and Visit approach (T&V), have been heavily criticized by some social researchers (Anderson, 2006; Röling, 1992; Swanson et al., 1997, p. 5). Some of these criticisms suggest that top-down programs like the T&V failed not because of the technical aspects, but for ethical reasons (Anderson, 2006; Leeuwis, 2013, p. 296). Then, as some scholars point out, the ethical dimension is concerned with how farmers were persuaded to make changes in their lifestyle, compromising their sustainable practices (Röling & Van De Fliert, 1994, p. 47).

Some scholars hold the perspective that agricultural extension history underwent a paradigm shift from traditional extension to a contemporary form (Ison & Russell, 2000). This shift identifies that agricultural extension has changed from top-down, vertical values (positivist and transference approach) to more horizontal ones (social constructivism). While some scholars maintain that modern ideas have led to a more bottom-up and horizontal approach to extension, it has also led to contradictions and confusion between theory and implementation (Knickel et al., 2009, p. 139). Theories help to inform practice, but the level of implementation is always far more complex than theory suggests. Some scholars suggest that theory, while useful, has reached a point where it requires more empirical evidence to ground it (Long, 2003, p. 4).

Research gap: Human relationships and knowledge co-construction

One of the key points in contemporary approaches to extension practice is the influential role of actors (Long, 2015; Verschoor et al., 2001). Moreover, similar works mention that agricultural extension is an inherently messy social process by highlighting how actors tend to navigate, maneuver, and adapt institutional planning (Koutsouris, 2012, p. 65; Leeuwis, 2013, p. 14). These and other works consider agricultural extension as a social phenomenon (Cristóvão et al., 2012; Fieldsend et al., 2021; Klerkx et al., 2012; Koutsouris, 2012; Long & Liu, 2009). Yet, these experiences – although useful – remain mostly theoretical, with little empirical exploration.

While there is increasing attention to the role of actors in social extension research, empirical works exploring human agency are scarce. Yet, as part of this exploration, some research has focused on interpersonal relationships between agricultural advisors and farmers, adding insight and evidence to how knowledge is co-constructed and other outcomes are catalyzed. Some of these works indicate that farmers and advisors build their relationships with nuanced and complex social dynamics (Arce & Long, 2002; Höckert & Ljung, 2013; Ingram, 2008; Landini & Murtagh, 2011; Tsouvalis et al., 2000). Similar works show that farmers and advisors can have deep emotional connections, underpinned by mutual trust and respect (Ingram, 2008; Kuehne et al., 2019; Vanclay, 2004), and sometimes even friendships (Ingram, 2008, p. 17). These researchers also emphasize that the interpersonal relationships between farmers and advisors are crucial in achieving goals and particularly around learning and knowledge co-construction (Koutsouris, 2014, p. 24; Leeuwis, 2013, p. 381). The last works also raise the question of how and to what extent agricultural extension is influenced by interpersonal relationships.

Constructivist social research in agricultural extension frequently mentions that agricultural knowledge is co-constructed by and through human relationships (Arce & Long, 1987; Fazey et al., 2013; Ingram, 2008; Tsouvalis et al., 2000; Winarto, 2011). Yet,

this process, mediated by people, hasn't been explored in depth in agricultural extension, but also at a local level. Empirical studies have revealed that knowledge co-construction is bound to the relational dynamics, showing that farmers and their relationships with advisors shape their understanding of the world by dwelling in communicational styles (Landini, 2010b), power dynamics (Landini, 2016e) , and emotional responsiveness (Arce & Long, 1987; Ros & Arqueros, 2018). Moreover, other researchers acknowledge the influence of elements like trust in the relationships as a benchmark in shaping the process of knowledge co-construction (Höckert & Ljung, 2013; Ingram, 2008; Thomas et al., 2020; Tsouvalis et al., 2000). Though valuable, these works remain limited in answering deeper practical and theoretical questions, which may also apply to particular contexts they explored, raising interest in producing more local empirical experiences to ground and crystallize these findings. The research reported in this thesis explored the relationships between rural extensionists (advisors) and small farmers in Latin American rural extension and how this relationship shapes knowledge co-construction

Research Questions

This research investigates how the interpersonal dynamics and relationships between farmers and extensionists shape knowledge co-construction and co-learning within the context of Chilean public rural extension. This research assumes that actors craft extension into practice through human relationships, meaning that extension is "people-driven" – unsteady, unpredictable, emotional, and self-organized. Other researchers have explored similar questions through qualitative research, but less frequently through ethnographic studies. While social researchers have contributed to the current understanding of how farmer-extensionist relationships interact and co-construct knowledge, this research provides an ethnographic perspective, seeking to add nuance and contextualized understanding to this question.

From a social constructivist stance, knowledge is a relational process and not information transfer. This raises the question of how this relational aspect of knowledge is co-constructed in practice. While scholars maintain that this happens through dialogue, negotiations, and social interaction (Arce & Long, 1987; Duncan, 2019; Ingram, 2007, 2008; Ingram & Morris, 2007; Landini, 2016e; Rist & Dahdouh-Guebas, 2006). Under this premise, knowledge construction is mediated by human agency, which makes it complex, unpredictable, and shaped by interpersonal dimensions.

Using ethnographic methods, this research examines how extensionists and farmers interact at an empirical level, looking at how they organize and build their relationships, and how these influence knowledge co-construction. This study has two main questions:

i) How do farmers and extensionists organize, maintain, and build their relationships in two rural extension programs in Central Chile?

ii) How do interpersonal relationships shape knowledge co-construction and co-learning?

Positioning the researcher

For ethnographic and social research, considering the researcher's background is essential. I grew up in Santiago de Chile, in an urban middle-class family. My parents became farmers when I was a kid, and ever since, they have imprinted me with agriculture and a farming lifestyle. Although we have always been relatively successful farmer-entrepreneurs, rural life has been of key interest since my early days. I did my master's and bachelor's in agricultural science in Chile. After working on small research projects, I started to ask myself why we, as agricultural scientists, have so much trouble

teaching farmers; as it were, because of our scientific arrogance, we think of farmers as uneducated people who don't know what they are doing. Now, I apologize if I ever had these thoughts.

After all, I transitioned into the social sciences while starting this PhD project. I had no previous experience in doing social research. Likewise, I did not know beforehand how transformative this experience would be. I wanted to contribute to the world through research, but in turn, this research changed me – people and social sciences did. This transition was painful because it challenged my core ontological and epistemological assumptions as a scientist. For the reader's clarity, I am not a trained anthropologist, but I had to become an amateur anthropologist in this journey. And through my amateurism, I somehow made it this far.

Contribution to the field

This research provides detailed empirical evidence about the relationship between farmers and extensionists and how this relationship shapes knowledge co-construction. Through the lens of ethnographic research, the results center on the empirical evidence, showing descriptions and reflections about how these relationships are organized, the structures that influence them, and their interpersonal social dynamics. This thesis provides stories illustrating the details of how farmers and extensionists interact and co-construct agricultural knowledge.

Results in this thesis are centered on stories, providing examples and narratives about how farmers and extensionists communicate and dispute information. Empirical evidence in this study indicates that knowledge co-construction cannot be reduced to information transfer, while farmers and extensionists dwell in dialogue and conversation to achieve learning outcomes. Moreover, knowledge is a process that takes time, and these achievements or moments of realization are difficult to track or predict. The

process of co-construction is a continuous change and contestation, mediated by interpersonal relationships, information exchange, disagreements, but also power. Knowledge and learning can be planned but never predicted, and this research unravels the limitations of information transfer and institutional planning in knowledge co-construction, bringing new questions about how much agency can be afforded to extension programs, policies, or institutions.

This study was conducted in Latin America, in central Chile, under unique sociopolitical circumstances, with a particular group of people, their personalities, and their stories. Nevertheless, this research contributes to the general understanding of agricultural extension worldwide. Some of the contributions of this thesis only apply to site-dependent ethnographic descriptions, but some of the findings extend to stimulate broader reflections about extension, relationships, and knowledge. The descriptions are useful to inform local policies or similar social studies in Latin America and agricultural extension programs running in the region.

Thesis structure

This thesis is structured in three parts and distributed into eight chapters. Part one comprises chapters one, two, three, and four: Introduction, literature review, research context, and methodologies. Chapters one and two introduce the reader to the research problem, gap, and questions. Chapter four informs the reader of the research context, as it's been taken from empirical descriptions of the social, political, and spatial context of the study. Chapter five explains how research was conducted, designed, and the methodologies applied. The second part comprises chapters five and six, showing the ethnographic results drawn from two different case studies of two rural extension programs (The SAT and the PRODESAL). Although both chapters show different results,

both are outlined and structured in a similar fashion. The last part of this thesis is chapters seven and eight, the discussion and conclusion chapter. Chapter seven brings insights and reflections about both cases of study, not necessarily to compare them, but to address the similarities and contrasts carried by different contexts and structures. The last and conclusive chapter wraps up the findings, limitations, and contributions to the field, taking into special consideration the methodologies utilized and further research.

Chapter 2 – Literature Review

Agricultural extension: Human development and adult education

Agricultural extension is reported as being a concept coined by Oxford and Cambridge Universities during the European potato famine crisis (Swanson et al., 1997). The concept emerged from the verb/action "to extend" knowledge from academia to non-academic people (Swanson et al., 1997, p. 1), and the word "extension" has remained with an agricultural connotation since then. Although similar agricultural advisory services are argued to have existed in ancient Egypt and Mesopotamia (Swanson et al., 1997, p. 3), agricultural extension as an academic concept originated at Oxford and Cambridge Universities. At that time, agricultural extension was delivered by itinerant agronomists who made in-field visits to potato farmers over the European territory (Anandajayasekeram, 2008, p. 32; Cheesbrough, 1966, p. 193; Swanson et al., 1997, p. 5).

The breadth of academic articles on agricultural extension reveals it as a broad and prolific field of research. Some researchers coming from social sciences in extension research acknowledge an abundance of approaches and frameworks related to extension research (Cristóvão et al., 2012, p. 47) . However, the multiple approaches and theories present challenges to finding an all-around definition. One of the most referenced definitions is authored by Christolplos, published by the Food and Agriculture Organization (FAO):

> *"(...) all the different activities that provide the information and advisory services that are needed and demanded by farmers and other actors in agrifood systems and rural development."*
>
> (Christoplos, 2010, p. 2)

However, this description limits the view of extension that is utilized in this thesis. This research aligns with the view of social scientists in the development field (Blaikie et al., 1997; Rist & Dahdouh-Guebas, 2006), who suggest seeing agricultural extension with an ontological lens instead of a strictly normative one (Leeuwis, 2013, p. 24). In this extension is viewed in a broader sense, suiting a definition informed by contemporary perspectives in the research fields of adult education and human development (Boon, 2010).

This research adopts a definition of agricultural extension under the lens of social constructivism. Here, extension is understood as all forms of education and development for the empowerment, autonomy, and resilience of farmers. While this definition is broad, it captures the essence of agricultural extension viewed as a social phenomenon where multiple actors and stakeholders play their roles, integrated within a system (Ozelame et al., 2002). This resonates with several scholars who view agricultural extension as a soft system (Klerkx et al., 2012; Knickel et al., 2009; Koutsouris, 2012; Röling, 1992). Furthermore, because this research focuses on actors, it complements social researchers, suggesting a view of extension as a social interface (Arce & Long, 1987; Long, 1989). This view goes further by expanding the concept of agricultural extension into a socially self-organized process, assuming it is a contested social space where knowledge and other outcomes are disputed and socially constructed.

By choosing a constructivist approach, this study broadens the traditional and normative view of extension as knowledge transfer, acknowledging it as a space for

negotiation and uncertainty. This research views agricultural extension as a knowledge co-creation interface (Long, 2003) based on how actors influence extension at the level of implementation. This view of extension is utilized to interpret and guide the empirical analysis of the farmer-extensionist relationships and how knowledge is constructed in two rural extension programs.

Social research in agricultural extension: Theoretical & practical paradigms

Agricultural extension research draws from a broad range of theories (Cristóvão et al., 2012, p. 201), which some describe as confusing and overwhelming (Klerkx et al., 2012, p. 467; Röling, 2012, p. 2). Some authors describe extension as complex and sometimes contradictory, suggesting that abstract thoughts and ideas are challenging to organize (Cristóvão et al., 2012, p. 202). According to some scholars, theoretical concepts and ideas in agricultural extension are increasing exponentially (Cook et al., 2021, p. 1), making it difficult to organize. Besides its challenges, some scholars argue that agricultural extension theory is represented by paradigm shifts in theory and practice (Black, 2000, p. 494; Boon, 2010, p. 46).

Agricultural extension was imported from Europe to the U.S. in the early 20th century by the Land Grant colleges (Swanson et al., 1997, pp. 6-7). Some scholars think this is a milestone because it attracted the attention of policymakers and theoretical scholars (Anandajayasekeram, 2008, p. 33). The institutionalization of agricultural extension likely favored the crystallization of theory and the development of further extension programs. The seminal researcher, Everett Rogers, and his work “Diffusion of Innovations” (1962) is one of the benchmarks in agricultural extension theory. Years after it was published, leading researchers recognized his work as one of the most influential frameworks in

agricultural extension (Black, 2000; Rogers et al., 2014; Röling, 1992). Rogers's early theoretical approach, also called the "top-down linear model" (Black, 2000, p. 493; Leeuwis, 2013, p. 135), explains that innovations such as knowledge and technology follow a linear flow (Figure 1).

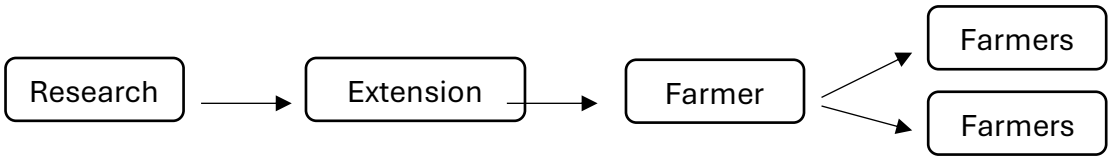

Figure 1. The diffusive model of Rogers. Sourced from Ison and Russell (2000, p. 19).

The linear model influenced extension theory and extension practice. The model was used as a framework to design agricultural extension programs like the Training and Visit (T&V) approach (Röling, 1992, p. 44) . Some academic reviews maintain that this was the leading model for agricultural extension worldwide (Black, 2000, p. 193).

Social research in agricultural extension literature is often critical of the traditional linear model (Boon, 2010, p. 49; Knickel et al., 2009; Mahon et al., 2010, p. 105; Röling, 1992). Some critics maintain that the T&V (as a top-down strategy) was an overt postcolonial device to persuade farmers to adopt green revolution agendas in developing countries (Anderson, 2006, pp. 3, 11, 12). Even though there is no hard and fast rule when organizing the diverse thinking of contemporary scholars in agricultural extension, social researchers tend to align with a theory that values horizontal, democratic, and participative ways of development (Otero & Selis, 2016, p. 8). This tendency is consistent with the group of scholars who perceive a change in paradigms for agricultural extension theory from a top-down to a bottom-up model of development after the 1950s (Black, 2000; Boon, 2010, p. 55; Cook et al., 2021, p. 7; Swanson et al., 1997, p. 10).

The literature that supports a changing paradigm in extension research often references the work of Robert Chambers, including his book “Putting the Last First” (Chambers, 1986). This seminal work provided a critical perspective on the vertical concepts in development, reframing them into a horizontal framework that empowered farmers. This work influenced modern social ideas in agricultural extension, a contrasting view to linear, top-down models of development (Black, 2000, p. 495; Röling & Van De Fliert, 1994, p. 97; Swanson et al., 1997, p. 10). For the Latin American context, Paulo Freire and his work “Extension or Communication” (Freire, 1998) in Adult Education, contributed to the paradigm shift that Chambers had installed – but in this case – in Latin American social researchers in agricultural extension (Cadena, 2011; Landini et al., 2014, p. 126; Lelis et al., 2012, p. 74). Furthermore, reviews suggest that this thread of thought favored the emergence of frameworks like the “rapid rural appraisal” and “participatory development strategies” (Black, 2000, p. 495).

Several scholars describe one of the main changes as a shift from a top-down to a bottom-up approach (Black, 2000; Boon, 2010; Klerkx et al., 2012). As mentioned above, extension literature draws on multiple approaches and frameworks from different fields of study. Therefore, literature is diverse and not a definitive body of theory (Cook et al., 2021, p. 2). However, as shown here, for the several examples in qualitative social research, qualitative social researchers tend to prefer a social constructivist lens to frame extension theory and practice. Some scholars suggest that the historical evolution of extension can be represented by attitudinal changes (Table 1). These scholars suggest specific changes in key elements like communication, the role of actors, and knowledge (Klerkx et al., 2012).

Table 1. Paradigm shifts in extension are portrayed as an "attitudinal change" (Klerkx et al., 2012).

Features	Former extension	Contemporary extension	Referenced in
Communication	Vertical	Horizontal dialogue	(Leeuwis, 2013)
Development	From top -down	From bottom - up	(Black, 2000)
Advisors	Bearers of knowledge	Facilitators and brokers of knowledge	(Duncan, 2019)
Knowledge	Science as the only truth	Multiple world views	(Tsouvalis et al., 2000)
Farmers	Passive receivers	Co-producers of knowledge	(Ingram, 2014; Ingram & Morris, 2007)
Institutions	Centralized and mostly public	Pluralistic and diverse	(Davidson, 2007; Rivera et al., 2005)

Agricultural extension is understood from a variety of angles and perspectives across the scholarly community, and the table presented above emphasizes the thread of thought of socially oriented agricultural extension ideas. Some scholars maintain that former approaches are theoretically overcome in social research (Moschitz et al., 2015), in practice, there is a significant body of research operating with former values (Takahashi et al., 2020).

The gap between theory and practice

For some agricultural extension researchers, theory is contradictory to practice. Agricultural extension is a broad field of research, and some authors suggest that the theoretical development of agricultural extension is saturated (Cook et al., 2021). The last commentary relates to the inconsistencies between practice and theory at the

implementation level (Knickel et al., 2009, p. 136). Scholars have mentioned the challenges of implementing extension theory (Cristóvão et al., 2012, pp. 210-211; Klerkx et al., 2012, pp. 473-474; Leeuwis, 2013, p. 372) , and these claims suggest that there are current challenges in bridging agricultural extension theory and its implementation.

Theoretical frameworks such as the AKIS (Agricultural Knowledge Information Systems) gained popularity for their success at the implementation level (Fieldsend et al., 2021; Zahran et al., 2020). However, according to one critical review, this – and other – frameworks need to be viewed with caution as they are not an all-around answer to agricultural extension challenges (Vanclay, 2004). While no theory is perfect in its implementation, some authors maintain that a significant group of extension researchers continues to discuss agricultural extension at a theoretical level, while failing to provide practical solutions at the level of implementation.

> *"Instead of going to the fourth stage of the approach (extension), which is the one that would alleviate problematic situations, the attention is focused on heated debates (theoretical scholarly debates), many times imprisoned in exacerbating differences between the various ways of making diagnoses."*
>
> *(Machado et al., 2006, p. 644)*

Extension is a messy and chaotic phenomenon in its implementation (Aguirre, 2012, p. 43; Höckert & Ljung, 2013, p. 293; Koutsouris, 2008, p. 240). For example, under the lens of knowledge brokerage, extensionists undertake a twofold role by complying with institutional agendas of knowledge delivery and the technical implications of knowledge brokerage (Klerkx et al., 2012, p. 473). Drawing on soft systems thinking, actors are recognized as being part of a system, and all have agency and responsibility for knowledge achievement (Machado et al., 2006, p. 642). Moreover, in a participative approach to extension, where actors partake in responsibility, the process of innovation

creates negotiated outcomes (Scoones et al., 2009, pp. 5-6). The view of agricultural extension as a social phenomenon suggests that there are more variables to consider apart from the technical, adding complexity to how extension is traditionally viewed (e.g., a multi-actor understanding). Accordingly, some researchers maintain that extension is not a straightforward process that depends on how actors navigate through constraints (policy and institutions) (Klerkx et al., 2012, p. 472). Moreover, some scholars who share this view describe the view of complexity as messiness:

> *"In all, we have come to think of change and innovation as inherently messy, chaotic, complex, and unpredictable; in other words, as quite incompatible with the idea of planning. Often, part of this messiness is connected with tensions and conflicts between people that tend to emerge whenever meaningful changes are considered (...)"*
>
> *(Leeuwis, 2013, p. 13)*

This research accepts that a grassroots level of analysis (e.g., social dynamics) will enable an understanding of how knowledge and extension operate and are socially constructed (Arce & Long, 2002; Ros & Arqueros, 2018; Sillitoe, 2006, pp. 8-9; Van der Ploeg, 2017a, p. 5). Leeuwis and other scholars from the Wageningen University in the Netherlands have contributed to extension theory by building on systems thinking (like the Agricultural Knowledge and Information Systems (AKIS)). Viewing agricultural extension as an AKIS accepts that actors and stakeholders work together in a self-organized process (Ozelame et al., 2002, p. 54). This perspective also considers that knowledge is a co-construction, happening within the system. While this perspective is more inclusive than reductionist approaches to agricultural extension (Ozelame et al., 2002), these frameworks were criticized (Leeuwis et al., 1990, p. 113) , suggesting that the systems approach is insensitive or oversimplifies the sociological nature of knowledge co-construction (Leeuwis et al., 1990, p. 113).

> *"(...) theories and conceptual frameworks always simplify what happens in practice. At the same time, such simplification is needed to make it possible to take deliberate action. Thus, we hope that conceptual researchers in the field of Communication and Innovation Studies will be able to use some of our thoughts and proposals for research in order to produce better quality simplifications."*
>
> *(Leeuwis, 2013, p. 381)*

While theory is important, it is argued that empirical work is required to ground theory in practice (Arce & Long, 1987; Klerkx et al., 2016; Leeuwis, 2013, p. 245; Leeuwis et al., 1990, p. 13). Grounding theory implies correlating what it says with the material world, but also by collecting new empirical data to inform theory. In conclusion, the gap between theory and implementation is presumably happening as a disconnect between a body of theory that requires empirical experiences to ground it (Arce & Long, 1987, 2002; Landini & Murtagh, 2011; Tsouvalis et al., 2000). This strongly relates to the questions of this research about how social dynamics and knowledge co-creation come into practice.

Social dynamics: The relationship between extensionists and farmers at the grassroots level.

Bridging the gap between theory and practice in agricultural extension requires empirical research, and scholars who maintain this idea direct attention toward exploring human agency (Arce & Long, 2002) and the relationships between extensionists and farmers (Gorman, 2019, p. 3). Acknowledging human agency gives responsibility to actors, shifting the attention towards phenomena such as how farmers and extensionists build their relationships and exchange knowledge. Agricultural extension is a social phenomenon that resonates with what social researchers call the human component of extension as "social relationships," (Leeuwis, 2013, p. 77) "social achievement,"

(Tsouvalis et al., 2000, p. 912) or "human interfaces" (Long, 2003). However, these concepts and statements frame the social aspect of extension as overly general and provide limited evidence of what human agents convey. In addition, some scholars claim that human relationships (e.g., farmers and extensionists) have been portrayed in the literature as black-boxed or solely viewed as a technical matter (Cook et al., 2021, p. 1).

Empirical research shows that the interpersonal relationship between agricultural advisors and farmers has a substantial influence on extension outcomes (Höckert & Ljung, 2013; Ingram, 2008; Kuehne et al., 2019). Moreover, some researchers add that social relationships in extension are not a straightforward process (Leeuwis et al., 1990). These findings suggest that farmers and extensionists interact in a contentious social space, which resonates with the view of chaos and mess reported by seminal works (Leeuwis, 2013, p. 13). While others consider the field of relationships an underexplored area of study (Ingram, 2008, p. 4; Kuehne & LLewellyn, 2017, p. 1), with past scholars mainly approaching relationships theoretically, they highlight the value of empirical studies at an "interpersonal level of analysis." (Landini, 2016b, p. 200).

Most of the empirical evidence exploring human relationships in extension research comes from qualitative case studies (Ingram, 2008; Landini, 2010b, 2016c, 2016e; Tsouvalis et al., 2000) and ethnographic research (Arce & Long, 1987; Ros & Arqueros, 2018). However, literature that focuses on the relationships between farmers and extensionists is still incipient. To date, the relationship between farmers and extensionists has been explored from slightly different angles. For example, similar relationships can be found between farmers and advisors (Kuehne & LLewellyn, 2017; Kuehne et al., 2019), farmers and scientists (Ingram, 2014), or bureaucrats and peasants (Arce & Long, 2002). In the context of rural Latin American extension, the relationship between rural agricultural advisors and farmers is usually referred to as the relationship between extensionists and farmers (Alemany & Sevilla-Guzmán, 2006; Cristóvão et al., 2012; Landini, 2016b).

Contemporary frameworks from Latin America maintain that the soft systems approach emphasizes the role of actors in agricultural extension (Ozelame et al., 2002, p. 58). Some scholars allege that while actors are considered agents of change, this is theoretical, with little exploration at the empirical level (Kuehne & LLewellyn, 2017, p. 1). Works exploring human interactions at the grassroot level are scarce but include detailed ethnographic studies of the farmer-extensionist relationships and how human agency unfolds in practice (Arce & Long, 1987; Ros & Arqueros, 2018). Moreover, similar qualitative research maintains that social dynamics within these relationships significantly influence extension outcomes (Höckert & Ljung, 2013; Ingram, 2008; Kuehne et al., 2019). This section suggests that grassroot research provides empirical examples of how relationships catalyze the outcomes of agricultural extension, shortening the theory-practice gap of how actors are agents of change.

Empirical findings reveal that farmers and extensionists aspire to have healthy working relationships, underpinned by basic elements such as mutual trust and respect (Ingram, 2008, p. 19; Landini & Murtagh, 2011, p. 263), commitment (Höckert & Ljung, 2013, p. 301), and empathy (Gorman, 2019, p. 8). These elements are commonly found in other similar/related human interactions, like in educational research (Baumeister & Leary, 2017; Cohen et al., 2017; Zandvliet et al., 2014). While the social dynamics (e.g., treating each other with minimal respect) found in extension research are not novel findings, a deeper layer of description, meaning, and significance of these elements (e.g., trust & respect) is underexplored in the literature. This means, for example, key elements like trust may have different connotations for the people who experience it. This is clear when we compare how detailed and nuanced trust is viewed in ethnographic research (Arce & Long, 1987) , in contrast to other qualitative empirical work (Kuehne et al., 2019). While trust is a key element in the farmer-extensionist relationship, most qualitative research uses, defines, and discusses trust in general terms.

Qualitative research often depicts relationships between farmers and their advisors as a working partnership (Ingram, 2008; Kuehne et al., 2019; Thomas et al., 2020). However, when it comes to answering the research questions, a working partnership provides a limited description of how relationships are organized. A working partnership may overrepresent relationships as a simple arrangement, leaving important details and subtleties of the interaction overlooked. Empirical research that utilizes in-depth interviews and ethnographic data suggests that the farmer-extensionist relationships, seen merely as a working relationship fails to capture the personal involvement and the complexity of human interaction (Arce & Long, 2002; Landini, 2020, p. 13; Lelis et al., 2012, p. 70; Ros & Arqueros, 2018).

Multiple works maintain that trust and respect are critical to how these relationships develop, are organized, and built (Arce & Long, 1987, p. 20; Bianqui et al., 2015, p. 254; Fisher, 2013; Gorman, 2019; Landini & Murtagh, 2011, p. 272; Phillipson et al., 2016, p. 38). Trust and respect are crucial features of human relationships (Baumeister & Leary, 2017; Zandvliet et al., 2014). Moreover, some researchers maintain that trust and respect in the farmer-extensionist relationship are a common ground of understanding in agricultural extension research (Vanclay & Lawrence, 1995, p. 21). What's more, some empirical work evidence farmers and extensionists/agricultural advisors displaying more than these two fundamental elements, revealing deeper emotional features that have not yet been widely considered by other scholars (Long, 2015, p. 71). Some of the elements that are shown by scholars include affection (Ros & Arqueros, 2018), friendship (Kuehne et al., 2019, p. 24), loyalty (Ingram, 2008, p. 14), care (Arce & Long, 1987; Fisher, 2013, p. 18), and commitment (Lelis et al., 2012, p. 73).

The extensionist-farmer relationship is a working partnership, and part of this interaction comprises one-to-one communication. Seminal extension scholars see communication as a broad topic, showing the multiple theoretical angles that relate to agricultural extension theory and practice (Leeuwis, 2013). While communication is a broad field of

study, research often accounts for communication as the mechanism through which farmers and extensionists express their ideas and concerns, deal with power dynamics, and demonstrate positive emotions. Research provides examples of power dynamics displayed as vertical or horizontal styles of communication (Landini, 2016e) or the capacity to recognize another's discourse (Brugnach & Ingram, 2012; Rist & Dahdouh-Guebas, 2006) and verbal demonstrations of care, commitment, and affection (Arce & Long, 2002; Ros & Arqueros, 2018).

The literature frequently expands on social elements like trust, respect, and communicational styles (Gorman, 2019; Ingram, 2007; Klerkx et al., 2016; Landini, 2016b; Landini et al., 2014; Thomas et al., 2020). However, some works suggest that solely focusing the analysis on these elements tends to overlook that these are also shaped by power (Landini, 2016e, p. 7). Other work maintains that the relationship between farmers and extensionists is bound to power imbalances (Davidson, 2007, p. 41; Kloppenburg Jr, 1991). This is important because extensionists – as shown in multiple works – often hold a relatively powerful position compared to farmers, shaping, for example, verticality in communication (Landini, 2015, 2016e). Therefore, extensionists potentially hold a powerful position, shaping interpersonal relationships in ways that remain relatively underexplored in the literature.

As noted in multiple empirical studies (Ingram, 2008; Kuehne et al., 2019; Landini & Murtagh, 2011; Machado et al., 2006; Thomas et al., 2020; Tsouvalis et al., 2000), the relationship between agricultural advisors, extensionists, and farmers exhibits clear emotional undertones. In these relationships, people experience a variety of different emotional states. Empirical studies indicate that farmers and extensionists experience mutual appreciation (Ros & Arqueros, 2018), trust (Ingram, 2008; Kuehne et al., 2019), safety, hope, and pride (Thomas et al., 2020). Though some emotions reported are not particularly positive. Ethnographic accounts show that farmers and extensionists appear to experience intense emotional states, which could be labelled as betrayal, anger,

hopelessness, and disdain (Arce & Long, 1987). Although extension scholars acknowledge the presence of emotions, this is also an area that needs further exploration (Long, 2015). This doctoral research enriches insight on emotions in farmer-extensionist interactions.

As shown in empirical studies, farmers and extensionists experience fluid and changeable emotional states (Kuehne et al., 2019). This is to say, emotions vary according to the quality of the relationships, communication styles, and people's responses to how circumstances unfold. Some studies show that extensionists and farmers often stand for positive interactions that further develop strong social/emotional bonds (Ingram, 2008; Kuehne et al., 2019, p. 24; Ros & Arqueros, 2018). This kind of interpersonal commitment indicates that farmer–extensionist relationships go beyond purely professional ties. All this suggests that good/bad relationships – including the positive/negative emotions – shape the course of extension services and knowledge co-construction, a finding that some works exploring these relationships affirm (Fisher, 2013, p. 13; Ingram, 2014; Kuehne et al., 2019; Landini, 2010, p. 11). While these assertions are thoroughly addressed, the implication, analysis, and description of emotions have not to date been explored in depth by current agricultural extension literature.

Recent scholars tend to frame emotions for agricultural extension practitioners as emotional labour (Aka & Enticott, 2025; Hochschild, 2022) or emotional intelligence (Raeisi et al., 2018; Sangadji, 2023; Zainal & Prakoso, 2019). Although emotional labour and intelligence involve effort (at the workplace in this case) and awareness to regulate and manage emotions (Hochschild, 2022), this effort also relates to dealing with human relationships. Similar works add that interaction with other human beings can carry an emotional burden/intensity, signalling that rural extensionists or social workers risk emotional burnout (Russell et al., 2019). While valuable, these works tend to treat emotional management as a work competency that explains part of the challenges that farmers and, particularly, extensionists experience. For instance, the emotional

landscape of rural extension practitioners suggests that emotional labour and emotional intelligence are more than a desirable skill set, but a nuanced experience that could also be addressed phenomenologically. The studies mentioned here recognize the importance of emotions at the working interface, which confirms relevance in exploring different aspects of how emotions shape the relationship and the service, but also how farmers and extensionists experience the service in more nuanced ways.

This section is not an argument against how theory in agricultural extension has addressed human relationships. Moreover, the argument revolves around producing a theory that better captures reality (Leeuwis, 2013, p. 281), and this relates to how empirical research in human relationships informs theory. As mentioned by several scholars, empirical research in the field of relationships in agricultural extension is a promising area of study to bridge the gap between theory and practice (Landini, 2016b, p. 200). Even though the gap is not completely unbridged because of the work exploring social relationships, more detailed studies are part of the recommendations of scholars (Leeuwis, 2013, p. 381) to contribute to an empirically informed understanding of how the human component/agency influences agricultural extension.

Knowledge co-production in agricultural extension research

Social constructivism posits that knowledge is co-created by human relationships. In agricultural extension, knowledge construction is a cooperation between extensionists and farmers:

"Knowledge is not reality's replica, yet a construction of humankind."

(Payer, 2005, p. 3).

Although many scholars in agricultural extension use the word knowledge, very few works give readers a clear definition, as most use the concept freely (Kemper et al.,

2008, p. 6) or imprecisely (Curry & Kirwan, 2014, p. 343). This may be because knowledge is a challenging concept to define, and the problem seems to be, at an ultimate level, a philosophical concern. While knowledge has different definitions and connotations, this section assumes a social constructivist approach providing an overview of the literature that focuses on how knowledge is co-created by farmers and extensionists in agricultural extension research.

One of the assumptions of researchers coming from a social constructivist background is that knowledge is not an objective, immutable reality (DeWalt, 1994, p. 128; Kloppenburg Jr, 1991, p. 530; Landini, 2010b; Tsouvalis et al., 2000). This is the opposite perspective of viewing knowledge as a truthful statement. Some researchers argue that a critical milestone was rejecting knowledge as merely information transfer (Boon, 2010, p. 90; Kloppenburg Jr, 1991, p. 523; Landini & Murtagh, 2011, p. 264; Raedeke & Rikoon, 1997, p. 146). For example, the T&V (Training and Visit program) was heavily criticized because of viewing knowledge as a transfer (Blaikie et al., 1997, p. 224; Boon, 2010, p. 58; Sulaiman & Hall, 2002, p. 226).

Social scientists from agricultural extension often link knowledge to power, identifying that scientists/extensionists hold a privileged position compared to other knowledge systems (e.g., farmers or indigenous) (Rist & Dahdouh-Guebas, 2006, p. 473). Social researchers visualized this as a hegemonic form of knowledge (Haraway, 1988; Kloppenburg Jr, 1991). The issue is that scientific and Indigenous forms of knowledge have different epistemological validity under a Western view, with indigenous knowledge ending up being undervalued compared to other knowledge systems (Agrawal, 1995; DeWalt, 1994; Kloppenburg Jr, 1991). Moreover, some works tried to reconcile Indigenous and scientific knowledge systems by acknowledging them as conflicting world views (Agrawal, 1995; Rist & Dahdouh-Guebas, 2006; Sillitoe, 2010). The dialogue between different knowledge systems connects to agricultural extension research, since scientists, agronomists, and extensionists have had a privileged position of knowledge

validity compared to farmers (Kloppenburg Jr, 1991). This perspective suggests that farmers and extensionists may have different worldviews and perspectives, making knowledge co-production in agricultural extension a challenge.

Even though there are multiple views on knowledge, some extension scholars view knowledge in agricultural extension research as the quest for truth, but more precisely for defining reality (Landini, 2010b, p. 23). Defining reality is far too ambitious for this literature review, and in a more grounded form, extension researchers prefer to deal with knowledge in terms of technical matters, such as technologies, pest management, or cultivation strategies (Brugnach & Ingram, 2012; Landini, 2010b, p. 22; Röling & Van De Fliert, 1994; Tsouvalis et al., 2000). In this research, knowledge is seen as small pieces of understanding, as a practical way to ground the abstract way of understanding knowledge. Seminal works show clear examples of this, like when farmers learn how to control pests and plant diseases, therefore changing their perception of reality (Röling & Van De Fliert, 1994).

Knowledge is the search for truth, but an excessive interpretative view of reality (where every perspective is valid) puts at risk the value of this pursuit. Therefore, reality is a contestation with others, and for this to work, science and other knowledge systems must engage on the same ground of critical reflection:

> *"While it is conceded that others' statements about nature might express different ideas, serving as cultural metaphors or commentaries on other issues, this does not rule out the possibility of error. Some New Guinea highlanders, for example, burn pieces of old net bag to stop rain and squash sappy plants to end droughts. In meteorological terms neither practice has any effect on the weather. We may proceed as anthropologists to speculate on wider symbolic associations, but from a scientist's perspective, people who believe these practices influence the weather are wrong"*

(Sillitoe, 1998, p. 226)

Some researchers argue that agricultural extension is a social interface where people dispute different knowledge systems and beliefs (Berkes, 2009, pp. 153-154). In this view, farmers and extensionists exchange ideas and learn from each other, assuming that knowledge co-construction is a contested social process (Arce & Long, 1987). This suggests that knowledge co-construction is not a straightforward process, and raises more questions about how co-learning and knowledge co-construction occur at the level of implementation.

Knowledge co-production at the grassroots level is not completely bound to hegemonic structures of power and validation, because people, in the end, will use multiple knowledge systems to interpret reality (Caron et al., 2014, p. 50; Ingram, 2008). While the connection between knowledge and power structures (e.g., colonialism, scientific validity, status) is an overarching discussion (Rouse, 1994), at a practical level, knowledge is an everyday, dynamic, and fluid entity. This means that although knowledge co-construction in agricultural extension comprises technical information and technologies, the mechanisms of knowledge co-construction are not a linear and steady process (Tsouvalis et al., 2000). This aligns well with agricultural extension research, maintaining that knowledge is a phenomenon that unfolds within the social fabric (Arce & Long, 1987; Landini, 2016e)

Empirical research provides evidence that suggests that the interpersonal relationships between farmers and extensionists are a crucial factor in how knowledge is co-created/exchanged (Brugnach & Ingram, 2012; Eshuis & Stuiver, 2005; Ingram, 2007, 2008, 2014; Ingram & Morris, 2007; Thomas et al., 2020). In detail, this group of researchers shows that communication styles, positive emotions, and empathy – to mention some examples – are influential in how knowledge is co-constructed. Because knowledge co-creation is a social, and not a straightforward, process, there is every

reason to believe that studying the social dynamics between farmers and extensionists is key to capturing the nuances of knowledge co-construction.

In this research, how farmers and extensionists learn and construct understanding is viewed as seizing the challenge of knowing together and deciding together (Brugnach & Ingram, 2012, p. 1). Social constructivist scholars from agricultural extension theory and empirical research had provided great discussions into the nature of how knowledge is socially constructed. This overview considers that social dynamics, the power dimension, and knowledge co-construction are all interconnected. As shown by multiple empirical researchers, farmers and extensionists have diverse and nuanced ways of knowledge co-creation, social dynamics, and power issues (Arce & Long, 2002; Ingram, 2008; Landini & Murtagh, 2011). This research contributes to shortening the gap in the understanding of how farmers and extensionists build relationships that later underpin knowledge construction. This will inform current understanding of knowledge co-construction in extension interfaces, but also how theory and policy are framed and revised in knowledge-related matters.

Conclusion

This section reviews relevant literature on agricultural extension, human relationships and knowledge co-construction. Based on a social constructivist stance, the first section accounts for the history of agricultural extension, represented in this research as a paradigm shift of theory and practice. The change of paradigms proposed in this research repositions agricultural extension not as a unidirectional flow knowledge delivery service, but as a co-construction that happens through relationships. This review assumes a theoretical position acknowledging agricultural extension as a social phenomenon influenced by human actors.

This section shows that relationships and knowledge co-construction have been traditionally rendered as a technical procedure. However, current social research on relationships reveals that farmers and extensionist or agricultural advisors build their interactions upon trust, commitment, and sometimes into friendship, suggesting that relationships are not fully professional connections but also shaped at the interpersonal level. The evidence presented by social researchers and ethnographers suggests that these interpersonal interactions are central to understanding how knowledge is co-constructed and exchanged.

This review highlights a gap in the literature about how human relationships have been explored. While relationships have been increasingly recognized as important in the literature, they have also been underexplored or oversimplified. Ethnographic research helps to address this gap, supporting these findings, by revealing that the farmers and extensionists build their relationships nuanced and emotional, and how this shapes extension at implementation and knowledge co-created.

Chapter 3 – Socio-spatial context: Chile, agriculture, and extension systems

Introduction

Chapter three covers a description of the geographical, social, and economic context under which this research was conducted. This chapter comprises two main sections. The first subsection explores the bigger geographical and sociopolitical context around agricultural extension and small farming in Latin America. These sections begin by revisiting colonial history, small farming and food sovereignty, Chilean geography, and its extension systems. The second sections start by addressing how public agricultural institutions and their extension programs are organized. This section ends with a description of both cases of study and their participants.

Agricultural extension in Latin America: Cues on colonialism and modernity.

According to some scholars, agricultural extension in Latin America was introduced by the United States as a strategy to oversee economic and political interests in the region (Alemany, 2013, p. 48; Anandajayasekeram, 2008, p. 33). The reasons behind the U.S. promoting extension institutions all over Latin America were mainly to stop communism from spreading after the Cuban revolution in 1959 (Otero & Selis, 2016, pp. 43-44). Whether these sociopolitical reasons are speculative, the U.S. indeed had a critical role in shaping the future of agricultural extension in the Latin American region.

During the first years 20th century, the modern view of agriculture was promoted by the principles of the green revolution. Consequently, agricultural extension brought to Latin America the green revolution rationales and the entrepreneurship mindset (Alemany, 2013; Alemany & Sevilla-Guzmán, 2006). Hence, the inclusion of capitalist means of production to small farmers in Latin America and the Caribbean forced the transition from small agriculture into an agro-industrial commodity, favoring the agro-export model and productivity (Alemany, 2013, pp. 12,75). Some scholars link this history of agricultural extension to a post-colonial strategy from the global north (Freire, 2000, p. 181; Giraldo, 2022, p. 81; Huizer, 1979, p. 8; Machado et al., 2006, p. 19). Now and then, Latin America and agricultural extension were inevitably shaped by the agendas of the countries from the global north (Alemany, 2013; Anderson, 2006, p. 4; Chambers, 1986, pp. 37, 40; Cook et al., 2021, p. 16).

During the later period of Latin American colonization (between 1800-1950), peasant agriculture was heavily affected by social struggle through the hacienda system. Haciendas are known when an extensive portion of land is exclusively controlled by a landlord or group of people. Typically, small farmer or inquilinos live inside the hacienda, farming their land in a semi-feudal system of exploitation (Vásquez Vargas et al., 2012). Landlords provide housing and the minimum conditions for the inquilino and their families to survive. This system segregated the farming class into an exploited farmer class. Although some farmers remained free from this system, this problem persisted until the Chilean land reforms that happened in the 20th century.

Small farmers in Latin America have a history of vulnerability and resilience. Some rural researchers in Latin America say that – perhaps miraculously – farmers had resisted being overcome by voracious modernity (Cárcamo, 2013; Devine et al., 2020). For some small farmers, modernity means a change of perspective into different economic rationale, sometimes at the expense of traditional knowledge. The forced inclusion of

technologies (hybrid seeds, machinery, and plant varieties) is an example. Even though it is safe to say that agricultural extension helps to find solutions between modernity and rurality, the traditional view of agricultural extension is often made to align with modern economic systems alone. Besides, many Latin American small farmers remain firm and reluctant to adopt modern lifestyles and economic thinking (Cárcamo, 2013, p. 332; Devine et al., 2020, p. 12; Escobar, 2013, pp. 26-27). In another way of putting it, farmers' resistance is often a political and spiritual matter. This research doesn't explore these in depth (the values and ontologies of farmers), but it does recognize their resistance and effort to exert sovereignty, to produce the food they want, and to uprise for their social reproduction. This is relevant to agricultural extension, as shown in the literature review, historically known as a colonial device.

Preserving rurality in Chile and Latin America: farming rationales for food security and sovereignty.

The Latin American territory has outstanding evidence of how small farming cultures persevered. The evidence shows that, for example, in the Peruvian Andes, in the Cuzco region, there are 2,000 potato varieties that local people still cultivate. What is more, it raises the question of how these varieties survived. Some scholars suggest that it would have taken 8,000 years of plant breeding and domestication (Koohafkan & Altieri, 2011, p. 21). While potato varieties continue to exist, some may argue that varieties survived because of technical reasons, because of the harsh conditions of altitude, 3,000 meters above sea level, and the inability to sustain modern varieties (Brush et al., 1981). We can speculate why our ancestors did so, but under a framework of modern agricultural thinking, holding on to 2,000 potato varieties seems purposeless, especially when considering the more efficient technologies and plant breeds. However, there is every reason to believe that answers are not technical but rather hidden underneath the social fabric.

For many agricultural scientists like me, farmers appear to be stubborn, resistant to change, and scientifically irrational. However, this is likely to be a wrong understanding:

> *[When I moved to the coast, my landlord, Don Ivan, was very welcoming. Don Ivan was a former farmer, but now he has retired and manages to make a living from small housing projects. I usually engaged in talking with his son Felipe. Felipe is 35, and he managed to access tertiary education, becoming a successful entrepreneur. Once, he asked me what I do for a living, to which I replied – "I will make a study of small farmers." – He enthusiastically said:]*
>
> **Felipe:** *"(…) You know Samuel… I was engaged with agriculture, I planted quinoa and wheat … but 'Los viejos!' – 'Those peasants!' They don't want to make any changes and get new technology … don't even know what Urea and nitrate are… I bet you'll remember my words… Farmers here don't know much… they are stubborn and like doing things their own way."*

This research uses the example of stubbornness and the Peruvian varieties to make a point. This resonates with the vast majority of farmers in this research who want to continue doing things traditionally. As some examples in the literature maintain, rural farmers do not possess agricultural knowledge; they are embodied in it (into the land, their ancestors, and their livelihoods) (Lugo Perea, 2019, p. 124; Méndez & Escolar, 2011). The latter relates to one of the key points in farmers' rationale: The pursuit of social reproduction (Devine et al., 2020). Ironically, the same resistance and seemingly economic irrationality may be one of the reasons why the 2,000 potato varieties remain today. This could be identified in one of the conversations I had with the group of extensionists and how they perceive farmers' way of living:

> **Fieldnotes:** [The first day I came into the extensionist office to meet the team, they kindly introduced me to some thoughts about what they do. It was remarkable that everyone said that INDAP institutional guidelines advocate for productivity. But the coastal drylands are geographically poor for agriculture, and are evaluated according to other high-productivity standards of top agricultural regions in Chile. Hence, the rural population of the coastal drylands doesn't stand highly for economic rewards.
>
> > ***Braulio**: [I usually say that most farmers here in the coastal range or drylands are just standing for sovereignty and – Ironically – patriotic to their homeland]*

Food security, rurality, and small farming have had recent scholarly attention, often linked together and regarded as a positive externality. Moreover, global statistics about food and small agriculture are outstanding. Seventy percent of global food is produced by small farmers, and up to eighty percent in some Latin American countries (Altieri et al., 2012, p. 3). The latter aroused public interest in recent years in global institutions, and the interest in preserving rural populations, the alleviation of poverty, and malnutrition (Christoplos, 2010). In contrast, global reports show that over the last 20 years, the rural population has historically declined, and the Latin American region has followed the same trend (Uribe-Sierra & Mansilla-Quiñones, 2022). Urban migration from rural territories is the main reason for this decline, likely caused by capitalist means of production, commoditization of land, industrialization, and neoliberal policies (Altieri & Toledo, 2010, p. 187; Barbetta, 2012, p. 12). Over the last decade, Latin America, including Chile, has suffered from a constant rural-to-urban migration (Méndez & Escolar, 2011). Compared to other countries from the region, Chile has had an accelerated loss of rural population, presumably because of neoliberal policies inherited from the dictatorship (Uribe-Sierra & Mansilla-Quiñones, 2022, p. 22). Some of the root causes point towards the counter-agrarian reform and the industrialization of

the agrarian sector during the dictatorship (Vásquez Vargas et al., 2012, p. 11). As a result, worldwide, Chile is one of the countries that has the smallest proportion of rural population (12%) (Uribe-Sierra & Mansilla-Quiñones, 2022), making Chilean rurality fragmented and fragile, as the evidence suggests that Latin American farmers appear to be constantly threatened by the pace of modernity (Koohafkan & Altieri, 2011, p. 15).

As mentioned above, small agriculture in Latin America is world-renowned for its food supply. Some statistics suggest that peasants from the Latin American region produce from 27 to 67 percent of the national food supply, representing up to 90 percent of the total agricultural units of the continent (Schneider, 2016, pp. 16-17). As mentioned at the beginning of this section, small farming is strongly associated with food security and food sovereignty. However, a distinction needs to be made between the two concepts, since they led to differentiated and contested arguments. Simply put, food sovereignty is the human right to choose and decide what to eat and how to produce it (Ibarra et al., 2018, p. 216). Food sovereignty is concerned with people, whereas food security is more concerned with public food supply and policy. Therefore, this distinction is necessary for some rural researchers, as food sovereignty is essential to understanding small agriculture (Barbetta, 2012, p. 67). An ethical overview in this matter comes by acknowledging the testimonies of Latin American farmers' uprising for the right to choose their lifestyle, cultivation methods, and food preferences (Giraldo, 2022, p. 133; Ibarra et al., 2018, p. 216). The latter refers back to colonization and the epistemic violence suffered by indigenous/peasant societies (Briggs & Sharp, 2004, p. 3). Again, from a postcolonial perspective, indigenous people, small farmers, and peasants were systematically forced to live and think under the precepts of Eurocentric views.

From a global economy perspective, the Latin American territory has been targeted to fulfill food security. However, the ethical dilemma is that farmers can't be forced to produce and fulfil modern economic rationales. Therefore, and again, an ethical approach to preserving farming cultures is by focusing on food sovereignty instead,

fostering development and agricultural extension that is aligned with their needs. Moreover, some works in the development field of research indicate that more productivity and technologies don't imply a better quality of life or empowerment (Cáceres et al., 1997, p. 11; Landini, 2010b, p. 27). Since there is an assumption that technologies must improve people's lives, the main problem is to first resolve what a good life is.

The Andean culture (e.g., Quechua) has a word that explains what a good life and happiness mean. For *suma qamaña/suma kawsay – "well living" or in Spanish, "El buen vivir"* is quintessential to understanding the Andean culture. For the Quechua, *suma kawsay* is considered a harmonious and restful life accomplished within shared ethical dimensions (e.g., moral economies), along with your peers and the environment (Albó, 2018, pp. 334-335; Arnold et al., 2019). Several scholars agree that current small farming Latin American societies are underpinned by this rationale (Jacobi et al., 2017, p. 190; León et al., 2015). "*El buen vivir"* or a "good life" is an alternative way of living, but also of doing agriculture, on which economic wealth is not superseded by the communal, daily, domestic wellbeing (León et al., 2015, p. 190).

> *"The peasantry is characterized by a moral rationale that drives his/her interaction with other people and nature"*
>
> (Devine et al., 2020)

Devine's quote suggests that understanding small farmers and rural lifestyle involves an ontological scrutiny of farmers' understanding of productive systems and life purposes, and this comprises strong ethical considerations. This is relevant to agricultural extension as a way of improving life quality and means of development that require adherence to this revision.

Describing the rationale of small farmers

Some scholars identify rurality, small farmers, and campesinos as a distinctive social group (Table 2). While in the literature there is unclarity if whether small farmers, smallholders, peasants, or campesinos are distinct farmer categories, for this research, these categories may be utilized as synonyms. Besides, defining Latin American rurality as a whole is a challenge (Devine et al., 2020, p. 6) and is likely to be more complex than what these scholars suggest. Moreover, rurality and the peasantry have contested views and meanings in the literature (Fernández et al., 2017, pp. 46-57). Although rural life is mostly associated with agriculture, farming activities can't be fully assumed as part of rurality (Méndez & Escolar, 2011, p. 38; Schneider, 2016, p. 14). While there are contested views of rurality, some seminal works suggest that a small farmer, peasant, or campesino (these are utilized in this research indistinctly) must accomplish three aspects: small landownership, family workforce, and display a non-capitalist economy (Ortega, 1986, p. 7).

Table 2. Comparison of small farmer/peasant agriculture and industrial agriculture. adapted from (Méndez & Escolar, 2011, p. 40)

Features	Peasant agriculture	Industrial agriculture
Objectives	Social reproduction of family and agroecosystem	Capital accumulation and maximization of benefit
Workforce	Family members, owners, and salaried employees	salaried employees
Owners compromise with the workforce	Absolute	Reduced to legal obligations
Destination of the products and inputs	Partially mercantile	Mercantile
Technology	Dependent of human workforce and least investment in technology	High investment in products and technology
Risk and uncertainty management	No boundaries between risk and survival	Based on risk management to maximize benefits

This table intends to summarize the view of some scholars who affirm it. While farmers of this research are heterogeneous, this study finds the previous summary to be conditional, but useful and accurate to many farmers interviewed in this research. Some of the key points of discussion in the farmer's rationale around economics. While the

rationale of economics for farmers is contextual and different from case to case, as mentioned in previous sections, the policy and extension programs of this research tend to put extra focus on economic development. For instance, farmers are expected to engage with this rationale.

> **Don Segundo:** (…) *"That técnico… he was fantastic… he helped me to raise my business and overcome poverty (…) for many years I planted 300 lettuces per annum, then we planted 2,000 and now look, I crop 20,000 lettuces!"*
>
> *That's fantastic, Don Segundo –* ***I reply***
>
> **Don Segundo:** *Yes, it is, I see myself as one of the best farmers at the PRODESAL program (…)*

Yet, this research found that farmers usually experience strong economic contradictions. Chilean farmers are considered a very heterogeneous group by previous studies (Beltrán Jofré, 2012, p. 13), and this study has found a similar conclusion working with farmer participants. Around the economic dimension, there is usually a dilemma between modern and rural lifestyles. The evidence in this research shows that some extensionists know this very well, by thinking that policies centered on productivity are the main issue:

> **Fieldnotes:** [I usually talk with Pedro about the nature of the program and their purpose as extensionists]
>
> **Pedro*:*** *Sometimes you'll find small farmers who are very wealthy… but when you start talking to them, they may confess to you, "Don Pedro… do you think that all I've got now comes from these 300 lettuces I plant every year?" (…) So…Can you*

> *see it, Samuel? economic success comes from other sources, such as land selling, housing projects, inheritance, or alternative crops"*

Based on what farmers and extensionists told me, rurality resembles more a way of living rather than a productive activity. Although Latin American small farmers are permeated by modernity, some smallholders still utilize traditional knowledge from their ancestors, and these techniques are often challenged by modern agricultural innovations. While productivity and wealth are not inherently bad, small farmers may not exchange their lifestyle for purely economic pursuits. Finally, farmers from this research who prefer to maintain traditions and values show that these are often a conscious political decision. For some farmers, this may come as a survival strategy against urban lifestyle, enjoyment, or, as mentioned by extensionists, even for spiritual reasons.

Public extension systems in Chile: somewhere between the public and the private

Latin American agricultural extension was hugely influenced by the influence of United States (U.S.) (Aguirre, 2012, p. 5; Otero & Selis, 2016). The creation of the Instituto Iberoamericano de Ciencias Agrícolas (IICA) in 1940 in Costa Rica was the first institution to start offering agricultural extension services in Latin America. This institution, created by the U.S., was controlled by the International Cooperation Program (Otero & Selis, 2016, pp. 45-46). The IICA received financial and technical support from the U.S. to offer various advisory and professional services. Further, the IICA contributed as an example of the emergence of multiple simultaneous agricultural institutes all over the Latin American region, such as EMBERAPA in Brazil, INTA in Argentina, and INIA in Chile (Arboleya & Restaino, 2004). By 1956, every Latin American country had some form of institutionalized agricultural advisory services (Aguirre, 2012, p. 7). The extension

programs in Latin America exhibited similarities with the Land Grant colleges, with four main objectives:

i) Close relationships between universities and extension
ii) Feedback between research and extension inside the institutions
iii) Board Committees gathering farmer's voice
iv) Applied research according to each country/state

(Aguirre, 2012, p. 6)

Until the 80s, Latin American agricultural extension was mostly public and free of charge, but the centrality of productivity, liberal economic models, and the reduction of public expenditures caused extension services to decline (Cox & Ortega, 2004, p. 9). During the 80's, some authors commented that agricultural extension systems suffered from a huge economic crisis (Da Ros, 2012; Diesel et al., 2008), which negatively affected the quality of the service (Ardila Vásquez, 2010, p. 46). During the 90's, Chile and other Latin American countries started to privatize public institutions following agricultural extension to decentralize from institutions (e.g., INDAP in Chile) (Ardila Vásquez, 2010, p. 46). The decentralization brought a variety of newer forms of agricultural services, which some authors call the emergence of pluralistic advisory services (Klerkx et al., 2016). During the 2000s, the criticisms against green revolution paradigms brought new perspectives to advisory services and extension systems, recapturing the interest in public extension services (Alemany & Sevilla-Guzmán, 2006).

According to Cox and Ortega (2004) the case of Chile, it is known as the first Latin American country to implement a privatized extension service. Some works take the Chilean experience as an internationally applauded privatized extension model. However, after 25 years of privatization, the Chilean agricultural extension faces complex issues (Cox & Ortega, 2004, p. 9). In September 1973, the democratic

government of Salvador Allende was overthrown by a military coup d'état, forcing a dictatorship that lasted for 17 years. Several references confirm the dictatorship's effect on the implementation of neoliberal policies, the reduction of the state, and the privatization of public goods (Cárcamo, 2013; Cox & Ortega, 2004).

During the mid-80s, a country-level financial crisis affected the public extension institution INDAP (Instituto Nacional de Desarrollo Agropecuario), forcing budgetary and personnel cuts. Over the next decades, INDAP shifted towards a semi-privatized subsidiary model, auctioning the extension programs to third parties and co-financed them with state bonds. Till the end of the military arrest (1990), all public extension services were auctioned to private companies. During this period, the Chilean extension services followed the principles of economic development and business entrepreneurship. As part of the privatization, the free-from-charge policy ended; farmers were charged, and most of them couldn't pay, producing a vicious circle of decline between service quality and farmers' dissatisfaction (Cox & Ortega, 2004, p. 9). During the 90s, with the return of democracy, political parties made policy changes focused on making the country more equitable in economic development by a commitment to minimize rural poverty, causing an increased budget for INDAP with the creation of new projects in rural development (Cox & Ortega, 2004, p. 11). In later years, INDAP became fully decentralized and divided into regional offices, and the agricultural extension programs started to be implemented at a territorial level.

Chile holds two types of extension systems (Ortega & Ramírez, 2018, p. 3):

i) Public advisory programs provided by INDAP, financed through subsidies and implemented by private companies,
ii) A fully privatized extension service which can be divided into two:
    a) The private advisory services independently hired by a farmer or industry

b) The private advisory services co-financed by the state.

Whether the Chilean privatized model can be considered successful or not, Chilean extension services continued with a mixed model, though it remained as a public service; it became mostly private at the level of implementation (Cox & Ortega, 2004). Furthermore, public extension systems in Chile remain exclusively dependent on INDAP, and while advisory services are auctioned to private companies and/or public entities (i.e., municipalities), the tensions between the public and private interests are one of the main challenges that the Chilean extension systems currently face.

Geography, climate, and small agriculture in central Chile

Chile has a peculiar geography. With an extension of 4.200 km from north to south, the Chilean borders are hugely shaped by geographic layouts (Figures 2 and 3). From north to south, the western border meets the Pacific coastline and, from east, the Cordillera de Los Andes (Andes mountains). In the northern part, between 18° and 29° latitudes, 1.500 km of the country is outlined by the Atacama Desert. With an annual rainfall of 2 mm, agriculture here is limited, and irrigation is mandatory (i.e., Lluta and Azapa valleys, Pica oasis). From latitude 35° to 49° south, it is known as Chilean Patagonia. Patagonia has extreme/unpredictable weather, with an average rainfall between 2.000-4.000 mm and temperatures ranging between -17°C and 20°C. Both extreme territories sustain little agriculture, contributing only two percent of the agricultural GDP. Hence, 98% of the agricultural activity happens in the country's middle, between latitudes 30° and 34° (ODEPA, 2023). Accordingly, these latitudes can be organized into three macro zones: Northern Chile (Norte Chico), Central Chile (Zona Central), and Southern Chile (*Zona Sur*) (Figure 2).

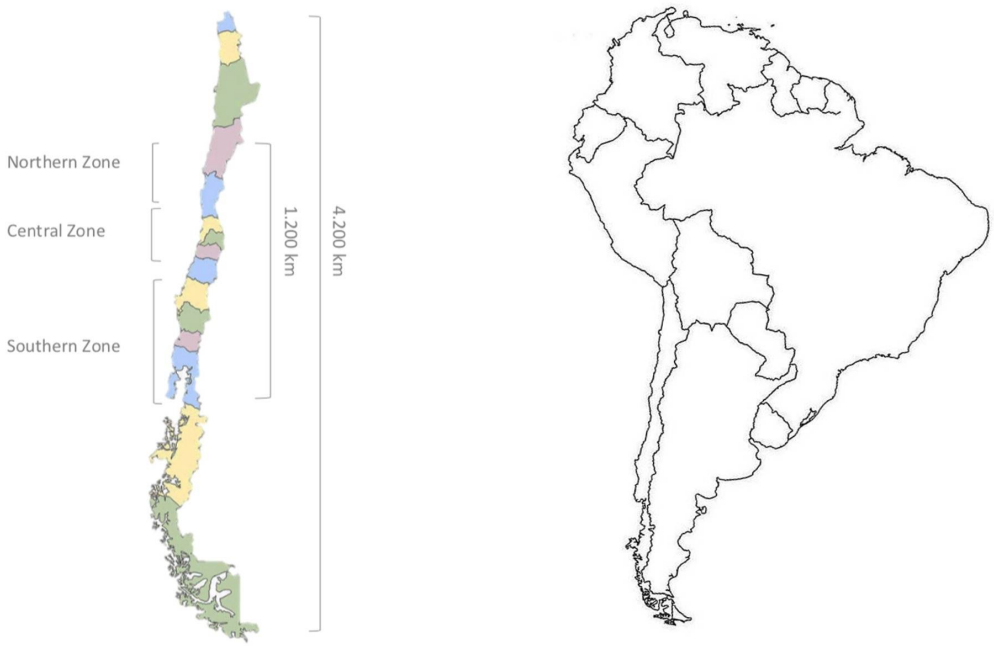

Figure 2. South America, Chile, and Macrozones.

This thesis focuses on Central Chile, which administratively functions as five regional divisions: Region Metropolitana, O'Higgins, Maule, Ñuble, Biobío, and Valparaiso (Chile, 2022). Here, most of the agriculture takes place in the intermediate valleys (Figure 3). At the same time, Central Chile holds most of the agricultural activity (ODEPA, 2023). Here, agriculture ranges from industrial agriculture to agroecological family farming systems. These regions hold 79% of the country's total population, which coincides with the closeness to Santiago de Chile (the capital city), confirming, in part, that Chile is a highly centralized country, holding the physical infrastructure of political and politico-administrative offices (Chile, 2022).

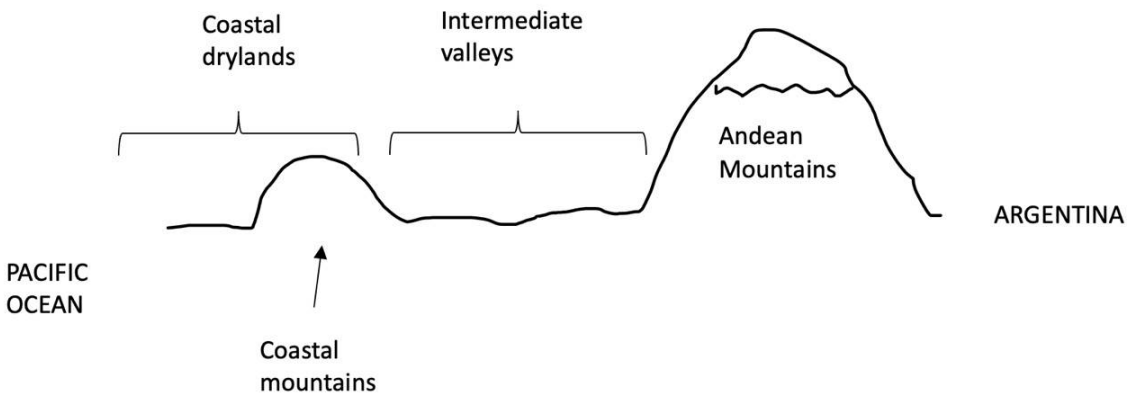

Figure 3. Transect of Chilean geography. Most of Chilean agriculture happens in the intermediate valleys.

Chile is considered to have a Mediterranean climate, with most rainfalls occurring in June, July, and August (Santibáñez et al., 2016). In central Chile, agriculture often requires irrigation, making water scarcity a concern during the summer months. National climatic reports allege that over the last 50 years, average rainfall has been reduced between 15 and 30 percent (Santibáñez et al., 2016). Therefore, climate change has become of national interest, affecting policy and implementation of the agricultural sector, and particularly affecting small farmers. Since most of the national agriculture (especially in central Chile) depends on irrigation, water management and water scarcity are an increasing problem. Consequently, water scarcity is present in various governmental policies/programs to mitigate climate change and the resilience of the agricultural sector.

Agriculture contributes to 2,7 percent of the national GDP (ODEPA, 2023), making agriculture a relatively important economic sector. The last agricultural census (2007) revealed that agricultural land corresponds to 17,680,059 hectares, whereas 4,010,096

hectares (22.6%) belong to small-family farming (UC, 2007). However, official sources such as ODEPA (National Office of Agricultural Policies), INE (National Institute of Statistics), and INDAP (National Institute of Agricultural Development) show conflicting data on small family farming units. The last national agricultural census from 2022 (INE, 2021) does not offer the current status of the small farming class category. Hence, the 2022 census is inconclusive whether these groups are classified as small-holders of family farming, showing confusing categories for all small agricultural holders (e.g., self-consumption agricultural units) (Table 3). Based on the 2022 statistics, only one percent of the total land can be awarded to small farming activities, which appears inconsistent with previous datasets from 2007. Even though contradictory or at the least inconsistent, the last Agricultural census (2022) provides valuable information about Chilean agriculture:

Table 3. The Agricultural Census of 2022 reveals the proportion of agricultural units v/s self-consumption units and Total cultivated land v/s self-consumption units (ha).

Total Agricultural units	138,628	100%
Self-consumption units from total	36,928	26%
Total cultivated land (ha)	45,742,565	100%
Self-consumption units from total (ha)	31,854	0,006%

Additional census data indicates that 73% of the total agricultural units are less than 20 hectares. In comparison, seven percent of the total is less than one hectare, revealing a high proportion of relatively small agricultural producers. However, this information still needs to be clarified in determining whether these are small producers. In matters of gender, farmers appear to be primarily men, 68%, and 32% women (INE, 2021). Considering the yet unclear statistics, alternative sources suggest that family farming controls 80% of the productive units, holding between 20% and 30% of the total cultivated land (ODEPA, 2016; UC, 2007). Chile's small family farming requires more clarification and demographic assessments.

In conclusion, Chilean agriculture is shaped by climate and geography, representing a relatively important economic sector. Chile has a variety of agricultural goods and producers, ranging from industrial to family farmers. Most of the agriculture is performed in central Chile (between 30° and 34° southern latitudes). The last agricultural census reveals valuable but inconclusive data between industrial agriculture and family agriculture. More assessments are required to clarify and define these groups. However, some sources allege that family farming occupies between 20 and 30% of the cultivated land. Further, Chilean agriculture is affected by climate change and water scarcity, making small farmers a vulnerable group.

What is INDAP?

"The National Institute of Agricultural Development" – "Instituto de Desarrollo Agropecuario" (INDAP) is a national public institution dependent on the Ministry of Agriculture, created in 1962 to promote small agriculture and rural development. Currently, INDAP has 16 regional offices and 137 territorial offices spread all over the country (Figure 4). The main goal of the institution is to:

> *"Promote social, technologic and economic development of small farmers and peasants, aiming to enhance entrepreneurial, organizational and commercial skills; all in all, integrated to rural development and the improvement of resource management."*
>
> *(INDAP, 2023b)*

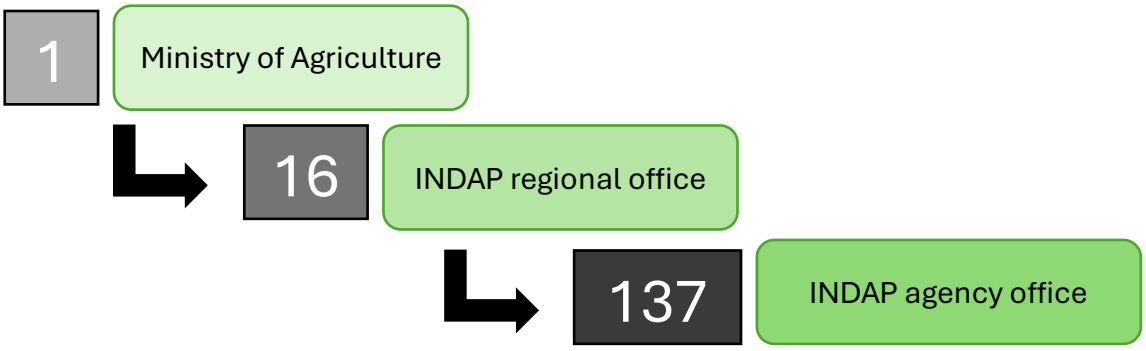

Figure 4. Organization of INDAP offices.

INDAP displays several extension programs and supporting features. According to INDAP, the institution offers 41 programs of assistance that are grouped into three axes: (i) skills development, (ii) Grants, and (iii) financial support for Investments (INDAP, 2023b). The skills development branch consists of various technical assistance extension programs, of which the most relevant are the PRODESAL and the SAT. The PRODESAL (Local Development Program) is oriented to micro-producers, and the SAT (Technical Assistance Service) is oriented to farmer entrepreneurs. In addition to technical assistance, these programs also offer financial support for investments, grants, low-interest loans, and financial advice. Grants and financial aid are mediated by extensionists as they can intervene in offering and granting these to farmers (Figure 5).

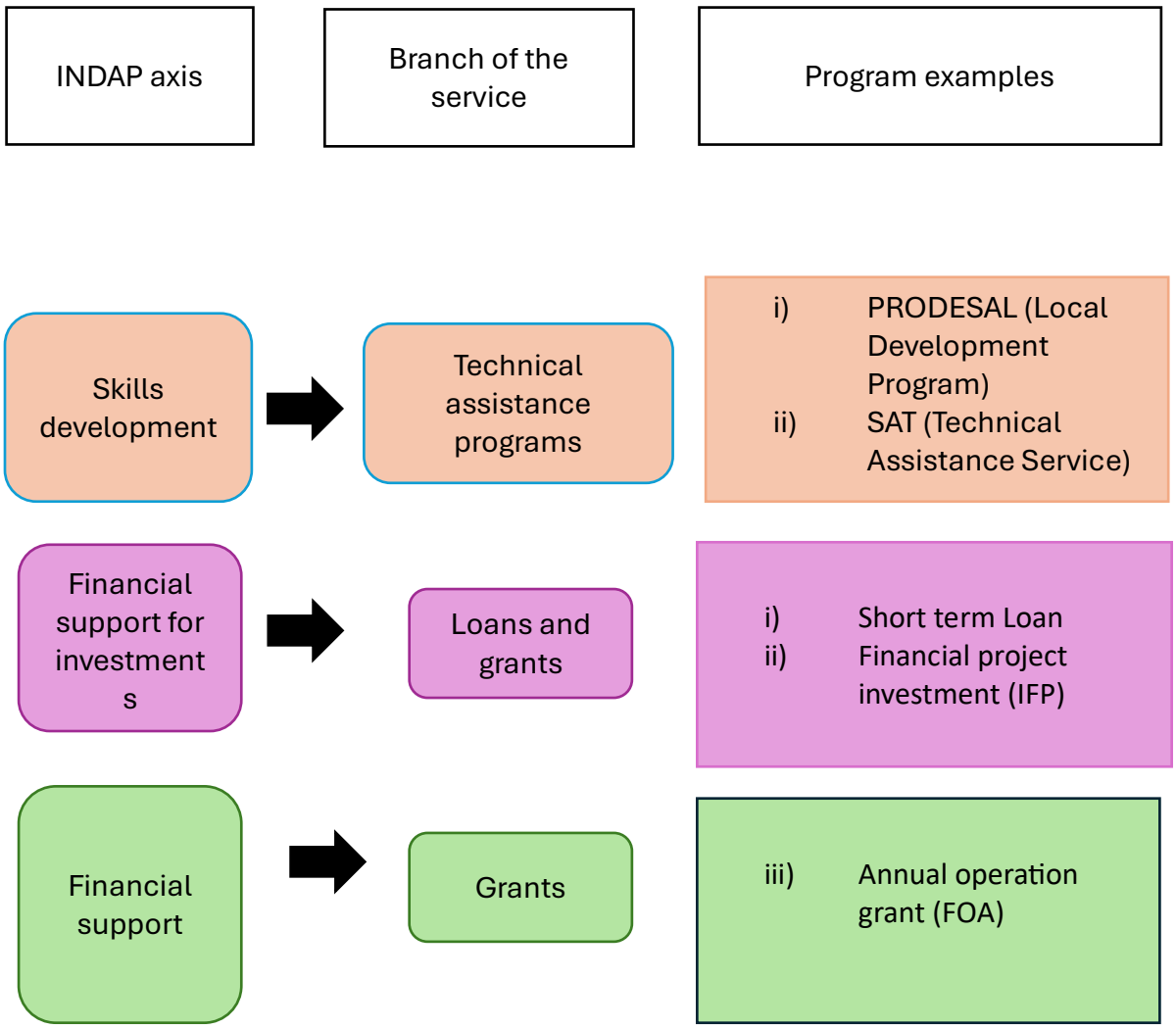

Figure 5. INDAP three axes of intervention

To become a beneficiary of INDAP, a farmer must be in the category of a small producer, which, according to law N° 18.910 (1993), requires having the following characteristics:

i) A maximum of 12 hectares of basic irrigation (varying according to each region of the country)
ii) Top limit of 3,500 (UF) (256,000 NZD) in financial assets
iii) The main family group's income must come from agricultural activities.
iv) Direct labor of the land.

(Beltrán Jofré, 2012, p. 14)

INDAP runs as a public institution, but some of its services are auctioned to private companies. Therefore, a program like the SAT is often implemented by third parties, usually through a company that hires a group of agronomists as extensionists. INDAP roleplays as a public administrator at the level of territorial offices or agencies. Accordingly, private companies are mediated by INDAP to organize and supervise implementation. In Chile, INDAP remains the only public institution that offers semi-public agricultural advisory services to small farmers. While most of the agricultural extension services are implemented by third parties, INDAP takes the administrative and supervisory roles.

Strawberry fields forever: The description of case study one

The SAT program goals and entry requirements

The Technical Assistance Service (SAT) is a public extension program co-financed with INDAP, mainly focused on agricultural technical assistance. According to INDAP, the SAT goals are:

> "Increase farmers' revenue of the forestry/agricultural/related businesses that are contributing the most to market-linked farmers and their household income."
>
> (INDAP, 2022, p. 3)

This program is oriented toward small farmers willing to grow their businesses. Farmers who want to become beneficiaries of the SAT program must fall into the small farmer category regulated by organic law N° 18.910 (modified by law N° 19.213). Additionally, small farmers must be linked to market and sales activities (INDAP, 2023b).

Program implementation, farmers, and extension personnel

The implementation SAT program is outsourced to a private company. This happens at a territorial level, where private companies compete in an auction. The private party signs a renewable contract with INDAP for 18 months, committing to implement the program in a specific territory. At the implementation level, the company has the freedom to propose a suitable extension plan, whereas INDAP gives general guidelines. In this context, INDAP remains mostly in a subsidiary and supervisory role. For the case of this study, the private company DUCANT won the auction for the SAT program in five districts in the Libertador Bernardo O'Higgins region. The company is responsible for hiring specialists or extensionists according to each territorial need.

The SAT program has two branches of the service: technical assistance and financial aid. For technical assistance, the SAT starts working with a business plan made for each farmer individually (INDAP, 2022). Depending on the business plan, technical assistance and investments are provided from case to case. Therefore, technical assistance and investments are not standardized but are often crafted to suit farmers' needs. This is usually dependent on the criteria of extensionists and their interaction with farmers. In terms of the technical visits, extensionists must comply with a minimum of 12 visits for each farmer in the 18 months. During these visits, the extensionists give farmers written recommendations with four manifold copies: one for the farmer, one for the extensionist, one for INDAP, and DUCANT (Figure 6). Moreover, these copies are also evidence that the visit was made, but only if properly signed by the farmer. This is important for the extensionist because the salary amount depends on the number of monthly visits made. Finally, for investments, farmers need to apply via the extensionist, with an annual limit of 3,500,00 CLP (7,000 NZD). These investments are co-financed up to 70% by INDAP (INDAP, 2023b).

Figure 6. The written recommendations are the evidence of the extension visit.

Other observations from the program

As some additional information, farmers are charged for the service for an annual copayment of 90,000 CLP (180 NZD). Although the SAT is mostly financed by public funds from INDAP (up to 90% of the advisory services), farmer payments are supposed to cover the rest. Finally, recent works suggest that the SAT program has additional objectives that are complementary to the advisory services:

- Make technical visits and deliver technical recommendations, supervise previous recommendations, and the assessment of the business plan.
- Group activities that consist of training sessions.
- Promote horizontal diffusion of innovations.
- The accomplishment of field trips and demonstrative units, the diffusion of market information, sale prices, and technologies.

(Henríquez Meza, 2020)

Growing strawberries, social, economic, and spatial context

Territory and spatial context

This case study is heavily influenced by the experience and work of Gabriel. Gabriel works as a berry advisor, usually strawberries, blackberries, and blueberries. Gabriel works with around 30 farmers in different districts in central Chile (Figure 7). All districts correspond to municipalities, which have different territorial, financial, and social conditions. In this case study, all territories are located near the coast. With an average population density of 15,000 inhabitants per km^2, these territories are also known as "Secano costero" or "Coastal drylands." The Coastal drylands are an extended territory that covers most of the Chilean coastline, usually known for lower agricultural productivity in comparison to the intermediate valleys (ODEPA, 2019). The territory explored for this case has a high proportion of rural population (40%), contrasting with the national average of 12% (INE, 2021).

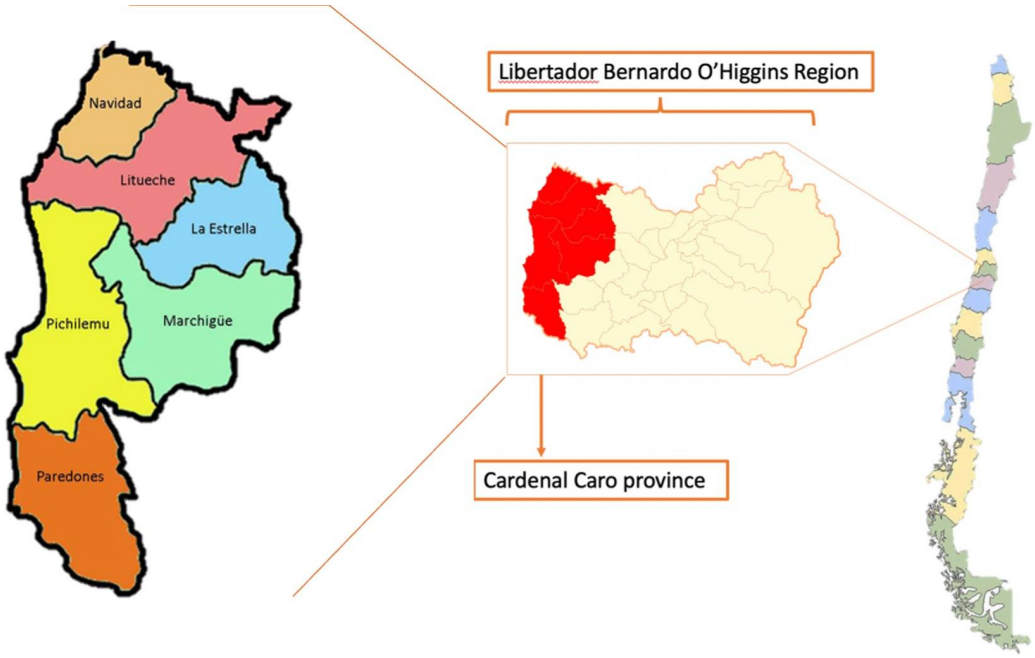

Figure 7. An example of a central Chile district.

Farmers and berry cultivation

For farmers, berry cultivation is considered difficult in terms of technical knowledge, but also because of the high capital required to start this business. However, among farmers, it is mainly believed to be a good entrepreneurship opportunity. For example, farmers who are into strawberry cultivation are usually open to focusing on economic development and business management. Some of my participants reveal examples of how strawberry cultivation is seen:

> **Señora Ana:** *(…) "I think I need to see strawberry cultivation as a business…you know what I mean?" (…)*

> **Don Hugo:** (…) *look around, Samuel… all that you can see is because of the strawberries… all the things I've got… the strawberries gave to us (…)"*

For Gabriel, berries are cash crops. For instance, small farmers find that these crops are attractive because of the high revenues, but also because they require a relatively low portion of land with a reasonable payback. According to Gabriel, most farmers cultivate between 1-2 hectares, with a maximum of 5 hectares. For instance, the niche in berry cultivation for small farmers is still highly intensive in labor, and this happens through highly intense periods of labor, with periods of no workforce needed. Because the intensity of human labor is seasonal, small farmers tend to do most of the farming labor all year round.

Taking strawberries as an example, one hectare of cultivated land can yield annually between 60-80 tons of harvestable fruit. The prices can vary depending on the season, but usually oscillate between 2,500 CLP (5 NZD) per kilo between September and November and as low as 400 CLP (0.8 NZD) per kilo when summer ends. Overall, farmers can expect an annual average revenue of 1,000 CLP per kilo and yielding at least 50 tons/ha. The latter resumes in 50,000,000 CLP (100,000 NZD) annually per hectare with a revenue of 40% minus costs (around 30,000,000 CLP or 50,000 NZD).

Despite the business attractiveness, there are some risks that farmers need to consider before starting. First, strawberries are demanding in human labor, especially during harvest season (September to April). Around 70%-80% of the annual costs are allocated to salaried labor. Thus, farmers often prefer to maximize labor costs by doing most of the job themselves (or with family members) but are often involved in hard and contra-ergonomic tasks (Figure 8). The body gets tired:

> **Don Julio:** "*I used to grow strawberries… but I am done with it! I am converting into fruit trees right now because I want to look up, not down!… I am older now and have become tired of the strawberries and being crouched all the time.*"

Farmer: (..) *"This thing of working yourself crouched... nobody can take it"*

Figure 8. Left. The strawberries are a ground-level crop, demanding a crouched and anti-ergonomic posture of repetitive labor. Right. Some farmers make ergonomic semi-hydroponic systems for the strawberries. The anti-ergonomic labor of strawberries is no fun.

Moreover, farmers who cultivate these kinds of crops feel their monetary and body-work investments are subjected to uncontrolled variables, such as the seasonal market, pests, and workforce unavailability. Farmers think berry cultivation is uncertain and risky. In that regard, Gabriel and many farmers report that the 2021 season was bad because of the historically low prices and the inflationary cost of agricultural inputs. The crisis of the 2021 season also revealed the importance of Gabriel's advice in terms of market networks and technical advice. Accordingly, market networks were revealed to be critical since sale opportunities were reduced to a few: the supermarket with high

prices but difficult to enter, Santiago's marketplace (known as La Vega), and the industry. The accessibility of these networks depends on fruit quality, but it can also be facilitated throughout Gabriel.

Strawberry growers know that strawberry cultivation is knowledge-intensive. Strawberries need to be sprayed regularly; they are highly sensitive to pests and diseases, making agricultural advice crucial to Gabriel's work. Strawberry cultivation can be considered a technical crop. Also, irrigation is a must, and farmers rely on water wells or small creeks to meet the irrigation requirements. The latter goes hand in hand with the use of irrigation infrastructure (e.g., water pump, drip hose, and fertilizers) and plastic mulch for the weeds.

Other considerations

Gabriel reports that berries can grow differently from place to place. This may be because of the agroclimatic conditions; however, he reports that this coincides with farmers being different.

> **Gabriel:** *"Here in Navidad, people are different. When I come to see farmers, they usually invite me to their houses to have a cup of tea or even lunch. In Camarico, people are not quite… I bet I can count on my fingers the farmers who would have offered me that.*
>
> *And why do you think this is that way?* **– I asked**
>
> **Gabriel:** *"Because in Navidad people are "gente mas de campo" – "peasant-alike", and they are not yet corrupted by the rural-capitalist thinking."*

In conclusion, the Berry SAT program is a technical assistance service that operates at a territorial level. Growing berries can be considered a cash crop. For instance, small farmers think of strawberries as an entrepreneurship matter, and most of them are interested as it is perceived as a business. Berry cultivation is knowledge-intensive, and farmers must consider relatively costly investments, such as high-tech agricultural products, irrigation infrastructure, plastic mulch, and financial risk.

A midlife warrior, about Gabriel and his job as an extensionist

I met Gabriel (30) during my studies in agriculture at Universidad de Chile. He started to work on strawberry irrigation projects as a technician in central Chile. Sooner, he started to familiarize himself with the berries and became an advisor. Later, he was contacted by an auctioning company to become part of the SAT program. According to Gabriel, he has 8 years of experience in berry cultivation and 4 years as an INDAP extensionist.

Gabriel's personality shows someone introverted, quiet, and reserved. Others who don't know him closely would say that he has a distant touch with farmers. I would rather say that Gabriel has a strong devotion to professionalism, making himself honest, righteous, and respectful of farmers. He sees himself as a proficient individual complying with farmers' and institutional demands. He also feels very confident in his agricultural background and technical knowledge, refraining from non-logical or unreasonable solutions to problems. I see Gabriel as someone who advocates for knowledge-based solutions, encouraging himself to learn and integrate as much knowledge as he can. I suspect that Gabriel and I fit into the vernacular category of agricultural nerds.

Gabriel is perceived by farmers as someone reliable. He is often afforded to have good intentions for farmers:

> **Juan Fernando:** *(…) You know what Gabriel has?… he is a good person… thanks to him I can sell the strawberries to the supermarket… it was because of him(…)*

He is also seen as a source of reliable knowledge and advice:

> *What do you think is best for having Gabriel? – I asked*
>
> **Don Mauricio**: *(…) Yep…that man really knows what he does.*

While Gabriel is good of character, well-intentioned, and respectful with others, he expects others to behave in the same way, while becoming frustrated when he sees inconsiderate behavior:

> **Gabriel:** (…) *"Look, Samuel, there is something that goes even beyond the extensionist-farmer relationships you are exploring (…) this has to do with the way you do in life and the values that your parents gave to you (…) I had realized that many people who have different values according to the parent they had… and, there are people who like to deceive and being dishonest to others"*

"Viejos de campo" – A small town, small agriculture, and the PRODESAL team: Description of case study two

PRODESAL program, the municipality, and INDAP regulations

Program details and goals

The Local Development Program or PRODESAL (Programa De Desarrollo de Acción Local) is a free-of-charge program from INDAP, often implemented via municipalities. The program is designed to operate at the territorial level of the Municipality. The

PRODESAL is oriented to micro-agricultural producers (reference to the INDAP Law 18,410) who usually work salaried but are on the way to becoming economically independent farmers. The main goals of the program are:

(i) Increase the income of micro-farmers linked to market sales surpluses in agro-related activities.
(ii) Promote linkages from public-private actors who wish to support better living conditions to the beneficiaries.

(INDAP, 2023a)

According to INDAP guidelines, the program has two intervention axes: (i) the productive axis and (ii) living conditions improvement. The productive axis is focused on increasing the sales of micro-producers while trying to maximize the use of available resources, cost-efficient systems, and productivity. It is important to mention that the PRODESAL also includes complementary economic activities that go alongside agriculture, such as craftsmanship and rural tourism. Therefore, the program must support a variety of rural producers, even if they are not related directly to agricultural markets. The second axis was enacted in 2020 policy by a decree from the Ministry of Interior and Public Safety. This decree governs the *National Policy of Rural Development,* alluding to the concept of "Social well-being." Accordingly, the Social well-being policy has six dimensions as follows: i) housing, ii) access to public services, iii) health, iv) education, v) physical connectivity and telecommunications, and vi) social equity and vulnerability.

The PRODESAL program consists of three main benefits for the users: i) integral advisory services, ii) annual operation funding source, and iii) investment fund. The advisory services are meant to enhance and develop farmers' skills, plus help networks with public-private parties. Accordingly, the advisory services are aligned with the two abovementioned purposes: farm productivity and the well-being of farmers. The other two benefits have subsidiary purposes. The annual operation funding source (FOA) is an annual grant of 115,000 CLP (230 NZD) that farmers have guaranteed access to each

year, and the Investment fund (IFP) that co-finances investment projects up to 90% with a maximum limit of 1,200,000 CLP (2,400 NZD). For the IFP and FOA, farmers ask INDAP for a refund and must show the receipts as evidence of purchasing agricultural supplies (i.e., seeds) or services (e.g., machinery services). Farmers can only apply every 3 years and must demonstrate agricultural performance, an invoice, or receipt of the expenditures for INDAP to refund.

Program implementation, farmers, and personnel

INDAP policy mandates and encourages that PRODESAL programs should be implemented via municipalities. However, in exceptional cases, private companies can compete for an auction for the service. As for this case study, the municipality has a 4-year renewable contract with INDAP for the implementation of the PRODESAL program. The municipality is responsible for co-financing the program with a minimum coverage of 15% of the INDAP annual budget, and every cent beyond is voluntary. INDAP allocates funds to the municipality while the municipality manages the contracts and program implementation. Hence, it is the municipality's responsibility to hire extensionists, which usually happens as a fixed-term yearly contract, usually under the observation of "provisional services".

For this case study, the PRODESAL program has 300 farmer-beneficiaries, a team of 5 extensionists, a coordinator, and a secretary. Each extensionist is assigned a group of farmers grouped in different sub-sectors of the territory. Extensionists are assigned to approximately 60 farmers/beneficiaries each. The program is organized according to an annual plan, which extensionists, the municipality, and INDAP agreed on. Extensionists must comply with varied activities regarding the annual plan, such as technical visits to farmers, emergency visits, training sessions, field trips, and municipal activities. For this research, the most important activity corresponds to the technical visit. During the technical visit, extensionists visit each farm to give advice and written recommendations. This moment is when the extensionists interact *vis-à-vis* the farmer.

In a similar way to the SAT program, extensionists must give written recommendations or manifold copies to the respective parties, the farmer, the municipality, and INDAP. According to the chief coordinator of the extension team, each farmer is visited at least 3 times a year by the extensionist, making an overall of 180 visits per year.

Other observations from the program

The organization of the PRODESAL program involves three parties: the PRODESAL team, the municipality, and INDAP. Since the PRODESAL is linked to the politico-administrative power of the municipality, sometimes the extensionists feel like political operators for the current party in place. Although there is a constant effort from INDAP to minimize the effects of political influence on the program, the intentions of the municipality on the territory are mixed with the official planning of the extension program, making a full separation difficult. The latter raises concerns on extensionists, since the municipal officers make public announcements about investments, making farmers attend public gatherings, while the extensionists claim to use farmers as a political spectacle.

The latter resonates with the nature of the contracts that extensionists hold with the municipality and INDAP. Since both institutions oversee the role of extensionists, these sometimes produce contradictory situations. However, the PRODESAL team has a better sense of belonging with the INDAP than the municipality because, again, because they feel carried away by the political agendas in the municipality. Besides, extensionists know that if the municipality needs them to do something, they may have no other alternative but to comply:

> **Extensionist:** *If the municipality tells us to sweep the floor, we must take the broom and start sweeping.*

Often, extensionists must deal with the contested interests of institutions. While the municipality formally hires extensionists, INDAP also oversees implementation.

“Viejos de campo”: Territory and economy of small farming in the coastal drylands

Territory and spatial context

The PRODESAL program is implemented at the territorial level of the municipality. The current territory is this research corresponds to a small town near the beach, popularly known for summer family vacations. From an agricultural perspective, the coastal drylands are hardly productive and, therefore, less attractive to big agroindustry and companies. Therefore, farming in this territory is often done by the rural population, as small farming lots are randomly scattered inland. Here, most of the agriculture is done by small subsistence farmers. However, similarly to other coastal dryland territories in central Chile, these have been extensively exploited for dryland Pinewood cultivation. Although the last census from 2007 reveals that Pine forestry only reaches 35% of the total cultivated land, the landscape is visually shaped by endless plantations of *Pinus radiata* (Figure 9). According to recent demographics from this small township, this territory holds 79% of the urban and 21% of the rural population (BCN, 2017).

Figure 9. Left, the usual landscape of Pinus radiata in coastal drylands. Right, a classic scene of an iconic town 100 km away: The beautiful Punta de Lobos is known for surfers and scenic views.

Farmers and the drylands

The Chilean coastal drylands are an example of gentrification. During the COVID-19 pandemic, many jobs went telematic, alongside the realization that a rural lifestyle is relevant to mental health and quality of life. Therefore, locals report that over the last 7-6 years, but especially enhanced during the pandemic, outsiders from urban territories have consistently moved in search of a better quality of life. However, this has had an impact on the local economies. These little towns have formerly sustained their economy on tourism and agriculture, and with the permanent settlement of outsiders, the pricing of services and land increased exponentially. As an example, the urban sector of Punta de Lobos shows how land sales and the housing business dramatically changed the prices of land. During the last decade, Punta de Lobos became world-

renowned for world-class big-wave surfers as the international surfing community baptized this place as the world's surfers' capital. Consequently, the Punta de Lobos sector, originally conceived as a fisherman's cove, is now overpriced at an outstanding amount of 500,000,000 CLP (1,000,000 NZD) per hectare.

Over the last decade, the coastal towns of central Chile have become increasingly costly to live in due to outsiders. Because of land pricing, all the surrounding territories had increased their surplus value. Small farmers who usually inherited land for several generations, once started to realize that their seemingly unproductive land can be sold to outsiders for a price equivalent to a lifetime (or even more) of hard work. For instance, farmers are tempted to sell land to investors for they to convert unproductive agricultural land into countryside cabins for leisure. In just one sale, farmers found themselves in an auspicious economic condition and perhaps safeguarding a sense of social security that the Chilean neoliberal economy hasn't provided to them. Under this perspective, small agricultural activities have no chance to compete with the urban economic standards.

Drylands are usually unattractive for industrial agriculture, and so for the young progeny of farmers. Most of the time, farmers told their children to search for opportunities off the farm, to study and become professionals – best an engineer or a doctor. Although the agricultural activity of these farmlands is now influenced by land sales, not all farmers have had the chance to become wealthy. More often than not, farmers are committed to farming regardless of their economic conditions, and it is remarkable to see that even wealthy farmers continue farming. I discussed this with my parents, who are former farmers, and they provided me insight about how personal this activity is – apparently, this may be because of immaterial rewards.

> **[Fieldnotes:** After a few months of fieldwork, I took a break to see my parents in La Serena. I remember sitting with them having dinner, and they asked me about how my project was doing. Since both of my parents are also farmer

> entrepreneurs, they were truly interested in knowing about other farmers' realities.
>
> ***Parents:*** *Considering all the knowledge you have gathered… can you summarize what the problem these farmers have?*
>
> *Well, first, I don't think there is any technical agricultural problem in their livelihood. I think farmers report having a good life that they enjoy very much… they are, indeed, happy people. But the problem happens when they get sick… when illness comes… they are done because they have the least resources to access the current health system –* ***I reply***
>
> ***Parents****: From our experience, I know what you mean… being a farmer is a sacrifice, but at the same time, incredibly rewarding… It's about contact with nature and yielding from your labor.*

In this case study, small farmers cultivate various agricultural products all year round, as these small agricultural systems rely on ecological diversity. However, farmers, in practice, often specialize in one or two crops because farmers adapt to seasonal variations and change crops accordingly. Most of them also reserve land for animal husbandry (e.g., sheep, cattle), which usually exceeds the bearing capacity, often having between 10-20 animals per hectare – usually sheep. In these lands, water scarcity is a huge issue. Most farmers comment that water is a limitation, and it is common to depend on a domestic well or water hole. Having a water well, even for domestic use, is a costly investment, and elder farmers allege this has only been a recent problem. In former years, there was no need to dig a well because water availability relied on small creeks and natural water springs. Elder farmers claim that rainfall has dramatically changed, while the Pine industry is to be blamed for drying out the vital creeks.

> **Don Hector:** *"In former years, our elders who lived here did not have any money, and they did sell their lands to Fra-Fra (A famous Chilean businessman)... and what happened?... pine... pine...pine... everywhere.|"*
>
> *How come? –* ***I asked***
>
> **Don Hector:** *"That destroyed nature... all the native trees that were... they all gone... and well, after all, the water creeks dried out... for just portraying you an example".*

From the viewpoint of PRODESAL extensionists, most of the time, farmers make a living from subsistence agriculture. Most extensionists believe that these people just exert sovereignty, apparently because of their connection to their land. The PRODESAL chief often comments that farmers may have the chance to sell their land and go to the city for a better life, but instead, they would not do it because it implies sacrificing their lifestyle. Again, farmers from this research report to have a good life quality, and they are not willing to change it, even for modern urban life. In that sense, farmers understand why outsiders want to buy their land:

> **Don Ivan:** (...) *This is what happens, Samuel, I have already told you that I want to sell a piece of my land, right...Nowadays, I see people preferring the countryside because of the tranquility and the peaceful living, but you don't have this in the coastal towns either.*

For instance, farmers insist that they like to stay, as some of them also love what they do. They will not change their minds for any monetary reward:

> *Do you think that working on the farm is going well for you? –* **I asked**

> **Señora Angélica**: *"God… you may not imagine how much! I love what I do. The peace and tranquility you get is priceless."*

The PRODESAL team usually calls "farmers" - "Viejos" or the diminutive "viejitos", which translates to the English "old man". However, it is unlikely that people use vis-à-vis these surnames since they appear to be loose in etiquette. Instead, all my participants appear to be cautious to keep that to themselves, and use the honorific words of "Don" if it is a man or "Señora" if a woman. This is so important in these relationships that the reader can tell I could not stop using them for my participants' pseudonyms (i.e., Don Ivan, Señora Angélica). However, the PRODESAL farmers in this research are commonly elderly people (Figure 10), and extensionists call them Viejos with affective connotations:

> **Guillermo:** *(…) Hey, Samuel, don't you think that I call them viejos pejoratively… I call them viejos because I care.*

Accordingly, farmers usually call their peers in the same way:

> **Farmer:** (…) "chuta el viejo lindo!" – "hell yeah!…Such a nice chap."

Figure 10. Farmers from different rural areas in central Chile

In summary, PRODESAL farmers are mainly elderly rural people. Most would see themselves as having a lifestyle that they enjoy, as this does not necessarily come with economic rewards. However, farmers still have to make money to have a decent life quality, and this is especially true when they require access to Chilean public services, like health education and housing, because these are surcharged. In this research, many farmers reported selling portions of their land to safeguard social security and wealth or farming alternative crops.

About the PRODESAL team: Six extensionists and their working life

A chief coordinator and five extensionists lead the PRODESAL extensionist team (Figure 11). All of them are agricultural professionals. Members are mostly men above the age of 40 and two younger women aged around their 30s. They have been working as extensionists for at least eight years, and some of them for almost 30 years. A great proportion of the extensionists were born in the territory, as their parents were usually farmers from the drylands.

The group is responsible for three hundred farmers and their families. For instance, extensionists are assigned to a client portfolio of 50-60 farmers (out of the 300), committing to them for a fixed term (12 months). In basic terms, the advisory service comprises visiting each farmer three times per year for financial and technical advice. For the extensionists to visit 60 farmers three times a year, they must organize between 15-20 technical visits per month. The technical visit is scheduled in advance, usually organized via telephone or in-person talks. After the technical visit is made, the farmer must sign a manifold copy with the technical recommendations made by the extensionist, similar to what happens in the SAT program.

Technical visits are often about agricultural technical matters, and the extensionists make recommendations based on what they see and hear from farmers. The visit lasts between one and two hours, but sometimes longer. Although the program is structured to focus on technical agricultural knowledge, extensionists – aside from the job – often help farmers with primary domestic chores and bureaucracies, and sometimes, even shop for some items. While this is a common practice, extensionists are advised not to do it, as it is not their job to do so. However, extensionists often help farmers because they see that sometimes very minimal needs aren't met, such as medicine, transportation, or even the ability to do online paperwork. This research suggests that extensionists feel that these altruistic actions don't cost much, and for farmers, the impact on life quality is outweighed when compared to these small details.

In terms of technical knowledge, extensionists have a scheduled plan of information delivery, as they are required to teach farmers about an agronomic knowledge plan that comes from the INDAP and the regional offices. While extensionists must do this anyway, the technical visit also involves attending to the specific needs farmers have. Sometimes, this is challenging for extensionists because farmers from the PRODESAL have a variety of agricultural products. Hence, the extensionists must deal with a pool of technical knowledge that demands a broad understanding of agriculture in the drylands.

Figure 11. I invited the PRODESAL team to a barbecue to say thanks.

Conclusions

Chapter three explores the sociopolitical, geographical, and economic research contexts under which this research was conducted. Agricultural extension was and continues to be influenced and constrained by larger political contexts like colonial history and the influence of the U.S. Latin America shows particular social and cultural practices around agriculture, to which small farmers appear under threat from capitalist modes of production. The difference between food security and food sovereignty explains how farmers experience modernity, as issued by different ontological understandings of farming and economic systems.

INDAP is a public institution responsible for designing, delivering, and implementing public extension programs in Chile. The SAT and the PRODESAL are two examples of the extension services delivered by INDAP. At the level of implementation, SAT operations are carried out by a private company and charge farmers for the service. In contrast, the PRODESAL is completely public, free of charge, and implemented via municipalities in each territory. The last subsection describes some of the particularities of farmers and extensionists from each program, highlighting some aspects of their personalities and the microsocial context they experience at each program.

Chapter 4 - Research Design and Methods

Introduction

This chapter presents the research design and methods applied in this study. With a social constructivist stance, this study was conducted utilizing qualitative methods from the research disciplines of anthropology and ethnography. This study was influenced by the global COVID-19 pandemic between 2019 and 2021. The use of ethnographic methods worked as a critical research strategy in managing an uncertain research scenario (Ritchie et al., 2013, pp. 3-4; Schettini & Cortazzo, 2016, p. 23). Moreover, ethnographic methods tackled the research question by capturing the details and nuances of agricultural extension at the implementation level. The values and ethics of social anthropology influenced ontological, methodological, and even political decisions taken in this research.

This chapter is structured into two main sections. The first section describes research design and methodology. The second part describes the methods utilized. The first section provides context and description of how research was conducted and structured, detailing the decisions made around: the Global pandemic, a case study approach, the utilization of a social interface framework, and participant recruitment. The last section provides the thinking behind the methods utilized, streamlined from methodological discussions in anthropological literature. This section dives into the fundamentals of participant observation and interviewing participants, highlighting the ethics and rigor in conducting ethnographic qualitative research.

Methodology and Research Design

Context during fieldwork and Covid-19

The COVID-19 pandemic regulations had a significant impact on the course of this research. During the first semester of 2021, as a 1st-year PhD student, the Chilean borders closed, and regulations impeded the free movement of people without authorization. I could continue my PhD studies in Chile, but the possibility of planning fieldwork was severely restricted. After consulting with my supervisors, I decided to do my data collection and fieldwork in Chile. Although pandemic regulations limited my options, I contacted potential participants through friends and academic connections, expecting this research to be conducted through telephone conversations. When COVID-19 restrictions were lifted (July 2021), and the generalized tension in public health calmed down, it opened the possibility of doing in situ research. However, during the first semester of 2021, my research plan was still uncertain. Considering that I didn't have many options or participants to work with, I finally contacted a former colleague agronomist, and asked him if he would participate. He (Gabriel) was working as an extensionist at Instituto Nacional de Desarrollo Agropecuario (INDAP) in the Servicio de Asistencia Técnica (SAT).

After a decisive phone call, Gabriel agreed to meet up in person at his location. A few days later, I moved to central Chile from La Serena (about 700 km away) to begin fieldwork in July 2021. I started accompanying him to work (visiting farmers) two to three times per week. This stage lasted for two months, from July to August 2021. During this period, most people wore surgical masks, avoided shaking hands, and maintained a 1.5-meter safe distance. I wanted to talk to farmers from the SAT program, but only after health restrictions were lifted. Yet, it was still concerning to have close interactions with anybody. I intended to build rapport with farmers, but it took much longer than I expected. These

circumstances became part of my research design, as Gabriel played a fundamental role as a gatekeeper of farmer participants (O'reilly, 2012, pp. 85-91). In August 2021, the COVID-19 policies were fully lifted, but my approach to farmers continued to be very minimal. It took six more months to get one-to-one personal talks to farmers from the SAT. Also, after six months of fieldwork at the SAT, I decided to visit the PRODESAL program municipal office to meet a new group of extensionists, which finally culminated in case study two. This decision shaped my research design and took me another year and a half of ethnographic research at the PRODESAL program.

Seeing agricultural extension under the theoretical framework of social interface

A social interface framework intends to see agricultural extension as a social phenomenon, maintaining that actors' agency plays a protagonist role in explaining what happens in practice (Long, 2003, pp. 4, 11). Norman Long, a social anthropologist from the Wageningen school in the Netherlands, spawned a new critique of theory about development and agricultural innovation systems like extension (Leeuwis et al., 1990; Verschoor et al., 2001, p. 4). Long proposed that extension is shaped by human agency and the capacity of humans to maneuver and make substantial changes regardless of the structures that condition them. Long advocates that theoretical and explanatory models in agricultural extension research remain too abstract and hegemonic. This critique suggests that previous theoretical contributions, like the theory of systems thinking, are limited in explaining the nuances in, for example, how knowledge is co-created (Leeuwis et al., 1990).

A social interface centers research attention on how human agency and its contradictions (discontinuities of life) explain what happens in reality:

> *"Long's actor-oriented approach stresses the importance of giving weight to how farmers and other rural players shape development themselves"* (Verschoor et al., 2001, pp. 4-5).

A social interface offers a lens to understand how people from different lifeworlds negotiate and achieve goals. In the literature, we can find examples of the use of social interfaces in ethnographic studies that explored human relationships, like the bureaucrat-peasant interaction in Mexico (Arce & Long, 2002). Long describes that social interfaces are a contested social space where different lifeworlds interact and negotiate with each other (Long, 2003, p. 243). In his view, social interfaces are well-suited to explore the farmer-extensionist relationship (Arce & Long, 2002). Also, ethnographic methods align well with exploring social interfaces, as they can capture the nuances and contradictions of social phenomena. In this study, the social interface helps to contextualize the boundaries of observation in this research (Long, 1989, p. 226), by framing that actors (as they have agency) interact in flexible ways, through negotiations and struggle rather than being fully constrained by structures (policy and regulations) that are conditioning them.

Case study framework

This study is framed as a two-case study approach. A case study intends to search for different sources of information to understand phenomena (De Salas et al., 2011, p. 22). While case studies don't restrict any particular use of methods – whether they are qualitative, quantitative, or mixed – some authors suggest that qualitative and quantitative methods have fundamentally different approaches (De Salas et al., 2011, p. 6). Although case studies are a contested topic in the literature, many scholars would agree that a case study design responds to the need to situate and contextualize findings in a particular

place and time (Cohen et al., 2017, p. 181; De Salas et al., 2011, p. 22; Hardwick, 2016, p. 4; White et al., 2009, p. 21).

Under this view, ethnography and case studies are complementary for designing research. Thus, what a case study offers to ethnography and vice versa is putting research boundaries and context. Although this helps to organize research, some anthropologists mention that it is important to maintain ethics without reifying participants into cases:

> *"We shouldn't make studies of people, but with people".*
>
> (Ingold, 2017b, p. 23).

However, this study is not an ethnographic case study or a standard traditional ethnography. Rather, this research uses ethnographic methods to explore human relationships and how they co-create knowledge. Under a case study approach, the ethnographic lens widens the boundaries of observation (White et al., 2009, p. 22), meaning that the questions are explored in depth rather than breadth. This means that this research utilized ethnography in two case studies to enrich data with differentiated contexts (e.g., extension program, policy, and regulations).

Finally, this research purposely uses a case study approach to give the reader an organized frame to follow. This research consisted of two case studies conducted at two different public rural extension programs: the SAT program (technical assistance program) and the PRODESAL (Local Development Program) to which in sum I spend almost a year (Figure 12).

	2021		2022		2023	
	1st semester	2nd semester	1st semester	2nd semester	1st semester	2nd semester
First immersion						
First case SAT						
Second immersion						
Second case PRODESAL						

Figure 12. Timeline from first immersion to fieldwork illustrating the duration of fieldwork spent at each extension program.

Research participants and taking fieldnotes

As mentioned in Chapter 3 – research context, during the early stages of research, Gabriel was my only participant. Because of COVID-19 regulations, approaching farmers was difficult, and this is why most of my data collection at the first case of the study came through conversations I had with Gabriel. Once the COVID-19 restrictions relaxed, I could start interacting with farmers more frequently, mainly because of safeguarding participants health safety. When I could better access farmers and extensionists from both extension programs, I was able to identify three fieldwork situations (Figure 13): i) one-to-one conversations with farmers, ii) one-to-one conversations with the extensionist, and iii) the farmer-extensionist interaction:

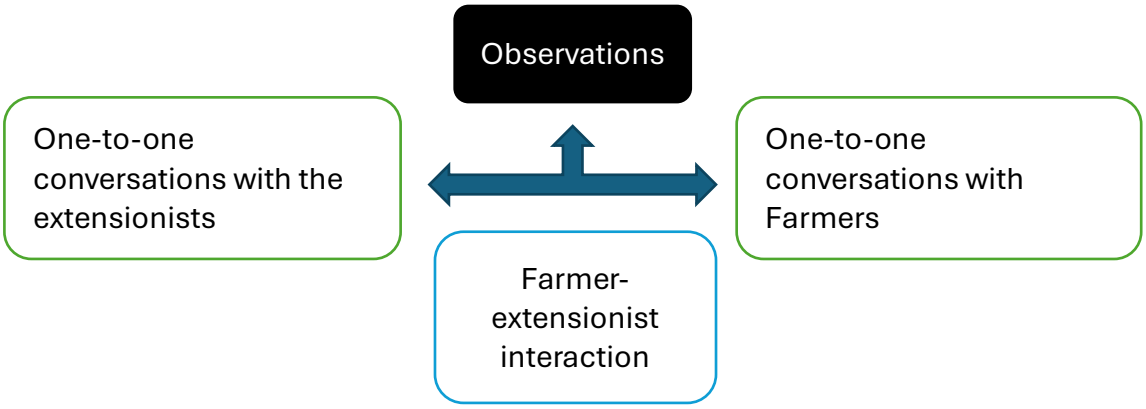

Figure 13. Situational observations during fieldwork.

These situations worked for both cases of study. Impressions from fieldwork were recorded in written field notes, voice notes, and photographs.

Human research ethics

This research was peer reviewed by the Massey Research Ethics Committee and approved as low risk (application code number 4000024899, approved on November 23rd, 2021). Participants were asked for written or verbal consent to collaborate in this research. Extensionists and interviewees were informed about this research and asked for written consent. These are shown in Appendices A and B. In the case of farmers, informed consent was obtained verbally after explaining the purpose of research. Verbal consent was preferred due to frequent suspicions raised among them about signing written documents.

The interpersonal relationships with participants played a key role in informing ethics in this research, particularly in my relationship with farmers and extensionists. As a strategy, rapport building along with social responsibility (O'leary, 2004, p. 54) informed

how to safeguard participants' safety. Although this heuristic mechanism informed most ethical decisions, a more structured guideline for ethics was considered. The following considerations were considered when interacting with farmers and extensionists:

i) Willingness to talk and emotional states

Sometimes participants showed strong emotional distress, which makes it unreasonable to prompt them with questions. In such occasions, interactions with participants were taken with social sensitivity, usually by engaging in conversation about the problem and distress at issue. Moreover, sometimes participants would direct attention to topics that weren't of direct interest in this research. In such occasions, a deliberate effort to continue with the thread of conversations was preferred to demonstrate genuine interest and care.

ii) Sensitive information management

Whenever it was evident that sensitive, insulting, or compromising information exposing participants or others, this research avoided direct use of it. While participants were informed beforehand about this, intentional interpersonal care was practiced by telling participants that they are safe to talk and information wouldn't be used.

iii) Blurring identities and geographic locations

Most participants' identities were blurred, and their roles and association to geographical locations changed. Although identities were blurred, this research considered and discussed with participants the possibility of their identities being inferred. When using photographs, participants' faces were concealed, usually done by choosing and cropping photographs that challenge their obvious identification. Whenever photographs of clear faces were shown, verbal consent was gained.

iv) Structured interviews

For formal and recorded semi-structured interviewees, participants were given informed consent and asked for permission to use their recordings. They were asked to have a face-to-face conversation, usually at their workspace. Although some sensitive information was said, discussed, and recorded, I ensured that compromising information would not be revealed. Interviewees were frequently asked during the interview how much time they had to talk, though they were generally flexible. I was double-checking with them every twenty minutes regardless.

Structure of case study one: Central Chile, the extensionist, the berries, and the extension program SAT

Considering that Gabriel was the best option because of COVID-19, the SAT program became the first case of study, without knowing that later I would be able to work at the PRODESAL. However, besides the limited options, the SAT program, Gabriel, and farmers demonstrated immense commitment to this research, justifying my decision to continue doing research at the SAT. Without their willingness and interest, this research wouldn't have been possible. I worked with Gabriel for one year, and for the first six months, I accompanied him regularly to his job, usually two to three times weekly. After six months, when I started to talk to farmers more openly, I ended up working with three from a group of thirty. With farmers, I started seeing them individually, usually once a week for three months. More details about my interaction with participants are provided in the methods section.

Structure of case study two: The rural extensionist, the small farming, and the PRODESAL program at the municipality

31st of May, 2022, after spending 6 months hanging out with Gonzalo and farmers from SAT program, COVID-19 restrictions were relaxed (except for the use of surgical masks). Before then, I wasn't able to enter public buildings without authorization. As soon as public buildings opened more to the general public, I introduced myself to the PRODESAL municipal office in the downtown township. Once there, I met Pedro, the chief of the extension program PRODESAL. After a small briefing and authorization, I started doing fieldwork with all six members of the PRODESAL extensionist team, spending 12 months of fieldwork at the PRODESAL program. Like my interaction with Gabriel, my first approach to farmers was through the extensionists as gatekeepers. This second case study follows a similar approach to participant recruitment at the SAT, following the same observational strategies (Figure 13). During the last three months of fieldwork, I focused on three of the five extensionists, who were the ones willing to talk deeply about extension, knowledge, and relationships. In the meantime, during the last four months of research, I continued to work and interview six farmers from the group. Farmers were chosen based on their willingness to talk and rapport.

Complementary sources of data: Document analysis and interviews

This research utilizes some secondary sources of data, which range from country-level policies to contracts and recorded interviews. Some of the relevant information from policy and contracts can be found in the appendices of this thesis (Appendix C). Apart from farmers and extensionists, this research also interviewed a few people from institutions, head officers, and scientists. These interviews were usually scheduled in advance with the interviewee in a safe environment and a one-to-one interaction. All participants of this kind were asked for written consent (Appendix B), audio recorded, and

some of the interviews were partially transcribed. Interviews and documents were treated as auxiliary sources of data, intended for thematic concordance with the main other sources of data.

Methods

Ethnography as a method and Participant Observation

Ethnography as a research method appears to attract heated scholarly debates, holding a variety of definitions and even questioning its scientific validity (Aktinson & Hammersley, 1998, pp. 248,249). The etymology describes it as "writing about a culture". Although the philosophic approaches around ethnography are compelling –and beyond the scope of this research – some scholars argue that it is a very simple method (O'reilly, 2012, pp. 2-3). According to different ethnographers and theorists in this section, ethnography essentially means to observe and generate understanding about a particular social group. Some seminal scholars view ethnography and their methods as the natural way that humans learn (Hammersley & Atkinson, 1995, p. 25). Still, this method distinguishes itself because of its flexibility and unusual scientific method. This is why "ethnography is never an orthodoxy" (Hammersley & Atkinson, 1995, p. 249), and for some scholars, it remains a controversial scientific method.

To understand how ethnography is done, some scholars argue it is better to do one rather than to read it, or at least, read it from a good ethnography (O'reilly, 2012). Yet, the scholarly community hasn't fully defined a systematic approach to ethnographic methods. Although there are different views of ethnography, several scholars would refer to authors like Clifford Geertz. Geertz maintains that ethnography is methodologically based on "thick description" (Geertz, 2008). Geertz makes a distinction between what people mean to say and what they nominally say (Geertz, 2008, p. 31). For Geertz, thick

description is about capturing the essence of what people do and think in a particular circumstance and context (McGranahan, 2015, p. 75). Therefore, ethnography is to convey the ability to get inside a cultural group to understand how they see the world and what it means to them. For this reason, close contact with participants is mandatory. Even though this method seems to be particularly open-ended, some scholars would suggest that ethnography is methodologically linked to "participant observation" (Aktinson & Hammersley, 1998).

Participant observation is the main method in ethnographic research (Fife, 2005, p. 77; O'leary, 2004, p. 121; O'reilly, 2012, p. 84). As the name suggests, participant observation is the type of observation where the researcher participates and observes at the same time (Cohen et al., 2017, p. 186). Besides its popularity and the simple technique among other disciplines in social sciences, the linkage of this "technique" with ethnography adheres to several ethical considerations (Aktinson & Hammersley, 1998, p. 249). Back in 1972, Geertz (2008, p. 12) in his seminal work warned readers to think of participant observation as if they were working with human beings and not objects. While the ethics of this method revolves around avoiding the reification of people, it also intends to break the scientific distance between the researcher and participants. Ethnography and participant observation convey minimal distance between people and the researcher.

Participant observation is more than a mere technique. Several authors coming from the HAU: *journal of ethnographic theory,* suggest that participant observation is the natural way in which people learn from each other (Ingold, 2017b). Ingold, in his work "Anthropology contra ethnography," maintains that participant observation is best linked to education rather than ethnography, and ethnography and participant observation are distinct because the former is closer to systematic descriptions (as Geertz suggests), and the latter is a fundamental human skill (Ingold, 2017b, p. 24). Ingold thinks that this also meets ethical concerns, since participant observation has become "schizochronic" (Ingold, 2017a, p. 65) *:*

"It means overtly attending to others with the concealed intention of reporting on them."

(Ingold, 2017a, p. 65)

Again, reconciling ethnography and participant observation is mostly an ethical matter. To close the gap between observations and participation, some works suggest that "ethnographic sensitivity" is required (McGranahan, 2018, p. 3), or "sensitivity towards the others' experience" (O'reilly, 2012, p. 108). This means that ethnography requires an interpersonal commitment to people, and McGranahan adds that ethnography is also bound to our human capacity to bridge the gap between ourselves and the other who are being researched:

> *"Ethnographic research is a commitment to interpersonal relations as the base of knowledge."*
>
> (McGranahan, 2018, p. 4)

Ethnography is a heuristic method of inquiry. Heuristics doesn't undermine the ability to reflect as a scientist, and though ethnography is "never fully a scientific endeavor" (Salzman, 2002, p. 806), it requires scientific thinking. The ethnographic approach is always "interpretative" (Salzman, 2002, p. 808) and some authors suggest that ethnography is a "science but also an art" (Fife, 2005, p. 1).

Ethnography is an interpretative heuristic method and utilizes human relationships as a basis for inquiry and understanding. While the process of ethnography is to observe and describe, the researcher maintains a minimal distance from the people investigated, and this process usually involves an interpersonal commitment. Typically, this process takes

time, and spending long periods with participants is mandatory for scientific rigor and validity (O'reilly, 2012). Ethnographic methods are flexible and heuristic, described by some researchers as how people naturally learn from others, based on observation and tacit experience.

Making the questions: Unstructured and Semi-structured interviews

Ethnography is time-consuming. It requires time because participants need to trust and feel comfortable around you. Trustworthy ethnographic work is associated with long-term fieldwork (O'reilly, 2012, p. 92), also because questions made under participant observation often emerge from spontaneous and unstructured circumstances. In the case of this research, extensionists and farmers were interviewed mainly utilizing unstructured interviews. People will reveal what they think once they trust you and know who you are, and for this reason, participants were interviewed with ethnographic sensitivity (McGranahan, 2018, p. 3), involving time and commitment to building researcher-participant relationships.

Most of the time, conversations happened informally, spontaneously, and honestly. As mentioned earlier, a researcher cannot predict what people will talk to you about; As a researcher, you can only elicit, direct, and refine questions. When talking to participants, it was important to be prepared, active, and engaged in their discourses. In this research, most of my interviews were unstructured and as natural as possible (e.g., without a recorder). When doing unstructured interviewing, I relied on memory and coordination between interpretation and questions (Figure 14).

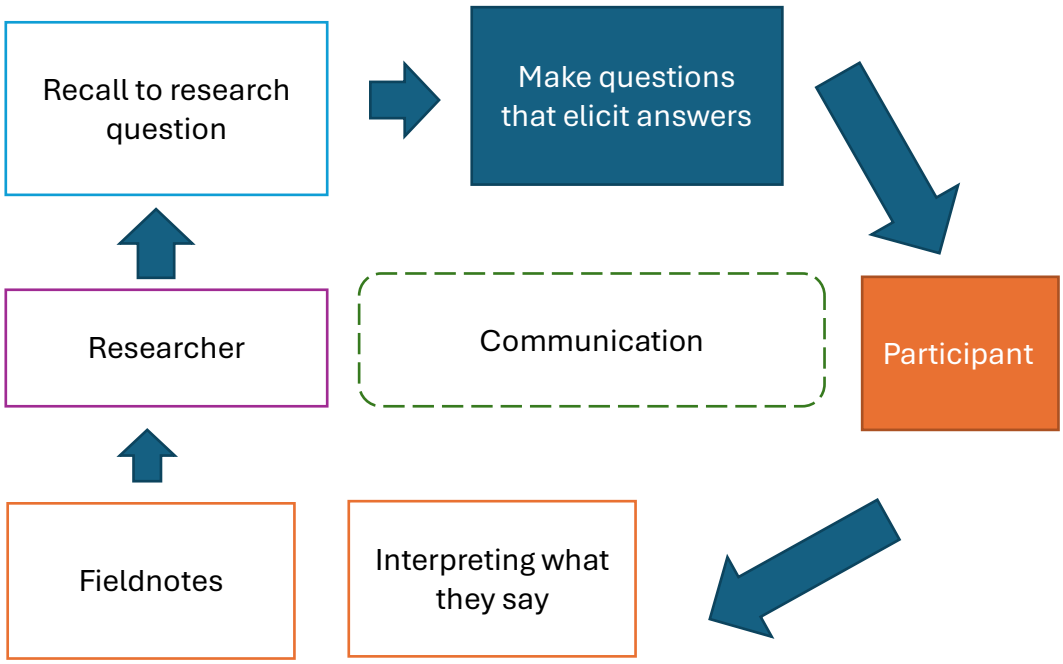

Figure 14. Illustrating the process of unstructured interviews and questions.

The last diagram should be taken heuristically and not as a procedure. Because misinterpretation exists, the best questions possible to ask were usually "why" and "how" to clarify what they meant to say. Here is an example of eliciting a question during an unstructured interview:

> **Extensionist**: (...) I think that farmers expect you to do everything for them.
>
> **Researcher:** Really?... Can you tell me why?
>
> **Extensionist:** (...) because they feel that if they belong to an extension program, they must receive everything... the sooner they forget that they must take control of their businesses... otherwise, you encourage people to be dependent.

Interviewing should focus on meaning, rather than on words (O'reilly, 2012, p. 114). Therefore, effort relies on understanding what participants mean to say. In that sense, a relaxed but active conversation is usually better than a structured interview, because it allows digressions and disclosure of meaning.

In qualitative research, there are usually three types of interviews: structured, semi-structured, and unstructured interviews (O'leary, 2004, p. 164). In ethnographic research, ethnographers usually use unstructured and semi-structured interviews; structured interviews, such as questionnaires, are not commonly utilized (Fife, 2005, p. 93). However, I utilized one-to-one semi-structured interviews for the case of INDAP officers, researchers, public administrators, and extensionists from other territories. A semi-structured interview approach was utilized to maximize the available time with busy participants while minimizing the pressure (O'leary, 2004, p. 164).

All my semi-structured interviews were conducted within the last three months of fieldwork, ensuring that the depth of understanding of my research question was refined enough through the fieldwork experience. In general, these interviews flowed as a natural conversation, which I usually began with an opening question about the relationship between farmers and extensionists and how they perceive co-learning, knowledge exchange, and co-creation. In general, no formal question was required to start the conversation since the interviewees were usually willing to talk or give their opinions about it. All semi-structured interviews were audio recorded, and each question was streamlined upon the current conversation we were having.

Taking ethnographic notes, data analysis, and writing

This research utilized fieldnotes as a primary source of data, considered as the first iteration of ethnographers in research (Ritchie et al., 2013, pp. 134-133). In this thesis, field notes are written observations, quotes, and situated descriptions. Some scholars see ethnographic note-taking as the process of "writing down" (O'reilly, 2012, p. 175). The process of data analysis in ethnographic research is not linear. Some scholars suggest that the nature of field notes can range from interpretative to merely descriptive (O'leary, 2004, p. 177). This research utilized interpretative and descriptive notes, taken as "contextual notes" (O'reilly, 2012, p. 185) . Notes were taken as soon as possible to avoid forgetting the impressions (Restrepo, 2018). I also followed the recommendation to duplicate my notes on different devices as data insurance (Fife, 2005, pp. 73-74).

This research followed an iterative inductive process for data analysis (O'leary, 2004). This is a cyclic process between writing impressions of fieldwork and writing up hermeneutical interpretations of data (O'reilly, 2012, p. 175). In iterative ethnographic research, fieldwork, analysis, and notetaking happen altogether. During fieldwork, essay writing was utilized as a form of data analysis. Some authors think of this as "iterative writing and rewriting", also as a valid process of data analysis (O'leary, 2004) or essay writing as a form of self-reporting. Finally, thematic analysis was not completely preferred, but since it was considered a "traditional and ideographic" strategy in data analysis (O'leary, 2004, pp. 123,111), thematic analysis was mostly utilized for recorded interviews, as some were transcribed and coded alongside field notes and essays.

In ethnographic research, there is a point when writing field becomes "writing up" (O'leary, 2004, p. 208; O'reilly, 2012, p. 176). As mentioned in the paragraph above, the first approach to data analysis was during fieldwork through iterative writing, thinking, and hermeneutics of the written material. Some scholars may describe the latter as "writing as a form of analysis" (O'leary, 2004). Some others see the ethnographic write-up as a spiral process, happening through all stages of research (O'reilly, 2012, p. 177).

Finally, this research follows a narrative writing style. Ethnographic findings are told as stories, anecdotes, and situations, trying to provide context through a story. Some scholars suggest ethnography is imagined as a "storied discipline" or "theoretical storytelling" (McGranahan, 2015). While McGranahan suggests that stories are a way in which ethnographies are told to the public, from the perspective of this research, a story allows us to organize, contextualize, and illustrate the findings not as mere descriptions but as lived experiences.

Regarding language and transcriptions, notes were originally taken in Spanish and later translated into English. The reader will notice that the narratives are not necessarily verbatim transcriptions, but interpretations of the discourses of participants, transcribed into Spanish, translated to English, and then into stories. While fieldnotes are in Spanish, all essays and written reflections produced during fieldwork are in English. It should be noted that participants' quotes are potentially shown with imprecise sentence structure or grammar. Although this may contribute to confusing the reader, a polished translation of quotes omits part of how participants express themselves, devaluing their essence and uniqueness of how people speak their minds. While the grammar and structure of quotes were not polished to an academic extent, they should be able to represent unique aspects of communication and idiosyncrasies of people living in rural areas in central Chile.

Conclusions

This chapter presents how this research was conducted, designed, and the methods applied. Methods and design in this research are drawn from a social constructivist stance, through the lens of anthropological research. This research was framed under a case study approach comprising two case studies, exploring two public rural extension programs: the SAT and the PRODESAL. This research was designed and conducted in central Chile, in the context of the COVID-19 pandemic, following a flexible and

opportunistic approach. This affected the study site preferences, participant recruitment, and how this research was conducted.

This study follows a social interface framework to understand agricultural extension as a social phenomenon. A social interface approach centers attention on human agency by assuming that actors shape agricultural extension practice. The method section contains anthropological discussions around the use of ethnography and its methods, like participant observation and interviews.

The last section explained how data was collected and analyzed. Ethnographic field notes were the main source of data for this research. Field notes correspond to written material that was analyzed through an iterative-inductive process done by essay writing. This thesis also utilized documents as auxiliary sources of data. The results sections were written using a "theoretical storytelling" approach (McGranahan, 2015), following a narrative style.

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Chapter 5 – The SAT program, Gabriel, small farmers, and the berry fields: Case study one

Introduction

Chapter 4 shows the results of case study one. The following sections show ethnographic evidence collected during the first stage of fieldwork at the SAT program and time spent with Gabriel (the extensionist) and farmers. Case study one is a collection of ethnographic descriptions organized into key findings and stories from fieldwork. This chapter comprises two main sections, framed into topics. The first section shows evidence on how relationships are organized and how interpersonal dynamics are experienced. The second section shows how relationships shape knowledge co-construction and co-learning. The reader will note that chapters 4 and 5, though different case studies, are very similar in the way findings are outlined.

How relationships are organized: Expectations and demands

Farmer and extensionist relationships are organized by curricula, contracts, and expectations. Gabriel and his farmers are bound to policy and institutions. They have a working relationship, informed by expectations shaping how they learn and build interpersonal dynamics. The SAT (Technical Assistance Service) extension interface can be organized into three main actors: INDAP, Gabriel, and farmers. From an organizational perspective, the SAT program functions co-financed by INDAP and farmers. The institution INDAP takes a supervisory role, and Gabriel is responsible for implementation. Gabriel is hired by INDAP to execute the program in a particular

territory. The SAT program aims for economic development, entrepreneurship, and the provision of technical advice. This chapter describes how relationships are structured at the SAT program and the formal expectations.

The SAT program is heavily influenced by country-level policies that favor economic development in rural territories (INDAP, 2023b). These appear to have an influence on how Gabriel and farmers relate at an interpersonal level and the formal expectations. This section shows evidence of formal expectations to understand how institutions, farmers, and extensionists build their relationships. This is what a working day to Gabriel looks like and his relationship with the institutions that hire him:

> ***[Fieldnotes:*** *Routinely, Gabriel must drive many hours a day, and eventually more, if he needs to reach a faraway farmer. Hence, most of our conversations happened on the go, in the safe space of his blue Mazda. We talked about a repertoire of things. From politics to romantic delusions, and of course, about the heart of what he does for a living. These are some quotes I recorded with him about being an INDAP/DUCANT extensionist.]*
>
> *So, do you work for DUCANT or INDAP?*
>
> **Gabriel:** *(…) I think I work for INDAP, but the contract and the supervision rely on DUCANT.*

On another occasion, he talked to me about the nature of this contract:

> **Gabriel:** *My contract is just temporary –it is yearly – and they (DUCANT) pay me on a monthly basis (…)*

I also asked where he sits between these two institutions:

> **Gabriel:** *I think I am part of both because INDAP can check my performance as well, as farmers can complain to INDAP if I am not doing alright (…) The money comes from INDAP, and DUCANT implements the program… but my direct boss is Mario from DUCANT.*
>
> *(…) I remember that when I started as a SAT advisor, an INDAP officer contacted me to follow up a diagnosis (statement of what are the issues at present) on my written recommendations – which I formally haven't … And that is the reason I always now put a diagnosis on the paper.*
>
> *So, INDAP officers check your written recommendations? –* ***I asked***
>
> **Gabriel: "***Yes, they have to… but what is curious is that farmers usually don't care about the diagnosis, if I report the strawberries were full of weeds, farmers wonder why I put that on paper… and most of the time, they are only concerned with recommendations related to the agricultural products (…)"*

Gabriel has an outsourced contract with INDAP through DUCANT – the private company financed by INDAP for SAT implementation. Gabriel feels he belongs to both. At a formal and bureaucratic level, Gabriel has a contract with DUCANT, but the continuity of his contract as an extensionist comes from meeting expectations from INDAP. During my last weeks of fieldwork at the SAT program, I came to see two strawberry farmers from the program, Señora Ana and her husband, Don Sergio. Gabriel often refers to Señora Ana and Don Sergio as the "tidiest" – "ordenado" – strawberry farmers of the group. For Gabriel, Señora Ana and her husband, Don Sergio, represent farming success. This was one of our conversations when I visited Señora Ana:

Fieldnotes 14 March 2022: [I have visited Señora Ana a couple of times now, so I directly asked her about Gabriel**]**

What is your experience with Gabriel and the SAT program? – I asked

Señora Ana: "*Well, DUCANT is the company implementing the SAT program, and he hires Gabriel as our 'técnico' – 'advisor', hence, he is the visible face (…) he has been working for 7-9 years with us."*

At the beginning (before Gabriel), there was a man named Lalo who was our advisor, and he worked just fine (…), but when Gabriel arrived, nobody took him seriously…

[In the middle of the conversation, Don Sergio, Señora Ana's husband, intervenes]

Don Sergio: *Look… this is exactly when someone arrives at a new job position… you first doubt if he/she is going to do well or not. You wonder: Is he/she going to do the job?*

Señora Ana: *Well… Soon, we started to notice that what Gabriel recommended to us – It worked! (…) now I consult him about everything, especially about the 'liquidos' – 'agricultural products' (…)*

(…) Now you know that there is 'Confianza' with Don Gabriel… for example, sometimes I call him at 10 pm at night, and I know that he is going to reply.

Strawberry farmers are mostly entrepreneurs, and their attitude generally tends toward reaching economic success. When I asked Señora Ana how she feels about strawberry farming cultivation, she replied:

> ***Señora Ana**: (…) I think I have to look at the strawberry as a business… you know what I mean? (…)*

Although economic success doesn't apply to what every farmer aims for, Don Sergio and Señora Ana see Gabriel's advice as a means of reaching economic success. For this reason, farmers see that being in the program should bring economic improvement.

The SAT program focuses on technical assistance and advice. Many of the expectations between extensionists and farmers revolve around the quality and reliability of information and advice. However, the extensionist is not fully responsible for farmers achieving economic success. Farmers must play an active role and be responsive to INDAP and Gabriel. The institutions (INDAP and DUCANT) expect farmers and extensionists to make economic achievements during their stay in the program. INDAP officers often refer to these as milestones in farmers' economic indicators. While the expectations and understanding of success are different from farmer to farmer, INDAP tends to standardize extension service by making farmers take on several responsibilities:

> **Fieldnotes:** *" I've been hanging out with Gabriel for a couple of months, and since we are still under COVID-19 restrictions, it has been difficult to network with other extension-related people. One day, Gabriel invited me to a field trip with a small group of three extension INDAP officers. "I think it would be a good idea for you, Samuel, to know these people… these connections will help your thesis – he said". I can afford to say it certainly did.*
>
> *[INDAP officers set up a group visit with Gabriel and some strawberry farmers. Apparently, INDAP agents were field-checking some unresolved issues with the farmers of the group. I introduced myself briefly, explaining my research to the*

officers, and although we spent almost the whole day visiting different farmers, till the very end of the day, I had no clue what the visit's purpose was – I tried not to give any bad impressions with uncomfortable questions, so I remained quiet and interpellated none. The last farmer we visited was a middle-aged woman who had multiple business enterprises apart from the strawberries. We parked our cars in her front yard, and she kindly came to receive us and asked us to follow her to the strawberry fields (Figure 15). After checking the strawberries, the officers had a small talk with her, and the statement was clear: Strawberries were infested with weeds!]

Figure 15.Walking with extensionists to the strawberry orchard.

> **Gertrudis**: *Dear Señora Rudy, we notice that you have a huge problem with weeds. I will have to report this on the paper, but we are going to visit you again soon – and we hope you can get weeds cleaned up by then – otherwise, you will be asked to leave the program.*
>
> *[With some nervousness, Señora Rudy replied]*
>
> **Señora Rudy:** *Yes, you are right – time took over my schedules, haha – but don't worry, next time you come, these will be clean.*

Afterward, I talked to Gertrudis and asked her about this situation:

> *Can farmers be expelled from the program? –* ***I asked***
>
> **Gertrudis**: *Yes, they could. Sometimes, if farmers leave the strawberries unattended… for example, weed infestations and other careless behavior (…), farmers know they can be expelled from the program, which is done by a renunciation letter due to a poor entrepreneurship prognosis or unproductivity.*

In the worst-case scenario, farmers can be asked to withdraw from the program. For Señora Rudy, this was a courtesy warning to tell what would happen if the weeds continued to grow. The SAT program has some baseline standards for productivity and business prognosis, and again, INDAP officers oversee the quantitative economic indicators. Gabriel and INDAP officers supply each other with information on farmers' performance. This means that they have expectations around the quality of the service and the implementation of technical advice. However, from my view, the weeds example

is not objective and quantitative. I think that the weed problem is indeed very subjective, so I asked Gabriel about it:

> *Hey Gabriel, I honestly don't see weeds growing to be a real problem… You know… this plastic material (Polyethylene mulch) that covers the soil is already preventing weeds from reaching the growing area of strawberries… I rather saw that most of the ryegrass was growing "between rows" of the cultivation ridges – Do weeds affect it, really? - I asked*
>
> ***Gabriel:*** *Well, it can. But only if the weeds reach the ridge, and then it can become a real problem. We encourage farmers to maintain clean between rows and pathways.*

Whether the weed affects productivity or not, for INDAP officers and Gabriel, a clean and aesthetic view of the crop is preferable. Yet, weeds can become a technical problem if not attended to; the preoccupation with tidiness may not be completely technical. Despite a tidy landscape being correlated with a farmer's success, farmers know that a few weeds aren't a problem; this casts suspicion on the feeling of performance in the eyes of Gabriel and the INDAP agents. Appearances are important, and these are part of the expectations found here.

The SAT program expectations range from standard economic indicators to informal agreements farmers make with the extensionists. INDAP makes farmers sign a contract that includes farmers committing to a co-payment for an annual amount of 90,000 Chilean pesos or 190 NZD. The co-payment also suggests the share of some responsibilities for the service. For Señora Ana (and others as well), the existence of a co-payment raises the feeling of expecting something in return:

[Señora Ana was telling me about Gabriel and his advisory performance, and she exclaimed the following, suggesting that co-payment implies a payback.]

Señora Ana: *(…) And well, Yes! We are paying for the service we are receiving!*

If farmers don't make the payment but also have poor performance, they can be expelled from the SAT. However, for farmers, co-payments, the institutional demands, Gabriel's performance, and the benefits of paying for the service are all interlinked. This may be the reason why, for this research, expectations tend to merge into the interpersonal side of relationships. Expectations operate at different levels on how extensionists, farmers, and INDAP officers perceive each other.

All actors have expectations from each other. In the literature, it is commonly seen that farmers have fundamental expectations from an extension program or their agricultural advisors (Faure et al., 2012, p. 34; Kuehne & LLewellyn, 2017, p. 17). Moreover, other scholars point out that extensionists also do (Ingram, 2008, p. 18; Landini, 2016d, pp. 694-696). In this sense, expectations can be considered a form of negotiated power, especially around technical advice. For instance, sometimes expectations relate to authority and power within the relationships. Gabriel told me what he expects from farmers when he gives them advice:

"Can you influence SAT farmers' exclusion from the program?" ***– I asked.***

Gabriel: *"Yes. The SAT program is quite requested by farmers… and only a few slots are available. And I have to be mindful of farmers who don't follow my agricultural advice (…) Moreover, it is important to be careful because I see other SAT advisors taking our advisership as a political backhand because farmers do not just benefit from our advice, they also benefit from the investment projects we apply for them"*

One of Gabriel's main worries is that farmers are not taking his advice. He feels frustrated when farmers "don't do what I ask them to do" – "no hacen caso". Gabriel is sometimes suspicious as he feels some farmers are deceiving him. According to Gabriel's words, this usually happens when farmers feel inclined to conceal some practices, especially when they mess up with an agricultural product, and as a consequence, need help.

> ***Gabriel:*** *I think Johnattan [a strawberry farmer] is playing on me… I don't trust what he says about the products he applied and the issues he is reporting… It simply doesn't match*.

> ***Gabriel****: "I think SAT is different from the PRODESAL… since at the latter you have more horizontal relationships… and technical proficiency doesn't seem necessary as much as the SAT (…)"*

As a general guideline, expectations in the SAT program revolve around technical and economic performance. However, the closer we move into people's experiences, the more heterogeneous, unique, or even bizarre expectations they become. It is, in a way, unsurprising that the economic and technical expectations that INDAP and Gabriel highlight influence interpersonal dynamics such as trustworthiness and reliability. A good example may be when Don Sergio and Señora Ana talk about Gabriel as someone whom they can trust: "N*ow we have Confianza in him (…) because we know he does his job"*. Needless to say, if Gabriel hadn't demonstrated his reliability, Señora Ana and Don Sergio wouldn't have that "trust"-"*confianza"* after all. There is every reason to believe that meeting expectations is the doorway to "trust" – "confianza," as the interpersonal and institutional expectations blend.

While Gabriel and his relationship with farmers are influenced by geographical and social contexts, their interaction is also constrained by structures and institutions. In practice, the institution INDAP arranges the relationships in the first place: "(…) *before Gabriel, there was a mister called Lalo that was our advisor and he worked just fine (…) " [Señora Ana].* INDAP guidelines and policies make the arrangements for the SAT possible and establish these relationships. Although meeting expectations is never something guaranteed, and for some of my participants, relationships can result in a huge disappointment, and sometimes success. The evidence illustrates that good relationships vary from person to person, as the interpersonal aspect and personalities play a huge role in shaping these. I remember when Gabriel felt disappointed when a farmer perceived him with deceit:

> ***[****I account that Gabriel brings professionalism to what he does, making his best effort to comply and deal with a variety of people. Besides, his view of a good job is linked to advice and technical recommendations, but farmers may perceive him in unexpected ways. Gabriel heard that some farmers made claims against him to the INDAP office – he was disappointed and shocked]*
>
> **Gabriel:** *(…) For example … I think Don Ramón lessened my job as a técnico… he said to INDAP that my visits were short, and I barely see the strawberries… I feel he is wrong in what he said (…) I even did him the courtesy of visiting him, which wasn't in the program… and charged him nothing (…)*

Concluding remarks

At the first level, expectations are made from structures coming from INDAP policies and regulations. The SAT program aims for business development. A business-oriented framework shapes what is expected from the SAT relationships. Most farmers acknowledge that if they are paying for the service (e.g., the co-payment), they should receive something back from the service. However, farmers and Gabriel have personal expectations on their own, which become mixed up with their personalities and preferences. Gabriel has personal standards of what he expects from farmers, and the same happens to farmers. For example, Señora Ana and Don Sergio think that Gabriel does a good job, but this is not the case for Don Ramon. Unsurprisingly, Gabriel knows that it is not his job to be liked by everyone, and even though he tries hard to be professional, he always says:

> "Not everyone is going to like you all of the time."

Gabriel and the farmers manage these formal expectations by dealing with the contracts and the agreements they have made. SAT farmers also need to accomplish minimum standards, whereas Gabriel and INDAP officers oversee the supervision of their performance. Being an SAT farmer should have rewards, but also responsibilities. INDAP and Gabriel expect farmers to grow economically, and thus, farmers are evaluated through quantitative parameters (e.g., financial survey) but also qualitative and interpretative indicators such as tidy farms (e.g., weedless orchards). The different levels/layers of expectations have an important role in organizing the relationships that occur here. These frame the social context we are exploring.

The elements of the farmer-extensionist relationships: what is inside extension?

We have reviewed in the previous section that the extensionist-farmer relationship is not something casual, and it happens because of several structures, contracts, and expectations. However, farmers and Gabriel are not fully dictated by these. Although conditioned by formalities and structures, working relationships develop in unexpected ways, based on different circumstances and personalities. The extensionist-farmer relationship is a dynamic entity and unfolds along with mutual interaction, communication, and trust. At first glance, the SAT program appears to be well structured (e.g., goals and expectations). However, the findings reveal that these structures don't prevent Gabriel and farmers from getting involved in complex and challenging situations. Hence, these situations are shaped by the uniqueness of each relationship and constructed by periodic interaction. This section intends to explore and describe how Gabriel and the farmers bring their working relationship beyond the structural level. The following paragraphs intend to reveal through small stories the elements that constitute these relationships, subtle elements that appear and reappear through the time we spent together.

Are relationships important?

Gabriel has 30 farmer clients. He visits them periodically (on a monthly basis for most of them) during the annual cycle of technical visits. While relationships are varied by nature, Gabriel always tries to even the game for everyone, holding to the ethics of professionalism. He is also cautious to avoid favoritism or unfair distribution of his services. On top of that, Gabriel insisted on the importance of giving a high-quality service, putting special attention to technical/agricultural knowledge. During our first months together, most of the talks were about advice and technical information, and it was difficult to ask him questions about the interpersonal relationships with farmers.

Most of the time, Gabriel talked to me about advice and technical skills. Even though until the very end of our time together, Gabriel viewed his job as something pragmatic and well-organized, when our time together was getting to an end, we had the chance to talk about relationships more directly:

> *What do you think about relationships, then?* – I asked
>
> **Gabriel:** *To be honest, because of you, Samuel… I realized their importance. For example, I noticed that some farmers ask me about my son and wife…, and I appreciate that.*

During the first months of fieldwork, my field note descriptions clearly outlined Gabriel's pragmatic approach to his job, showing again that his interactions with farmers focused on technical information and advice. However, after all the time we spent together, we reached the point where we could discuss the interpersonal level of his relationships. This changed my perception of the work he does. The following is the recording of our first visit and how my perception evolved from there:

> ***Field notes 3rd September 2021****: This is the first visit. Gabriel asked me to hang out with him to see some farmers. I remember we arrived at 9:00 to see Don Mauricio, a young strawberry farmer. As soon as we arrived, we shook hands and had a small, polite introductory talk. Promptly, Gabriel and Don Mauricio started to exchange information about the orchard and strawberries. Gabriel asked Mauricio about the recent sprays, harvesting status, and if he had identified insect plagues. The conversation was focused on the technical, fast, and direct to the point. Occasionally, Gabriel and Don Mauricio interrupt to tell some jokes and comment about miscellaneous topics. The talk was about 15-20 minutes, and afterward, Gabriel and I checked the orchard status (15-20 min). When we ended, Gabriel took the manifold, a permanent pen, and started to write the*

> *recommendations. It took Gabriel 10-15 minutes to fill the sheet; Don Mauricio signed it, said farewell, and went to see the next farmer at 10:15.*

A few months later, he commented to me that he acknowledged the importance of having social skills:

> *If you were ever an INDAP officer and you need to find someone to do your job, what are the qualities that person should have? –* ***I asked***
>
> ***Gabriel:*** *Well, Empathy… And the capacity to ground the information to farmers' words, so that they (the extensionist) don't go too deep into technical information… and likewise to be flexible with time.*
>
> *Why time? –* ***I asked***
>
> ***Gabriel:*** *Because farmers have their own timings… and you need to adapt to visit them.*
>
> *How did you learn all these skills? You already knew when you started? –* ***I asked***
>
> ***Gabriel:*** *I learned throughout this job.*

This was very surprising, though, because, as I've mentioned earlier, Gabriel mostly valued the relationships with farmers through advice and technical knowledge:

> ***[****When I arrived in town, he (Gabriel) was excited about my presence since he perceived me to have relatively similar standards of agricultural knowledge and professionalism. "It is good that you arrived, Samuel, because advisors here don't*

> *know much, and I think University of Chile Agronomists are highly valued" [Gabriel]*

These talks suggest that being an extensionist requires both technical and social skills. Moreover, these (beta and gamma) skills are also mentioned in the literature (Leeuwis, 2000) and are not promoted or taught at a formal level of Chilean tertiary education (e.g., university) when we studied together. We discussed that and acknowledged that those skills are also built by experience, interacting with farmers and their technical and interpersonal issues.

The importance of listening in communication

The SAT is centered on advice and technical information. However, giving and receiving advice requires communication and social skills. The importance of soft skills is evidenced when Gabriel and his farmers face uncomfortable situations:

> **Fieldnotes:** [October 22nd, 2021, I accompany Gabriel to see Don Marcos. As soon as we arrived, Don Marcos wasn't very comfortable with Gabriel's presence. Something in the atmosphere was tense as if something bad had happened to him, and Gabriel was responsible for it. After a couple of minutes, Don Marcos showed distress and started making claims against Gabriel. This was the conversation between them.]
>
> ***Don Marcos:*** *(…) A couple of weeks ago, this strawberry orchard was beautiful. Don't you remember? (…) But now you can see that it isn't worth working on it anymore. The mites had taken over the whole crop (…), but I don't understand… I did all you advised me to do (…) Don Gabriel… do you remember how it was?*
>
> ***Gabriel:*** *I remember it was good (…), but surely the mites had taken over.*

Don Marcos: *Yes, I am tired of working this over, and I am planning to dry them (…) I think it is lost (…)*

Gabriel: *I encourage you not to do it (…). It still has its chance to be productive. I will give you a recommendation (…)*

Don Marcos: *(…) nah… don't give me anything.*

[Don Marcos was really upset and uncomfortable; he was explicitly rejecting any kind of advice, but also saying he wouldn't sign any of the forms with recommendations. After a while, Gabriel and Don Marcos talked and listened to each other. Gabriel tried to explain what happened and the possible solution. Meanwhile, Don Marcos expressed his frustration and situation. After several minutes of tense talks, they both started to find soothing points in their arguments. Suddenly, Don Marcos said: "ok, give me that paper (Figure 16)."]

Figure 16. Don Marcos finally ends up signing the form. In his frustration, he lit a cigar, and as it was in his mouth, he signed.

I don’t remember any more details about the conversation. But the tension in the atmosphere could be cut with a knife. I kept silent. All of a sudden, the conflict ended with a change in tone in their voices. It was like a little mystery. If I were to explain what happened, I would rather say that they just kept talking until both felt listened to. After all, I perceived Don Marcos to feel better (I knew it by the tone of his voice and his sense of humor), and also because he started to accept the possibility of signing the form. Gabriel, on the other side, was worried about the farmer's problems, but also because of the possibility that the form wasn’t signed. When there is any misalignment, listening can help to share different and contrasting points of view, particularly when the situation gets emotional. Technical problems may not be resolved by listening, but it can calm emotions and make people feel better. Conversely, in such situations, a technical recommendation alone is likely to make people feel worse. I never saw Don Marcos

again, but after a few months, I asked Gabriel how he was doing and if the strawberries went well; he said, "Yeah, everything went well, and the orchard recovered from illness (pest)".

The importance of trust

Gabriel strives for professionalism, even if he finds himself dealing with delicate and personal interactions with farmers. Farmers report that Gabriel's advice is helpful, but some of them also think that the advice involves more than a technical talk or a written recommendation. For farmers, agricultural advice is more than a mere set of technical instructions to be followed, and this goes hand in hand with how they perceive the service. For farmers, the perception of a good/bad service is linked to an overall experience. Every farmer has different needs and expectations, and advice is important not only because of its own. Advice is advice when "advice is trustworthy." Trust, or, in Spanish, "La confianza," follows different aspects of the relationship as it shapes the quality of the service and the interpersonal relationship.

Trust is especially visible when it's missing. Therefore, instead of thinking of trust as a checklist of expectations, trust is a holistic perception. For my participants, trust is something difficult to describe, but again, it appears more clearly when it's missing:

> ***Gabriel:*** *Sometimes I wonder about joint ventures with some farmers to make businesses (…). Yet, many things happened over these years, and I don't trust them anymore.*
>
> *Really? So what do you think about trust - "la confianza"? Because, according to the way we have talked about your job … you'll be keen to just deliver the information, and that's all… So, my question is – how does "confianza" affect you?*

> **Gabriel:** *Yeah… the thing that comes to my mind when I see some farmers doing things that aren't right… how are you going to trust them afterward?… later, you can expect them to shit you over – does it make sense?*
>
> *How can they shit on you?* – **I asked**
>
> **Gabriel:** *Do you remember Don Ramon that who played badly with me, saying to the INDAP that I made him short visits? (…) Well, I think that he shat on me… because my boss from DUCANT called me for an explanation… but you know Samuel, I did well… so why make all this situation a mess?*
>
> *(…) Imagine, Samuel… he (Don Ramon) said that my visits were only 20 min… and you have been there with me! My visits are much longer (…)*
>
> *You know, Samuel, I accept the critiques as long as they are constructive (…). I cannot stand when people lie and make up a story to harm*.

As a rule of thumb, trust indicates the quality of the working relationship. While it is difficult to make a checklist of what specific expectations derive from trust, yet, trust is also like a crossing line – when it is there and when it is not. Gabriel and the farmers can make mistakes and disappoint each other, but trust is a much bigger standard. Although disappointing behaviour can affect mutual, the crossing line is something in between technical and interpersonal performance. The following story shows some examples of how trust is linked to the reliability of advice, but also with loyalty.

> *[A couple of days ago, I went to see Señora Ana María. With her husband, Don Sergio, they have been cultivating strawberries for about 20 years. We have been visiting her orchard a couple of times with Gabriel, but this was the first time that I had the chance to have a one-to-one talk with her.]*

How was it when Gabriel just started working with you? – ***I asked***

Sra. Ana: *Well, at the beginning, nobody (other farmers in the program) took Gabriel seriously. In previous years, we had an extensionist from INDAP that we trusted, and things were working. But when Gabriel arrived – about 8 years ago – I honestly doubted his recommendations. But as time went by, we (other farmers as well) started to see that the recommendations of Gabriel worked, and soon we started to follow his advice.*

Sra. Ana: *(…)Gabriel demonstrated that the 'liquidos' (agricultural products) he recommended are good and accurate, as well as the plant management (pruning, irrigation, fertilization).*

Sra. Ana: "*… Always when I am about to apply a new agricultural product or I do have any doubts about the 'liquidos', I call Gabriel for his advice… I don't take any risks… I just called him to ask for the spare days I have to wait between cropping and applying the product…Now there is "confianza" between us, you know, I can call him late or send a WhatsApp at night (22:00) and I know he will respond.*

> *[During the conversation, her husband, Don Sergio, joined us, and I returned the conversation to the moment that Gabriel started to be in their lives. Don Sergio added to the conversation]:*

Don Sergio: *" You know, Samuel, it is like anyone who arrives at a new job. You actually don't know if he/she is going to 'hacer la pega' - (work proficiently) or not"*

[The same day, I talked to Don Sergio and Señora Ana, who also highlighted a meeting with a cooperative of strawberry farmers. To make a long story short,

> *Gabriel was crucial to the cooperative because he helped the farmers unite and legalize the strawberry cooperative. During this meeting, something happened, and they started to discuss Gabriel's performance as an extensionist. Some farmers took sides on whether to support Gabriel or not:]*
>
> ***Don Sergio:*** *(…) Tempers got heated… some farmers started to talk bad about Gabriel (…) some of us stood and started to argue against them (…) – "How you dare to talk shit about Gabriel? – I said" (…) "you have been accusing him to INDAP, and at the same time knowing he does no wrong?" (…) You know Samuel… I realize then that these people got mad because Gabriel did not help them to enter the supermarket, so they are trying to get back at him (…). Gabriel does a good job, he has been helping us… and you already know the kind of advisership he gives – they are good!*

Overview of the INDAP people and the upper bureaucracies

During my time with Gabriel, we had to attend some public events of the SAT program. I remember there was an important training session happening at the municipal auditorium of Perquenco (Figure 17). The purpose of the gathering was to inform farmers about the upcoming law on water management. One of the surprises was meeting the managers of DUCANT, Mario, and Pablo. Gabriel introduced me to Mario and Pablo, and both introduced themselves and asked me what my thesis was about.

> *I explained that I am exploring the relationship between the farmer and the extensionist and how they construct knowledge, which I am doing with Gabriel and his farmers***.**
>
> ***Mario:*** *Actually, we are interested … and I know some of what you are doing… such as horizontal knowledge exchange, for example. Am I right?*

Yes, you are right! And I am focusing on that kind of stuff – ***I replied***

Mario: *Indeed… we should catch up soon! And please come to see us when you are in Santiago.*

Figure 17. INDAP meeting. DUCANT representatives were there

For multiple reasons, that meeting never happened – unfortunately. However, the small talk with Mario raised some thoughts about why relationships are so important. First, good, respectful, and trustful relationships are bound to the perception of a good service. What's more, the continuity of DUCANT's contract with INDAP stems from the service quality and the extensionist performance. As it follows, good working farmer-extensionist relationships are relevant for good service, and henceforth, the importance

of social skills as a desirable quality when companies need to hire a new extensionist. Besides, we must remember that DUCANT – like most companies – has lucrative interests, which is not bad, but it can shape the connotations and purposes of interpersonal relationships we are here exploring. For example, Gabriel alleges that some extensionists would make a huge effort to give a good impression rather than proper advice. Thus, when I first explained my thesis to him, he immediately warned me about clientelist relationships. Therefore, in Gabriel's mind, but especially for INDAP officers, there is always a worry that interpersonal relationships can be a means to hide poor technical skills and overall bad performance. Likewise, this view can be complemented by the perspective of a former INDAP officer about the SAT program:

> **Jesefina**: *(…) I think there are different levels on which the programs can be improved (…) INDAP is constantly revising and improving the programs… I think they generally work fine, but the critical issues are seemingly not in how the programs are structured… I reckon the answer may be on other things (…) Do you remember I commented to you about not looking down at farmers … well, I think the improvements can be made in the way we relate to each other: farmers to farmers, farmers to INDAP officers, farmers to extensionist… because farmers can get angry for example… so what I am wondering is if we could make changes to how we treat each other (…) and by consequence that will bring benefits but also the capacity to say "NO" to farmers for example… to put healthy boundaries "*
>
> *That is fascinating and is exactly what I am interested in… let's do a mind exercise and imagine an ideal future… can you please set an image of how the future would be? –* ***I asked***
>
> ***Jesefina****: Ha ha… fair enough, let's think about an ideal future (…) First, it will depend on each interpersonal skills (…) to know how to set boundaries, know*

> *how to negotiate with the other, to dialogue… because we need to break the habituated verticality between the extensionist and the farmer (…)*
>
> *(…) Additionally, it is important to build an environment where technical criteria prevail… and these are not contrary to having affectionate relationships with farmers. Indeed, I am standing for affection. However, it should not prevent them from setting healthy boundaries.*

Concluding remarks

This section views the SAT relationships as work-oriented. Even though compliance with work is important, Gabriel and farmers face situations where technical advice alone is not enough. Technical advice is not enough because of the need for social skills. These results indicate that the quality of the relationship influences the interaction and, therefore, the perception of the extension service. The SAT program comprises many life discontinuities where the struggle, negotiation, and disagreements indicate that these also belong to the relational space. Therefore, if Gabriel is equipped with social skills, he may have better chances to deal, understand, and communicate with farmers, but also farmers to deal with him. Therefore, elements like the ability to listen and communicate effectively are part of the substantial efforts to build good, friendly, and trustful working relationships.

When my participants are asked about their relationships, trust emerges as a central element. A trustful relationship is characterized by a sense of security, which, in the case of how farmers see Gabriel, begins with the reliability of his advice. The latter makes sense since strawberries are knowledge-intensive, and mistakes can be fatal to farmers' economies. Don Marcos and Señora Ana are both good examples of how Gabriel's advice is intertwined with trust. Gabriel expects that farmers behave ethically, as he must deal with different values and farmers' personalities. The latter suggests that trust

is more than meeting expectations, but a perception that considers multiple dimensions, including the personal and technical. Besides, most of the strawberry farmers perceive that trust in Gabriel is directly linked to his reliability, and as Gabriel holds many social skills, these come together as complementary. For instance, there was trust when Señora Ana sent a WhatsApp text to Gabriel at 22:00. This means that trust doesn't indulge in technical advice alone because there are other valuable attitudes (e.g., mutual caring attitude) that shape trust in the relationship (e.g., when Gabriel is invited to have a cup of tea or asked about his son and wife).

Further questions arise from these results. Would it be possible to establish good working relationships without trust? Or without communication abilities? – I think Gabriel put it well by telling me that empathy was more than important. However, there are some controversial questions to be answered because, from the view of outsiders (e.g., INDAP officers), there is a fine line between clientelism and true affection. The former INDAP officer Jesefina suggests that technical advice and interpersonal skills are both important and even at the affectionate level. However, again, she also warns about the precautions of clientelism, stressing that technical knowledge is critical, but there is so much improvement that can be made in the interpersonal space.

> *[Gabriel started to comment to me about some dramas that occurred to one of his farmers. The stories were about domestic violence, revenge, and love affairs. I've asked him what he thinks when farmers tell him these stories.]*
>
> ***Gabriel:*** *Interpersonal relationships are complex… and the relationships I've made with farmers have developed over time.*
>
> *And how do you get to know them and their stories? –* ***I asked***

> ***Gabriel:*** *They just told me… after all these years together… I get to know them, but they also get to know me.*

Knowledge and relationships at the interface: Stories about knowledge, farmers, and Gabriel

Knowledge, power, and the 'liquidos'

When Gabriel talks about himself, he has full confidence in his knowledge. Anyone familiar with farming strawberries will tell you that, in general, they are knowledge-intensive crops. Therefore, in this case study, technical information and advice are critical for a farmer's decision-making. According to the SAT policies, the extensionist should hold a demand-driven approach. However, in practice, the SAT program displays a vertical flow of advice from the extensionist to the farmer. Farmers expect that Gabriel will give them reliable advice and technical solutions to their problems. For the SAT, technical advice can be both, sometimes like a transmission, and in other cases, a horizontal dialog. Therefore, advice can take different communication styles, ranging from an informal conversation to mandatory instructions. Put in simple terms, Gabriel and his advice can happen in two different communication styles (e.g., vertical or horizontal), but these occur dynamically. This is why, for this research, there is significant attention to the links between power and advice, as this comes directly from former and traditionally paternalistic extensionist-farmer relationships. The following paragraphs show how Gabriel and the farmers navigate through these power imbalances, their relationship, and technical advice.

Farmers from the SAT program are often committed to a single berry crop. Thus, most farmers from the group share the same crops and economic activity (i.e., strawberry,

raspberry). This is important for SAT extensionists because it requires expertise and specificity. This is one of the reasons why Gabriel sometimes prefers to use a vertical communication style. Gabriel believes that the SAT program holds a vertical strategy when compared to other programs, such as the PRODESAL:

> *[My first contact with Gabriel was via telephone. In August 2021, the pandemic was hitting hard, and the overall vibe was to remain guarded and safe from contagion. Most of us thought twice about hanging out, even in a one-to-one interaction. With all the uncertainties, I called Gabriel's phone for our first encounter. I had prepared myself for the worst-case scenario – framing my fieldwork via telephone. For the good, this was my first and last telephonic interview. This interview was crucial to understanding how Gabriel looked at the program and the job he did. After I talked to him and told him I would be exploring the relationships with his farmers, he replied with a skeptical tone.*
>
> **Gabriel: "***Oh well, relationships… what you first need to know is that the SAT program holds a vertical style of relationships… not like the PRODESAL, where you would have more horizontal relationships, as they do not rely much on technical advice."*
>
> *[I was very disappointed with my findings. I felt Gabriel was trying to say that he might not be of much help since his relationships aren't as colorful as the PRODESAL. At the same time, exploring the PRODESAL was virtually impossible at that time because of the sanitary restrictions. But somehow, I continued.]*

In this conversation, Gabriel gave me some hints to follow and some threads between technical advice, the SAT program, and the style of the relationships he has with farmers (vertical or horizontal). As my fieldwork with Gabriel unfolded, this conversation became more and more relevant in understanding how advice, the SAT guidelines, power, and

relationships are connected to each other. Firstly, Gabriel's advice focuses on agricultural products, or what farmers commonly call 'liquidos'. The 'liquidos' is the name for every agricultural product, and not only the ones that come in actual liquid form. The 'liquidos' are very important for berry cultivation; these are critical and the easiest way to ensure fruit quality and pest management. Apart from being critical to cultivation, the 'liquidos' are the cornerstone of Gabriel's advice. I've noticed that almost every conversation between farmers and Gabriel is about it, whereas farmers can easily dispute them according to price, moment of application, type of product, and doses:

> **Don Mauricio**: (…) *"Don Gabriel is very well accounted with the agricultural products… that man, he knows…"*
>
> ***Señora Ana**: (…) I mostly consult Gabriel for the liquidos.*

The decision of farmers to apply a particular 'liquido' is relevant to how power and advice go together. At first, Gabriel perceives that if farmers are committed to the program, they should listen and take advice verbatim, plus, Gabriel thinks it is for their benefit. The latter creates tension because sometimes, they don't follow what he recommends:

> *[it is usual that Gabriel confesses to me his feelings about the farmers' attitude towards his advice. I remember, in many instances, hearing Gabriel claim: "The problem is that farmers 'no hacen caso' – 'don't follow recommendations."*
>
> ***Gabriel**: (…) Advice is exactly as the baby milk offered by the rural hospital… The hospital doesn't know if they give it to the baby or not – it is up to the mother.*

The latter suggests that Gabriel views his knowledge/advice as something trustworthy and indisputable – something that will benefit farmers. Maybe because he is so

confident, sometimes, Gabriel is reticent toward the farmers who try to conceal agricultural practices from him:

> **Gabriel:** *I reckon that Michael is 'cuentiandome' – 'deceiving me with stories' with the agricultural products he is applying… because it doesn't coincide with what I am seeing in the field (…)*
>
> *Why do you think he is not telling you the truth, and why? – I asked*
>
> **Gabriel***: In my experience, I see that some of the problems that farmers report don't coincide with the management they tell me they did (…) I do not know exactly why farmers lie to me, but I have heard that sometimes they take advice from an old woman that lives in Santa Juana (…) from my perspective she recommends aberrant things (…) I think that farmers don't want me to know that they take advice from somewhere else.*

Behind Gabriel's confidence, this also merges with the duty of care and professionalism. If, after multiple times, farmers didn't take the advice, Gabriel believes they are going to make mistakes as they don't follow the recommendations. Gabriel genuinely worries about farmers not making those mistakes. Eventually, when there is too much dissent on what he says and what farmers do, he feels that he has the power to expel farmers from the program if they don't follow his advice:

> **Gabriel:** *(…) In a worst-case scenario, I can influence farmers to exit the program if I see they are not doing what I recommend (…)*

Gabriel appears to see advice with a paternalistic attitude towards farmers. However, I attest that his true intentions don't tell of someone arrogant who just wants to exert

domination. On the contrary, his concern, again, is on care, and his purpose in the SAT is to enhance the businesses and economies of the strawberry farmers:

> **Gabriel:** *(…) For example, Don Ramon. I remember that he started small, and I have witnessed how much he has grown…. He is now very successful, with various hectares. He is one of the most productive (…). It is satisfactory to see farmers grow since you accompany them through the process.*

Gabriel inspires himself with a sense of purpose, which aligns with the SAT guidelines to enhance farmers' strawberry businesses. Accordingly, he strongly believes that farmers can reach this purpose by following his advice, and if not, they may be compromising this achievement. Gabriel cares about his farmers, and he believes that farmers should not pass through the unnecessary burden of potential mistakes and trial and error, as these can be minimized with advice and guidance. However, again, we know that farmers contest Gabriel's advice by looking for different sources of information or holding critical views. The latter provokes tension about what works best for strawberry growers and what Gabriel thinks is best for them.

> *[In one of our visits, Gabriel had a small argument with a farmer. The farmer discloses to Gabriel that he applied a dangerous "liquido" or "agricultural product". Though effective, this agricultural product is now prohibited by law.]*
>
> **Farmer:** *(…) I had applied this product, Don Gabriel*
>
> **Gabriel:** *You know that this product is forbidden? But it is also dangerous for your health and the health of others… you shouldn't be applying it.*
>
> **Farmer:** *Yes, but it is effective…*

> *[This conversation was uncomfortable and awkward. The farmer received Gabriel's disapproval with a nervous laugh. Likewise, Gabriel felt disappointed and responsible for the farmer's behavior – after we left the farm, he commented to me.]*
>
> **Gabriel:** *(…) There are many growers whom I don't eat their strawberries … I know some farmers are nasty because of the agricultural products they apply…*
>
> *And what do you think about how farmers see the "liquidos"?* ***– I asked***
>
> **Gabriel:** *Farmers don't take them seriously. The agriculture that we have here is still performed as if we were in the Stone Age.*

Although Gabriel thinks that farmers have room for improvement, he also recognizes the value of farmers' knowledge. This is why he adjusts his recommendation from farmer to farmer. Each recommendation is based on a diagnosis, for which Gabriel inquires of the farmer to gather information, their experience, and knowledge. Although the recommendation looks like an instruction when you read it, underneath, it is more like a negotiated and convened outcome. While most farmers take Gabriel's advice seriously, they usually try to negotiate with him about the agricultural products Gabriel recommends:

> ***Farmer:*** *(…) Is this product expensive? Do you have any alternatives?*

The time Gabriel spends with the farmer talking is when he challenges his technical skills. A good example resides in the type of 'liquidos' he recommends – some of them are applied regularly, but others depend on specific circumstances. For Gabriel, some farmers are more critical in challenging his advice. These farmers have a different attitude towards knowledge. Gabriel calls them "mateos" – "keen to learn," a group of

farmers that he considers capable of critical thinking and learning. Denison is one of the iconic farmers of this group:

> *[Denison is a unique case from Gabriel's strawberry farmers. Denison is 35 years old, one of the youngest farmers of the group, and probably the only farmer who has had access to tertiary education. Denison started small with the strawberries on a little inherited land from his grandparents. He was very young when he began, reporting that the strawberries paid for his engineering studies. When talking to Denison, he is one of the few farmers who constantly defy Gonzlao's advice, assuming a critical position in what works for his own experience.]*
>
> ***Denison:*** *Gabriel likes that we plant different strawberry varieties at once… but I disagree with that.*
>
> *Can you tell me why –* ***I asked.***
>
> ***Denison:*** *Because each variety has its own management*
>
> *And how does that come to be a hindrance? –* ***I asked***
>
> ***Denison:*** *You end up multitasking and depending on it too much (…). I also think that you end up spending much more money (…)*

Concluding Remarks

In this research, Gabriel provides advice that can shift from horizontal to vertical styles. Most of the time, Gabriel's attitude is vertical. However, it is not uncommon for farmers to contest and be critical, questioning advice, and, therefore, become a conversation or dialogue. From the viewpoint of policy, the SAT program advocates for farmer-based

solutions and horizontal advice. Still, the program's goals are aligned with economic development, which sometimes contradicts the possibility of drawing farmers into mistakes that impair productivity. Gabriel feels this inside as a contradiction. And this may be the reason why he avoids dealing with horizontal advisership. INDAP officers seem to support the view of advice as something vertical as they insist that INDAP programs are intended to outcome to productivity and economic development. The assumption that all farmers must maximize economic benefits and revenue potentially misaligns with the other purpose of the SAT guidelines, which is to generate skills in farmers. The problem with this issue is that farmers and extensionists are at risk of falling into a codependence. If the advisory services do not truly empower farmers, they remain dependent on what Gabriel says.

Some authors sustain that the ultimate purpose of extension should be farmers' empowerment and not merely focus on the technical aspects of farming (Christoplos, 2010, p. 30; Ingram, 2014, p. 7; Rivera, 1998, p. 260). However, various problems arise from this consign. Hereupon, there are relevant questions to ask regarding the institutional and the extensionist's responsibility for empowerment to happen. Put in another way, is this problem a matter of the extensionist's style of relationships, or does it depend on institutional guidelines and policies? In the case of INDAP, it is unclear whether advice should remain horizontal, while Gabriel practices a more vertical and paternalistic approach. If this happens to be the extensionist's responsibility only, does INDAP have any other methods to assess farmers' skills or horizontal communications? During some informal interviews with berry farmers, I asked Señora Ana if INDAP requires something from them.

> *Does the SAT/INDAP ask for something back from you?* – **I asked**
>
> **Señora Ana:** *Apart from the co-payment, all farmers are required to declare their productivity and economic revenue… but this is funny because it varies from year*

> *to year, and also depends on the date you planted the strawberries (strawberries have a two-year crop cycle) … Also, you can be expelled from INDAP if your revenue is too high*.

INDAP advocates for economic development. For Gabriel, it is always a twofold issue of whether to enhance productivity or let farmers make mistakes to learn. In that sense, Gabriel plays it safe by pushing his advice for the farmer's economic success. Since INDAP evaluates performance only by economic indicators, the skills farmers learn from the advisership are difficult to notice. In practice, the responsibilities of learning are likely shared and shaped between institutional guidelines and the attitudes of the stakeholders (i.e., INDAP officers, farmers, and extensionists). Finally, this led us to think about the structure-agency (institutions v/s actors) dilemmas and how institutions/policy may/or may not be aligned with the higher and idealistic values of extension and development.

Finally, advice is usually related to the topic of agricultural products, commonly called "iquidos". 'Liquidos' can be dangerous, but their use guarantees good yields and crop success. Farmers can contest advice by testing if 'liquidos' work, if they are expensive, the moments of application, and the dosage. The recommendation of a particular liquido is often a conversation that is a dialogue between Gabriel and farmers, and the nature of the dialogue (more vertical or horizontal) depends on each circumstance, the skills of the farmer, and their interest in learning. Likewise, Gabriel looks after his farmers, feeling responsible for their economic success, or if they don't take advice or apply a 'liquido' which is prohibited. Institutional policies can draw power and advice, but also when Gabriel feels he is on the right side to impose his vision (e.g., when the farmer conceals his management). The suspicion of farmers not taking advice makes Gabriel feel worried about their economies, and it becomes a personal matter when they don't follow his recommendations. It is important to mention that farmers also hold power, and they can contest advice/power depending on their skills, confidence,

training, and overall social status. This can be noticed in farmers that Gabriel calls the "mateos" of the group, such as Denison and Señora Ana.

Construction of knowledge: moments of understanding, meaning, and co-learning

For the naked eye, Gabriel's role is to deliver information. Yet, we know from the previous section that verticality is not what fully happens in practice. Farmers and Gabriel are often challenged by complex interpersonal situations, making the delivery of information far more complicated than a simple delivery. Hence, it is crucial to understand the difference between information and knowledge. Although these two concepts merge, the relationship between Gabriel and the farmers tells the story of how these two are bridged. Moments of understanding, construction of meaning, and learning all show how knowledge is constructed in these relationships. The purpose of this section is to show some examples of why knowledge is an exchange that happens when information is contested, dialogued, and negotiated.

Information transfer and learning

During my time with Gabriel, we had various moments when it was clear that knowledge is more than information transfer. However, the moments where farmers and Gabriel found understanding don't exclude vertical information transfer. Though unpopular in the extension literature, this section suggests that advice and co-creation of knowledge can still be reached through the transmission of information. For instance, knowledge, creation of meaning, learning, or understanding may also happen through vertical communication styles. While the following examples will sound contradictory and confusing, it is exactly what I want to convey. While Gabriel, on a discursive level,

believes in having vertical styles of advisership, most of the time, Gabriel would have a dialogue before giving a recommendation. While findings reveal that he may use his powerful position to intervene with instructions, this is not the usual. Gabriel also often comments that farmers aren't interested in the cause-and-effect relationships of the 'liquidos'. So, he insists they are not interested in knowing and they just want solutions. Although he thinks he gives plenty of opportunities to explain the "science" behind the 'liquidos', he says that farmers respond with little interest. Therefore, in some cases, Gabriel feels compelled to stop the dialogue and take an authoritative role:

> *[26th October 2021. We arrived at a Farm on which a poisonous 'liquido' was applied before our arrival. Strawberries are sensitive to plagues, especially mites, so they need to be sprayed regularly. In the middle of the talk, the farmer makes a small laugh, unveiling his intentions to enter the recently applied orchard for a task. "You are not planning to enter the orchard, right? Aren't you?" – Gabriel asked. The farmer showed a nervous laugh at Gabriel's authority while continuing to be skeptical of the several dangers of the spray. The farmer replied to Gabriel:*
>
> > **Farmer:** *Look at this! I've always overlooked that shit…*
>
> [The farmer took a while to think about it, and he added to the commentary, nodding his head in confusion:]
>
> > **Farmer:** *But what a strange thing! Why then, you can witness other farmer-folks taking a beer while applying. Please tell me.*
>
> [Gabriel kept serious and silent, while his body language showed complete disapproval, but eventually he said:]
>
> > ***Gabriel:*** *Sir, we need to professionalize our agriculture; you should not do it anymore.*

For Gabriel, these situations fall into a disparate. In my view, this is the only occasion when he shortcuts his dialogic vision to resolve some situations as quickly as possible. Under these circumstances, knowledge does not come from horizontal communication; Gabriel was shocked, as the farmer was at imminent risk, endangering his health and the health of others. This situation informs about the boundaries of co-constructing meaning together (between the extensionists and farmers) and the relative truths that can be disputed (e.g., local knowledge v/s scientific knowledge). I would rather emphasize that taking a beer while applying poison may be out of a reasonable and dialogic discussion. The latter is also a reminder to be cautious of romanticizing farmers' knowledge – we must consider that small farming societies have recently been invaded by modern technologies (i.e., agricultural products), and the knowledge of 'liquidos' can sometimes be limited. Moreover, farmers from this research tend to relate knowledge to practical and tacit things. For farmers, understanding agricultural products can be challenging, especially because this type of knowledge relates to abstract and invisible cause-and-effect relationships. Certainly, Gabriel knows this from farmers, while he advocates that his advice has a twofold purpose: On the one hand, to solve technical problems, but on the other hand, to strengthen farmers' understanding/knowledge.

> *Gabriel, what do you think about your own recommendations? How should farmers manage what you give them? How do you tell the difference between a recommendation and an instruction?* – **I asked**
>
> **Gabriel: "***I think it is for decision making… that is the reason each time I put the "technical reasons" and the "reasons why" (…) I am interested in farmers to learn, but at the same time, the idea is that farmers do what I recommend (…) I am always afraid they will screw things up"*

Gabriel thinks that farmers have different capabilities and interests in learning. He identified some farmers who stand out from the group because of their learning capacity and technical skills. Recalling the SAT guidelines – on developing and overall farmers'

empowerment – Gabriel believes that developing skills is not suitable for everybody, even though he is always advocating for farmers to learn:

[Denison is the only farmer of the group who has built himself an innovative semi-hydroponic system for strawberry cultivation. The semi-hydroponic structure has multiple benefits drawn by an ergonomic design. One of the major improvements is the impact on cost-labor efficiency, but it also helps the crouched body positions most farmers complain about from the traditional cultivation methods. Under my agronomist eye, Denison's cultivation system can be a good example for other farmers to follow. However, Gabriel feels it is more complex than it looks.]

"It looks like Denison's semi-hydroponic system is the future, isn't it? – But I am surprised that no other farmers are having the same system". – **I asked**

Gabriel: *"I don't think the semi-hydroponic is for everybody… I don't see many of the farmers implementing it."*

Why do you think so? - **I asked**

Gabriel: *I see that most farmers aren't really interested to learn; however, some of them do … (…) I think of a few, like Don José and Señora Ana would find the semi-hydroponic system suitable.*

I think I can understand you (…) because you often said that what you say to farmers "goes in one ear and out the another" (…) I think that some farmers have the capacity to see advice with a broader technical perspective, such as Denison… and some farmers may have no interest to learn technical skills, while others may be quite a challenge to understand abstract concepts …. For example, farmers look at the intensity of the green color, while we (as agronomists) imagine the different levels of photosynthetic activity." – **I commented.**

> **Gabriel:** *Yes. (…) I guess that there are some things we (as agronomists) can easily imagine, but it can be a huge challenge for a farmer (e.g., such as photosynthesis) (…) I have been thinking about the different backgrounds of their education because most of them have had only primary school (…) And I see this more clearly when I look at Denison, he is always learning new things… looking for YouTube videos and stuff on the internet.*

Dialogue and negotiation? Co-construction of knowledge

Gabriel strongly believes that farmers must take something from his advice, and this does not necessarily convey a horizontal dialogue. For a dialogue to happen, Gabriel and the farmer need to be in a relatively equal position. According to Gabriel, farmers' education and background (i.e., years of farming experience) can make a huge difference in how these relationships co-create knowledge and understanding. Although the current scholarly trend is pointing towards horizontal and dialogic relationships, for this research, the possibility of a dialogue appears to be bound to socio-spatial circumstances. Likewise, there is a fine line between horizontality and verticality, as different ways that people learn or create knowledge together. As has been said above, although Gabriel has a more vertical style in his advisory services, he is also fully interested in farmers' learning. The latter raises the question of how we can identify whether the situation is "knowledge co-creation" or "information transfer", considering that these are shaped by the power spectrum. This section intends to show that neither Gabriel nor I could clearly define whether his advice is vertical or horizontal.

> *[Among farmers, there is a common understanding that 'liquidos' can have marvelous results on plants. There is much excitement to apply products that*

most farmers develop through their own experience, and which products work best. This usually can lead to an interesting conversation when farmers discuss it with Gabriel:]

Field notes: *When farmers call Gabriel, I often listen to the telephone conversations. Maybe because his car is connected via Bluetooth when we're heading to the farms. I do not always remember the exact dialogue of the conversations, but it is surprisingly common to hear that farmers often confuse the mite sprays for killing insects. Unfortunately, mite poison has a poor effect on insects. Usually, farmers ask Gabriel if they can utilize the mite product to kill the aphids. I asked Gabriel about what he thinks about this confusion, and he responded:*

Gabriel: *I usually hear asking me about this confusion, but some others just apply without being sure or consulting me.*

During the car-Bluetooth conversations, I remember various farmers confusing the mite products to kill insects, to which Gabriel would respond, explaining that both belong to different types of 'bichos' (bugs). Commonly, this confusion is easily resolved without any disagreement between Gabriel and the farmers. In this situation, we can identify that farmers are keen to learn and resolve these questions. Therefore, it is easily identified that a degree of interest is crucial for learning to happen. In the example above, knowledge comes from correlating the agricultural product and the kind of bugs these can kill. However, underneath this example is an evident power-knowledge nexus. In this case, Gabriel is the one who knows, as farmers are consulting him for advice. While Gabriel doesn't undervalue farmers' knowledge, dialogue is only possible when both sides are open, receptive, and power-balanced. Therefore, the possibility of dialogue and the idealistic ideas of constructivism must comply with some of these conditions at first.

Certainly, these would be moments of understanding and learning, but what would be the case with all the many misalignments that occur?

Knowledge and advice are different.

We must not forget that Gabriel is an authority, holding a higher status at the knowledge interface. Therefore, the environment of co-creation is potentially dominated by Gabriel's influence. Ergo, the stronger the power and the less horizontal the relationship, the stronger the "battle of knowledge" (Long & Liu, 2009, p. 71). Most of the time, farmers abide by Gabriel's advice, making advice flow easily, carried by small agreements and negotiations. However, besides Gabriel controls the knowledge scene, sometimes farmers disagree and question his advice. For this research, advice and knowledge should not be taken as synonyms. Advice is closer to information, but knowledge is something else. The former is information, and the latter is integration. The discrepancies between Gabriel and the farmers make a clear distinction between advice and knowledge:

> ***Fieldnotes****: We came to see Don Lalo, Señora Monica's husband, who runs a relatively big Strawberry farm in Perquenco. When we arrived, Don Lalo was in distress because of the orchard's status. According to him, strawberry plants looked wilted, lacking the shine of a usually healthy green fond. Gabriel and I had an enclosed conversation about the orchard status, and we agreed that the orchard wasn't in bad condition – only a few plants looked wilted. Hereupon, multiple factors may be causing the plants to wilt. Gabriel started to inquire about his diagnosis:*
>
> **Gabriel**: *Don Lalo, when was the last time you applied for mites?*
>
> *[Don Lalo said that the last application was relatively recent, while we checked some leaves with the magnifier, saying that mites weren't the problem. The second thing that Gabriel did was to check soil water status (Figure 18) with a*

portable instrument called TDR (Time Domain Reflectometry sensor). After several measurements, Gabriel asked Don Lalo]

Gabriel: *Ok, Don Lalo, the soil is looking pretty dry … when did you irrigate last time?*

Don Lalo: *But what a strange thing! I had just irrigated them an hour ago… I don't think it has to do with water issues.*

[We walked through the orchard again to double-check it with the TDR, but the soil water content showed low levels still. Gabriel kept talking with Don Lalo while he continued to be skeptical about his irrigation practices. Because of this, Gabriel rechecked the orchard, but this time, he found something different, which may explain the apparent decay of plants.]

Gabriel*: Don Lalo, I know what happened! Some of the irrigation hoses are entangled in some spots of the orchard, and therefore, for some rows, the water bulb isn't reaching the root area.*

[After a small talk, Don Lalo was still convinced that it wasn't because of the irrigation practices he had been doing. However, Gabriel convinced him to run an irrigation test and irrigate the strawberries for 45 minutes while we were there. He accepted, and after 45 minutes, we rechecked with the TDR. The numbers improved, but the soil water content was still low. After all, Gabriel wrote the recommendation advising Don Lalo to increase irrigation frequency and time. Besides the inconclusive remarks, Don Lalo started to consider the possibility of irrigation issues, and now it is up to him to reassert what Gabriel was suggesting.]

Figure 18. TDR. The controversial apparatus casts doubt between objective measurements and farmers' experience.

Farmers always cast doubt on things they cannot see or prove their effects. And these suspicions come from the main knowledge source they have – their own empirical experience. Besides, most farmers took Gabriel's advice seriously; farmers' practical experience and even intuition can be a main source of disagreements:

> *[I went to see Denison, and we ended up talking about irrigation. He says that he has different soils in the orchard, making the irrigation assessment challenging.*
>
> **Denison:** *Here, we have different types of soils in just a few meters. Gabriel comes with the TDR, but I don't trust it really… he takes measurements here and there, but these all are different, and in the end, I end up using my intuition on what works best.*

The case of Denison is remarkable because he is one of the farmers whose formal educational level makes him arguably more capable of challenging Gabriel's technical knowledge. Talking with Denison, I realized in him the capacity to maintain a technical conversation. This is a critical distinction because most farmers have difficulties sustaining a technical conversation with Gabriel. This does not mean that farmers aren't technically bad, but the technical information that Gabriel gives to farmers is often decontextualized in farmers' knowledge systems. The case of Denison is a special case in that sense. However, the attitude he has toward the TDR reveals some surprises. When it comes to decision-making about irrigation and water management, he first casts doubt on the assessment Gabriel does. Conversely, he still advocates for his own experience and intuition while presenting his own view of what works best. This situation is something very common among the farmers of the SAT group. This is the moment when Gabriel feels *"they don't take the recommendations I give them".* Here is an open discussion of how knowledge systems can converse. We, as agronomists, see the world through objectivity and science, which can devalue farmers' experience, especially if they have been cultivating for many years. This by no means indicates that farmers are always right, and the same happens with Gabriel's understanding of the world. The fact that Denison prefers to trust his intuition rather than an apparatus makes us think about how different epistemological backgrounds share their views. Whether it is intuition, experience, or logical scientific arguments, it is nearly impossible to ascertain who is right or wrong, especially when the biological agricultural field is such a

nondeterministic source of knowledge. Needless to say, power plays a key role in influencing who can tell who is wrong and who has the truth.

Concluding remarks

The SAT program favors a dynamic that resembles vertical styles of information transfer. However, most of the time, Gabriel tends to dialogue with farmers about technical matters, like the 'liquidos', instead of instructing them. Still, Gabriel feels at a crossroads whether he should just give instructions or enable them to make mistakes and learning from them. Gabriel has a predicament between two aspects of giving farmers advice: to generate skills or to prevent disaster. Therefore, sometimes, he utilizes his powerful position to give instructions and influence farmers. The latter is negotiated accordingly, to what he believes, goes hand in hand with farmers' status (e.g., education and experience). Yet, power is something dynamic that changes according to each relationship, depending on everyday circumstances.

Knowledge is different from advice. For this research, knowledge comes with the experience of learning and the construction of meaning. Therefore, moments of learning and understanding are shown here as moments where Gabriel and farmers make something meaningful from advice. While Gabriel's advice is often very welcomed, there are some moments where disagreements and misalignments occur, which is also an opportunity to co-construct meaningful understanding – this is also what happens when Gabriel imposes his view on farmers. In other words, Farmers and Gabriel have situations where a vertical style of communication is evident, and besides the negative connotations for it, this is also the chance for learning together. When a farmer questions or disagrees with Gabriel, it generates disruption in the transmission of information/advice, permitting sometimes a dialogue or a negotiation that may or may not end in the production of knowledge. Yet, Gabriel also learns from farmers through his interaction and experience with them. Besides, the SAT program favors a one-way flow of

advice and information, and knowledge appears as a continuum influenced by agreements and disagreements. The case of the use of 'liquidos' is a good example of how knowledge is co-constructed and disputed together with farmers. After all these years, Gabriel knows this very well.

> *How did you end up becoming a berry expert?* – **I asked**
>
> **Gabriel:** (…) *"I started with irrigation projects in strawberry orchards about ten years ago, and after a few years, I started to advise some farmers… and well, after all, I've learned along with Los Viejos"*

Conclusions

This Chapter shows ethnographic descriptions and fieldnotes on how Gabriel and his farmers organize and build relationships. Also, how they interact and co-construct knowledge. The evidence shows that relationships are structured by institutions and formal expectations. While institutions, policy, and regulation organize relationships, the interpersonal aspect shows that trust, respect, and other emotional elements play a significant role in how relationships are organized and maintained. Technical advice is highlighted as central for participants regarding the quality of service. Quality of service and advice involve having social skills, like the ability to communicate, dialogue, and negotiate. This section shows ethnographic evidence on how actors in agricultural extension co-construct knowledge through their relationships.

Chapter 6 – The PRODESAL team and three hundred farmers: Case study two.

Introduction

Chapter 5 shows the results of case study two. The following section shows ethnographic evidence collected during the last stage of fieldwork at the PRODESAL program, from November 2022 to April 2023. This chapter shows ethnographic descriptions of key findings and stories from fieldwork. Chapters 4 and 5 were outlined into similar findings by organizing the evidence into sound topics. This chapter comprises two main sections. The first section presents evidence on how relationships are organized and interpersonal dynamics are experienced. The second section shows how relationships shape knowledge co-construction and co-learning.

A picture of the interface: Stories about the relationship between the PRODESAL team and farmers

Casting relationships: Expectations and demands.

As in the first case study, relationships at the PRODESAL program are shaped by institutions, curricula, and formal expectations. The PRODESAL program has different aims and regulations from the SAT, shaping interpersonal relationships differently. According to my conversations with extensionists, one of the main differences with the SAT is the addition of a fourth party: the municipality. As a consequence, the PRODESAL

has four main actors: i) INDAP, ii) the municipality, iii) the PRODESAL team of extensionists (office), and iv) farmers. The municipality is a public institution subdivided for political administration and governance across different Chilean territories. This institution oversees and provides services according to its jurisdiction and the interests of the local communities. As mentioned in Chapter 3, research context, municipalities are frequently commanded to implement the PRODESAL program in the corresponding territory. This institution follows a similar role to the outsourced company from the SAT – DUCANT. The inclusion of another institution – the municipality – is important at the level of formal expectations, shaping how participants perceive, particularly extensionists, the PRODESAL program. Roberto, one of the extensionists from the team, was very interested in reflecting on this. This is how he described the main actors in the program:

> ***Roberto:*** *The program has four legs: the municipality, INDAP, farmers, and us (…). Therefore, sometimes I wonder what we are as a program… what are we, Samuel?!*
>
> *In my view, all the parties involved are making the meaning of the program, isn't it?* – ***I replied***
>
> ***Roberto:*** *Not sure about that, Samuel… because we have guidelines to follow… but… are we following them after all?*

This was a thoughtful question asked by Roberto. Later, this conversation became part of the understanding of how participants perceive formal expectations of the PRODESAL program. In this section, the reader will find more examples of these expectations and how farmers, extensionists, and people from the administrative offices understand them to organize their relationships.

The PRODESAL is the only Chilean agricultural extension program exclusively developed to assist small farming and micro-producers. Similar to the SAT, its main purpose is to enhance farmers' economic development and quality of life. The PRODESAL is a free-of-charge agricultural extension service. This program focuses on small farmers and families, integrating a more socially oriented program than the SAT. As described in Chapter 3, policy and regulations from the PRODESAL suggest that economic development and social development are included as main aims and goals in the program. However, from the view of my participants PRODESAL guidelines are not crystal clear about what quality of life means. While social development is included in the mission and vision of the program, in practice, extensionists and INDAP officers see that economic indicators receive more attention in how the program is implemented. I asked an INDAP officer how they perceive social and economic development in the program:

> ***Claudio:*** *The program (PRODESAL) from the view of the upper bureaucracies (i.e. ministry) is one of the worst evaluated programs… because it does not have economic results! (…) a couple of years ago we started to assess farmer's sales… to see what is happening because that is the program's main objective (…) however, many farmers have been in the program for 16 years or more, and they do not raise (i.e. from poverty or as economically)… likewise, there are a group of [farmer] beneficiaries they should not be in the program… I am sorry to say it, but that is true. (…) How do extensionists deal with 70 farmers not interested in growing (economically)? And what about those ten of the bunch who wish to overcome poverty?*
>
> *Yes, most farmers do only enough to survive a year-round cycle* ***– I commented.***
>
> ***Claudio:*** *That is why we encourage the extensionists to focus on the few who are willing to grow.*

Because of how INDAP officers like Claudio comment about where the attention goes, it suggests that the PRODESAL and the SAT share a similar economic development rationale. While on paper the social aspect of the service is considered, the implementation of the PRODESAL program likely focuses on economic development. Conversely, some extensionists (like Pedro and Simon below) from the team think that maximizing economic development often misaligns with considering the different farmers' interests and needs.

> ***Fieldnotes:*** *[During the last stage of fieldwork, Pedro (Extensionist) invited me to hang out with the team on a barbecue day trip to a solitary beach 40 km north from the municipality. It was quite informal, and we all had a really good time with local fishermen and a former PRODESAL farmer [Simon]. On our way back to the office, I started to talk with Simon about the fisherman's lifestyle and how it coincides with farmers' lifestyle.*
>
> *[The fishermen constructed their huts on the shoreline. They aren't owners of their huts, but they occupy (with the permission of the state) the space, as they collect sea products and live there. Recently, this beach has been affected by a new-rich housing project, and a couple of years ago, fishermen were asked to leave the beach – maybe because of some form of gentrification, or how they refer to as "social cleansing". However, the increase in value of the terrains and the housing investments wasn't enough for them to leave. One of them said: "Do you see that plot just in the frontline? Well… that will cost you about 150 million pesos (300,000 NZD), some people will work a lifetime to live the way I am living here – I am not moving anywhere."]*
>
> ***Simon (PRODESAL extensionist)****: Did you learn something when talking to the fishermen?… I mean for your research.*

To be honest, I just wanted to hang out … I wasn't in researcher mode… but those fishermen were inspiring in a sense… it was impressive that they see life quite differently from us … it is a way of living, as they said… Don't you think that farmers have some of the same ways of seeing life? – ***I replied and asked.***

Simon*: Yes. Some of the agroecological principles are sound with fishermen's view of life… because agroecology is that! It is a way of living… and not a set of technical solutions (…)*

In that regard, what is your opinion of the INDAP guidelines? ***– I asked***

Simon*: They are bad! Because the PRODESAL is aiming for productivity… but you can see that some farmers don't. Some of them have 14 sheep just for subsistence… maybe they can sell a few… but that's not the main reason…it may be because their sons come for Christmas so they can have a barbecue (…) Most of the time, farmers feel all-right managing small productive systems… but on the other hand, INDAP wants them to grow economically and escalate into higher productive systems (…)*

(…) Each year, the INDAP makes the productivity survey (through us) to check if farmers grew economically… This is what INDAP demands from farmers. But I wonder: what if a farmer is interested (and has the need) to grow spiritually instead of economically? … INDAP doesn't care about that (…)

(…) From my perspective, this job is about supporting farmers in what they want to do with their lives and their worldview.

I understand… but what happens when some farmers are interested in growing themselves economically or prefer to become entrepreneurs? ***– I asked***

Simon*: Well, that's an easy one… they should escalate into another program, like the SAT.*

Moreover, for Simon and other extensionists, there is a contradiction when quality of life and economic success are put together roughly. Although economic development and good life quality are recognized at the institutional formal level, some INDAP officers maintain that implementation is mostly centered on the economic. While farmers and extensionists believe in a service that can enhance their economies, they claim that the service should also assist with their immediate social needs, like housing and health.

[During my fieldwork, I had the chance to go on a field trip with farmers to the agro-ecological school in Hualqui town (Figure 19). There were about 30 people on the municipal bus, and upon our arrival, they were expecting us to have breakfast at a large table. Farmers started to talk, gossip, and have a good time. Some of them comment and ask others from the program]

Don Carlos: *Señora Veronica, you have been in the program for a long time (about 20 years). What do you feel about it? Do you think that the program has been helpful to you?*

Señora Veronica: *Yes, it has been really helpful (…) When we first arrived here (La Quebrada, about 50 km west of the Municipality), we did not have any facilities… we did not have any water or electricity (…) because of the PRODESAL we now have these facilities.*

Figure 19. Agroecological school at Hualqui

The PRODESAL program has five extensionists and three hundred farmer-beneficiaries, often expecting different economic and social achievements from the program, extensionists, and institutions. According to my field notes, farmers from this program often hold a smaller agricultural activity than the SAT. However, this is not because farmers are indifferent to the economic dimension. Most have a farming lifestyle based on subsistence and small sales. As a researcher, I perceived that farmers from the PRODESAL were more embedded in a rural identity and lifestyle than the SAT, committing to traditional values in agriculture and lifestyle. An experienced municipal officer aligned with my thinking when he said that the economic rationale in farmers might be different between the two programs:

> ***Dante:*** *In the rural world, farmers who ascend to the SAT assume a commitment to entrepreneurship. On the contrary, at the PRODESAL, there is a mix between self-consumption and entrepreneurship. Have you asked the farmers how much of their produce they take for self-consumption?*
>
> *Not really –* ***I responded***
>
> ***Dante****: It would be good to know that stats…*
>
> *Yes indeed…But what I really know is that there are at least three types of farmers, one group is fully for self-consumption, others are in between entrepreneurship and self-consumption, and finally, the ones who are just at the doorway of the SAT –* ***I reply***
>
> ***Dante:*** *(…) That's true. Likely, when the old farmers pass away, the PRODESAL will have to shift the focus… because of the new housing projects and land redistribution… the new farmers may no longer hold to the productivity rationale anymore (e.g. preferring a self-consumption rationale) (…) but regarding the productivity assessment, the state has the obligation to prove the impact of these programs, because it must demonstrate to citizens that public policy and resource allocation has a purpose.*

After talking to Dante, I started to see farmers in three categories: the subsistence farmer, the small business farmer, and the one between the two. Accordingly, this personal interpretation overly explains the different expectations from PRODESAL farmers. For instance, farmers like Don Raimundo, a farmer who is business-oriented, had a very critical eye on advisory services. In that sense, he perceived that extensionists and the program are in debt to him:

How do you think the INDAP is treating you, Don Raimundo – ***I asked***

Don Raimundo: *As a beneficiary of the program, you must comply with what the INDAP says.*

How is that? – ***I asked***

Don Raimundo: *For example, if they call you for a meeting, you must go, or if you assume any commitment, you must comply with them.*

[Then, Don Raimundo changed the topic. He explained to me how he feels the program should be.]

Don Raimundo: *(…) the técnico that I have now is worthless (…) because he doesn't do the job… For example, the técnico comes to visit me and advises me to become organic, chicken manure, and other lazy-jerk ideas… if I were to do that, my lettuces would not grow… and then, I cannot sell them.*

(…) However, I've had a técnico, she was marvelous… I started small with only 300 lettuces a year… and because of her, I jumped to 2,000… and now almost 20,000 per year!

That is quite a lot, Don Raimundo ***– I commented***

Don Raimundo: *Sure! I am one of the biggest from the PRODESAL*

Since you prefer technical advice, have you ever wondered about ascending to the SAT? ***– I asked***

> ***Don Raimundo:*** *Wow, that would be good. If the technical advisory services are better, that would be convenient (…). I may lose some of the benefits if I leave the PRODESAL, but I may have similar or even better opportunities than the PRODESAL.*

The case of Don Raimundo exemplifies a farmer whose business expectations have exceeded the expectations of the PRODESAL. However, many farmers I've interviewed don't necessarily aspire to run a business like Don Raimundo. While most farmers care about the economics, there are only a handful of PRODESAL farmers who showed me an interest in growing as a business. Moreover, the case of Don Raimundo shows that sometimes the program runs short in fulfilling an entrepreneur's expectation of the service, hence Dante's claim that the SAT does a better job in fulfilling this expectation.

There is every reason to believe that a preference for a subsistence lifestyle makes it difficult to have purely economic ambitions. Some farmers interviewed see entrepreneurship as conditional to their life circumstances. While there are farmers who prefer tradition and lifestyle by choice, some others are limited because of different conditions like social capital, health, or educational barriers. As an example, the know-how of information technologies can be a huge obstacle. Celestina (PRODESAL extensionist), identified some of these limitations abovementioned with non-formally educated farmers:

> **Celestina:** *You know, Samuel, yesterday a farmer confessed to me that she/he doesn't know how to read… I was surprised, but at the same time, I greatly appreciated the disclosure…. I was honored and showed him/her my appreciation.*

The different lifestyles and conditions are vital to understanding the reasons why misalignments occur between institutions (INDAP and the municipality) and when PRODESAL is put into practice. Pedro (team leader) has a firm opinion on economic productivity, which produces a contradiction between institutional guidelines and practice.

> *[I was hanging out with Pedro on our way to visit some farmers, looking to talk with some about the annual grant of 115,000 CPL (230 NZD). We stopped to see an elder farmer – he was probably around 80. Pedro asked the farmer about the grant, and he said that he had to give it all to his ten sheep through supplementary food. The farmer said that sheep are no longer sustainable. Here, Pedro saw a fundamental contradiction and commented to me.]*
>
> **Pedro:** *From the INDAP and up, we feel obligated to enhance productivity and talk technical to the farmer about the "lettuce and the aphids". However, the problem does not reside on the technical, but on the socio-economic – such as the old man we visit (…) I feel the contradiction of seeing that I should talk about the sheep as a técnico to enhance productivity, but if you see the numbers, the old man he needs to get rid of the sheep insofar – Even though he wants to continue with it. Then, the problem is not about the sheep but about the financial context the farmer is experiencing.*
>
> *(…) From the upper management, there is minimal understanding of the nuances of the territory we are working in. Everything you must do as an extensionist comes pre-digested from the top (prompted by the institution). Therefore, you (as an extensionist) build your yearly plan and schedule, and they often say that it is too little (in terms of technical knowledge). Then you feel like you are overdoing stuff… sort of inventing technical solutions… and when you start doing that, you realize that everything is fucked.*

> *So, from what I understand, you need to sound compelling on paper* ***– I asked***
>
> **Pedro:** *That's right! (…) But look… don't misinterpret me… I am not against productivity. For example, if the farmer has to buy coriander at the supermarket, that is totally wrong… she/he should be producing it instead of buying it. That is an example of when we should promote productivity.*

While farmers have different priorities and needs, a frequently praised benefit from the service is getting a grant to fund project investments. Receiving money for investments can be critical in terms of how extensionists and the program are perceived by farmers. In this territory (which can vary from other municipalities), farmers apply for funding every three to four years, with an upper limit of 1,000,000 CLP (2,000 NZD). Some farmers are in the program exclusively because of the possibility of getting funding investments, leaving agricultural advisory services as secondary. Therefore, from the view of some farmers, the técnico's ability to get the funding for them is a critical skill. Money, investments, and the seemingly arbitrary allocation of resources overall can create apprehension/resentment, especially if farmer neighbors get investments that they don't – some farmers think this is the fault of the extensionist.

> [Don Hector was my landlord during my two years of fieldwork; he was a former PRODESAL farmer]
>
> **Don Hector:** *The PRODESAL… I would like to become a beneficiary again. Right now, I feel that some farmers in the program shouldn't be there. I feel that they must give the opportunity to those who really need it. For example, there are many farmers who have been at the program for ages, and they are not giving the opportunity to others.*

> *(…) And another thing… Some farmers don't get project investments! while others do. Some farmers always get the prize… Do you know what I mean? And I think that comes with the arrangements they do with the técnico.*
>
> *You mean that there is something (i.e., money) in between –* ***I asked***
>
> ***Don Hector:*** *Bah… surely is… after all these years…you get to know some stuff. (…) Overall, I think the PRODESAL is helping farmers who need not… for example, I have some sheep but no money, so I should be a beneficiary, right?… But some others… they are millionaires! And nobody really checks/cares about their (financial) backgrounds.*

Farmers have different opinions about this. Some appear to have little expectations - especially those who are experienced and older, generally prefer to do farming as a lifestyle or for self-consumption:

> ***Fieldnotes****: [I am shocked by how much isolation is in here. As far as I knew this place, I had always associated it with holidays, surf, a laid-back vibe, and a cool city overall. When I started to hang out with the PRODESAL team, I realized that only 20 minutes away from town, people still live as they were 50 years ago – In the countryside, with no potable water, no electricity, and all wilderness.]*
>
> **Fieldnotes:** *[We went to see Don Chago to make him a productivity survey. Don Chago was expecting us, and he served us some sopaipillas and drinks upon our arrival. Although it was only noon, I did have a glass of white wine – such a sin. Of course, we did the survey, and while talking for about an hour and for a couple of drinks, Don Chago was delighted with our presence. We did not talk much about the program or productivity. However, we talked about everyday life. Surprisingly,*

> *just before saying farewell, Don Chago looked at me, saying, " Is such a good thing to have a talk, to talk about interesting things."]*

This is perhaps not a good example, but my impression of this talk was how simple talks and short visits can hugely impact farmers' perception of the service. Maybe this example became clearer later in my fieldwork experience. In the last stage of research, I had the chance to talk with Camila, an extensionist who is very special to me personally. Camila works as a PRODESAL extensionist at the municipality of Casablanca in central Chile. I interviewed her because I wanted to talk to someone outside of my territory. Nevertheless, I would rather add/mention that she was my former partner ten years ago, and over the years, we have developed a nice and disclosed friendship. In one of our informal talks about extension, philosophy, and education, she reported to me some comments from a farmer she visited.

> **Camila:** *(…) Sometimes you just go to the field, talk to farmers, do what you need to do in terms of the technical – and that's it. Recently, I visited a farmer woman who said to me, "The days that you come to visit me are my happiest days." Then I came to realize that you never know how much impact you have on people's lives (…)*

> *Yes. That's a good point, and it makes sense what the literature says about ´the technical is important but not enough.'… I reckon there is much more going on than the technical job you guys do –* ***I commented***

Concluding remarks

The PRODESAL is a free-of-charge extension service focused on small farmers and micro-producers. There are four main actors in the program: farmers, extensionists, and the two bureaucracies: i) the INDAP and ii) the municipality. The PRODESAL has more flexibility about how goals are viewed than the SAT. However, this approach also carries some misalignments around the goals and aims of the program, which are perceived differently by INDAP officers, extensionists, and farmers. One of the key findings shows farmers and extensionists are unsure whether the PRODESAL is to improve their quality of life or their economy. Some INDAP officers and extensionists feel that life quality and economic indicators overlap. Typically, this creates misalignments at the level of implementation, building tension over how actors navigate between the formal goals of the program and how upper management oversees implementation.

From my personal view, I identified three types of farmers according to their lifestyle and economic aspirations: the business-oriented, the subsistence farmer, and farmers who are in the middle between the two. Therefore, farmers can have different expectations about the program, whereas most extensionists engage with the ethical conviction to support farmers with their true interests. Besides, the extensionists interviewed/ studied hold different opinions about the purpose of the PRODESAL. Most of them believe that the technical is important, but this importance must be contextualized to each farmer's circumstances, interests, and life purposes.

The elements of the farmer-extensionist relationship: What is inside extension?

The first time I entered the municipal PRODESAL office, most of the extensionists were open to discussing their interactions and relationships with farmers. In my previous case with Gabriel, I had to ask about his relationships indirectly, trying to avoid pestering him with these questions too much. Contrary to Gabriel, most people at PRODESAL were

very keen to talk about their interpersonal working relationships. When I was introduced to Pedro (the team leader of the PRODESAL team), he had a firm opinion about it.

> *[I went to the municipal office to introduce myself to the PRODESAL office. I had mixed feelings/expectations about what I would encounter. Are they going to be receptive to my research? Will they accept hanging out with me? As soon as I entered Pedro's office, he was staring at his computer while listening to what I had to say. I briefly explain my interest in doing research about farmer-extensionist relationships. I notice him shifting his eyes to the conversation.]*
>
> ***Pedro:*** *From the perspective of the upper levels (e.g., INDAP, the ministry of agriculture), we are forced to think of extension as numbers only, but the truth is that there is humanness behind what we do. That is something that they (the upper bureaucratic levels) do not understand.*
>
> *(…) I think it is good you exploring/interested in these things because I feel I am not the only crazy man anymore… moreover, what is expected from us is to fill in the paper (recommendations), and that's it, whereas they don't want to us to get close to people*

Are relationships important?

From my previous case with Gabriel, the importance of relationships is drawn by professionalism, etiquette, respect, and trust. However, at the PRODESAL, participants were more open to discussing the nuances that were not seen in detail at the previous case. Relationships in this research were explored in two main ways: by i) witnessing how my participants behaved, and ii) what they reported about their relationships. The second one – the way people describe relationships – led me to view relationships as something mystique. A frequent commentary from my participants is that institutions and policies don't recognize human relationships as part of the extension process. There

is a non-tangible aspect around relationships, something that is hardly recognized through policy, bureaucracies, and regulations. Therefore, extensionists feel that he humanistic side of extension is felt as forgotten. Pedro identified this. I will continue my story from my first day at the PRODESAL office, just a few minutes after I met with Pedro:

> *[I left Pedro's office with a smile on my face, knowing that fieldwork was looking promising. As soon as I left the office, one of the other extensionists called me into his office to talk. His name was Roberto. Roberto listened to my conversation with Pedro, and while he was listening, he prepared an opinion on my research interests.]*
>
> ***Roberto:*** *What are you interested in… many have already explored it.*
>
> *Really? Can you tell me more? –* ***I asked***
>
> *[Roberto showed me a seminar webpage, but I couldn't realize what it was… and at the same time, I thought that, most importantly, he wanted to give me his opinion about it]*
>
> ***Roberto:*** *(…) I am an advocate of hard and cold facts – numbers and data.*
>
> *What do you mean? –* ***I asked***
>
> ***Roberto:*** *I am interested in farmers becoming productive. For example, a lady farmer… She won a project to build a glasshouse, but she became depressed, and now she could no longer continue with agricultural production – then the humane side of our job starts to make sense, doesn't it? However, when that happens, I call a psychologist to come to see her.*
>
> *(…) I try to avoid relationships insofar… for example, when I foresee an old woman farmer is about to cry, I kind of stop her and say, " Dear lady, if you want to talk to someone, there is a health department at the municipal office."*

Roberto's words are evidence that highlights how the interpersonal side of relationships can be neglected and ignored. However, I spent more than a year hanging around with him, and somehow, my perception of what he meant to say has changed over time. Ironically, we developed a relationship!

Roberto has a difficult personality for some (especially for the team); he even declares to be "the hated one of the PRODESAL" – a hard nut to crack. His personality is of someone pragmatic, respectful, and proficient. Roberto – like most extensionists in this research - shows that relationships are essentially unavoidable, and even for personalities like Roberto, they find it difficult to argue that the extensionist's job is a purely technical endeavor. On the last stage of our time together, Roberto repeated what he said on my first day at the office, but this time, with a more nuanced answer:

> ***Roberto:*** *(...) Mmm, Samuel... with relationships, I have my reservations. Because, well, our team is very much into getting closer to people (farmers). But this often distracts us from the job we need to do... For example, if an old woman starts to cry (during our visits – this is quite common), I will support her but at the same time immediately refer her to the municipal psychologist or social services because, you know, Samuel... we are not psychologists and we don't have the skills and competencies to help her professionally. We must remember that the PRODESAL program is for productivity, and we should comply with that first (...)*

My first impression of Roberto was that he was cold-hearted and impersonal. However, after several talks, I started to understand the healthy boundaries and commitments he had to his relationships with farmers. Again, the more I hung out with him, the clearer the boundaries of his speech became. Roberto often argued that the problem is that having close relationships with farmers is utilized by some to garnish poor performance as a técnico.

> ***Roberto:*** *(...) I think that the problem I see about the 'social' thing extensionists do is that they use relationships to justify bad technical performance. There is so*

> *much reliance on social stuff that we forget what we are here for, which is to enhance productivity and technical assistance.*

However, when Roberto speaks, his critical vision of extension and relationships can be contrasted with practice. Moreover, when he neglects relationships, he is likely referring to unhealthy boundaries. This is the experience we had with a farmer, Maria Margarita:

> ***[****November 14th, 2022, Roberto invited me to take some visits to the farmers. We started at 10 am, and after visiting several farmers, I was exhausted and starving. It was 4 pm, and I hadn't eaten anything in the whole day. Roberto somehow noticed my discomfort and commented to me.]*
>
> **Roberto:** *We are going to end our visit at a good place (…) We are getting some food as well.*
>
> *[Soon, we arrived at Maria's place. She received us kindly, but we all remained with minimal verbal communication. Suddenly, Roberto commented to her.*
>
> **Roberto**: *I am hungry! – We both are hungry.*
>
> *[I was surprised by Roberto's words. I thought it was impolite and awkward. However, Maria laughed at us and said]*
>
> **Maria:** *Ha ha ha… Roberto, you always appear when you are hungry… but you know you are at ease to tell me!… You should be more direct about what you want… So, what do you want to eat now?*
>
> *[In the middle of this conversation, we also checked the crop status, grafted tomatoes, and lettuces. Only afterwards did we move to the kitchen. Maria lit a fire to boil some water and cooked us some scrambled eggs (Figure 20)]*

Figure 20. (Left) Maria is boiling water in an old-fashioned way. I asked why she lit up a fire instead of boiling it with gas. "Wood is cheaper, and it is what we have," she said. (Right) Roberto and Maria are helping with our meal. We sat around the fire embers with a cup of mate (a tea made from yerba mate) and talked.

Fieldnotes: I was happy to eat, and the three of us started to share around the fire embers. At some point, Maria stood up from her seat to check something outside. This was the moment to prompt Roberto with a joke:

ha ha ha… the way you asked for food…That was quite a request! – ***I comment***

Roberto: *"ha ha ha…Sure it was!… but this is something I only do because we have trust."*

Surely you have it! ***– I commented***

Roberto: *True, but I don't have this – confianza – everywhere else.*

Don't you think that Maria has trust in you? ***– I asked***

[Before Roberto was about to reply, he looked quite serious and replied:]

Roberto: *Yes… Sometimes I feel like it is too much…*

Why do you think so? ***– I asked***

Roberto: *Because she always follows my recommendations… even if I have gone wrong with some… I remember I advised her about something that was wrong… but she continued trusting me*

From my view, Roberto… it looks like you have quite a close relationship with Maria." ***– I commented***

Roberto: *Yes… But the other guys (team members)… I think they did have the chance to do it… But they didn't develop this relationship as I did…*

Well, Roberto… I have to say that what we talked about earlier (in the car that day, but also in our previous conversations) doesn't match with what we are living here and now… as I told you… these relationships that are created between you (the team) and the farmers are demanding but also requires time and flexibility… this is what I think happens between you and the beneficiaries of the program… this is why guidelines and schedules are messed up… it is like you cannot separate

> *yourself from the demands of the job and what happens in human interaction* ***– I commented***
>
> **Roberto:** *Well, you are right… But as you notice, we also checked out the tomatoes and lettuces… it was not only a random, social visit.*

After all, Roberto showed me that he still has interpersonal relationships with some farmers. At this point, I understood what Roberto was trying to tell me in our previous talks. After our time together, he disclosed more, and I was able to read him more clearly in what he was trying to say. Moreover, I agree with Roberto when he warned me about using interpersonal relationships as an opportunity for clientelism and, therefore, camouflaging a lousy service.

As far as academic knowledge goes, the extension-farmer relationship is something unavoidable. Besides, I must confess that at the beginning, I was hunting for the PRODESAL relationships. Roberto taught me the nuance between professional relationships and interpersonal closeness. Interpersonal relationships are likely more personal, and while these can be considered not part of a professional service, in the end, these two ways tend to complement each other. What I am seeing between the lines is that the boundaries between working relationships and closeness are blurry. My experience at the PRODESAL and the experience of other researchers as well (Kuehne et al., 2019; Ros & Arqueros, 2018) indicate that the extension job is likely to become personal, and this research provides evidence confirming this.

In our conversations with Roberto, he was often suspicious about my idea of researching the relationships between farmers and extensionists. Maybe he was trying to highlight that professionalism cannot be superseded by malpractices associated with relationships, like favoritism and breach of trust. Although relationships can unfold into

gentle interpersonal interactions, they also can be painful and disappointing, and in this case, what always remains is the professional service.

A few days before I was to end my fieldwork, I had a last talk with Roberto. I was trying to convey that I was grateful and emotional about my leave. This also elicited a conversation about his relationships and their importance:

> [It was a rainy Friday night at the municipal office, and no one else was around but Roberto and I. Roberto was doing some paperwork, and we started to talk around the heater about life and my foreseeable leave from the extension team.]
>
> ***Roberto**: Hey, Samuel, you are always saying that you are leaving and you will miss us… but I think that you are getting too emotional, and I don't see the purpose of that. (…) And I am not sure, but are you aware of how you should close this research process?*
>
> *I don't think that my emotions have a purpose (for the research), and yes, I have discussed that with my supervisors. But for me personally, there is no other but to say thank you and to disclose the fact that this experience has been life-changing for me, and my way through your lives was not in vain (…)* ***– I commented***
>
> *(…) When I was a young scientist, I was very square-minded… and now I feel that this study is not like raising plants or lab rats to take samples to dispose of them later. This research has changed me because I have connected to my emotional side, and I feel more open to my relationships overall* ***– I commented***
>
> ***Roberto:** Oh really, beware of that! Have you recently checked your health status? Because people get sick when they soften.*
>
> *Haha, not really… maybe I am sick already… but my psychological state feels much better than before–* ***I reply***

> ***Roberto:*** *You know, Samuel… after all, there is something that I must agree with you… that we are working with people.*
>
> *How is that for you? –* ***I asked***
>
> ***Roberto:*** *Yeah, because I recognize there is an affective/caring component to what we have to do… likewise, it is important for us to give farmers advice and make them produce.*

The importance of listening in communication.

Extensionists from PRODESAL make fewer visits to each farmer than the SAT. Pedro says that each extensionist is assigned to 60-70 farmers. As part of the formal regulations of the program, Pedro mentioned, is that each farmer must be visited at least 3 times a year. However, the visit count is usually higher than that, and the circumstances when the extensionists and the farmer meet are likely to be more frequent. Typically, technical visits are interactive, and farmers are often happy to receive extensionists, expecting them with a cup of tea, a piece of cake, or an informal conversation. While the extensionists usually keep in touch with farmers via telephone or WhatsApp, the technical in-person visit is a key aspect of the farmer-extensionist relationship. These instances can be critical, as they prompt the development of the relationship itself, whether the good or the bad experiences.

> *[Celestina is the youngest extensionist of the team. She arrived while I was starting my fieldwork (only two or three months after), coming from another municipality. Hanging out with Celestina was a very fortunate opportunity to see how the extensionists start new relationships and how these develop through time. I remember that during the first months with her, I was looking forward to understanding how the first interactions worked. Besides, most of the farmers were very receptive to their new técnico; but for some others, the events happened to be unfortunate (…)*

[As part of Pedro's policy service, extensionists must help farmers with anti-parasitic medicine for cows and sheep. This is often called "la toma" – "the drench." Giving the drench is not easy because animals must be herded, lined up at the corridor end, and finally given the medicine. For me, this had become a routine part of my fieldwork since I could not count how many times we did this. As part of the technical procedure, if farmers don't have a proper corridor, we have to catch the sheep individually, which is almost a sport, an extra workload, and a stressful experience for the animals. Having a corridor is what you want. By having a corridor, cows and sheep get less stressed overall, which can be critical when they are gestating (between May and July). The stressful experience can cause animals to have a miscarriage, giving farmers reasons to be upset since the loss of a newborn lamb can be catastrophic to the farmer's annual revenue. For farmers, there is a strong suspicion around the use of the drench and miscarriages. Most of the time, farmers are hesitant about it, and if a miscarriage happens, it is easy to blame the extensionists and their compulsory need to do it. This is the situation Celestina had with a woman farmer and how it was resolved.]

Celestina: *Samuel, I need to talk to you – something happened with a farmer. A couple of days ago, Señora Wilma called me, telling me that one of the sheep had a miscarriage. She was blaming me for the deaths of two lambs. Just a few days before the drench was given to the cattle. I tried to cool things down, but she was agitated, so I decided to go to her place. It was awful because I could not make her understand that the reason for the miscarriage had nothing to do with the drenching. Her 30-year-old son was with her. Her son was also agitated, and according to what I could notice, he was deaf, so he started to make gestures and mimic the dead of the lambs. I was speechless. After explaining to her that, according to the veterinarian, she should not worry about the drench, she still remained very upset. I had no other choice but to say:*

Celestina: *I am really sorry that we started like this.*

> ***Señora Wilma:*** *Yes, we started with the wrong feet.*
>
> *[A couple of weeks later, I asked Celestina about the situation, and she said:]*
>
> ***Celestina:*** *Everything is going smoothly now – we are thick as thieves.*

I wasn't there to witness the situation, but I chose to believe in Celestina that everything went well. Facing challenging and uncomfortable situations is part of the extension job, and Celestina's story is only one example of many that extensionists may encounter. However, the way that Celestina handled it was, in my opinion, smart and socially sensitive. First, she recognized the feelings of the farmer, and second, she listened. According to her, she was even capable of understanding and communicating with Señora Wilma's deaf son. After the situation cooled down, Celestina continued to nourish the relationship via telephone and WhatsApp. Finally, the relationship started to go on track, and this event seems to be nothing but an anecdote. As Celestina did with Señora Wilma, communication can be critical and explicitly important for the participants. This is what Señora Karen told me about his técnico and the relationship she has with him:

> ***[****When I visited Don Hugo and Señora Karen, both were very talkative with me. They were especially receptive to my questions about the extensionist and their relationship with them. For me, this conversation was disclosed and honest – I asked them about the relationship with the técnicos directly****]***
>
> ***Señora Karen:*** *(…) Now the relationship with the técnico isn't very good… you know… it is like…hum… I cannot have the same conversation (for example) that I am having with you right now… it is like he (the técnico) is always defensive when we talk (…) but I also feel that when I talk with him, he is always demonstrating that 'he knows' and ultimately we could no longer talk… there is a humbleness and 'una cosa humana que falta' – 'a humanness that is missing' (…), for example,*

I feel that I can talk with you… because you have something that I feel like having in a conversation (…)

I see Señora Karen…, and what are those things that you feel are missing? ***– I asked***

Señora Karen: *Well… is like the other is putting themselves in our shoes… something like that… that they do listen to our version of the story… not only theirs (…) and finally what I do in this interaction (with the técnico) is that I let him do what he does… let him be (sighs of resignation)*

So… as I can see, you are "putting yourself in his shoes" but not the other way around - ***I said jokingly***

Señora Karen: *ha ha ha… yes! (…)*

The importance of trust

Most of the extensionists from the team report the importance of trust.

[Each extensionist is assigned to visit/attend between 60 to 70 farmers of the program. This year (2022), INDAP changed the policy and forced extensionists to rotate client portfolios (farmers), meaning that they had to start this new year with new farmers and new relationships. I talked to Sandro about this and what he thinks.]

Sandro: *(…) It is nonsense! because the work we do with farmers is trust-based (…) INDAP does this to us because it thinks that we have favoritism… and that is not true (…) likewise, they don't know either, they just make assumptions… this policy is based on wrong assumptions.*

To be honest, I understand why Sandro is disappointed about this policy. Trust partly develops with time and implies effort and commitment from both sides. When the extensionists must start all over again, building trust from scratch is hard work and can be emotionally draining. However, there is something mysterious about trust since it is still unclear why and how it rises and fades in relationships. This is also true for some of my participants, who find it difficult to describe. While farmers and extensionists highlight the importance of trust, most would rely on stories to tell me how trust operates in their relationships. Señora Karen gave me some clues when talking about one of the técnicos she had.

> ***Señora Karen:*** *ha ha ha… yes! (…) by chance… do you remember Jose Miguel ?*
>
> *No I don't… but I have heard many good references from him* ***– I reply***
>
> ***Señora Karen:*** *Well he was such a good técnico… because it was a little bit like you Samuel… we can have a conversation… and the attitude he had, made me feel I could tell him everything… we had the 'Confianza' – 'Trust' to talk about the problems and the needs we have (…) and of course with the técnico we have now that is not possible (…)*

The description of trust or confianza appears to be built on several expectations, but in the end, it comprises a nuanced decision of whether the relationship or the person is trustworthy. For instance, Señora Karen feels that trust is based on a clear but indescribable feeling. The perception of trust usually entails that my participants feel at ease and willing to connect and work together. Moreover, when I asked Pedro about trust he also struggles to describe why trust is so important, and what the experience is.

[Pedro invited me to the PRODESAL office for me to share my experience and my observation with the team. The purpose of this meeting was to coordinate new directions for the year and "hacer un mea culpa – to review our faults" of the previous seasons. The meeting was a tense experience; some of them had a strong argument about internal and personal issues that had happened before. In the end, Pedro said, "It was good to have that catharsis in the team to say what we need to say." After the team had this meeting, everyone felt more relaxed because of the talk. Next, I accompany Pedro and Sandro to see some farmers. This was my opportunity to ask the following of Pedro and Sandro:

> *"Guys… I wanted to ask and share with you something about my findings: During this period, you have been repeatedly commenting on the importance of trust in your relationships with farmers, but also, farmers do the same. Can you tell me what trust means to you? –* ***I asked***
>
> **Pedro: "***There is a difference between having 'confianza' and not having 'confianza' … for example now we are seeing that farmers are losing the "confianza en nosotros – trust in us". Farmers are looking at us as the guys who gave them nothing else than for "proyectos – investment funding projects" and there is one of the things that we have been losing with our farmers. After all, we are seen as the guys who go visit the farmers to get the paper signed and receive the paycheck once a month…The trust earned through the years, now we are losing it"*
>
> *"Why do you think this is happening?" –* ***I asked Pedro***
>
> **Pedro:** *"Well, some farmers attend you to sign the paper and that's all… They no longer "invite you in"…. farmers that welcome you into their home,*

to their living room, to have bread or a cup of tea… that indicates a different situation… that is a different kind relationship you have… for example:

"Once, I remember that it was "se caía lloviendo – raining cats and dogs". I was making my visits, and I needed to see a specific farmer during that day. When I arrived at his house, he saw me from his window at his front gate. I was expecting that he would invite me into his house: "Get in!" "you are getting wet." "Come here, have a tea to heat your body."… but… he just attended me from the inside, from his window, seeing me dripping water from my clothes. At that moment, I thought: It must be a minimum of humanity… it must be a minimum of consideration for the other man who is getting wet over your yard. In that moment, I felt something break inside; that relationship was over, trust was over."

"So what is happening now in that relationship?" – ***I asked Pedro***

Pedro: *Yeah, the relationship still goes on.. but trust is dead and "y ahora lo trato con el minimo que tiene que recibir cada weon nomas – "and now I treat him with the minimum required like any random jerk"*

"I see your point, Pedro. And I wonder if we can go a little further with this… Can you tell me what trust means to you in concrete terms? Can you describe what it is? I know it's difficult, I don't either know what it is… we both know that trust is important, but imagine we are going to tell INDAP about this for them to consider trust as an important thing in the future" – ***I asked him***

Pedro: *"I think that extensionists can no longer be a 'walking encyclopedia'… that should be over… You see… one of the greatest harms*

> *INDAP did to us was to change our 'client portfolio.' From night to morning, we had to start seeing a different group of farmers. That change made us start from scratch and leave behind all the trust earned along the way with them.*

Concluding remarks

Although extensionists and farmers report having good and not-so-good relationships, a constant in the equation is the continuity of work responsibilities. Relationships are important to my participants because they seem to help them navigate implementation. While extensionists do this by having sensibility, criteria, ethics, and personal convictions, for extensionists like Pedro, relationships are there to help this navigation too, proving that mutual interaction, communication, and care are influential in handling challenging scenarios. While there are extensionists like Roberto, who stand for professionalism by being more cautious and distant with farmers, he still believes that the human component plays a significant role.

Trust and communication are critical to enhance positive mutual interactions. Communication and listening are also essential because they demonstrate commitment and genuine care. For this reason, the ability to listen can make a huge difference in how the extensionist is perceived by the farmer. This is especially visible when challenging situations emerge and the possibility of resolving and moving forward is better with active listening. Something similar happens to trust. Despite that, Pedro, the farmers, and the other people who inquired could not describe precisely what trust means.

Trust is desirable and necessary for long-term, sustainable relationships. Trust leads relationships to be open and collaborative. Trustful relationships between farmers and extensionists are also an institutional standard for good working relationships. Further, trust also indicates the health status of the relationship, conveying that positive

emotions help people to feel safe, acting as a benchmark to safeguard reliability and the possibility of betrayal. Trust may also play a fundamental role in enhancing interpersonal and emotional aspects of the relationship.

Knowledge and relationships at the interface: Stories about knowledge extension team members and small farming

Technical advice or human support? Ethical issues, contradictions, farmers' demands, and the purpose of the PRODESAL program

Technical advice is a key aspect of most agricultural extension services worldwide. While advice is central, this section shows that advice can be understood differently depending on the program and the actors. For instance, the connotation of advice at the PRODESAL may be different from the SAT. Although the SAT and the PRODESAL operates in a similar fashion of recommendations signed in a manifold by both parties, extensionists from the PRODESAL usually give agricultural recommendations alongside a broad range of assistance, comprising technical information, market networks, and funding opportunities – Whereas, at the SAT, it gravitates more to technical agricultural advice alone. While INDAP officers suggest that the PRODESAL service focuses on technical knowledge, some of the extensionists think that their job is more likely to be a facilitatory role instead:

> ***Claudio:*** *Since the program's (PRODESAL) main objective is to enhance productivity, extensionists should focus on technical advice and not project investments—sometimes, this can create misunderstandings in farmers'*

> *expectations of the service… However, helping farmers find networks and funding sources is also considered advice.*

If we compare the SAT to the PRODESAL, specificity and depth of technical knowledge can be a strong difference. For some extensionists, knowledge at the PRODESAL program is a call to see advice more broadly. While Gabriel is required to be specific with advice, on the other hand, the PRODESAL extensionists must look at the bigger picture.

> *[The PRODESAL extension team invited me to share the training session at the Research Centre CEIAP. We went together in a municipal shuttle that picked us up at 8:00 to get there at 10:00 am. As soon as we arrived, I noticed many other PRODESAL extensionists from nearby communes – I counted at least 4 more teams/municipalities. Everything was well organized; our hosts prepared us with timed (15-minute) training stations on which we were all split into mixed groups of extensionists from different municipalities. The first station was about plant breeding, and everyone was delighted with the technology shown. The woman scientist received good compliments, and she replied to the extensionists:]*
>
> ***Raul Cornejo (extensionist)**: I found this science fascinating. As extensionists, we know bits from everything… but not much!*
>
> ***Woman scientist**: As scientists, we genuinely admire the capacity to integrate the broad scope of knowledge as you do… I believe that is much more challenging than what we do as researchers.*
>
> ***Raul Cornejo (extensionist):** In terms of knowledge, our job can be described as an ocean of understanding with one centimeter of depth (…)*

Despite the specificity may help to resolve technical issues more precisely, one of the challenges at the PRODESAL is to have a solid general understanding of most technical agricultural matters. However, extensionists at the PRODESAL can't afford to be specific because, in practice, they are required to see the big picture. One of the downsides of

this is that this can lead to concluding that the technical advice provided is insufficient. While some farmers are happy receiving general advice, some would like to receive more specificity than is provided. Even though finding technical solutions can be a relatively easy task for extensionists, extensionists must visit 70-80 farmers only a few times a year, and it becomes a challenge to fulfill each of the individual farmers' needs. Pedro also added that the social and economic circumstances are far more complex than giving a technical solution alone:

> **Fieldnotes**: *I accompanied Pedro to see farmers. This time, Pedro was informing farmers about the new technical annual plan cycle. After visiting various farmers, Pedro said to me: "Now we are going to see a special farmer, Don Cote, he is very kind and gentle. However, he is having some health problems… I want you to meet him.*
>
> *We arrived at Don Cote's place. Apparently, he had a condition on his legs, so he barely approached us to shake hands. Don Cote has chickens for egg production. He has been doing this for several years, but due to health problems, he wonders about the continuity of his farming lifestyle and his life purpose. This is the conversation we had:*
>
> ***Don Cote:*** *(…) So good that you visited me… I am having trouble feeding the livestock… the food is no good nowadays… chickens aren't laying eggs. I am having a crisis now because I wonder if I can continue doing this (…). I have 100 chickens now, but I used to have 300! Now I do not know what to do… I feel like I do not have any further aspirations.*
>
> *[Pedro explained/advised him of some funding opportunities available that he will apply for]*

> ***Don Cote:*** *Now you are giving me hope… because I can barely walk… I still can do my things (working with his livestock by myself), but I make it slowly, at my own pace… I'd already told my family that I am not raising chickens anymore (…). I was feeling abandoned… but the only thing that I am wholly concerned about is to continue to be active… otherwise, this shit is going to kill me.*
>
> ***Pedro:*** *(…) You are right, Don Cote… you still have the energy to go on… don't you dare to lie on the couch all day watching Netflix… that will intoxicate you.*
>
> ***Don Cote:*** *Yes!… that shit will kill me.*
>
> *[after we leave, I continued to talk with Pedro about this visit]*
>
> What do you think when farmers comment that the technical advice is not good? **– I asked**
>
> ***Pedro:*** *I get sad about it.. but if we were to say if that is true or not, I think that is true… Because we always have to believe what farmers are saying (…). From my perspective, the extensionists should have a personal seal/stamp, and the technical visit should be comprehensive/integral… Maybe that is why I always ask farmers about their health, as I did with Don Cote… I first asked about his health, and only then I ask about his business… and if you reflect upon it, it is to make him feel I am not here only to get him to sign the manifold.*

According to what the extensionists report, it is difficult to set a standard purpose for the technical visit. The PRODESAL guidelines, coupled with the heterogeneity of farmers, often create misalignments and confusion about what is the purpose of technical visits. For example, some farmers in the program feel that technical advice is nonessential, while for others it can be a life-changing experience. An experienced farmer reveals her view of technical advice as nonessential:

> ***Señora Esmeralda****: We have been living here for 37 years (…), and when the técnicos come to visit us… what are they going to teach us? because we have been cultivating for so long (…)*
>
> *Yes, I think you are, and I reckon the técnicos know this, right? –* ***I ask***
>
> ***Señora Esmeralda****: Yes yes! That is why when they come to visit us, they do what they have to do, bring me the paper, and all is good!*
>
> *And what do you think is the benefit of being in the program after all* ***– I asked***
>
> ***Señora Esmeralda****: Well, this program is not for you to surge (rise from poverty). Like you have said, 100,000 CLP bond a year (200 NZD), plus 1,000,000 CLP each every four years (2,000 NZD), with that, you can't do much… Maybe it will work for maintenance… but not to rise from poverty. However, it is good to be in the program because, after all, it is an aid for us.*

For farmers like Señora Esmeralda, advice is contested by the priorities, needs, and interests of farmers. Although the PRODESAL is formally structured to provide technical advice, many farmers would be only interested in having access to financial aid and project investments. As mentioned above, other farmers perceive technical advice as having changed their lives, and project investments are a secondary aspect of the service:

> *Do you think that the PRODESAL has helped you? –* ***I asked***
>
> **Señora Alicia:** *Oh yes! Quite a lot… one of the things that I really appreciate about the program was learning new things… which mostly I've learned through the técnicos… things that I did not know before, they have taught me… I try to attend every training session (…), and you know one thing? That glasshouse (she pointed towards her glasshouse) I won it through a project some time ago… and it very good for me… and well, it is going to last a few more years before it wears out, and*

> *I will probably be able to re-built it again… god only knows (…) but the knowledge I have; that knowledge of how to sow, plant a seedling, the plagues and that sort of stuff it is never going to leave me… that is forever, it doesn't wear out… and I owe it to the técnicos who taught me (….)*

As farmers perceive the advisory services differently, extensionists adapt strategies to different farmers. Roberto is perhaps the one who is always worried/ was thoughtful about this:

> ***Roberto**: Hey, Samuel. After all… what do you think that we extensionists mostly do for farmers?*
>
> *From my perspective, the program mostly works in a facilitatory role, favoring access to capital, market networks, and project investments –* ***I reply***
>
> ***Roberto**: Exactly! because the way I see it, sometimes it is difficult for us to contribute to farmers' technical knowledge… because most of the time, the farmers know far too much, and it is difficult for him/her to make innovations.*

Moreover, some extensionists add that the difference comes when technical advice is crafted with care and is suitable to the needs and demands of farmers:

> ***Simon**: (…) whereas, for the knowledge (recommendations), there are some things that you can intervene… for example, a farmer says to you " Don Sergio, I have been cultivating potatoes in the same plot for three years now and I have been applying the same amount of fertilizers but the yield is receding, what should I do?" (…) At that moment, you can talk about crop rotation and other techniques to resolve it.*

Concluding remarks

INDAP officers believe that the PRODESAL program should focus interventions on providing technical advice. However, most extensionists of the program find that advice should be comprehensive and contextual, not exclusively technical. Accordingly, most extensionists think that giving technical advice is conditional on the immediate needs of farmers. While some farmers will find that technical advice does not fulfill their expectations, for others, it can be a life-changing experience. For some farmers, technical advice provided may not be enough for their needs, because extensionists are required to commit to a broad scope of knowledge and agricultural techniques – "an ocean of knowledge with one centimeter of depth." Roberto provides evidence by saying that more often than not, farmers know far more than the extensionists, making it difficult to intervene with new understandings. Findings suggest that extensionists consider social and economic contexts before recommending any technical solution, trying to support farmer with their priorities at first.

Technical advice remains an essential part of the PRODESAL, but the service comprises more than technical agricultural knowledge alone. This is what Pedro expresses as a "comprehensive visit." My interpretation of his words is that advice should not focus on the lettuce alone. This is because extensionists often find that socio-economic issues cannot be dismissed. This research finds that extensionists at the PRODESAL often have a social sensitivity about the farmers' situation. This point can be critical since this attitude may be misinterpreted by INDAP officers as clientelism – again, to hide the lack of professionalism or technical skills. Pedro's testimony is perhaps the one whose dialogue reveals the internal dilemmas they experience from farmer to farmer.

> ***Pedro:*** *What happens, Samuel, is that you go visit a farmer to talk about the lettuce, and as soon as you arrive, you find that the farmer starts to cry… You cannot say, "Okay enough, shut up, stop the weeping, and now listen about the lettuces." Does it make sense?*

Pedro's view is a shared feeling with other extensionists from the team, which is the frustration of not being able to significantly improve the lives of farmers. For most extensionists, this is the bottom line of the PRODESAL program's purposes.

Knowledge co-construction: Moments of understanding, meaning, and learning

Co-construction of knowledge at the PRODESAL is less structured and more spontaneous than the SAT. Extensionists from the PRODESAL tell me that they often told me that they have horizontal relationships with farmers, which shape the dynamics in how they learn and construct meaning. Moreover, when Gabriel said that *"the PRODESAL is more horizontal than the SAT"* – I think he was right. While extensionists are compelled by institutions to make knowledge interventions, in practice, farmers and extensionists from the PRODESAL tend to be conversational about it, which favors responsiveness, but also the capacity to improvise upon spontaneous circumstances for co-learning. Therefore, this section aims to show the reader some examples and stories of how farmers and extensionists learn together.

Learning with the rural small farmers

As I mentioned earlier in this section, the PRODESAL has more horizontal relationships than the SAT because the interaction between farmers and extensionists tends to be more open and responsive to the circumstances. The following paragraphs address how extensionists perceive this capacity to adapt and respond:

> ***Celestina: "****I was surprised to see that here (at this municipality) you go to see the farmers with a pre-made sheet of technical information."*

> *And at Santa Rosa (another territory), it wasn't that way? –* ***I asked***
>
> ***Celestina:*** *No. Whenever you see a farmer at Santa Julia, you first must check their needs and then elaborate a recommendation accordingly (...). Nonetheless, I like this method because it can be faster and ensures that the theoretical content is delivered more homogeneously.*

After this conversation, I realized that some technical visits aim to deliver information packages. During these visits, part of the manifold recommendations extensionists give to farmers are pre-made by an institutional agenda. This resembles the idea of information packages. Depending on the kind of agricultural activity farmers have (e.g., livestock or vegetable production), extensionists follow a plan in information delivery. However, farmers often question these packages or are interested in knowing something different:

> **Celestina:** (...) *Señora Nerta and her husband text me almost every day on my phone (...)*
>
> *Really? And what do they ask you?* ***– I asked***
>
> **Celestina:** *(...) They want to know about everything... sometimes random stuff... let's say: "Celestina, I want to raise Deer... do you know what I need to do?" – that kind of thing!*
>
> *And what do you think about that?* ***– I asked***
>
> **Celestina:** *It is not completely fine... because I have 65 farmers to attend, and you cannot afford to attend them personalized... otherwise it would be*

> *unfair for the others (…) that is the reason that you follow a plan with topics… of course, you can set yourself aside from the plan (once in a while), but that is not the idea.*
>
> *(…) But anyway, we have a schedule to follow, and as soon as we leave señora Nerta, we must see other farmers as well.*
>
> *[That same day, Celestina and I visited Señora Nerta and stayed for an hour or so. As soon as we get in the car, we have this talk.]*
>
> *Finally, it wasn't so bad in terms of the schedule we had. We made it!* ***– I commented***
>
> ***Celestina:*** *Yes, it was cool… I was impressed by the many innovations they are doing…*
>
> *That's true! -* ***I replied***
>
> ***Celestina:*** *I have realized something about them… They may call me every day… but they are surprisingly committed to following whatever recommendations I give them.*

The PRODESAL has a structured plan to deliver information packages to farmers, but extensionists often disagree about the real value of these packages. This is what Pedro identifies as the "knowledge that comes predigested from up." A reason for extensionists to believe that is so much more value when the farmers are genuinely interested in learning, so extensionists can craft advice for them. Although some farmers are interested in the information packages, farmers would make the most of the technical visit when they bring topics to the conversation or directly ask the extensionists what

they want to know about. Or, in some cases, some farmers are taught how to search for information on the internet. Most farmers I interviewed don't have internet access; hence, it was very common for them to show up at the PRODESAL office looking for answers to technical solutions. The following story is about a farmer who came to the office asking for help:

> *[I was with Roberto in the car, philosophizing about extension, and we ended up talking about knowledge and learning. He recalled a situation we had a few days ago at the municipal office.]*
>
> ***Roberto:*** *(…) Do you remember what happened that day at the office (Figure 21) when Maria came to see us asking for help?... Oh! That was quite an example of what an extensionist should do. Maria came to our office because she wanted a técnico to go and vaccinate her sheep. Don Valentino (his técnico) was very busy, but he took the time to teach her step-by-step how to do it on her own (…). And that is the idea of our job! It is to generate capacities/skills in the farmers(…)*

Figure 21. Maria (left) and Valentino (right). Valentino explained to her how to vaccinate the sheep.

> ***Roberto:*** *(…) You know, Samuel, that is the way that our relationship should be with farmers. I feel they should not become dependent on us… to avoid a dependency relationship (…) and well, across a whole lot of institutions and programs we have (in Chile and the world), is this deep institutional fear (unconscious) of freeing people from the program itself (…)*
>
> *Yes, I think you have a point, Roberto… and this is happening at many levels in our lives"* ***– I commented.***
>
> **Roberto:** *Yes indeed… With our parents, with our teachers and at every level… that fear is present (…)*
> *However, I believe that is not all the fault of the extensionist… sometimes farmers are not very much interested in being free… what do you think?* **– I asked.**

> **Roberto:** *"That is because we (the extensionists) have induced/implanted those ideas in farmers… and that is where we are doing it wrong (…) and well, as Paulo Freire says: the best way to generate understanding is to legitimize farmers, validating their knowledge… Some of my farmers barely know how to read, and you yourself can imagine what happens with mathematical operations… But when you give farmers everyday examples like 'if you go buy some bread (Chile is one of the biggest consumers of bread in the world) and you pay 800 pesos and give 1,000 pesos, you receive back 200 – right?' … well the farmer is going to say… yes of course! And then you demonstrate to him that he already knows how to make simple math operations… for putting an example, but you get the point (…)*

Roberto was pointing out how he sees the ultimate purpose of the PRODESAL program. According to Roberto and other team members, learning comes when farmers become independent and empowered. This can be a vocational and ethical pursuit:

> **Roberto:** *(…) The one thing to be avoided is that the farmer should not feel he/she could not make it because he/she did not know (…) maybe he could not do it because it doesn't have any more land… but the reasons should not be because she/he did not know.*

As Roberto sustains, farmers in the program should have all the opportunities to learn according to their needs, businesses, and ventures. However, are the extensionists solely responsible? Farmers seem to have an active role in their learning journey. Extensionists experience some dilemmas about the information packages and the knowledge agendas they imply. Extensionists from this group recognize that farmers have plenty of knowledge, and they often reject the idea/assumption that farmers' understanding is technically poor. I had the chance to talk again with Señora Esmeralda

about knowledge and the role of the técnicos. This time, I was lucky because Pedro was also there (Figure 22).

Figure 22. Mercadito campesino.

> *[Each Saturday, some PRODESAL farmers gather at the square to sell their products. During my last fieldwork stage, I used to frequent the marketplace. It was a good chance to hang out with farmers and have small talk. "Mercadito campensino," or farmers' marketplace, was a farmer's initiative. However, it requires a membership and a municipal permit. Hence, only about 20 farmers can come and sell their products. Sometimes, the extensionist sneaks from the desk duties to visit the marketplace and talk to farmers. This time I was happily surprised to see Pedro talking to Señora Esmeralda – I approached them to join the talk.]*

> ***Señora Esmeralda:*** *(…) ha ha ha, we (farmers) are not to be taught how to plant or sow a seed… we already know how to do it.*
>
> *So what is the purpose of the técnico? –* ***I asked***
>
> ***Señora Esmeralda:*** *well yeah… at the same time it is also good that they give us a talk, you know.*
>
> *[Pedro was listening, and he added to the commentary]*
>
> ***Pedro:*** *(…) That is true. We are not going to teach anything… but the best we can do is to advise on specific things like planting the lettuce in this row or choosing this variety instead of the other.*

Señora Esmeralda boastfully affirms that she has plenty of agricultural knowledge. However, in the last bit of the talk, she sees the value of being open to listening/learning from what the extensionists have to say. This recalls what Roberto sees in farmers: "*(…) sometimes it is difficult because farmers already know"*, and *"farmers should not feel they could not do it because they did not know".* Farmers from the PRODESAL are often more familiar with tacit and experiential forms of knowledge, like sowing dates, varieties, soil management, and other knowledge coming from direct experience. Therefore, for extensionists, the knowledge interventions are generally small when compared to the experiences farmers gathered over so many years. While at times advice can be critical and change the lives of farmers, extensionists often deal with the dilemma of whether interventions are needed. While extensionists use their criteria and social sensibility, there is every reason to believe that knowledge and learning are hugely influenced by the social context, the program guidelines, but also by the conscious decisions that my participants make.

Knowledge exchange, dialogue, and negotiation

As extensionists and farmers have casual and informal conversations, knowledge and co-learning also happen through these informal and casual talks. A co-learning process that happens in a more adaptable and fluid way challenges the view of information delivery curricula. Random situations, insightful questions, or even what might appear as information transfer are the moments that elicit new understandings. The first story is about when Celestina made a technical visit to Don Carlos Campos. It was also the first time they met.

> *[We arrived at a small house in La Quebrada where Don Carlos and his family have lived for more than 50 years. Don Carlos has a condition in his legs, he is dependent on a walking stick and personal assistance to move around. Don Carlos is a former beekeeper and honey producer.]*
>
> **Celestina:** *How long have you been doing beekeeping, Don Carlos?*
>
> **Don Carlos:** *For more than 60 years (…) my grandfather and his grandfather started this… and I continued (…)*
>
> *[He received us in his living room. Celestina knew that Don Carlos would have some trouble with moving around, but anyway, Celestina asked if he (and us) would like to go and see the bees; Don Carlos said, "Yes, let's go and see them". With a slow pace, we reached the beehives (Figure 23). Once there, Celestina and I just listened to Don Carlos. We were amazed by Don Carlo's expertise, his comments about the bees' season, and some details that were nothing but wisdom. The outstanding experience of Don Carlos made me wonder about his current knowledge status:]*

Don Carlos, after all these years, do you think that you still learn new things? ***– I asked***

Don Carlos: *Yes! (...) You never end up learning new things (...). The more you live, the more you learn*.

Celestina: *Don Carlos... I congratulate you (...) for maintaining all these traditions alive*.

Don Carlos: *Yes! The traditions of my ancestors*

[We moved to his warehouse, loaded with wooden hives. The different colors of the hives caught the attention of Celestina]:

Celestina: *Don Carlos, why are the hives of different colors? Are they for some sort of identification?*

Don Carlos: *Haha...not quite... these are the bees' houses... and we paint them because bees recognize color... it is exactly as we humans do to identify our house... haha*.

[After the exhausting walk for Don Carlos, we came back to his living room to complete the technical visit, take his signature, and give him the sheet with the recommendations. When Celestina was writing the paper, she said to Don Carlos]

Celestina: *Don Carlos, I realized that you know much more than I (...), but you know that I am compelled to recommend anyway... I foresee that I could better help you with paperwork and other bureaucratic stuff than recommendations (...). And given said so, I ask you to take this recommendation with your best modesty.*

Figure 23. The walk to the hives

The case of Don Carlos displays multiple aspects of the co-learning and extension services, including interpersonal respect, disclosure, and expertise. As soon as we arrived at Don Carlos's place, Celestina knew the limitations of helping him through technical advice – it felt like there was not much to recommend. Still, Celestina gave him a recommendation regardless because it was her job to do so, and perhaps the recommendations helped Don Carlos – I do not know. However, since she disclosed to Don Carlos about her knowledge gap/weaknesses, she offered her help with bureaucracies and paperwork. Don Carlos's openness and validation from Celestina

showed mutual understanding and respect. Celestina and I mostly learned from him, as Don Carlos was also open to listening to what Celestina had to say. I remember we keenly listened to his life as a beekeeper, his health condition, and other rural stories. This situation also added evidence showing that extensionists also learn from farmers.

Most of the time, it is the extensionists who intervene with technical advice, and even if the farmer appears to be an expert, it doesn't mean extensionists cannot contribute. This is an important point because farmers' sense of expertise can also impair the possibility of extensionists contributing to mutual learning. The latter suggests that the more people think they know, the more difficult co-creation becomes. In my view, these moments can happen randomly and even in bizarre ways:

> *[I was with Celestina and went to see Don Jecho. Don Jecho is a very talkative farmer who is always sharing with us his innovative and technical farming skills. Celestina and I think of Don Jecho as an experienced farmer.]*
>
> > *It was quite amazing to see the number of things that this old man knows* ***– I commented.***
> >
> > ***Celestina:*** *I am amazed too (…) I could spend all the morning learning things with Don Jecho."*
>
> *[During this technical visit, Don Jecho showed us his various small farming projects. At the very end of our visit, he pointed to a box of potatoes intended to be sown in the following weeks. Unfortunately, they appear to be infested with a plague, however, Don Jecho seemed to be unworried. Celestina asked him about it.]*

Celestina: *I would strongly recommend you disinfect those potatoes before planting… and avoid mixing them with the others (potato seeds)… it might infect the others as well.*

Don Jecho: *Yeah… I got the solution to that problem… when you apply this product I got, plagues are destroyed… There is no better product than this (…)*

[Soon, Celestina and I started to wonder about Don Jecho's product – It seemed too good to be true. We looked into each other's eyes in silence as we were reading our minds about the suspicion of what was going on. Celestina asked.]

Celestina: *Can you please tell us what the name of the product is?*

*[*Don Jecho proudly rushed to his warehouse and showed the infamous MTD 600 or Methamidophos, a prohibited organophosphate insecticide (Figure 24)]

Celestina: *Dear Don Jecho, you must know that this insecticide is prohibited by law, but also is very dangerous to you (…)*

Don Jecho: *This is the best for bean's worms (…) differently from other products you apply… You apply it at once, and then you forget about the problem (…) I bought this a long time ago from the salesman… Since then, I have cared for this product like a holy bone.*

[Don Jecho probably did not consider the health dangers of utilizing this product. Of course, Don Jecho cares about his health, but his position on the cause-effect relationship is, for instance, a better opportunity to kill the pests. This becomes

clearer when, just after Celestina warns him about the dangers, he brings the MTD bottle to his nose and smells the rotten egg odor. I reacted immediately, saying:]

Hey Don Jecho! *Don't do that… that is poison! –* ***I exclaimed***

[Celestina, in her kindest way, reacted and continued to tell him about the dangers:

Celestina: *Please, Don Jecho… try not to use it.*

[Don Jecho smiled nervously, closed the bottle, and remained silent]

Figure 24. About the potatoes and MTD 600.

Commentaries about horizontality

While this research is not a bout power, human relationships are always bound to power dynamics. This section doesn't provide enough evidence or develop this idea in depth, but acknowledges and describes some instances where power dynamics play a role in the relationships and co-learning.

PRODESAL farmer-extensionist relationships often happen in dialogic and horizontal ways. My observations suggest that power is more balanced at the PRODESAL than at the SAT. This may be because the PRODESAL guidelines and policies are more open to interpretation and flexible when compared to the SAT. Moreover, the evidence shows that power depends on how actors navigate their relationships, communication, and interpersonal values. Yet, human agency doesn't ignore/neglect the structural forms of power. At the PRODESAL extensionists still hold a powerful position relative to farmers, likely because of the historical background and traditional styles of extension-farmer relationships. At the same time, power imbalances are influenced by privileges like education, urban lifestyle, and financial conditions. Power is always present, and despite my participants being mindful and respectful, during challenging situations, power imbalances were evident. For example, some farmers perceive extensionists as privileged people, which gives them the feeling of inferiority in the relationship.

> **Don Raimundo**: *(…) I see that the técnicos recommend me some stuff, but I don't see they are caring for me really… they have a steady monthly salary of 1 million pesos (2,000 NZD), so they are secure (…) but for me to get 1 million I have to work my ass off*.

What Don Raimundo told us shows some structural differences between farmers and extensionists. These structures are contingent on power, but also knowledge. As I mentioned earlier, the farmer-extensionist relationship at PRODESAL is often dialogic, which evens the structural power disparities. However, during critical situations, the hidden power imbalances become explicit.

[Señora Karen and her husband, Don Hugo, had a problem with an extensionist of the team some time ago. They told me that one day, the extensionist came to check the strawberries. After the extensionist walked the orchard, all of a sudden, Don Hugo started to have a dispute with the extensionist about the condition of the strawberry orchard. The extensionist sustained that the orchard was infested with mites, while Don Hugo and Señora Karen perceived it to be wrong. After a while, the argument started to heat the tempers until the extensionist exploded and said:

Extensionist: "I am the one who knows… you listen".

This exhausted Don Hugo and Señora Karen's patience. After a few days of thinking whether it was right to do it or not, Don Hugo reported the interaction to the INDAP office. Despite the discomforting situation, this episode ended up with good outcomes.

Señora Karen: *(…) In the end, going to INDAP was for the good… because the extensionist really changed his attitude towards us, he has been kind afterward (…)*

Don Hugo: *You know, boy… I am the kind of person who stands up and talks… I do not keep quiet. Other farmers recognize my attitude and told me, "I admire you because you talk."*

So why do you think both end up talking, and/or people choose not to talk? ***– I asked both***

> ***Señora Karen:*** *(…) Well, I have discussed this with my husband, and sometimes we are doubtful if we are doing well or if it will harm us… You know… we are afraid that they are going to get back at us.*

Concluding remarks

Even though the extensionist-farmer relationships at the PRODESAL tend to be horizontal, power imbalances still happen, and are drawn by power structures in the relationship. Some of the structures, like the higher social status of the extensionist, influence power in these dynamics. Regarding knowledge, horizontal relationships favor a cooperative environment for co-creation, but horizontality could be tensioned by the pre-digested knowledge packages coming from above. For farmers, these packages are often limited in fulfilling their needs. On top of that, extensionists recognize that farmers have plenty of technical knowledge, raising an internal dilemma for the extensionists on how and in what they should intervene. This is why a farmer's openness to learn can be critical for knowledge co-creation and co-learning.

Horizontal relationships can buffer power, and knowledge co-creation is affected by how participants maintain power in balance. Interpersonal elements like respect and trust can help to deal with structural forms of power, as these interpersonal values and commitments are eased by empathetic communication and care. Even if farmers can resent and feel inferior, in some cases, these can be talked through, or in a worst-case scenario, make a complaint to formal institutions to intervene. This is why the interpersonal aspects may play a role in buffering the power imbalances, as farmers have mechanisms to exert power too, such as opening a dispute at the INDAP office or refusing to accept advice.

Conclusions

This Chapter shows ethnographic descriptions and fieldnotes on how PRODESAL extensionists and farmers organize and build relationships, how they interact, and co-construct knowledge. Similar to the SAT program, relationships are structured by institutions and formal expectations, but the PRODESAL program displays a more forgiving and adaptable framework to the extension service. While policy and guidelines appear to be less rigid and more interpretative than the SAT, reducing constraints in the service, this also occasions actors to have ethical dilemmas, like choosing to prioritize social issues over economic development. Furthermore, extensionists from this group work with more farmers than the SAT, adding complexity and heterogeneity to this case study.

In this case study, extensionists and farmers appear to be more overt about interpersonal relationships than the SAT. However, this case study shows similar findings, revealing that trust, respect, and other emotional elements play a significant role in how relationships are organized and maintained. Technical advice is essential to the quality of service, but this is also perceived through the lens of interpersonal relationships, like how farmers trust their advisors. The SAT and the PRODESAL show that social skills, like the ability to communicate, dialogue, and negotiate, are necessary to provide a good quality of service perceived by farmers. Findings also reveal that knowledge and co-learning are a contested space, bound to power and interpersonal dynamics.

Together, the SAT and the PRODESAL demonstrate that relationships between farmers and extensionists are mediated by interpersonal relationships and not purely as a professional matter. Elements found in both cases reveal that whether formal expectations and structures shape the interaction, these are not fully conditional on the relationships they build together. The evidence clearly shows that trust, respect, and

other interpersonal aspects help to catalyze learning outcomes and achieve the different goals of the service.

Chapter 7 Findings and reflections

Introduction

This discussion is grounded in social science. Drawn by ethnographic fieldnotes and data shown in chapters 4 and 5, it discusses the key findings and reflections from these two chapters. The evidence presented in this research is interpretative, discussed through a narrative style, and analysis done from iterative essay writing and rewriting.

This chapter discusses two main topics. The first section explores how extensionists and farmers in this research organize and build their relationships. The first part is framed by high-level structural influences (i.e., policy, history, economic systems), and moves to the interpersonal levels of organization (e.g., trust and respect). The second topic discusses the nature of knowledge, co-learning, and co-construction in the context of the relationship between farmers and extensionists explored in this research. The knowledge co-construction section is divided into three main findings: i) knowledge is not a transmission, ii) moments of learning and understanding, and iii) knowledge is constantly contested. These three highlight the main themes in knowledge co-construction that emerge in this research, illustrating key aspects of how relationships and knowledge co-construction intersect.

While this chapter is divided into several topics and themes, these should be understood and read as a whole. Although the reader will find repetition across the chapters, this is intentional to highlight how key findings are interwoven. For example, elements like trust appear throughout all main sections, trying to bring the evidence holistically. For instance, it is hard to make clear separations since relationships are organized by policy and regulations, while these also influence the interpersonal level of

relationships. Additionally, knowledge co-construction as a social phenomenon involves the influence of social dynamics that are discussed in the previous sections.

For the reader's clarity, a summary diagram is provided (Figure 25) to understand how findings are organized and linked together through the main findings. This diagram shows key elements explaining how relationships are organized and knowledge is co-constructed. The left side of the diagram shows the key elements to which relationships are organized into structural and interpersonal foundations. The structural level shows how policy and regulations are drawn by structural forms of power. The second level shows a deeper layer of organization, founded in interpersonal dynamics like trust and respect, which follow into more complex elements that are nested within the former (duty of care, ethics, commitment, and affection). Knowledge co-construction is a multifaceted process affected by power, communication, and human relationships. This research indicates that knowledge is not information transfer, as it faces unpredictability, negotiation, and contestation. This process is ultimately mediated by the role of actors through dialogue, the interpersonal dynamics, and how power is allocated.

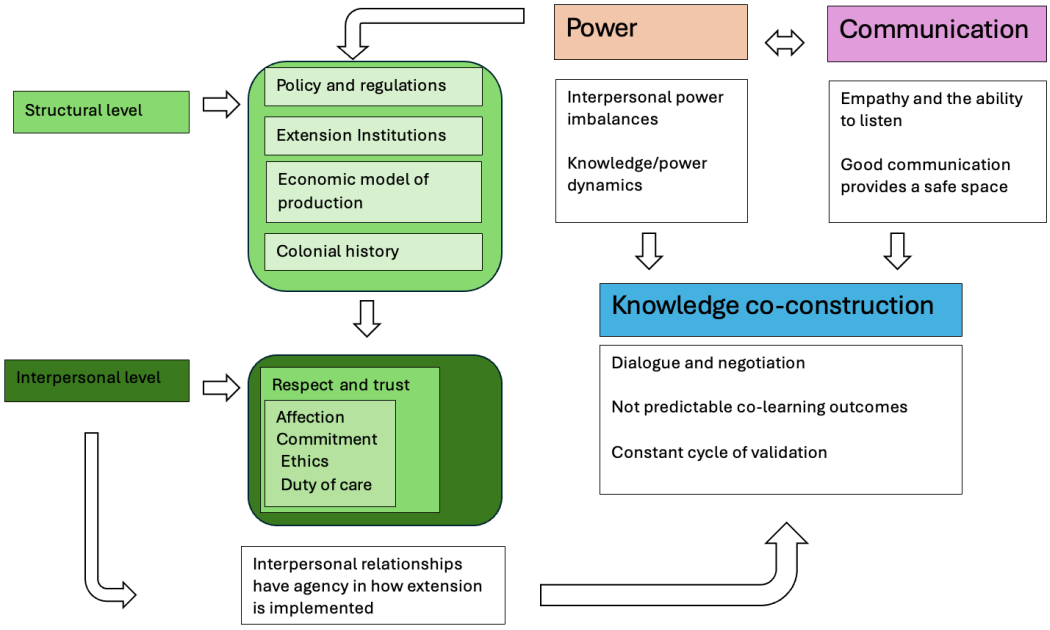

Figure 25.Diagram showing how findings are connected, influencing how these are discussed in this chapter.

How policy and regulations organize relationships.

Relationships between farmers and extensionists are mostly built through interpersonal dynamics, but individuals don't fully determine these. Policy and institutions shape how relationships are organized, providing structure and context for how these are organized and built. In extension research, actors are shown to be influenced by economic, political, and socio-spatial constraints (Cook et al., 2021, p. 4; Mahon et al., 2010, p. 108; Tsouvalis et al., 2000, p. 910; Winarto, 2011, p. 281). The two cases explored in this research are based on two different extension programs. While programs share common ground regulations, they also show differences, leading to different aims, beneficiaries,

extensionists, and nature of the social dynamics between the extensionist-farmer relationship.

Regulations and policies set the formal expectations of the service, and these influence the social roles stemming from formal expectations of the service. The extensionist role, taking Gabriel as an example, shapes a fundamental style to how the service is provided to farmers. According to him, the PRODESAL and the SAT have different styles of communication and working relationships:

> **Gabriel:** T*he PRODESAL is more horizontal than the SAT*.

For Gabriel, this difference is not only institutional but also about how his relationships with farmers are organized. Across the evidence in this study, this individual quote highlights that SAT extensionists have a less horizontal working relationships than the ones at the PRODESAL. While Gabriel (as the only example I've got from the SAT) appears be feel entitled to the vertical role (e.g., expert), he also perceives that at the PRODESAL (as seen in chapter 5), technical matters and the role of expertise are less important. This aligns well with an institutional officer who thinks that SAT extensionists (in other territories) are to be seen as "experts" in the field. These findings suggest that different extension programs (with their policies and regulations) encourage extensionists and farmers to connect to a particular social role, which in this example are vertical or horizontal roles in advisory services.

Institutions play a central role in influencing how power, relational structures, and expectations set the interaction between farmers and extensionists. Whereas previous research highlights the influence of policy and regulations and their influence in agricultural extension (Alemany & Sevilla-Guzmán, 2006; Blackstock et al., 2010; Diesel et al., 2008; Ingram, 2007), less attention has been paid to how this affects relational dynamics between farmers and extensionists. As a key example, some Latin American

researchers noted that Chilean neoliberal policies are shaping the relationships between farmers and extensionists (Alemany & Sevilla-Guzmán, 2006; Cárcamo, 2013; Otero & Selis, 2016). These scholars add that economic-centered policies led agricultural extension services to focus on productivity, dictating expectations of the service but also the interpersonal (Alemany, 2013). These scholars identify that interpersonal relationships are affected by the competitive aspect of capitalist forms of production and accumation of capital. This was suggested by Gabriel (SAT extensionist), in how he thinks rural capitalism affected individualistic attitudes in his relationships with farmers.

> *(…) Then, why is trust so important in these relationships? –* ***I asked***
>
> ***Gabriel:*** *(…) Well… I think this is a byproduct of individualism in rural capitalism …this is so much established in our culture, which made us individualists, and if you have the chance to shit on someone to enrich yourself… You are natural to do it.*

This quote reveals that for Gabriel, moral economies shape farmers' attitudes toward self-preservation and individualism, which probably gives Gabriel reasons to set his expectations of farmers. Gabriel reflects that the embedded economic system impinges trust-based reciprocity in exchange for the individualistic attitudes he encounters with farmers. While researchers think that neo-capitalist economies affect multiple aspects of the social dynamics in small rural societies (Cárcamo, 2013), Gabriel believes that trust safeguards him and his farmers from the relational downsides (like individualism) of a capitalist economic system.

Another expectation that emerges from structures is the traditional embodiment role of the extensionist as an expert. The epitome of expertise influence on co-learning in the farmer-extensionist relationship, shaping the power dynamics in favor of the

extensionists (Landini, 2016e; Machado et al., 2006; Mahon et al., 2010). Expert knowledge holds a privileged status, and the evidence in this research shows that extensionists and INDAP officers acknowledge the power dynamic that emerges from it. Although extensionists are aware of this imbalance, they tend to patronize farmers, their lifestyle, and their economic vulnerability. Extensionists like Pedro think that somes farmers see extensionists as educated people, holding a better position when compared to their – usually tacit – forms of knowledge.

"Farmers always see you one step above their knowledge".

In Pedro's view, this raises an ethical problem, bringing more responsibility on the side of extensionists to identify and manage power imbalances. Although some extensionists resist the idea of embodying or holding on to a powerful/privileged stance, this condition is structural. Even if some extensionists and farmers appear to be free from embodying these roles, participants can't fully escape from bigger political structures like colonial history. While this study shows that extensionists and farmers can maneuver the knowledge/power dynamics, some extensionists and farmers take a passive stance towards these structures, reinforcing the higher status of extensionists. As mentioned in the literature review, the traditional view of colonial history, knowledge, expertise, and scientific validity positions extensionists in a powerful structural position, and while in this research, these appear to be navigated by extensionists and farmers, this is a stance that favors perpetuating power imbalances in this social dynamic.

While focus on top-down approaches comes from the influence of the U.S. and the Land Grant Colleges (Otero & Selis, 2016), some scholars indicate that despite participative (e.g., horizontality and dialogic) policies being encouraged, Latin American extension programs, with their social dynamics, still hold to verticality in some extension services (Landini, 2016a). This suggests that verticality is enacted by policy or the actors.

However, it is unclear how much awareness and weight policy actors have in enforcing this verticality. As shown in chapters 4 and 5, participants tend to maneuver or interpret regulations, and some extensionists like Pedro feel that reflection is needed to fight against these constraints:

> **Pedro (PRODESAL extensionist):** "*From the INDAP and up, we feel obligated to (…) talk technical to the farmer about the 'lettuce and the aphids". However, the problem does not reside in the technical, but on the financial, such as the old man we visit (…). I feel the contradiction(…)*

Extensionists as Pedro, show that these contradictions shape decision-making by questioning how formal expectations are be adapted to the context. Although extension researchers suggest that farmers and extensionists maneuver, navigate, and interpret policies, economic systems, and values (Long & Liu, 2009; Ros & Arqueros, 2018), these researchers don't explore the limitations of agency in depth. Link to the quote above, extensionists who are able to reflect more deeply about their job, suggest the ability to navigate more fluidly, adapting better to rules and regulations. The ability to reflect appears to inform ethical decision-making, something that aligns well with similar research, showing that agricultural extension at implementation is heavily influenced by this (Gorman, 2019).

As stated in Chapter 3 – research context, the INDAP mission has a holistic approach acknowledging both social and economic aspects. However, participants from both extension programs tend to perceive that goals are more economically oriented. What's more, extensionists from the PRODESAL insist that policy is what constrains the economic to be prioritized over the social. Some INDAP officers conclude similarly:

> ***INDAP officer**: While I understand there are social needs, our programs are 100% centered on productivity.*

While extensionists experience contradictory policy mechanisms, exploring what the causes are is beyond the scope of this research. Regarding, some scholars suggest that the agro-industrial model and the entrepreneurship mindset (Berdegué & Marchant, 2002, pp. 1-2) , and economically centered policies are a legacy of the military dictatorship (Cárcamo, 2013).

As mentioned above, extensionists and farmers tend to navigate these policies, adapting to the circumstances that emerge. For example, extensionists feel tension about whether the social or the economic should be prioritized and when. A piece of clear evidence manifests when the extensionists from PRODESAL found it difficult to meet farmers' needs by providing technical advice alone. In many cases, PRODESAL extensionists feel suspicious if policy and regulations truly consider the social aspect of the service, as they often feel that the social aspect is overlooked. Moreover, some extensionists perceive that the focus on productivity and rural capitalization is a narrow approach to fulfilling rural farmers' needs.

> **Raul:** W*hat if a farmer is interested (and has the need) to grow spiritually instead of economically?*

Although spiritual growth is far beyond INDAP's concern, the previous commentary illustrates the frustration of some extensionists with how policy, to its extent, fails in understanding the different social needs. Whenever these situations occur, extensionists often adapt and try to adjust the formal expectations comprehensively. As some researchers mention, a portion of this problem stems from confusing social and economic development as synonyms (Lelis et al., 2012, pp. 69-70).

The SAT program has better alignment with a productivity and technical model of agricultural extension. As one of the sections in Chapter 5, farmers from the SAT often

expect Gabriel to give them technical advice, as in the case of the líquidos. This results in a solution-oriented service. In contrast, the PRODESAL program experiences more contradictions. PRODESAL extensionists must attend to 60 farmers who often show different priorities regarding the economic and agricultural productive practices. Among this diverse group of priorities, subsistence-oriented farmers pose a challenge for PRODESAL extensionists, who need to adapt the service, usually economic-centered, by putting more emphasis on social assistance and networking.

In some - although frequent - cases, some PRODESAL extensionists feel forced to dismiss the human aspect of the service by focusing on giving technical advice. This raises contradictions and ethical concerns, which are shown when, at times, extensionists show a sensitive approach rather than dwelling on technical advice alone.

> **Pedro:** *If the woman (farmer) starts to cry, I cannot tell her, 'ok is enough, shut up, and now listen about the lettuces*.

In such a context, extensionists from this research have the agency to question, maneuver, and overcome formal expectations by reflecting on the purpose of the program with social sensitivity. Although work formalities constrain the capacity of actors to navigate them, policy and regulations ensure that farmers and extensionists enjoy a minimum standard of rules and quality of service. The manifold is perhaps the clearest example of how both extension programs organize the technical visits. The manifold serves as a compliance tool, a document that contributes to setting formal expectations of service, safeguarding relationships in this research from malpractices and infringement.

While both programs have structural differences, a significant one identified in Chapter 2 is that SAT farmers must make a co-payment for the service. The Co- co-payments enact an upper level of expectation, as farmers expect rewards for the service they paid for. For

the case of the PRODESAL, the free-of-charge service has different connotations and individual expectations, but, in general, extensionists and farmers appear to be less concerned than participants from the SAT about it. This characteristic of the PRODESAL removes some of the pressure of paid service. For example, Gonzalo's experiences with his farmers, as he appears to focus on proving to farmers that his advice has a positive economic impact. This shapes the focus and intention of social interactions at both programs, since the SAT compliance and responsibilities are liable to a commercial exchange.

Moreover, frameworks and regulations help to prevent collapse when relationships are damaged or difficult. Policy, contracts, and regulations provide a framework that maintains the momentum and, therefore, safeguards the professional aspect of the service by setting regulations that can prevent bad, unfair, or insufficient service.

> ***Pedro:*** *the relationship still goes on.. (…) now I treat him with the minimum required by any random fellow.*

The experience of Pedro and other extensionists in this study suggests that even under uncomfortable, disappointing, and distressing relationships, service can still be provided, and besides the discomfort, regulations and policies help to prevent a breach in service quality. This is likely to operate in both programs.

In summary, the socio-economic context, policy, and regulations from each program play a central role in shaping formal expectations that guide the relationship between extensionists and farmers. While relationships are not entirely dictated by these structures, they provide a framework that organizes interactions. Broader social contexts, such as colonialism, position the extensionists in privilege in knowledge matters, influencing vertical styles of communication and relationships. While as mentioned in the literature review, these constraints shape relationships, but it also constrain actors' agency. This suggests that the ability of actors to navigate is

determined in more detail at the level of interpersonal relationships, to which elements like trust, reflection, and ethics play a key role in regulating power dynamics. Tools and mechanisms like the manifold or the co-payment operationalize expectations, enforcing compliance and minimum service standards. Moreover, formal expectations also shape interpersonal relationships (like in capitalist means of production on individualism) because these are the ground on which institutional regulations and their policies are implemented.

The importance of relationships in agricultural extension

Farmer and extensionists build their interaction as both professional and interpersonal. This study shows that farmers and extensionists rely on their interpersonal connections to adapt and navigate work responsibilities. Although not all participants develop deep personal working relationships, interpersonal involvement is unavoidable. Participants have different views about interpersonal relationships, and while most of them recognize that they are working with other human beings, the stories and situations they experience indicate that establishing a relationship is central to how actors collaborate, organize, adapt, and navigate their daily work. This section argues and illustrates the importance and nature of how farmers and extensionists interact, revealing it not simply as a technical service, but relationally grounded.

Extensionists of both programs recognize their relationships with farmers are a central aspect in the service they provide, even the ones who prefer a professional tone in them. However, some extensionists like Gabriel (SAT) and Roberto (PRODESAL) tend to see relationships more on the professional side, avoiding too much reliance on the interpersonal. Although they told me that they focus on providing high-quality technical advice, they made it explicit that the social component of their job and their relationships are important. This aligns well with empirical social researchers in

agricultural extension, framing it as an intensive social process where human interaction is at the core (Kuehne et al., 2019; Landini, 2010a; Ros & Arqueros, 2018).

This study argues that the technical aspect of agricultural extension can't stand alone because implementation is crafted by interpersonal relationships. Moreover, some extensionists believe that upper management from institutions gives little attention to the relationship they build with farmers. Also, they often claim that the technical aspects of the service are always over-prioritized by the upper management. These commentaries align with recent scholars saying that, alongside the technical, modern extension should recognize the richness and nuance that happens in human interactions (Cook et al., 2021).

In general, farmer-extensionist relationships in this research are built through repeated visits and mutual commitment. While technical visits (a specific number of visits) are planned and scheduled by the extension programs, the interpersonal aspect takes its own time to develop by building rapport and mutual commitment. Some agricultural extension researchers highlight very similar findings by mentioning that relationships are built through time and commitment (Höckert & Ljung, 2013, p. 294; Ingram, 2008, p. 5). Relationships in this research are strengthened by consistency and reliability that are demonstrated at both technical and interpersonal levels. Some of the process of reliability helps to build trustworthiness that comes directly from technical advice.

> ***Señora Ana (SAT farmer)****: (…) As time went by, we (other farmers as well) started to see that the recommendations of Gabriel worked, and soon we started to follow his advice".*

Last quote reveals that trust – and likely other aspects of the relationships – are built through a process of validation of advice. Other participants indicate that trust as an interpersonal aspect takes time to develop and reach a consistent stability in the

working relationship. Part of building this trust involves consistency and periodic interactions between extensionists and farmers, but also specifically to how extensionists demonstrate giving reliable advice.

Some agricultural extension researchers maintain that farmers and extensionists relate in rich and nuanced ways (Ingram, 2008, p. 6). Part of this social nature is visible when farmers value the interpersonal side of the relationship alongside with receiving valuable advice.

> **Señora Gloria (PRORDESAL farmer):** *he was more like a friend than a técnico (…) You know Samuel, that we could call him any time, and he would reply… and sometimes when he was around.. he come to pass by to say hello (…) Now we have another técnico, and is like starting from zero"*

Moreover, Señora Gloria expressed that the sense of continuity and informal gestures enforce reciprocity and demonstrations of care, aspects that make participants feel emotionally involved.

Another dimension that encourages extensionists to commit (as seen in Chapters 3 and 4) is feeling emotionally touched by the social realities they experience with farmers:

> ***Celestina****: (…) Last day a farmer confessed to me that she/he doesn't know how to read…. I felt honored [that they shared this with me] and showed him/her my appreciation*.

These feelings appear to stem from a strong social sensitivity, something that in this research usually leads extensionists to vocation and commitment to the job. Celestina in Chapter 4 showed that for her, being an extensionist conveys personal and political convictions. This aligns with Koutsouris (2008), who stated that impersonal/value-free

extension is never possible, showing that extensionists are heavily influenced by values, ethics, and duty of care (Ros & Arqueros, 2018). This finding aligns with multiple scholars mentioned in the literature review, affording agricultural extension a social nature, intertwined with emotions, convictions, and ethics (Arce & Long, 2002; Cook et al., 2021; Gorman, 2019; Ingram, 2008; Kuehne et al., 2019; Landini, 2016b).

While farmers and extensionists acknowledge their mutual relationships, an INDAP officer showed concern by believing that a professional distance should be maintained in these relationships.

Officer: *Why do extensionists want to have more trust than necessary?*

While the officer mostly refers to this because trust can be breached, many extensionists in this research have a more extreme view, disagreeing fully in most cases. This is because many of them believe that most of the time, the problem is usually the other way around: not having enough trust, hence their disapproval. While I can't know exactly what they convey by disagreeing with the officer's view, the general feeling of disguise stems from the importance of maintaining continuity in relationships, which involves trust building. This suggests that when trust is missing, it hinders the ability to establish better relationships with farmers, usually lowering its perceived quality.

Many extensionists in this research describe that building interpersonal relationships brings the capacity to respond more flexibly to their job. Moreover, Gabriel maintains that this flexibility alone is more valuable than technical accuracy. Extensionists like Pedro (PRODESAL) don't say this in terms of flexibility, but he highlights that having social skills like communication abilities, empathy, and social sensibility is what binds everything together in the relationships they have with farmers. This is not flexibility by itself, but it gives room to bring a service that recognizes that farmers and extensionists can navigate and respond more freely to the constraints. As for the case of Pedro, this

acknowledgement comes when they consider farmers as a whole and not the technical side alone.

> ***Pedro:*** *I first asked about his health, and only then did I ask about his business.*

From my research perspective, though indirectly, the capacity to improvise and adapt is frequently highlighted by extensionists from the PRODESAL. For PRODESAL extensionists, being responsive appears as a coping mechanism when unforeseen events change the course of their planning. Some of the stories and examples reveal that participants who are responsible and adaptable often enjoy a forgiving attitude, something that is especially important, for example, when extensionists must read social priorities/issues that need resolving.

Extension programs involve a plan, but the emerging issues of implementation require extensionists and farmers to adapt and be responsive to resolve them. Often, farmers will reach out to extensionists for help revolving around unexpected expenses, pest infestations, or mechanical repairs. At other times, farmers would also reach extensionists for personal issues. The evidence in chapters 5 and 6 shows very clearly that farmers experience technical challenges not detached from personal emotional experiences. While some extensionists believe that they lack the professional training (e.g., not like a social worker could help) to deal with personal issues, they did not ignore that different forms of social struggle and distress need attention. Although we remember Roberto in Chapter 5 when he said that the human side of extension starts to make sense when farmers have overwhelming personal issues that are disabling:

> **Roberto:** (Because of depression) *she could no longer continue with agricultural production – then the humane side of our job starts to make sense, doesn't it?*

These examples show that interpersonal aspects are intertwined with agricultural technical services, and Rodrigo seems to understand that these two are not separated.

Although most extensionist participants strive for compliance with INDAP, the municipality and DUCANT (in the case of the SAT), sometimes they experience ethical dilemmas. Extensionists have no formal responsibility to help farmers with their emotional struggles, but most extensionists believe that they cannot move forward (with the technical) at the expense of following the rules neat and tidy. In other words, having this attitude is not a deliberate dismissal of regulations, but an ethical conviction that seems too strong to ignore.

In summary, interpersonal relationships are important because they help resolve situations that require a comprehensive approach, considering both technical and interpersonal skills. Balancing priority between technical aspects and interpersonal is a constant worry for some extensionists from this study, as some of them would not interchange it or underestimate the interpersonal aspects for the technical. While the technical aspect is crucial for the service, the problem appears to emerge when achieving technical goals undermines the social needs or humanized service. This aligns well with scholars who maintain that extension cannot be purely rendered as a technical matter (Cook et al., 2021). This is the importance of human relationships in this research.

Agricultural extension as explored in this research comprises a deep relational component, shaped by trust, reliability, consistency, ethics, and emotions. Again, this view suggests that agricultural extension is not simply a technical matter. While at the institutional level, extensionist participants allege that there is little recognition of their emotional labor and human connections.

Layers of interaction: Relationships are like an onion

This section identifies and defines the key interpersonal elements that organize the extensionist-farmer relationships. In this research, these are framed in a layered order, similar to an onion (Figure 26). While all farmer-extensionist relationships are different, this section finds that relationships are organized and built through layers. The first layers are respect and trust. These two elements have a foundational connotation, acting as a baseline that helps to organize and safeguard basic interpersonal and professional formalities. The second and following layers are optional, showing emotional elements of the relationship. While the inner layers are not deemed essential to achieve service goals, elements like vocational drive, duty of care, ethics, commitment, and affection hugely shape the perceived quality of communication and co-learning, the service, and the interpersonal relationship.

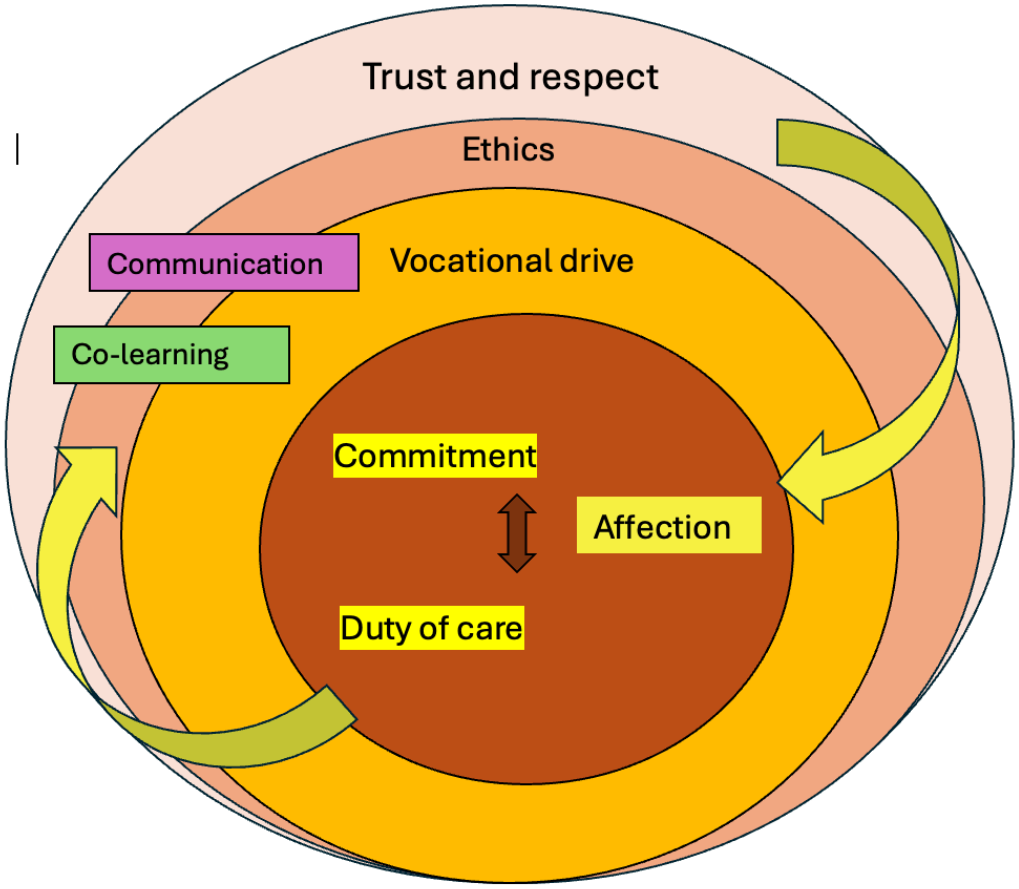

Figure 26. The onion model that illustrates how farmers and extensionists organize their relationships in this study. The outer layers are foundational, comprising trust and respect. The inner layers are optional in terms of an agricultural extension service, dwelling more on emotions and the interpersonal dynamic.

Trust and respect

The foundational layer of interaction is respect and trust, shaped by formalities, etiquette, and adherence to social norms. This includes politeness and customary communicational behavior, which participants perceive as a respectful interaction. A respectful interaction is a basic requirement to set a basic level of expectations and

work together in a positive environment. Some participants described it as impossible to have any successful interaction without meeting these basic norms:

> ***Celestina: (PRODESAL Extensionist):*** *If you visit farmers without respect, they will ignore you*.

Respect appears to act as an entry point for the relationships between extensionists and farmers to develop further. Evidence illustrates that when farmers and extensionists show respect consistently, it helps to set the basis for trust. Respect closely relates to meeting mutual work responsibilities, social norms, and fulfilling a good perception of the relationship.

While trust and respect share the same level of organization in the onion model (Figure 26), trust is often regarded by participants as more specific and particular in terms of meeting expectations. Although trust involves meeting professional and interpersonal aspects of the relationship, building interpersonal trust happens in more nuanced and less pragmatic ways, like when farmers invite extensionists for lunch or a cup of tea:

Celestina*: By the end, you build that kind of trust… especially when they invite you for a cup of tea or to sit in their living room. Those are important moments in the relationship."*

Informal gestures like the above appear to be good indicators of whether relationships develop interpersonal trust. Typically, this is also followed by the willingness to abide more in informal meetings to connect and know each other better, like when having tea. Farmers see that when extensionists engage in these informal gestures, coupled with consistent professional behavior, it is indicative of a trustworthy individual.

Although trust and respect are highlighted as different, separated elements in this section, the evidence shows they share mutual interrelatedness. According to research, mutual respect stems from horizontal communication and politeness (Leeuwis, 2013, p. 46; Terblanche, 2005; Vanclay & Lawrence, 1995, p. 21). However, this definition overlaps with the findings of this research, because these features also feed trust. In this research, the boundaries between trust and respect are difficult to separate and define because they influence each other.

Although in this research, respect is about meeting basic social expectations, at times, respect is shown as acts of consideration. For example, when some extensionists and farmers show understanding of their formal roles and responsibilities:

> **Don Silabario (PRODESAL farmer)**: (…) I let him do the talk because it is his job to give me a talk… You know.

Also, when extensionists acknowledge that farmers have plenty of agricultural knowledge:

> **Roberto**: *The best way to generate understanding is to legitimize farmers, validating their knowledge.*
> Or:
>
> **Pedro:** (…) We are not gonna teach farmers how to sow the beans, but there are some things you can do to help them.

The quotes above show multiple aspects of mutual acknowledgment, but also empathy and respect. While the literature has mentioned that extensionists recognize farmers and their knowledge (Thomas et al., 2020, p. 2) , it is unclear where this recognition stems from. Some extensionists in his research believe that taking farmers into account

is a responsive strategy to enable mutual understanding, but also enforcing an ethical stance towards communication. This study perceives that these values are drawn by a foundational layer of respect, which underpins fundamental ways of considerate behaviour. However, these boundaries are not definitive but interpretative.

Without respect, relationships are unlikely to have trust or develop into interpersonal close relationships. While Trust and respect are commonly highlighted together as important in the relationships between extensionists and farmers (Kuehne et al., 2019; Thomas et al., 2020; Tsouvalis et al., 2000), no explicit commentaries are made of these elements in order of importance. This evidence of this research suggests that respect is better linked to social norms, while trust relies more on making relationships meet minimum expectations in social interactions.

Respect draws the line for basic relational standards. As a researcher, I see respect standing above trust in that sense. Moreover, participants tend to highlight trust more explicitly when compared to respect. Maybe because respect is a more obvious element in relationships, participants tend to comment on trust more, highlighting its importance. Participants had commented on the importance of trust from the early stages of fieldwork. This is one of the first field notes I've recorded:

> ***Fieldnotes 20th January 2022:*** *I've been exploring Gabriel's relationships with farmers, but I don't often see complicated emotions in them. However, it is more than evident that they have 'confianza—trust', and hence, trust is a main assumption for a working relationship, either formal or informal.*

Also, during the last stages of fieldwork, I recorded my participants mentioning that trust is a commitment to interpersonal and professional expectations. Extensionists such as Celestina are one of the many examples:

> ***Celestina:*** *When working with farmers, trust relies on their compliance with what they committed to you*.

The last quote makes it clear that trust is also linked to formal expectations for Celestina. Typically, when participants were asked to describe interpersonal trust in their relationships, most of them weren't able to do it, and instead, they referred to examples related to work and compliance, as Celestina was telling me above. Some participants would express this nuance through interpersonal stories when trust was missing or strengthened. However, there is still a gap in how most participants described it. For example, Gabriel expressed how he feels about trust, but in a generalized way.

> ***Gabriel****: Many things happened between farmers and me, how am I supposed to trust now?*

The view of Gabriel suggests that trust works for him as a changing perception that grows, diminishes, or disappears in the relationship. While it is been widely understood that trust comes by meeting expectations in relationships (Kasperson et al., 1992), there is little evidence in the farmer-extensionist literature showing what these expectations convey and how they change over time. Additionally, ethnographic evidence in agricultural extension reveals that trust in the relationship is not something stable and predictable (Arce & Long, 2002). While some scholars utilize trust as a well-established element in the farmer-extensionist relationship (Ingram, 2008; Kuehne et al., 2019), results suggest that these concepts – though genuinely experienced – might be perceived differently elsewhere or in particular social contexts.

Although interpersonal trust is slippery and hardly described by participants, in this research is very clear how trust acts as a mechanism, shaping and influencing the way farmers and extensionists deal with power dynamics. While trust conveys a safe

environment to proceed in their work duties and responsibilities, trust can also act as a leverage point, like when farmers can exert some mechanisms of power over the extensionists. This is common when some issues cannot be resolved through a talk, farmers can complain to INDAP about the service. For some extensionists, this is seen as betraying this trust. Typically, agricultural extension researchers acknowledge trust that comes from the side of extensionists trusting farmers (Vanclay, 2004), and this example shows that trust dynamics can operate for both sides of the relationship. This suggests that when extensionists and farmers have mutual trust, it safeguards the possibility of betrayal.

Trust affects the quality of interpersonal connections and work responsibilities, but it is also deeply connected to how knowledge is co-constructed. Information and advice depend on how trustworthy advisors are, hugely shaped by the quality and consistency of agricultural advice (Ingram, 2008, p. 4; Kuehne & LLewellyn, 2017). While trust in this research is influenced by other dimensions related to emotions, safety, and disclosure, the literature highlights trust coming from reliable advisors and information (Ingram, 2008; Landini, 2016e; Vanclay, 2004, p. 220).

Technical advice is considered reliable only when it is linked to a trustworthy provider. While trust is reinforced when extensionists perform well, the interpersonal aspect of trust also shapes it. In other words, advice is not only ascertained based on technical outcomes but on the personalities and relationships that farmers have with their extensionists. While farmers are always evaluating extensionist performance, the level of trust can mediate this decision to some extent. We remember farmers like Don Sergio in Chapter 4 when they perceive that trust in Gabriel correlates with the quality of advice, but in the end, they consider Gabriel as a person. Señora Fresia in Chapter 5 expressed something similar when we were talking about having a safe space to talk about their needs.

Part of building trust involves participants feeling safe in the relationship. Evidence shows that informal gestures, as mentioned above, can enhance a safe environment for talking. In my experience, one of the reasons that some farmers and extensionists engage in informal communication is to build mutual trust. As a consequence, building a safe space is not a byproduct of reliable advice alone, something that was highlighted in the previous sections of this chapter. In this research, participants have difficulties in explaining and describing trust, as they only provide me with examples and situations. Hence, trust is difficult to ascertain, and trust – as a whole -is not something to be built through a technical manual.

While the SAT enjoys better alignment with trust that comes from the reliability of technical advice and professional competency, the evidence at the PRODESAL shows examples that suggest that interpersonal trust is equally important, also showing that both forms of trust are intertwined. The best example (at the PRODESAL) was when the portfolio farmers' client was changed by an INDAP policy, and extensionists felt angry and disappointed to start and build trust and relationships all over again:

> ***Sandro:*** *) It is nonsense! because the work we do with farmers is trust-based (…)*

The process of building trust is time-consuming but also emotionally laborious. Apart from demonstrating technical proficiency, the building of trust (professional and interpersonal) doesn't happen instantly, and takes many cups of tea, informal talks, and technical reliability to consolidate.

In sum, respect is the baseline for healthy working relationships and further development of trust. Respect is usually fulfilled by meeting basic expectations through etiquette and social norms. Trust is associated with meeting professional (through technical proficiency) and personal (safe space) expectations. While respect is one step

before trust in order of importance and level of organization, these two tend to overlap and shape each other, as shown in the diagram provided for this section (Figure 26). The evidence of this research shows that the mutual perception of trust potentially has different meanings elsewhere. Lastly, this raises practical questions: How do you regain trust if lost? How can we prevent or identify a “breach of trust”? If trust has been damaged and needs repair, this will likely happen by regaining respect at first. Once more, this is another reason to conclude that respect and trust, as interpersonal elements in relationships, overlap. The relationship between farmers and extensionists is a dynamic construction grounded by several expectations, to which trust and respect are just the outer layers.

The inner layers: Ethics, vocational drive, duty of care, commitment, and affection

This section explores deeper layers of the farmer-extensionist relationships, showing them as nuanced and subtle. These layers provide a deeper understanding of how relationships are built and organized. The previous section shows that trust and respect are foundational, and if trust or respect is missing, farmers and extensionists are unlikely to have a good working relationship. While the deeper layers explored in this section are more optional, they strengthen emotional bonds, fostering good working relationships. As shown in the diagram at the start of the main section (Figure 26), the deeper the layers, the higher the levels of interrelatedness, but also complexity.

Farmers and extensionists frequently comment on their relationships in emotional terms, ranging from warmth and wholesomeness to frustration and disgust. Despite participants’ report of experiencing a variety of emotions, according to my field notes, participants have a strong tendency to work towards positive, healthy, and enjoyable relationships:

> ***Fieldnotes**: After reviewing my notes, it is very likely that extensionists and farmers want to enjoy and abide in good-quality relationships. This is visible when farmers and extensionists devote time to sit together, have a meal or informal talks, cups of tea, or drinks.*

The desire for positive interactions overly explains why, sometimes, farmers and extensionists will indulge in informalities and emotional bonding. As mentioned in the previous section, informal gestures, such as invitations to sit down, have a meal, or talk, are some examples that show a willingness to connect more deeply into the working relationship. While participants strive for enjoyable working relationships, the evidence suggests that most will give space to indulge in informal activities, usually after working hours. Don Keno (PRODESAL farmer) is an example of how sharing time with a técnico developed into a friendship.

> ***Don Keno**: (...) he was my friend. I remember that day when he came to visit me, we got drunk together (...)*

Despite the story seeming unprofessional, participants often see these instances as meaningful – and probably also part of professional – interactions. The meaningfulness of these moments could start with a cup of tea and an informal talk (rarely alcohol). These invitations stem from genuine and reciprocal interest to connect, and less than merely acts of courtesy. Even among extensionists like Gabriel, who advocates for professional relationships, gestures and informalities have a positive and meaningful connotation:

> ***Gabriel:** (...) When I come to see farmers, they usually invite me to their houses to have a cup of tea or even lunch(..)*

While Gabriel alone (I suspect because of his personality) doesn't interpret these moments as emotional bonding opportunities, cups of tea, meals, and other invites that seem part of courtesy, help to develop deeper connections (emotional and professional) with his farmer clients. There is every reason to believe that time spent in extracurricular activities creates a chance to know each other, which ultimately builds trust and emotional connection.

For some extensionists, the absence of informal gestures indicates a warning on the quality and depth of their interaction. While the interpersonal dimension is not fully dictated by gestures, they seem to be a critical determinant in ascertaining the quality of the relationship. Pedro (PRODESAL extensionist) referred to this by saying that farmers aren't inviting them (extensionists from the team) to a cup of tea anymore, meaning that they are losing the mutual trust that was before.

> **Pedro:** *(...) They no longer "invite you in"(...)*

While some researchers suggest that informal situations occur as naturally in the agricultural extension social environment (Lelis et al., 2012, p. 70), in contrast, this study sees these instances as intentional rather than accidental. Once more, the example of Don Keno, based on the tone, words, and willingness, demonstrates efforts to share, connect, and build relationships more deeply. Also, according to other extensionists and quotes listed in Chapters 4 and 5, informal moments aren't fully unrelated to the professional side of relationships. Another way of looking at this comes from scholars who suggest that farmers and extensionists likely interact with a strong personal involvement (Landini, 2020, p. 13). This means that the boundaries between the interpersonal and professional are blurry.

This research identified the following layer after respect and trust as ethics and vocational drive (Figure 26). Extensionists from this research appear to have a strong

vocation for their job, which often links to a duty of care and the witnessing of growth and achievement in farmers. Part of the satisfaction of the job stems from true vocation:

> **Gabriel (SAT extensionist):** *(…)It is satisfying to see farmers grow since you accompany them through the process*

In the cases studied in this research, duty of care stems from vocation, but also links to multiple other dimensions like respect, ethics, commitment, and affection. While the onion model suggests they are separate, in practice, they hold interconnectedness, as discussed for trust and respect. Although participants navigate them differently, the bottom line is how interpersonal relationships are built from case to case, but also to what extent these abide in the positive and healthy elements this section highlights. A good example of interconnectedness was when Celestina had to tell off a farmer for using a forbidden product, which she handled with care and respect.

> *[*Don Jecho rushed to his warehouse and showed the infamous MTD 600 or Methamidophos, a prohibited organophosphate insecticide]
>
> **Celestina (PRODESAL extensionist)**: *Dear Don Jecho, you must know that this insecticide is prohibited by law, but also is very dangerous to you (…)*

Even in situations where the farmer could be involved in danger or illegal activities, extensionists like Celestina showed care and understanding by gently telling the farmer what to do. This example also highlights that Celestina has a reflective attitude when communicating something that may compromise power imbalances in the relationship. Moreover, this also shows a possible mechanism based on ethics, explaining what drives extensionists to deal with power and show consideration towards the farmer. Some research indicates that the extensionists' profile aligns with the values and commitments of social workers (Terziev et al., 2017). These researchers align well with these findings, as

duty of care, ethics, and reflection are frequently mentioned in the literature as part of the extensionist's profile (Gorman, 2019; Landini, 2016b; Machado et al., 2006; Otero & Selis, 2019).

Ethics, as highlighted on some occasions, likely happens when extensionists underline that extension programs must improve farmers' quality of life, changing the priority towards fulfilling farmers' needs.

> ***Sandro**: (...) From my perspective, this job is about supporting farmers in what they want to do with their lives and their worldview.*

The latter also links that it is been previously discussed in this chapter, when extensionists perceive that policy and regulations do not help to meet what farmers are expecting from the program. Also mentioned earlier in this chapter, the ethical dimension plays a significant role in informing decision-making when implementation and policy misalign. Extensionists from both cases of study frequently mention that extensionists should strive to put farmers' needs as a priority. In such cases, a reflective extensionist feels compelled to adapt guidelines that are limited to fulfill farmers' needs.

According to my fieldwork observations, if farmers perceive the extensionists focuses only on technical alone, some farmers would think extensionists are coldhearted, not caring, and eventually distrust them. While this finding mostly relates to the PRODESAL (likely because of the diversity of expectations), most extensionists in this research try to demonstrate that they display genuine care and commitment to farmers, and also have social sensibility. As a common statement, they often say to me:

> (this job) "It's about farmers."

Farmers and extensionists from this study experience negative emotional states during their job and their relationships. Participants experience frustration, despair, and disappointment in their relationships, which resonate with similar findings in agricultural extension ethnographic research (Arce & Long, 2002). Although farmers and extensionists work towards mutual care and commitment, sometimes the circumstances shape the events in a different direction. Gabriel experienced this with Don Ramon:

> **Gabriel:** *Do you remember Don Ramon, that he played badly on me (…)*

I remember that Gabriel felt frustration and betrayal not only because he felt wrongly accused, but also because he genuinely cared about Don Ramon. Moreover, this conversation suggests that sometimes extensionists commit to a very personal extent. While extensionists like Gabriel describe having this attitude as care, some farmers would perceive this attitude as commitment. For some farmers like Don Segundo, extensionists must demonstrate they care (and commit) through their actions.

> **Don Raimundo**: *(…) I see that the técnicos recommend me some stuff, but I don't see they are caring for me really (…)*

As Don Raimundo suggests and extends in more detail in Chapter 6, care is evident when farmers see that extensionists make substantial efforts to help farmers, but also in achieving their goals. Moreover, this indicates that for farmers, care (and therefore commitment) is something that needs to be demonstrated by results and not only through words. These findings reveal that even though extensionists feel they care about farmers, sometimes this genuineness doesn't come as evident when material outcomes show different results. This is accurately represented in related ethnographic research, where extensionists report genuine care, but farmers have a different perception of how the extensionists experience care and the feelings that this conveys (Arce & Long, 2002).

The last paragraph opens a broader reflection about how these elements are interconnected and how the emotional dimension shapes their implementation. Although emotions are an unresearched topic in extension (Long, 2015, p. 95) , some researchers highlight that emotional experiences between farmers and extensionists shape perceptions, values, and outcomes of the service (Arce & Long, 1987; Landini, 2020, p. 13; Ros & Arqueros, 2018). This research suggests that even though feelings and emotions appear as genuine, unless these feelings are transmitted or demonstrated through practice, they tend to be misinterpreted or misunderstood.

Extension literature increasingly mentions that friendship, commitment, and care are elements that are beneficial to the relationship between extensionists and farmers (Höckert & Ljung, 2013, p. 301; Landini, 2010a, p. 19; Ros & Arqueros, 2018, p. 19). Although the literature indicates in general terms that positive interpersonal traits lead to healthy interactions, the implications of these elements in the extensionist-farmer relationships haven't been explored in the literature in detail. Also, this study provides evidence from extensionists and farmers suggesting that emotional responsiveness feeds social sensitivity. For extensionists like Camila, having this emotional dimension is what makes work satisfying:

> ***Camila:*** *This job gives you a different kind of satisfaction (...), and this satisfaction comes from the emotional bonds you make with farmers*.

Camila suggests that this satisfaction is also the bottom line for a vocation that is significantly social. This suggests that for some extensionists and farmers, the interpersonal dimension is not an extra but an expression of how vocation and the subsequent elements inspire wholesomeness in their interactions. In my own words, this is approaching farmers as "technically assisted but with genuine care". While vocation, duty of care, and affection can never be prescribed to extensionists as part of

formal responsibilities, this study and other researchers show how important it is for the extensionist's vocational profile (Landini, 2010a; Ros & Arqueros, 2018, p. 19). While social skills are important for extensionists, (Leeuwis, 2000, p. 83) the evidence of this research shows that duty of care, commitment, and affection (while not necessarily understood as skills) are influential elements that shape the working relationship they have with farmers.

This section is a bit more chaotic than the previous one because it involves the interconnectedness of the elements discussed. Based on the understanding of this section, these elements connect and operate in a virtuous cycle that encourages deeper connections and commitment to the interpersonal but also professional side of relationships. Starting from the foundations of trust and respect, the deeper layers of interaction could be summarized in a small diagram that shows how these are connected but also organized (Figure 26). Under this view, the cycle starts with ethics, which inform vocation, care, and further commitment on the side of extensionists. Farmers would experience care as a form of commitment, which also comes from previously building on trust and respect. These elements together enhance emotional bonding and escalation into friendships and affection.

Communication but listening: some cues about problem-solving.

This research shows that farmers and extensionists resolve conflicts and misalignments by abiding in empathetic communication. This is unsurprising from a scholarly perspective. Influential scholars from extension research maintain that communication is a benchmark for conflict resolution (Leeuwis, 2013). From a knowledge interface perspective, all struggles, misalignment, and disagreement are bound to how people exchange different ideas and worldviews (Long, 1989, 2003, 2015; Long & Liu, 2009).

Although communication is not necessarily verbal, resolving struggles and uncomfortable situations requires social skills, including the ability to communicate effectively. More important than having a problem-solving technical conversation, farmers and extensionists value sharing ideas in empathetic and kind ways, making the ability to listen a standard in how they resolve technical issues and interpersonal struggles. According to this research, having a safe space to talk is an essential aspect of problem solving, a process that is fed by trust, active listening, disclosure, and enhanced by power management and dialogue. This can be summarized in the following diagram (Figure 27).

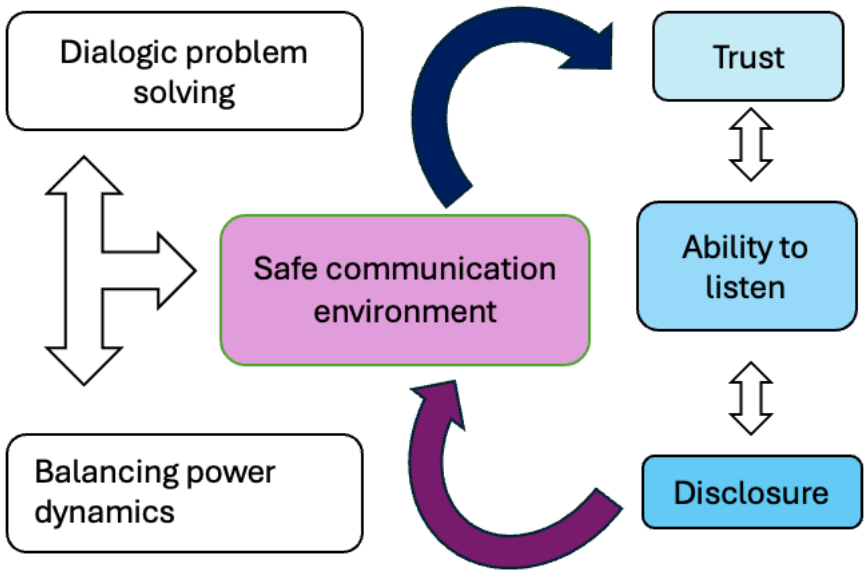

Figure 27. This study highlights that good communication serves as a safe space to talk, linked to the ability to listen, trust, and disclose. Also, effective communication helps to resolve problems by balancing power dynamics and dialogue by abiding in a safe communicational environment.

Some scholars see communication in agricultural extension as a space to share and disclose information (Gorman, 2019, p. 7; Kuehne et al., 2019, p. 20; Tsouvalis et al.,

2000, p. 917). However, participants don't experience disclosure indifferently, and especially farmers, have strong reservations about whether they feel safe enough to do so. Some farmers prefer to keep silent, as verbal communication sometimes involves different forms of risk, like emotional discomfort, confrontation, or becoming overly vulnerable.

> ***Señora Karen:*** *(…) you know… we are afraid that they are going to take it back on us (if we talk)"*

The quote above indicates that not all farmers feel safe to talk because of the fear of retaliation. For some farmers, feeling unsafe to talk comes the possibility of backlash from institutions or extensionists, showcasing the influence of power imbalances in the relationship. The evidence suggests that farmers like Señora Karen sense whether the communicational environment is safe to enable disclosure, without the fear of judgment or retaliation.

The possibility of disclosure goes hand in hand with power dynamics. Interpersonal relationships help to navigate and manage how participants deal with power dynamics, and one way of putting this into practice is through communication styles. While the literature often links power dynamics to vertical or horizontal forms of communication (Landini, 2016c, p. 50; Mahon et al., 2010). In this research, trust appears to have a key influence on how this is navigated. Related studies say that trust is essential to catalyze a safe space to talk (Agrawal, 1995, p. 433). This also resembles seminal and more recent authors, saying that agricultural extension should be dialogic and horizontal, emphasizing the active role of actors in communication (Freire, 1998; Mahon et al., 2010; Rist & Dahdouh-Guebas, 2006). This suggests that favoring a safe space to talk is not fully determined by power structures (like institutions or colonial history), as the

examples reveal that farmers and extensionists navigate through this because of the relationships they build together.

While farmers and extensionists frequently indulge in informal miscellaneous talks, a great portion of the time, they will engage in technical agricultural conversations. Yet even technical conversations can be pragmatic and educational, sometimes they can become a very personal and sensitive matter. These situations often happen when farmers face financial issues related to their agricultural activity. We remember the conversation Gabriel (SAT extensionist) had with Don Marcos in chapter 5:

> ***Fieldnotes****: (…) After a while, Don Marcos communicated his frustration. Within minutes of tense talks, they both started to find soothing points in their arguments. Suddenly, Don Marcos said:*
>
> *"ok, give me that paper."*

As Don Marcos shows, a technical agricultural problem could be something very personal. While the problem of Don Marcos remained technical on the surface, he communicated his frustration to Gabriel, conveying more than a financial disaster. Moreover, Don Marcos and Gabriel tried to move forward not by providing the usual technical solutions, but on the capacity to and hearing each other's arguments. This situation showcases that empathetic listening and consideration do a better job in moving forward than a technical solution alone can provide. While in agricultural extension, technical answers matter, on a deeper level, it is not only about exchanging technical knowledge but showing empathy and a welcoming attitude in which problems are resolved (Brugnach, 2017; Gorman, 2019).

My ethnographic field notes suggest that extensionists and farmers think that, more importantly, is enabling dialogue and discourse. The example above indicated that when farmers and extensionists must deal with a difficult conversation, it is unlikely beneficial to navigate this situation by providing a pragmatic and solution-oriented speech. As Gorman writes:

> "A light bulb moment for most was the realization that it was okay not to always have the right answer to a technical question and that it was more important to build a good working relationship with the client so that s/he trusted you to find out the information that was needed."
>
> (Gorman, 2019, p. 7)

The last quote from Gorman raises the question: If extension is about supporting farmers with technical agricultural solutions to farmers, why sometimes a technical answer is insufficient? While several social scholars recommend a dialogic conversational style, this research shows that a dialogue comprises more than a technical conversation that looks horizontal. What I mean is that a dialogue must not be purely a horizontal talk, but include emotional elements abovementioned, like empathy and consideration. More closely related to my argument, some scholars add that a genuine dialogue is a strategy to hold back imbalanced power dynamics (Agrawal, 1995, p. 433; Mahon et al., 2010). Some other authors put it as "accepting the possibility that the other may be right" (Rist & Dahdouh-Guebas, 2006, p. 473). In the words of some farmers, a technical conversation usually comes as secondary because they appreciate more the ability of the extensionist to empathize and listen:

> ***Señora Fresia:*** *(...)Well... is like the other is putting themselves in our shoes... something like that...*
>
> *(...) The attitude he had (the técnico) made me feel I could tell him everything...*

While Señora Fresia listens to the extensionist, she also expects the same attitude back, looking for empathy and understanding about what she wants to share and communicate as a farmer. Having this mutual attitude hugely relates to how power dynamics are handled in these relationships. While extensionists hold authority in knowledge and a socially acceptable role to teach and guide farmers, farmers like Señora Fresia highlight that, even though she knows that power dynamics favor the extensionist, she prefers those who are capable of listening to what they want to say.

Pedro, the leader of the team (PRODESAL), often commented to me that technical proficiency and problem-solving are often easy tasks for all members of the team. Moreover, Pedro insisted that this is not the challenge extensionists must face in their job:

> ***Pedro**: I trust my team of extensionists to find technical solutions, and that is not often the problem in what we do.*

I was interested and asked:

> *What then is the problem with what you guys do?* – **I asked**

Pedro gave me a long explanation arguing that the difficulty does not rely on technical matters but on the interpersonal dimension. Among other things, he commented on the difficulty of dealing with social interaction with farmers, something that many other extensionists also comment upon. What's more, extensionists from both programs suggested to me that – perhaps – the only way to resolve conflicts with farmers is to sit down, talk, negotiate, and find solutions together. Based on field notes and some situations I've witnessed, technical and informal conversations happen altogether, and this is seen when extensionists want to engage with the stories and situations farmers

told them. We remember from the previous section that some extensionists, like Pedro, avoid approaching technical issues directly.

These findings not only reveal that communication styles shape and build relationships but also add evidence that it is also important in technical agricultural matters. Power dynamics are hugely influential in how extensionists and farmers deal with knowledge and communication. We remember the story when Señora Fresia and Don Hugo were told by extensionists in an authoritarian way:

> *[Señora Fresia and her husband had a problem with an extensionist of the team some time ago. They told me that one day, the extensionist came to check the blueberries. After the extensionist walked the orchard, all of a sudden, Don Hugo started to have a dispute with the extensionist about the condition of the blueberries. The extensionist sustained that the orchard was infested with mites, but Señora Fresia and her husband perceived him to be wrong. After arguing for a while, the tempers started to heat, until the extensionist exploded and said:*
>
> **Extensionist:** I am the one who knows… you listen.

While this story does not show the usual dynamic of how extensionists and farmers communicate in this research, it reminds us that these attitudes from the extensionists are likely coming from the structural power dynamics we explored in the literature review. Don Hugo and Señora Fresia didn't take this situation indifferently (seen as a lack of respect), telling the extensionist to beware and reconsider their words. All this shows that agricultural technical knowledge is, on the one hand, bound to power, but on the other hand, to participants' ability to redirect these issues into conversations that are more horizontal and power-balanced.

In summary, the ability to listen is highlighted in this research as one of the benchmarks for empathetic and dialogic communication. This study suggests that communication is more than a technical conversation, as it is grounded on genuine interpersonal dynamics that foster willingness to connect, listen, and understand. Likewise, farmers often remain cautious of disclosing information when there is no trust or a safe space to do it. While technical conversations are important and part of the agricultural technical service, extensionists don't see this task as difficult when compared to having hard talks with farmers. This section shows that feeling safe to talk and disclose information enhances the possibility of resolving conflict and fostering understanding, sometimes by engaging about what people are feeling/experiencing in their lives. Good communication isn't a technical skill alone – It is grounded in empathy and the capacity to engage with others' discourse. While these values strengthen the interpersonal dimension, they also play a huge role in problem solving, by using more flexible pathways than a technical solution alone could provide.

Knowledge co-construction and human relationships

This research provides ethnographic evidence about how farmers and extensionists exchange information and co-create knowledge. Although social constructivist scholars in agricultural extension assume that knowledge is a co-construction with others (relationships), there is little empirical evidence explaining how this happens in agricultural extension. This section comprises three subchapters that illustrate key points on how farmers and extensionists co-create knowledge through their relationships.

Information packages and knowledge co-construction

According to a social constructivist stance, knowledge co-creation is incompatible with the idea of information transfer (Ingold, 2017a, p. 1). Yet, findings from this study indicate that extension programs deliver information packages to farmers. While both literature and evidence support that knowledge is fundamentally a cooperative phenomenon by exchanging and challenging information, the presence of information packages does not impede this process. This section discusses how participants navigate these information packages to foster knowledge co-creation.

Transmissive knowledge conveys a separate, independent entity that can be packaged, stored, and delivered (Sillitoe, 2006, p. 2). While some scholars had discarded this perspective, some researchers insist that institutions, policies, and agricultural advisors still look at knowledge as information transfer (Black, 2000). In practice, this view promotes the idea that knowledge should flow vertically from the extensionist to the farmer (Angstreich & Zinnah, 2007). In both extension programs, extensionists must deliver packages of information to farmers, where information is organized, scheduled, and included in the technical visits. While information packages misalign with a constructivist overview, findings in this study suggest that these institutional planning practices coexist with knowledge co-construction. This section provides insight into how information packages sit in the view of knowledge co-construction.

Extension programs in this research organize and standardize different aspects of the service. One of them is how information is packaged and delivered. As mentioned in Chapter 5, some extensionists (PRODESAL) believe that this level of institutional influence is detrimental to the essence of the service, which is to provide advice that is tailored to the needs of farmers:

> ***Extensionist:*** *(…) Everything you must do as an extensionist comes pre-digested from the top. Then you feel like you are overdoing stuff (…) inventing technical solutions (…)*

Although some extensionists like the above believe that this way of delivering information/advice weakens the benefits of personalized service, this individual example is not what all extensionists believe in.

> *And what do you think about (a personalized service for farmers)?* ***– I asked***
>
> **Celestina:** *It is not completely fine… because I have 65 farmers to attend to, and you cannot afford to attend to them personalized… it would be unfair for the others otherwise (…) that is the reason why you follow a plan*.

Although some extensionists feel frustrated about complying with delivering information packages, in practice, advice is never fully dictated by the schedule. Some authors argue that agricultural knowledge and small farming avoid prescriptive knowledge solutions (Cristóvão et al., 2012, p. 214; Ingram, 2007, p. 102). The frustration and concerns experienced by extensionists may not be because they are giving farmers useless information, but maybe because this underscores the value and care extensionists put into what farmers truly need.

Providing advisory services that fully rely on information packages sounds way too prescriptive, impractical, or unethical to participants. Some extensionists think that advice comprises much more than the information packages planned by the extension program. Extensionists like Pedro frequently said that advice should be comprehensive, and what he meant by that is that advice should be considerate, thoughtful, and reflective recommendations. The analogy of a "predigested information" shows that some extensionists indeed think of advice as something that requires digestion, as a thoughtful process that follows up farmers' needs. A good example is how Gabriel prepares his advice and recommendations. In the service he provides, technical issues

are often discussed and negotiated, like when he talks with farmers about which agricultural product is best for each scenario.

***Fieldnotes**: (…) Gabriel asked Mauricio about the recent sprays, harvesting status, and if he had identified mites or insects (…) When we ended, Gabriel took the manifold, a permanent pen, and started to write the recommendations (for chemical treatment)*

Also not mentioned in this example, Gabriel considers the socioeconomic conditions of the farmer and how he can adjust best to their finances. Gabriel and his farmers usually engage in conversation rather than playing the role of information deliverer. The PRODESAL has a similar dialogic dynamic but is expressed differently. In Chapter 5, when Celestina and Don Carlos were sitting together, talking about his beekeeping expertise, Celestina was compelled to give him a written recommendation regardless:

> **Celestina:** *Don Carlos (…) I ask you to take this recommendation with your best modesty.*

Gabriel and Celestina, both from different programs, show the preference of extensionists to be open and willing to negotiate an outcome rather than providing one-directional advice or solution. This aligns well with seminal agricultural extension research, maintaining that ethics of dialogue are important in extension advisory services (Freire, 1998).

Sometimes farmers understand that information packages are part of the role that extensionists must play with them. Information packages, though planned by extension programs, are often bypassed or ignored by farmers and extensionists:

> ***Señora Mirna**: We have been living here for 37 years (…), and when the técnicos come to visit us… what are they going to teach us? Because we have been doing agriculture for so long (…)*

> *Yes, I think you are right, and I suppose the técnicos know this? –* ***I ask***
>
> ***Señora Mirna****: Yes yes! That is why when they come to visit us, they do what they have to do, bring me the paper to sign – and, all good!*

Last quotes reveal that some farmers – but also extensionists – are aware that delivering information packages is part of the job extensionists must do. However, at times, information packages can help to start a conversation about a relevant topic that farmers and extensionists want to discuss. On these occasions, institutional information agendas are exhibited as part of a mutual agreement that needs to be made, often resulting in farmers engaging in elaborate technical conversations. We remember when Señora Mirna, from Chapter 5 added to the previous conversation we had:

> ***Señora Mirna:*** *Although we know how to do farming, it is always good to listen to what extensionists have to say.*

Although information packages contradict a horizontal way of knowledge co-construction, the quotes above suggest that some farmers are receptive to these. In the end, farmers like Señora Mirna seem to recognize that information packages might provide cues to discuss more about topics that they are interested in. Besides, when information is presented to farmers, they tend to contest it, often by challenging extensionists. Often, participants navigate through these packages thoughtfully, showing agency in identifying whether information packages are useful or to digress into related topics of interest. This aligns with agricultural extension literature, saying that actors are often reflective and capable of discriminating information (Landini, 2010b; Riley & Harvey, 2007, p. 1278; Thomas et al., 2020, p. 5), supporting the idea that participants are never passive emitters/receivers of knowledge (Eshuis & Stuiver, 2005, p. 139).

In terms of the different regulations of both programs, pre-packaged information delivery is more frequently observed at the PRODESAL than in the SAT. Information packages constitute a key element in how both agricultural extension programs are structured in this research. At the PRODESAL, technical assistance is planned through packages of information as a "one size fits all". In the case of the SAT, there is also an agenda, but because the program focuses on highly technical crops (i.e., strawberries, blueberries), advice tends to be focused on resolving technical aspects that arise during the visits. Gabriel (SAT extensionist) believes that his competency relies on technical knowledge for a good reason, because he must show this proficiency to their farmer clients, whereas for the PRODESAL, advice appears to be more nuanced for some extensionists, given a strong difference in terms of the depth and scope of knowledge:

> ***Rulo Carreño (PRODESAL extensionist):*** *In terms of knowledge, our job can be described as an ocean of understanding with one centimeter of depth (…)*

This research shows that packages of information do not imply information transfer and play an important role in how extensionists and farmers co-construct agricultural knowledge. Although farmers prefer tailored and personalized advice, the packages are an opportunity to challenge information and, therefore, to foster dialogue and negotiation. Prescriptive and transmissive advice has long been criticized by social researchers in extension as an outdated and unethical perspective (Cristóvão et al., 2012, p. 214; Faure et al., 2012, p. 28; Leeuwis, 2013, pp. 24-25; Raymond et al., 2010, p. 27). Also, research has shown that information packages or prescriptive advice usually end in negotiated and dialogue outcomes (Ingram, 2008, p. 19). This section shows that information packages are likely to be navigated and discussed, suggesting that farmers and extensionists have the agency to recognize them and utilize them to catalyze discussion instead of a mere transmission.

Moments of understanding and learning: Living in the spontaneous

Constructivist agricultural extension scholars mention that knowledge co-construction is not a straightforward phenomenon (Leeuwis et al., 1990, p. 22). This research concludes similarly by showing that knowledge, as moments of realization or "Aha! moments" (Gorman, 2019, p. 7; Sillitoe, 2010, p. 20), often emerge as something unexpected and difficult to predict.

In this research, co-learning is seen as a process of construction but also an epiphany, and since these moments happen through conversations and exchanging ideas, quite often, they cannot be anticipated. Moreover, these moments are not only difficult to record through fieldwork but also don't seem to occur very frequently. While moments of learning/understanding happen through a continuous process, on some occasions, these can reach their climax as an enlightening moment. Extensionists as facilitators can raise the probability of their occurrence, though learning and understanding are not guaranteed.

The uncertainty around these enlightening moments is a predicament for extensionists when they consider how extension services are planned. While institutions carry an agenda and expectations in knowledge and learning, these can't be applied by persuasion or force. In contrast, a planned, tidy, and organized teaching schedule does not fully represent how farmers and extensionists experience this process. Some authors suggest that knowledge is a co-construction that has the nature of fluidity, suggesting that learning and understanding happen in a fluid way (Clark & Murdoch, 1997, p. 42; Ingram, 2008, p. 6; Tsouvalis et al., 2000, p. 909). In empirical terms, the fluidity abovementioned relates to some farmers who have an active role with the extensionist, asking more questions to the extensionists about what they are saying, making it a quest to seek information and understanding:

> **Celestina:** *(…) They want to know about everything… sometimes random stuff… let's say: "Celestina I want to raise Deer… do you know what I need to do?" – that kind of things!*

The last quote entails that learning is not a one-way directional flow of information, but a shared experience between, that is determined by the interest and intent between the extensionist and the farmer. Thus, farmers' curiosity favors a dialogue and a more horizontal dynamic than the traditional one-directional role of extensionists teaching farmers. In practice, knowledge dynamics in this research are better understood through the lens of brokering agricultural knowledge (Christoplos, 2010, p. 2). Brokering knowledge positions the extensionists in a facilitatory role instead of a lecturing style or information deliverer (Koutsouris, 2014). In the case of Gabriel and the SAT, this is very clear. At the SAT program, farmers often require specific technical information, which is usually provided by the extensionist by facilitating access to information. We remember the case of Sandro in Chapter 5, he perceives advice as respectful and thoughtful interventions:

> ***Sandro (PRODESAL extensionist)****: (…) whereas, for the knowledge (recommendations), there are some (few) things that you can intervene… for example, a farmer says to you, " Don Sergio, I have been cultivating potatoes in the same plot for three years now, and I have been applying the same amount fertilizers, but the yield is receding, what should I do?" (…) At that moment, you can talk about crop rotation and other techniques to resolve it.*

One of the main roles of extensionists in this research relies on the ability to find knowledge gaps, but also to respond when farmers are interested in something particular. This shows that mutual interest and engagement are necessary to catalyze learning outcomes. Although learning outcomes are never guaranteed, contemporary

literature aligns well with the twofold responsibility of finding solutions together (Cristóvão et al., 2012, p. 211; Koutsouris, 2012, p. 68).

If knowledge is brokered instead of delivered, extensionists must navigate the teacher-student role with a flexible attitude. For instance, experienced extensionists are aware they cannot force learning, displaying social sensitivity to how best knowledge would be catalyzed. This often means opening a dialogue and believing in what farmers are requesting. Celestina (quoted above) (PRODESAL extensionist) and other extensionists maintain that following up on farmers' needs and priorities is key.

As mentioned in chapters 4 and 5, extensionists often understand that knowledge and learning are attached to an ethical component, since the majority of them feel frustrated when they realize that it would be much easier to deliver the message and say goodbye. Therefore, when it comes to learning, extensionists prefer to follow a dialogic approach, which is perceived as ethical. Some extensionists like Roberto consider this a very serious matter, stating that knowledge and learning happen through acknowledgment, respect, and patience.

> ***Roberto (PRODESAL extensionist)****: (…) as Paulo Freire says: the best way to generate understanding is to legitimize farmers, validating their knowledge… Some of my farmers barely know how to read, and you can imagine what happens with mathematical operations… But when you give farmers everyday examples(…)then you demonstrate to them that they already know(…)*

In the last quote, Roberto also talks about the importance of understanding the epistemological backgrounds of farmers (embodied knowledge). While Roberto does not talk about epistemologies directly, the examples he provides suggest the importance of having the ability to connect with the experiential and embodied forms of knowledge and use them to co-create understanding and learning with farmers. While technical

knowledge in agricultural extension is frequently catalyzed by different forms of dialogue and communication (written or oral recommendations), farmers are known to have a preference for experiential and embodied forms of knowledge (Eshuis & Stuiver, 2005, p. 138; Šūmane et al., 2018; Tsouvalis et al., 2000, p. 912), which are difficult to convey through words. Hence, the ability of extensionists to consider this and communicate to farmers in understandable terms.

In this research, technical information is generally displayed as a verbal or written message (like in the manifold), but sometimes farmers have trouble in understanding/discussing technical language with the extensionist. However, this is not often because farmers don't know about the matter of discussion, but rather on the words utilized by extensionists. Gabriel is very aware of this, while he believes the most important thing is to be able to empathize and ground his recommendations:

> *If you were ever an INDAP officer and you need to put someone doing your job, what are the qualities that person should have? –* ***I asked***
>
> ***Gabriel:*** *Well, Empathy… And the capacity to ground the information to farmers' words, that he (the extensionist) doesn't go too deep into technical information (…)*

These quotes illustrate what most extensionists do with farmers to translate and facilitate access to knowledge. Also, it reaffirms the ethical codes scholars have been saying about farmers not being ignorant people to be trained (Alemany, 2013, p. 107). The evidence of the last paragraphs shows that empathy plays a significant role, but also the ability to translate technical information. The previous examples show that extensionists must have these interpersonal skills in communication and empathy, which help to make the learning process move forward, brokered, and catalyzed.

Since these interpersonal skills are important tools for extensionists, this aligns well with the extent that knowledge co-construction is a self-organized process (Ingram, 2014). The latter conveys that knowledge is a social phenomenon, assuming that actors will find mechanisms to operationalize learning processes (Röling, 1992, p. 48). Therefore, the main question would be whether it is possible that knowledge co-creation could be fully entrusted to the actors, without any agenda.

This section shows that moments of learning and understanding happen unexpectedly, mediated by actors, and not necessarily in a structured way (teacher-student relationship). This process emerges from several conversations and negotiations that eventually lead to understanding. Although co-learning is a process that culminates in such moments, the evidence suggests that these instances cannot be guaranteed or forced to happen – only facilitated or brokered. Extensionists from this research believe that they don't need to persuade farmers, but to ground conversation in understandable, sometimes through non-technical terms. Extensionists also show social sensitivity, ethics, and empathy, helping to navigate this process in a more responsive environment, showing that co-learning is mediated by the interpersonal dimension. Examples highlight how patience and consideration of different ways of knowing and epistemologies undertake the learning process with mutual understanding and the capacity to adapt.

You cannot live with or without it: Knowledge is constantly contested

This section shows that farmers and extensionists constantly review and validate knowledge. The constant process of knowledge validation and reassessment not only happens through technical and logical arguments but also through their relational dynamics. Some of these elements include trust-building, consistency in speech, expertise, power dynamics, and critical thinking. Constructivist scholars highlight knowledge as dynamic and constantly contested (Clark & Murdoch, 1997, p. 42), while

similar studies see the knowledge co-creation in agricultural extension as a contestation of different knowledge systems (e.g., Indigenous knowledge and science) (Agrawal, 1995; Clark & Murdoch, 1997; DeWalt, 1994) . However, in contrast to what these authors suggest, this contestation not only happens at an epistemological level but also through interpersonal relationships (Arce & Long, 1987; Landini, 2016e). This section adds evidence that supports the importance of relationships in knowledge validity and contestation.

Farmers from this research are not naïve; they often found reasons to distrust, especially when there are contradicting arguments and technical imprecision:

> ***Don Leo**: " A técnico we had… a couple of years ago, he told us to train the walnuts that way, I cannot remember whom… So, if you just have come here 3 years ago, this situation would be different… but you know what 'One said a thing and the other guy a different thing and I found myself not knowing who the fuck to believe in'*

Farmers like Don Leo align well with the literature, saying that farmers aren't passive receivers of information (Šūmane et al., 2018, p. 4). The last example shows that Don Leo also links advice to an agricultural advisor, suggesting that advice is perceived according to who is giving it. While farmers validate knowledge by the level of trust in their agricultural advisors (Ingram, 2008; Kuehne et al., 2019; Landini & Murtagh, 2011, p. 268), advice is also never based only on blind trust in advisors.

Technical reliability is a critical aspect of how farmers experience the service extensionists give. However, extensionists recognize that their credibility does not come from giving unwaveringly accurate advice. That is the case of Roberto and Señora Maria, both from the PRODESAL, showing that the process of trusting technical

recommendations is highly related to the quality of the interpersonal relationship they have:

> *"Don't you think that Maria has trust in you?"* ***– I asked***
>
> *[Before Roberto was about to reply, he looked quite serious and replied:]*
>
> ***Roberto:*** *Yes… Sometimes I feel like it is too much…*
>
> *"Why do you think so?"* ***– I asked.***
>
> **Roberto:** *" Because she always follows my recommendations… even if I have gone wrong with some… I remember I advised her about something that was wrong… but she continued trusting me."*

The last conversation shows that reliability comes not only by demonstrating technical competency but also by the ability to respond to interpersonal relationships. The previous example indicates that some farmers appreciate and understand that the extensionists are not infallible, and in some cases, they prioritize information that comes across the interpersonal trust they have built with them. However, this is not the case for all farmer-extensionist relationships. In programs like the SAT, the reliability of information appears to be more fundamental. The case of the SAT shows that trust is also shaped by the quality of technical advice, also likely strengthening the interpersonal dimension:

> ***Señora Ana:*** *Well… Sooner, we started to notice that what Gabriel recommended to us – It worked! (…) Now I consult him about everything, especially about the 'liquidos' – 'agricultural products' (…)*

> *(…) "Now you know that there is 'Confianza' with Don Gabriel… for example, sometimes I call him at 10 pm at night, and I know that he is going to reply"*

In the SAT program, where farmers pay for the service, this puts pressure on how the extensionists demonstrate their technical capability.

> **Señora Ana**: *(…) And well, Yes! We are paying for the service we are receiving!*

There is every reason to believe that farmers see interpersonal relationships and technical proficiency altogether. This coincides with the agricultural extension research indicating that agricultural advisors must build this relationship (trust, commitment, and disclosure) with their clients, enabling them to contest and agree upon information (Ingram, 2008; Kuehne et al., 2019; Landini, 2010a, p. 19; Thomas et al., 2020).

From the last two previous sections, farmers in this research demonstrate agency and active participation in knowledge co-construction and so in evaluating and validating knowledge. This statement supports research that maintains that farmers are reflective individuals with a critical approach toward knowledge (Gorman, 2019, p. 8; Landini, 2021, p. 10). SAT farmers, who are mostly familiar with scientific-technical knowledge associated with the cash crops they grow, think that technical advice is a significant aspect of the service. SAT farmers frequently challenge the extensionist in technical matters, but this also happens at the PRODESAL. Although farmers from the PRODESAL are often less formally educated, they are not passive or easygoing when they think they are right:

> ***Don Segundo**: For example, the técnico comes to visit me and advises me to become organic, chicken manure, and other lazy-jerk ideas… if I were to do that, my lettuces would not grow… and then, I cannot sell them.*

Farmers' ability to question information is a key finding in this research. For farmers, taking advice often involves a risk, and as Don Segundo recognizes, it could be financially compromising. This aligns well with the view of some researchers about how personal and embedded Latin American farmers are with the activity, maintaining that the social reproduction of this group depends on it (Devine et al., 2020, p. 7). Moreover, this illustrates that farmers expect extensionists to understand the practical and economic implications of their advice. If farmers see that extensionists are caring, compliant, respectful, and responsible, it is more likely that farmers will consider what they recommend.

Farmers have plenty of technical skills, knowledge, and experience, often enabling them to discriminate information. Some of the problems that emerge from this premise are that extensionists perceive that farmers already know how to do things themselves, hence the difficulty in making interventions:

> **Roberto**: (…) "Sometimes the problem seems to be that farmers already know too much, and it is difficult for the farmer to make innovations".

Many extensionists, like Roberto, but also in the literature, recognize farmers as agricultural experts (Thomas et al., 2020, p. 2; Vanclay, 2004, p. 216). This raises the question of how extensionists can better offer information without undervaluing their knowledge/expertise. This can be a problem when power dynamics are imbalanced. We remember Gabriel in chapter 4, that his dynamic with SAT farmers can be quite vertical, especially because he embodies the role of an expert. We also remember that Gabriel gets frustrated when farmers say they are not taking his advice, or taking it from somewhere else instead:

> ***Gabriel**: (…) "They don't take me into account of what I've said."*

> *"I think Johnathan is gaslighting me with the agricultural products he is applying; he might be taking advice from another advisor – I think."*

While it is ethically sound to let farmers choose what they want to integrate as knowledge, there are some instances in which extensionists are firm in giving imperative instructions. For example, we must remember when Celestina and Gabriel, extensionists from both programs, told farmers not to apply dangerous phytochemicals, especially when doing it while having a beer, as we remember in Chapter 4. This raises the predicament of power and expertise in the relationship, and what are the ethical considerations that extensionists must consider before doing these exceptional interventions.

Although extensionists from both programs tend to hold firmly to ethical values, the traditional ties to scientific validity seem to give inherent power and status to what they say. More interestingly, the wrongly called resistance that farmers appear to have upon external sources of knowledge clearly shows that the contestation not only happens because of the search for truth but also because of how power is framed and structured in the farmer-extensionist relationships. While it is true that farmers have the ultimate right to decide whether to take advice or not, some researchers suggest, between the lines, that holding to this attitude, though ethical, can slide into persuasion (Swanson et al., 1997, p. 10). This is why respect in the relationship is so important, because giving a true consideration of farmers' discourses and needs seems to follow a better ethical approach for most extensionists. We remember Celestina in Chapter 5, when she identified that Don Jecho was so proud of his poisonous product, she respectfully told him:

> **Celestina:** *Hey Don Jecho, try not to use it.*

The attitude and the values that are imprinted in advice, such as empathy, respect, and kindness, play a huge role in how advice is perceived. While having a beer while applying a dangerous agricultural product is an extreme and questionable example, farmers would consider being instructed only when they have been communicated with respect and underlying care. Farmers' success and social reproduction are evidence of their capacity and expertise (DeWalt, 1994, p. 126), but this doesn't eliminate the dilemmas extensionists feel around when it is necessary to intervene. While extensionists often respect farmers' decisions, they struggle to find the right balance. Maybe vaguely, Pedro illustrated to me that this balance relies on criteria:

> ***Pedro:*** *(…) The best we can do is to advise on specific things like planting the lettuce in this row or choosing this variety instead of the other.*

Whether farmers and extensionists belong to different epistemological or ontological backgrounds, this contestation arises not only as a logical argument for truth or technical validity, but also as to how farmers assess, trust, respect, and reliability. While scholars portray farmers and extensionists in a battle for knowledge (Röling, 2012, p. 2) or a contestation of different knowledge systems (Blaikie et al., 1997; Jacobi et al., 2017; Raymond et al., 2010), this research shows that more than opposites battling each other, disagreements in knowledge better align with the phrase of knowing and deciding together (Brugnach & Ingram, 2012). Farmers and extensionists navigate this challenge by treating knowledge co-construction as embedded in the quality of interpersonal relationships and their dynamics.

Conclusions

Chapter 6 shows this research's main findings and reflections, informed by Chapters 4 and 5 accordingly. This Chapter explores how farmers and extensionists build and organize their relationships, and how they co-construct agricultural knowledge. While

the different topics are separated into sections, this chapter is better comprehended and read as a whole, and since the interpersonal dimension of relationships mingles with knowledge co-construction, the reader will find that sections overlap, emphasizing the interconnection between topics.

This Chapter is organized into two main sections. The first section comprises ethnographic reflections from fieldwork that highlight how extensionists and farmers build and organize their relationships. Findings reveal that at the first level, these are built through formal expectations constrained by institutions, policy, and colonial history. However, formal expectations don't fully dictate how relationships are built, because they also rely on the interpersonal dimension. This research finds that the interpersonal aspect plays a significant role in organizing relationships, with respect and trust as basic elements. Some extensionists and farmers also develop nuanced and complex emotions and interpersonal interactions. Farmers and extensionists can experience strong interpersonal emotions, some others as ethical convictions like duty of care, commitment, and affection. Although these seem to have an optional stance, participants who experience them indicate that they hugely shape how the extension programs are implemented.

A middle section considers communication as the way that interpersonal relationships and knowledge co-construction bind together. Accordingly, this particular section focuses on how the ability to listen, which helps to understand how interpersonal relationships and knowledge co-construction are intertwined.

The second section comprises three parts showing the key findings on how farmers and extensionists learn together and co-construct knowledge. These sections highlight that elements like respect, trust, are other interpersonal dynamics are very influential in how co-learning takes place. The first part highlights the apparent contradiction between

knowledge co-construction and the information packages that are delivered by institutional agendas. While extensionists and farmers are compelled to follow a plan, the evidence shows that even though it sounds like extensionists are transmitting information, information packages are utilized by participants as opportunities to co-create understanding and co-learning. The second section focuses on co-learning as enlightening moments, which are difficult to predict. This section argues that knowledge and epiphanies are instances in time that are reached through an indefinite process of dialogues and negotiations. Co-learning often happens unexpectedly, and while extension programs intend to catalyze learning, these are very hard to predict. Hence, extensionists can only help and facilitate them to happen. The last section argues that knowledge is in a constant process of validation. While co-construction of knowledge involves searching for truth, based on empirical and theoretical assessment of reality, this is not a cognitive process alone, but is also influenced by the interpersonal relationship between extensionists and farmers. Elements like trust and the overall quality of the relationships compel farmers to consider advice as reliable, not purely by logic, but upon trustworthiness.

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Chapter 8 – Conclusions and further research

Research Question and ethnography

This study contributes to understanding the relationships between small farmers and extensionists in central Chile. This research utilized ethnographic methods to explore how these relationships are organized and how they co-construct agricultural knowledge. With a social constructivist stance, this thesis utilizes ethnographic descriptions of social relationships and how knowledge is socially constructed. Unlike other studies done by qualitative methods, this research strongly emphasized the details, nuances, and contradictions, informing how agricultural extension operates at the grassroots level.

Agricultural extension relationships in this study are drawn by structures (policy and regulations). Yet, the interpersonal interactions have a strong influence on the outcomes by dictating how actors navigate the structural constraints. The structural aspect shapes and constrains the relationships between farmers and extensionists, shaping the conditions and formal expectations of the service. The interpersonal side of relationships is one of the key mechanisms of how relationships develop and are maintained, but also how actors navigate through structures that constrain them. For instance, relationships that are not purely work-oriented, as participants highlight that interpersonal relationships, social skills, ethics, and humane values significantly affect how actors navigate and achieve their goals in practice. This research provides evidence that agricultural extension is not a purely technical procedure for knowledge transfer, since the interpersonal aspects of relationships like trust, respect, and emotions influence how farmers and extensionists learn and co-construct knowledge.

While knowledge co-constructions stand by the search for meaning, truth, and validity, it is also influenced by the quality of the interpersonal relationships. Empathetic dialogic communication, power dynamics, respect, and trust are highlighted elements that shape how farmers and extensionists build knowledge together. For instance, trustworthy advisors are better considered in their advice when compared to those who aren't. So do extensionists who can engage in horizontal talks with farmers, as well as how they respect their world views and knowledge systems. This all suggests that power dynamics, communication, and interpersonal aspects are connected elements that together shape the co-construction of agricultural knowledge.

Key findings

Relationships are structured by policy and regulations. Regulations shape formal expectations of extension services but also the nature of interpersonal interactions. The SAT program, with a strong focus on business-oriented farmers, prompts the extensionist and farmer to dwell on technical conversations and advice. In the case of the PRODESAL, formal expectations are more diverse, having more flexible regulations and approach than the SAT. While these regulations shape basic expectations, in both cases, the interpersonal side of relationships maintains relative importance in how farmers and extensionists respond and navigate their work and commitments. When extensionists navigate, they often take a flexible approach based on social responsiveness, recognizing that the service they provide comprises social and economic aspects as a whole. Having social responsiveness means that extensionists and farmers value their interpersonal relationships, as it helps to navigate more flexibly in their mutual interactions and through their responsibilities and duties. This compels extensionists and farmers to pay attention to building and nourishing their working relationships.

Although farmers and extensionists have working relationships, extensionists and farmers often describe their job and mutual interaction as something quite personal. Although both extension programs hold a structure and a schedule, this research aligns well with understanding agricultural extension as a messy social process (Leeuwis, 2013, p. 14). While some researchers have mentioned that agricultural extension has an inherent social nature (Da Ros, 2012, p. 643; Ingram, 2008; Vanclay, 2004, p. 213), this research adds empirical evidence that supports and moves in the same direction. On one hand, this research challenges the traditional idea that agricultural extension is a merely technical phenomenon by showing that actors influence extension practice through their relationships.

Although the SAT and the PRODESAL have different expectations drawn by the type of farmer clients the service is focused on, the interpersonal side of relationships shares key findings. Interpersonal relationships are founded in respect and trust; for these, they share formal and interpersonal expectations. These foundations are the basic expectations of the farmer-extensionists relationship, which are the bottom line for healthy working relationships. If relationships are built on these elements, they are likely to deepen into more emotional elements. Some of these elements rely on vocation, duty of care, commitment, and affection. This explains why some of these relationships develop into friendships, but also explains how some extensionists and farmers took them very personally, whether for good or bad working relationships.

The ability to communicate effectively is a benchmark for building and organizing the extensionist-farmer relationships explored in this research. This is also relevant to how co-learning takes place in these interactions. While communication is a broad topic in extension research (Leeuwis, 2013), this study highlights the importance of listening. In this research, the ability to listen to each other creates a safe space to talk, stemming from how extensionists perceive ethics and empathy. Moreover, the ability to listen has crucial importance in fostering dialogue. This is clear in how extensionists from this

research often maintain a respectful attitude to farmers' knowledge systems and understandings, even if they believe they are wrong. Ultimately, this attitude helps dialogue and buffers how power imbalances are managed through horizontal communication. Communication involves the ability to listen, to respect, and buffer power dynamics. This study views communication as the binding agent that puts together interpersonal relationships, power dynamics, and knowledge co-construction.

Extension programs have an information delivery agenda based on information packages with different agricultural technical topics. Extension programs and institutions expect that farmers learn and implement what is taught by the extensionists through the program. Most clearly at the PRODESAL, there is a delivery agenda in which information is organized into topics, packaged, and delivered to farmers on schedule. However, while the scheme of information transfer is scripted by program regulations, in practice, extensionists and farmers see the delivery situations in a more fluid and less structured way, relying on dialogue rather than a transfer.

This study shows that most of the time, information delivery doesn't happen as a transfer but as a shared, negotiated experience. While there are instances, like when farmers are endangered or the extensionist gives instructions and directions, most of the time, knowledge is negotiated. As part of this process, some of these moments are identified as "aha! moments", instances when there is a realization of new understandings. However, in this view, co-learning is not a linear process, since these enlightenment moments happen unpredictably. While these instances are desirable and pursued by extension programs, genuine understanding, acquisition, and implementation of knowledge are often incompatible with a straightforward idea of an information delivery plan. The evidence suggests that knowledge co-construction is more likely a fluid and spontaneous phenomenon. This means that the dialogic and negotiated nature of knowledge co-construction, as understood in this research, is contingent on the agency and influence of actors rather than a planned information delivery agenda.

The idea that knowledge is acquired by farmers and transferred via extensionists is inconsistent with the evidence from this research. Moreover, the results section strongly suggests that human agency and relationships play an explanatory role in understanding how knowledge co-construction happens in practice. Farmers and extensionist in this research show a strong preference to dialogue and crafting solutions rather than taking a passive role. Interrelated interpersonal aspects of the relationship, such as trust, respect, commitment, disclosure, ethics, and affection, enable extensionists and farmers to feel safe and engage more fully in agricultural technical discussions. By providing a mutual healthy social environment, extensionists and farmers' interpersonal aspects help to catalyze horizontal dialogue and negotiated knowledge. Even when farmers and extensionists face uncomfortable situations like resentment and anger towards the extensionists, the capacity to deal with these challenges is mediated by interpersonal skills, leading, sometimes, to learning outcomes. Although social skills are a particularly important tool for extensionists in this research, this evidence supports the idea that the quality of the interpersonal relationship between farmers and extensionists shapes and encourages better learning opportunities.

In agricultural extension literature, the notion of knowledge co-construction doesn't stand alone because it is constantly contested and constrained as a social validation process (Angstreich & Zinnah, 2007, p. 91; Koutsouris, 2014, p. 30; Leeuwis, 2013, p. 181; Rist & Dahdouh-Guebas, 2006, p. 488). In this research, knowledge co-construction is a process where extensionists and farmers discuss information, often skeptically and critically. The evidence shows that farmers are not passive receivers either, while extensionists feel challenged to provide farmers with insight and attractive information/solutions. Moreover, the process of contesting information is not necessarily driven by the search for reliable answers or useful information alone, it is also shaped by the interpersonal aspects of the relationships, like trust, for example. In this study, farmers trust information given by the extensionists not only because of

technical consistency, but also because relationships with them. After building relationships and getting to know extensionists more, farmers tend to become less skeptical about information and more trusting. A great example shown in chapter six indicated that if an extensionist gives wrong or misleading information, some farmers will be forgiving, as long as they see the extensionist strive for care and trust in the relationship. This means that validation and contestation of information are mediated by how extensionists and farmers perceive mutual trust, commitment, and care.

Contribution to the understanding of interpersonal relationships and knowledge co-construction

This research focuses on and adds to the current empirical ethnographic experiences in Latin America about the relationship between farmers and extensionists and how they co-construct knowledge. The first conclusion from ethnographic evidence is the recognition that agricultural extension and its implementation are a contradictory and messy experience. While participant observation and ethnographic data enable to capture of the nuances and details they also uncover contradictory discourses and actions of participants (Fife, 2005, p. 119; Restrepo, 2018). Hence, one of the main findings reveals some of the details and mechanisms of how actors navigate through these lived contradictions, like when extensionists experience the tensions, ethical dilemmas between institutional regulations and the service they must provide to farmers. The implications of these findings are to recognize the agency and adaptability of participants when dealing with social realities that contradict the course of agricultural extension as a straightforward plan. This research highlights that the human/social component of extension is discontinuous, something that aligns well with findings in similar ethnographic research in Latin America (Arce & Long, 1987).

The ethnographic experience of this research contributes to highlighting the incongruencies between theory and practice more clearly. While theory has been

immensely useful for extension practice, as shown in the literature review, empirical evidence doesn't fully reconcile with theory. For instance, popular concepts in modern theory in agricultural extension, like horizontality, bottom-up, dialogue, and knowledge co-construction, involve a multifaceted scenario in practice, showing them in a less reductionist and more compounded way. For instance, participants (mostly extensionists) experience contradictions and predicaments around compliance, ethics, and emotionally compelling situations, which are vaguely considered in modern theory approaches. While this study contributes to highlighting some of the issues and lived experiences between theory and implementation, empirical research is required to examine this discontinuous nature in more detail, thus to make better generalizations between theoretical arguments and their practice in agricultural extension.

This research contributes descriptive evidence and examples on how people navigate and build their working relationships. All this evidence supports that actors play a highly significant operational role when compared to how policy and regulations frame extension practice. Moreover, the evidence of this research indicates that at the implementation level, human agency outweighs these constraints. However, this research also shows that it is of critical importance to bring more attention to the social, economic, political, and geographical context, since these influence the style of relationships and therefore extension practice. However, while actors are constrained by institutions, policy, and regulations, under the context explored in this study, agricultural extension is never a straightforward, always predictable phenomenon.

Lastly, this research found that participants are inspired by maintaining positive working relationships. Participants have a strong preference to dwell on positive emotions and comfortable social interaction, as they perceive that this enhances a satisfactory but also proficient co-working experience. There is every reason to believe that the tendency to strive for positive interactions informs some decisions, drawn by duty of care and vocational convictions. This suggests that the social aspect of extension is outlined by

emotion and ethical values. Moreover, when farmers and extensionist build their relationships, a purely technical work-driven interaction is often insufficient. The lack of mutual social touch between farmers and extensionists is perceived as dehumanizing, a concept that summarizes the experience of lacking reciprocity, care, and commitment. All these values suggest fostering reciprocity and kindness, inspiring extensionists and farmers to act wholesomely. This thesis proposes that it is what lubricates the wheels of extension, based on human values that lead to satisfaction and mutually beneficial outcomes. Moreover, these findings validate the importance of ethical values in relationships as a base for knowledge co-construction, as so for doing ethnographic research, where interpersonal relationships are the basis of knowledge co-construction.

The contribution of this thesis to the understanding of how farmers and extensionists co-construct knowledge dwells on empirical evidence showing the capacity of my participants to dialogue and negotiate knowledge. This adds value as an empirical correlation with what agricultural extension theory has been pointing towards, horizontal and dialogic forms of knowledge co-construction. Empirical evidence shows that farmers and extensionists almost invariably engage in conversation and contestation to create meaning and understanding. This is clear when information packages, though delivered, foster technical dialogic discussions, rather than a passive knowledge transmission. Moreover, the ethnographic data suggest that knowledge co-construction is a long process that is difficult to predict or plan, suggesting that attention should be focused on the actors rather than on the outcomes. Findings in this thesis and the categories presented here support articulating a constructivist approach to empirical findings, by proposing a view of how knowledge is co-constructed between farmers and extensionists in this research

Policy and practical contributions

Policy and regulations must recognize agricultural extension as a social phenomenon that requires recognition at the level of human relationships. Typically, extensionists in this research expressed their concern that the upper management and policy constraints are insensitive to the emotional and social labor they do. We remember one of the examples in chapter six when extensionists were forced to change their client portfolio every year, forcing them to build new relationships. This situation appears as institutions and policy disregard all the effort and commitment to the interpersonal labor, which leads extensionists to conclude that there is no care about this dimension. Examples like the above suggest that if policy and regulations come closer to entrusting people who implement extension, this is likely to reduce incongruencies and misalignments that occur. For a better congruence between people, policy, guidelines, and regulations, institutions must make efforts to protect the interpersonal aspect of the service. While recognizing and entrusting actors may reduce the institutional capacity to oversee and predict what is happening in practice, the evidence of this research says that actors navigate these constraints regardless. Extensionists in particular find ways to bend and adapt regulations and compliance following their vocation and ethical convictions. The overseer role of the municipality and INDAP should strive for an ethical and responsive approach to build a partnership between bureaucratic operations and the actors at the implementation level.

Additionally, the ethical values abovementioned must comprise a bottom-up development strategy. Unlike a top-down strategy of development, a bottom-up approach is prompted by recognizing the needs and context in which the extension programs are implemented (Christoplos, 2010, p. 47). The idea of institutions dictating what people need and how it impairs the possibility of giving human relationships the power and agency to produce the outcomes that this thesis supports. The overseer role of institutions should be supportive rather than policing.

For programs like the SAT, where the technical is a prioritized aspect of the service, relationships tend to be more practical and pragmatic than the PRODESAL. However, the evidence strongly supports that although technically oriented, interpersonal aspects of the service play a significant role in how the farmers and the extensionists perceive the quality of the service. Thus, interpersonal relationships should not be exclusively seen as a means to achieve purely technical matters. Institutions need to acknowledge that the interpersonal dimension is blended with the technical, as both comprise how the quality of the service is perceived. Because extensionists and farmers must engage in respectful and trustful interactions to be accredited as a good service, there is every reason to believe that for both programs, although clearly at PRODESAL, the quality of the interpersonal relationship between extensionists and farmers is paramount.

One of the key differences between programs is that the field delivery of the SAT is auctioned to private companies. The latter is not necessarily bad or negative for service quality, but it gives too much control and power to companies whose main interest may be to maximize profits. Eventually, this could put the administrative power and values of public extension services at risk. On the other hand, the PRODESAL, implemented via municipalities, which work as a public institution, but sadly, this often taints the program with political agendas. For the PRODESAL, the lack of economic and political party independence is something that my participants claim with huge disappointment. More than changing how programs are administered, an ethical perspective of policy could aim to enhance the autonomy of actors, grounding regulations and guidelines to genuine bottom-up strategies of development.

For the case of the PRODESAL, the recognition of interpersonal relationships in the frame of the service requires significant revision. Extensionists from the PRODESAL allege that this is one of the biggest problems and misalignments they experience. While farmers expect a proficient technical service, many farmers value their interpersonal interactions with their advisors, sometimes even beyond their technical accuracy.

Moreover, the social sensitivity of extensionists and constant exposure to the interpersonal connection with farmers make them perceive that institutions are insensitive to this nature. Most farmers and extensionists from the PRODESAL think maintaining good interpersonal relationships is mandatory, and as part of maintaining this sensitivity, comes as contradictory to a purely solution-oriented service. Farmers PRODESAL farmers show a variety of expectations and goals, and regulations should accommodate to bring greater adaptability to fulfill their different needs, with special attention to when and how the technical can be prioritized over the social. This also suggests that the program guidelines must bring ethical discussions to these dilemmas by considering adding a broader and holistic approach to the service. This ultimately should allow extensionists to become more responsive to adapt to the diverse priorities and needs of farmers.

Finally, to avoid clientelism and other dangers of not providing good-quality technical service, institutions should still oversee, organize, and set the standards of compliance. Although the evidence suggests that a humanized approach to the service does not compromise its quality, institutions should bring a flexible framework that allows the best of both worlds. Policymakers, researchers, and institutional officers should account for what extensionists and farmers report from practice, helping to ensure that regulations and guidelines facilitate the service rather than compromising it.

Recommendations and future research

This research supports the importance of human agents at the level of implementation in agricultural extension interfaces. This research shows that the extensionist-farmer relationships involve more than a contractual aspect, as they are outlined/layered by emotions and human values. However, the interpersonal dimension of relationships remains an underexplored field in agricultural extension research and is the reason why

this study runs short in analyzing and comparing it to the results of other scholars. Even though relationships in agricultural extension can dialogue with other fields of research like human development and education, the exercise of comparing contextual ethnographic descriptions, scale, and frameworks is significantly different from the experience of other researchers. This suggests that to compare, more ethnographic and social empirical research is necessary to stimulate deeper theoretical and practical discussions.

This research also finds that ethnography is suitable to provide a grounded analysis of how theoretical models and extension programs are implemented. While this may not apply to all people, geography, and sociopolitical factors, any additional empirical evidence will provide value and contrast in how policies and extension programs are implemented. The ethnographic method, though limited to descriptions within a particular time and space, shortens the gap of understanding we have between the theory and how people perform in practice.

The Latin American extension history, country-level policies, and other structures condition the farmer-extensionist relationship. While this research doesn't bring deeper analysis on this matter, these seem to constrain with a tremendous force on how relationships occur. One of the future research areas would be the addition of more empirical research that considers a decolonial perspective in agricultural extension. Moreover, this area of research later raises important ontological questions like what development is and for whom. A decolonial inquiry into the ontologies of the Latin American farmers and extensionists is likely to provide groundbreaking insights into agricultural extension, but also into their relational dynamics.

Lastly, future research should aim to contribute to policymaking. Extensionists often report that program policies are sometimes restrictive, restraining flexibility in the service they provide to farmers. Even though regulations are necessary to organize any

serious extension service, the question is to what extent. This research shows that participants have to interpret/bend policies and regulations in their favor. This is dangerous, but it also shows the gaps in how policy could reach people more effectively. This suggests that policy research and analysis are necessary to consolidate policymaking that is ethical, comprehensive, and centered on the needs of farmers.

The power dimension is an aspect of the relationship that needs further research and exploration. Although this study indicates that power is a crucial element in the relationship explored in this research, a deeper exploration of the power dimension was beyond the scope of this research. While results show that power is transversal and dynamic in influencing interpersonal dynamics and upper structures, further analysis is required to understand how participants deal with and perceive these dynamics.

Final remarks

This thesis argues that human interpersonal relationships play a fundamental role in extension practice and implementation. This study maintains that agricultural extension services are shaped by the nature and quality of interpersonal relationships. While SAT and PRODESAL regulations and policies organize relationships, these are navigated, shaped, and interpreted by practitioners. Results show that interpersonal relationships are underpinned by elements like respect, trust, commitment, duty of care, affection, ethics, and other, sometimes negative, emotions. Knowledge co-construction is mediated by the quality of interpersonal relationships; elements like trust, disclosure, commitment, and empathetic communication help to foster co-learning and knowledge co-construction. By paying attention to how extensionists and farmers deal with implementation, there are compelling arguments to rethink a purely technical approach to agricultural extension, as well as the view of knowledge as information transfer. Moreover, an ethical approach to development and extension seems to align well with

the evidence presented in this research, putting people at the centre. Findings should inform policymaking and extension program regulations by enacting recognition of the actor's role in practice. Also, this would help theoretical and empirical scholars in agricultural extension to link how theory and implementation are bridged into practice.

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Appendix A: Information sheet for participants

MASSEY UNIVERSITY
COLLEGE OF SCIENCES
TE WĀHANGA PŪTAIAO

School of Agriculture and Environment

Farmer-extensionist relationships and knowledge co-construction: Ethnographic case studies of public rural extension in central Chile

Information sheet:

Introducing Myself

My name is Samuel Campos Sáez I am 34 years old and former agronomist. Right now, I am undertaking a full time PhD in Agriculture at Massey University in New Zealand. Due to the Covid-19 pandemic my field work was suggested to happen in Chile, and through this sheet you will be able to better understand why I am interested in your participation, my research purpose and the ethical considerations.

Research summary and rationale

Within the extension system, there is an inevitable encounter between the extensionists (técnicos) and farmers. Though may be unintended or not, both stablish a working relationship based on trust and expectations, and notwithstanding, this interaction co-creates various forms of knowledge.

This research will explore the farmer/agronomist relationship, under a social interface analysis. This study intends to understand in depth what occurs into these relationships and how knowledge flows across this interface. Framed into a case study approach, coupled with ethnographic methods, research will be done mostly in central Chile.

Looking for your participation

You are being asked to participate because you hold knowledge about the extension process and other related topics (i.e. education, science, relationships). My role as a researcher will be participative, and you will see me talking to you as we were having a casual conversation. I will be asking you questions about yourself and what do you think about certain things. It is likely that I will be directing our conversation towards the extension services but is ok for you to tell me about other things happening in your life. My intention is to explore the relationship between the extension agents and farmers and how knowledge is built/moving in between, therefore, my questions will tend in that direction. Again, It is highly possible that I am talking with you because you may be a farmer, an extension agent, or anyone related to the extension system.

What happens when I decide to participate?

If you decide to participate, I usually will like to talk face to face. I will be looking forwards to meet you at your work or during your daily activities, so I can understand more closely what is your context. In some cases, if not possible a face-to-face encounter, a phone call will be an acceptable option. I am fully aware of your time, and I don't expect that you will be attending me all day, so I will be asking you how much time we have to talk every time. At some point, after a few meetings, I might ask you for an interview. If that happens and you agree, you can expect to talk about 1-2 hours, be recorded and asked for an oral written/consent. I will also ask your permission to take pictures from your lands/workplace in order to register photographic data.

Handling the information collected from you

All data collected will be written in my notes, or registered through photographs or transcriptions from the recorded interviews. Raw data will only be seen by myself and therefore secured in my laptop or lock cabinet. When I write my results, I will advocate for participant's anonymity, but also considering to not divulge sensitive or harmful information to you or other participants. Besides of my efforts, I have to warn you, that it is possible that your identity could be inferred by connections through data (or because you may hold a public position). However, despite I cannot guarantee total anonymity of your identification in the research, I will stress on guarding and blurring your identity as much as I can. It is likely that I will make use of quotes said by you, and meaning from your words.

What are your rights if you participate in this research?

You are invited to participate in this research appealing to your freewill. By any means there is an intention to coerce or force you before and during your participation in this study.

In order to protect you, there are several rights that you will have during this research:

- Withdraw at any time during the study
- Make any suggestion, question and commentaries about your participation

- Ensure that your personal identity will be protected through anonymity
- The right to regret or refuse the usage of any information given to the researcher
- Access to the summarized findings of the research in your mother language

Information from Massey University about this research

"This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher(s) named in this document are responsible for the ethical conduct of this research. If you have any concerns about the conduct of this research that you want to raise with someone other than the researcher(s), please contact Professor Craig Johnson, Director (Research Ethics), email humanethics@massey.ac.nz. "

Do you have any further questions?

If you have any questions about the nature of this research, please feel free to contact me and/or my supervisors.

Researcher
Samuel Campos [redacted] [redacted]

Supervisors
Dr Janet Reid J.I.Reid@massey.ac.nz (06) 356 9099 ext 84812

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Appendix B: Informed Consent

MASSEY UNIVERSITY
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Project title: Knowledge dynamics at the farmer-extensionist interface

PARTICIPANT CONSENT FORM - INDIVIDUAL

I have been informed about the nature of this research and understand the requirements and rights derived from this sheet attached. My participation is voluntary, and I may withdraw from the research at any time.

i) I will voluntarily participate in the research under the conditions listed on the information sheet

Agree ☐ Disagree ☐

ii) I accept to be interviewed and recorded

Agree ☐ Disagree ☐

iii) I accept that despite my identity will be covered, there is a chance of being identified through inference

Agree ☐ Disagree ☐

Declaration by Participant:

I _____hereby consent to take part in this study.

Signature: _____ Date: _____

Appendix C: Contract between extensionists and the municipality

1.1 Contract between the municipality and INDAP

The institution INDAP signs a contract with the municipality for a four-year period as a service provider, receiving a fixed amount of money. INDAP finances up to 70% of a yearly plan extension program, of which the 30% left must be covered by the municipality. Apart from a financing role, INDAP acts as an overseer of performance, loans and investments.

1.2 Contract between extensionists and the Municipality

Extensionists are hired by the Municipal administrative office, often by a fix-term renewable contract creditable for each year. Each extensionist receives around 1,700,000 CLP or 3,400 NZD per month, with the addition of yearly grants.

1.3 The responsibilities of the extensionist towards the municipality

These are listed as it follows:

i) Work along with the extension team to suffice the different technical competencies
ii) Collect and inform INDAP the yearly results of the service.
iii) Support beneficiaries by helping them with the application to funding sources and grants
iv) Follow and support with technical advice on any new investment or project awarded from grants and funding sources
v) Manage and support social networks
vi) Assist to INDAP meetings
vii) Assist to training sessions convened by INDAP
viii) Support INDAP as an overseer of farmers' performance
ix) Elaborate technical reports when requested by INDAP
x) Full disposition to work on request to any other activity solicited by INDAP
xi) Follow the INDAP guidelines for technical visits