

Trust, Risk, and Dissonance: Prairie Agriculture and Canada's Environmental Farm Plan

By

Patrick Harney

A Thesis submitted to the Faculty of Graduate Studies in partial fulfilment of the requirements for the Master of Arts degree.

Department of Environmental Studies and Sciences and Department of Geography
Master of Arts in Environmental and Social Change
The University of Winnipeg
Winnipeg, Manitoba, Canada
April, 2024

Copyright © 2024 Patrick Harney

Abstract

In the wake of combined economic and ecological pressure, Prairie farmers and the Canadian ministries responsible for agriculture are pressed to instigate sustainable agricultural development. However, Canada's central agri-environmental program, the Environmental Farm Planning program (EFP), faces low uptake in the Prairie region. In this thesis, I explore the nature of the dissonance between the EFP and Prairie farmers to understand why participation is so low, the issues embedded in the EFP, and how to develop better agri-environmental policy for the Prairie region. I employ multiple methods, including survey, discourse, and institutional analyses, to make sense of the dissonance. Survey analysis is used to explore the social psychology of risk and characterize participant's knowledge, risk perceptions, and trust regarding environmental action. Next, I employ discourse analysis to examine taken-for-granted notions embedded in how interviewees articulate their relationship to themselves, society, the environment, and the state. Finally, I utilize an institutional analysis to look at the mechanisms and values built into the EFP and the Prairie context and theorize how these institutional factors affect the EFP dissonance. Using the process of triangulation, I mix my methods to conclude that risk perceptions, economic constraints, and governmental trust are at the core of the EFP dissonance.

Acknowledgments

I cannot express enough gratitude for the commitment and determination of my supervisor Dr. Matt Dyce. The care and attention that Dr. Dyce displayed throughout this project was nothing short of phenomenal. I cannot thank you enough for sticking with me and this project through all the many, many bumps in the road.

A further thank you to the Dr. Ian Mauro for bringing me into the Environmental and Social Change program. Although we did not complete the project together, Dr. Mauro showed an interest in my abilities as a researcher and writer that is greatly appreciated. A thank you to the support of the Prairie Climate Centre and to the MESC Graduate Committee and Social Sciences and Humanities Research Council who funded this project. Thank you to my committee Dr. Melanie O’Gorman, Dr. Ryan Bullock, and Dr. Jonathan Peyton for your time and effort in reviewing this thesis.

A special thank you to my brother Niall and his partner Laura who acted as principal problems solvers and guides throughout thesis writing and navigating the stresses and heartache of being a grad student. To my aunt Niamh, thank you for the constant care and regular checkups and the rest of my family for their unending support that allowed me to finish this thesis. To my partner Bailey, thank you for your love and for believing in my ability to accomplish anything, even when it felt impossible. Finally, thank you to my mother Gemma. Although you could not see the end of this thesis, you are the reason I have been able to get where I am, and I know you would have been proud.

Table of Contents

Abstract	ii
Acknowledgments.....	iii
Table of Contents	iv
Table of Figures	viii
Chapter 1: Introduction.....	1
1.0 Introduction.....	1
2.0 Background of the EFP	4
2.1 Roll Out.....	4
2.2 A Regional ‘Dissonance’.....	5
3.0 Theorizing Dissonance.....	7
4.0 Objectives	8
5.0 Academic Contribution	9
5.1 Sustainable Development in Agriculture	9
5.2 Implementing Sustainable Agriculture	11
6.0 Structure of Thesis	13
7.0 Reflexivity and Positionality.....	15
Chapter 2: Surveying Environmental Risk Perception Among Prairie Farmers.....	18
1.0 Introduction.....	18
2.0 Literature Review – Social Psychology of Risk	19
2.1 Knowledge and Risk.....	21
2.2 Affect and Risk	22
2.3 Trust and Risk	23
3.0 Methodology	25
3.1 Methods.....	25
3.2 Measures	26
3.2.1 Knowledge	26
3.2.2 Affect	27
3.2.4 Trust	27
4.0 Results.....	28
4.1 Knowledge of Climate Change.....	29
4.2 Concern Regarding Climate Change Impacts.....	31

4.3 Trust Regarding Climate Change.....	34
5.0 Discussion.....	37
5.1 Climate Risk, Knowledge, and Skepticism.....	37
5.2 Affect, Banality, and Psychological Distancing.....	39
5.3 Trust, Responsibility, and Climate Action	41
5.4 Implications for the EFP	42
6.0 Conclusion	43
Chapter 3: Analyzing Discourses Among Prairie Farmers	46
1.0 Introduction.....	46
2.0 Methods.....	49
2.1 Discourse Analysis.....	49
2.2 Semi-structured interviews	52
2.3 Research design	54
3.0 Analysis.....	57
3.1 What does your ‘day-to-day’ look like?.....	57
3.1.1 Biophysical Processes.....	57
3.1.2 Monitoring and Technological Applications	58
3.1.3 Risk Management	59
3.1.4 Freedom and Uncertainty.....	60
3.2 What does it mean to be a responsible farmer?	61
3.2.1 Stewards of the Land	61
3.2.2 Cultivating the Landscape.....	62
3.2.3 Feeding the World.....	63
3.3 How do you view environmental risks and government action?.....	64
3.3.1 Natural Cycles.....	64
3.3.2 Subjects to the Weather	65
3.3.3 Skepticism.....	66
3.3.4 Government Action.....	68
4.0 How does this all figure into the EFP?	69
5.0 Conclusion	70
Chapter 4: Investigating the EFP through an Institutional Framework	73
1.0 Introduction.....	73

2.0 The EFP Policy – Focused View.....	77
2.1 Policy Analysis.....	77
2.1.1 Policy Studies.....	77
2.1.2 New Institutionalism.....	80
2.2 The EFP at Work.....	82
2.2.1 How Farmers Use the EFP.....	82
2.2.2 How Governments Use the EFP.....	84
2.2.3 How Third Parties Use the EFP.....	85
2.3 Assessing the EFP’s Mechanisms.....	86
2.3.1 Existing Policy Analysis of the EFP.....	86
2.3.2 Policy Mechanism #1 – Moral Suasion.....	86
2.3.3 Policy Mechanism #2 – Bottom-Up Approach.....	87
2.3.4 Policy Mechanism #3 – Beneficial Management Practices.....	88
2.4 Prairie Farmers and the EFP Policy.....	90
3.0 Situating the EFP – Contextual View.....	91
3.1 History of the EFP.....	91
3.1.1 Origins in Ontario.....	91
3.1.2 Expansion to a National Program.....	92
3.1.3 Rollout in the Prairies.....	93
3.2 The EFP in Context.....	95
3.2.1 Farm Insurances and Business Risk Management.....	95
3.2.2 Sustainably and Corporate Food Production.....	97
4.0 Conclusion.....	98
Chapter 5: Conclusion.....	100
1.0 The EFP Dissonance.....	100
2.0 Methods.....	102
2.1 Mixed Methods.....	102
2.2 Triangulation.....	102
2.3 Mixing Methods in Practice.....	104
3.0 How does this explain the dissonance?.....	105
4.0 Policy Recommendations.....	108
5.0 Thematic Contributions.....	110
5.1 Theme # 1: Modernity and Environmental Risk.....	110

5.2 Theme #2: Neoliberalization of the Environment.....	112
5.3 Theme #3 The Problem of Governance and Sustainable Agriculture.....	114
References.....	116
Appendix 1: Survey Questionnaire.....	127
Appendix 2: Semi-Structured Interview Guideline	134
Appendix 3: Informed Consent Form	136

Table of Figures

TABLE 1: Farmer Demographics 29

TABLE 2: How much do you agree or disagree with the following statements about climate change? 30

TABLE 3:How much do you agree that climate change will harm the following groups? 32

TABLE 4: How concerned are you about the effects of climate change on the following? 34

TABLE 5: How much do you trust the following groups as a source for information? 35

TABLE 6: How much do you agree with the following statement about climate change? 36

Chapter 1: Introduction

1.0 Introduction

The Canadian agricultural system is at the forefront of a combined economic and environmental crisis. Canadian farms face increasing economic precarity and rural depopulation (Qualman et al. 2018). The financialization of farmland and the dominance of industrial production systems have resulted in agribusinesses, who supply fertilizers, chemicals, machinery, fuels, technologies, services, and credit, taking as much as 95% of farm revenues (Desmarais et al. 2015; Magnan 2012; 2015; Qualman 2019). Only 5% of revenues are translated into income, an ongoing trend since the 1980s, with revenues hitting a nadir in the early 2000s followed by a weak recovery in the 2010s (Qualman 2019). The income crisis has resulted in farm debts nearly doubling since the beginning of the new millennium, and the survival of small to medium-sized farms or ‘family farms’ increasingly relies on off-farm work, taxpayer-funded support programs, and non-farm revenue sources to sustain incomes (Magnan 2012). As human activities destabilize planetary systems, farmers face new challenges such as climate change, biodiversity loss, water pollution, and freshwater depletion (Qualman 2019; Steffen et al. 2015). The cost of environmental destabilization is only expected to increase in the Prairie region (Sauchyn, Diaz, and Kulshreshtha 2010) and with the economic precarity of farming, there is an apparent need for the Canadian government to assist farmers in mitigating the negative effects of economic and environmental change.

Agriculture and Agri-food Canada (AAFC) and provincial ministries of agriculture have displayed an interest in helping farmers alleviate environmental and economic precarity. The Guelph Statement, which laid out Canada’s goals for the agricultural sector in the coming years, put at the top of its list “tackling climate change and environmental protection to support GHG

emission reductions and the long-term vitality of the sector while positioning producers and processors to seize economic opportunities from evolving consumer demands” (Agriculture and Agri-Food Canada 2021). This statement shows AAFC and participating provinces’ commitment to collaborating on a vision of the agricultural sector that integrates environmental protection while sustaining economic growth. To achieve this goal, the federal, provincial, and territorial governments have committed \$3.5 billion through the Sustainable Canadian Agricultural Partnership (SCAP) to support programs to help farmers develop economically, environmentally, and socially sustainable farms (Agriculture and Agri-Food Canada 2023). At the core of this suite of programs is Canada’s flagship agricultural program for managing environmental resources and mitigating contributions to environmental change, the Environmental Farm Plan Program (EFP).

The EFP aims to weave agri-environmental stewardship into farming practices and influence farmers’ decision-making regarding the economics of environmental change. In its inception, AAFC intended the EFP policy to be a uniquely bottom-up initiative. Rather than dictate terms or limit behaviours, the EFP offers farmers training courses, partnerships with experts, and planning tools that they can use to create a management strategy for their operation. The EFP teaches farmers how to identify environmental “assets and risks” and then find economic incentives to manage the former and mitigate the latter (Province of Manitoba, n.d.-a). In developing an EFP, farmers gain access to the expertise of environmental extension agents to “pinpoint where improvements can be made” on their farms (Province of Alberta, n.d.-c). Farmers who register their EFPs are eligible to receive Beneficial Management Practices (BMP) grants and cost-sharing programs provided by provincial and federal governments under SCAP to help them continue growing under a planned model. Incentives enable farmers to recognize

the value of sustainability. The combination of environmental and economic considerations built into the EFP could make it a valuable program for farmers to mitigate the negative effects of the changing landscape.

Given farmers' dire need to manage environmental and economic stressors, the EFP would appear to be a uniquely adaptive government program tailored to create awareness and education around the transition to more sustainable agriculture, while reducing the financial burden of this transition on farmers themselves. The federal and provincial governments that roll out the plans on a province-by-province basis also benefit from the opportunity to meet climate goals and instigate a more resilient agricultural sector.

Yet results show that a large proportion of Canadian farmers are resistant to adopting the EFP model. Since its introduction in 2005, only 37% of Canadian farmers have enrolled in the program as of early 2022 (Statistics Canada 2019). While buy-in is higher in eastern Canada, much of the disparity accounts for farmers in western Canada, including the drought-affected Prairies. In Ontario, 42% of farmers, 72% in Quebec, and, on average, 60% in the Atlantic provinces have an up-to-date EFP in place. In contrast, less than 30% of Albertan, Manitoban, Saskatchewanian and British Columbian farmers have an up-to-date EFP (Statistics Canada 2019).

A regional dissonance is evident between the farmer-centred aims of EFP and the low level of uptake on farms across Western Canada. The bottom-up approach of EFP grants farmers the opportunity to have their needs heard and take the lead on the issue of environmental change, yet Western Canadian farmers are reticent to participate and create EFPs. In this thesis, I focus on understanding the dissonance between Western Canadian farmers and the EFP program. Looking at the rollout and history of the EFP across Canada helps to explain the complexity of this

problem. Specifically, the development of the EFP program points to the dissonance being regional in character, with farmers in Western Canada not reaching the level of uptake that Eastern Canada has. For this reason, I take a regional view focusing on the Prairie provinces to elaborate on various factors contributing to the dissonance regarding the EFP. By doing so, I can reveal how governing bodies can develop environmental policies that can address these farmers' needs.

2.0 Background of the EFP

2.1 Roll Out

The Ontario EFP was first developed in conjunction with the Ontario farmers' associations, the Ontario agricultural ministry, and farmers and it was rolled out in 1993. They designed the EFP as a farmer-led educational initiative designed to teach farmers about environmental risks and assets on their farms (Robinson 2006b). During the 1990s, Quebec and the Atlantic provinces adopted the EFP or EFP-like programs, and by the mid-2000s, the Prairies and British Columbia followed suit (Smith et al. 2020). In 2005, under the Agricultural Policy Framework, a National EFP Initiative systematized the program, defining the principles and elements that should be implemented in each province's EFP (Agriculture and Agri-food Canada 2009). Within this new framework, BMP grants and cost-sharing agreements began to be integrated into the EFP, increasing farmers' incentivization (Yiridoe 2000). In the thirty years of the EFP's existence, it has spread across the country, revealing a growing coalescence between farmers and different levels of agri-environmental awareness and management of agricultural lands and resources. However, there is a troubling disparity in the regional acceptance of the plan (Agriculture and Agri-Food Canada 2009). The inter-provincial expansion of the EFP program

represented multi-tiered government efforts to combat environmental change and a growing willingness among farmers to mitigate environmental costs associated with agriculture.

While the inter-provincial expansion of the EFP program signalled a positive future for the program, the late adoption of Western Canadian provinces meant that their uptake of EFPs lagged compared to the rest of the country. In 2006, the Farm Environmental Management Survey (FEMS) began cataloguing the number of participants in the EFP program in Canada. At the time, 26% of all farms had an EFP in place with Western Canadian farms uptake at 10.8% in British Columbia, 13.4% in Alberta, 10.7% of Saskatchewan, while 15.4% of Manitoban farms had EFPs (Agriculture and Agri-Food Canada 2009). The FEMS report (2009) authors explained the lack of uptake in Western Canada by pointing to the relative newness of the program in the region. As the EFP had spread across the country, it was expected that uptake in Western Canada would only increase with time (Agriculture and Agri-food Canada 2009).

2.2 A Regional 'Dissonance'

Despite AAFC's expectations that Western Canada would catch up with the rest of the country, as of 2023, they have yet to match the numbers that Eastern Canada held in the 2000s. Notably, participation in the Prairie provinces only significantly increased between 2006 and 2011, with Alberta going to 23%, Saskatchewan 26%, and Manitoba 28%. Since 2011, participation in Manitoba has decreased by 1% to 27%, Saskatchewan has decreased by 2% to 23%, and Alberta has increased by only 2% to 25% (Statistics Canada 2011; 2019). Based on these numbers, it seems that the current rate of participation in the Prairies represents a series of early adopters, and the program has failed to expand past this initial population. Given that the Prairies comprise 80% of Canada's farmland, this outlier becomes even more significant. It

suggests that the majority of land under agricultural production has no environmental strategy in place.

AAFC has attempted to discover why farmers have not taken up the program, but their data collection leaves far too much room for interpretation. AAFC's Farm Evaluation Survey provides room for farmers to respond to questions on why they have not created an EFP. Possible answers include it is too complicated (22%), it is too time-consuming (32%), there is a lack of information (26%), that they are already participating in other environmental initiatives (10%), and they are concerned with data privacy and enforcement issues (10%) (Statistics Canada 2019). While these explanations provide some insight into farmers' reasoning for not developing an EFP, they provide no context as to why Western Canada has not reached the uptake of farmers in Eastern Canada. The survey results do not provide room for farmers to articulate how their beliefs, relationships to economic systems, or perceptions of risk inform their choices.

AAFC's survey does not clearly explain why farmers are not participating in the program because it presents Canadian farmers as a homogenous group. This portrayal excludes the regional quality of Canadian politics (Cochrane and Perrella 2012) and how regional geographic, economic, political, and cultural differences inevitably inform farmers' decision-making. An adequate explanation of the dissonance requires attention to this regional quality. The survey also excludes farmers' relationship to capital and the competing interests embedded in the evolving political-economic system. Capitalism is increasingly important with the ongoing expansion of neoliberalism into agrarian production and politics (Beingessner, Magnan, and Wendimu 2023; Magnan 2017; Müller 2008). Finally, the survey does not account for the heterogeneity of environmental perceptions, how farmers in different regions conceptualize risk, and how the development of risk management programs differs across regions. A full explanation of the low

uptake of EFP must consider the country's regional variance, the political economy of agriculture, and the risk management process.

In this thesis, I show that explanations for the dissonance between Western Canadian farmers and the EFP programs can be found in exploring these regional factors not included in AAFC's survey. I use a combination of survey and interview data to investigate how farmers in the Prairie region make decisions related to environmental risks, how they conceptualize land under capitalism, how they relate to the state, and how they select policy instruments in the agricultural sector. By positioning these decisions in relation to my analysis of the EFP itself, I use a mixed methods approach to outline the factors that may contribute to the dissonance on EFP. I show that the dissonance lies in how Prairie farmers perceive risk, economic pressures on the Prairie agricultural mode of production, and the relationship between farmers and the state. These factors often encourage farmers to prioritize ever-increasing growth in the sectors' productive capacity, a critical barrier to integrating effective environmental management. I conclude that recognizing this disjuncture between economic and environmental aims can aid in narrowing the gap between Western Canadian farmers and the EFP, and aid in developing environmental policy for the agricultural sector.

3.0 Objectives

My research explores the forces that influence Prairie farmers' decision-making, including risk perceptions, values, relationships with the government, and economic priorities. I also examine the EFP itself to determine the values and mechanisms built into the program. These different levels of analysis enable understanding of the dissonance between Western Canadian farmers and the EFP by attending to the regional specificities of the Prairies. Resolving

this dissonance is significant for both the ministries responsible for agriculture, farmers, and wider society given the potential mitigating influences of program adoption. Since the EFP stands as Canada's flagship tool for managing agri-environmental resources, the program's success is critical for achieving the government aim of tackling environmental protection and economic stability (Agriculture and Agri-food 2023). For farmers, developing an EFP is a key part of ensuring the resiliency of their farms in an era of economic precarity and environmental change. My research determines that the regional and historical properties of the Prairies and the functional design of the EFP program such as the mechanisms and values built into the program contribute to a dissonance regarding what should be clearly aligned goals.

The conclusions reached in this thesis provide new perspectives for the ministries responsible for agriculture, farmers, and academic audiences. I highlight key explanatory factors for the EFP dissonance, including risk perceptions, economic constraints, and trust. My analysis shows the particularities of how farmers interpret environmental risks in the context of the Prairies, the various ideological and material constraints placed on farmers' decision-making, and the issue of trust, which exacerbates the struggle to implement environmental programming. I also turn my analysis to the EFP to show how the program has succeeded and struggled to integrate the needs of Prairie farming into its framework. These insights serve to unpack the contingencies of the EFP and Prairie agriculture to show how agricultural practices and governance are part of a changeable system, providing ground for academic contributions on neoliberalism, sustainability, and agriculture in the Prairies. By highlighting the dissonance between the EFP and Prairie farmers, I show why achieving environmental sustainability requires a shift in the actors' approaches.

The concept of ‘dissonance’ is vital to this research by accurately conceptualizing the problem but has implications on the character of the research. Framing the problem as dissonance is useful because it illustrates how shared objectives can coincide with conflicting values and a deep mistrust. Using dissonance serves as a reminder that these groups have a consonant goal that becomes problematic when they attempt to meet on policy. The dissonance is not about whether or not farms should be sustainable, it is about what sustainability means, what is achieved, what is given up, and who gets control over the landscape. The concept opens the discussion to looking at Prairie farmers and the EFP as two sides of the problem rather than one being wrong and the other right. The term is equally valuable when expanded to serve interpretive analysis. In the conclusion, I demonstrate this by returning to theorize ‘dissonance’ and discuss its implications on this research.

4.0 Academic Contribution

4.1 Sustainable Development in Agriculture

Sustainable development was officially introduced to Canadian agriculture with the report, *The Health of our Soils: Toward Sustainable Agriculture in Canada* (Agriculture and Agri-Food Canada 1995) and has since become a key concern for policymakers. The report was a response to global interest in integrating notions of sustainability into the agricultural field which came out of increasing scrutiny towards agricultural contributions to pollution and increased mechanization’s impact on family-farm incomes (Buttel 2006). These critiques indicated the potentially unsustainable nature of modern, industrial agricultural systems. They demonstrated ways industrial agriculture acts unsustainably by depleting soil and water resources and negatively altering the climate as well as squeezing farmers’ incomes and increasing debts.

Since the 1990s, managing or altering agricultural production to achieve sustainable development has become a key concern for states and policymakers around the globe.

As sustainable development in agriculture has become a key policy goal, researchers in rural sociology and environmental geography, among other fields, have questioned the various definitions surrounding ‘sustainability’. They have raised the question of what definition of agriculture’s ‘sustainability’ should inform policy (Carolan 2006; Janker, Mann, and Rist 2018; Karami and Keshavarz 2010; Robinson 2009; Velten et al. 2015). Janker, Mann, and Rist (2018) argue that two prominent discourses tend to govern the discussion around sustainable agriculture. First, a discourse where the core concern for future planning should be the development of smallholder agriculture, the intensification of agriculture, and the management of farm-adjacent environmental resources. In this discourse, sustainable means equitable and would apply to balancing inequalities in the global south with the productive capacity of the globe. Second, a discourse arguing that management of environmental resources should be the true measure of sustainability. This discourse draws from ecological science, arguing that there are hard planetary limits that agriculture must stay within. These definitions represent a core tension within the sustainability literature between growth, focusing on increasing farmers’ incomes and productive capacities, and degrowth, focusing on managing environmental resources to prevent degradation.

The tension between different definitions of how to measure sustainability in agriculture has led to a divergence in how to work towards it. Robinson (2009) highlights two primary paradigms within sustainability goals: ecocentric and technocratic. The ecocentric paradigm focuses on the development of alternative modes of production that prioritize the environment over the economics of farming. Researchers within the ecocentric paradigm argue that the industrial, capitalist mode of agricultural production is untenable with the planet’s ecological

limits. Instead, they argue societies need to move towards low-growth or degrowth within the sector (Saito 2023). The ecocentric paradigm is exemplified by research into alternative agricultural practices and food systems such as organics, community supported agriculture, and regenerative agriculture (Robinson 2006). In contrast, the technocratic paradigm favours economic aims and argues for modifications of the existing agricultural system. These authors argue that low-growth scenarios are practically and politically unfeasible as farmers need to maintain their incomes and production needs to continue to feed the world (Vercammen 2011). Instead, they attempt to address the environment while maintaining growth and increasing income and production by integrating new environmental management techniques and technologies. This includes policy instruments such as carbon pricing, environmental regulations, and payments for environmental services. The ecocentric and technocratic paradigms of sustainable agricultural development are the result on competing definitions of sustainability, either prioritizing the environment, food security, or the economy.

There have been calls to integrate the competing approaches to agricultural sustainability (Velten et al. 2015). In this thesis, I highlight the EFP's focus as well as where key barriers to implementing ecological sustainability lie. Through my exploration of the Prairies and how context has shaped farmers' views of the environment, I argue that risk perception, economic constraints, and trust are key challenges for the EFP.

4.2 Implementing Sustainable Agriculture

Beyond debates regarding the definition and aims of sustainable agriculture, researchers have also debated what factors exist as barriers to the implementation of sustainable practices. These debates come out of questions surrounding the mobilization of sustainable practices,

which are yet to be picked up by farmers. These include reducing fossil fuels used by heavy machinery, reducing inorganic fertilizers, increasing energy-saving technologies, and increasing soil management to sequester carbon (Stringer et al. 2020). While many of these technologies are already available to farmers, encouraging them to alter their practices and adopt mitigative or adaptive measures represents a core challenge for researchers.

Buttel (2006) argues there are two main approaches to instigating sustainable change: attitudinal change and systems change. Research focused on attitudinal change highlights various barriers to integrating an environmental ethic into farming to find new ways to better communicate sustainable goals. Researchers focused on the relationship between attitudes and behaviours have pointed to environmental values, risk perceptions, social norms, and trust as barriers to sustainable development (Arbuckle et al. 2013; Kollmuss and Agyeman 2002; Kragt, Dumbrell, and Blackmore 2017; Prokopy et al. 2015). As a counterpoint, Buttel (2006) argues that attempts to influence farmers toward an ecological ethic will always fall short. Instead, he argues that attention should be paid to the political-economic system that perpetuates unsustainability. Other authors reiterate this systems approach by looking at political (Janker, Mann, and Rist 2018), knowledge (Velten et al. 2015), and political-economic (Bryant 1998) systems that shapes farmers possibilities regarding sustainable practices. The tension between the attitudinal and systems approach to instigating sustainable change represents a key site of study for achieving sustainable agriculture.

Over time, the attitudinal approach has begun to integrate findings from the systems approach. Prokopy et al. (2019) argue that an integration between attitudinal and systems change needs to occur for sustainable development to be achieved. They argue that there is no single factor that determines willingness to adopt sustainable practices. Rather, they argue there needs

to be an integration between individual and systemic factors to determine what contributes to a farmers' adoption of sustainable practices. My research contributes to this discussion by following in this process of integration. By using mixed methods, I integrate findings related to farmers attitudes with findings regarding the agricultural system to conclude that the historical and economic experiences shape the attitudes of farmers.

5.0 Structure of Thesis

To make sense of the factors that shape the low uptake of EFP, each chapter of this thesis relies on a different methodology, including social psychology, discourse, and policy analysis, to bring to light the different facets of the issue. Each methodology pulls from different data sources, including surveys, interviews, primary documents, and secondary literature. Creswell describes this arrangement of various sources as a form of 'triangulation' (Creswell 2013), wherein separate data sets are collected and analysed to understand different facets of a single research problem. Through a process of triangulation, I bring the separate results together and synthesize findings into a series of overall interpretations. Each separate chapter provides results regarding the interactions between and among farmers, the environment, the economy, and the state to explain the same problem: the low uptake of the EFP. After triangulating the themes found in each chapter, I use the conclusion to infer links between Prairie farmers' relationship to environmental controversies, the land, capital, and policy and the EFP dissonance.

In Chapter 2, I analyse how Prairie farmers react to environmental hazards using a dataset collected by The University of Winnipeg's Prairie Climate Centre (PCC) on climate change, risk, information, and policy. The PCC initially collected this material to survey individuals from the Prairie provinces' views on climate change to discover where their priorities lie related to

climate. I interpret the results to analyze how Prairie farmers view climate change risks using three core social psychology measures: knowledge, affect, and trust (van der Linden 2015). The basis of this chapter presents the quantitative results of this survey, then analyzes participants' views through the social psychology of risk. My analysis points to the unique perceptual relationship between Prairie farmers and environmental hazards within the context of a highly variable climate. This shows how Prairie farmers have received and reacted to an environmental crisis. It also points to farmers' low level of trust in geographically distant governing bodies as a potential explanation for low levels of support for environmental policy in the region. I end this chapter by theorizing how perceptions of climate change and governing bodies bear on the EFP's low uptake. The chapter concludes that consistent struggle with environmental hazards, distancing of the climate change, and distrust of the federal government result in farmers disagreeing with government action on environmental issues.

In Chapter 3, I use interview data to address how farmer subjectivities are articulated in the Prairies. This chapter employs the perspective of discourse analysis to semi-structured interviews I conducted in the winter of 2022. Analyzing these interviews reveals that participants ways of knowing themselves and the environment around them in relation to industrial capitalism affects their views on management. I conclude that farmers have become intertwined with economic rationalities, see themselves as self-interested individuals and economic producers, and the land as a resource requiring exploitation. The chapter reiterates the findings from the previous chapter that Prairie farmers have a unique relationship with environmental hazards influenced by the characteristics of the Prairie environment and that Prairie farmers have an antagonistic relationship with government action. Additionally, I conclude that historical

experiences and capitalist economic logics influence farmers perceptions of environmental policy, including the EFP.

In Chapter 4, I discuss the EFP in relation to the institutions that administer the program, and the policy networks it sits within. I use the framework of new institutionalism (Munck and Rosenschöld, Rozema, and Frye-Levine 2014) to understand the values and mechanisms built into the program. I critique how the structure and functions of the program interact with other farming programs and political economic forces that compete with the EFP. Chapter 4 completes my analysis by offering a micro-view of the specific policy documentation to place against the views presented in Chapters 2 and 3. I look at how the aims of the EFP are realized in the program's design and highlight the contradictions evident in its supposed bottom-up approach. I then explore the context and how the EFP's goals compete with the aims of other programs and technologies available to farmers. I highlight how the development of the agricultural policy network often downplays the role of environmental protection in lieu of economic growth.

In Chapter 5, I bring my findings together, exploring theoretical insights for effectively mixing methods, and identify crucial themes across the chapters. Each chapter of the thesis points to an explanation for why Prairie farms are not adopting the EFP. By bringing my findings together, I determine where my conclusions converge to present a comprehensive picture of the EFP dissonance. By treating my chapters as independent analysis that enter into a dialogue with one another, I demonstrate why the EFP has struggled with uptake in the Prairies and where pressure needs to be applied if the EFP program is to succeed.

6.0 Reflexivity and Positionality

Critical feminist and postcolonial research continually highlight the important roles of positionality and reflexivity in the research process. Calling back to Donna Haraway's (1988) concept of situated knowledge, positionality reflects academic research's partial nature. In her article, Haraway vividly demonstrates the foundations of academia as based on the invisible gaze of the researchers, who observe objective reality and transform it into academic knowledge. Haraway's critique returns the academic gaze to the embodied self, highlighting that a being in the world produces all knowledge. By asserting the role of the self in knowledge-making, Haraway helped invigorate an academic tradition that calls to the role of individual's positionality, with associated ontological, epistemological, political, and social foundations, as unequivocally reshaping knowledge-making. Researchers' positionality inevitably means that the knowledge they produce is never total or objective but rather situated and informed by a social position.

Researchers have expanded upon Haraway's initial theories to recognize the role of power embedded in knowledge formation. Rose (1997) demonstrates the problems that emerge within the researcher-subject relationship and how unequal power dynamics inevitably shape the research character. As a way of overcoming the problems of power, researchers have highlighted the value of reflexivity. Reflexivity refers to a constant process of interrogating and reinterrogating one's position, the position of their subjects, and how these relationships shape the research process (Finlay 2002; Guillemin and Gillam 2004; G. Rose 1997).

Interrogating my subjective position at the onset of this project provides a valuable foundation for engaging in the process of reflexivity. I am a settler male of Irish and English heritage. I moved to Winnipeg as an infant and have lived in the city my whole life. However, I

have maintained ties in England and Ireland throughout my life, spending many summers on my grandparents' sheep farm outside Dublin. Although I rarely understood what was happening around me, from silage to 'the dip' to meandering through barns, I was always aware of the particularities of how the farmers communicated with one another, the importance of history, and the relevance of community. At the same time, many aspects of the farm confused or repelled me, most vividly the pink deworming syringe uncomfortably forced into sheep's mouths. This relationship forms one part of my attraction to this project; the other is a concern with the history of the place – Winnipeg. Engaging in a project about what I viewed as a symbolic practice in the Prairies seemed like an opportunity to come to terms with my home. Finally, the frame of the environment seemed like a powerful way to understand farming in the 21st century and the practice of transforming the land in the era of climate change. In sum, I came to this project from a place of ignorance, willing to learn quickly and broadly from the literature, collaborators, and farmers about how farming is done, how it relates to the environment, and what makes it distinct in the Prairies.

Although I came to the project willing to learn and adapt, my privileged position as a researcher connected to an academic institution and in the practice of probing farmers for knowledge inevitably shaped the character of my 'findings.' My attempts to answer this research question run the risk of aligning with the needs of the state rather than the needs of farmers. I have to be conscious not to take 'the view from Ottawa' by arguing that Prairie farmers are ignorant or in the wrong and need to be changed. In writing up the experiences of Prairie farmers, I need to consider that the situations of surveys and interviews create unequal power dynamics. As a result, participants may feel pressure to speak inaccurately or produce a singular component of the many aspects of their identity. Inevitably, my work is a partial knowledge,

unveiling one aspect of the Prairie farming experience as seen through my social position. Still, I know what I produce carries a particular weight due to its association with an academic institution. In writing the thesis, I must carefully represent everyone in a fair and equal light that still interrogates the workings of power, subordination, and inequality.

Chapter 2: Surveying Environmental Risk Perception Among Prairie Farmers

1.0 Introduction

One of the core functions of the EFP program is to unveil environmental risks and help farmers design a plan to manage them and mitigate losses. In their day-to-day operations, farmers consistently manage a variety of agricultural risks. Risks caused by fluctuations in the global market, disease, or adverse weather conditions can negatively affect farmers' incomes and yields (Huirne 2003). However, Prairie farmers are reluctant to participate in the EFP, despite its potential for managing environmental risk. To understand this dissonance where two groups with a shared goal cannot find common ground, 'risk' must be placed at the centre of my analysis. Unpacking Prairie farmers' conceptualizations of risk offers important explanations of the dissonance between the EFP program and Prairie farmers. In this chapter, I look at the link between psychology, risk, and behaviour through the social psychology of risk to determine how Prairie farmers interpret risk and what these findings say about the EFP dissonance. I determine if the specific regional context of Prairie farming has a unique relationship with risk associated with climate change and theorize how their interpretation of risk affects the EFP.

The empirical context of this survey is the record-breaking 2021 drought that shocked agricultural production in the Prairie region. The combination of high temperatures and low precipitation dried up soil overburdening the region's water supplies as Prairie farmers witnessed a major drop in crop production. The subsequent lack of feed and water forced ranchers to sell off cattle (Laforge, Corkal, and Cosbey 2021). According to researchers, these events are likely connected to the force of anthropogenic climate change, that farmers can expect to experience them more frequently in the future, and they should plan to mitigate or adapt to them now (J. Laforge, Corkal, and Cosbey 2021; Sauchyn, Diaz, and Kulshreshtha 2010; Sauchyn, Davidson,

and Johnston 2020). Yet taking ‘climate action’ is typically a controversial subject among Prairie farmers (Davidson et al. 2019; Fletcher et al. 2021). A survey from 2023 showed that 83% of farmers disagree with a recent federal fertilizer emission reduction target (Briere 2023). Farmers’ rejection of government climate action seems counterintuitive since their goals are ostensibly aligned in averting environmental risks. Exploring the disjuncture between the immediacy of climate change and rejection of action presents a valuable basis for research into how Prairie farmers perceive threats associated with environmental risk and how this interpretation is shaped by farmers’ relationship to environmental action, and governing bodies.

2.0 Literature Review – Social Psychology of Risk

The social psychology of risk provides a framework for analyzing the processes that shape the interaction between environmental risk and Prairie farming. The social psychology of risk typically defines risk as the perceived potential that a hazard will cause harm (Breakwell 2014). The field grew in response to the failure of another approach called ‘statistical risk analysis.’ In statistical analysis, presenting farmers with claims like droughts will increase by 50% over the next 10 years, was assumed to result in them adapting to the risk accordingly. Research showed however that the interaction between people and risk is highly complex involving differences in values, preferences, institutional relationships, and levels of exposure. Technical accounting of probabilities and effects disregards the human elements at the core of risk taking (Renn 1998). The alternative view contends that individuals do not necessarily internalize these claims so directly, but parse risk through social and psychological processes. This approach theorizes that “the majority of citizens rely on intuitive risk judgements, typically called risk perceptions” (Kahneman, Slovic, and Tversky 1982, 380). Hence, risk perceptions are

not uniform but depend on social, economic, and cultural values, and may vary from one individual to the next according to past experiences and levels of education. It follows that experts and laypeople hold different interpretations of what constitutes a risk and how different actors should manage it (Kahneman, Slovic, and Tversky 1982; Taylor-Gooby and Zinn 2006; Sjöberg 1999; van der Linden 2015). For example, hazards deemed risky by experts, such as smoking, may still be taken up by the public. Conversely, threats like nuclear energy may be considered too risky by the public but be seen as mostly safe by experts.

Rather than examine the probabilities and effects of a risk, the social psychology of risk studies the risk receiver to understand how individuals know and interact with risks. This framework can be applied to survey data collected on Prairie farmers to determine how the risk of climate change is perceived. Based on this research, my analysis finds that respondents have a regionally specific way of perceiving environmental risk. Many farmers view environmental threats through the register of their prior views on government action and connect their assessments of climate danger in specific ways to their understanding of the region's history. I infer how farmers' views on environmental risk provide insight into the dissonance between Prairie farmers and the EFP program.

As an area of study, the social psychology of risk is characterized by varying approaches, each emphasizing distinct factors believed to shape people's interpretations of what a risk is and what to do about it (Breakwell 2014). In the context of this study, three of these approaches are relevant to investigating Prairie farmers' views on climate change. Each contends that a primary factor from either (1) knowledge, (2) affect, or (3) trust is the primary driver of farmers' perceptions of climate risk. Each factor presents a different approach for analyzing the data to understand farmers' psychological and social risk perception.

2.1 Knowledge and Risk

The knowledge deficit view of risk focuses on the relationship between expert knowledge and lay understanding. Researchers who place this area as the central factor in risk assessment claim that the dominant way individuals perceive danger depends on the amount of information they have. Lacking adequate information forces individuals to make poor decisions. For example, if one does not know about the link between smoking and lung cancer, they may be more willing to pick up the practice than someone who does. The predictable solution would be to provide the target population of smokers with information about the health risks of smoking. This conventional view is called the ‘knowledge deficit’ – individuals are believed to make better risk assessments if their deficit of knowledge decreases. Yet studies have found that various cognitive processes cause non-experts to misinterpret, ignore, or downplay the information they receive, resulting instead in a deficit of ‘accurate’ knowledge (Sundblad, Biel, and Gärling 2007; Taylor-Gooby and Zinn 2006). Even with knowledge surplus, the lay public’s and expert’s perceptions of risk can vary widely (Siegrist, Hübner, and Hartmann 2018; Sjöberg 1999; Slovic et al. 1995).

When applied as a research tool, the knowledge deficit framework assesses the level of accurate knowledge a target group has by measuring the degree they diverge from the expert view. Researchers have used the knowledge deficit approach to demonstrate correlations between perceived risk and knowledge on the subject of vaccines (Zingg and Siegrist 2012) and food hazards (Charlebois and Summan 2015). On the subject of climate change, Milfont (2012) and Shi et al. (2016) argue that a direct relationship exists between increased knowledge and concern climate change. Milfont (2012) found that political party orientation was a determining

factor in knowledge affecting concern, concluding that those supporting centre-right political parties tend to downplay climate change information. Shi et al. (2016) found that different types of knowledge had a greater affect on concern. Specifically, they concluded that knowledge of causes, such as carbon emissions, resulted in greater concern than knowledge of the physical characteristics of climate change, such as greenhouse gases. The knowledge deficit approach to risk presents a frame for measuring survey respondents' understanding of risk to compare it with that of experts as a baseline to see if a deficit exists.

2.2 Affect and Risk

Researchers who argue the 'knowledge' factor in risk assessment focus on calculating the non-expert's relative deficit of information and whether that information is accurate. In doing so, they formulate a conception of the public as rational actors who, when provisioned with accurate information, will act accordingly to minimize risk. This formulation disregards the irrational elements of human perception, such as emotions. To return to the prior example, even the chronic smoker who is provided with expert and accurate information about emphysema may continue to consume tobacco because they profess to love it, or because they have other smoking friends who have not died from it. These are psychometric factors, considered to be the role of 'affect' in risk perception (Slovic et al. 2004).

In their seminal piece, Fischhoff et al. (1978) developed the psychometric model by placing risk perception on a two-dimensional scale according to whether a risk is dreaded or unknown. Risks were classified as either 'dreadful' – those where the possibility for death or catastrophe were high, and were likely to be the result of an involuntary accident, and those that were 'unknown' – where death was less certain, and the origin and nature of the danger was

something that would potentially develop over time (Siegrist and Árvai 2020). The psychometric approach attempts to explain why activities involving potential outcomes where death is certain and gruesome, like a plane crash, tend to be perceived as a salient risk even though the statistical chances of dying in one are miniscule. Conversely, those activities where the outcomes are ‘unknown’ are minimized. They may cite the example of visiting the beach: statistically people are far more likely to die from drowning during a swim, or from skin cancer caused by the sun, yet a visit to the shore is typically seen as a completely safe activity. The psychometric approach demonstrates that individuals’ risk judgements are less based on the quantitative measure of potential harm than a qualitative assessment of individuals’ own feeling of control over the situation, the immediacy of the outcome, their familiarity with the activity, and the way they imagine the potential harm playing out on their body.

The psychometric affect model is usefully applied to environmental concerns. Something like climate change is firmly in the ‘unknown’ category – the timeline on which the harm plays out is in a somewhat undetermined future, and the physical effects are not unlike things people are already familiar with. The ‘feeling’ of an anthropogenic, climate-change induced drought is in practice no different than a drought caused by a natural variation in weather pattern. In the case of climate change, Bostrom et al. (1994) argue that a lack of concern or negative affective association leads people to disregard climate change. From this perspective, individual positive or negative feelings associated with a risk determine their action (Taylor-Gooby and Zinn 2006).

2.3 Trust and Risk

The ‘trust’ approach argues that the most important factor in risk perception is not found in the knowledge or emotional register of a given individual, but is found at the group level and

located in the relationship between social and cultural institutions and their members. Nickel and Vaesen (2012) define trust as a “disposition willingly to rely on another person or entity to perform actions that benefit or protect oneself or one’s interests in a given domain” (860). In this formulation, the question is not what the individual thinks, but rather how they base their risk assessment on the level of trust they have in external institutions to handle the risk (Eiser, Miles, and Frewer 2002; Siegrist and Cvetkovich 2000; Sjöberg 2001). For example, Vainio, Paloniemi, and Varho’s (2017) study of the relationship between trust and perceptions of nuclear energy showed that individuals’ faith in institutions correlated with their acceptance of nuclear energy.

Critically, there is disagreement regarding the definition of trust. Most researchers follow Slovic (1999) by focusing on the role of social trust in determining perception of risk. Social trust refers to individuals’ trust in organizations to effectively manage a risk. For example, one might find an invasive cancer treatment case less dangerous if they trust their doctor and the medical system. Yet researchers have shown relationship between social trust and risk perception only produces a moderate correlation (van der Linden 2015; Siegrist and Árvai 2020). Sjöberg (2001) argues that trust investigations should examine both social trust and the role of epistemic trust. This refers to quality of knowledge used to make risk assessments.

The above approaches to the social psychology of risk demonstrate the value of considering different factors influencing the perception of risk. The knowledge approach looks at how much people know about a risk and how that determines their views; the affective approach looks at how much people worry about a risk and how that determines their views; and the trust approach looks at how much people trust those around them and how that determines their views. I employ these risk perception measures in this study to assess respondents’ views of climate change.

3.0 Methodology

3.1 Methods

The social psychology of risk perception offers a valuable framework for testing the various factors that contribute to threats. In the case of Western Canada, the objective of applying social psychology is to understand how knowledge, affect, and trust inform the way farmers view the Environmental Farm Plan. The EFP is predicated on the idea that salient environmental threats exist, yet the statistics show that farmers are not adopting the plan. To conduct the analysis of Prairie farmers' risk perceptions, I use survey data collected during the spring of 2022. The survey used in this research is part of a larger project on climate opinions across the three Prairie provinces of Alberta, Manitoba, and Saskatchewan. The larger survey was led by researchers from the University of Winnipeg's Prairie Climate Centre (PCC) and investigated the relationship between personal opinion and climate communication. This survey is valuable to my study because questions and responses ranged into assessments of farmers' trust in institutions, their self-understanding of climate, and their political beliefs. The survey provides the basis to test the social psychology of risk factors of knowledge, affect and trust, and to theorize if these factors contribute to the lack of uptake of EFP. The survey data also allows for a generalizable sample of Prairie farmers and how these shared measures relate to risk perception (Clifford et al. 2016).

Since the survey was designed to address the PCC's research objectives, not all the questions used in the survey directly relate to this research. For instance, one of the main goals of collecting this material was to survey Prairie people's views on climate change to discover their priorities related to climate. While no questions directly ask about the EFP, due to the broad survey scope, many questions are pertinent to this research project. I was able to select specific

questions that could test the three socio-psychological factors influencing risk. Because survey respondents were asked to answer each question on a five-point Likert scale to account for degrees of agreement or disagreement, I was able to correlate these with measures of knowledge, affect and trust designed for the analysis.

3.2 Measures

3.2.1 Knowledge

I selected the first set of questions based on their ability to test farmers' knowledge of climate change. Following Van der Linden's (2015) suggestion to look at levels of accurate knowledge rather than presumed knowledge, these questions are not designed to ask farmers if they think they know about climate change; rather, they are designed to find out what statements farmers actually agree with. For this reason, the questions are based on factual statements related to the scientific consensus around climate change. For instance, "greenhouse gases trap heat in the atmosphere" was used to gauge the degree that farmers know about the process of climate change. Alternatively, "climate change is made worse by burning oil, gas, and coal" was used to gauge farmers knowledge of the anthropogenic forces contributing to climate change. Each question I selected asks farmers' level of agreement with the following statements on climate change: climate change is human-caused, climate change is made worse by burning fossil fuels, and greenhouse gases trap heat in the atmosphere. These questions also reflect the scientific consensus put out by organizations like the IPCC and the Canadian government and reflect objective scientific information regarding climate change. Respondents' level of agreement tested how much objective knowledge respondents held regarding climate change.

3.2.2 Affect

The next sets of questions look at respondents' concerns regarding the effects of climate change. These questions help reveal the affective response of farmers to climate change by recording the negative associations they have with the effects of climate change. The first set of questions is related to the degree to which climate change is perceived as an unknown or uncertain problem. For instance, questions such as "how much do you agree climate change will affect you and your family" or "how much do you agree climate change will affect other people in Canada" show how the climate change is associated with different geographical and temporal scales to see how distant respondent believe impacts are. These questions asked to what extent individuals agree or disagree that climate change will harm the following: you and your immediate family, your community, your province, other people in Canada, other people outside of Canada, and future generations of people. The next set of concern questions was selected to test farmers' affective response and associated dread with climate change impacts. This was done by asking how concerned individuals were about the subsequent impacts of climate change: economic disruption, infrastructure, human health impacts, water quality and availability, ability to produce food, and environmental impacts (e.g., changes to forests, parks, etc.). Respondents' level of agreement tested how worried farmers are about climate change impacts and how they conceptualize its various effects.

3.2.4 Trust

The final questions tested farmers' feelings about how climate change risk should be handled. These questions asked how risky climate change would be if the following groups managed it or how risky it is to collaborate with these groups in addressing climate change. The first set of questions investigated farmers' level of trust in various institutions as information

sources. The organizations include university-based researchers, industry groups, farmer groups, environmental groups, and the three levels of Canadian government (municipal, provincial, and federal). Questions such as “how much do you trust the municipal government as a source of information” or “how much do you trust university-based researchers as a source of information” can reveal level of epistemic trust or trust in the information that various groups produce.

I selected the next set of questions to test Prairie farmers’ trust regarding action on climate change and their feelings of responsibility for acting. These questions included: “I am willing to reduce climate emissions in my own life” and “I support government initiatives to reduce emissions” for example. These questions relate to social trust or trust in external bodies to handle risk. The questions test the degree to which respondents trust governments to act on climate change, counterposed by their belief that something should be done. By contrasting Prairie farmers’ feeling of responsibility, their support for government initiatives and trust in different information sources, I test who farmers trust to address climate change, with emphasis on government action.

4.0 Results

The PCC’s surveys were conducted online and over the phone in the spring of 2022. The PCC chose to sample respondents based on gender (male/female), racial (settler/Indigenous), and locational (provincial and urban/rural) variables to gain a clear picture of different Prairie people’s responses. The survey covered 1487 individuals with an almost even split between the three Prairie provinces (499 in Alberta, 510 in Manitoba and 478 in Saskatchewan). Although the survey did not intentionally sample agricultural producers, the rural sampling meant that a statistically relevant number of farmers participated. In the end, 145 (39 in Alberta, 31 in

Manitoba, and 75 in Saskatchewan) of the respondents identified themselves as farmers. Of these respondents, the most significant demographic groupings include 68.4% of respondents as male, 41.3% are 55 or above, 20.7% earning \$150 000 or more a year, and 42.8% of respondents politically on the right (see Table 1).

TABLE 1: *Farmer Demographics*

Gender		Age		Income		Politics	
Woman	31.00% (45)	18 to 24	15.90% (23)	Less than \$20,000	10.30% (15)	Strongly right	20.00% (29)
Man	64.0% (94)	25 to 34	13.80% (20)	\$20,000 to \$39,999	13.0% (19)	Somewhat right	22.80% (33)
Non-binary	0.70% (1)	35 to 44	13.80% (20)	\$40,000 to \$59,999	6.90% (10)	Moderate	28.30% (41)
Transgender	0.00% (0)	45 to 54	12.40% (18)	\$60,000 to \$79,999	9.70% (14)	Somewhat left	6.90% (10)
Two-spirit	0.70% (1)	55 to 64	17.0% (25)	\$80,000 to \$99,999	10.30% (15)	Strongly left	6.20% (9)
Another gender not listed above	0.70% (1)	65 or older	24.10% (35)	\$100,000 to \$149,999	16.60% (24)	Prefer not to respond	15.90% (23)
Prefer not to respond	2.10% (3)	Prefer not to respond	2.80% (4)	More than \$150,000	20.70% (30)		
				Prefer not to respond	12.40% (18)		

Source: Prairie Climate Centre. 2022.

Notes: Response number in brackets

4.1 Knowledge of Climate Change

On the knowledge questions (Table 2), I found a moderate level of belief in the existence of climate change. A total of 52.7% either agreed or strongly agreed that climate change was happening. Of the remaining responses, 28.3% disagree or strongly disagree, and 17.9% neither agree nor disagree that climate change is happening. These results show that a slim majority of

respondents believe that climate change is underway, well below the rest of the surveyed population at 79.3%. I found a similar distribution regarding whether greenhouse gases trap heat in the atmosphere. A slightly smaller majority of respondents either agreed or strongly agreed, at 46.9%. In comparison, a minority disagreed or strongly disagreed at 22.8%, and a large percentage neither disagreed nor agreed at 21.4% or don't know at 9%. This measure helps determine if respondents agree with the science behind climate change. The results show a low level of agreement that climate change is occurring and that many respondents are unsure of the science behind climate change. These results point to a moderate knowledge deficit being present, with a significant portion of the respondents not agreeing with climate science.

TABLE 2: *How much do you agree or disagree with the following statements about climate change?*

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Don't know	Mean
Climate change is happening	13.1% (19)	15.2% (22)	17.9% (26)	34.5% (50)	18.6% (27)	0.7% (1)	3.31
Greenhouse gases trap heat in the atmosphere	9.7% (14)	13.1% (19)	21.4% (31)	34.5% (50)	12.4% (18)	9.0% (13)	3.30
Climate change is primarily human caused	17.2% (25)	21.4% (31)	23.4% (34)	21.4% (31)	14.5% (21)	2.1% (3)	2.94
Climate change is made worse by burning oil, gas, and coal	20.0% (29)	22.1% (32)	22.8% (33)	21.4% (31)	11.0% (16)	2.8% (4)	2.81

Source: Prairie Climate Centre. 2022.

Notes: Response number in brackets

The next set of measures tested if respondents agreed with the anthropogenic nature of climate change and found a significant knowledge deficit. Regarding whether climate change is mainly human-caused, Prairie farmers gave mixed reactions, with 38.6% either disagreeing or strongly disagreeing, 23.4% neither agreeing nor disagreeing, and 35.9% agreeing or strongly agreeing. These results show a clear divide on the issue as more respondents disagree that humans cause climate change than agree. Additionally, regarding the science of anthropogenic climate change, responses on whether climate change is worsened by burning oil, gas, and coal showed more significant disagreement on the subject. 42.1% of respondents disagree or strongly disagree, 22.8% neither agree nor disagree, and only 32.4% agree or strongly agree that climate change is worsened by burning oil, gas, and coal. These results demonstrate a significant knowledge deficit and the presence of attribution skepticism - skepticism towards the attribution of climate change to humans.

4.2 Concern Regarding Climate Change Impacts

The first concern measure (Table 3) demonstrates that respondents view climate change as a faraway phenomenon. When asked if climate change would harm subsets of the population, respondents trended towards agreement as the population in question became more distant, implying that climate change is currently an 'unknown' phenomenon. On the potential that climate change would have you and your immediate family, 39.3% of farmers responded either disagree or strongly disagree. In comparison, 33.1% agreed or strongly agreed, and 26.2% neither agreed nor disagreed. As the harm scale moves further away from direct impacts, farmers tended to move towards the agreement side, with 36.5% agreeing or strongly agreeing to your community, 42.1% on your province, 44.1% on other people in Canada, 56.5% on other people

in the world, and 51.7% on future generations. These results reveal a generalized perception among respondents who believe climate change is unlikely to affect people near them. Instead, respondents viewed climate change as a faraway phenomenon affecting future generations or people outside of Canada. Following the psychometric scale, these results imply that respondents perceive climate change as an unknown and distant phenomenon.

TABLE 3: *How much do you agree that climate change will harm the following groups?*

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Don't know	Mean
You and your immediate family	13.8% (20)	25.5% (37)	26.2% (38)	22.8% (33)	10.3% (15)	1.4% (2)	2.90
Your community	13.8% (20)	23.4% (34)	24.8% (36)	26.2% (38)	10.3% (15)	1.4% (2)	2.96
Your province	13.1% (19)	21.4% (31)	23.4% (34)	29.0% (42)	13.1% (19)	0.0% (0)	3.08
Other people in Canada	13.8% (20)	17.2% (25)	24.1% (35)	25.5% (37)	18.6% (27)	0.7% (1)	3.18
Other people in the world	8.3% (12)	9.7% (14)	22.1% (32)	31.0% (45)	25.5% (37)	3.4% (5)	3.58
Future generations of people	8.3% (12)	13.8% (20)	23.4% (34)	25.5% (37)	26.2% (38)	2.8% (4)	3.49

Source: Prairie Climate Centre. 2022.

Notes: Response number in brackets

The second concern measure related to discrete impacts (Table 4) showed respondents have low dread associated with climate change. Of those that did show concern, their concern is related to potential harm to their productive capacity. On average, 25.2% of farmers responded that they were not concerned about climate change's effects. For those concerned, on average, 15.9% of respondents answered that they are slightly concerned, 25.2% are moderately

concerned, 20.9% are very concerned, and 12% are highly concerned about the effects of climate change. These results show that, on average, at least 58.1% of respondents were at least moderately concerned about the various impacts of climate change. Like with the knowledge scales, only a slim majority of respondents are moderately concerned, while 41.1% remain either not concerned or only slightly concerned. Regarding mean concern, the ability to produce food was 2.99, water quality and availability was 2.95, the economy was 2.84, the environment was 2.77, human health was 2.65, and infrastructure was 2.50. Each of these mean responses sits between moderately concerned and very concerned and below the rest of the surveyed populations. These results indicate that farmer respondents were generally less concerned about the effects of climate change than the rest of the surveyed population. Of those concerned, production-based concerns, food, water, and the economy outrank non-productive-based concerns such as infrastructure and human health. These results demonstrate that respondents' core concerns lay with their ability to farm rather than climate impacts on the rest of the population.

TABLE 4: *How concerned are you about the effects of climate change on the following?*

	Not at all concerned	Slightly concerned	Moderately concerned	Very concerned	Extremely concerned	Don't know	Mean
Ability to produce food	24.8% (36)	12.4% (18)	21.4% (31)	20.0% (29)	20.7% (30)	0.7% (1)	2.99
Water quality and availability	24.8% (36)	13.8% (20)	20.7% (30)	22.8% (33)	17.9% (26)	0.0% (0)	2.95
Economy	21.4% (31)	15.2% (22)	27.6% (40)	26.9% (39)	7.6% (11)	1.4% (2)	2.84
Environment	25.5% (37)	13.8% (20)	30.3% (43)	17.2% (25)	12.4% (18)	0.7% (1)	2.77
Human health	26.2% (38)	20.7% (30)	22.8% (33)	21.4% (31)	8.3% (12)	0.7% (1)	2.65
Infrastructure	28.3% (41)	19.3% (28)	28.3% (41)	17.2% (25)	4.8% (7)	2.1% (3)	2.5

Source: Prairie Climate Centre. 2022.

Notes: Response number in brackets

4.3 Trust Regarding Climate Change

Regarding questions related to respondents' trust in information sources (Table 5), responses showed a general distrust of bodies farther away from the context of Prairie farming. The two groups with mean responses above neither agree nor disagree were farm groups at 3.57 and university-based researchers at 3.32. All other means were between disagreement and neither agreement nor disagreement with the federal government at 2.05, environmental groups at 2.46, the provincial government at 2.73, industry groups at 2.74, and municipal governments at 2.94. These results show that organizations closer to the experience of farming or rural living, such as farm groups and municipal governments, are more trusted. The only exception is university-based researchers, the second most trusted, implying that respondents trust university-based

researchers' information. In contrast, those that are far away such as provincial governments and environmental groups typically are not trusted. The results also show that respondents trusted the federal government the least by a large margin.

TABLE 5: *How much do you trust the following groups as a source for information?*

	Strongly distrust	Distrust	Neither trust nor distrust	Trust	Strongly trust	Don't know	Mean
Farm groups	2.1% (3)	11.0% (16)	28.3% (41)	42.8% (62)	14.5% (21)	1.4% (2)	3.57
University-based researchers	13.1% (19)	9.0% (13)	29.7% (43)	28.3% (41)	19.3% (28)	0.7% (1)	3.32
Municipal or local government	11.0% (16)	17.2% (25)	40.0% (58)	26.9% (39)	3.4% (5)	1.4% (2)	2.94
Industry groups	12.4% (18)	21.4% (31)	44.1% (64)	16.6% (24)	2.1% (3)	3.4% (5)	2.74
Provincial government	14.5% (21)	26.2% (38)	32.4% (47)	23.4% (34)	2.8% (4)	0.7% (1)	2.73
Environmental groups	29.0% (42)	24.8% (36)	21.4% (31)	20.7% (30)	4.1% (6)	0.0% (0)	2.46
Federal government	46.2% (67)	19.3% (28)	20.7% (30)	9.0% (13)	4.1% (6)	0.7% (1)	2.05

Source: Prairie Climate Centre. 2022.

Notes: Response number in brackets

Prairie farmers' response to the question "I am willing to reduce climate emissions in my own life" revealed that many farmers are willing to reduce climate emissions (Table 6). 57.2% responded that they either agree or strongly agree that they are willing to reduce emissions. Additionally, 23.4% answered that they neither agree nor disagree, while only 17.9% responded that they either strongly disagree or disagree that they are willing to reduce emissions. 59.3% of

Prairie farmers agree or strongly agree that agriculture must respond to climate change. Only 23.5% of respondents said they strongly disagree or disagree that agriculture must respond to climate change. This is below the rest of the surveyed individuals, where 77.8% said agriculture would have to respond to climate change. This result makes sense to respondents' lower belief in climate change compared to the rest of the surveyed population. In contrast, when asked: "I support government initiatives to reduce climate change," responses were far more negative. 46.2% responded either strongly disagree or disagree that they support government initiatives. There was still 37.3% that agreed or strongly agreed that they support government initiatives, making this a polarizing scale. These results demonstrate that respondents feel a need to react to climate change and are willing to do something themselves but do not trust government initiatives to reduce emissions, pointing towards a general distrust of government action on climate change.

TABLE 6: *How much do you agree with the following statement about climate change?*

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Don't know	Mean
I support government initiatives	22.1% (32)	24.1% (35)	15.9% (23)	29.0% (42)	8.3% (12)	0.7% (1)	2.77
I am willing to reduce climate emission	7.6% (11)	10.3% (15)	23.4% (34)	40.0% (58)	17.2% (25)	1.4% (2)	3.50
Agriculture will need to respond	13.8% (20)	9.7% (14)	15.9% (23)	39.3% (57)	20.0% (29)	1.4% (2)	3.43

Source: Prairie Climate Centre. 2022.

Notes: Response number in brackets

5.0 Discussion

Several notable findings emerged from this survey. These findings are broken down below based on the three approaches to risk perception. The purpose of this discussion section is to explore the survey findings to see what degree they can explain how respondents perceive risk and the social-psychological factors that inform their perception. In exploring these factors, I will build hypotheses regarding the dissonance between Prairie farmers and the EFP program.

5.1 Climate Risk, Knowledge, and Skepticism

The knowledge approach argues that individuals' decision-making on risks is informed by their knowledge or lack of knowledge regarding that risk. In this survey, I found a slight knowledge deficit among many respondents regarding climate change and the science of greenhouse gas emissions. Based on the knowledge deficit model, these results imply that many respondents are either unaware or unaccepting of the science of climate change. Additionally, the results showed a more significant knowledge deficit regarding the anthropogenic nature of climate change. The results showed a high level of disagreement regarding the contribution of humans and oil, gas, and coal to climate change. These findings imply that many deny or are skeptical of the scientific consensus regarding climate change's relationship to human action. Shi et al. (2016) point out that individuals aware of the physical processes of climate change will not necessarily be concerned about its effects. Rather, knowledge of the causes of climate change are greater predictors of concern. As was seen in the results, respondents were more in agreement regarding the process of climate change than the causes. This discrepancy in types of knowledge presents a key explanation for inaction on climate change.

The knowledge model for risk perception here points to the conclusion that respondents might lack access to information regarding climate change. However, it also explains that individuals may receive the same information but understand it differently based on cognitive biases or value orientations (Milfont 2012; Whitmarsh 2011). Previous studies using the knowledge deficit approach have found that right-leaning, older males are the most likely demographic group to deny or be skeptical about the existence of climate change (Milfont 2012; Whitmarsh 2011). These demographic groups, centre-right politics, older, and male, comprise a significant percentage of respondents. Individuals on the centre-right tend to downplay the effect of climate change despite being aware of process. These individuals have been shown to rely more on their subjective knowledge and subscribe to alternative viewpoints rather than following the advice of experts (McCright et al. 2016). The centre-right orientation of the majority of farmers is a key explanatory variable for low support for government climate policy.

An alternative explanation for the results come from previous studies involving farmers (Arbuckle et al. 2013; Fletcher et al. 2021; Houser 2018; Kuehne 2014; Mitter et al. 2019). These studies have found that farmers' experience regarding year-to-year weather patterns provides an important basis for climate skepticism. This 'natural cycle' frame points to a belief that extreme weather events are a product of "long-term climatic variations or short-term recurring events" (Fletcher 2021, 341) rather than an ongoing process of climate change. The challenge of discerning between the year-to-year experience of the weather versus the statistical phenomenon of climate change produces a disconnect between the lived experience and scientific understandings of climate change (Hamilton-Webb et al. 2017). As individuals who must constantly observe the environment, farmers can often recollect periods of variable weather and cite that as evidence of a natural cycle of extreme weather (Sauchyn, Diaz, and Kulshreshtha

2010). Fletcher et al. (2021) points out that the Prairie context further complicates the situation. The Prairie ecosystem's tendency toward periods of drought potentially reinforces a belief in natural cycles and provides a basis for downplaying the role of scientific claims regarding anthropogenic climate change. From this perspective, the experience of variations in the weather from year-to-year becomes a basis for arguing that the climate is in a consistent state of flux that is uncontrollable, contrary to the findings of climate science.

5.2 Affect, Banality, and Psychological Distancing

In contrast to the knowledge deficit approach, the psychometric theory of risk focuses on the role of irrational elements of human psychology in determining individuals' perceptions. In situations of uncertainty, individuals are assumed to refer back to affective associations with risk rather than rationally analyzing available information. The survey results showed respondents perceive climate change as a distant, unknown phenomenon and have a low level of concern or dread associated with the phenomenon. These results imply that respondents are largely unconcerned about the effects of environmental change and associated risks. From a psychometric perspective, these perceptions present a challenge, implying that respondents view environmental change and risk as an everyday problem rather than something requiring significant change.

There is potential that the banality associated with climate change results from farmers being inured to the effects of environmental hazards. The history of the Prairies is populated with memorable droughts during the dustbowl era of the 1930s as well as in 1961, 1988, and 2001. As a result, a drought year, no matter how bad, likely does not present an inflection point for reassessing practices but rather is normalized by farmers' knowledge of the regions history and

assumed to already be integrated into practice. As Western Producer columnist Kevin Hursh puts it, “Those of us who are a bit long in the tooth have seen dry years and wet years, hot years and years with early frost. Kind of tough to know what’s climate change and what’s natural variability” (Hursh 2023). Prairie farmers are accustomed to the impacts of poor years, so it makes sense that their mental associations with drought caused by climate change are banal.

The banality of climate change may also coincide with climate optimism among Prairie farmers. Northern latitudes are predicted to experience many positive effects from climate change compared to those in southern latitudes (Kulshreshtha 2011). Farmers in northern latitudes often discuss beneficial changes such as increased growing seasons and crop yields as a rationale for not worrying about climate change (Hyland et al. 2016; Mitter et al. 2019). Farmers who have access to this information may see climate change as having the potential to stimulate a boom year just as much as a bust year. This lends to an ambivalent image of a changing climate. Climate change can be understood as both a negative force bringing in bust years and a positive force bringing in boom years, not wholly different from the experience of Prairie farmers throughout history.

While the survey presents respondents as unconcerned, the results still show that many farmers are worried about the impacts of climate change on their ability to produce food, water availability, and the economy. These results are congruent with past studies that found that when referring to climate change, farmers often mention their worries related to declining water availability, soil quality, and incomes (Haden et al. 2012). The results demonstrate that respondents are likely more concerned with immediate, localized productive struggles rather than global environmental effects. As climate change is often communicated within the frame of far-off global catastrophes (Weber 2016), respondents may not see why they should adopt measures

that would secure the future of others around the globe. This reaction to climate change shows the importance of localized problems for respondents when reacting to risk.

5.3 Trust, Responsibility, and Climate Action

As the trust approach argues, support for policy options often relies on faith in government institutions that develop policies. Survey responses related to trust in institutions as a source of information reveal a core component of respondents' views towards environmental action. The survey responses demonstrate the respondents have high trust in university-based researchers. This shows that despite their skepticism toward scientific proof of climate change, respondents are nonetheless receptive to university-based research. Due to the open-endedness of the concept of university-based researchers, this could be researchers who encourage farmers to ignore environmental risks or ones who encourage environmental values. Other rifts appear regarding respondents' trust in government institutions. Respondents showed greater trust in organizations closer to their practices, answering that they hold a much higher degree of trust in the municipal government when compared to provincial, and were highly distrustful of the federal. Respondents were also shown to trust farmers' groups more than industry groups and industry groups more than environmental groups. These results point to respondents' greater trust in organizations closer to farming, implying a form of localism that may have bearings on climate policy. The lack of confidence in further institutions implies that respondents potentially view these groups as antagonistic or uninformed regarding the context of farm work.

Respondents may perceive those outside the industry as possessing a weak knowledge of their concerns and needs. Respondents' expression of localism implies that if government actions are to be trusted, they must come from the local level.

Davidson et al.'s (2019) previous survey of Alberta farmers found that farmers' values regarding what it means to be responsible and their responsibility for adaptation and mitigation is a significant antecedent for adopting mitigative and adaptive measures. Most respondents answered that they are willing to reduce emissions in their lifetimes and that agriculture must respond to climate change. Many respondents feel a need to do something about climate change, but they do not want the government to be involved. In contrast, many answered that they largely did not support government actions to reduce emissions. These responses point to the controversy regarding climate policy lying, not with access to information or a feeling of responsibility. Instead, it points to the issue being with government institutions and their role in action.

5.4 Implications for the EFP

The findings of this chapter present important implications for the EFP dissonance. The low levels of knowledge regarding climate change found among respondents demonstrates a disjuncture between expert messaging and the reception of these messages. It is evident that messaging surrounding the scientific consensus has not been effective among respondents. There are likely other sources of information, be it experience or alternative messaging, that farmers are more likely to subscribe to. The lack of agreement means that alternative messaging must be found to get Prairie farmers to voluntarily subscribe to the EFP or other agri-environmental programs.

The low levels of concern displayed in the survey responses points to an ambivalent affective association with environmental risks. These findings likely carry over to broader discussions of environmental risks, implying that the communication of the probability and

effects of environmental risks does not necessarily result increased worry. Rather other forces bear on the viewpoints of farmers. The importance placed on impacts such as “ability to produce food”, “water quality and availability”, and “the economy” imply that productive capacity is a major consideration for farmers; this idea will be explored in depth in the next chapter. The lack of concern regarding environmental risk point to farmers regarding these risk as an everyday phenomenon rather than something that require immediate action.

Finally, the survey responses showed a lack of trust in distant governing bodies and the unwillingness to support government action. These results imply a distrust towards government programs. While the historical and contemporary foundations of this distrust will be explored in later chapters, the low level of trust in environmental groups as well as the federal and provincial governments appear to be an important explanatory variable for the EFP dissonance. Respondents clearly do not trust these bodies to interfere with their operations. There are evidently social-psychological factors that have resulted in a disjuncture regarding information and the low level of concern.

6.0 Conclusion

The dissonance between Prairie farmers and the EFP program reflects a shared need, increasing farmers’ resilience to environmental risk, but a disagreement as to the reason or the solution. By exploring Prairie farmers’ responses to the environmental risks and actions associated with climate change, my analysis points to farmers’ perceptions of environmental risk are not necessarily one-to-one with what Agriculture and Agri-food Canada or the Provincial ministries responsible for agriculture might expect. That is, farmers do not necessarily take in rational accounting of probabilities and effects and act accordingly. Rather, farmers’ actions on

risk are informed by social and psychological factors that shape perception. These particularities present a foundation for an environmental politics which challenges the objectives of the EFP program.

In this chapter, I utilized Prairie farmer's survey responses related to climate change in order to determine how they perceive environmental risk across measures of trust, knowledge, and affect. Responses to the knowledge questions showed that while many respondents accepted climate change and knew how it worked, many were skeptical about its attribution to human actions. These factors point to a knowledge deficit regarding climate change that is specifically centred around its anthropogenic nature. I hypothesized that this attribution skepticism relates to demographic variables and the commonly found natural cycle framing. Through this discussion, I connected Prairie farmers' perennial struggle with harsh conditions and the challenge of discerning climate change from natural variability.

The connection between historical and contemporary hazards was solidified during my discussion of the affect measures, which showed that respondents viewed climate change as a distant and banal phenomenon. I reiterated my hypothesis that the perennial challenges of Prairie farming results in a downplaying of natural hazards. Prairie farmers have had to deal with environmental risks continuously, and the recent drought is just another in a long line rather than a unique inflection point. Additionally, the potential for climate change to yield positive results in the global north builds an ambivalent picture of a changing climate. I point to the history of environmental struggle in the Prairies playing a key role in respondents' viewpoints.

Responses to both the affective and trust questions revealed an additional conclusion. While most farmers were shown to be unconcerned about the effects of climate change, of those that did, they expressed concern for localized issues, such as health, their ability to produce,

water quality, and soil quality. This focus on climate change's local and perceived distance has interesting implications alongside the trust measures. Within the trust measures, respondents showed that they are more likely to trust closer institutions such as the municipal government rather than the federal government. Additionally, respondents were shown to be willing to reduce emissions themselves but did not support government actions to reduce emissions. This lack of trust in distant institutions and the perceived distance of climate change imply that climate change is the domain of untrustworthy groups. This idea that climate change is the domain of untrustworthy individuals may be an explanatory factor in the controversy around climate change.

Chapter 3: Analyzing Discourses Among Prairie Farmers

1.0 Introduction

Participant #4, an organic farmer from Saskatchewan, purchased his first half section of land in 1994, after previously working as a tenant farmer. During that period, Participant #4 was working as a conventional grain farmer, but he struggled to make enough to survive. Even with an off-farm job, the expenses associated with fertilizers, pesticides, and fuel ate up too much of his profits. As a result, Participant #4 made the transition to organics, “I just didn't want the risk anymore because I mean, sure I could have put a crop in conventionally, but I have to spend all that money for fertilizers and chemicals, and I couldn't afford to lose the crop. But when I don't have to put all those that money out, then I don't have that borrowing risk. So, I could afford to lose a crop and rely on my off-farm job to carry me through to the next year.” Participant #4 found a switch to low input farming to be the only solution to his fiscal crisis.

In contrast, Participant #1, a former sheep farmer from Manitoba, felt that expansion and intensification was the only solution for his fiscal challenges. Wanting to live in the country, Participant #1 moved from Waterloo to Manitoba in the 80s and purchased an 80-acre property. Participant #1 wanted to do something with those 80 acres and decided to graze sheep. After Participant #1 moved to the U.S. in the late 80s, he decided to keep the operation going but needed someone to manage the land while he was away and slowly the operation grew. “It was a practical reality of me being remote, hiring someone to manage the farm on a full-time basis and we needed turn this into a profitable operation with him working full time. And at that point we felt like the minimum size of an operation that could be profitable was a thousand ewes. In an intensive operation, we now realize it's closer to 5,000 ewes that you need to be profitable, but

we evolved to that.” Participant #1’s felt that the only logical move forward was to grow the farm which by 2018 had 40 000 breeding animals and produced 100 000 lambs a year.

The contrast between these stories shows that when Prairie farmers think about who they are and make decisions about their farms, they do so utilizing knowledge of their environment, their beliefs about the value of farming, and considering the economic imperatives they understand to be driving them. Their choices draw on an understanding of what it means to be a ‘good farmer’. Researchers have theorized the concept of a good farmer as a political and culturally constructed identity category that farmers organize their actions in aspiration of. The good farmer is an idealized character who incorporates the best management practices to grow the fattest cattle, the tallest corn, the greenest pastures, balanced books, or the most vital community (Burton 2004; Silvasti 2003). The concept of the good farmer comes from a reorientation of rural sociology that looks at the importance of identity and culture over politic-economic factors in shaping farmer’s decision making (Burton et al. 2020). Rather than seeing farmers as rational actors whose decisions are purely determined by economic opportunities or constraints, the concept of the good farmer focuses on culturally constructed values, imbued with legitimacy and status, in determining norms regarding how farmers farm. Theorizing decision making anchored around good farming allows investigations to incorporate contestation between different farmers, as one may place greater value on protecting the environment and another may place greater value on their economic output (Burton et al. 2020). While outside signals play a valuable role in constructing and affirming individuals views on good farming through biophysical or economic feedbacks (McGuire, Morton, and Cast 2013), this conceptualization of farmer decision making is intended to show why farmers’ decisions may lag behind, sidestep, or contradict the economics of farming (Burton 2004).

In this chapter, I analyze a series of interviews I conducted with Prairie farmers to better understand the factors that influence their decision making. In my interviews, participants alternatively conceptualized the Prairie farmer as a naturalist, “more sensitive to what’s happening around them”, an environmental steward, attempting to “leave things in as good a condition or better condition than what they received”, or economic agents, concerned with “dollars and cents” above all. These articulations of Prairie farming are not natural occurrences. Rather, they are the product of varying technologies of power, economic calculations, moral imperatives, and perceived ecological limits, that determine how best to farm and what it means to be a good farmer. By identifying these aspects of the Prairie farmers’ subjectivity, what drives their practices and how they relate to the resource of ‘the land’, I unveil the working of power in the Prairies further elaborating on the foundations of the dissonance between farmers and the EFP program.

Through my analysis, I refine last chapter’s discussion of risk. Tools like surveys treat individuals as autonomous subjects, who, due to the limits of their psychological biases and social context, make inaccurate conclusions on risks and need to be better convinced of the evidence to make correct decisions. The work of Michel Foucault unveils why this treatment of subjectivity is incomplete. He shows that subjects exist not only as a social actor, being able to affect the world, but also as an object of social systems. The subject is not a rational actor but instead, a subject to the various social, cultural, and political forces that surround them (Foucault and Rabinow 1991). Using this approach allows for a fuller understanding of the dissonance between Prairie farmers and the EFP through attention to how farmers articulate their views, and come to know themselves within the social, cultural, and political context of Prairie farming. I find these explanations through the ways that participants articulate their practices, the

environment, and the state through the lens of risk. With reference to the social, cultural, and politics processes embedded in participants articulations of risk, I unveil how the contemporary subjectivity of the Prairie farmer relates to risk, capital, nature, and the state. My research concludes that (1) the Prairie farmer subjectivity is deeply intertwined with neoliberalism rendering farmers as the productive hand of the market; (2) Prairie farmers relate to nature through both a practice of improvement and acceptance of struggle; and (3) Prairie farmers' resistance to state action comes from a perceived ignorance of the state. Finally, I demonstrate how these subjective positions related to the dissonance regarding the EFP program.

2.0 Methods

2.1 Discourse Analysis

The theoretical framework I employ borrows from Michel Foucault's understanding of the interaction between discourse and power. Developed in the 1960s and 70s, Foucault's approach was unique for his time in disregarding the common view of 'power' as something wielded by people or groups as a repressive force. Rather, Foucault interpreted power as a productive, dispersed, and relational force that is made of many local centres of power. No single person or group wields power, power is everywhere and acts as a force that conditions individuals to act in a particular way (Foucault and Rabinow 1991).

At the core of his notion of power is the production of knowledge through discourse. For Foucault, the concept of 'discourse' refers to the limitations and rules placed on language at a given point in history. He unveiled how modern disciplines like psychology and medicine utilized complicated terminologies which began to regularize the way practitioners describe their work. While the resulting system of language established a barrier of control around the body of

knowledge, Foucault noted these same rules worked to constrain and discipline the in-group expert's language and behaviours. In *The Birth of the Clinic* (Foucault 2003 [1963]), Foucault asserted that, acting alongside the practice of doctors studying and diagnosing bodies, the a clinical gaze was also positioning the human subject inside the discursive frame of medical knowledge. This medical discourse, presenting itself as the truth of human existence, served to normalize, regularize, and therefore control the way of talking about and knowing the body and disease.

The operation of discourse is seen in the knowledge claims other professional or scientific institutions such as psychology or criminology. Within Foucauldian thought, discourse extends beyond speech acts and takes shape in texts, tables, architectures, and embodied practices. In *Discipline and Punish* (1977), Foucault highlights the design of Jeremy Bentham's prison as a system wherein individual actions are potentially monitored at any given time. Although the process of surveillance can not be all encompassing, the design of a prison is one where individuals internalized knowledge that they could be monitored disciplines them into obedience. Switching to reality, he highlights prisons have imported Bentham's concepts utilizing routinized practices, including schedules, timetables, and observation, that act as methods of surveillance, judgement, and examination, which produce docile bodies. Foucault highlights how these same notions, that one could be surveyed and the practice of routine, is transported to schools, factories, hospitals, mental institutions, and the rest of social action. These notions reveal the subtle operation of power in society, that power is not something discussed in political arenas and then exerted on people to shape their practices, it is the practices themselves that create and sustain power.

This view of power, as everyday practices, reveals the other important component of Foucault's theories, that power is productive. The productive nature of power refers to its place as interconnected with knowledge and constitutive of reality. Discourses establish what is true based on accepted forms of knowledge production. In relation to this nexus of power and knowledge, subjects come to know and reproduce themselves. Discourses restrain the field of possibility and normalize select ways to tell the truth about oneself, a process termed subjectification, in relation to knowledge (Feindt and Oels 2005). As a result, subjects both are subject to the operation of power, as in restrained, and the subjects of power, as in produced such as in the statement "I am a criminal" or "I am healthy". These statements carry with them discursive articulations of what it means to be a criminal, as an abnormal member of society, and what it means to be healthy, as a functioning member of society.

The political object of a Foucauldian study then is to speak truth to power or to show the contingency of 'regimes of truth' and what discourses constantly produce and reproduce them. For Foucault, the contingency of discourses makes them a site of tension and struggle representing a battle over "the ensemble of rules according to which the true and the false are separated and specific effects of power attached to the true" rather than a battle over absolute truth (Foucault and Rabinow 1991).

Within risk studies, analysis informed by Foucault's work focuses on the examination of the discourses of risks. These researchers look at how discourses generate a field of possibility for possible management of the risk in reference to knowledge and power (N. Rose, O'Malley, and Valverde 2006). A risk is typically understood as a hazard that has the potential to cause harm, but how those risks are articulated as truth in discourse, either from the sciences or politics, has massive implications on how they are dealt with. As Hardy and Maguire (2016)

illustrate in the case of environmental risks: “Government agencies, such as the U.S. Environmental Protection Agency and the European Chemicals Agency, use normal science and the scientific method to assess whether chemicals are likely to damage human health or the environment in unacceptable ways and to regulate the firms that produce and use these chemicals accordingly” (86). Then, different subjective positions may choose to deal with risk differently, being risk takers or risk avoidant or denying the existence of a risk. This approach to risk looks less at whether a particular regime effectively manages a risk and instead, looks at how certain discourses envision risks, what they affect and what should be done about them, and what institutions, agencies and techniques are to be used to deal with it (O’Malley 2016).

Through Foucault’s framework, I unpack the discourses to understand the abstract relations of power which undergird Prairie farming. Discourses serve as an intermediary between the abstract relations of power and knowledge as expressed concrete practices. By breaking down recurrent discourses found in my interviews, I reveal taken for granted notions of the truth of how farming is meant to be done, how farmers are meant to relate to nature, and the role the government should play in farming. I also highlight the role of environmental risks and how individuals articulate them and how they are supposed to be managed. Then, by relating these discourses to the broader context of Prairie farming, I showcase relations of power that structure farmers’ fields of possibility regarding their work. In this way, discourse analysis allows me to dissect the use of talk to look at how society is produced and reproduced through discourse.

2.2 Semi-structured interviews

The material my discourse analysis examines is a series of semi-structured interviews conducted in 2022. The epistemological status of interviews as a method for discourse analysis

has been the subject of much debate in recent years (Gubrium et al. 2012; Nunkoosing 2005; Rose 1997). As a method, the intention behind interviewing was to ask questions to prompt subjects to explain themselves and what happens around them. Gathering interview data was based on the assertion that participants are capable and competent reporters of their attitudes, beliefs, behaviours, relationships, and interactions (Gubrium et al. 2012). From a purely positivistic perspective, interviews are a window into the objective truths about how people think and what they believe. However, participants are influenced in a variety of ways that influence how they interpret and give accounts of their experiences. It is difficult for a researcher to discern what information is true, what is a manipulation of reality and what information is a result of the interview context itself. Along with the social position of both interviewer and interviewee, the interview setting invariably shapes the content of the interview as participants come in with their own objectives that may strategically omit or distort how they present information about themselves (Mills et al. 2009).

More recently, theorists have pushed for the dissolution of the interview of a method for collecting information. Nikander (Gubrium et al. 2012) notes this as the ‘natural’ versus ‘contrived’ debate which argues that naturally occurring data, spontaneous or observed conversations, is less biased and more authentic than information gathered from predetermined questions. Overcoming the contrived critiques of the interviews requires a reorientation of the method’s intention. Rather than viewing the interview as a practice of uncovering, using interviews to find the objective truths behind individuals, the interview must be viewed as a productive practice (Talja 1999). The interview is a shared space wherein the interviewer and interviewee enter a dialogue which produces knowledge, not one for the uncovering of truths (Gubrium et al. 2012). The interview is a social text and the primary object of analysis rather

than a method for uncovering empirical reality. An interview is valuable an economic and efficient means for generating discussion on a particular topic that may not arise in more naturalist form of speech (Nunkoosing 2005).

Semi-structured interviews enable greater flexibility so that conversations can experience a natural flow and move into topics that participants decide to elaborate on. However, unequal power dynamic still exists. The space of the interview involves my position as the interviewer and the position of my participants as interviewees. From a reflexive position (G. Rose 1997), my interviews are understood as a productive space wherein Prairie farmers produce an image of themselves that is particular to the setting. While I treat my interviews as truthful, participant may have lied or attempted to deceive me. Critically though, the interview space is an opportunity for participants to project an ideal form of who they are, what they want a researcher to receive. So, even if their replies are constructions, I argue they still project who participants think Prairie farmers are.

2.3 Research design

My semi-structured interviews were 45-60 minutes and guiding by talking points that focused on Prairie farmers' articulations of their production, place in society, view of the environment, their views on the discussion surrounding climate change and their experience with climate risks (full list in Appendix 2: Semi-Structured Interview Guideline). Talking points were broken down into four sections: production, environment, risk/trust, and society. The first section, production, was designed as a simple question that could start off the conversation ("What does your year conventionally look like?") and allowed me to gain an understanding of what farmers do. This set of questions looked towards the literature bringing out reflection on the

structures that affect their production (“Farmers are often perceived as having more control over their work than the average worker, do you feel like this is true?”) and their views of sustainability (What does it mean for your farm to be sustainable?). The second section, environment, was intended to gauge farmers’ articulations of what the environment is to see how they coincide, or contest discourses found in the literature (“When you think of your farm, how does it relate to the idea of nature? How about the environment? How about resources?”). The section was also intended to begin a conversation about the effects of the 2021 drought, but no respondents said that they had been affected by the drought so discussion instead moved to their view on what can be done about future environmental risks. The third section, trust, focused on farmers articulations of their views of climate change, the reality of it, the role of experts, and whether Canada should do anything about it. Specifically, the questions around climate change looked at the relationship between lay and expert knowledges, a critical point found in the survey (e.g., Do you have faith in those claiming climate change is real and a threat?). The final section, society, looked at how farmers believe they are perceived by society to see how it connected with the literature as well as what makes a ‘responsible’ farmer.

In line with the sequential mixed-methods approach of this research project, participants were selected from the pool of survey participants who agreed to a follow-up interview. This recruitment strategy was chosen to strengthen the connection between the findings of this chapter and those of the survey. Six interviews were conducted using online video-conferencing software. Online interviews were used due to the Covid-19 pandemic which restricted my ability to meet with participants face-to-face. The key advantage of online interviewing is that it allows participants to select the environment in which they wish to do the interview (Janghorban, Roudsari, and Taghipour 2014). Participants are encouraged to speak from their homes allowing

for a degree of comfortability that would not be afforded in a neutral space. Unfortunately, this does not always mean that participants will choose an ideal space as some may not have access to an office space in which to do that interview leading to potential that they are distracted during the interview process. One large disadvantage of the online interview is the lose of rapport, and non-verbal or subtle conversational cues which may not be picked up by the microphone or seen on camera (Salmons 2014). Additionally, the online interview means that the interviewer is not immersed in the environment of the interviewee (Salmons 2014). Experiencing setting and participant observation often goes hand in hand with the interview process and this is an unfortunate loss when conducting interviews online (Fardon, Gledhill, and Association of Social Anthropologists of the UK and the Commonwealth. 2012). During my online interviews, I was at home and could not experience the wider world the participants inhabit and opportunities to be shown specific objects on farms or in homes was lost.

Analysis was conducted by transcribing and organizing interviews based on the guiding discussion points, i.e., production, environment, trust, and society. Once organized, interviews were read through several times and coded using an inductive approach (Cresswell 2006). An inductive approach to coding allowed me to identify commonalities between participants' responses and shared themes that cut across the interviews. I was then able to pull out these themes and choice quotes which are used to demonstrate how participants thought about the interview questions.

Interviews were transcribed and organized based on the guiding discussion questions. Once organized, interviews were read through several times and coded using an inductive approach (Creswell 2013). An inductive approach to coding allows me to identify commonalities between interviewees responses and shared themes that cut across the interviews. Analyzing

these themes and choice quotes pulled from the interviews, I illustrate how participants articulated what it means to be a farmer, farmers relationship to the environment, their views on climate change, and their responsibilities to society within the interview context. These themes represent the major guiding discourses found within the interviews.

3.0 Analysis

3.1 What does your 'day-to-day' look like?

3.1.1 Biophysical Processes

When asked about their day-to-day practices, participants regularly discussed the seasonal nature of farm work. In the winter, farmers prepare, find the cheapest seed or best livestock, and market their products. In the spring, seeds are sown and new livestock is born. In the summer both crops and livestock grow to the age of maturity to then be sold in the winter. Participant 5, a cattle rancher, discussed the largely rigid the routinization of his practices, saying the following:

From January till the end of March, or later part of March, we just are feeding and then we keep, heifers till February, middle of February. And then, we start calving, middle or end of March, that goes to about May. [Micro]chip-brand May-long weekend, ship cattle out about two weeks later to pasture. And then we start haying usually end of June, started July, somewhere in there. And then wait for some green feed that our neighbors grow for us to be ready, cut that, bail it, get all our hay home and green feed and bale a little bit of straw and bring cows home ween calves usually middle and October, ship the steers, and then start feeding heifers start of November is ... and start the whole process over again for the winter.

The biophysical properties of both plants and animals creates a structure within which farmers must work. Especially, in the harsh winters of the Prairies, there is little room for alternative schedules.

3.1.2 Monitoring and Technological Applications

Where farmers break out of the biophysical constraints of the seasons is in the process of nutrient application and risk management. Participants discussed the constant process of monitoring crops health, livestock activity, and the market price of their products. Participant 2, a grain farmer, said, “through the growing season, essentially [I am] just monitoring the fields, field checking, pesticide applications as well throughout that entire period, monitoring crops.” While farmers are restricted in their choice of when to do things, they seemingly have leeway regarding how they manage their plants and animals.

Through the discourse of technical management, the biophysical processes of the farm become enmeshed within technological and scientific discourses. Farmers are encouraged to be constantly looking, creating hypotheses, and testing, through calculations of yields, their operations to assess their productive practices. This practice of management reflects a ‘farmer scientist’ subjectivity, in which farmers act as expert managers, accurately overseeing their farms based on the most recent developments of science. Technologies developed by multinational corporations for seed application, fertilizer measurement, and viewing animal vitality condition farmers to accurately measure their products and provide correct number of inputs needed to maximize their farm outputs (Müller 2015). For example, Participant 1, a sheep farmer, discussed using sonar scanning to make sure that only pregnant ewes were kept together. Direct seeding, GPS powered fertilizer applications, GMO crops, and zero till technologies subject farmers to a practice of precise, technical management and maximization their farms.

MacLauchlan and Laforge (2018) argue that “soil management is now a technical problem addressed by modern equipment and improved genetics, rather than one part of a larger farm management system.” These technologies and the discourses that promote them guide producers to increase the resilience of their farms and maximize profits. Through these discourses, farmers are aided in the process of remaking nature as something that can be effectively understood and improved to maximize production.

3.1.3 Risk Management

Another important use of the monitoring and application of technologies on farms is in management of risk. Threats such as disease, pest, poor weather conditions, market volatility. An illustrative example of this relationship is the constant risk of poor weather conditions and the need for preparedness. An unusually dry or wet year or a sudden shock like a hailstorm can dramatically hinder productive capacities. Participant 4 referenced a constant need to observe the weather; if there was a storm coming, if there is a heat wave, if it is going to be a wet year, farmers must see it coming and do what they can to prepare. By extension, those who did not monitor the weather, are ill-prepared, and likely to farm without limits, resulting in possible failure. Participant 6 referenced young farmers who maxed out their potential yield and as a result were dramatically affected by poor years. The same participant argued that sudden shocks due to a lack of preparedness was why many farmers leave the practice. Consequently, the ‘good’ farmer sees the threat of poor weather conditions through consistent observation of weather reports. Many participants focused on the management of risk, in turn revealing how risk aversion, or the mitigation of negative outcomes, is a critical discursive force that governs farmers practices rather than productivity or the promotion of goods.

The discourse of risk, as much as profits or yields, represents a discourse that organizes good farmers from bad ones. Farmers agreed that a ‘good’ farmer constantly tries to innovate and prepare for the worst, while a bad farmer grows without limits, eventually resulting in failure. As participants discussed, those that do not successfully compete and maximize their production would be subject to failure. A good farmer is constantly staying on top of incoming risks, usually through the application of technological innovations. Critically, risk was regularly conceptualized as economic in nature, affecting farmers ability to stay afloat. The framing of farming within an economic rationality is best iterated in the idea that a failed farm is unable to financially stay afloat. The financial viability of a farm is determined by the farmers ability to carefully assess and mitigate risks.

3.1.4 Freedom and Uncertainty

Discussion of risks on farms also reflected a discursive dichotomy between freedom and uncertainty and the individualization of risk management on farms. Participant 2 discussed the inherent freedom of farming and said that farmers have a degree of control over their day-to-day choices that other workers may not, but highlighted how the same freedom means farmers are largely alone in their decision making, especially in the realm of risk management. Several participants mentioned a variety of risks that are presented to farmers including disease, price volatility, and environmental shock. These participants felt that farmers were largely left to their own devices when managing these risks. Participant 2 mentioned the need to be constantly vigilant, observing weather patterns, animal and crop health, and global markets to mitigate the risk of disaster. Participant 4, an organic farmer, explicitly framed consistent weather monitoring as a critical tool for preparing one's farm and ensuring success. Participant 4 portrayed constant vigilance as the first of farmers' risk-reducing mechanisms, followed by state insurance

programs. This commentary reflecting individualization of risk reveals a discursive image of the agricultural experience as one of solitude, largely bereft of guidance from the state or other assistances. Within this discourse, good farmers much rely on their own experiential knowledge, intuition, and the process of observation to ensure a productive farm. In this way, Participant 1 describes farmers as ‘naturalists’ who are closer to the land, being able to see what is happening to nature in a way that urban-dwellers cannot.

3.2 What does it mean to be a responsible farmer?

3.2.1 Stewards of the Land

During discussions of farmers' practices, their feelings of responsibility, and how they relate to the environment, a consistent topic of conversation was the concept of acting as stewards of the land. When asked about the goal of farming, Participant 2 answered that it was “being stewards of the land, managing waterways, managing nutrients” and discussed the need for more intensive forms of testing and technological advancements to manage farms. They added that land stewardship was an important part of what farmers left behind, implying a need to protect land for future generations. In slight contrast, Participant 1, when asked what it meant to be a responsible farmer, mentioned protecting land for the future, saying, "I think a successful farmer will only be one who protects and improves his land base." Critically, the use of the term 'improves' implies that stewardship is not exclusively about maintaining land for future generations but also about bettering it to increase its productive value. These words highlight the function of agricultural discourse in articulating farmer selfhood as productive rather than extractive form of resource management (Laforge and McLachlan 2018). In my discussions, farmers were clearly aware of the potential environmental impacts of their practices but

highlighted that they contributed to the improvement of the environment more than other industries. Whereas the mining or oil industries take from the environment to increase their output, farming cultivates the environment to increase its output.

3.2.2 Cultivating the Landscape

Within the framing of stewardship, farmers also see themselves as contributing to the environment by being cultivators of the landscape. The juxtaposition from the good of farming and the bad of urban dwelling or other forms of resources extraction allowed farmers to differentiate blame on issues of the environment. Participants argued, no matter how bad they are, there is someone worse. Furthermore, participants discussed building up the soil to maximize its productive capability, projecting the practice of the farmer as a net positive contribution to the ecology. Participants projected a moral obligation, as a good farmer, to safeguard and build-up the land. This moral obligation creates a subjectivity centred around being a producer of the landscape, improving its capabilities to increase production and profits. Participants internalized a notion of farming as an environmental good. The discursive articulation of improvement conceptualizes farmers as a net good for the environment and the landscape.

An extension of this discourse is successful farming being framed as maximization of the land for an increased production and profits. Participant 6, a cattle rancher and butcher, articulated management of environmental resources as predicated on its ability to produce a significant economic benefit. Similarly, Participant 5 referenced the need to maximize profits and "do the best you can for the land that you have." This framing reflects the entrepreneurial conception of Prairie farmers as profit-seeking individuals. Participant 4 articulates this when he said,

I mean, farmers make their decisions based on dollars and cents. I mean, there's no doubt that most decisions are made simply on dollars and cents. Farmers do want to protect their environment, but they need to make money first. And in fact, they need to make a maximum profit first if there's money out there to be made.

Here, Participant 4 is articulating the potential dissonance between stewardship as an entrepreneurial practice of maximizing and profiting off land and protecting the environment. The use as a form of self-interest or economic risk management rather than a moral commitment to intergenerational preservation presents an issue as environmental protection always comes second.

3.2.3 Feeding the World

The focus on production and profits leads to the other essential articulation of the responsibility of farming, as feeding the world. Feeding the world refers to the need for farmers to grow enough food to feed the global population. When discussing farmers' responsibilities, Participant 1 emphasized the importance of producing enough food so that people around the globe do not starve. This suggests another moral imperative to safeguard the world against the risk of starvation. In other researchers' accounts, feeding the world has been termed productivism (Arbuckle et al. 2013; Hyland et al. 2016; Stringer et al. 2020). These researchers argue that productivism among farmers represents an ideology that places a central focus on maximizing productive output. Participant 2 reflects these ideas when discussing the need to "be as non-pollutive and as efficient as you can and maximize production so that hopefully at some point in time everybody can actually eat," intermingling stewardship and production. Critically, this quote reflects to the ideas of maximization and efficiency reflected in discourses of food security. This discourse reflects both the individual incentive of personal profit and moral imperative of

global security. The need to feed the world carries an implicit conception of the world as a place full of starvation, and the solution is for Prairie farmers to produce as much as possible. This creates an almost infinite need for production - if there is hunger, farmers must produce more.

The need to increase productive capabilities also exists within a moral discourse. The concept of 'feeding the world' represents a moral logic of farming centred around productivism. The development of the Canadian Prairies was and still is an export economy, provisioning food for the rest of Canada and the global market (Thompson 1998). Still today, most Prairie agricultural products being sold as exports (Laforge, Corkal, and Cosbey 2021). Feeding the world seems to be a moral and political justification for focusing on an export economy. In Vanclay and Fleming (2010), the discourse of human responsibility among farmers is a moral responsibility to protect a fragile earth. In this study, most farmers identified the earth as resilient rather than fragile and, instead, called for intensive management and technological applications to harness the earth's capabilities. The concept of feeding the world is also reflective of broader discourses within sustainable agriculture. Discussions of food security frame the world as in need of more food and through an intensification of agricultural production, industrial nations need to provide this food (Janker, Mann, and Rist 2018). This discourse enables farmers to imagine themselves as a social good provisioning food for the globe. Since there is a need to feed the world, Prairie farmers are unable to reduce their production, lest the globe go hungry.

3.3 How do you view environmental risks and government action?

3.3.1 Natural Cycles

When asked about the environmental risk of climate change, all the participants agreed that there had been poor conditions in the past couple of years and that it was a risk to their

operations but, all but Participant 4, the organic farmer, expressed skepticism toward the anthropogenic causes of climate change. When asked about their opinion of climate change, these participants took a position of circumspection, often saying they are 'not quite convinced' instead, referencing the presence of natural cycles. Participants 5 and 6 also brought up historical weather reports showing worse conditions decades ago. They believed that since farmers had survived through those conditions, they too could survive through poor conditions. These historical references imply that Prairie farmers hold on to an intergenerational memory of climatic risks that takes precedence over climate scientists' communication. Experiential and historical memory of variability in the Prairies presents a basis for the presence of the natural cycles discourse and doubting climate science claims.

3.3.2 Subjects to the Weather

Unlike water, soil, or livestock, participants articulated themes as subject to weather conditions; they can observe the weather and prepare for it but cannot affect it. Participants discussed the constant presence of weather and climatic shifts in their decision making. For example, Participant #5 says “Weather is one of the biggest things because you're dependent on what the weather's going to do. You can't predict it. You have no idea if you're going to get moisture or not, which is vital to grow anything, whether it's grass or the cows or cereal crops. You need rain and you need sunshine and you got to have a mixture of both. So that's one of your biggest inherent risks.” While weather conditions have implications on farmers decision making, many participants did not see themselves or humanity as agents of climatic shifts. As Participant #6 says, “God, I enjoy history and reading and looking back over the settlement of the prairies. And I think it's always been changing. The fact that it's changing is maybe undeniable, but what's causing that change is ... I don't feel is being established, just more of a natural occurrence.”

Here, participant #6 identifies that the climate is changing and that it is a natural occurrence, one that is not novel but embedded in the history of the Prairie region.

The historical relationship between farmers and the Prairie climate is the source of some farmers becoming inured to climatic worries. Prairie farmers have historically been susceptible to extreme variability in weather conditions as well as hazardous events, and participants were able to draw on these experiences accurately. Müller (2008) demonstrates that the history of struggle and contention with an inherently unforgiving environment is a component of how Prairie people see themselves. She argues that Prairie farmers have become inured to environmental risks and have instead, “resorted to wishful thinking that the hard-working farmer would be rewarded” (404). Prairie farmers draw on the history of the Prairie farmers as subject to a harsh environment and conceptualize themselves as inherently resilient individuals.

3.3.3 Skepticism

The dismissal of climate science found in the natural cycles discourse was, for some, bolstered by a belief that climate science was unreliable. As Participant 1 says, “Universities have become very politicized and even the large companies who do research have become very politicized because, you know, get punished as an academic if you make any comments that are not subject to the party line.” Climate research is understood as politicized and expressing an ideological programme of whoever holds power. When discussing the relationship between climate change and authority figures, Participant 2 made a similar claim, saying that while scientists create valid data, institutions often mobilize that information for their ends. The idea that climate science has become politicized implies that the mobilization of climate science does not reflect empirical realities but, instead, is a tool for certain groups' ends. Participant 1 and 2's suggestion that such groups mobilized climate science for political means implies that alternative

evidence contradicts that of the supposed scientific consensus. The politicization of climate science represents another reason to believe that climate change may be an exaggeration or a fabrication and instead refer to personal experience.

Participants' discussions of climate change largely reiterated around an uncertainty towards anthropogenic climate change, a distrust of climate science, and anxiety towards climate policy. The citation of a natural cycle discourse links with farmers constant observation of the weather. In the continuous observation of the weather, farmers are taking account of poor years and bad years, creating an experiential knowledge set. References to historical weather events build upon this knowledge base. As a region deeply susceptible to poor years, the experiential knowledge of the Prairies can draw out sustained periods of poor weather. In contrast, climate science often portrays the climate as worsening with expectations of greater frequencies of droughts and flooding (Sauchyn 2010). It is the seeming conflict between their knowledge and that of climate science that creates a point of tension. The Prairies' susceptibility to environmental shocks presents a foundation for a cognitive dissonance between experience and expertise; the environment cannot worsen if it has always been bad.

Focusing on experiential and intergenerational knowledge of weather as uncontrollable also provides a potential explanatory factor for farmers' focus downplaying of climate change and resilience over adaptation. The prominence of references to the region's history is an act of conceptualizing Prairie farmers as constantly subject to a challenging environment (Fletcher et al. 2021). This discourse conceptualizes Prairie farmers as resilient, surviving the consistent shocks of poor weather as an essential part of what it means to be a Prairie producer. Farmers' calls to increase the region's resilience are embedded in the region's history, which, through technological and scientific innovation, was able to reverse poor conditions, such as in the Dust

Bowl, or survive through bad years, such as in the 1980s (Laforge and McLachlan 2018; Thompson 1998). Reference to historical knowledge provides a foundation for faith in the good farmer's resiliency and want for greater assistance to survive bust years and maximize boom years.

3.3.4 Government Action

For some participants, government regulatory instruments were feared and a source of anxiety. Participant 3, a former grain farmer, expressed a worry that forcing farmers to participate in programs results in their costs increasing and hurting their farms. Participant 3 felt that the Canadian government was focusing too much on mitigative practices such as carbon taxes, which they saw as effectively penalizing farmers' ability to produce. Participant 1 pointed the finger at cities and their voting power, arguing that the political agenda of urban dwellers, committed to green development, often superseded the needs of farmers to produce. Here, there is a clear that there is an antagonistic divide between urban people and rural people. Fletcher et al. (2021) notes how farmers often feel misunderstood by urban people and policy makers. According to Fletcher et al. (2021), the strong sense of rural independence, which runs contrary to government intervention, carries on as a critical part of the Prairies. These ideas point to an anxiety that policymakers are not attuned to the needs of farmers and are instead working to satisfy the needs of others at the behest of farmers. Participant 5 emphasized this idea in the context of globalization. Participant 5 argued that without universal environmental policies, nations such as China or India would have a competitive advantage over Prairie farmers and be able to produce more. Again, Participant 5 was expressing anxiety that policymakers are ignorant of the needs of farmers and worried about green initiatives but unaware of their implications. These anxieties frame mitigative policies as a risk themselves. The potential of regulations

presents a risk to productive capacities and, by extension, resilience against the effects of a changing climate. The focus on misguided policy implies that to some farmers that policymakers are a source of risks due to their ignorance to the needs of farmers.

4.0 How does this all figure into the EFP?

These discourses have important implications for farmers' interactions with the EFP program. The focus on the individualization of farming in neoliberal discourses around risk management mean that participation in collective environmental action is unlikely. Neoliberal subjectivities rely on the market to determine how production should be enacted, rather than the producers themselves. In this framing, whatever type of wheat or cattle consumers wish to purchase determines what farmers will produce. Although I did not see it in my research, Eaton (2013) and Beingessner, Magnan, and Wendimu (2023) identify resistance to the neoliberal subjectivity on the Prairies. In Eaton's (2013) study, farmers worked together to resist GMO wheat, debunking the narrative that consumers dictate how farms operate. Similarly, Beingessner et al. (2023) identify collective resistance to the financialization of Prairie farmland. Both examples show cases where Prairie farmers collaborated towards a collective goal rather than just following market demand. These examples of resistance mean that a 'green' collective movement among Prairie farmers is possible, but they also reflect examples of economic concerns that drive farmers. GMOs and land grabbing both affect farmers claims to freedom and threaten their ability to make a profit, environmental degradation will have to be put within this frame to increase participation in the EFP. To be adopted within this neoliberal framework, the EFP must include financial incentives and provide access to market opportunities.

Possibly due to the ordering of the market, participants expressed a moral obligation to increase production for global markets allowing them to downplay moral obligations to environmental protection. When it came to their moral obligation to the environment, participants articulation of stewardship, the practice of protecting the environment, invoked the concept of improvement. Participants felt that Prairie farmers improved the ecology around them unlike urban dwellers or other industries that extract without giving back. This was articulated in the very process of growing food as a practice of maintaining and caring for the environment. As a result, they felt like the blame for environmental degradation should not fall on their shoulders, and that they were already working as stewards of the environment. Participants felt they were already giving back to the environment, so a program, like the EFP, that is designed to help them with that might be perceived as arbitrary.

The feeling of blame those participants incurred was reiterated in the expressions of distrust towards government policy. This distrust reflects a belief that participants are not included in the process of policy making. Participants felt that those in 'government', defined broadly, were ignorant of the needs of Prairie farmers. Rather, the government was mobilized by urban voters to meet ideological, and material needs of urban centres. The EFP is likely perceived as a government project that is designed to suit the needs of urban individuals at the behest of farmers. If it is to survive, the EFP must connect with farmers and show the ways in which they are involved, potentially through greater participation at the ground level.

5.0 Conclusion

In this chapter, I analyzed the various discourses found in a series of interviews with Prairie farmers. Discursive formation's structure farmers conception of themselves, what it

means to be a good farmer (Burton et al. 2020), and help guide their decision making. Within my interviews, several core discourses arose. First were the individualized qualities of a good farmer which was affirmed through discourses of risk. Participants regarded risk in terms of financial precarity, arguing that risks affected their ability to financial sustain their farms and continue to produce. This reflects the increasing prominence of neoliberal ideologies and forms of subjectivity in the Prairies. The recession of the state since the 1980s had resulted in a state of precarity among farmers, within this state of precarity, farmers have been compelled to aspire towards a neoliberal, individualized, and entrepreneurial sense of self. Participant portrayed themselves as free agents competing in the free market to gain the best possible return. This individualized risk mitigation represents the central signal that affirms good farmers and punishes bad farmers: good farmers are competitive and observant while bad farmers do not possess the reflexivity necessary to improve their practices.

The focus on improving practices flows into two other prominent discourses reflective of aspirations for good farmers: the moral responsibilities to feed the world and be a steward of the environment. Participants articulated the value of Prairie farming as its ability to produce for export markets. By increasing their production, Prairie farmers saw themselves as able to feed the entirety of the globe and connected with discussions of global food security within the sustainability literature. Additionally, participants highlighted the value of Prairie farming as their ability to be stewards of the land, improving their land base into the future. Participants saw farming as a practice that builds up the ecology rather than extracting from it. These two discourses reflect a moral imperative to continue growing to provide social and ecological value.

Participants also expressed an interesting relationship to the environment. While the concept of stewardship implies that farmers can transform the ecology around them, discussion

surrounding weather conditions imply that the weather is a natural law that cannot be overcome. Participants portrayed this relationship as being subject to the weather, since farmers can only observe, monitor, and prepare for poor conditions. While this discussion seems benign, when placed within the discussion of climate change, they are a way of farmers downplaying their role as agents of climate change and instead crediting climate change to nature cycles. Critically, participants articulated this discussion with reference to the history of struggle in the Prairies. Participants called on the history of perseverance in the face of poor weather conditions as an aspirational quality and grounds for being able to wait through periods of struggle in hope that it will at some point reverse. As was gestured towards in the previous chapter, Prairie farmers are inured to increased worry regarding climate change.

Finally, participants' discussions of government policy invoke a populist discourse that farmers are not included in the policy making process. Participants referenced the politicization of climate action as a reference point for the unequal treatment of farmers by the Canadian state. Additionally, participants felt climate science, while potentially real, was mobilized by the state to serve their own ends. Participants felt like policymakers were ignorant towards their needs and that farmers had little representation in the policy making process.

Chapter 4: Investigating the EFP through an Institutional Framework

1.0 Introduction

Garrett Hardin's famous 'Tragedy of the Commons' scenario from the 1960s provided a powerful interpretation of the problem of environmental degradation and policy action. Hardin uses an agricultural metaphor to reason what happens when private individuals share a common resource. He envisions a pasture open to all where each farmer, acting rationally, allows their cattle to eat as much grass as possible in fear that others will beat them to it. The competition over the shared resource quickly turns the pasture into a barren wasteland (Ostrom 1990, 2). Hardin's metaphor presents a logical endpoint for common resources: individuals, propelled by their rational self-interest and knowledge that others will do the same, will deplete the commons out of fear that others will beat them to it. The situation is tragic as rational individuals will inevitably deplete all common resources for short-term gains (Ostrom 1990).

Traditionally, there are two reactions to this tragedy: a state 'leviathan' regulates all resources to ensure equal shares, or total privatization that parcels out all resources to be owned, sold, and used how rational individuals see fit. On either end, solutions fall short as leviathans require unlimited, free knowledge, and privatization cannot tackle issues like water and air. Both options focus on a singular authority, be it the state or a private individual, which are open to corruption without proper supervision. Elinor Ostrom (1990) argues that an adequate solution to the tragedy of the commons already exists in the form of institutional arrangements based in collaboration between private individuals to share common resources. Ostrom argues that proponents of both the state leviathan and privatization envision policy solutions that must come from outside and be imposed on individuals to ensure success, ignoring human's ability to work in consort (Ostrom 1990). As an alternative, she demonstrates that effective solutions are

“difficult, time consuming, conflict-invoking processes ... that require reliable information about time and place variables as well as a broad repertoire of culturally accepted rules” (Ostrom 1990, 10). Suppose states are to sublimate the solutions found in already-existing common property regimes. In that case, policymakers should begin with the social context, designing policies that match the cultural values and work towards collaboration rather than starting with the aims and working backwards to impose solutions.

The Environmental Farm Planning program represents a policy program that intersects with the same debates as Hardin and Ostrom. The EFP deals with the exact problem that Hardin envisioned: agricultural producers sharing common resources, including soil, water, air, and climate, which, through their rational, self-interest, they are going to eventually deplete or denigrate. In designing and implementing the EFP, the ministries responsible for agriculture have attempted to create a solution that educates farmers on risk management and provides cost-sharing for technical solutions to conserving environmental resources.

In the design of the EFP, the policy debates that Ostrom (1990) laid out become visible. Traditional policy development tends to focus on solutions that come lowering costs or increasing benefits rather than look at the structure of the policy. They focus on policy aims, such as sustainable agriculture or zero-till farming, and calculating costs and benefits. Then, working backwards, government agencies develop policies that can induce farmers, as rational, self-interested individuals, to shift their practices for the betterment of society (Bernstein et al. 2000; Levin et al. 2012; Vining and Weimer 2017). Yet, the origins of the EFP program run contrary to this traditional approach. The genesis of the EFP as a voluntary program created ‘by farmers for farmers’ reflects Ostrom’s third approach, a shared agreement embedded in the cultural context of farming working within a shared framework of environmental, social, and cultural values. On

the Prairies, however, the EFP has struggled to gain significant traction among farmers in the region, in seeming contrast to its bottom-up approach. While there has been steady uptake in the rest of the country, fewer than 30% of Prairie farmers have an EFP (Statistics Canada 2019). This points to a dissonance between the EFP and Prairie farmers, either embedded in the interaction between the Prairie context and the program's design or somehow picked up during the program's rollout in the region.

The contours of Ostrom's (1990) debate over effective policy avenues present a valuable perspective for analyzing the EFP program and its dissonance on the Prairies. One insists that the focus should be placed on policies, their goals, costs, and benefits, while the other emphasizes the social and cultural contexts that inform common resource management. In this chapter, I examine at how the EFP from similar vantage points: a detailed overview the policy and its mechanisms followed by a section on the broader context of the EFP program. Following this method allows me to further my analysis of the two core components of the EFP dissonance. It tackles the first part of the dissonance: with the Prairie region facing significant economic and ecological crises (Qualman 2019), Prairie farmers and the various ministries responsible for agriculture logically want to see the widespread adoption of practices that can sustain the region into the future. A detailed, focused examination of the policy can reveal how the program translates values into practices and evaluate whether it succeeds or fails. My analysis also explores the other end of the dissonance: why other regions in Canada have adopted the EFP at higher levels than the Prairies. An examination of the origins and inter-provincial expansion of the EFP, and how the policy is situated in a network of public and private organizations in Western Canada can shed light on why the Prairie region differs from the rest of the country.

In this chapter, I divide my analysis into a focused and contextual view of the EFP program. In the focused view, I employ the analytic frameworks of policy studies to examine how different actors embed the EFP with value and the mechanisms they use to encourage environmental stewardship. I begin by developing a rough outline of the major questions and methods used to assess voluntary policy instruments and bring into focus the literature of ‘new institutionalism’ to provide an outline of what constitutes effective policy. I use this framework to explore how the EFP operates from the perspective of farmers utilizing the system and the governing bodies designing it. Specifically, I highlight the critical interaction between voluntary participation and incentive in determining why farmers may or may not view the program as welcoming. My analysis shows that while the EFP is designed to present farmers with a choice, encouraging uptake of innovations by their free will, but in reality, the program presents narrow avenues for participation that strip participants of their free will.

The second section focuses on the contextual aspects of the EFP program. I begin by looking at the program’s development in Ontario and its expansion into the rest of Canada. This historical view shows important shifts in the EFP’s delivery as it moved into Western Canada. Next, I look closely at the Prairie farming context, unveiling alternative forms of risk management, including Canada-wide Business Risk Management programs and Prairie-specific economic relationships. These contextual factors demonstrate why understanding the broader scope of Canadian farming and the Prairies is crucial for understanding why Prairie farmers are not participating at the same rates as the rest of the country.

2.0 The EFP Policy – Focused View

2.1 Policy Analysis

2.1.1 Policy Studies

The field of policy studies refers to the diversity of methodological and theoretical tools used to analyze the different effects of public policy choices. On the most basic level, the objective of policy studies is to understand the process of policy-making and the mechanisms built into a policy that ‘bind our collective selves.’ (Levin et al. 2012) In summarizing this way, Levin et al. (2012) suggest that policy is a tool for governments to bring individuals together around a common cause. This common cause may not be in an individual's self-interest but represents the interests of society as a whole. Vining and Weimer (2017) are more practical in dividing policy studies between two core areas of focus: content and process. Investigating the content of a policy could take the form of measuring its effectiveness, interrogating potential costs, or exploring externalities. In contrast, researchers looking at the process ask questions related to the creation and design of a policy to understand why users and administrators adopt certain policies in the first place (Fischer and Miller 2017; Fischer et al. 2015; Vining and Weimer 2017). In the case of the EFP program, focusing on process allows me to look at the design of the EFP, including the mechanisms and values built into it, to answer my research question regarding why Prairie farmers are not participating in the program.

In practice, the process approach investigates how goals, objective, and aims coalesce in the design of a policy, centring on the values inculcated by them (Howlett 2019). Those that value growth may enforce policies that prioritize maintaining productivity, income transfers, or free market agency, while those that value the environment may downplay the economics of policy responses in favour of achieving defined environmental goals.

The most relevant value area of policy analysis to the EFP is that it counts as ‘voluntary.’ This means it should belong to a broad class of policies, programs, and initiatives where actors agree to participate rather than being legally required or otherwise forced to do so. In the case of agri-environmental policies, voluntary agreements between farmers and the state are used to improve environmental performance on farms, through technological innovations, or alternative management styles, which go beyond the confines of regulatory requirements. Those informed by rational actor theories, cognitive psychology, political-economics, or sociology come to differing conclusions regarding why farmers participate in voluntary policies, and sorting through these perspectives is critical for gaining a full understanding of the operation of voluntary policy options like the EFP.

The first area is the ‘rationale approach.’ Proponents of this view would argue that farmers may participate in a voluntary program in order to improve their relationship with external regulatory bodies and attempt to maximize benefits and reduce costs. Farmers could favour these policies to gain relief from existing environmental regulations, a pre-emption of regulatory threats and avoid command and control scenarios. They might suggest farmers also favour voluntary programs to improve internal efficiency, such as increased cost-efficiency through reducing potential environmental risks. The rationale approach thus claims that perceived economic and political advantages most influence farmers’ decision-making regarding participation in certain policies. Applied to the EFP, this approach lets us ask questions such as: What are the intended benefits of the EFP over other instruments, what are the costs to farmers, what are the costs to the state, and how is the EFP tuned to amplify benefits and reduce costs?

Another voluntary policy perspective focuses on the social context that farmers operate within. The ‘cultural’ perspective would conceptualize farmers’ decision-making as shaped by

external pressures, dominant norms, and cultural codes. They view policy processes, from agenda setting, problem definition and formation to implementation as the result of external forces of power, the macro-political process of argumentation, or the competition and compromises between interest groups (Fischer et al. 2015). For ‘cultural’ adherents, farmers may volunteer themselves to increase goodwill, trust, legitimacy, and reputation associated with their products. Looking at the government’s perspective, researchers ask why voluntary agreements are chosen in relation to ideologies of free markets, agricultural growth, or the power of agricultural organizations (Burton, Kuczera, and Schwarz 2008; Welch and Hibiki 2003). In analyzing the EFP dissonance, this framework is powerful for helping theorize how intangible benefits, such as goodwill or reputation, might shape Prairie farmers’ decision-making. Additionally, it provides a basis for asking questions related to how social contexts inform governments’ choices regarding policy design (Koehler 2007).

A final and often-missed part of the voluntary participation equation is the relationship between farmers, the value embedded in the design of the programs, and institutional arrangements administering them. Institutional analysis looks at the meso-level, institutional frameworks that shape policy pathways, rather than the micro-level of potential users and cost-benefits or the macro-level of broad social contexts and government decision making. To evaluate whether the EFP is truly a voluntary program, this perspective needs attention. Framed as ‘new institutionalism,’ the conceptual advances of scholars, including Ostrom, interested in the institutional values and mechanism in policy design adds to my framework. It provides a lens for understanding how the EFP was built from the ground up, the implications of one choice versus the other, and how the institution legitimates itself.

2.1.2 New Institutionalism

New institutionalism holds that institutions set the “rules of the game” by which individuals engage in the policy process, and argues that individual choices are made within the boundaries of institutional patterns as well as the informal expectations of organizational culture (Levin et al. 2012; Munck af Rosenschöld, Rozema, and Frye-Levine 2014). This standpoint offers a way to look at policy adoption from both the structural analysis of an organization like the federal Department of Agriculture, the practiced bureaucracy of a government agent operationalizing the EFP, and from the view of the farmer participating in the program. Two core approaches to new institutionalist analysis inform my research: work focusing on the role of norms and values in sustaining policy acceptance and work focusing on the role of institutional mechanisms for ensuring the continued adherence of a population to a policy.

Ostrom (1990) showed the significance of ‘norms and values’ in her exploration of several successful collective organizations. She demonstrated how sustaining them required long-term trust building, communication and conflict resolution systems, participation, and monitoring of agreed-upon rules. The creation of shared rules for governance and logics of appropriateness allowed policy choices to maintain legitimacy. Ostrom argued that the construction of policy instruments must respond to socially accepted norms of cooperation, building them into its design to encourage continued adherence, and use those norms to build out new values for effective governance (Koehler 2007).

New institutionalism also unveils the ‘institutional mechanisms’ that adhere individuals to its framework and shape individuals’ preferences for how the world ought to be. David (1985) provides an explanation of the mechanics of institutions in the choice to use QWERTY keyboards over other configurations. Although QWERTY came from a sales gimmick, with time

the capital investment of building typewriters and the public knowledge of the QWERTY system meant that reversing this change was challenging, even with more efficient options. Individuals learning the QWERTY system had a vested interest in staying with the system as the time and skill investment was too great to move to a different system, and firms were rewarded through the market's growth, creating a cycle of rewards. Individuals' preference for the QWERTY keyboard is a result of institutional constraints rather than a rational choice.

Unlike the inclusion of 'norms and values' to encourage participation, the 'institutional mechanics', adherents argue successful policy innovations have similar features. Levin et al. (2012) refers to the 'increasing returns' of a policy innovation like the case of linking property taxes to home value. Over time, this policy leads to more resources accruing in certain neighbourhoods such as better schools, regular infrastructure maintenance, or more food options, in turn attracting wealthier homeowners. Importantly, policy makers need to make sure that their policies do not create niche markets where users are incentivized to prevent expansion (Levin et al. 2012).

The contributions of policies studies and new institutionalist perspective provide a framework for analyzing the EFP and the values and mechanisms it uses to engage farmers. The policy studies approach presents a guidebook for examining how farmers weigh material costs and benefits, how social context shapes farmers' decisions, and what institutional features allow for the common management of resources.

2.2 The EFP at Work

2.2.1 How Farmers Use the EFP

The current iteration of the EFP is a whole farm self-assessment tool intended to increase farmers' awareness of environmental risks and assets. Farmers use a four-step process that begins with an itemizing of environmental risks related to soil, air, and water quality, production, and greenhouse gas emissions, next rating each of these according to risk, then creating an action plan, and finally reviewing their assessment. These individual steps show precisely how the program engages farmers, how the government intends to use the program, and how third parties have begun to employ the EFP.

The first step of the EFP uses online workbooks containing a series of chapters, each with a one-page introduction followed by activities investigating a different aspect of one's farming operation. Farmers are also assigned to an EFP technician, whether in the case of Manitoba a Keystone Agriculture Producers farmers association member, in the case of Alberta a Agricultural Research and Extension Council private organization member; or in the case of Saskatchewan, a member of the provincial government. The first two chapters of the workbooks begin with cataloging overall farm characteristics, such as farm type and size, central yard site and various fields including soil type, topography, and climate, and the availability of water. These chapters aim to allow farmers to learn how different physical characteristics of the landscape limit or otherwise affect their operation. The chapter also creates an itinerary of farm features, setting up the backbone of the proceeding risk assessment phase.

The next chapter series builds on the farm assessment process by having farmers learn about and identify risks associated with the infrastructure and practices on their farms. In Manitoba, this section is automatically populated with chapters relevant to the specific farm

characteristics identified in chapters one and two. This is a part of the tailored experience, meaning farmers must only interact with the information relevant to their specific operation. The chapters provide basic information on potential environmental risks, how they work, what affects environmental risks, and what can be done to prevent or reduce such risks. Participants then develop risk ratings associated with their practices on a scale from one to four. The EFP provides structured guidelines for developing one's risk rating in this section. For example, in the Saskatchewan EFP, tillage has one representing zero tillage or direct seeding while four representing full conventional tillage. By structuring questions this way, the identification process clearly indicates what practices to adopt.

In the final chapters of the workbook, risk ratings are used to develop a farmer action plan. All risks identified as a three or four and violating regulations are tagged, and three questions are asked: How do you intend to address this risk, what is your timeline for completion, and what are the challenges for completion? This part of the EFP process has farmers engage in a self-assessment process, critically reflecting on their own practices and developing a realistic action plan for improving them. The information gathered from the workbooks are then submitted to an EFP technician for review. After reviewing the EFP, the technician provides comments and suggestions to point out gaps or technical issues in the farmers' review and action plan before farmers are ready to implement action. Action plans help farmers sort through the possible actions and available supports for improving their farms and mitigating environmental risks. With a completed EFP, farmers gain access to Best Risk Management (BMP) programs that provide cost-sharing to help farmers implement improvements. They also gain certification, which can be used to market their products to buyers looking for sustainable foods.

2.2.2 How Governments Use the EFP

Prairie governments characterize the design of the EFP as a risk-reducing mechanism. The core thrust of the program is to provide farmers with knowledge that can help them identify risks, assets, and funding sources for adopting Beneficial Management Practices and adapting to environmental risks (Agriculture and Agri-Food Canada 2009). For example, the Government of Manitoba states that the EFP “helps farm managers identify agri-environmental assets and risks, develop an action plan to help mitigate risks” (Province of Manitoba, n.d.-a). Similarly, the Government of Saskatchewan state that the EFP “is a free, online self-assessment tool designed to help producers identify environmental risks on their farm and create action plans to address those risks” (Province of Saskatchewan, n.d.-a). For the governments, the objective of the EFP is to assist farmers in learning about environmental risks and how management practices can reduce risks and improve efficiency on farms without directly impacting farmers’ practices in the same way that regulations would.

The more implicit function of the program is enabling Prairie governments to close the gap between policy objectives, regulatory bodies, and farming practices. Through its itinerary and risk rating system, the government uses the EFP to unveil the presence of environmental risks and construct guided avenues for developing sustainable solutions to on-farm issues. By creating their farm itinerary, the EFP unveils issues that might have otherwise been unknown to the user. The program then presents a streamlined evaluation of their farm’s specific characteristics, highlighting regulatory issues and pointing them towards improvements users can make to their farm. The government is effectively able to enforce existing regulations and policy objectives by increasing farmers’ awareness of how environmental changes could negatively

impact their operations. This process creates a structure through which the state can assess farmers' relationships with the environment and induce desired actions.

2.2.3 How Third Parties Use the EFP

The framing of EFPs in both Manitoba and Alberta has begun to focus on sustainable marketing and the EFP's role in third-party negotiations. The government's focus on the EFP potential has emphasized its potential as a sustainable sourcing tool for third-party buyers. Some buyers have already realized this as completing an EFP is a requirement for marketing to clients such as McCain Foods, Egg Farmers of Canada, and Dairy Farmers of Canada. Additionally, the Alberta EFP is benchmarked against the SAI Platform's Farm Sustainability Assessment. SAI Platform assessments are used to measure the environmental quality of the products for organizations from around the globe. A completed EFP grants a silver level, allowing farmers with an EFP to sell their products to a wider range of buyers (Wilton et al. 2022). As the Alberta EFP website states, "Consumers are increasingly concerned about the safety and quality of the food they eat and how that food is grown/raised. Sustainable sourcing is becoming a requirement of many major food purchasers, from manufacturers to restaurants" (Province of Alberta, n.d.-b). For private buyers, using the EFP presents an already existing measure for assessing farmers' environmental performance. Private buyers can use the program to promote environmental quality that they can then project to their customers.

2.3 Assessing the EFP's Mechanisms

2.3.1 Existing Policy Analysis of the EFP

Of the limited research on the EFP program, most studies focus on Ontario (Robinson 2006; Smithers and Furman 2003; Summers, Plummer, and Fitzgibbon 2008), with additional work in Nova Scotia (Atari et al. 2009). Within this body of literature, a primary focus has been on weighing participation against other concerns such as lack of privacy (Smithers and Furman 2003; Yiridoe 2000), issues with government control (Morrison and Fitzgibbon 2014), compliance with government regulations (Atari et al. 2009), cost (Atari et al. 2009; Boxall 2018; Smith et al. 2020), and demographic variables such as age, income, and education (Robinson 2006b; 2006a; Atari et al. 2009). Researchers have also highlighted the lack of monitoring or assessment of the EFP and issues with determining how effective the program is (Atari et al. 2009; Morrison and Fitzgibbon 2014; Robinson 2006a; Smith et al. 2020). The EFP relies on a confidential approach, meaning that no data collected within the program can be gathered or disseminated. The lack of existing research on the interaction between the EFP and the Prairie context positions my research to contribute to the ongoing discussion of the EFP. I contribute to this body of literature by emphasizing the values and mechanisms built into the EFP and their potential issues when operationalized.

2.3.2 Policy Mechanism #1 – Moral Suasion

One of the core motivational practices used by the provincial government is moral suasion. The Manitoba EFP references demonstrating “due diligence” to complete an EFP to mitigate those risks on farms. The program thus leans on an existing cultural norm among farmers – their concern for environmental risks and stewardship and the belief that having a

strategy for mitigating these risks is valuable for protecting one's way of life. The Saskatchewan EFP leans on the notion that farmers are already good managers of the environment, saying creating an EFP is a way "to identify what you are already doing well and pinpoint where improvements could be made." (Saskatchewan EFP, n.d.) As an institution with moral bearing, the EFP is a way for farmers to indicate they are indeed good stewards of the environment.

Through creating an EFP, farmers can realize internalized and expand their feeling of duty to the environment. By learning about the presence of environmental risks they may not have been aware of, farmers can expand their existing obligation to environmental stewardship. Smith et al.'s (2020) survey of Ontario farmers illustrates this expansion process. 62% of respondents went to the EFP for a project they already had in mind, such as no-till equipment or manure storage. Smith et al. (2020) found that 45% of respondents changed their priorities regarding environmental actions once they created an EFP, encouraging them to act and prioritize additional projects. By building on farmers' internalized obligation to stewardship, the EFP is able to expand the quantity of projects that farmers wish to employ to improve their farms. In this way, the EFP sets up an institutional structure that creates increasing returns as farmers become more embroiled in the practice of stewardship.

2.3.3 Policy Mechanism #2 – Bottom-Up Approach

As Morrison and Fitzgibbon (2012) argue, the legitimacy of the EFP's design hinges on its focus on a bottom-up approach and voluntary participatory structure. The bottom-up approach is designed to allow farmers to learn about environmental risks and then, critically reassess their operations considering this new learning. By creating risk ratings, the EFP process helps reframe certain practices and farm features as risks to the farmers' operation. Risks such as over tillage,

soil degradation, and manure leakage present inefficiencies to a farm operation that farmers can assess and remediate through the EFP. However, the EFP also constructs these risks and their solutions in a binary manner leaving little room for interpretation. For example, a question on tillage ranks zero till farming as minimal risk and full conventional tillage as high risk. The risk rating system allows farmers to feel like they are rating the risks on their farms, but the EFP give farmers very particular parameters for evaluating their farms. In practice, the bottom-up approach may make farmers feel like they are free while presenting a contained experience that works to reshape the views of their farms as a binary indication of good and bad practices. With the construction of a solution, the interpretation process is diminished as certain actions are framed as empirical indicators of good stewardship.

2.3.4 Policy Mechanism #3 – Beneficial Management Practices

In addition to internal motivations, the EFP uses Beneficial Management Practice (BMP) cost sharing. In this model, the governments provide farmers who invest in sustainable risk management with portion-matching funding contributed by the federal and provincial governments. BMP cost sharing can cover as much as 70% of the cost with funding caps from \$15 000 to \$150 000 (Province of Alberta, n.d.-a; Province of Manitoba, n.d.-b; Province of Saskatchewan, n.d.-b) and may cover various projects, including reduced pesticide use, perennial cover for sensitive lands, reduced tillage, improved manure application, irrigation efficiency, and water use efficiency. BMP cost sharing acts as the carrot or the end goal of creating an EFP: by assessing one's farm, farmers can access funding to help them improve efficiency and safeguard the environment.

Once adopted, BMPs allow for entrenchment and expansion of the population using the EFP. Those who already have an EFP are rewarded for completing the program by gaining access

to funding. Additionally, the choice allows for a greater expansion of the population covered by the EFP as farmers who witness the potential to gain funding are encouraged to join the program. By providing increased benefits for the already covered population, the federal and provincial ministries responsible for agriculture created a system of increasing returns.

While incentives have the potential to grow the EFP's user base, BMP integration also shows the competitive nature of funding. Money for the program comes at a first-come-first-served model, meaning yearly funding for BMP programs can dry up quickly (Morrison and Fitzgibbon 2014). On the one hand, this creates an incentive to maintain an EFP in case a farmer needs funding down the road, especially in the case of perennial projects such as cover cropping, where funding exists for purchasing seeds. The competition creates a degree of entrenchment as farmers who employ perennial projects are locked into creating EFPs every year to access funding in time. On the other hand, this creates a system wherein beneficiaries have a personal stake in keeping others out of the EFP program to reduce the potential competition. This competition creates a 'niche market' "by increasing benefits to the original population but inadvertently make it harder or impossible to address [expansion] because incentives are created that only exist if others are prevented from benefiting or joining." (Levin et al. 2012, 136) The competitive nature of BMP funding is beneficial to users already in the EFP ecosystem, but potentially detrimental to the program's expansion.

The connection between the EFP and BMP programs is tenuous as access to funding is not guaranteed year-to-year. While Alberta and Manitoba have maintained the connection, accessing the most recent Saskatchewan BMP cost-sharing program no longer requires an EFP for participation. Instead, it only requires a review of the Agri-Environment Risk Assessment guidelines (Province of Saskatchewan, n.d.-a). The link between the EFP and BMP programs is

tenuous and subject to change with shifts in government. Additionally, the funding allocated for BMP programs can change from government to government. For example, after the federal Conservative party formed government in 2006, funding for BMP programs dropped dramatically (Morrison and Fitzgibbon 2014). While they have risen in the most recent agricultural policy framework, particular amounts of BMP funding are not a guarantee. The federal government's choice to connect these programs creates a tenuous foundation for the EFP program.

2.4 Prairie Farmers and the EFP Policy

The core policy mechanisms of moral suasion, voluntary participation, and cost-sharing incentives built into the EFP create a contradictory image of how the program is intended to function. While on one hand many farmers feel a moral obligation towards environmental stewardship, on the other, BMP funding has been attached to the program to ensure that more users will access the EFP and gain increasing returns. Attaching these funds creates a competitive environment, destabilizes the program, and erodes its bottom-up nature. Morrison and Fitzgibbon (2014) raised this same concern, arguing that attaching funding for BMPs as an end goal creates a perception that the federal and provincial governments guide the program rather than a farmer. This can be seen in the EFP's focus on technocratic solutions rather than ecocentric ones, incorporating new technologies or new seeding practices attached to BMP funding rather than reductions in size or use of regenerative practices. Including a form of cross-compliance associated with government action reshapes the end goals of the program and critically affects the program's perceived legitimacy and diminishes the EFP's bottom-up foundation. The same issue is present in the EFP's prescribed solutions that always point to exact

practices that farmers must adopt to increase their environmental performance. In the Prairies, the EFP relegates the role of peer-to-peer contact to technician who can explain the program and how risks function. However, farmers play a minimal role in collaboratively assessing and devising solutions to environmental problems. Prairie farmers have little voice in the review process as completed Prairie EFPs are sent to government bureaucrats rather than peer farmers. Looking at the EFP in the Prairies, shows that the bottom-up, collaborative approach has diminished in service of an institutional pattern characterized by box-ticking exercises for gaining funding or new marketing opportunities.

3.0 Situating the EFP – Contextual View

3.1 History of the EFP

A focused view on the policy and practice of Environmental Farm Planning shows the critical importance of the bottom-up design. This same point is evident in this history and development of the program itself. In this next section, I move to explore how the EFP from the broader national context, looking at its migration from Ontario to cover the rest of Canada, and the attendant changes to the program in turn. Understanding the regionally-specific qualities of the EFP dissonance necessitates a greater assessment of the Prairie context, the national policy network, and the EFP's place within it.

3.1.1 Origins in Ontario

The 1992 EFP program in Ontario was an attempt by farmers to get on the ground floor of environmental action and avoid the potential of state interference. Concerns over the impact of regulation catalyzed farmers to act. Several Ontario farmers' associations assembled to design a

program that could encourage inter-peer environmental education and increase the adoption of sustainable agricultural practices (Morrison and Fitzgibbon 2014). While a small cohort of farmers used the program, it was widely regarded for its innovative approach to agri-environmental stewardship (Morrison and Fitzgibbon 2014). The program's focus on critically engaging farmers on environmental issues and using a peer review system to help farmers collaboratively work out problems was an innovative approach. The program was also very flexible, as participants were allowed to complete as much or as little as they wished. This flexibility set the EFP apart from other agri-environmental programs, showing that voluntary programs are popular among farmers as they allow them to collaborate on the process of governance, practice a degree of freedom in their choices, and they replace the necessity of potentially near-sighted regulations (Welch and Hibiki 2003).

3.1.2 Expansion to a National Program

In the early 2000s, the federal government expressed interest in scaling up the Ontario EFP to become a part of the first interprovincial agreement on agricultural policy, the Agricultural Policy Framework (APF). The EFP program's implementation made sense as its bottom-up framing was congruent with the federal government's general approach to agri-environmental programs. Montpetit (2002; 2003) argues that these institutions showcased two broad forces of path dependency creating policy averse to command-and-control, top-down style planning. The first 'force' is the separation of powers in Canada. Citing fears that federal environmental initiatives might harm the economic viability, provinces have historically argued that their constitutional property rights over natural resources places most of the control over environmental protection into their hands. In response, the federal government has shown little

interest in claiming power over environmental regulation, forming a weak bureaucracy that struggles to convince provinces that agriculture and the environment are an issue worthy of federal control (Ashton 2022; Wilson 2019).

Montpetit's (2002; 2003) second force is more substantial. Perceived successes with previous agricultural extension programs encouraged the ministries responsible for agriculture to orient the policy apparatus around nurturing educational programs and individual self-interest. The most significant is from the dustbowl 1930s, when the Prairie Farm Rehabilitation Act (PFRA) successfully created demonstration plots and disseminated innovations to prevent soil erosion. The PFRA presented these innovations through agricultural improvement associations, which empowered farmers to direct the path of conservation ('PFRA: The Story of Conservation on the Prairies' 1961). Farmers were compliant with guidelines and quickly picked up on new technologies, likely due to existing networks of trust with government experimental farms (Anderson 2018) and their vested interest in the economic benefits of reducing soil erosion (Stefanik 2015). The educational approach was successful again in the 1970s and 80s through various conservation programs aimed at adopted new seeding technologies to reduce soil erosion (Montpetit 2002). Such that "It is now viewed as the normal policy trajectory to delegate agri-environmental responsibilities to agricultural officials and to rely on the educational approach." (98)

3.1.3 Rollout in the Prairies

When APF was agreed upon in 2003, the federal government adopted the EFP as a primary instrument for agricultural extension and by 2005, every province in Canada had an EFP model running. As part of the scaling up, the federal government put attached BMP funding

sources to the EFP to incentivize expansion. However, the rollout of the EFP in the Prairies undermined the legitimacy of the program since no farmers' associations picked up the program. Only as of 2022 did the Manitoba government grant Keystone Agricultural Producers administrative control over the program with the creation of their online platform, but until 2009, the program was run by a third party created for the EFP, the Farm Stewardship Association of Manitoba, and then taken over by the government (Arnason 2009). It is unknown whether this was a choice by the government or the organizations, but the lack of uptake by agricultural associations in the Prairies has critical implications for how the programs' design carries over from Ontario to the Prairies. Whereas the foundations of the program's success in Ontario relied on the involvement of farmers' voices, the non-involvement of farmer's association in the Prairie EFP's inception appears to have hampered its growth potential (Robinson 2006a; Morrison and Fitzgibbon 2014). With the lack of representation in the design phase of the EFP, Prairie farmers did not have a voice in the policy approach from the outset.

The EFP rollout in the Prairie confirms much of what New Institutionalism adherents argue regarding policy: that legitimacy is important for success, and that management must incorporate trust and the values of those who are governed. Hence, the early success of the EFP relied on the validity and moral authority of farmers' associations. With the federal government picking up the EFP for the first agricultural policy framework, the group driving the program changed, focusing on risk management and technical innovation over risk education and capacity building. With the development of the EFP in the Prairies, farmers organizations have had little presence in the program's design and administration. As shown in Chapter 2, the federal and provincial governments are trusted far less than peers and farmers organizations. The result of

this gap is that Prairie farmers likely see the EFP as an illegitimate or untrustworthy program due to its association with both provincial and federal government rather than farmers.

3.2 The EFP in Context

3.2.1 Farm Insurances and Business Risk Management

With APF in the 2000s, the federal and provincial governments expanded the EFP alongside creating a suite of programs to support farmers' incomes under the title Business Risk Management (BRM). BRM includes AgriStability, which provides a fund that farmers and governments contribute to that can be triggered in the event of a dramatic decline in their profits across the whole farm from a poor year, market decline, or cost rise, and AgriInvest, which has the provincial and federal governments provide 1% of eligible net sales to an account in a financial institution held by the farmer so long as it was matched by the farmer. The suite also include two insurance programs: AgriInsurance, which provides payments in the case of a natural hazard and AgriRecovery, which provides disaster relief (Eagle, Rude, and Boxall 2016). Agricultural and Agrifood Canada intend BRM to protect farmers from severe market volatility and disasters (Eagle, Rude, and Boxall 2016). These programs differ from the EFP in that they focus on providing farmers with insurance and income support to supplement the effects of ecological shocks rather than encouraging alterations in their practices to protect them from future shocks. Currently, none of these programs require an EFP, although SCAP is expected to change this for AgriInvest in 2025 (Hamm 2022). The lack of integration means that whether a farmer does or does not use an EFP to manage or mitigate environmental risks, such as soil erosion or climate change, the farmer will still get compensation for the effects of environmental shocks.

Farmers also have many tools for reducing risk related to economics, profits, and yields rather than environmental risks. Contracts, typically delivered by large-scale corporations, such as Viterra, Richardson International, and Cargill, reduce these risk by providing direct payments or the promise of payments once a farmer produces the agreed quantity of goods (Magnan 2016). Some corporations may even sell inputs and seeds under the requirement that a stipulated quantity of products is sold back to them. These programs reduce the risks of market uncertainty allowing farmers to guarantee a certain level of income as long as they produce enough. Stuart and Schewe (2016) highlight how the proliferation of grain contracts in the U.S.A. constrains many farmers' choices regarding how they farm. While contracts reduce economic risk, they constrain farmers' ability to choose to adopt alternative farming practices, if they conflict with their ability to fulfil contracts.

The EFP's focus on environmental management practices and the BRM program's emphasis on financial security set up contrasting images of a responsible risk manager. BRM programs do not attempt to interfere with farmers' practices, supporting them even if they do not shift or reduce environmental risks in their practices. As an effect, this approach encourages business as usual, allowing for a short-term profit orientation over long-term environmental planning. The competing framings allow large-scale farmers to continue to maximize production without regard for environmental risks. These competing programs for risk management crowd out the EFP's goal of learning about and mitigating future environmental risks (Kimura and Anton 2011). The financial support of the BRM programs allows farmers to effectively discount the issue of future environmental risks by providing a security net that grants financial payments in the case of environmental shocks (Eagle, Rude, and Boxall 2016; Jeffrey, Trautman, and Unterschultz 2017).

3.2.2 Sustainably and Corporate Food Production

In the Prairies, the political and economic context the EFP is meant to fit within is challenging as it is characterized on the market side by rising consumer demand for sustainable, organic food and on the production side by corporatization, high-input farming, technological intensification, and scaled up production. Almost all of Canada's largest farms are within the Prairies, and most Prairie farms have more than \$410 000 of machinery on their land (Statistics Canada 2022). These features mean that most Prairie farms rarely sell directly to consumers and rather go through intermediaries (Desmarais et al. 2015; Wiebe 2021). Some private buyers may feel a moral obligation to sustainable sourcing and ask farmers to complete one to sell to them, as the provincial government is pushing. However, supporting this direction could have poor outcomes because few buyers are unlikely to ditch their price motive, and consumers do not have the buying power to move every firm in a sustainable direction. Unable to meet sustainable market demands, many farmers instead turn to increasing production efficiency, utilizing more inputs such as intensive machinery, hybridized seeds, chemical fertilizers.

The application of more fertilizers and bigger machinery allows many farmers to push the potential environmental effects of soil erosion or climate change down the road as inputs can replace costs. The logical conclusion is that with more inputs comes more yields and more profits, but the proliferation of high-input farming has resulted in a debt crisis among farmers (Qualman 2019; Sommerville and Magnan 2015). This debt load of large-scale farming represents a sunk cost wherein farmers must continue their current productive behaviours to pay off their debt. As a result, the proliferation of high-input farming and contracts effectively pressures farmers into large-scale production. Prairie farmers are trapped in a short-term profit

orientation where they focus on producing more to recoup costs may seem like the way out for many farmers.

The contextual factor of consumer choice and production drives shapes Prairie farmers interaction with the EFP. The increased use of high input farming techniques has locked farmers in cycles of debt wherein they must continue to increase their productive output to continue to pay off their debts. This debt cycle is combined with the proliferation of buyer contracts which allow farmers to reduce the risk of economic uncertainty with the trade-off being that they have less power in directing how they farm. Within this institutional context, Prairie farmers are locked in to practices that maximize production. Adopting a program that encourages them to invest capital in environmentally sustainable actions requires a broad shift in these entrenched institutions. The EFP encourages the adoption of technologies that can reduce environmental risks while additionally increasing efficiencies, but the allure of technologies that just increase efficiencies is likely greater.

4.0 Conclusion

In the Prairies, the EFP is sitting in a state characterized by low uptake, wherein expansion of the program has slowed to the point of slight decline. While both the governments of Canada and Prairie farmers should have a vested interest in increasing the adoption of sustainable practices, the lack of EFP uptake in the Prairies points to a dissonance between the program and Prairie farmers. In this chapter, I examined the EFP and the context of Prairie farming to see what insight it could provide into the dissonance. I employed the lens of policy studies of process with emphasis on the perspectives of New Institutionalism regarding voluntary policy, in order to understand the trajectory, set out by the EFP creation, of the mechanisms

within it, and the logic present in other intersecting institutions. My analysis highlighted issues with the EFP itself, the way it was rolled out in the Prairies, and the challenges it must surmount to gain acceptance in the Prairies.

The issues present within the EFP relate to the motivations used to bring users into the EFP's ecosystem. The integration of BMP cost sharing has created a logic that can bring users in but destabilizes the program over time and contradicts the program's voluntary nature. Alternative risk management programs have also allowed farmers to gain access to risk reducing mechanisms that downplay long-term environmental adjustments. Integrating BMP funding into the EFP process has created a program focusing on narrow risk assessment and management pathways. The peer-to-peer learning and farmer-led approach have declined in favour of a system that is guided by BMP funding, which the federal government dictates. Rather than an interactive, cooperative program, farmers are presented a sterile web program that primarily acts as a box ticking exercise. This issue is amplified in the Prairies as the networks of trust that initially granted the EFP legitimacy in Ontario have been non-existent in the Prairies. Farmers organizations were not involved in the establishment of the EFP in the Prairies to grant the program legitimacy. This crisis of legitimacy is critical as many farmers in the Prairies have been shown to trust other farmers and farmers' associations and express skepticism towards the government. These findings present critical issues that are likely foundations for the EFP dissonance.

Chapter 5: Conclusion

1.0 The EFP Dissonance

The 2021 Prairie drought was record-breaking, dramatically impacting croplands and causing stress to livestock operations. In its wake, farmers and researchers called for a change to the disaster support system and how farmers farmed (J. Laforge, Corkal, and Cosbey 2021). It appeared momentarily that the drought could be an inflection point where farmers would reassess their practices considering anthropogenic climate change. Indeed, in 2022 the federal government made a sweeping commitment to reducing fertilizer use to curb emissions. Yet this announcement was met with backlash from farmers as they worried about fertilizer reduction's impact on their profits. Farmers argued they were already good stewards of the land and were reducing fertilizers on their own, and that the federal government's commitment was short-sighted (Clayton 2023; Schwartzentruber 2023). Today, 2024 is seeing another dry winter, and farmers across Canada are preparing for the worst (Tolman 2024). Action must be taken to address the relationship between intensive agricultural practices and the environment, while the government seems to struggle to get farmers on board with their approach. Understanding *why* is critical to solving the problem and theorizing *how* new, collaborative approaches can be developed is imperative to developing a sustainable future.

The dissonance between Prairie farmers and the Environmental Farm Planning program is both a crucial question of environmental politics and an important scholarly venture. The core of the problem comes from the logical disconnect between the issues facing Prairie farmers, the aims of the policy, and its low uptake. The Prairies are experiencing combined environmental and economic crises. High debt loads, slim margins, and rising land prices are coalescing with an increased frequency of environmental hazards, creating immense precarity for Prairie farmers

(Qualman 2019). Prairie farmers should logically be interested in working towards sustainable innovations on their farms. The EFP is designed to do just that by helping farmers interweave agri-environmental stewardship into their practices. The program allows farmers to create a tailored action plan with technical support to “pinpoint where improvements can be made” on their farms (Province of Alberta, n.d.-c) and access cost funding to offset environmental protection costs. Despite moderate to high uptake in the rest of Canada, the Prairies appear reluctant to participate in the program (Statistics Canada 2019).

Why do so many Canadian farmers say they need government action to meet environmental and economic challenges, yet are unwilling to participate in the flagship intergovernmental program intended to address them? Why are Prairie farmers in particular – where environmental stresses are highest, farms are largest, and farms are on a precarious economic edge – the most reluctant to joining the program? This thesis interprets this dissonance.

In three body chapters, I used multiple methods to analyze the different layers of the problem, from a quantitative survey that examined population-based trends, to interviews that employed qualitative discourse analysis, to an investigation of the EFP frame by policy analysis. In each of these methodological approaches, I explored the regional specificities of Prairie farming and contrasting them against the aims and structure of the EFP program. This concluding chapter develops a theoretical model to mix my methods, analyze my findings, and present a complete picture of the EFP dissonance. Due to the epistemological divides of my research, I use a strategy of dialogic triangulation, which allows each of my chapters to ‘talk’ to one another and help me find the logical centre of my problem. With these triangulated findings, I present my final answer to the research question and possible policy recommendations for

improving the EFP. As a conclusion, I discuss four major themes that have persisted throughout this thesis to reframe my findings within broader theoretical debates.

2.0 Methods

2.1 Mixed Methods

Mixed or ‘multiple’ methods has been a part of social research since at least the 1930s (Flick 2017). However, my analytical strategy comes from literature developed over the past 50 years placing mixed methods alongside quantitative and qualitative methods as a ‘third paradigm’ in social research. Tashakkori and Teddlie (2010) argue that using multiple methods most closely reflects everyday problem-solving as individuals commonly refer to statistics, surveys, interviews, or historical texts in deciphering how to approach a problem. However, what distinguishes the mixed methods approach from using multiple methods is the process of mixing and combining methods collected sequentially or concurrently (Creswell 2013). Effective mixed methods research requires an approach that integrates methods and produces results distinct from qualitative or quantitative research (Creamer 2018). Although mixing methods is not an entirely new form way of looking at social problems, the discursive repackaging of mixed methods has allowed researchers to develop several key strategies for conducting this work.

2.2 Triangulation

Campbell and Fiske (1959) developed the cartographic metaphor of ‘triangulation’ to use multiple methods to validate findings, proponents of mixed methods research have argued that the field represents a new approach to social issues (Flick 2017). The definition of triangulation is unstable, shifting over time and between researchers. At the core of triangulation’s messiness

is attempting to reconcile epistemological divides, a complex, often opaque process that, if unattended, can lead to one method dominating the other. Fiske similarly (2017) argues that the mixed methods approach tends to rely on technical distinctions between quantitative and qualitative research. Consequently, this view discards the epistemological and ontological differences between and within methods such as positivism, interpretivism, or pragmatism. For Fiske, the focus on qualitative-quantitative distinctions arbitrarily and wrongly overshadows these far more consequential philosophies of knowledge and knowing. Beyond Fiske's examples, alternative foundations may also argue that academic knowledge should be a product of rational interpretation, examining social constructions, or solving a given problem (Goldkuhl 2012).

Fielding (2009) argues that bridging the gap between traditional, positivist and post-modern, interpretive methods is possible. Researchers must critically engage with the methodological conflicts embedded in mixing methods embracing dissonance, multiplicity, and reflexivity in the research process. Ultimately, this thesis stays close to the quantitative and qualitative model laid out by the mixed methods thinkers. Hammersley (2008) lays out four dominant approaches that organize the different strategies for mixing methods to help elucidate the concept of triangulation, offering a neat way of organizing what is essentially an extremely messy process (see Fielding 2009). Hammersley's typology of triangulation includes cross-validation, which refers to mixing methods to verify the findings of one method with the finding of the next. Indefinite triangulation refers to the abandonment of a singular reality, critiquing a multitude of valid interpretations to discover why they diverge. Complementary triangulation mixes methods by locating complementary findings to build out a fuller interpretation of a problem. Finally, dialogic triangulation relies on the difference between methods and how they represent the social world as a basis for methods to critique one another, entering a dialogue that

tries to transcend epistemological divides. In this thesis, I employ ‘dialogic’ triangulation because it allows me to cross the epistemological divide between my methods. This approach allows me to use my mixed methods to interrogate each other while still coming together to provide conclusions regarding the EFP dissonance.

2.3 Mixing Methods in Practice

By engaging with mixed methods, I developed multiple intersecting windows into the phenomenon of EFP dissonance between farmers and the federal government. I used primary survey data, follow-up interviews, and policy documents all originally produced for other purposes, and from those I extrapolated answers to my question. This was an *inductive* approach to theorize how my data on perceptions, values, and power shape the interaction between Prairie farmers and the EFP. In Chapter 2, I took a firmly positivist approach utilizing survey methods to understand the distribution of knowledge, risk perceptions, and trust across the Prairie population. The approach relied upon a social-psychological perspective by arguing that survey responses reveal the internal processes of individuals. In Chapter 3, I performed a discourse analysis relying on the theoretical work of Michel Foucault to inform my analysis. Critically, positivism and using surveys to ‘understand’ individuals is the exact object of Foucault’s own epistemological critiques. Rather than arguing that survey’s discovered steady states of human activity, he employed the concept of power/knowledge to argue that positivistic human research is one of the many sites where power is operationalized. He argues that techniques like surveys generate rather than discover the problems and consistencies of populations. In response to knowledge formation, individuals’ subjectivity is shaped in reference to the problems and consistencies outlined by researchers (Foucault and Rabinow 1991; Higgins 2001; Murdoch and

Ward 1997; N. Rose, O'Malley, and Valverde 2006). My analysis relies on Foucault's assertions that societal operations of power construct farmers' ability to tell the truth about themselves. While Chapter 2 and 3 thus contrast greatly at an epistemological level, I argue that through examining codified discourses, I show how power flows through Prairie farmers and shapes their subjectivity. In Chapter 4, I utilize a policy studies approach theorizing how institutional mechanisms and values shape the interaction between Prairie farmers and the EFP to add to the conflict. From positivism (Chapter 2) to poststructuralism (Chapter 3) to positivism (Chapter 4), I argue that the EFP dissonance is a result of the interaction between socially constructed values and the empirical mechanisms built into the program and its context.

3.0 How does this explain the dissonance?

The findings of each chapter lead me to three explanatory factors for the EFP dissonance: risk perception, economic constraints, and trust. The first is Prairie farmers' perceptions of environmental risk and the downplaying of the future effects of environmental hazards. In Chapter 2, I showed the low worry that survey participants displayed concerning environmental risk and hypothesized possible explanations such as a lack of access to information, risks embeddedness in farming, or the process of psychological distancing. With Chapter 3, I expanded and critiqued my previous findings by investigating how Prairie farmers articulate discourses related to environmental risks and their work. I showed how discourses of management and monitoring environmental risks organize Prairie farming. Droughts, floods, and short growing seasons are all a part of the regular experience of Prairies farming, and prediction and mitigation are a part of the process of being a good farmer. The technological landscape of the Prairies also allows many farmers to ignore threats of the past, such as nutrient depletion and

soil erosion. Chapter 4 showed exactly this: Business Risk Management programs compensate farmers for losses due to environmental hazards without the actual or opportunity costs of shifting productive practices. These forces show why Prairie farmers appear to downplay the effects of environmental risks.

I conclude that many Prairie farmers are inured to the psychological effects of environmental hazards, viewing them as an everyday phenomenon. Instead, environmental risks are a part of the day-to-day practices of being a farmer, and farmers believe they have already built risk into contemporary management practices. For the EFP, this discounting of environmental risk means that the program's ability to mitigate environmental risks may be perceived as unnecessary compared to existing strategies. Additionally, the potential for environmental crises to spur farming into completely re-evaluating their practices and turning to the government for assistance is limited. As a result, EFP administrators cannot wait for farmers to come to the EFP and must create robust incentives or bring the program directly to farmers.

My second conclusion is that economic ideologies emphasize short-term gains which contradict the EFP. In Chapter 2, participants highlighted the most worrisome effects of environmental hazards as productive threats, such as water quality, the ability to produce food, and the economy, implying that farmers were only concerned with their ability to produce. In Chapter 3, this conclusion was complicated as participants highlighted three core responsibilities: land stewardship, land development, and feeding the world. These discourses revealed a melding of environmental, economic, and moral values embedded in farming. They encourage Prairie farmers to equate moral values with protecting the environment, maximizing production, and manufacturing the environment. This melding of these values creates a complicated situation wherein economic gain is as righteous as environmental protection.

In Chapter 4, I also highlighted how the EFP attempts to call on the concept of land stewardship to bring farming into the program. Provincial messaging behind the EFP highlights farmers' need to practice 'due diligence' and their internalized desire to protect the environment. However, the multiple productive, economic, and environmental responsibilities and material constraints complicate the situation. By pressuring Prairie farmers to maximize production, the material circumstances of the Prairies embolden one side of the Prairie identity - as productive entrepreneurs. This position subverts farmers' capacity to participate in the EFP. Farmers' ability to protect the environment is flanked by the need to maximize production and maintain economic stability. Prairie farmers will likely ignore the program without mechanisms to help them out of these cycles, especially with the costs associated with adopting many of the innovations the EFP promotes.

The final explanatory variable for the EFP dissonance is the relationship between Prairie farmers, governments, and trust. In Chapter 2, survey respondents ranked the federal and provincial governments and environmentalists low in terms of trustworthiness. They also expressed a high level of agreement that they would be willing to do something to increase sustainability but did not support government action to do so. In Chapter 3, my findings complemented the importance of trust and expanded upon how farmers articulate their distrust in governments. They argued that the political aims of governments are ignorant to or directly conflict with the actual needs of farmers. The belief that governments let politics overtake objectivity creates a foundation for skepticism and distrust towards government messaging and programming such as the EFP. These views are warranted as fiscal restraints have caused the Prairie and federal governments to dismantle supports offered to farmers, arguing it will make

them more dynamic and self-sufficient when, in reality, it has increased precarity and made them more subservient to corporate power.

In Chapter 4, I showed how the foundations of the EFP were designed to tackle this trust issue. The foundations of the EFP when it was created in Ontario emphasized farmer cooperation and the use of farmers' associations to grant the program legitimacy. However, the current EFP's extremely narrow options for interpreting environmental risks and already-developed solutions contradict the bottom-up approach as the program dictates questions and answers for farmers. T Additionally, with the program's rollout on the Prairies, the program was not picked up by any farmers' associations. This lack of involvement means the Prairie EFP diminishes its primary tool for trust building and, instead, intensifies perceived government control. However, the erosion of the bottom-up approach is largely due to the integration of Best Management Practices funding. While BMPs are there to offset the costs of environmental sustainability, they also serve as a tool for governing bodies to influence the EFP, further eroding the voluntary, bottom-up approach.

4.0 Policy Recommendations

Based on the findings of this thesis, two important policy recommendations can help to alleviate the EFP dissonance. The first recommendation is to focus on coalition building. Levin et al. (2012) highlight the importance of building coalitions to deal with environmental issues. Coalitions can be built around short-term issues, such as reducing the debt associated with fertilizer application and bringing multiple groups together to build up long-term issues, such as whole-farm sustainability. The EFP could find a singular issue within its framework that can be used to build coalitions with farmers' organizations. Bringing farmers' organizations into the

design phase would allow the program to gain greater legitimacy in the eyes of Prairie farmers, be more responsive to the specific needs of farmers, and target the specific environmental issues that impact Prairie farms. From there, the EFP can be scaled up to incorporate more farmers and begin integrating greater sustainability options. Currently, the EFP is a sterile program that does little to engage farmers. With a stronger coalition of organizations working together, the program could put more resources into critically engaging farmers on the issue of sustainability, acting as a project based on co-learning and value transformation rather than a box-ticking exercise for accessing funding.

The second policy recommendation is to address the material reality of farming by attaching income support to the EFP. Integrating the BRM system with the EFP system would be useful for deepening the connection between environmental and financial sustainability. This has already been done in Quebec – the province with the highest level of EFP participation. Including greater support for farmers' incomes would also ease the transition from high-input farming to a lower-input option. Another option is for the governments to place a greater onus on corporations that sell inputs or buy foods to use the EFP to ensure that Canadian agricultural products are produced sustainably. Allowing for the integration of the economy and the environment is a critical consideration for ensuring sustainable development occurs on Prairie farms. Improving the EFP or creating another program that integrates the needs of Prairie farmers is undoubtedly valuable in alleviating the stress of the economic and environmental crises facing Prairie farmers and ensuring that Canada can meet its commitment to sustainability.

5.0 Thematic Contributions

In this final section, I extrapolate my findings to show how they contribute to theoretical questions regarding the relationship between farming and the environment. By doing this, I show some of the themes running in the background of this thesis, including modernity, neoliberalism, governance, and dissonance. Connecting my findings to theory allows me to demonstrate the value of this project to the greater academic community and why exploring the EFP dissonance is valuable outside of the Prairie context.

5.1 Theme # 1: Modernity and Environmental Risk

The relationship between modern agriculture and environmental risks is a common theme discovered throughout this thesis. Bantjes (2005) argues the historical development of Prairie agriculture was deeply embroiled in discourses of modernity. With the national policy, the Canadian government undertook a project to transform a landscape in line with modern governance practices. This can be seen by looking at the aerial landscape of the Prairies as the Dominion Land Survey's grid system characterizes the region, reflecting the rational architecture of Le Corbusier. This system created a framework for farmers to understand their role as the principal drivers of Prairie development. It also allowed the bureaucrats in Ottawa to govern the landscape from afar effectively (Bantjes 2005). As Prairie history progressed, modern transnational economics (Magnan 2016), socialist and capitalist practices of governance (Bantjes 2000), and techno-scientific applications (Anderson 2018; Eaton 2013) aided the landscape's transformation into what it is today. These forces shaped the Prairies into a deeply rationalized model of agricultural production, growing vast monocultures cultivating wheat, oil seed, and livestock to sell to markets across the globe.

Central to practices of modernity is an attempt to disassemble the biological processes of nature and reassemble them within the controlled mechanisms of capitalism. This process can be seen all over the Prairies with the development of Marquis wheat to survive the difficult Prairie winters in the late-19th century (Anderson 2018) to the proliferation of genetically modified seeds that permit additional pesticides in the 21st century (Eaton 2013). However, the attempt to subordinate nature has come under fire from farmers' movements arguing against corporate control and environmentalists highlighting the looming threat of climate change. Social and environmental feedback has begun to ripple through the Prairies, causing many to rethink the path that Prairie agriculture has paved, vividly mirroring Ulrich Beck's 'Risk Society' thesis.

In the 80s, Beck articulated fears over modernity's social and ecological ramifications (Beck 1992). He argued that modernity has reached a new phase of development wherein the production of social goods has begun to rebound, resulting in a rise in new, manufactured risks. The chief example is the Chernobyl disaster, where the attempt to produce clean energy resulted in a disaster that threatened all life. Still, other examples persist long after Beck's initial writing, such as new illnesses like SARS or COVID-19 and ecological issues including water pollution and climate change. Beck's thesis is vitally important for agriculture. Modern agriculture practices used to increase efficiency have clear impacts on the environment and rural society, such as intensified livestock operation and fertilizer application running off into water sources, the use of heavy machinery producing greenhouse gases, and the consolidation of farmland resulting in rural depopulation (Fletcher et al. 2020; 2021).

Beck argued that the proliferation of manufactured risks necessitated a new 'reflexive modernity' where governments and individuals replace the concept of human progress with a vague notion of 'reform' or 'reorganization.' The continual work to refine a policy like the EFP

is just such an example: the track of a possible better future is subjugated by the goal of making effective policy to stem the decline of a worsening present. Stuart, Schewe, and McDermott's (2012) study of farms in the U.S.A.'s Midwest argues the same, that views of human exceptionalism, short-term environmental goals, and exposure to conservative media represent reflexive barriers to environmental progress. My findings present similar conclusions but are routed in the perspective of the Canadian Prairies: a faith in Prairie exceptionalism, economic constraints, and a lack of trust in the government and their central environmental program, the EFP. These factors present critical hurdles to Prairie farmers' capacity for reflexivity in the wake of economic or environmental crises.

5.2 Theme #2: Neoliberalization of the Environment

Another key theme that has run in this thesis's background is neoliberalism's political economics and how it impacts farming and the environment. Neoliberalism as a political ideology fosters "entrepreneurial, competitive and commercial behaviour in its citizens" by cultivating "individualistic, competitive, acquisitive and entrepreneurial behaviour ... assumed to be the natural condition of civilized humanity, undistorted by government intervention" (Gilbert 2013, 9). On the ideological level, Wendy Brown (2015) argues that neoliberalization transforms subjectivity to centre activity around entrepreneurialism and competition. Operationally, Tickell (2008) argues that states institute the economics of neoliberalization through a rollback of state assistance and deregulation of economic practices followed by a rollout of new policies and programs that allow private markets to direct activity.

Neoliberalism's effects are not relegated to politics or the economy, as the process also impacts the environment. Noel Castree (2010) argues that neoliberalism results in privatizing and

commodifying human relations with the natural world. The process of neoliberalism renders all components of the environment as privately-owned commodities that can be bought and sold on the free market. The commodification and privatization of the environment are internally linked with agriculture. Agriculture transforms the environment into commodities that can be sold. Still, the effects of the neoliberal turn around the globe had critical implications for the support that Canadian farmers receive.

The process of neoliberalization has been unfolding in the Canadian agricultural sector since the 1980s. Skogstad (2008) argues that from the 1930s to the 80s, Canadian agriculture was under an exceptionalist policy paradigm, allowing for the creation of state trading enterprises, like the Canadian Wheat Board, that regulated trade and protected farmers from corporate control. The transition to neoliberalism was exemplified in Agriculture Canada's 1989 document, *Growing Together*, beginning with the statement:

“Our vision of the future is a more market-oriented agri-food industry that aggressively pursues opportunities to grow and prosper. The industry must be provided with a framework of consistent and predictable government programs that encourage a more self-reliant sector that is able to earn a reasonable return from the marketplace.”

(Agriculture Canada 1989, 3-4)

In the 90s, Canadian agriculture was opened to free market trade as previous support systems were rolled back in favour of market-orientated programs, such as the Business Risk Management suite, and the signing of free trade agreements such as 1994's North American Free Trade Agreement (Skogstad 2008). In the 2010s, the closure of the Canadian Wheat Board in the Prairies marked the ascension of neoliberalism as an economic order and political ideology on the Prairies (Müller 2013).

The relationship between Prairie farmers and the EFP program clearly indicated neoliberalism's effects on the landscape. The ascension of individual entrepreneurial values was on full display as an explanatory force for farmers' orientation towards short-term gain and distrust of the state. At the same time, the economics of neoliberalism present a valuable factor for understanding the rise in debt and corporate control in the Prairies. The rollback of supports has led to a rise in debt and costs, constraining farmers' choices to maximize productive output. The rollout of market-oriented instruments like BRM programs and corporate agribusinesses has encouraged farmers to deepen their view that the environment is a commodity that must be maximized to realize their entrepreneurial self and effectively compete in global markets.

5.3 Theme #3 The Problem of Governance and Sustainable Agriculture

In this thesis, I have approached the problem of governance and how to develop adequate agri-environmental policies for encouraging sustainable agriculture, where these policies fail, and how to build appropriate policies for the Prairie context. The goal of agri-environmental policymaking is to shift the foundations of farming from a productivist perspective, where maximizing yields is the primary goal, to a post-productivist perspective, where on-productive outputs, such as social, environmental, and cultural goals, are folded into the practice of farming (Latacz-Lohmann and Hodge 2003). How governments approach this transition varies. Some may focus on an ecocentric approach that integrates the biophysical limits of the environment into agricultural practices, exemplified in degrowth and regenerative agriculture. Others may focus on a technocratic approach that encourages technological innovations that can modify current practices (Robinson 2009). The EFP's approach firmly falls in the latter, encouraging the implementation of technocratic innovations rather than advocating

for ecocentric shifts. This approach is due to the development of the agricultural policy network in Canada, which has struggled to form strong regulations and avoided direct involvement in agriculture to allow farmers to direct their path.

The result of this approach connects to farmers' attitudes and shifting social structures. The EFP's policy network favours the former, focusing on education that can shift farmers' values. However, my analysis showed how the EFP struggles as it fails to address one critical attitude: trust. The lack of trust building associated with the EFP means the program cannot reach farmers. This result supports the arguments of Elinor Ostrom (1990), who stated that institutional trust building mechanisms are central to effectively governing the commons.

Ultimately, my analysis showed how a singular focus on attitudes hampers policies. The EFP's lack of attention to social structures, specifically corporatization and the economic commitments of Prairie farmers, compounded its struggles. Without adequate support for farmers' incomes, their decision-making is constrained to maintaining the status quo. The EFP has few mechanisms for tackling the behemoths of capital that direct farmers' actions. As a result, the program sits idly waiting for farmers join.

5.4 Theme #4: Theorizing Dissonance

In this thesis, I framed the low uptake in the EFP program among Prairie farmers as a dissonance between the two primary actors – Prairie farmers and the state. Whereas each group recognizes the need to manage environmental impacts and mitigate risks like severe droughts brought on by climate change, the difference arises where they seem to be at absolute odds in reaching that goal. Framing this as 'dissonance' highlights the significance of a shared goal, while illustrating the deep divide in how to reach it. Similar concepts of dissonance are used

elsewhere. Psychologists have routinely employed the concept of ‘cognitive dissonance’ to describe the disconnect individuals experience when one or more of their beliefs contradict, often at the level of attitudes and actions (Langseth and Vyff 2021). For example, one could hold the belief that the production of meat is morally wrong due to its harm to animals but eat meat due to its protein content or taste, resulting in a dissonance. In this thesis, the concept of dissonance refers to the social level by looking at a disconnect as the actor’s shared belief coalesces in theory but contradicts in practice. By framing the issue as a dissonance, I focused on how this tension play out, framed as Prairie farmers’ unwillingness to use what should be a valuable program combined with the state’s inability to provide a program that farmers are willing to use.

There are two important levels to this dissonance which are attended to in this thesis: dissonance between actors and dissonance within actors. Dissonance between actors plays out as different group’s intersecting values result in social conflict. To illustrate, Ade-Ojo and Duckworth's (2017) research into adult literacy shows divergent values regarding the importance of literacy as an economic tool or as a practice of personal development. Both groups agree that adult literacy is important, but economic proponents believe that programs should be directed towards achieving functional literacy by using standardized benchmarks while personal proponents focus on promoting critical literacy through democratic learning environments. In this research, I explored the divergent values of Prairie farmers and the EFP. I expanded on Prairie farmers’ perspective on risk, identity, the environment, and the state and how these perspective intersect with implementing sustainability. I then was able to contrapose these perspectives with the beliefs embedded in the EFP’s design and delivery. This allowed me to gain an understanding of how each actor conceptualizes the problem of sustainability and theorize why their views are dissonant in practice.

Dissonance within actors is the instances of conflict that arises as individuals hold multiple contradictory beliefs associated with their cultural identity. In Langseth and Vyff's (2021) research on Norwegian surfers, they theorize cultural dissonance that occurs within cultural as they explore surfers who articulate pro-environmental beliefs along with contradictory practices of travel and consumerism as essential to their identity. Similarly, I explored components of Prairie farmers' identity which are dissonant with their own goals of sustainability. For example, I unveiled participants' belief that they are stewards of the environment or naturalists that contradict with their beliefs and actions associated with productive maximization. Alternatively, I explored how the same process occurs within the EFP as the program's bottom-up foundations and intentions conflict with its delivery and context. This perspective allowed me to show examples of dissonance in regards to sustainability occurs within Prairie farmers and the EFP and their evaluations of the problem being incoherent.

Framing the problem as a dissonance has benefits. It allows me to avoid putting power entirely in the hands of the state and expert policymakers to pilot environmental change. Various researchers have attempted to destabilize the primacy of official avenues to sustainability demonstrating that expert knowledge is an embedded form of knowledge production that can be incorrect or misguided (Lash, Wynne, and Szerszynski 1995); how attempts to 'follow the science' obscure the politics at the core of change (Sarewitz 2004); and the value of place-based knowledge production in efforts towards sustainability (Moran and Rau 2016). Similarly, Prairie farmers have legitimate place-based understandings of sustainability on the Prairies influenced by economic constraints, political commitments, practical knowledge, and their want to maintain their identity. By framing the problem as a dissonance, I theorized the problem as disagreement rather than deficit and centre solutions around achieving collaboration.

However, by framing the problem as a dissonance, I also open the discussion to potential inertia. By treating both forms of knowledge equally, both actors are granted the opportunity to essentially do nothing, since both are ‘correct’ from their own vantage point. In a case like environmental change, where immediate action is necessary, treating problems as dissonances has the potential to result in political gridlock. However, understanding dissonance does have advantages as an approach to rectifying environmental controversies. A dissonance framing emphasizes the disconnect between differing subjective values rather than treating the issue as a lack of evidence. As Sarewitz (2004) illustrates both sides of environmental controversies are able to mobilize objective evidence to support their position, and that the key to reducing inertia within a democratic system is an open discussion and adjudication of values rather than solely evidence.

Following this approach, I examined the underlying histories, structures, and mechanisms that exacerbate dissonance. The goal was not to disregard the reality environmental change, but to examine the politics of environmental governance. In theorizing why Prairie farmers and the EFP struggle to achieve consonance, I attempted to locate where greater change is needed. Some of these issues may not be solvable through tweaks to the already existing system. The continued failure to address environmental change on farms clearly points to a lack in Canada’s political system and as a result, may require radical reform, but answering that question is out of the scope of this research. The intention here is to understand why these actors are dissonant.

References

- Ade-Ojo, Gordon, and Vicky Duckworth. 2017. 'Of Cultural Dissonance: The UK's Adult Literacy Policies and the Creation of Democratic Learning Spaces'. *International Journal of Lifelong Education* 36 (4): 388–405. <https://doi.org/10.1080/02601370.2016.1250232>.
- Agriculture and Agri-Food Canada. 1995. *The Health of Our Soils: Toward Sustainable Agriculture in Canada*. Edited by D. F. Acton and L. J. Gregorich. Ottawa, ON: Centre for Land and Biological Resources Research.
- . 2009. 'Environmental Farm Planning in Canada: A 2006 Overview'.
- . 2021. 'The Guelph Statement'. 10 November 2021.
<https://agriculture.canada.ca/en/department/initiatives/meetings-ministers/guelph-statement>.
- . 2023. 'Sustainable Canadian Agricultural Partnership'. 6 March 2023.
<https://agriculture.canada.ca/en/department/initiatives/sustainable-canadian-agricultural-partnership>.
- Agriculture Canada. 1989. 'Growing Together'. Ottawa, Ontario.
- Anderson, PG. 2018. 'Grasses Tame and Wild: Imperial Entanglements in Settler Colonial Cereal Breeding and Botany'. *Environment and Planning E: Nature and Space* 1 (4): 539–60.
<https://doi.org/10.1177/2514848618792233>.
- Arbuckle, J. Gordon, Linda Stalker Prokopy, Tonya Haigh, Jon Hobbs, Tricia Knoot, Cody Knutson, Adam Loy, et al. 2013. 'Climate Change Beliefs, Concerns, and Attitudes toward Adaptation and Mitigation among Farmers in the Midwestern United States'. *Climatic Change* 117 (4): 943–50. <https://doi.org/10.1007/s10584-013-0707-6>.

- Arnason, Robert. 2009. 'Farm Plans Change Hands'. *The Western Producer* (blog). 10 September 2009. <https://www.producer.com/crops/farm-plans-change-hands/>.
- Ashton, Lisa. 2022. 'A Framework for Promoting Natural Climate Solutions in the Agriculture Sector'. *Land Use Policy* 122 (November): 106382. <https://doi.org/10.1016/j.landusepol.2022.106382>.
- Atari, Dominic O. A., Emmanuel K. Yiridoe, Shawn Smale, and Peter N. Duinker. 2009. 'What Motivates Farmers to Participate in the Nova Scotia Environmental Farm Plan Program? Evidence and Environmental Policy Implications'. *Journal of Environmental Management* 90 (2): 1269–79. <https://doi.org/10.1016/j.jenvman.2008.07.006>.
- Bantjes, Rod. 2000. 'Modernism and the Machine Farmer'. *Journal of Historical Sociology* 13 (2): 121–41. <https://doi.org/10.1111/1467-6443.00110>.
- . 2005. *Improved Earth: Prairie Space as Modern Artefact, 1869-1944*. University of Toronto Press.
- Beck, Ulrich. 1992. *Risk Society: Towards a New Modernity*. SAGE.
- Beingessner, Naomi, André Magnan, and Mengistu Wendimu. 2023. "Land Imaginaries" in Western Canada: (Financial) Neoliberalism, Agrarianism, and the Contemporary Politics of Agricultural Land'. *Environment and Planning C: Politics and Space* 41 (4): 637–55. <https://doi.org/10.1177/23996544221144168>.
- Ben Hamm. 2022. 'Risk Mitigation: What Are You Doing to Protect Your Farm?'
- Bernstein, Steven, Richard Lebow, Janice Stein, and Steven Weber. 2000. 'God Gave Physics the Easy Problems:: Adapting Social Science to an Unpredictable World'. *European Journal of International Relations* 6 (1): 43–76. <https://doi.org/10.1177/1354066100006001003>.

- Bostrom, Ann, M. Granger Morgan, Baruch Fischhoff, and Daniel Read. 1994. 'What Do People Know About Global Climate Change? 1. Mental Models'. *Risk Analysis* 14 (6): 959–70.
<https://doi.org/10.1111/j.1539-6924.1994.tb00065.x>.
- Boxall, Peter C. 2018. 'Evaluation of Agri-Environmental Programs: Can We Determine If We Grew Forward in an Environmentally Friendly Way?' *Canadian Journal of Agricultural Economics/Revue Canadienne d'agroeconomie* 66 (2): 171–86.
<https://doi.org/10.1111/cjag.12170>.
- Breakwell, Glynis M. 2014. *The Psychology of Risk*. 2nd ed. Cambridge: Cambridge University Press. <https://doi.org/10.1017/CBO9781139061933>.
- Brown, Wendy. 2015. *Undoing the Demos: Neoliberalism's Stealth Revolution*. Zone Books.
<https://doi.org/10.2307/j.ctt17kk9p8>.
- Bryant, Raymond L. 1998. 'Power, Knowledge and Political Ecology in the Third World: A Review'. *Progress in Physical Geography: Earth and Environment* 22 (1): 79–94.
<https://doi.org/10.1177/030913339802200104>.
- Burton, Rob J. F. 2004. 'Reconceptualising the "Behavioural Approach" in Agricultural Studies: A Socio-Psychological Perspective'. *Journal of Rural Studies* 20 (3): 359–71.
<https://doi.org/10.1016/j.jrurstud.2003.12.001>.
- Burton, Rob J. F., J  r  mie Forney, Paul Stock, and Lee-Ann Sutherland. 2020. *The Good Farmer: Culture and Identity in Food and Agriculture*. London: Routledge.
<https://doi.org/10.4324/9781315190655>.
- Burton, Rob. J.F., Carmen Kuczera, and Gerald Schwarz. 2008. 'Exploring Farmers' Cultural Resistance to Voluntary Agri-Environmental Schemes'. *Sociologia Ruralis* 48 (1): 16–37.
<https://doi.org/10.1111/j.1467-9523.2008.00452.x>.

- Buttel, Frederick. 2006. 'Sustaining the Unsustainable: Agro-Food Systems and Environment in the Modern World'. In *The Handbook of Rural Studies*, by Paul Cloke, Terry Marsden, and Patrick Mooney. 1 Oliver's Yard, 55 City Road, London EC1Y 1SP United Kingdom: SAGE Publications Ltd. <https://doi.org/10.4135/9781848608016>.
- Campbell, Donald T., and Donald W. Fiske. 1959. 'Convergent and Discriminant Validation by the Multitrait-Multimethod Matrix'. *Psychological Bulletin* 56 (2): 81–105. <https://doi.org/10.1037/h0046016>.
- Carolan, Michael S. 2006. 'Social Change and the Adoption and Adaptation of Knowledge Claims: Whose Truth Do You Trust in Regard to Sustainable Agriculture?' *Agriculture and Human Values* 23 (3): 325–39. <https://doi.org/10.1007/s10460-006-9006-4>.
- Castree, Noel. 2010. 'Neoliberalism and the Biophysical Environment 1: What "Neoliberalism" Is, and What Difference Nature Makes to It'. *Geography Compass* 4 (12): 1725–33. <https://doi.org/10.1111/j.1749-8198.2010.00405.x>.
- Charlebois, Sylvain, and Amit Summan. 2015. 'A Risk Communication Model for Food Regulatory Agencies in Modern Society'. *Trends in Food Science & Technology* 45 (1): 153–65. <https://doi.org/10.1016/j.tifs.2015.05.004>.
- Clayton, Chris. 2023. 'Canadian Plan to Reduce Fertilizer Emissions Draws Heat on Prairie'. *DTN Progressive Farmer*, 25 April 2023. <https://www.dtnpf.com/agriculture/web/ag/crops/article/2022/10/06/canadian-plan-reduce-fertilizer-heat>.
- Clifford, Nicholas, Meghan Cope, Thomas Gillespie, and Shaun French. 2016. *Key Methods in Geography*. SAGE.

- Cochrane, Christopher, and Andrea Perrella. 2012. 'Regions, Regionalism and Regional Differences in Canada'. *Canadian Journal of Political Science/Revue Canadienne de Science Politique* 45 (4): 829–53. <https://doi.org/10.1017/S0008423912001011>.
- Creamer, Elizabeth G. 2018. 'Striving for Methodological Integrity in Mixed Methods Research: The Difference Between Mixed Methods and Mixed-Up Methods'. *Journal of Engineering Education* 107 (4): 526–30. <https://doi.org/10.1002/jee.20240>.
- Creswell, John W. 2013. *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. 4th edition. Thousand Oaks: Sage Publications.
- Davidson, Debra J, Curtis Rollins, Lianne Lefsrud, Sven Anders, and Andreas Hamann. 2019. 'Just Don't Call It Climate Change: Climate-Skeptic Farmer Adoption of Climate-Mitigative Practices'. *Environmental Research Letters* 14 (3): 034015. <https://doi.org/10.1088/1748-9326/aafa30>.
- Desmarais, Annette Aurélie, Darrin Qualman, André Magnan, and Nettie Wiebe. 2015. 'Land Grabbing and Land Concentration: Mapping Changing Patterns of Farmland Ownership in Three Rural Municipalities in Saskatchewan, Canada'. *Canadian Food Studies / La Revue Canadienne Des Études Sur l'alimentation* 2 (1): 16–47. <https://doi.org/10.15353/cfs-rcea.v2i1.52>.
- Eagle, Alison J., James Rude, and Peter C. Boxall. 2016. 'Agricultural Support Policy in Canada: What Are the Environmental Consequences?' *Environmental Reviews* 24 (1): 13–24. <https://doi.org/10.1139/er-2015-0050>.
- Eaton, Emily. 2013. *Growing Resistance: Canadian Farmers and the Politics of Genetically Modified Wheat*. Univ. of Manitoba Press.

- Eiser, J. Richard, Susan Miles, and Lynn J. Frewer. 2002. 'Trust, Perceived Risk, and Attitudes Toward Food Technologies¹'. *Journal of Applied Social Psychology* 32 (11): 2423–33. <https://doi.org/10.1111/j.1559-1816.2002.tb01871.x>.
- Fardon, Richard, John Gledhill, and Association of Social Anthropologists of the UK and the Commonwealth. 2012. *The SAGE Handbook of Social Anthropology*. 1 online resource (2 volumes) vols. Thousand Oaks, Calif.: SAGE. <http://site.ebrary.com/id/10614226>.
- Feindt, Peter H., and Angela Oels. 2005. 'Does Discourse Matter? Discourse Analysis in Environmental Policy Making'. *Journal of Environmental Policy & Planning* 7 (3): 161–73. <https://doi.org/10.1080/15239080500339638>.
- Fielding, Nigel G. 2009. 'Going out on a Limb: Postmodernism and Multiple Method Research'. *Current Sociology* 57 (3): 427–47. <https://doi.org/10.1177/0011392108101591>.
- Finlay, Linda. 2002. 'Negotiating the Swamp: The Opportunity and Challenge of Reflexivity in Research Practice'. *Qualitative Research* 2 (2): 209–30. <https://doi.org/10.1177/146879410200200205>.
- Fischer, Frank, and Gerald J. Miller. 2017. *Handbook of Public Policy Analysis: Theory, Politics, and Methods*. Routledge.
- Fischer, Frank, Douglas Torgerson, Anna Durnová, and Michael Orsini. 2015. *Handbook of Critical Policy Studies*. Edward Elgar Publishing.
- Fischhoff, Baruch, Paul Slovic, Sarah Lichtenstein, Stephen Read, and Barbara Combs. 1978. 'How Safe Is Safe Enough? A Psychometric Study of Attitudes towards Technological Risks and Benefits'. *Policy Sciences* 9 (2): 127–52. <https://doi.org/10.1007/BF00143739>.

- Fleming, Aysha, and Frank Vanclay. 2010. 'Farmer Responses to Climate Change and Sustainable Agriculture. A Review'. *Agronomy for Sustainable Development* 30 (1): 11–19. <https://doi.org/10.1051/agro/2009028>.
- Fletcher, Amber J., Nancy Sah Akwen, Margot Hurlbert, and Harry P. Diaz. 2020. "'You Relied on God and Your Neighbour to Get through It': Social Capital and Climate Change Adaptation in the Rural Canadian Prairies'. *Regional Environmental Change* 20 (2): 61. <https://doi.org/10.1007/s10113-020-01645-2>.
- Fletcher, Amber J., Margot Hurlbert, Sam Hage, and David Sauchyn. 2021. 'Agricultural Producers' Views of Climate Change in the Canadian Prairies: Implications for Adaptation and Environmental Practices'. *Society & Natural Resources* 34 (3): 331–51. <https://doi.org/10.1080/08941920.2020.1823541>.
- Flick, Uwe. 2017. 'Mantras and Myths: The Disenchantment of Mixed-Methods Research and Revisiting Triangulation as a Perspective'. *Qualitative Inquiry* 23 (1): 46–57. <https://doi.org/10.1177/1077800416655827>.
- Foucault, Michel. 1977. *Discipline and Punish: The Birth of the Prison*. Vintage Books.
- . 2003. *The Birth of the Clinic: An Archaeology of Medical Perception*. Psychology Press.
- Foucault, Michel, and Paul Rabinow. 1991. *The Foucault Reader*. Penguin Books.
- Gilbert, Jeremy. 2013. 'What Kind Of Thing Is "Neoliberalism"?' *New Formations* 80 (80): 7–22. <https://doi.org/10.3898/nEWF.80/81.IntroductIon.2013>.
- Goldkuhl, Göran. 2012. 'Pragmatism vs Interpretivism in Qualitative Information Systems Research'. *European Journal of Information Systems* 21 (2): 135–46. <https://doi.org/10.1057/ejis.2011.54>.

- Gubrium, Jaber F., James A. Holstein, Amir B. Marvasti, and Karyn D. McKinney. 2012. *The SAGE Handbook of Interview Research: The Complexity of the Craft*. SAGE Publications.
- Guillemin, Marilys, and Lynn Gillam. 2004. 'Ethics, Reflexivity, and "Ethically Important Moments" in Research'. *Qualitative Inquiry* 10 (2): 261–80.
<https://doi.org/10.1177/1077800403262360>.
- Haden, Van R., Meredith T. Niles, Mark Lubell, Joshua Perlman, and Louise E. Jackson. 2012. 'Global and Local Concerns: What Attitudes and Beliefs Motivate Farmers to Mitigate and Adapt to Climate Change?' *PLOS ONE* 7 (12): e52882.
<https://doi.org/10.1371/journal.pone.0052882>.
- Hamilton-Webb, Alice, Louise Manning, Rhiannon Naylor, and John Conway. 2017. 'The Relationship between Risk Experience and Risk Response: A Study of Farmers and Climate Change'. *Journal of Risk Research* 20 (11): 1379–93.
<https://doi.org/10.1080/13669877.2016.1153506>.
- Haraway, Donna. 1988. 'Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective'. *Feminist Studies* 14 (3): 575–99.
<https://doi.org/10.2307/3178066>.
- Hardy, Cynthia, and Steve Maguire. 2016. 'Organizing Risk: Discourse, Power, and "Riskification"'. *Academy of Management Review* 41 (1): 80–108.
<https://doi.org/10.5465/amr.2013.0106>.
- Higgins, Vaughan. 2001. 'Assembling Restructuring: Governmentality, Economic Regulation and the Historical Emergence of the "enterprising Farmer" in Australian Agricultural

- Policy'. *Review of International Political Economy* 8 (2): 311–28.
<https://doi.org/10.1080/09692290010033402>.
- Houser, Matthew. 2018. 'Who Framed Climate Change? Identifying the How and Why of Iowa Corn Farmers' Framing of Climate Change: Who Framed Climate Change?' *Sociologia Ruralis* 58 (1): 40–62. <https://doi.org/10.1111/soru.12136>.
- Howlett, Michael. 2019. *Designing Public Policies: Principles and Instruments*. Routledge.
- Huirne, R.M.B. 2003. 'Strategy and Risk in Farming'. *NJAS - Wageningen Journal of Life Sciences* 50 (2): 249–59. [https://doi.org/10.1016/S1573-5214\(03\)80010-6](https://doi.org/10.1016/S1573-5214(03)80010-6).
- Hursh, Kevin. 2023. 'Common Ground on Climate Change Is Important'. *The Western Producer* (blog). 20 July 2023. <https://www.producer.com/opinion/common-ground-on-climate-change-is-important/>.
- Hyland, John J., Davey L. Jones, Karen A. Parkhill, Andrew P. Barnes, and A. Prysor Williams. 2016. 'Farmers' Perceptions of Climate Change: Identifying Types'. *Agriculture and Human Values* 33 (2): 323–39. <https://doi.org/10.1007/s10460-015-9608-9>.
- Janghorban, Roksana, Robab Latifnejad Roudsari, and Ali Taghipour. 2014. 'Skype Interviewing: The New Generation of Online Synchronous Interview in Qualitative Research'. *International Journal of Qualitative Studies on Health and Well-Being* 9 (1): 24152. <https://doi.org/10.3402/qhw.v9.24152>.
- Janker, Judith, Stefan Mann, and Stephan Rist. 2018. 'What Is Sustainable Agriculture? Critical Analysis of the International Political Discourse'. *Sustainability* 10 (12): 4707. <https://doi.org/10.3390/su10124707>.
- Jeffrey, Scott R., Dawn E. Trautman, and James R. Unterschultz. 2017. 'Canadian Agricultural Business Risk Management Programs: Implications for Farm Wealth and Environmental

- Stewardship'. *Canadian Journal of Agricultural Economics/Revue Canadienne d'agroéconomie* 65 (4): 543–65. <https://doi.org/10.1111/cjag.12145>.
- Kahneman, Daniel, Paul Slovic, and Amos Tversky, eds. 1982. *Judgment under Uncertainty: Heuristics and Biases*. Cambridge: Cambridge University Press. <https://doi.org/10.1017/CBO9780511809477>.
- Karami, Ezatollah, and Marzieh Keshavarz. 2010. 'Sociology of Sustainable Agriculture'. In *Sociology, Organic Farming, Climate Change and Soil Science*, edited by Eric Lichtfouse, 19–40. Sustainable Agriculture Reviews. Dordrecht: Springer Netherlands. https://doi.org/10.1007/978-90-481-3333-8_2.
- Kimura, Shingo, and Jesus Anton, eds. 2011. *Farm Income Stabilization and Risk Management: Some Lessons from AgriStability Program in Canada*. <https://doi.org/10.22004/ag.econ.114755>.
- Koehler, Dinah A. 2007. 'The Effectiveness of Voluntary Environmental Programs—A Policy at a Crossroads?' *Policy Studies Journal* 35 (4): 689–722. <https://doi.org/10.1111/j.1541-0072.2007.00244.x>.
- Kollmuss, Anja, and Julian Agyeman. 2002. 'Mind the Gap: Why Do People Act Environmentally and What Are the Barriers to pro-Environmental Behavior?' *Environmental Education Research* 8 (3): 239–60. <https://doi.org/10.1080/13504620220145401>.
- Kragt, Marit E., Nikki P. Dumbrell, and Louise Blackmore. 2017. 'Motivations and Barriers for Western Australian Broad-Acre Farmers to Adopt Carbon Farming'. *Environmental Science & Policy* 73 (July): 115–23. <https://doi.org/10.1016/j.envsci.2017.04.009>.

- Kuehne, Geoff. 2014. 'How Do Farmers' Climate Change Beliefs Affect Adaptation to Climate Change?' *Society & Natural Resources* 27 (5): 492–506.
<https://doi.org/10.1080/08941920.2013.861565>.
- Kulshreshtha, Surendra N. 2011. 'Climate Change, Prairie Agriculture, and Prairie Economy: The New Normal'. *Canadian Journal of Agricultural Economics* 59 (1): 19–44.
<https://doi.org/10.1111/j.1744-7976.2010.01211.x>.
- Laforge, Julia, Vanessa Corkal, and Aaron Cosbey. 2021. 'Farming the Future: Agriculture and Climate Change on the Canadian Prairies'. International Institute for Sustainable Development.
- Laforge, Julia M.L., and Stéphane M. McLachlan. 2018. 'Environmentality on the Canadian Prairies: Settler-Farmer Subjectivities and Agri-Environmental Objects'. *Antipode* 50 (2): 359–83. <https://doi.org/10.1111/anti.12362>.
- Langseth, Tommy, and Adam Vyff. 2021. 'Cultural Dissonance: Surfers' Environmental Attitudes and Actions'. *Frontiers in Sports and Active Living* 3 (September).
<https://doi.org/10.3389/fspor.2021.695048>.
- Lash, Scott M., Brian Wynne, and Bronislaw Szerszynski. 1995. 'Risk, Environment and Modernity : Towards a New Ecology', 1–304.
- Latacz-Lohmann, Uwe, and Ian Hodge. 2003. 'European Agri-Environmental Policy for the 21st Century'. *Australian Journal of Agricultural and Resource Economics* 47 (1): 123–39.
<https://doi.org/10.1111/1467-8489.00206>.
- Levin, Kelly, Benjamin Cashore, Steven Bernstein, and Graeme Auld. 2012. 'Overcoming the Tragedy of Super Wicked Problems: Constraining Our Future Selves to Ameliorate

- Global Climate Change'. *Policy Sciences* 45 (2): 123–52. <https://doi.org/10.1007/s11077-012-9151-0>.
- Linden, Sander van der. 2015. 'The Social-Psychological Determinants of Climate Change Risk Perceptions: Towards a Comprehensive Model'. *Journal of Environmental Psychology* 41 (March): 112–24. <https://doi.org/10.1016/j.jenvp.2014.11.012>.
- Magnan, André. 2012. 'New Avenues of Farm Corporatization in the Prairie Grains Sector: Farm Family Entrepreneurs and the Case of One Earth Farms'. *Agriculture and Human Values* 29 (2): 161–75. <https://doi.org/10.1007/s10460-011-9327-9>.
- . 2015. 'The Financialization of Agri-Food in Canada and Australia: Corporate Farmland and Farm Ownership in the Grains and Oilseed Sector'. *Journal of Rural Studies* 41 (October): 1–12. <https://doi.org/10.1016/j.jrurstud.2015.06.007>.
- . 2016. *When Wheat Was King: The Rise and Fall of the Canada-UK Grain Trade*. UBC Press.
- . 2017. 'Food Regimes and the Geopolitics of Wheat'. *Nature Plants* 3 (12): 914–15. <https://doi.org/10.1038/s41477-017-0073-x>.
- McCright, Aaron M., Sandra T. Marquart-Pyatt, Rachael L. Shwom, Steven R. Brechin, and Summer Allen. 2016. 'Ideology, Capitalism, and Climate: Explaining Public Views about Climate Change in the United States'. *Energy Research & Social Science* 21 (November): 180–89. <https://doi.org/10.1016/j.erss.2016.08.003>.
- McGuire, Jean, Lois Wright Morton, and Alicia D. Cast. 2013. 'Reconstructing the Good Farmer Identity: Shifts in Farmer Identities and Farm Management Practices to Improve Water Quality'. *Agriculture and Human Values* 30 (1): 57–69. <https://doi.org/10.1007/s10460-012-9381-y>.

- Milfont, Taciano L. 2012. 'The Interplay Between Knowledge, Perceived Efficacy, and Concern About Global Warming and Climate Change: A One-Year Longitudinal Study'. *Risk Analysis* 32 (6): 1003–20. <https://doi.org/10.1111/j.1539-6924.2012.01800.x>.
- Mills, Albert J., Elden Wiebe, Gabrielle Durepos, Sage Publications., and Sage eReference (Online service). 2009. *Encyclopedia of Case Study Research*. 1 online resource : illustrations, digital, HTML, PDF vols. Gale Virtual Reference Library. Thousand Oaks, Calif.: Sage Publications. <http://site.ebrary.com/id/10372838>.
- Mitter, Hermine, Manuela Larcher, Martin Schönhart, Magdalena Stöttinger, and Erwin Schmid. 2019. 'Exploring Farmers' Climate Change Perceptions and Adaptation Intentions: Empirical Evidence from Austria'. *Environmental Management* 63 (6): 804–21. <https://doi.org/10.1007/s00267-019-01158-7>.
- Montpetit, Éric. 2002. 'Policy Networks, Federal Arrangements, and the Development of Environmental Regulations: A Comparison of the Canadian and American Agricultural Sectors'. *Governance* 15 (1): 1–20. <https://doi.org/10.1111/1468-0491.00177>.
- Moran, Lisa, and Henrike Rau. 2016. 'Mapping Divergent Concepts of Sustainability: Lay Knowledge, Local Practices and Environmental Governance'. *Local Environment* 21 (3): 344–60. <https://doi.org/10.1080/13549839.2014.963838>.
- Morrison, Karen, and John Fitzgibbon. 2014. 'Adaptive Governance of Dynamic Social-Ecological Systems: The Case of the Ontario Environmental Farm Plan (1992–2011)'. *Agroecology and Sustainable Food Systems* 38 (February). <https://doi.org/10.1080/21683565.2013.870627>.
- Müller, Birgit. 2008. 'Still Feeding the World? The Political Ecology of Canadian Prairie Farmers'. *Anthropologica* 50 (2): 389–407. <https://doi.org/10.2307/25605429>.

- . 2013. ‘The Canadian Wheat Board Struggle: Taking Freedom and Democracy to Market’. In *Food Activism: Agency, Democracy, and Economy*, by Carole Counihan and Valeria Siniscalchi. London: Berg Publishers.
- . 2015. ‘Fools Gold on the Prairies: Ontologies, Farmers and Their Seeds’. *TSANTSA – Journal of the Swiss Anthropological Association* 20 (May): 61–73.
<https://doi.org/10.36950/tsantsa.2015.20.7434>.
- Munck af Rosenschöld, Johan, Jaap G. Rozema, and Laura Alex Frye-Levine. 2014. ‘Institutional Inertia and Climate Change: A Review of the New Institutional Literature’. *WIREs Climate Change* 5 (5): 639–48. <https://doi.org/10.1002/wcc.292>.
- Murdoch, Jonathan, and Nkil Ward. 1997. ‘Governmentality and Territoriality: The Statistical Manufacture of Britain’s “National Farm”’. *Political Geography* 16 (4): 307–24.
[https://doi.org/10.1016/S0962-6298\(96\)00007-8](https://doi.org/10.1016/S0962-6298(96)00007-8).
- Nickel, Philip J., and Krist Vaesen. 2012. ‘Risk and Trust’. In *Handbook of Risk Theory: Epistemology, Decision Theory, Ethics, and Social Implications of Risk*, edited by Sabine Roeser, Rafaela Hillerbrand, Per Sandin, and Martin Peterson, 857–76. Dordrecht: Springer Netherlands. https://doi.org/10.1007/978-94-007-1433-5_34.
- Nunokoosing, Karl. 2005. ‘The Problems With Interviews’. *Qualitative Health Research* 15 (5): 698–706. <https://doi.org/10.1177/1049732304273903>.
- O’Malley, Pat. 2016. ‘Governmentality and the Analysis of Risk’. In *Routledge Handbook of Risk Studies*. Routledge.
- Ostrom, Elinor. 1990. *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge University Press.

- ‘PFRA: The Story of Conservation on the Prairies’. 1961. Ottawa, Ontario: Canada Department of Agriculture. https://publications.gc.ca/collections/collection_2015/aac-aafc/A22-4061-1961-eng.pdf.
- Prokopy, L. S., K. Floress, J. G. Arbuckle, S. P. Church, F. R. Eanes, Y. Gao, B. M. Gramig, P. Ranjan, and A. S. Singh. 2019. ‘Adoption of Agricultural Conservation Practices in the United States: Evidence from 35 Years of Quantitative Literature’. *Journal of Soil and Water Conservation* 74 (5): 520–34. <https://doi.org/10.2489/jswc.74.5.520>.
- Prokopy, Linda S., J. G. Arbuckle, Andrew P. Barnes, V. R. Haden, Anthony Hogan, Meredith T. Niles, and John Tyndall. 2015. ‘Farmers and Climate Change: A Cross-National Comparison of Beliefs and Risk Perceptions in High-Income Countries’. *Environmental Management* 56 (2): 492–504. <https://doi.org/10.1007/s00267-015-0504-2>.
- Province of Alberta. n.d.-a. ‘Beneficial Management Practices’. Alberta.Ca. Accessed 5 February 2024. <https://www.alberta.ca/beneficial-management-practices>.
- . n.d.-b. ‘Environmental Farm Plan’. Accessed 30 October 2023. <https://www.albertaefp.com/>.
- . n.d.-c. ‘Producers -Alberta Environmental Farm Plan’. Alberta Environmental Farm Plan. Accessed 31 October 2023. <https://www.albertaefp.com/environmental-farm-plan-resources/producers/>.
- Province of Manitoba. n.d.-a. ‘Environmental Farm Plan’. Province of Manitoba - Agriculture. Accessed 30 October 2023. <https://www.gov.mb.ca/agriculture/>.
- . n.d.-b. ‘Sustainable Agriculture Manitoba’. Province of Manitoba. Accessed 5 February 2024. <https://www.gov.mb.ca/scap/climatechange/sustainable-agr.html>.

- Province of Saskatchewan. n.d.-a. 'Environmental Farm Plans'. Government of Saskatchewan. Accessed 25 April 2023. <https://www.saskatchewan.ca/business/agriculture-natural-resources-and-industry/agribusiness-farmers-and-ranchers/programs-and-services/environment-programs/environmental-farm-plans>.
- . n.d.-b. 'Resilient Agricultural Landscapes Program'. Government of Saskatchewan. Accessed 5 February 2024. <https://www.saskatchewan.ca/business/agriculture-natural-resources-and-industry/agribusiness-farmers-and-ranchers/sustainable-canadian-agricultural-partnership/programs-for-farmers-and-ranchers/resilient-agricultural-landscapes-program>.
- Qualman, Darrin. 2019. 'Tackling the Farm Crisis and the Climate Crisis: A Transformative Strategy for Canadian Farms and Farm Systems'. Saskatoon: National Farmers' Union.
- Qualman, Darrin, A. Haroon Akram-Lodhi, Annette Aurélie Desmarais, and Sharada Srinivasan. 2018. 'Forever Young? The Crisis of Generational Renewal on Canada's Farms'. *Canadian Food Studies / La Revue Canadienne Des Études Sur l'alimentation* 5 (3): 100–127. <https://doi.org/10.15353/cfs-rcea.v5i3.284>.
- Renn, Ortwin. 1998. 'Three Decades of Risk Research: Accomplishments and New Challenges'. *Journal of Risk Research* 1 (1): 49–71. <https://doi.org/10.1080/136698798377321>.
- Robinson, Guy M. 2006a. 'Canada's Environmental Farm Plans: Transatlantic Perspectives on Agri-Environmental Schemes'. *The Geographical Journal* 172 (3): 206–18. <https://doi.org/10.1111/j.1475-4959.2006.00207.x>.
- Robinson, Guy M. 2006b. 'Ontario's Environmental Farm Plan: Evaluation and Research Agenda'. *Geoforum* 37 (5): 859–73. <https://doi.org/10.1016/j.geoforum.2005.05.002>.

- . 2009. 'Towards Sustainable Agriculture: Current Debates'. *Geography Compass* 3 (5): 1757–73. <https://doi.org/10.1111/j.1749-8198.2009.00268.x>.
- Rose, Gillian. 1997. 'Situating Knowledges: Positionality, Reflexivities and Other Tactics'. *Progress in Human Geography* 21 (3): 305–20. <https://doi.org/10.1191/030913297673302122>.
- Rose, Nikolas, Pat O'Malley, and Mariana Valverde. 2006. 'Governmentality'. *Annual Review of Law and Social Science* 2 (1): 83–104. <https://doi.org/10.1146/annurev.lawsocsci.2.081805.105900>.
- Saito, Kohei. 2023. *Marx in the Anthropocene: Towards the Idea of Degrowth Communism*. New edition. Cambridge ; New York, NY: Cambridge University Press.
- Salmons, Janet. 2014. *Qualitative Online Interviews: Strategies, Design, and Skills*. SAGE Publications Ltd. <https://doi.org/10.4135/9781071878880>.
- Sarewitz, Daniel. 2004. 'How Science Makes Environmental Controversies Worse'. *Environmental Science & Policy* 7 (5): 385–403. <https://doi.org/10.1016/j.envsci.2004.06.001>.
- Saskatchewan EFP. n.d. 'Saskatchewan EFP - Why Develop an Environmental Farm Plan (EFP)?' <https://efp.saskatchewan.ca/tool/docs/chapter0/learningModule/m00b.html>.
- Sauchyn, David, Debra J Davidson, and Mark Johnston. 2020. 'Prairie Provinces'. In *Canada in a Changing Climate: Regional Perspectives Report*, by F.J. Warren, N Lulham, and D.S. Lemmen. Ottawa, Ontario: Government of Canada.
- Sauchyn, David, Harry Diaz, and Suren Kulshreshtha, eds. 2010. *The New Normal: The Canadian Prairies in a Changing Climate*. First Edition. Regina: University of Regina Press.

Schwartzentruber, John. 2023. 'Fertilizer-Emissions Reduction Won't Work, Isn't Scientific and Farmers Don't like It'. *FarmersForum.Com* (blog). 5 April 2023.

<https://farmersforum.com/fertilizer-emissions-reduction-wont-work-isnt-scientific-and-farmers-dont-like-it/>.

Shi, Jing, Vivianne H. M. Visschers, Michael Siegrist, and Joseph Arvai. 2016. 'Knowledge as a Driver of Public Perceptions about Climate Change Reassessed'. *Nature Climate Change* 6 (8): 759–62. <https://doi.org/10.1038/nclimate2997>.

Siegrist, Michael, and Joseph Árvai. 2020. 'Risk Perception: Reflections on 40 Years of Research'. *Risk Analysis* 40 (S1): 2191–2206. <https://doi.org/10.1111/risa.13599>.

Siegrist, Michael, and George Cvetkovich. 2000. 'Perception of Hazards: The Role of Social Trust and Knowledge'. *Risk Analysis* 20 (5): 713–20. <https://doi.org/10.1111/0272-4332.205064>.

Siegrist, Michael, Philipp Hübner, and Christina Hartmann. 2018. 'Risk Prioritization in the Food Domain Using Deliberative and Survey Methods: Differences between Experts and Laypeople'. *Risk Analysis* 38 (3): 504–24. <https://doi.org/10.1111/risa.12857>.

Silvasti, Tiina. 2003. 'The Cultural Model of "the Good Farmer" and the Environmental Question in Finland'. *Agriculture and Human Values* 20 (2): 143–50.

<https://doi.org/10.1023/A:1024021811419>.

Sjöberg, Lennart. 1999. 'Risk Perception by the Public and by Experts: A Dilemma in Risk Management'. *Human Ecology Review* 6 (2): 1–9.

———. 2001. 'Limits of Knowledge and the Limited Importance of Trust'. *Risk Analysis* 21 (1): 189–98. <https://doi.org/10.1111/0272-4332.211101>.

- Skogstad, Grace. 2008. 'Internationalization and Canadian Agriculture: Policy and Governing Paradigms'. *Internationalization and Canadian Agriculture: Policy and Governing Paradigms*, 1–376. <https://doi.org/10.5860/choice.46-5278>.
- Slovic, Paul. 1999. 'Trust, Emotion, Sex, Politics, and Science: Surveying the Risk-Assessment Battlefield'. *Risk Analysis* 19 (4): 689–701. <https://doi.org/10.1111/j.1539-6924.1999.tb00439.x>.
- Slovic, Paul, Melissa L. Finucane, Ellen Peters, and Donald G. MacGregor. 2004. 'Risk as Analysis and Risk as Feelings: Some Thoughts about Affect, Reason, Risk, and Rationality'. *Risk Analysis* 24 (2): 311–22. <https://doi.org/10.1111/j.0272-4332.2004.00433.x>.
- Slovic, Paul, Torbjörn Malmfors, Daniel Krewski, C. K. Mertz, Nancy Neil, and Sheryl Bartlett. 1995. 'Intuitive Toxicology. II. Expert and Lay Judgments of Chemical Risks in Canada'. *Risk Analysis* 15 (6): 661–75. <https://doi.org/10.1111/j.1539-6924.1995.tb01338.x>.
- Smith, Paul, Carrie Bibik, Jon Lazarus, David Armitage, Cindy Bradley-Macmillan, Maxine Kingston, Andrew Graham, Ryan Plummer, and Robert Summers. 2020. 'Canada's Environmental Farm Plan: Evaluating Implementation, Use of Services, and the Influence of Social Factors'. *Sustainable Agriculture Research* 9 (4): 1. <https://doi.org/10.5539/sar.v9n4p1>.
- Smithers, John, and Margaret Furman. 2003. 'Environmental Farm Planning in Ontario: Exploring Participation and the Endurance of Change'. *Land Use Policy* 20 (4): 343–56. [https://doi.org/10.1016/S0264-8377\(03\)00055-3](https://doi.org/10.1016/S0264-8377(03)00055-3).

- Sommerville, Melanie, and André Magnan. 2015. “Pinstripes on the Prairies”: Examining the Financialization of Farming Systems in the Canadian Prairie Provinces’. *Journal of Peasant Studies* 42 (1): 119–44. <https://doi.org/10.1080/03066150.2014.990894>.
- Statistics Canada. 2011. ‘Farm Environmental Management Survey’. 2011. <https://www150.statcan.gc.ca/n1/daily-quotidien/131009/dq131009a-eng.htm>.
- . 2019. ‘Farms with a Formal Environmental Farm Plan’. 3 December 2019. <https://www150.statcan.gc.ca/t1/tb11/en/tv.action?pid=3210020501>.
- . 2022. ‘Census of Agriculture: Mapping Tool’. 22 February 2022. <https://www150.statcan.gc.ca/n1/pub/32-26-0003/322600032016001-eng.htm>.
- Stefanik, Justin. 2015. ‘Squaring Palliser’s Triangle: The Normalization of Nature in the Canadian Dry-Land Prairies 1860-1940’. Ottawa, Ontario: Carlton. https://www.academia.edu/78407412/Squaring_Pallisers_Triangle_The_Normalization_of_Nature_in_the_Canadian_Dry_land_Prairies_1860_1940.
- Steffen, Will, Katherine Richardson, Johan Rockström, Sarah E. Cornell, Ingo Fetzer, Elena M. Bennett, Reinette Biggs, et al. 2015. ‘Planetary Boundaries: Guiding Human Development on a Changing Planet’. *Science* 347 (6223): 1259855. <https://doi.org/10.1126/science.1259855>.
- Stringer, L.C., E.D.G. Fraser, D. Harris, C. Lyon, L. Pereira, C.F.M. Ward, and E. Simelton. 2020. ‘Adaptation and Development Pathways for Different Types of Farmers’. *Environmental Science & Policy* 104 (February): 174–89. <https://doi.org/10.1016/j.envsci.2019.10.007>.
- Stuart, Diana, and Rebecca L. Schewe. 2016. ‘Constrained Choice and Climate Change Mitigation in US Agriculture: Structural Barriers to a Climate Change Ethic’. *Journal of*

- Agricultural and Environmental Ethics* 29 (3): 369–85. <https://doi.org/10.1007/s10806-016-9605-z>.
- Stuart, Diana, Rebecca L. Schewe, and Matthew McDermott. 2012. 'Responding to Climate Change: Barriers to Reflexive Modernization in U.S. Agriculture'. *Organization and Environment* 25 (3): 308–27. <https://doi.org/10.1177/1086026612456536>.
- Summers, Robert J., Ryan Plummer, and John E. FitzGibbon. 2008. 'Accounting Precautionary Measures in Agriculture through Pathway Analysis: The Case of the Environmental Farm Plan'. *International Journal of Agricultural Resources, Governance and Ecology* 7 (6): 437–49. <https://doi.org/10.1504/IJARGE.2008.022746>.
- Sundblad, Eva-Lotta, Anders Biel, and Tommy Gärling. 2007. 'Cognitive and Affective Risk Judgements Related to Climate Change'. *Journal of Environmental Psychology* 27 (2): 97–106. <https://doi.org/10.1016/j.jenvp.2007.01.003>.
- Talja, Sanna. 1999. 'Analyzing Qualitative Interview Data: The Discourse Analytic Method'. *Library & Information Science Research* 21 (4): 459–77. [https://doi.org/10.1016/S0740-8188\(99\)00024-9](https://doi.org/10.1016/S0740-8188(99)00024-9).
- Tashakkori, Abbas, and Charles Teddlie. 2010. 'Putting the Human Back in “Human Research Methodology”': The Researcher in Mixed Methods Research'. *Journal of Mixed Methods Research* 4 (4): 271–77. <https://doi.org/10.1177/1558689810382532>.
- Taylor-Gooby, Peter, and Jens O. Zinn. 2006. 'Current Directions in Risk Research: New Developments in Psychology and Sociology'. *Risk Analysis* 26 (2): 397–411. <https://doi.org/10.1111/j.1539-6924.2006.00746.x>.
- Thompson, John Herd. 1998. *Forging the Prairie West*. Oxford University Press.
- Tickell, Jamie Peck, Adam. 2008. 'Neoliberalizing Space'. In *Economy*. Routledge.

- Tolman, Bob. 2024. 'After Three Devastating Years of Drought, There's No Future for Our Farm - Macleans.Ca'. *Macleans*, 22 January 2024. <https://macleans.ca/society/farm-canada-climate-change/>.
- Vainio, Annukka, Riikka Paloniemi, and Vilja Varho. 2017. 'Weighing the Risks of Nuclear Energy and Climate Change: Trust in Different Information Sources, Perceived Risks, and Willingness to Pay for Alternatives to Nuclear Power'. *Risk Analysis* 37 (3): 557–69. <https://doi.org/10.1111/risa.12640>.
- Velten, Sarah, Julia Leventon, Nicolas Jager, and Jens Newig. 2015. 'What Is Sustainable Agriculture? A Systematic Review'. *Sustainability* 7 (6): 7833–65. <https://doi.org/10.3390/su7067833>.
- Vercammen, James. 2011. 'Agri-Environmental Regulations, Policies, and Programs'. *Canadian Journal of Agricultural Economics/Revue Canadienne d'agroeconomie* 59 (1): 1–18. <https://doi.org/10.1111/j.1744-7976.2010.01210.x>.
- Vining, Aidan, and David Weimer. 2017. *Policy Analysis: Concepts and Practice*. 6th ed. New York: Routledge. <https://doi.org/10.4324/9781315442129>.
- Weber, Elke U. 2016. 'What Shapes Perceptions of Climate Change? New Research since 2010'. *WIREs Climate Change* 7 (1): 125–34. <https://doi.org/10.1002/wcc.377>.
- Welch, Eric W., and Akira Hibiki. 2003. 'An Institutional Framework for Analysis of Voluntary Policy: The Case of Voluntary Environmental Agreements in Kita Kyushu, Japan'. *Journal of Environmental Planning and Management* 46 (4): 523–43. <https://doi.org/10.1080/0964056032000133143>.
- Whitmarsh, Lorraine. 2011. 'Scepticism and Uncertainty about Climate Change: Dimensions, Determinants and Change over Time'. *Global Environmental Change*, Special Issue on

- The Politics and Policy of Carbon Capture and Storage, 21 (2): 690–700.
<https://doi.org/10.1016/j.gloenvcha.2011.01.016>.
- Wiebe, Nettie. 2021. 'Farm Crisis'. In *Critical Perspectives in Food Studies*, by Mustafa Koc, Anthony Winson, and Jennifer Sumner, 3rd ed. Oxford University Press, Canada.
- Wilson, Charles Z. Levkoe, Amanda. 2019. 'Policy Engagement as Prefiguration: Experiments in Food Policy Governance through the National Food Policy Dialogue in Canada'. In *Civil Society and Social Movements in Food System Governance*. Routledge.
- Yiridoe, Emmanuel K. 2000. 'Risk of Public Disclosure in Environmental Farm Plan Programs: Characteristics and Mitigating Legal and Policy Strategies'. *Journal of Agricultural and Environmental Ethics* 13 (1–2): 101–20. <https://doi.org/10.1007/BF02694138>.
- Zingg, Alexandra, and Michael Siegrist. 2012. 'Measuring People's Knowledge about Vaccination: Developing a One-Dimensional Scale'. *Vaccine*, Special Issue: The Role of Internet Use in Vaccination Decisions, 30 (25): 3771–77.
<https://doi.org/10.1016/j.vaccine.2012.03.014>.

Appendix 1: Survey Questionnaire

Section 1: Location and Identity

S1. Are you 18 years of age or older?

- 1 Yes
- 2 No
99. Prefer not to respond

S2. In which province or territory do you live?

1. Alberta
2. Manitoba
3. Saskatchewan
99. Other or Prefer not to respond

S3. What type of population centre best describes where you live?

1. Rural (less than 1,000 people)
2. Small population centre (1,000 to 29,999 people)
3. Medium population centre (30,000 to 99,999 people)
4. Large population centre (100,000 people and over)
99. Prefer not to respond

S4a. Which race category would you say best describes you? You may select more than one.

1. Black (e.g., African, Afro-Caribbean, African-Canadian descent)
2. East/Southeast Asian (e.g., Chinese, Korean, Japanese, Taiwanese descent; Filipino, Vietnamese, Cambodian, Thai, Indonesian, other Southeast Asian descent)
3. Indigenous (First Nations, Métis, Inuit)
4. Latino (e.g., Latin American, Hispanic descent)
5. Middle Eastern (e.g., Arab, Persian, West Asian descent, e.g. Afghan, Egyptian, Iranian, Lebanese, Turkish, Kurdish, etc.)
6. South Asian (e.g., South Asian descent, e.g. East Indian, Pakistani, Bangladeshi, Sri Lankan, Indo-Caribbean, etc.)
7. White (e.g., European descent)
8. Other, please specify: _____
99. Prefer not to respond.

[If S4a = 3]:

S4b. Are you:

1. First Nations
2. Métis
3. Inuit
99. Prefer not to respond

[If S4a = 3]:

S4c. Do you live on reserve?

1. Yes
2. No
99. Prefer not to respond

S5. Do you live or work on a farm?

1. Yes, I am a farm owner/operator
2. Yes, I work on a farm
3. No
99. Prefer not to respond

S6. Does your household have a landline?

1. Yes

2. No

99. Prefer not to respond

Section 2: Issues and Climate Concern

A1. How important are each of the following issues to you personally?

(Scale: 1 = Not at all important, 2 = Slightly important, 3 = Moderately important, 4 = Very important, 5 = Extremely important, 98 =Don't know')

1. Health care
2. Cost of living
3. Protecting the environment
4. Taxes that support social programs
5. Climate change
6. Protecting jobs
7. Support for the oil and gas sector
8. Immigration
9. Food security
10. Covid-19 pandemic

A2. To what extent have you noticed changes to the following seasons?

(Scale: 1 = Decreased a lot, 2 = Decreased slightly, 3 = No change, 4 = Increased slightly, 5 = Increased a lot, 98 =Don't know):

1. Temperature in summer
2. Length of summer season
3. Temperature in winter
4. Length of winter season

A3. How concerned are you about the following extreme weather events?

(Scale: 1 = Not at all concerned, 2 = Slightly concerned, 3 = Moderately concerned, 4 = Very concerned, 5 = Extremely concerned, 98 =Don't know)

1. Drought
2. Flooding
3. Wildfire
4. Smoke (affecting air quality)
5. Tornadoes
6. High winds
7. Extreme cold
8. Blizzard
9. Heat wave

A4a. To what extent have you been personally affected by any of the following extreme weather events?

(Scale: 1 = Not at all affected, 2 = Slightly affected, 3 = Moderately affected, 4 = Very affected, 5 = Extremely affected, 98 =Don't know)

1. Drought
2. Flooding
3. Wildfire
4. Smoke (affecting air quality)
5. Tornadoes
6. High winds
7. Extreme cold
8. Blizzard
9. Heat wave

10. Coastal storm surge

50. Other, please specify:

[If A4a = 2, 3, 4, 5 for any items 1-11. Ask for every item to which participant responded 2-5]:

A4b. How were you affected? [check all that apply]

1. I was evacuated
2. I was concerned about being evacuated
3. I lost income/work
4. My physical health was affected by the event(s)
5. My property was damaged (i.e. physical dwellings)
6. I was impacted by disruption of the supply chain
7. I had to change my behaviour (e.g. limit travel, exercise)
8. My mental health was affected by the event(s)
50. Something else? Please explain: _____

[If A4b = 1 or 2]:

A4c. To what extent do you agree or disagree with the following statements about evacuations (Scale: 1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree, 98 = Don't know)

1. I knew where to get information about evacuation
2. Our community has an evacuation plan
3. Communication from governments was clear
4. I felt safe during the evacuation process

[If A4b = 1 or 2]:

A5. Do you have any specific recommendations - based on your experience - to support better evacuation planning in the future: [OPEN]

A6. To what extent do you agree or disagree with the statements about climate change: (Scale: 1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree, 98 = Don't know)

1. Climate change is happening
2. Climate change is mostly human caused
3. Climate change is made worse by burning of oil, gas, and coal
4. Greenhouse gases trap heat in the atmosphere
5. Climate change is a serious problem
6. Climate change will bring benefits to society

A7. To what extent do you agree or disagree that climate change will harm the following groups: (Scale: 1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree, 98 = Don't know)

1. You and your immediate family
2. Your community
3. Your province
4. Other people in Canada
5. People in other parts of the world outside of Canada
6. Future generations of people

A8. How concerned are you, if at all, about the following impacts of climate change?

(Scale: 1 = Not at all concerned, 2 = Slightly concerned, 3 = Moderately concerned, 4 = Very concerned, 5 = Extremely concerned, 98 = Don't know)

1. Disruption to the economy

2. Damage to infrastructure
3. Human health impacts
4. Cultural impacts (e.g. land use)
5. Forced evacuations
6. Water quality and availability
7. Ability to produce food
8. Environmental impacts (e.g. changes to forests, parks, etc)

Section 3: Climate Change Adaptation and Action

B2. One definition of climate adaptation is: “making changes to live with the impacts of climate change.” To what extent do you agree or disagree with the following statements about climate adaptation:

(Scale: 1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree, 98 = Don't know)

1. Individual adaptation is important
2. Societal-wide adaptation is important
3. Adaptation is a waste of time and money
4. Adaptation will safeguard society in the long-term

B3. Some ways that governments and communities are preparing for climate change include: conducting risks assessment, developing adaptation and emergency plans, investing in durable infrastructure, and running public education campaigns. Given these examples, do you think the following groups should be doing more or less to prepare for climate change?

(Scale: 1 = Do a lot less, 2 = Do less, 3 = Maintain the same level, 4 = Do more, 5 = Do a lot more, 98 = Don't know)

1. My local/municipal government
2. My provincial government
3. The federal government

C1. How often do you actively do the following in your day to day life, if any? (check all that apply) (Scale: 1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Always, 98 = Don't know)

1. reduce water consumption
2. reduce energy and fuel usage
3. reduce waste and/or compost
4. improve soil health
5. support wildlife and biodiversity
6. use public/active transportation
7. buy sustainable products
8. eat local foods
9. influence climate policy

C3. To what extent do you agree or disagree with the following statements:

(Scale: 1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree, 98 = Don't know)

1. Science says we cannot emit greenhouse gases by 2050
2. I am willing to reduce climate emissions in my own life
3. It's impossible to move away from fossil fuels
4. We can solve the climate crisis
5. I support government initiatives to reduce emissions

Section 4: Climate frames and messengers

D1. To what extent do you agree or disagree with the following statements about climate change within the Prairies:

(Scale: 1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree, 98 = Don't know)

1. Natural resource extraction is vital to our economy
2. Climate action may undermine our natural resource economy

3. We need a plan for workers to transition into new energy industries
4. Prairie people are highly adaptable
5. Prairie communities are vulnerable to climate change
6. Climate change is primarily an environmental issue
7. Agriculture will need to respond to climate change
8. We must prepare for the wildfires of the future

D2. To what extent do you trust the following groups as credible sources of information on climate change:

(Scale: 1 = Strongly distrust, 2 = Distrust, 3 = Neither trust nor distrust, 4 = Trust, 5 = Strongly trust, 98 =Don't know)

1. University-based researchers
2. Mainstream media outlets
3. Social media
4. Industry groups
5. Farm groups
6. Indigenous groups
7. Environmental groups
8. Municipal or local government
9. Provincial government
10. Federal government
11. Your friends and family

Section 4: Demographics

You have arrived at the last section of our survey. We have a few final questions about you and your identity. Please remember that all answers are confidential and will not be used to identify you in any way.

D1. What gender do you identify as? Please select all that apply.

1. Woman
2. Man
3. Non-binary
4. Transgender
5. Two-spirit
6. Another gender not listed above
99. Prefer not to respond

D2. Which of the following age categories do you belong to?

1. 18 to 24
2. 25 to 34
3. 35 to 44
4. 45 to 54
5. 55 to 64
6. 65 or older
99. Prefer not to respond

D3. What is the highest level of education you have completed?

1. No schooling
2. High school or less
3. Community college/technical college/CEGEP
4. University
5. Post-graduate degree
99. Prefer not to respond

D4a. Which of the following best describes your current employment status?

1. Employed Full-time
2. Employed Part-Time
3. Self-employed
4. Not employed or unable to work
5. Homemaker
6. Student
7. Retired
99. Prefer not to respond

D5. What is your annual household income before taxes?

1. Less than \$20,000
2. \$20,000 to \$39,999
3. \$40,000 to \$59,999
4. \$60,000 to \$79,999
5. \$80,000 to \$99,999
6. \$100,000 to \$149,999
7. More than \$150,000
99. Prefer not to respond

D6a. To better understand how results vary by communities of different sizes, could you please provide your 6-digit postal code?

_____ (A9A9A9 format)

99. Prefer not to respond

[If D6a = 99]:

D6b. Would you be willing to provide the first 3 digits of your postal code?

_____ (A9A format)

99. Prefer not to respond

D7a. In terms of politics, people often talk about left and right. How would you identify?

1. Strongly right
2. Somewhat right
3. Moderate
4. Somewhat left
5. Strongly left

99. Prefer not to respond

D8. Do you practice any faith and/or spirituality?

1. Yes, often
2. Yes, sometimes
3. No

99. Prefer not to respond

Appendix 2: Semi-Structured Interview Guideline

Theme#1 Capital/Control:

1. What is your name? What do you do/farm?
2. How did you begin farming?
3. What does a year conventionally look like?
 - a. Do you pay rent?
 - b. Who is your main purchaser?
 - c. Do you use contracts?
4. Has your farming strategy changed over time?
 - a. Why?
5. Is it important that farmers reassess their strategies?
 - a. How?
6. Farmers are often perceived as having more control over their work than the average worker, do you feel like this is true?
 - a. Who affects your decision making?
 - b. What are your constraints?
7. What does it mean for your farm to be sustainable?

Theme #2: Environment:

1. Were you affected by a recent ecological hazard?
 - a. How?
2. Were you provided assistance from anywhere?
 - a. In what ways?
 - b. By who? (Corporate, government, neighbours)
 - c. Who should be providing assistance?
3. Have you noticed a greater frequency of ecological hazards
 - a. Why?
4. What are you doing to adapt to/mitigate the outcome of upcoming ecological hazards, if anything?
5. When you think of your farm, how does it relate to the idea of nature? How about the environment? How about resources?
 - a. To you, is the environment fragile, is the environment resilient?
 - b. To you, can humans control the environment or do we have to work with it?
 - c. Is nature a finite resource?
6. How do farming practices affect the environment?

Theme #3: Risk and trust:

1. What are the risks inherent in farming?
2. What do you do to mitigate them?
3. What do you think of the discussion around climate change?
 - a. How much does it bear on your practices?
 - i. In what ways?
4. Where do you get your information regarding the climate change debate?

5. Climate change is discussed as a unique risk in that it cannot be perceived without scientific instruments and requires a faith in authority figures. Do you have faith in those claiming climate change is real and a threat?
 - a. Why or why not?
 - b. How does this affect your assessment of the risk of climate change?
 - i. Are you more worried with immediate risks you can physically perceive?
6. Should Canadian farmers take measures to adapt to climate change?
 - a. Why or why not?
 - b. Would you be willing to adopt climate adaptations if it was paid for?
 - i. Who should pay?
 - c. How could farmers adapt in a changing climate?
7. Who is to blame for climate change?

Theme #4: Self and society:

1. What makes a responsible farmer?
 - a. Who are you responsible to (i.e. globe, country, province, family, future)?
 - b. Is it important for farmers to be economically responsible?
 - c. Is it important for farmers to be ecologically responsible?
2. How are farmers perceived by society?
 - a. Has this changed over time?
3. How do you see yourself in relation to farmers 100 years ago?

Appendix 3: Informed Consent Form



You are invited to participate in a study which is a part of a master's thesis on climate change and farming in the Canadian Prairies. This study is being conducted by Patrick Harney, a master's student at the University of Winnipeg under the supervision of Dr. Ian Mauro with assistance from the Prairie Climate Centre (PCC). Funding for this project has been provided by the Social Sciences and Humanities Research Council.

Purpose of this project:

This research project intends to capture the experience of Canadian Prairie farmers related to adaptation to climate related ecological hazards such as drought and floods. This project iterates on previous research both within and outside the Prairie context highlighting the intersection between politics, society, and ecology and how these interactions shape vulnerability and resilience regarding ecological hazards in the era of climate change. By employing qualitative and quantitative methodologies, this research seeks to gain insight into farmer's relationship to ecological hazards and their farming practice's relationship to techniques of hazards management, economic vulnerability, energy use, and politics across the Prairies.

Your participation in this project:

You are being asked to participate in a semi-structured interview over Zoom or phone (depending on connectivity) – approximately 40 to 60 minutes in length – that will document your perspectives regarding farming, ecological hazards, politics, economics, adaptation, and climate change. This interview will be recorded either using Zoom's audio-only recording function or, in the case of a phone interview, an external recording device for the creation of interview transcripts and future reference. If you agree to be interviewed, you will not be publicly identified and all identifying information, such as this consent form, will be stored separated from anonymized interview transcripts and audio recordings. Your participation is voluntary, and you may withdraw from the study at any point prior to April 2023.

Benefits and risks of research:

The potential benefits of your participation in this study include sharing your knowledge to create awareness regarding climate change and its impacts. There are no anticipated risks from this research, however, if you find the interview stressful, we can provide resources to support you.

Use, access and storage of interview content:

Part of your interview may be used in future research publications undertaken by University of Winnipeg's Prairie Climate Centre. The audio from your interview will be recorded and securely stored alongside the anonymized transcript of the interview in the PCC's servers for further analysis. Below, you will be granted the opportunity to opt-in to share an email address to receive a copy of your interview transcript as well as updates on the research process. Your personal information will be kept securely and separately from your interview transcripts and audio recording to ensure anonymity within the PCC's database.

