

**JUST IN PRINCIPLE? ASSESSING THE CONTRIBUTIONS OF ORGANIC FARMING
TO SOCIO-ECOLOGICAL SUSTAINABILITY IN CANADIAN AGRICULTURE**

by

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Abstract

Agriculture is at the centre of society's most pressing sustainability challenges, including food insecurity, climate change, ecological degradation, and social inequity. Organic agriculture, when practiced according to an ethic grounded in ecology, health, fairness, and care, has been proposed as a remedy to these challenges. Building on a movement for an alternative to socially and ecologically exploitative food production, organic agriculture is now a multi-billion-dollar industry with established legal and regulatory frameworks around the world. While this growth could be seen as a success, empirical research has called into question the extent to which organic agriculture and market-oriented third-party certifications can foster sustainability transitions and has found that performance is often context dependent (e.g. depending on which practices are adopted). There remain significant gaps in knowledge about how organic agriculture is practiced in jurisdictions around the world relative to the sustainability-related principles on which it was founded, especially the principle of fairness.

To address these gaps, I developed a mixed-method assessment grounded in a critical realist methodological approach to evaluate the contributions of organic agriculture to socio-ecological sustainability in Canada. I utilized both qualitative and quantitative methods—drawing from interviews with farmers, inspectors and organic policymakers, analysis of census data for farms across Canada, surveys of vegetable farmers in British Columbia and organic policy documents—to investigate how organic agriculture is shaped and enacted by organic community members at multiple scales. My analysis of organic standards in North America, along with census and survey data in Canada, provide strong evidence for higher levels of adoption of ecologically sustainable management in organic agriculture relative to all other farms. Yet, despite explicit attention to the principle of fairness in organic standards and among

organic community actors, I found little evidence that organic agriculture in Canada is correlated with improved working conditions for farmworkers in practice. Across Mexico, the US and Canada, no organic standards contain any requirements related to social sustainability. At the same time, standards governance and community-led efforts toward integrating the principle of fairness into certification show potential to advance a more just and sustainable agriculture.

Lay Summary

Organic farming has been proposed as a solution to many food-related sustainability challenges, including ecological degradation and wellbeing for eaters, farmers and farmworkers alike. However, previous research has cast doubt on the assumption that organic agriculture is necessarily more sustainable or fair. This dissertation investigates how organic farming contributes to socio-ecological sustainability in Canadian agriculture by looking at the practices used on organic farms, the standards and regulations that govern organic certified agriculture, and efforts by the organic community to make improvements to the organic sector. I find that organic agriculture does contribute to ecological sustainability in Canada through agroecological practices that support biodiversity, but that efforts to integrate the principle of fairness by improving conditions for workers are still nascent. This dissertation also illustrates the importance of governance and social movement efforts for advancing organic principles of ecology and fairness.

Preface

Chapter 2 is an original unpublished manuscript that has been submitted to a peer-reviewed journal. I identified the research questions and designed the methodological approach with input from Navin Ramankutty and Hannah Wittman. I led the analysis with support for qualitative coding from Noa Bridson and Erika Luna Perez. Erika Luna Perez assisted with interviews and content in Spanish. Noa Bridson transcribed several interviews. I authored the manuscript with comments and feedback from Navin Ramankutty, Hannah Wittman and Claire Kremen.

Chapter 3 is an original unpublished manuscript that will be submitted to a peer-reviewed journal. I identified the research questions and designed the methodological approach along with input from Navin Ramankutty. I conducted all analysis of the research data. Verena Seufert provided input on an earlier version of the data analysis. Sean Kearney provided input on the statistical analysis. I authored the manuscript with comments and feedback from Navin Ramankutty, Hannah Wittman, Sean Kearney and Claire Kremen.

Chapter 4 is an original unpublished manuscript that will be submitted to a peer-reviewed journal. I identified the research questions and designed the methodological approach along with input from Hannah Wittman, Navin Ramankutty and Terre Satterfield. I conducted all analysis of the research data. Navin Ramankutty provided input on the statistical approaches used. I authored the manuscript with comments and feedback from Navin Ramankutty, Hannah Wittman and Claire Kremen.

Chapter 5 is an article that has been published (Klassen, S., Fuerza Migrante, & Wittman, H. (2022). Sharing the struggle for fairness: Exploring possibilities for solidarity & just labour in organic agriculture. *Canadian Food Studies / La Revue Canadienne Des Études Sur l'alimentation*, 9(2), 147–179. <https://doi.org/10.15353/efs-rcea.v9i2.536>). I identified the

research question and designed the methodological approach with input from Fuerza Migrante. I conducted all analysis of the research data. I authored the manuscript with input and feedback from Hannah Wittman and Fuerza Migrante. This paper also benefited from collaborative review and feedback from others involved with the special issue publication, including Lauren Kepkiewicz, Charlie Spring, and Anelyse Weiler.

Chapters 2, 4 and 5 received ethics approval from the Behavioural Research Ethics Board at the University of British Columbia under ID H19-02615 (“Canada Organics”). Interviews conducted for this research also contributed to another published manuscript (Nawaz, S., Klassen, S., & Lyon, A. (2020). Tensions at the boundary: Rearticulating ‘organic’ plant breeding in the age of gene editing. *Elem Sci Anth*, 8(34), 21. <https://doi.org/10.1525/elementa.429>) which is not part of this dissertation.

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List of Abbreviations

CGSB – Canadian General Standards Board

CFIA – Canadian Food Inspection Agency

CNPO – Consejo Nacional de Productos Orgánicos / National Council for Organic Products
(Mexico)

EA – Equivalency Agreement

FLC – Farm Labour Contractor

IFOAM – International Federation of Organic Agriculture Movements

LPO – Ley de Productos Orgánicos / Organic Products Law (Mexico)

NOSB – National Organic Standards Board (in the United States)

NOP – National Organic Program (United States)

OFC – Organic Federation of Canada

OFPA – Organic Foods Production Act (United States)

PGS – Participatory Guarantee Systems

SAGARPA – Secretaría de Agricultura Ganadería Desarrollo Rural Pesca y Alimentación /
Secretariat of Agriculture, Livestock, Rural Development, Fisheries, and Food (Mexico)

SAWP – Seasonal Agricultural Worker Program

SENASICA – Servicio Nacional de Sanidad, Inocuidad y Calidad Agroalimentaria /
National Agro-Alimentary Health, Safety and Quality Service (Mexico)

US - United States

USDA – United States Department of Agriculture

TFWP – Temporary Foreign Worker Program

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Chapter 1: Introduction

Agriculture is at the centre of society's most pressing sustainability challenges, including food insecurity, climate change, ecological degradation, and various manifestations of social inequity, including poverty and unfair working conditions for farmers and agricultural workers. Organic agriculture has been proposed as a remedy to these challenges by reducing greenhouse gas emissions from agriculture (Lynch et al., 2011); improving environmental problems such as biodiversity loss (Tuck et al., 2014); and providing better conditions for farm workers (Costa et al., 2014). Building on a movement for an alternative to socially and ecologically exploitative food production (Eyhorn et al., 2019; Obach, 2015), the field of organic agriculture is now a multi-billion-dollar industry, with a recognized policy framework and established legal and regulatory frameworks around the world. It is also a rapidly growing agricultural sector globally. In their compilation of the latest available data on organic agriculture worldwide, IFOAM reported more than 15 times the number of producers and more than 6 times the acreage in certified organic production since 1999, with a total of 187 countries reporting organic activities (Willer et al., 2021). The organic food market in the US - the largest market for organics globally - grew by 13% in 2019-2020 alone, reaching a value of \$56 billion USD (Organic Trade Association, 2021).

Despite this growth and recognition, there are important knowledge gaps about how farmers around the world are currently enacting internationally articulated organic *principles* of health, ecology, fairness and care (Luttikholt, 2007), versus following jurisdictional *standards* and the *practices* they govern, which have been shown to be more narrowly oriented toward limiting chemical inputs (Darnhofer et al., 2010; Seufert et al., 2017). There is growing evidence

that organic agriculture should not be conflated with sustainable agriculture (Rigby & Cáceres, 2001), because organic status doesn't guarantee the use of ecologically-beneficial management practices (Darnhofer et al., 2010; Seufert et al., 2017), or better working conditions (Cross et al., 2008; Dumont & Baret, 2017; Soper, 2019).

To better understand how organic agriculture contributes to sustainability, existing scholarship has highlighted several priorities. First, given the influence of state-sponsored regulations and markets (Clark, 2015), there is a need to analyze the practice of organic agriculture in particular jurisdictions. Second, to move past the dualistic conceptualization of large industrial vs small-scale artisanal organic farms, research needs to examine the variation in management (e.g. of diversification practices) within the broad category of what is considered “organic” (Darnhofer et al., 2010; Mehrabi et al., 2017; Ponisio et al., 2015). Third, to fill empirical and theoretical gaps in our understanding of the social dimension of sustainability, research on organic farming should systematically assess the social equity dimension of sustainability in organic farming (Allen et al., 1991; Guthman, 2014; Minkoff-Zern, 2017; Shreck et al., 2006). Finally, given the likely variation in adoption of sustainability-related practices on organic farms, research should investigate what drives this variation, including the values and motivations held by farmers (Darnhofer et al., 2010). Before explaining my overall methodological approach, research questions and the structure of the dissertation, I will first review the key bodies of work that helped to illuminate these over-arching research gaps and underpin this dissertation, and discuss the broader context for the Canadian organic agriculture sector.

1.1 Organic movement principles vs. practices

The interplay of values-based principles, practices and science has shaped organic agriculture since its (colonial) origins. The history of organic farming is often considered to begin in the 1930s with Sir Albert Howard, who is considered the original “pioneer” of the organic movement (Heckman, 2006). Howard wrote *An Agricultural Testament* (1943) building on his experiences directing agricultural research centres in colonial India, which focused largely on a whole systems approach to farming (holism), including recycling nutrients, composting, livestock integration and building soil health. From there, Jerome Rodale—inspired by the work of Howard—continued the work of promoting organic farming principles in the United States through his *Organic Farming and Gardening* magazine, which began publication in 1942 (Heckman, 2006). Lady Eve Balfour was another important figure in advancing research and popularity of organic farming in the second half of the 20th century, including her leadership in founding the International Federation of Organic Agriculture Movements (IFOAM) in 1972 (Arbenz et al., 2016; Luttikholt, 2007). Balfour argued for a principle-based approach, and eventually the IFOAM conducted a worldwide participatory stakeholder process which gave rise to the four principles of organic agriculture: Health, Ecology, Fairness and Care (Luttikholt, 2007).

While these key figures played important roles in developing and popularizing what we call organic farming, the contemporary organic sector stems from diverse foundations. Howard’s insights and experiences are inseparable from the agricultural communities where he worked in India. Indeed, many practices that are foundational to organic farming, such as intercropping and agroforestry, are built on Indigenous and peasant knowledge, often without acknowledgement (Heim, 2020). The environmental movement spurred by Rachel Carson’s *Silent Spring* also

boosted consumer awareness of the harmful impacts of pesticides. Though perhaps a lesser-known link, the organic movement was also bolstered by the United Farm Workers (UFW) in the late 1960s, who succeeded in mobilizing millions of consumers to boycott the grapes and lettuce they were working to produce, bridging the struggles for farmworker justice with the interests of health and social justice-minded consumers—a boon for the organic market (Obach, 2015; Sligh & Cierpka, 2007).

The four IFOAM principles of Health, Ecology, Fairness and Care reflect the social movement history of organics, and are also closely linked to sustainability's social, ecological and economic dimensions (Arbenz et al., 2017). However, since government-led national organic programs have stepped into the role of creating and revising organic standards, the extent to which these movement principles have been integrated into jurisdictional standards is unclear. While in many ways the codification of organic into legal standards and enforceable framework of practices could be seen as the successful institutionalization and legitimization of the organic social movement, this codification itself has been associated with the compromise of the original organic principles and practices (Buck et al., 1997; Coombes & Campbell, 1998; Darnhofer et al., 2010; Guthman, 2004, 2014; Hall & Moggyorody, 2001). Many scholars posit that institutionalization, including the shift toward third-party certification bodies and away from peer-to-peer certification systems (Nelson et al., 2010), has played a key role in driving “conventionalization” of the sector. In tandem with the need for measurable standards (codification), this institutionalization has facilitating the “transformation of organics from an ecologically and politically innovative social movement to yet another sub-sector within conventional regulatory paradigms and agencies” (Lockie & Halpin, 2005, p. 286). Meanwhile, other work has shown how practices required in contemporary organic standards have shifted

away from founding organic principles (Seufert et al., 2017). In sum, while the sustainability-related principles are foundational tenets of the organics movement (IFOAM, n.d.), there is variability and uncertainty in the extent and manner in which these principles are enacted, and as such, a lack of certainty in how practices on organic farms are contributing to a more sustainable and fair agricultural system.

1.2 Context dependency of sustainability performance of organic

Conflicting evidence about organic agriculture globally has prompted critical examination of the claim that organic farms are more sustainable than their “conventional”¹ counterparts. Some existing research demonstrates clear evidence of the environmental benefits of organic farming to biodiversity (Tuck et al., 2014) and soil health (Henneron et al., 2015; Lori et al., 2017). However, when the yield differences between the systems are taken into account, many rigorous meta-analyses conclude that the sustainability performance of organic versus “conventional” is highly dependent on context (e.g. crop type and biophysical characteristics) and practices (e.g. intercropping and crop rotation) (Ponisio et al., 2015; Seufert et al., 2012; Seufert & Ramankutty, 2017).

Moreover, this and other research has highlighted the problematic nature of the organic-conventional binary altogether (Lockie & Halpin, 2005; Mehrabi et al., 2017; Sutherland, 2013). While the comparison of organic vs. “conventional” farming has been a commonly used study

¹ Throughout this dissertation, I place the term “conventional” in quotations to emphasize its constructed nature, and the variation within this broad category. While the term organic does refer to a specific subset of agriculture according to some combination of movement principles and regulated practices (as this dissertation explores), the term conventional is often used as a catch-all category for the dominant mode or system of farming, or even refer to all other farms that are not organic. In the substantive chapters of the thesis where I am comparing organic farms to other farms (i.e., in Chapters 3 and 4), I use the term non-organic to qualify these farms.

design in the natural sciences (e.g. agronomy, life cycle analysis, biodiversity) to examine the relative impacts of management regimes, it does not have the ability to examine important variations within these two broad classifications (Mehrabi et al., 2017; Sumberg & Giller, 2022). As such, there is a need to expand research beyond the constructed organic-conventional binary by accounting for organic farms that may not adopt ecologically-beneficial practices, as well as non-organic farms (which may include a variety of integrated or low-input farming methods) that do employ ecologically-beneficial methods without being certified organic. As organic performance is highly context-dependent (Seufert & Ramankutty, 2017), and given that food systems are socially mediated and organized (Allen, 2008), there is a need for more in-depth examination of organic agriculture across socio-ecological dimensions and in distinct contexts.

1.3 Finding fairness: the missing the social dimension

As the organic sector has evolved to include larger farms with higher labour demands, and markets have expanded to include international trade, the fairness principle of organic agriculture has been the subject of increased discussion and debate (Kröger & Schäfer, 2014; Sligh & Cierpka, 2007). To address gaps in organic management standards with respect to fairness, IFOAM first included a section on social fairness in the 1996 standards, which now include requirements and recommendations for working conditions, local community impacts, and Indigenous land rights (IFOAM-Organics International, 2019). While the IFOAM standards represent concrete commitments to social sustainability, unlike national standards in countries with organic laws and regulation, they are *voluntary*. As such, it is unclear how these ideological commitments translate to concrete practices in organic production in different jurisdictions.

While there is a large body of literature investigating the sustainability performance of organic agriculture relative to other approaches, there is relative dearth of systematic studies of the social dimensions of organic farming, resulting in large degree of uncertainty around social sustainability outcomes (Seufert & Ramankutty, 2017). Given the difficult, dangerous, dirty and devalued nature of farm work, addressing labour inequities experienced by workers – especially racialized migrant workers – stands out as a top priority for improving fairness in practice (Caxaj & Cohen, 2019; Gertel & Sippel, 2017; Holmes, 2013; McLaughlin et al., 2014; Otero & Preibisch, 2010). Studies focusing on farmworker wellbeing have focused primarily on comparisons of pesticide exposure and occupational health between organic and conventional (Bachmann, 2012; Cross et al., 2008; Letourneau & van Bruggen, 2006; Thapa & Rattanasuteerakul, 2011; Zehnder et al., 2007). Some other reviews cite social benefits of organic agriculture based on its labour-intensive nature creating rural employment opportunities (Reganold & Wachter, 2016), with no consideration for the quality of these jobs. There are also several pioneering studies that examine labour and farmworker wellbeing within organic or diversified production systems (Bacon et al., 2012; Cross et al., 2008; Galt, 2013; Harrison & Getz, 2015a; Shreck et al., 2006; Weiler, Otero, et al., 2016).

Because of the qualitative or case-study approach taken in some of this literature, these important insights are often not reflected in systematic reviews or meta-analyses on organic farming, reflecting a significant disciplinary divide between different bodies of research on organic agriculture. Where evidence exists, research shows that organic certification does not guarantee better conditions for farm workers (Cross et al., 2008; Dumont & Baret, 2017; Harrison & Getz, 2015b; Shreck et al., 2006; Soper, 2019; Weiler, Otero, et al., 2016). The social

equity dimension of sustainability – and the enactment of the principle of fairness in practice – thus represents an even larger gap in our understanding of organic agricultural performance.

1.4 Organic agriculture in Canada

Canada has the 6th largest market for organic products and the 11th largest area of land under organic production globally (Willer et al., 2021). Canada's National Organic Standards were implemented in 2009, and most provinces have now implemented their own provincial regulation for organic products, with BC having only implemented theirs in the summer of 2018 (COTA, 2018).

Despite its prominence in the global organic landscape, Canada has not been included in previous analyses of organic standards (Seufert et al., 2017). There are also significant gaps with respect to empirical studies of organic production in Canada generally, and in the province of British Columbia (BC), specifically. Existing research on organic agriculture in Canada is highly concentrated in the Prairie provinces, and focused on forage and grain crops (e.g. Benaragama et al., 2016; MacRae et al., 2010; Pelletier et al., 2008). There are no published studies that systematically evaluate sustainability parameters in organic vegetable production systems in Canada, reflective of a large-scale knowledge deficit surrounding vegetable production generally. This makes them an understudied commodity relative to their significance in achieving a more sustainable and food secure future (Bahadur KC et al., 2018; Willett et al., 2019), as well as more intensive labour demands of vegetable production. BC includes 31% of Canadian organic farms growing vegetables and melons – the largest share of any province or territory (Statistics Canada, 2016b), making it an ideal region in which to investigate the possible implications and potential for more sustainable vegetable production. The largest share of the

Canadian organic consumer market is in BC, as well as the second largest number of producers in transition, and the second largest proportion of farms producing organic products (COTA, 2013, 2017a; Statistics Canada, 2016a). Overall, despite the increasing share of agricultural land and the agri-food market represented by organic (COTA, 2017a), there is a lack of evidence regarding how organic farming is being practiced, which constrains effective policy and program development for agricultural sustainability.

1.5 Positionality

I come to this research as a white, settler, cis-gendered and able-bodied woman. My background and privileges have enabled me to pursue the education, travels, and personal pursuits that led me to this scholarship. My proximity to the organic movement, experience working on both organic and non-organic farms, and my involvement with food movements in Canada all inspired my interest in the questions that guide this dissertation. As such, my pre-existing relationships, experiences, and values helped guide the research process. I sought to leverage my positionality to deepen the inquiry, and to be reflexive about previously held assumptions or desired outcomes of the research. This was aided by collaborations (including with supervisors, co-authors, participants, and other research colleagues), drawing from social theory and critical scholarship on food justice, personal learning and growth on decolonization and anti-racism, and triangulating findings of multiple data collection methods.

As most of my engagement was with the organic community in Canada, a predominantly white and often highly educated community, my research and involvement was often embraced by the participants that I worked with. However, my position as the “researcher” also carries power and privilege, which I felt especially cognizant of in my collaborations and interviews

with migrant justice groups and participants from the Global South. Through my commitment to community engaged scholarship, I aimed to counteract typical extractive research processes, and to conduct scholarship that is both accessible to and shaped by these communities wherever possible.

1.6 Methodology, research questions and structure

This doctoral dissertation employs diverse social science methods to investigate how organic agriculture contributes to food system sustainability with a focus on “fairness” in the Canadian context. More specifically, this dissertation:

1. Investigates to what extent the organic standards in North America advance sustainability in principle vs practice;
2. Assesses the variation in adoption of sustainability-related management practices on organic farms in Canada and BC; and,
3. Explores the governance and advocacy efforts by the organic community that advance sustainability and fairness in Canada.

As an interdisciplinary social scientist, I draw from sociology, critical geography, political ecology, political economy, food system science and agroecology. While the specific audiences for each chapter may differ, broadly speaking, my research is oriented to those studying food system sustainability transitions, and aims to integrate considerations of equity, justice, and governance into food system sustainability scholarship in both empirical and theoretical ways.

Because I sought to understand organic agriculture's contributions to both social and ecological dimensions of sustainability and what shapes them, these research questions demanded an interdisciplinary and multi-scalar approach. I developed a mixed-method assessment grounded in a critical realist methodology, which emphasizes: the importance of context in causal explanation, treatment of individuals' beliefs, values and motives as legitimate causes, and the significance of diversity and variation within groups (Maxwell, 2012). By using multiple methods, I aimed to triangulate my findings and increase the validity, complementarity and reach of my conclusions from the dissertation work as a whole (Greene, 2007).

The four empirical chapters that follow advance this assessment using a combination of qualitative and quantitative methods, and draw from multiple sources of data, including 23 qualitative interviews, participant observation, document analysis, the Canadian Census of Agriculture, and surveys (n=143). This dissertation is written in a manuscript-style format, so each chapter was written as a discrete paper for publication in academic journals. As such, there is some repetition of literature review of scholarship assessing the sustainability and fairness of organic agriculture. While the over-arching focus of the dissertation is socio-ecological sustainability in Canadian agriculture, both the substantive focus and geographic scope of each chapter differs. For example, as the title implies, the research incorporates the concept of justice (and fairness) in its assessment of sustainability, but most chapters take a narrower focus on aspects of justice as they relate to labour (chapter 3), working conditions (chapter 4) and migrant justice (chapter 5). The next section summarizes each of these chapters in turn.

1.7 Summary of chapters

In Chapter 2: *Beyond equivalency: Comparing governance and sustainability of three North American organic standards*, I use a multi-method approach to compare the extent to which national organic standards in the North American countries of Mexico, the United States, and Canada reflect principles and benchmark practices for agricultural sustainability, and the governance and legal context that shape them. I built an assessment framework that includes 15 principles and 121 benchmark practices for sustainable agriculture. I draw from qualitative interviews, a comparative legal assessment and qualitative coding of organic standards documents to make conclusions about how the standards differ from one another, and how legal and governance processes shape the sustainability-related content of the standards. This chapter embodies the most breadth in substantive and geographic scope, including all North American countries as well as on-farm practices related to social and employment standards, crop and land management, and animal/livestock management. It also investigates aspects of fairness with respect to democratic governance of organic standards.

Chapter 3: *Different from the rest? Comparing socio-economic and ecological management of certified organic to non-organic crop farms in Canada* analyses data from the Canadian Census of Agriculture from 2001 to 2016 to provide a baseline understanding of how organic agriculture is practiced relative to other farms in Canada, and how it has evolved since the creation of the Canadian Organic Regime and its associated standards and regulations. I use statistical methods to analyze the adoption of diverse socio-economic and ecological management variables related to labour, financial aspects, beneficial management practices, habitat, and product input use.

Chapter 4: *Diversification, job quality and organic certification: A survey-based analysis of BC vegetable farms* uses a survey-based approach to take a closer examination of two crucial yet poorly understood aspects of agricultural sustainability: the adoption of agroecological diversification practices and the quality of jobs (working conditions) for hired workers. This chapter aims to better understand how organic certification is associated with these dependent variables of diversification and job quality. I conducted statistical analysis on a sample of mostly organic (certified and uncertified) vegetable farmers (n=143) in British Columbia, Canada, to look at the variation in and drivers of adoption of the dependent variables on organic farms.

Chapter 5, *Sharing the struggle for fairness: Exploring possibilities for solidarity & just labour in organic agriculture*, uses qualitative and participatory methods to report on a growing relationship between an organic farming association (Organic BC) and a migrant workers justice collective (Fuerza Migrante). This chapter takes an explicit focus on justice both in its methods and substantive focus on migrant justice. I use qualitative data from a combination of interviews and participant observation to examine efforts by the organic community to advance the principle of “Fairness”, and assess the extent to which these efforts align with demands and priorities articulated by migrant justice groups in Canada. I draw from theoretical work on post-capitalist relations and emancipatory social transformations to inform my assessment.

In the final chapter (Chapter 6), I return to the over-arching research question and summarize new insights from the four empirical chapters. I also discuss remaining questions—for researchers, policy-makers, and those working to advance transitions to more fair, just and sustainable food systems—and specific policy recommendations that emerged. Finally, I offer personal reflections on what I will take away from this dissertation and carry with me into the next stages of my work.

Chapter 2: Beyond equivalency: Comparing governance and sustainability of three North American organic standards

2.1 Introduction

Standards for organic production are the backbone of the organic agri-food sector. As part of the broader legislation, regulation, and institutionalization of organic agriculture into accredited certification schemes, standards define normative requirements for organic farmers and food processors. Following the rapid development of distinct national regulatory apparatuses for organic agriculture in the early 2000s, global organic agriculture and markets have grown substantially. In their compilation of the latest available data on organic agriculture worldwide, IFOAM reported more than 15 times the number of producers and more than 6 times the acreage in certified organic production since 1999, with a total of 187 countries reporting organic activities (Willer et al., 2021). The organic food market in the US—the largest market for organics globally—grew by 13% in 2019-2020 alone, reaching a value of \$56 billion USD (Organic Trade Association, 2021).

Increased global demand for organic agri-food products is premised, in part, on consumer associations with sustainability, especially benefits associated with human health, the naturalness of foods, and the environment (Hansen et al., 2018; Schleenbecker & Hamm, 2013; Yiridoe et al., 2005). Yet, important scholarship has called into question the assumption that organic food is inherently more sustainable (Rigby & Cáceres, 2001). Seufert and Ramankutty (2017) highlight the context dependency of sustainability performance and the gaps in empirical comparative data about the social dimensions of organic. Ponisio et al. (2015) show that reductions in yield gaps

between organic and conventional systems depend on diversification-based management practices. Scholars have also highlighted a shift in focus from the *processes* inherent in organic management to the purity of organic *products* for consumers, often depicted as a binary between the process- and product-based definitions of organics (Clark, 2015). Several scholars have highlighted the way that social inequities persist in the networks and spaces that support organic agriculture, despite their ideological commitments to sustainability and fairness (Alkon, 2013; Weiler, Otero, et al., 2016), and others have shown that organic certification does not guarantee better working conditions (Cross et al., 2008; Dumont & Baret, 2017; Klassen, Kremen, et al., 2022; Soper, 2019).

Scholars have also suggested that international trade has been a driving force toward harmonization of organic standards to a “lowest common denominator”. In their analysis of how organic standards compare to founding organic ideals and practices, Seufert et al. (2017) found no major differences between standards analyzed, and attributed this to harmonization driven by international trade. Guthman (1998) has written about the risks of institutionalization, and highlighted how the heterogeneity of different standards within and between countries deters investment from large-scale and profit-oriented growers. Astaira (2018) accounts to how farmers in Latvia and Costa Rica contested efforts towards harmonization driven by EU and Central American trade agendas, respectively.

This research prompts the following questions: how do jurisdictional organic standards require or promote sustainability, and how do these requirements differ between countries with tightly integrated agri-food trade? Globally, inter-governmental negotiations have focused on facilitating international trade of organic products through bi-lateral “equivalency arrangements” (EAs), as opposed to international trade agreements. Where an EA is in place, governments have

agreed to consider organic products certified under another country's organic regime to be equivalent to their own based on a comparison of regulatory systems, including regulations, accreditation criteria, certification criteria and management standards (Government of Canada, 2021a). Canada and the US have an EA in place, and EAs are under negotiation between Mexico and the US, and Mexico and Canada, but have not been finalized at the time of writing (Willer et al., 2021). The EA between the US and Canada focuses on addressing a limited number of controversial production practices that differ between the two jurisdictions,² with no mention of other requirements in either country's detailed organic management standards (Government of Canada, 2020). In other words, while governments have agreed to treat organic products from the US and Canada as "equivalent", further analysis is needed to assess the extent to which North American organic standards are indeed equal in terms of how they define and operationalize organic production principles and practices, and how governance and legal context shape potential differences. This paper takes a different approach to examining "equivalency" by assessing three countries' organic standards in terms of their governance and sustainability.

2.1.1 Socio-political change and governance of organics

Social scientists have long advanced critiques of the conflation of organic agriculture with sustainable agriculture (Allen & Kovach, 2000; Rigby & Cáceres, 2001). Most notable is the development of the conventionalization hypothesis and associated theory, which has

² The United States-Canada Organic EA does not cover agricultural products from Canada that are derived from any animal treated with antibiotics, or agricultural products from the United States that are (1) produced with the use of sodium nitrate, (2) produced by hydroponic or aeroponic production methods, or (3) derived from animals not produced according to livestock stocking rates as set out in the most recent version of the Canadian organic standards (Government of Canada, 2020).

illuminated shifts towards more input-intensive and capitalized organic production as the sector has grown, as well as the uneven and divergent patterns of these changes (Buck et al., 1997; Guthman, 2004, 2014). This discussion has underscored: (1) the imperative to focus on processes (i.e. on-farm practices that impact communities and ecologies) rather than on ‘form’ (i.e. farm size) in assessing the sustainability of organic agriculture; and (2) the importance of political and economic factors that may influence how the organic industry may adapt its founding principles. A subset of critical literature on organics has also highlighted the ongoing struggle of organic movement actors to re-assert their collective values and maintain autonomy in a sector that has seen rapid changes (H. Campbell & Liepins, 2002; Dufeu et al., 2020; Nawaz et al., 2020; Obach, 2015). As the sector continues to evolve, there are both new and continuing socio-political dynamics defining organic food production that remain under-explored.

While international organic agri-food markets have expanded in both size and reach, local organic movement actors – primarily farmers, inspectors and civil society – have engaged in significant struggles to advance organic values and principles (Obach, 2015), respond to challenges from new technological developments and industrial agricultural pressures (Nawaz et al., 2020), especially through governance processes that oversee the creation, maintenance, and evolution of organic standards. There has also been significant work by the international organic community to re-articulate the relationship between organics and sustainability, and to advance a vision for a more sustainable organic agriculture³ (Arbenz et al., 2016, 2017; SOAAN, 2013).

³ There is considerable debate and discussion about the definition of sustainable agriculture. Here we operationalize this concept as a response to the question: what would the organic standards look like if they were a framework for sustainability? We thus reflect the literature reviewed in the introduction of this paper (with insights from sociology, geography, and ecology) as well as how the organic movement itself has defined a sustainable organic agriculture.

While the specific governance processes of organic standards have largely been ignored by research on the sustainability of organic agriculture, they are important sites of struggle to define and maintain the principle-based commitments of the organic movement.

2.1.2 Research objectives

Given existing harmonization processes within the North American agricultural sector (e.g. around food safety), we could expect national organic standards to be similar in their requirements. At the same time, distinct legal contexts, social movement histories and governance processes mediate policy outcomes, and thus complicate the simple hypothesis that regions with significant trade will have more similar organic standards. Here, we compare the extent to which national organic standards in North America reflect sustainability by assessing the standards against a framework of “benchmark” principles and management practices based on published research on sustainable agriculture. We also analyze the political-economic contexts in which decisions about national standards are made as part of larger regulatory, legal, and social movement landscapes. Specifically, we examine how governance processes, regulatory apparatuses, and legal requirements shape what goes into organic standards.

We undertook a comparative assessment of organic standards in Mexico, the United States (US) and Canada, all of which have well-established organic sectors, significant trade of primary agriculture products (all three countries are within each other’s top 4 export trade flows for agricultural products) (Chatham House, 2021), and have extensively participated in international trade agreements on agri-food, such as the North American Free Trade Agreement (NAFTA) (now Canada-United States-Mexico Agreement).

This paper seeks to address three major gaps in the current literature assessing the relationship between organic agriculture and sustainability:

- (1) **It examines differences in organic standards between three jurisdictions highly connected by trade.** While some research has examined institutional structures that define organic production internationally, less attention has been paid to the differences between jurisdictions. For instance, Seufert et al. (2017) conducted a foundational assessment of how a key subset of organic standards and regulatory documents⁴ define the concept of “organic” in terms of principles and agroecological practices, and found that the standards were substantively similar in their focus on input-free and natural products as opposed to the environmental best practices that were the original foundations of organic ideals. This study did not include the Canadian organic standards, focused only on crop management practices, and did not examine governance or legal frameworks of the standards. Clark (2015) provides a detailed overview of organic regulatory environments in Canada and the US, but did not examine the organic standards, and did not account for differences in either governance processes or management requirements between the two countries.
- (2) **It includes a holistic consideration of sustainability, encompassing the social dimension of farming systems.** Despite significant work challenging the conflation of organic with sustainability, there are still gaps in evidence and understanding of how the practices required under organic certification measure up to sustainable agricultural

⁴ Seufert et al.’s study included the following countries’ and organizations’ standards: Australia, European Union, India, Mexico, Uganda, United States, Joint FAO/WHO Food Standards Programme, and IFOAM Norms for Organic Production and Processing.

management practices (Seufert & Ramankutty, 2017). Empirical research on the sustainability performance of organic agriculture often leaves out social dimensions, including but not limited to farm labour practices, despite extensive theoretical scholarship elucidating both the moral and empirical imperative to include social justice, fairness and farm labour metrics in conceptualizations and assessments of agricultural sustainability (Agyeman, 2008; Allen et al., 1991; Klassen, Fuerza Migrante, et al., 2022; Minkoff-Zern, 2017).

- (3) **It examines the role of governance and legal context in influencing standards.** In general, much of the scholarship regarding organic certification looks past questions of how jurisdictional organic standards are formed, who decides, and what gives them regulatory and legal power. Raynolds (2004) draws attention to the importance of understanding governance within agri-food networks as the “relations through which key actors create, maintain, and potentially transform network activities” (pp. 728). She found that both social movement and state actors were a central influence on international North-South organic trade, and that a combination of mainstream market and social movement ideals were being advanced in their governance, despite the contradictions between them. Much has changed in the organic sector since Raynolds published this influential work. At that time, international organizations – especially the International Federation of Organic Agriculture Movements (IFOAM) – played an important role as standard-setting bodies that organic certifiers could look to for production guidelines. In the last two decades, however, national organic programs have stepped into the role of creating and revising organic standards, effectively supplanting the voluntary international IFOAM standards, which were not enforceable by any regulations. Despite

these major changes, the imperative highlighted by Raynolds (2004) to look beyond producer-buyer relations and examine what is qualified in organic standards and certification remains relevant today.

Research on organics has often conflated terms such as regulations, standards, and laws in discussions of how organic principles are codified into practices, and to what extent these are required or enforced (with a few notable exceptions, including Fouilleux & Loconto, 2017). Moreover, while national organic standards with accompanying regulation may privilege certain production methods, definitions of what is considered organic are not necessarily codified into law or enforced by government regulation. In response to the gaps identified above, this paper presents an assessment of how organic agriculture is defined by national organic programs by comparing national standards and accompanying governance processes that currently structure organic production in North America.

2.2 Materials and methods

We examined the principles and practices embedded in the most recent versions of the official organic standards documents for Mexico (Secretaria de Agricultura y Desarrollo Rural, 2020), the US (USDA, 2020) and Canada 2022-10-19 12:11:00 PM, and complement this assessment with an analysis of governance and legal context. Building on Seufert et al. (2017), we developed an assessment framework for a broad set of **principles** corresponding to a sustainable organic agriculture which includes biodiversity, climate change mitigation, social fairness, and regeneration (Table 2.1). We also built on the practice assessment used in Seufert et al. (2017), who examined a subset of eleven key organic practices related to crop management. We built a novel assessment framework of 121 benchmark sustainable agriculture **practices**

across social and employment standards, animal management, and crop and land management domains. Three members of the research team (Authors Klassen, Luna Perez, and Bridson) qualitatively coded the standards documents from each country using NVivo qualitative analysis software. We coded equivalent sections each country's standards, which included the framing or introductory text and the relevant sections of the management guidelines corresponding to our three domains of focus (crop and land management; animal management; and social and employment standards). All relevant sections of the standards were coded for both principles and practices.

For our assessment of **principles** (Table 2.1), we first defined 15 core principles for a sustainable organic agriculture based on a review of published research, international publications relating to sustainability in the organic sector (Arbenz et al., 2016; SOAAN, 2013), and participant observation with the organic sector in North America conducted by the first author. We coded the organic standards documents for the three countries to assess the presence and importance of these principles. Building on methods from Seufert et al. (2017), we combined (1) a quantitative assessment of coverage (percent coverage based on character count), and (2) a subjective reviewer score (0-3) based on the strength and clarity of language used, and the context in which it was mentioned. We calculated our final scores for the principles assessment by first averaging the quantitative and qualitative assessments across reviewers. We then log transformed the quantitative coverage score after noticing that their distribution across principles was highly skewed and because differences between smaller numbers (e.g. between 1 and 100 characters) are more important than similar differences between larger numbers (e.g. between 1,000 and 1,100 characters). We then calculated our final score by multiplying the relative log-transformed character count by the qualitative reviewer score. These two measures combined

enabled us to balance the replicability of quantitative scoring with a more nuanced and context-specific qualitative scoring of importance of the principle within the standards.

Table 2.1. Principles for a sustainable organic agriculture and their definitions.

Principle	Coding Definition
Soil Health	The physical structure, nutrient content, biological health of soil organisms, and other optimal soil properties
Biodiversity	The abundance and diversity of organisms, including genetic diversity of cultivated or domesticated species
Watershed health	Water quality and health of waterways
Environmental Contamination (avoidance)	Reducing or avoiding forms of environmental contamination, including general environmental protection from contaminants or pollutants
Animal Welfare	Freedom from hunger and thirst; from discomfort; from pain, injury and disease; from distress; to express behaviors that promote wellbeing
Human Health	Improvements to human health or decreasing risks to human health (e.g. food security and nutrition, food safety)
Product Contamination (avoidance)	Reduction or avoidance of contamination of the organic operation or organic products from prohibited substances
Social Fairness	Fair conditions for workers, fair prices for farmers, and other aspects of fairness, equity and justice
Social Development	Impacts on and involvement with local communities, including opportunities, risk and benefits
Local	Considerations for areas in close geographic proximity, including local sourcing of inputs or shortening supply chains
Natural	The extent to which a thing or a process mimics ‘nature’, including by adhering to ecological principles and respect for the integrity of life
Holism	The view of the agroecosystem as interconnected entities or a ‘whole system’ approach focusing on relationships and interactions, as opposed to reductionism
Regeneration	Agroecological systems that sustain and improve life and agroecosystem functioning over time
Productivity	Agroecosystem productivity, including yield and production volumes, overall plant fitness and health, including avoiding losses from pests
Climate Change Mitigation	Reduction of atmospheric greenhouse gas emissions, or mitigation of the impacts of climate change

We also assessed the extent to which organic standards in North America require a set of benchmark sustainable management **practices** related to three domains of agricultural systems. As with principles, we first built a framework of best management practices based on a review of scholarly literature, international organic movement priorities, and other third-party certification requirements. The practice assessment framework is built around the following domains: (1) Crop and land management (Altieri & Rosset, 1996; Bommarco et al., 2013; Kremen et al., 2012; Kremen & Miles, 2012); (2) Animal management (American Humane Certified, 2020; Fraser, 2018; SPCA, n.d.); and, (3) Social and employment standards (Agricultural Justice Project, 2012; Harrison & Getz, 2015c; Kalleberg, 2013; SOAAN, 2013; Weiler et al., 2015). This practice assessment framework is summarized in Table 2.2 and the full list of practices is in Appendix A.1. We used this framework as a benchmark to score the organic management standards from Mexico, the US, and Canada by assessing whether and to what extent each practice was included following the scoring system in Table 2.3.

Table 2.2. Example benchmark sustainability practices.

Domain	Sub-domain	Example benchmark sustainability practices
Crop and land management	Cropping system diversification	Crop rotation; Crop & variety selection for ecological compatibility
	Soil health and fertility	Green manures; Nutrient recycling
	Alternative pest control	Use of dead soil cover/mulches; Avoidance of synthetic and toxic pesticides
	Presence of conservation areas	Maintain or re-establish wildlife corridors; Protect native vegetation
	Presence of semi-natural habitat	Insectary strips; Living barriers or hedgerows
	Sustainable water management	Irrigation water quality; Waterway construction does not block migration or movement of wild species
	Sourcing and treatment of genetic material	Contribution to improving genetic material; Protect the vigor of Indigenous landraces and species (where working with them)
	Sustainable energy use ⁵	Encourage use of renewable energy and reduced fossil fuel dependence
Animal management	Food and water quality and availability	Feed free from antibiotics and mammalian or avian derived products; Access to water and feed at all times
	Housing requirements	Space requirements for free movement and species-specific behaviours; non-slip floors in housing and handling facilities
	Outdoor access requirements	Shade or screening to protect animals from predators and rodents; Species-specific outdoor requirements
	Regulation of painful procedures and slaughter	Surgical procedures are regulated by age and use through pain control; Stunned before bleeding
	General health and wellness	Monitoring and other measures to prevent illness and lameness; Veterinary treatments are permitted where appropriate, following preventative measures
	Requirements for transportation and handling	Fitness assessment, feed and water before loading; Employee training in transport standard operating procedures
	Best practices for manure management	Manure is managed in a way that protects surrounding environment
	Breeding and sourcing of genetic stock	Breed selection for resilience and suitability to bio-regional conditions; Encourage contribution to improving genetic material (e.g. by on-farm breeding)
	Farm policies, plans and records	Biosecurity, sanitation, and emergency response plans; Code of conduct and company policies available to all employees in their native language

⁵ Energy use on farms is not limited to crop and land management, but we have included it in this crop and land domain to avoid double counting practices.

Domain	Sub-domain	Example benchmark sustainability practices
Social and employment standards	Remuneration and hours of work	Remuneration amount (living wage); Pay hourly wages (no piece rate wage) to reduce injuries
	Employment stability and mobility	Labour market freedom; Stable and long-term contracts
	Social benefits	Access to health and dental insurance; Access to employment/unemployment insurance
	Workplace/HR policies	All policies in languages spoken by workers; Formal job descriptions
	Workplace benefits	Opportunities for autonomy and control over work activities; Training and development opportunities
	Occupational health measures	Limit hand weeding; Clean and sanitary place to eat
	Equity	Share of benefits and risks among employees and operators; Proactive supports for employees from equity-deserving groups
	Benefit sharing	Profit sharing mechanisms with employees; Benefit and risk sharing models (e.g. CSA)
	Political processes	Enable workers to organize collectively; If interested, support workers to participate in food system governance (e.g. food policy councils)
	Fair prices	Prices reflect costs of production
	Indigenous rights	Respect and uphold the rights of Indigenous peoples
	Economic policies	Select financial institutions with sustainable investment portfolios and cooperative models; Diversify income sources

Table 2.3. Practice scoring system.

Scoring was used to assess the organic standards relative to the benchmark sustainability practice organic management practice framework (see Table 2.2).

Beneficial practice (+)	Harmful practice (-)
0 = Not required or recommended	0 = Either not mentioned, or, explicitly permitted
1 = Recommended, but not required	1 = Discouraged, but permitted
2 = Required, but with exceptions or to a lesser extent/degree than the benchmark practice	2 = Prohibited, but with exceptions or to a lesser extent/degree than the benchmark practice
3 = Required at the same level as the benchmark practice	3 = Strictly prohibited or restricted at the same level as the benchmark practice

While the assessment of principles (Table 2.1) reflects stated values, intent and goals in the standards, the practice assessment (Table 2.3) reflects enforceable management requirements – i.e. what should be done on organic farms (e.g. crop rotation). We assess practices independently of goals or intent because the management standards are not always written such that the desired outcome of a given practice is clear.

Both Mexico and Canada published new versions of their organic standards while we were conducting this analysis (in June and December of 2020, respectively); we re-coded both countries' standards to account for any changes and noted them as part of our qualitative process discussed below. While our initial coding framework was constructed in advance following the methodology outlined above, several principles were refined or merged iteratively throughout the coding process. When changes were made, relevant sections were re-coded in subsequent coding rounds utilizing the revised definitions.

To add context to and triangulate our findings from the assessment of the national organic standards, we also conducted qualitative interviews with organic sector representatives in all three countries, and carried out a comparative assessment of the legal and regulatory contexts in which the organic standards are embedded. Interviews were conducted with 14 experts who have

been engaged with development of the organic standards, international equivalency, or agricultural trade in Mexico (3), the US (4), and Canada (7). Most participants have been directly involved with the governance body responsible for the organic standards in one or more of the countries. Interviews were conducted in the participants' preferred language (English or Spanish), were transcribed in NVivo, translated into English where appropriate, and inductively coded in NVivo. The assessment of regulatory and legal context was conducted by Authors 1 and 4 following a comparative law methodology (Eberle, 2011; Siems, 2018) that considered the type of legal instrument, application scope, enacting body, legal foundation, responsible entity, composition, objective, and functions.

2.3 Results

The following sections describe the results from our assessment of organic standards in Mexico, the US and Canada, and the governance processes and legal context that shape them. Specifically, we compare the extent to which these national organic standards reflect benchmark principles and practices for sustainable agriculture, as well as the context in which decisions about these standards are made as part of regulatory, legal and social movement landscapes.

2.3.1 Principles of a sustainable organic agriculture

Our assessment found a relatively similar pattern of importance between assessed principles across each of the organic standards (Figure 2.1). For instance, all three countries strongly emphasized *Animal welfare*, *Avoiding contamination of organic products*, and *Soil health* as three of the most important principles. They were also similar in terms of principles that were *not* well-reflected in the standards (i.e. scored lowest) despite their relevance to

conceptions of sustainability for organic agriculture – *Social fairness*, *Social development*, and *Climate change mitigation* scored low in all three organic standards. Though not discussed prominently, the principle of *Social development* was at least mentioned in all three standards, and *Social fairness* was mentioned in the Canadian and Mexican standards, but not in the US. *Climate change mitigation* was not mentioned in any of the standards.

Despite these similarities, our assessment revealed several differences between countries in the relative ranking and absolute scores of other principles (e.g. *Natural*, *Holism*, *Regeneration* and *Local*). For example, the principle of *Natural* scored high in the Canadian and Mexican standards (ranked third and fourth, respectively), whereas in the US standards it scored relatively lower (ranked seventh). Similarly, the concepts of *Holism* and *Regeneration* scored higher in the Canadian and Mexican standards (*Regeneration* ranked fifth in Canada, and *Holism* ranked fifth in Mexico), but were much less prominent in the US standards. The average scores for all principles coded in the standards show that Canada exhibited the strongest expression of principles, followed closely by Mexico, while the US standards were the weakest (Figure 2.1). A sensitivity analysis of the impact of different methods and reviewers on principle scores can be found in Appendix A.2.

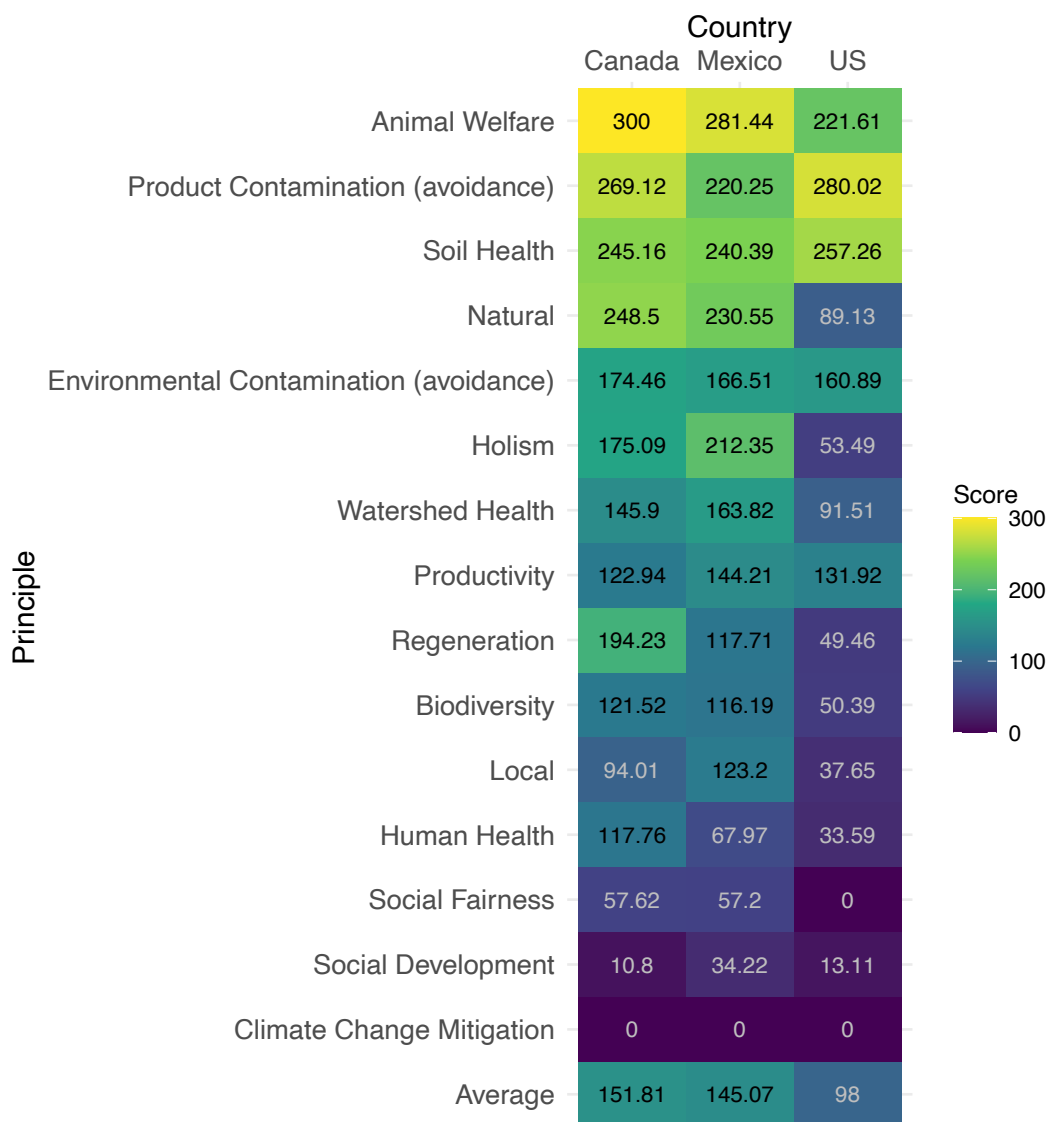


Figure 2.1. Average scores for principles for sustainable organic agriculture in Canada, Mexico and the US. Scores combined (1) a quantitative assessment of coverage (percent coverage based on character count), and (2) a subjective reviewer score (0-3) by multiplying the relative log-transformed percent coverage by the qualitative reviewer score. All scores are scaled to a highest possible score of 300.

2.3.2 Sustainable management practices

We found that the organic standards are not equivalent between the three jurisdictions in terms of sustainable management practices (Figure 2.2). While all three jurisdictions lack

requirements pertaining to social and employment standards (all countries scored 0 on every practice in this domain, consistent with low scores for social principles), there were notable differences in practices for the other two domains, with Mexico scoring highest for their crop and land management requirements, and Canada scoring highest on animal management requirements (See Appendix A.1 for full list of practices and sub-domains, and Appendix A.3 for average scores for practices by sub-domain). On average, the US scored the lowest across both domains.

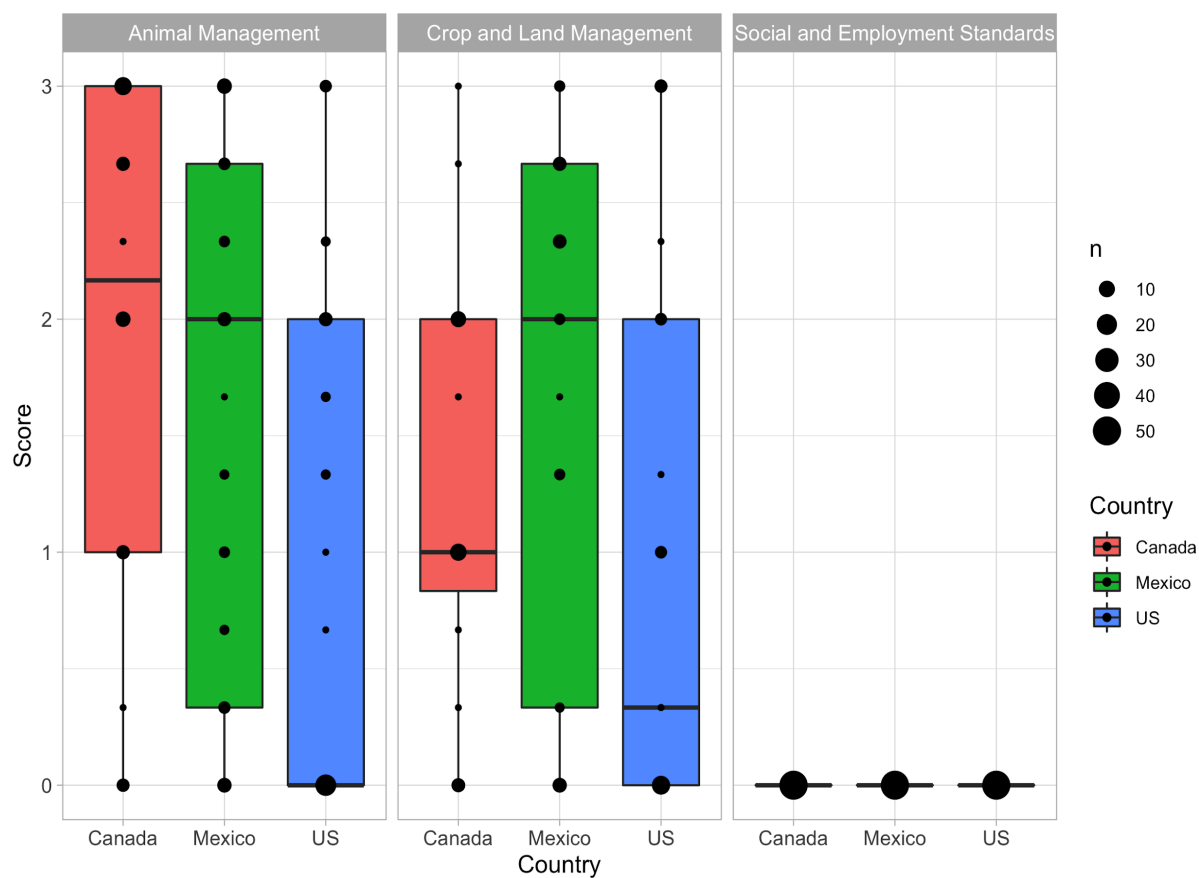


Figure 2.2. Scores for sustainability management practice requirements across domains.

The size of the black dots represents the number of practices with that score (n).

Within the crop and land management domain, we found important differences between the three countries regarding practices for sustainable water management, cropping system diversification, sourcing of genetic material, and presence of semi-natural habitat (Figure 2.3). Mexico had the highest scores for practices in all these sub-domains except the presence of semi-natural habitat, where the Canadian standards were superior. The high scores in Canada for ecological habitat considerations (semi-natural habitat and conservation areas) were due in part to additions to the most recent version of the standards, published in December 2020. In contrast, Canada scored relatively lower than the other two countries in terms of diversification of cropping systems and soil health and fertility. This lower score resulted from many of Canada's standards being written as conditional requirements, often stating the practice as being clearly required, but adding clauses such as "where appropriate", which, according to our scoring framework, merited a score of two instead of three⁶. The US had the lowest score overall, driven by weak or non-existent requirements for presence of conservation areas, semi-natural habitat, sustainable water management, and sourcing and treatment of genetic material. All three jurisdictions scored 0 on sustainable energy use, as they had no requirements to limit fossil fuel use or energy consumption more broadly (consistent with lack of climate mitigation principles).

⁶ According to several interview participants who have been involved with standards development in Canada, these "where appropriate" clauses are relatively more common in the Canadian standards as they were written to account for the diversity of operations and approaches across farms in Canada and may not actually reflect looser or weaker enforcement of standards.

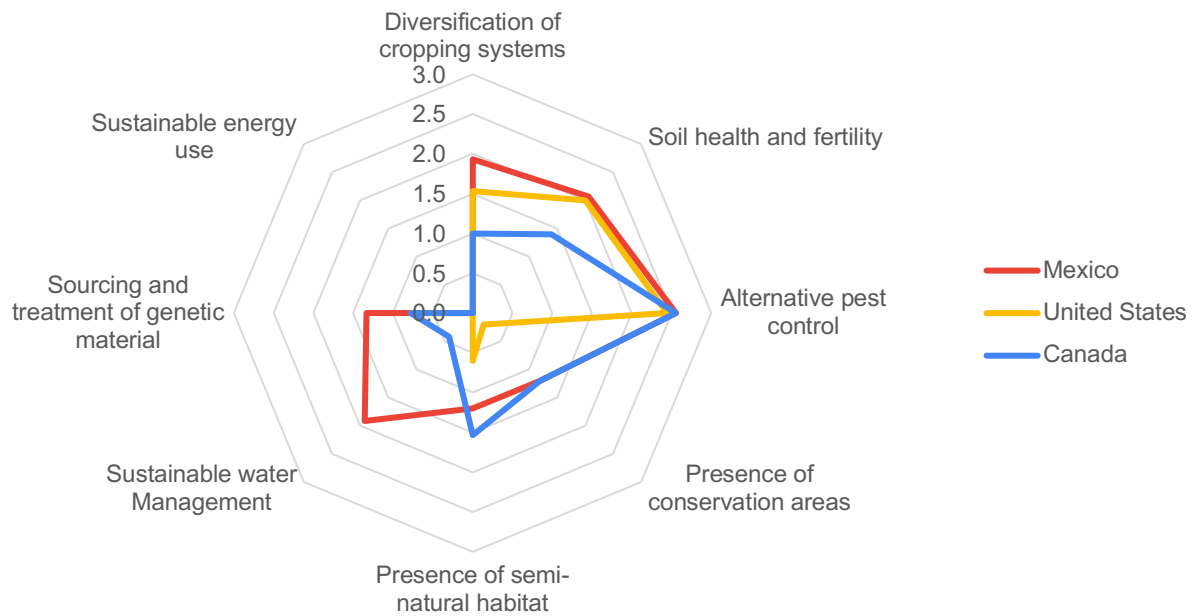


Figure 2.3. Radar diagram showing average scores in each sub-domain for best practices in crop and land management.

For practices related to animal management, Canada consistently scored the highest (Figure 2.4). In particular, the Canadian standards contained clearer requirements aligned with our assessment framework for the general health and wellness of animals, transportation and handling of animals, and regulation of painful procedures and slaughter. Canada and Mexico scored similarly in terms of housing, outdoor access, food and water quality and availability, and best practices for manure management. The US organic standards scored consistently lower across all sub-domains relating to animal management. Notably absent from the US standards were any requirements related to transportation and handling, and the US also received a particularly low score for regulation of painful procedures and slaughter and housing

requirements. No country's organic standards scored highly in terms of requirements for farm policies, plans and records for animal and livestock management.

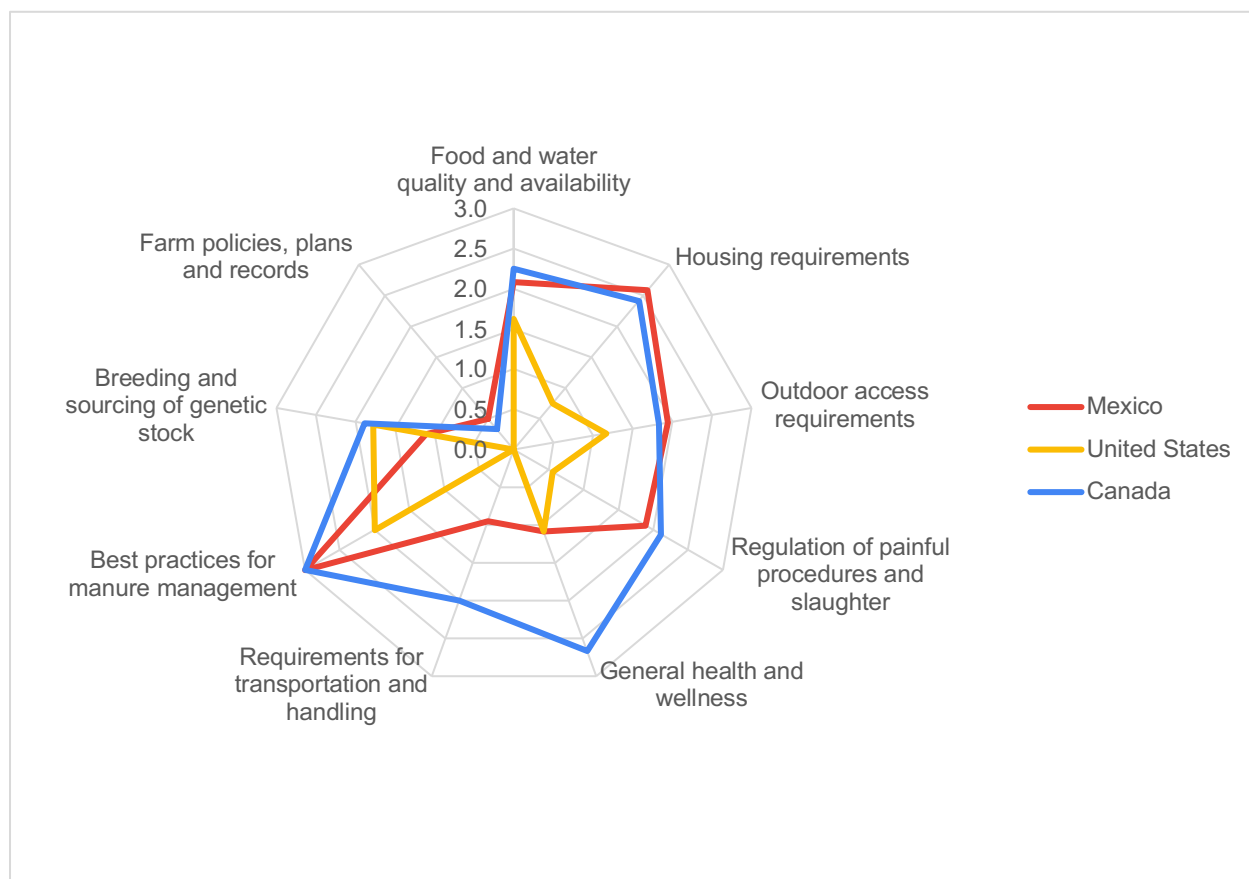


Figure 2.4. Radar diagram average scores in each sub-domain for best practices in animal management.

2.3.3 Governance and legal context

National organic standards are not static, but are the product of dynamic socio-political processes. We found several important differences in governance and regulations between the three countries that help explain the difference in standards, and the extent to which principles and practices for sustainable organic agriculture are represented within them. In this section of our results, we draw from qualitative interviews with individuals familiar with the governance

and regulatory processes in these jurisdictions, as well as from a comparative assessment of the laws, regulations and standards in Canada, the US and Mexico.

2.3.3.1 Who decides?

All three countries have a multi-stakeholder committee that serves as a standards governance body and contributes to the review of the national organic standards in some way (Figure 2.5). These committees are somewhat similar in their composition in that they include representation from producers, processors, and environmental or public interest groups. However, they differ in the level of control they have over decision-making, as well as the extent of government involvement. Only in Canada does this committee (the “Technical Committee”) have full control over decisions about the organic standards. Canada’s committee is convened by a government body (the Canadian General Standards Board or CGSB) that has no influence over the standards themselves, and is also distinct from the Canadian Food Inspection Agency (CFIA), which oversees the regulation and enforcement of the standards for organic agriculture (Figure 2.5c). While representatives from the government are involved in the revision process, they do not have any formal voting power on the Technical Committee (i.e. they can participate in discussions, but not decision-making).

In contrast, the equivalent committees in the US and Mexico – the National Organic Standards Board (NOSB) in the US, and the National Council for Organic Products (CNPO) in Mexico – do not have direct influence over the standards, but rather are consulted by the government body that ultimately makes decisions about the standards for organic agriculture in each country (United States Department of Agriculture [USDA] Agricultural Marketing Service

[AMS] in the US and the National Agro-Alimentary Health, Safety and Quality [SENASICA] in Mexico). As the Chair of the Technical Committee in Canada described it:

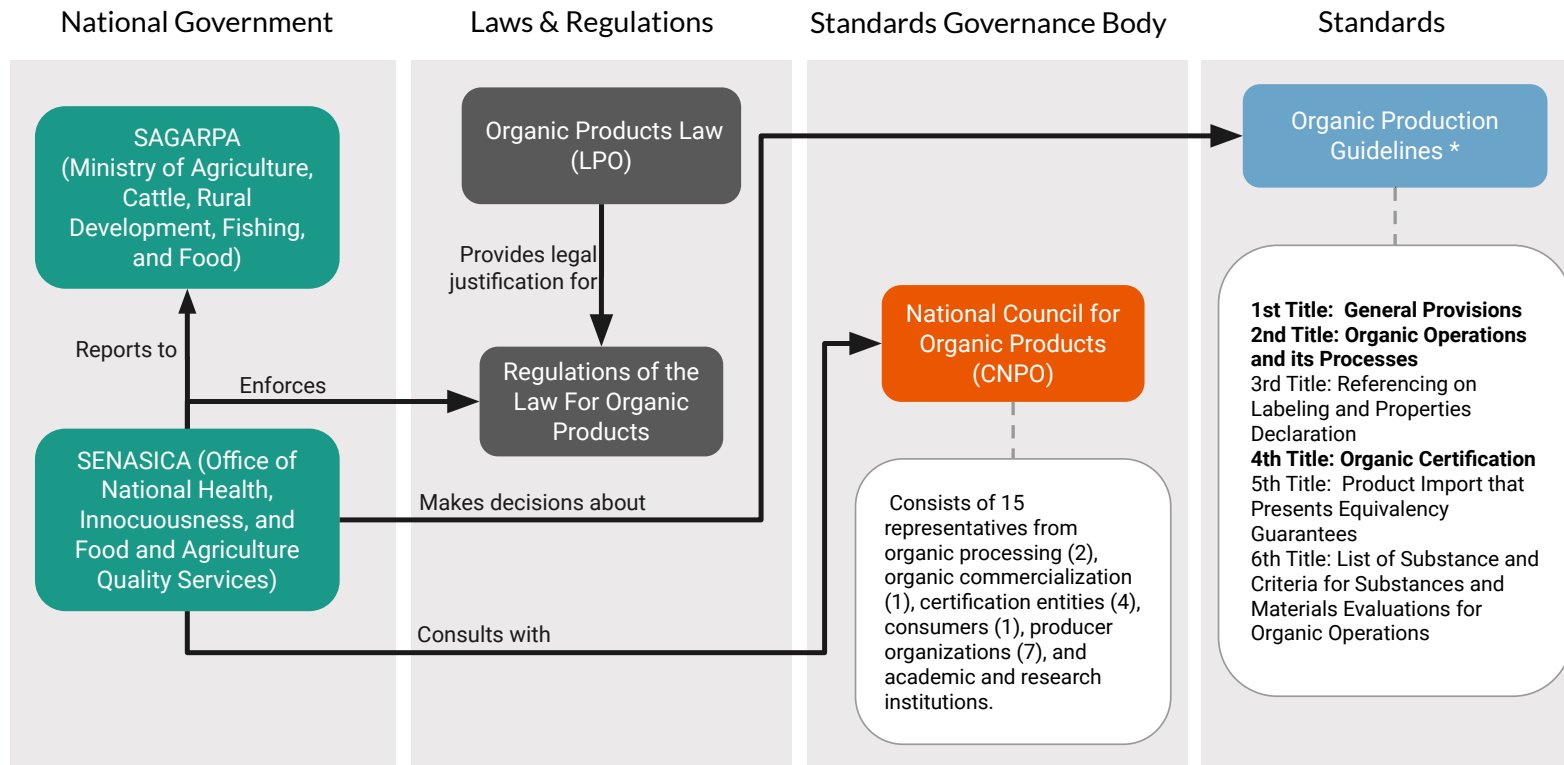
We write the standards on our own, we say what goes in the standards. The government, even though they're part of the consultation process, really don't get a lot of say into it... and that regulation [the Safe Food for Canadians Regulation] - article 13 it is - deals with organic, and it just references the Canadian Organic Standards, which gives them their legal authority, if you will. So there really isn't much room for political interference. (Participant 3, February 5, 2020)

In both Mexico and the US (Figure 2.5a and 2.5b, respectively), the standards are administered by the government *in consultation with* the governance body (the CNPO in Mexico, and the NOSB in US). However, the Organic Foods Production Act (OFPA) – the law that was passed to create the National Organic Program (NOP) in the US – does not require that the USDA take the advice of these multi-stakeholder committees, just that they are consulted. One participant who has been involved with the NOSB consultation process in the US described how these consultations by the USDA Agricultural Marketing Service did not always lead to actual changes:

A very high percentage [of the time, they] *don't* take the advice. Like there's recommendations from ten years ago that are still not implemented by the [USDA]. And quite a few of them. So, in other words, the government agency controls this organic standard. And that loss of control for the organic stakeholders is very obviously detrimental. (Participant 12, April 7, 2021)

a)

Mexico



b)

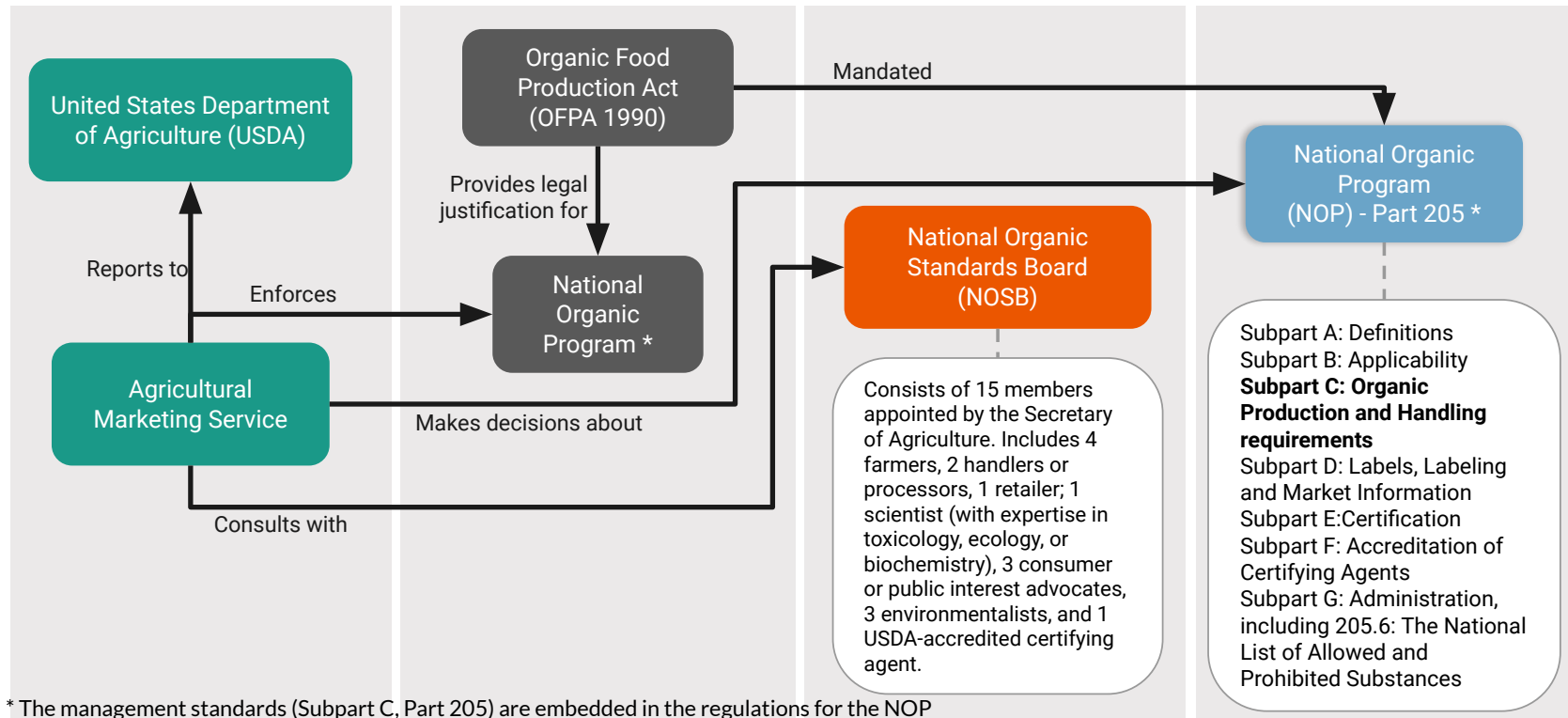
United States

National Government

Laws & Regulations

Standards Governance Body

Standards



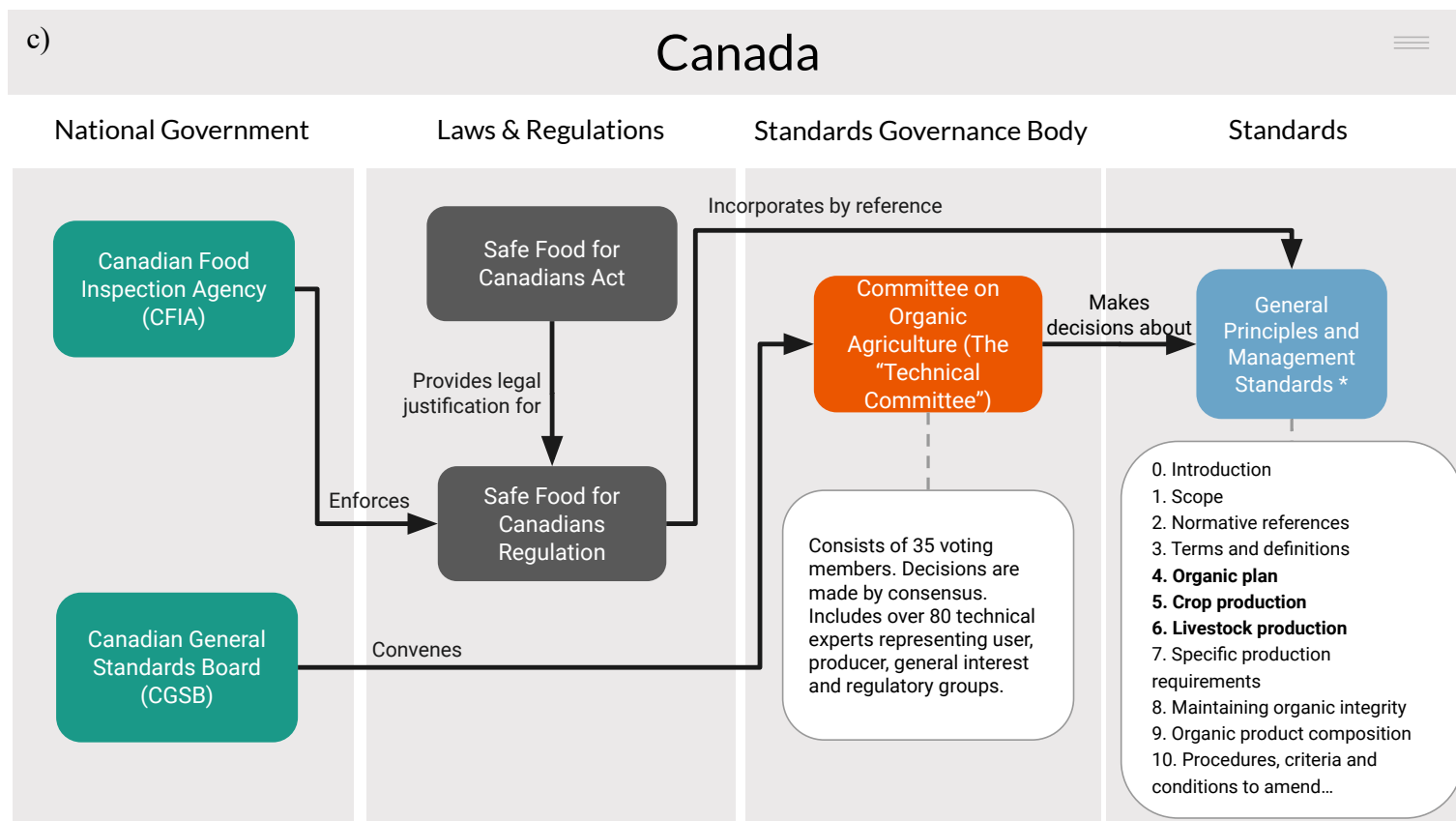


Figure 2.5. Governance, Regulatory and Legal context of organic standards in a) Mexico, b) the US and c) Canada.

Government agencies are represented by green boxes. All three countries have laws and regulations (dark grey boxes) that provide the legal foundations for their organic regimes and support the enforcement of standards, as well as a multi-stakeholder committee that acts as a standards governance body (orange boxes) that provide input on the organic standards. The sections of the standards that were coded for this analysis are bolded in the descriptions (white box).

2.3.3.2 Representation vs participation

In addition to the distinct governance roles of these committees, their size and the extent of organic community representation within them also differ between countries. The Technical Committee that governs the organic standards in Canada consists of 35 voting members who represent different constituencies from across the sector, including 15 positions for producers, and one position for every 378 organic farms in Canada (CGSB, 2020; Willer & Trávní, 2021). Voting members sit on this committee as representatives of associations or organizations, and the application process is overseen by the Organic Federation of Canada (OFC), itself comprised of democratically elected provincial and territorial representatives (OFC, 2021).

Despite having significantly larger organic sectors (in terms of acreage and number of producers), the committees in the US and in Mexico have only 15 members each. In the US, NOSB members are appointed by the Secretary of Agriculture following an application process, and members sit on the committee in their individual capacities. Only four of the NOSB's 15 representatives must be farmers, equal to one farmer representative for every 4,125 farms (The Organic Foods Production Act of 1990, 1990; USDA AMS, n.d.; Willer & Trávní, 2021). In Mexico, seven of the committee's 15 members must be representatives of producer organizations, one producer organization representative for every 30,000 farms⁷ (Willer & Lernoud, 2019). We found no evidence of set requirements for diversity or commodity representation on these committees beyond the general stakeholder interest categories (e.g. producer, public interest group, etc.) in any of the three countries.

⁷ Due to changes in the data collection for organic certification in Mexico, more recent estimates capture only producer groups and exclude small-scale farms that work collectively to get their products certified. As such we are using an older but more accurate estimate for number of producers here from before this reporting changed.

While producer representation on the Mexican CNPO is limited, participants reported that they were able to have an outsized impact through organizing. The social movement work to bring producer voices to the decision-making table has resulted in outcomes that are unique to the organic program in Mexico, including the inclusion of Participatory Guarantee Systems (PGS) in the national organic standards as a peer-to-peer method of certifying organic production destined for local markets. One participant described the process of building the initial national management guidelines (standards) in a participatory way through workshops:

It is from these workshops that the national guidelines emerged. We can say at that time it was tried, in this alliance that was created, the guidelines could be built with a broad participation of the different sectors that were active at that time ... it was about listening to all these voices and that is why the issue of participatory certification appears as an important section in the guidelines, as it comes from this historical work that we—those who worked with local markets—had been doing... This was one of the novel parts of this process, where the voices of the people who participated as in the different sectors, of the different representatives of the sector, were heard. (Participant 10, March 17, 2021)

However, when asked about producer representation through the CNPO today, this participant was less optimistic about the influence of smallholder producers over the standards, and stressed the increasing power of transnational corporations who are active and organized in the organic certification space. Referring to recent changes to the Mexican organic standards (including the removal of some language referencing fairness for workers in the newest version of the standards published in June 2020) that they felt reflected a move away from organic principles:

This is a fear of many of us, these modifications that are made go against the very origin of the organic movement and that again serves [the part of the] sector that is present and active in the decision-making. The movement of small farmers has weakened, there is no active representation. And if there is no active representation, no matter how much consultation is made, then there is no real representation. (Participant 10, March 17, 2021)

Not all participants felt there was a lack of producer representation as part of the CNPO in Mexico. Another representative from a producer group that works with coffee growers described his active engagement with and on behalf of producers around the organic standards. However, Participant 10 pointed out that there was no designated producer representative for local markets, and many barriers for small producers to participate in these governance processes, even when they are meant to include their voices. Representation aside, the CNPO has no decision-making power, similar to the NOSB, and thus representation and participation does not guarantee influence in terms of shaping standards.

Overall, our results suggest that standards governance processes have a significant influence on the sustainability-related practices and principles of the organic sector. In the US, participants attributed the dearth of organic principles and weakness of sustainability-related practice requirements to the significant political influence, the control over the standards by the USDA, and the limited governance power of the organic movement. In contrast, the more participatory and democratic process in Canada has enabled the organic community to maintain its commitment to both principles and practices in the organic standards (see sections 2.3.1 and 2.3.2).

Despite the lack of formal power of the Mexican CNPO, their standards also display a strong commitment to sustainability, and had the highest average score across sustainability management practices. This was largely driven by their strong standards relating to water management, a single difference that explains their higher score than Canada, and could be driven by relatively more widespread water scarcity and drought pressures in the country. Our interview data also suggest the community in Mexico has historically overcome their lack of formal power through collective producer organizing, but that this collective power is under threat from increasing corporate influence on the standard-setting process.

2.3.3.3 Legislating sustainability?

In all three countries, national laws enacted by the Legislature provide the foundation for the regulations that govern the organic standards (Figure 2.5). However, the countries' laws relating to organic food differ in their framing, scope, and links to organic principles and sustainability, such as biodiversity, soil health or local communities. In other words, the laws that govern organics might not even refer to sustainability at all.

For example, in Mexico and the US, the laws that govern organic do reference some aspects of sustainability. Mexico's *Ley de Productos Orgánicos* (LPO) includes language relating to social impacts of organic production, ecological health, economic aspects for producers, and avoiding contamination of organic products (Estados Unidos Mexicanos, 2006) – all of which relate to the content of the Mexican organic standards (though the standards don't include any practice requirements for the social and economic considerations outlined in the law, as outlined in section 2.3.2). The only considerations relating to sustainability in the US law (OFPA) are regarding the possible environmental or human health impacts of inputs, which

reflects the narrower focus of the principles and practices reflected in the standards. For these two cases, the organic and sustainability principles mentioned in the law are related to the content of the management standards.

In contrast, the law that underpins Canada's organic regulations – the *Safe Food for Canadians Act* – is much broader in scope (as the name implies), and has no mention of organic certification whatsoever. The law does include references to human health, and one reference to humane treatment of animals and preventing risks to the environment, respectively, but no considerations relating to other principles of organic agriculture or sustainability. Yet, as the previous sections demonstrate, the Canadian organic standards contain the strongest references to these principles, with sustainable management practice requirements that are similar in strength to those of Mexico.

These cases demonstrate that the content of the laws that give legal foundation to national organic regimes do not necessarily predict the content of the standards themselves. Where laws do not align with principles for a sustainable organic agriculture, such as in the Canadian case, this decoupling could allow for the weakening of standards, enabling them to move away from sustainability objectives without being prevented from doing so by the law. However, where these legal foundations do exist (e.g. in Mexico), they could provide the basis for future amendments to standards or regulations to better align with the objectives of the law.

2.4 Discussion

Previous scholarly work has suggested that trade-related motivations could put pressure on organic regimes to harmonize and dilute their organic standards (Aistara, 2018; Allen & Kovach, 2000; Seufert et al., 2017). While our participants did refer to pressure on the organic

sector to lower or simplify standards, this was not framed as being directly related to trade. We also find that sustainability principles and practices reflected in current standards for organic production vary between North American jurisdictions despite substantial trade between the three countries.

In the case of Canada and the US, who have an EA in place but show important differences in terms of sustainable management practices, our research suggests that EAs may relieve some of the pressure to harmonize the national organic standards to a lowest common denominator. EAs are largely dependent on the systems of verification, regulation, and control to maintain the integrity of organic *products*, as opposed to specifying detailed production *processes*. The United States-Canada Organic EA includes labelling requirements, a small number of provisions for controversial practices such as the exclusion of any animal products from animals that have been treated with antibiotics in Canada from being sold as organic in the US, and the exclusion of agricultural products produced with sodium nitrate in the US from being sold within Canada (Government of Canada, 2020). In other words, EAs appear to be more concerned with the integrity of the products that are being moved across international borders, as opposed to how their production impacts the land, animals or communities where agricultural production happens.⁸

Recent regulatory changes in Mexico help illustrate the complex interplay between standards, regulations and the pressure to harmonize. In 2020, Mexico announced that all organic products imported to the country would need to be certified to their standards (the LPO) (USDA

⁸ The exception here is the exclusion of hydroponic production, which is allowed under the US NOP but not in the COR.

Agricultural Marketing Service, n.d.). The significance of this change was not with respect to the management standards themselves, but it caused a scramble amongst US certifying bodies to respond to the new requirements to export to Mexico, which as we have seen in section 2.3.2 are different in several substantial ways.

Clark (2015) argued that organic food in North America has lost its process-based definition. In contrast, our research finds that process-based principles and practices for sustainability are present within all three North American organic standards for agricultural production, even though avoiding product contamination was also a prominently articulated principle throughout. In line with Dufeu et al.'s (2020) findings from the case of French farmers' involvement with organic standards as a collective project, our findings suggest that the weakening of organic rules is not inevitable, but dependent in part on governance processes in place. We found important differences between North American jurisdictions in the way organic principles are discussed within the standards, both as guiding frames for what organic should be, and the stated intent of specified management practices. While the product-based definition of organic may have expanded alongside the institutionalization of the sector, the focus on product purity shows up differently in different countries' standards, and it is not necessarily at the expense of attention to process. The standards themselves are an embodiment of these competing – though evidently not mutually exclusive – elements of organic food production regimes. This research illuminates some of the ways that the organic community actors who animate the sector have been negotiating the tension between consumer preferences for product purity (Luna et al., 2021) and maintaining the principles of ecological health, regeneration, care, and fairness.

Scholars and activists have long argued for deeper engagement with social justice in the study, discourse, and practice of agricultural sustainability. In the case of the organic standards

assessed here, practice requirements that would advance social justice are notably and unequivocally absent. While our study finds no explicit mention of the principles of social fairness in the US standards, both the Canadian and Mexican standards retain references to this principle, even though we found no management practice requirements within the social and employment standards domain. In the Mexican standards, the support for PGS within domestic organic production – which espouse the principle of fairness in both theory and practice – is a nod to these values. In the Canadian case, the four IFOAM principles including “Fairness” and “Care” are included as introductory framing text, and organic movement actors have been advancing further integration of the principle of Fairness through their involvement with the Technical Committee (Klassen, Fuerza Migrante, et al., 2022). The presence of social justice requirements in Regenerative Organic Certified standards and the voluntary IFOAM standards demonstrate some commitment to social equity by factions of the organic movement, which was confirmed by our assessment of principles and qualitative interviews, and could be leveraged to improve the standards in the future. However, the absence of requirements in the social and employment domain means that organic standards in North America are not aligned with sustainable agriculture.

2.5 Conclusion

The national organic standards in North America, and especially in Mexico and Canada, retain both process- and practice-oriented language and requirements. Sustainability-related practices and principles remain present and clearly articulated in organic requirements, but the extent and strength of these orientations differ between North American standards. Thus, the

organic management standards that define production in Mexico, Canada and the US are not equal in terms of sustainability.

While EAs largely ignore the specifics of production processes, our research suggests that they may enable national organic programs to focus on creating standards that are relevant within their borders, thereby side-stepping – if only temporarily – the need to lower all standards to a lowest common denominator through harmonization. For example, PGS in Mexico are an example of a regionally distinct certification process that have maintained their presence in the Mexican organic standards, a direct result of producer organizing by the agroecology movement in Mexico (Nelson et al., 2010, 2016). Other research highlights how PGS in Mexico have been able to maintain commitments to social development and local communities, despite pressure from increasingly large-scale and bureaucratic organic sector (Gómez Tovar et al., 2005; Kaufmann & Vogl, 2018).

At the same time, if an EA enables trade between countries and one country has a higher set of standards than another (for instance, the higher animal welfare requirements of the Canadian standard), this is arguably economically disadvantageous to the country (and its producers) who take more care and time to produce the same product and incur more costs. Currently, pressures to dilute standards to increase trade are being mediated at several levels, including EAs and national standards governance processes, which differ significantly between countries and are constantly evolving. As EAs and trade agreements are (re)negotiated, this may change. As such, further research is needed to assess the directionality of changes to the national organic standards, the laws, regulations, and governance processes that shape them, as well as how they are implemented by certification agencies, inspectors and producers.

This research underscores the distinct governance, principles and production requirements that influence what “organic” means in different countries, despite the organic market’s international nature. With increasing awareness of both social and ecological implications of food production, public interest in participating in alternatives to the conventional food system is growing. Despite the status of organic certification as a longstanding and well-known market-based “alternative”, it is certainly not the only one. As certification schemes for regenerative, socially just, pollinator-friendly, and GMO-free food are advanced as purported solutions for individual action by consumers, it is imperative to continue to interrogate how organic – the original alternative food label – is defined and contested, and by whom.

Chapter 3: Different from the rest? Comparing socio-economic and ecological management of certified organic to non-organic crop farms in Canada

3.1 Introduction

Organic agriculture is no longer at the fringe of the food system. The word “organic” is widely used in households, restaurants and grocery stores, and broadly associated as being more healthy, tasty and good for the environment (B. L. Campbell et al., 2013; Hughner et al., 2007). In Canada, the first official organic standards were published in 1999, and have continued to evolve alongside the growth of the sector over the past two decades. Currently, 55% of consumers purchase organic products on a weekly basis, and the organic market was valued at \$6.9 billion Canadian dollars in 2020, the 6th largest organic market globally (COTA, 2017b; Willer et al., 2021). Organic agriculture represents 2.3% of agricultural area in Canada (more than 3 million acres), and there are now 5,677 certified organic producers (Willer et al., 2021). While acreage in organic production is still dwarfed by non-organic production, the organic sector has matured into a burgeoning agri-food industry with strong consumer support and an unprecedented level of transparency in agricultural practices.

Organic farming has also been at the center of extensive debates about its potential as a solution to food system sustainability challenges, including improving environmental problems such as biodiversity loss (Tuck et al., 2014), providing safer conditions for farm workers (Costa et al., 2014), and increasing farm profitability (Crowder & Reganold, 2015). To better understand organic performance, a large body of literature comparing organic to conventional farming systems has emerged. Yet, these studies have found mixed results including “many

shades of grey” (Seufert & Ramankutty, 2017), as the context-dependency of many findings limits definitive conclusions about the sustainability performance of organic farming. These context-dependent factors include several management practices that are often included in organic certification standards: notably, the extent and type of input use, crop diversification, habitat conservation, and other nutrient management and pest suppression strategies (Gabriel et al., 2010; Lori et al., 2017; Ponisio et al., 2015).

Significant gaps in this comparative literature remain around social dimensions of agriculture, especially the conditions experienced by farmworkers. Particularly in the context of the Global North (the primary focus of this paper), farm workers outnumber employers, and tend to be more directly engaged with farm labour tasks. Even with advances in mechanisation, labour remains a central input to farming systems, and one of the biggest expenses for farm businesses (Statistics Canada, 2021). As such, labour is integral to the sustainability of farm operations and food systems more broadly. There is a small body of research assessing relative exposure to pesticides between organic and conventional (Bachmann, 2012; Cross et al., 2008; Letourneau & van Bruggen, 2006; Thapa & Rattanasuteerakul, 2011; Zehnder et al., 2007), and studies that examine broader working conditions on organic farms (Dumont & Baret, 2017; Soper, 2019, 2021). These pioneering studies notwithstanding, meta-analyses and structured literature reviews have acknowledged the lack of evidence relating to social dimensions of organic systems, especially with regard to labour and the experiences of farmworkers (Seufert & Ramankutty, 2017).

The published literature assessing organic agriculture in Canada reflects these same patterns. Studies have been largely focused on a small subset of environmental variables (tillage practices, soil health parameters and energy use) in field cropping systems (mostly wheat and

forage) in the prairie regions of Canada, with a few exceptions (Stonehouse et al., 2001; Warman & Havard, 1998). Of particular note in terms of its empirical contributions to researchers' agronomic understanding of organic practices is the Glenlea long-term crop rotation and organic management study in Manitoba, which was established in 1992 (L. W. Bell et al., 2012; Braman et al., 2016; Entz et al., 2014; Hoepfner et al., 2006; Welsh et al., 2009). While reviews of environmental parameters (Lynch, 2009; Lynch et al., 2011; MacRae et al., 2010) and organic-focused field trials (e.g. Kubota et al., 2015) are well-represented in the literature, social dimensions remain under-explored (Cranfield et al., 2010; Egri, 1999; Hall & Mogorodoy, 2001; Khaledi et al., 2010; MacRae et al., 2007), or ignored altogether.

The regulatory landscape of organic certification has also experienced a transformation in the past few decades. While in many ways the codification of organic into legal standards and accompanying regulation could be seen as the successful institutionalization and legitimization of the organic social movement, this codification itself has also been associated with the dilution of organic principles and values elsewhere, especially in the United States (Guthman, 2004). Research from Australia has shown how state involvement has played a key role in driving the need for measurable standards, facilitating the institutionalization of the organic movement into the current regulatory framework we see today (Lockie & Halpin, 2005). The substantial body of scholarship that has explored these changes in the organic sector – the so-called “conventionalization debate” and associated conventionalization theory (e.g. Buck et al., 1997; Guthman, 2004, 2014) – draws attention to the dynamic nature of the social and political forces that shape ecological activities of the organic sector. It has also underscored the need to look at multiple dimensions of farm management—including human labour (people), finances (profit),

ecologically-beneficial management practices (processes), agronomic input use (products) – and their changes over time.

This research utilizes a representative dataset from the Canadian Census of Agriculture (the census) to examine how certified organic agriculture compares to rest of the farms in Canada in terms of the four characteristics listed above, and how they have changed during this recent period of rapid institutionalization and growth (2001-2016). In doing so, we contribute foundational analysis on which future research on different approaches to farming systems – including but not limited to organic certified agriculture – can build. Following Sumberg & Giller (2022), we agree that the category of “conventional” farms so often used in the organic/conventional dichotomy obscures more than it reveals. Public policies and programs across the globe have promoted environmental Best Management Practices (BMPs) among non-organic farms including environmental BMPs such as cover cropping and conservation or no-till agriculture (Awada et al., 2014; Wallander et al., 2021). The growth of “regenerative” agricultural approaches outside of organic certification also prompt a more critical examination of assumptions about environmentally harmful “conventional” farming (LaCanne & Lundgren, 2018; Newton et al., 2020).

In contrast, organic certified farming does have “analytical purchase”, as it is defined by a set of standards with regulations and laws that enforce their meaning. To add further complexity to these categories, there is also a substantial number of farms who identify as practicing organic but who choose not to get certified (Klassen, Kremen, et al., 2022; Veldstra et al., 2014). 2006 was the only year when the Census of Agriculture collected data about uncertified organic farms, and estimated that there were more uncertified organic farms than certified organic farms in Canada. Because the census no longer collects information about

uncertified organic farms, these farms are included within the rest of all (non-organic) farms in the census.

We thus frame this paper in terms of how certified organic agriculture differs from “the rest” of agriculture in Canada, examining patterns within it by region, industry type and farm size, and how it has changed over time relative to other farms in Canada. We acknowledge the limitations of our comparative approach, and use the term “non-organic” to emphasize that we are comparing certified organic farms to the collective remainder of farms (the majority) who do not report certified organic products for sale, as defined in the census.

3.2 Materials and methods

To assess how organic certified agriculture compares to other agriculture and how it has changed over time in Canada, we examine both socio-economic and ecological dimensions of farming systems (Figure 3.1). In addition to the overall structure of the organic sector (patterns in farm size and industry type across regions), we examined a series of management practices with implications across social, economic and ecological dimensions of sustainability. These can be categorized into variables exploring:

- (1) **People** - Labour as a key social dimension of farming system sustainability both as a necessary ‘input’ and an indicator of distributive justice or equity (Carlisle, Montenegro de Wit, DeLonge, Iles, et al., 2019; Getz et al., 2008; Minkoff-Zern, 2017);
- (2) **Profit** - Financial aspects of the farm business including profitability and the amount of capital in the farm business, with important implications for livelihoods, debt loads, and overall economic viability/sustainability (Carlisle, Montenegro de Wit, DeLonge, Calo, et al., 2019; National Farmers Union, 2015);

- (3) **Processes** - Ecological best management practices or BMPs (e.g. crop rotation and habitat conservation) which can replace harmful product inputs by fostering nutrient cycling, beneficial insects and other ecological services and is critical for sustainability (Bommarco et al., 2013; Kremen & Miles, 2012); and,
- (4) **Product Inputs** - including pesticides and fertilizers, which contribute to fertility, yield and productivity, but can have negative impacts on soil health, surrounding water quality, and overall ecological health of agro-ecosystems (Aktar et al., 2009; MacDonald et al., 2011; Pretty, 2018; Vörösmarty et al., 2010).

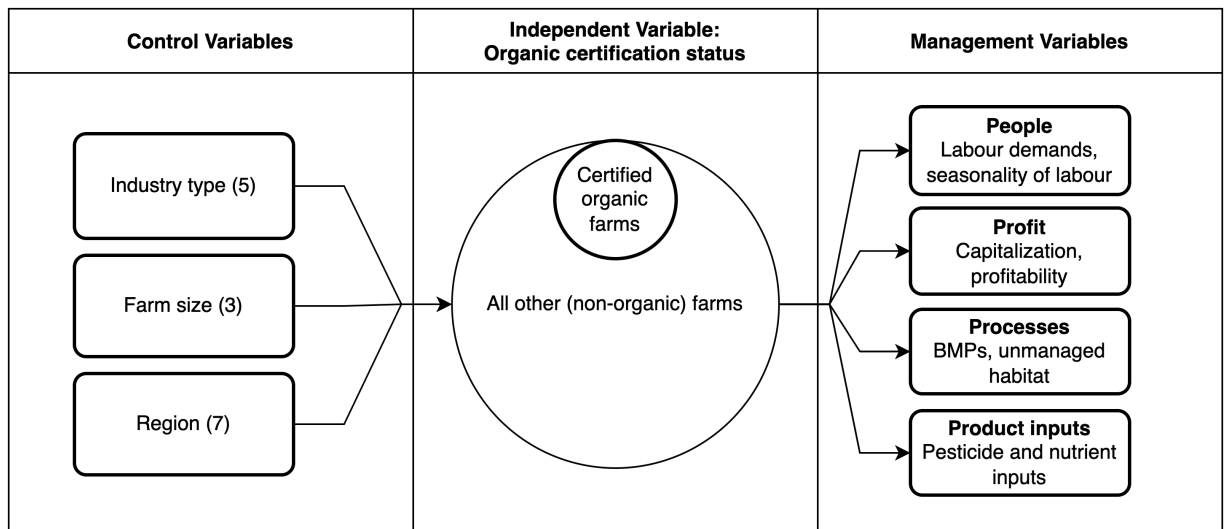


Figure 3.1. Conceptual representation of the data and variables assessed.

We utilize descriptive statistical analysis to answer the following research questions:

- (1) How is certified organic agriculture different from the rest of agriculture (non-organic) across socio-economic and ecological dimensions of farm management?
- (2) How has socio-economic and ecological management changed over time in organic certified agriculture relative to non-organic?

3.2.1 Data source

The Canadian Census of Agriculture is conducted every five years by Statistics Canada. In 2016 it included 193,492 farms, and was estimated to have a 95% response rate. The census includes data collection about field management practices and farm business characteristics. We acquired custom tabulations of farm management data across socio-economic and ecological dimensions for all farms primarily growing crops, as defined by Statistics Canada (i.e., excluding livestock and dairy) (Table 3.1). The data were cross tabulated by organic status⁹, farm size, industry type and region. Where available, data about farm management were analyzed on both a per acre and per farm basis; however, several variables were only available as dichotomous variables (i.e. whether a farm adopted a practice or not), and so these data can only be analyzed on a per farm basis. In addition to this farm management data, we were able to access a second dataset looking at more detailed subgroups of industry type, which included only the area and number of farms in each subgroup.

Due to the Statistics Act in Canada, we were unable to access more detailed or disaggregated farm-level micro data, and values were often suppressed when looking at data across multiple control variables (e.g. when looking at a single farm size category for one industry type in a specific province). We were only able to access data for the southern provinces in Canada (excluding the Northern territories) with the Atlantic provinces aggregated into one region. We will return to a discussion of limitations of data access in the conclusion.

⁹ This includes all farms that produce certified organic products for sale and does not include farms that are in transition to receiving their organic certification status, or farms that use organic practices but are not certified. The census does not include any information about the extent of organic production on farms. For the purposes of this research, we treat all farms reporting certified organic products for sale as organic.

Table 3.1. Farm management, descriptive and control variables included in analysis.

Dimension		Construct	Management Variable Description
Socio-economic	People	Labour demands	Number of employees per acre of cropland
			Number of employees per farm
		Seasonality of labour	Value in wages paid to workers per farm
			Value in wages paid to workers per acre of cropland
	Profit	Capital	Proportion of workers who are year-round versus seasonal
			Value of capital in machinery, land and buildings per acre
		Profit	Value of capital in machinery, land and buildings per farm
			Gross farm sales minus operating expenses per farm
Ecological	Processes	Beneficial Management Practices (BMPs)	Gross farm sales minus operating expenses per acre of cropland
			Proportion of farms using winter cover cropping
			Proportion of farms using green manures
			Proportion of farms with windbreaks or shelterbelts
		Unmanaged Habitat	Proportion of farms reporting unmanaged pasture
			Proportion of total farm area in unmanaged pasture
			Proportion of farms reporting woodlands and wetlands
			Proportion of farm area in woodlands and wetlands
	Products	Pesticide inputs	Proportion of farms using insecticides
			Proportion of farm area on which insecticides are used
			Proportion of farms using herbicides
			Proportion of farm area on which herbicides are used
		Nutrient inputs ¹⁰	Proportion of farms using fungicides
			Proportion of farm area on which fungicides are used
			Proportion of farms using fertilizers
			Proportion of farm area on which fertilizers are used
			Proportion of farms using manure
			Proportion of farm area on which manure is used

¹⁰ Data for fertilizer use is presumed to include synthetic and organic fertilizers, as the census questionnaire does not specify type of fertilizers used. There are no questions in the census of agriculture about the use of compost.

Dimension	Construct	Management Variable Description
Descriptive Variables	Number of farms	Number of farms
	Farm Area	Average total farm area & area in cropland
	Industry type	Based on North American Industry Classification System
Control Variables	Farm size	Farms size categories (0-49, 50-199, and 200 + acres)
	Region	Region in Canada, excluding northern Territories

We developed two sets of hypotheses reflecting our two research questions about (1) how organic and non-organic farms differ, and (2) how organic farms have changed over time for each socio-economic and ecological construct (Table 3.2). While critical scholarship has called into question the extent to which organic farms adopt process-based ecological farming practices, the inclusion of some of these practices in Canadian organic standards provides strong support for the hypotheses that organic farms will exhibit lower pesticide use, higher adoption of ecologically beneficial management practices, and a higher presence of unmanaged habitat for biodiversity (Klassen, Luna Perez, et al., 2022). However, as socio-economic dimensions are not regulated by organic standards, hypotheses relating to labour, wages, profitability, and capital were formulated based on published research, with a focus on studies in North America.

Table 3.2. Hypotheses tested in sections 3.2 and 3.3 and examples of literature that supports them.

Construct	Difference between organic and non-organic (2016)	Change in organic over time, relative to non-organic (2001-2016)¹¹
Labour Demands ¹²	(+) Organic farms will be more labour-intensive (Garibaldi & Pérez-Méndez, 2019; Jansen, 2000; Morison et al., 2005)	(-) Labour demands on organic farms will decrease at a faster rate (Hall & Mogyorod, 2001)
Seasonality of labour	(+) Organic farms will employ more year-round labour (Guthman, 2014)	N/A (no time series data)
Economic Capital	(+/-) Value in capital will depend on region, industry and farm size ¹³	(+) Value in capital will increase over time at a faster rate
Profitability	(+) Organic farms will be more profitable (Crowder & Reganold, 2015)	(+) Profitability will increase at a faster rate (Crowder & Reganold, 2015)
BMPs	(+) Organic farms will utilize ecologically beneficial management practices more (Klassen, Luna Perez, et al., 2022)	(-) Ecologically beneficial management practice use will decrease for organic farms, but increase for non-organic farms (Guthman, 2014)
Unmanaged habitat	(+) Organic farms will support more unmanaged habitat (Klassen, Luna Perez, et al., 2022)	(-) Unmanaged habitat will decrease at a similar rate (Guthman, 2014)
Nutrient inputs	(+/-) Organic farms will utilize fertilizer inputs less/ on a smaller area, but rely more on manure as a nutrient source (Berry et al., 2002; Kirchmann & Bergström, 2001)	(+) Nutrient input use will increase at a faster rate (Guthman, 2014)
Pesticide inputs	(-) Organic farms will utilize pesticide inputs less/on a smaller area (Klassen, Luna Perez, et al., 2022; Letourneau & van Bruggen, 2006; Zehnder et al., 2007)	(+) Pesticide input use will increase at a faster rate (Guthman, 2014)

In terms of how management variables would change over time on organic farms relative to non-organic, our hypotheses were based on conventionalization theory, or the expectation that

¹¹ All variables expressed in Canadian dollars were adjusted for inflation

¹² Due to changes to census data collection, several variables were not available for all census years. For instance, the data that enabled us to calculate the average amount spent on wages per acre (a measure of labour demands) were only available for 2011, and measures of labour intensity (either number of employees or number of weeks of work) changed during the period of analysis.

¹³ While literature on the conventionalization of organics suggests that the value in capital will increase over time, there is little to no research that explores whether organic agriculture would be more capital-intensive than non-organic in recent years.

we might see an overall decrease in ecological management and an increase in product input use (and a focus on yield), as more profit-motivated farmers become certified, and the organic sector as a whole becomes more highly integrated into conventional agri-food markets. Examples of literature that supports these hypotheses are captured in Table 3.2.

3.2.2 Data analysis

We conducted statistical analyses to test these hypotheses. As the census data provides population-level information, we did not need to use inferential statistics, and simply used descriptive statistical analyses. Our analyses are based on complete but aggregated data and analyzed by a single control variable at a time. Because data from the agricultural census are treated as sensitive business data, they were only available pre-tabulated into aggregated values, and values for management variables are often suppressed when looking at management variables by multiple control variables at once. For example, depending on the number of observations (farms) in a category and which management variable is being examined, values might be suppressed (i.e. not accessible) when looking at small certified organic oilseed and grain farms, even though the management data associated with that group are included in aggregated totals for either small organic or organic oilseed and grain farms.

3.3 Results and discussion

We first present an analysis of the structure of the organic sector by looking at the distribution of farms and patterns by industry type, farm size and number of farms by region in southern Canada (section 3.3.1). In sections 3.3.2 and 3.3.3, we examine differences between organic farms and non-organic farms in Canada across a series of socio-economic and ecological

management variables as outlined in the methods using data from the most recent census year (2016). In section 3.3.4, we analyze changes in management variables over time (2001-2016) in organic certified agriculture, and look at these trends relative to changes for non-organic farms during the same time period.

3.3.1 Patterns in industry type and farm size in regions across southern Canada

Both organic and non-organic farms show distinct patterns between regions and farm size categories (Figure 3.2). The coastal regions of British Columbia (BC) and Atlantic Canada (ATL) have a similar distribution of primary industry type favouring fruit and tree nuts (especially among smaller farms), and vegetable and melon farming (especially among larger farms). In the prairie regions of Alberta (AB), Saskatchewan (SK) and Manitoba (MB) and the province of Ontario (ON), oilseed and grain farms are relatively more common, especially in the larger farm size category. Across nearly all regions and farm size categories, there is a relatively higher proportion of organic farms primarily growing vegetable and melons than for non-organic farms. There was also a higher proportion of organic farms in the fruit and tree nut category in most regions and for most farm size categories, with the exception of Atlantic Canada, which showed a higher proportion of non-organic farms devoted to fruit and tree nut production. The proportion of organic farms reporting ‘other crop farming’ as their primary industry type (a diverse industry category that includes hay, maple, sugar beet, and mixed fruit and vegetable production) varies across region and farm type, and shows no consistent pattern.

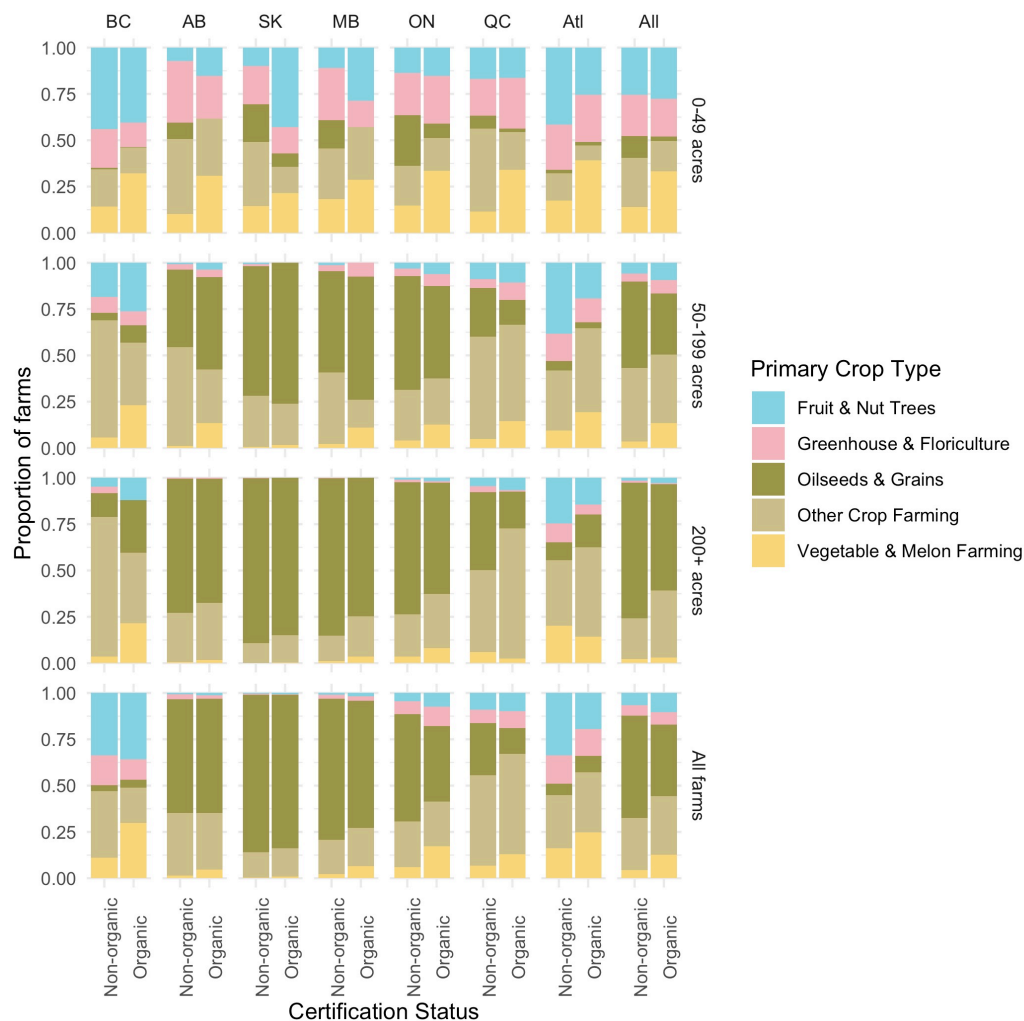


Figure 3.2. Distribution of farms grouped by industry and farm size between organic and non-organic farms by region.

When looking at differences in the makeup of these larger industry categories between organic and non-organic farms, there are substantial differences between groups in the sub-categories of industry type, especially for the “greenhouse” and “other crops” categories (Figure 3.3). For instance, certified organic farms in the “other crops” industry category are mostly made up of “all other miscellaneous crop farming”, whereas for non-organic farms in the same category, they are mostly “hay farming”. Differences in the “greenhouse” category are similarly

notable, as the vast majority of non-organic farms in this category are “nursery and tree production” farms, whereas the vast majority in organic are “other food crops grown under cover”. Because of the differences in cultivation methods, infrastructure and markets, these differences within industry categories between organic and non-organic farms should inform interpretation of the results below (where data was not available by these sub-categories of industry). We will return to a discussion of this in the conclusion.

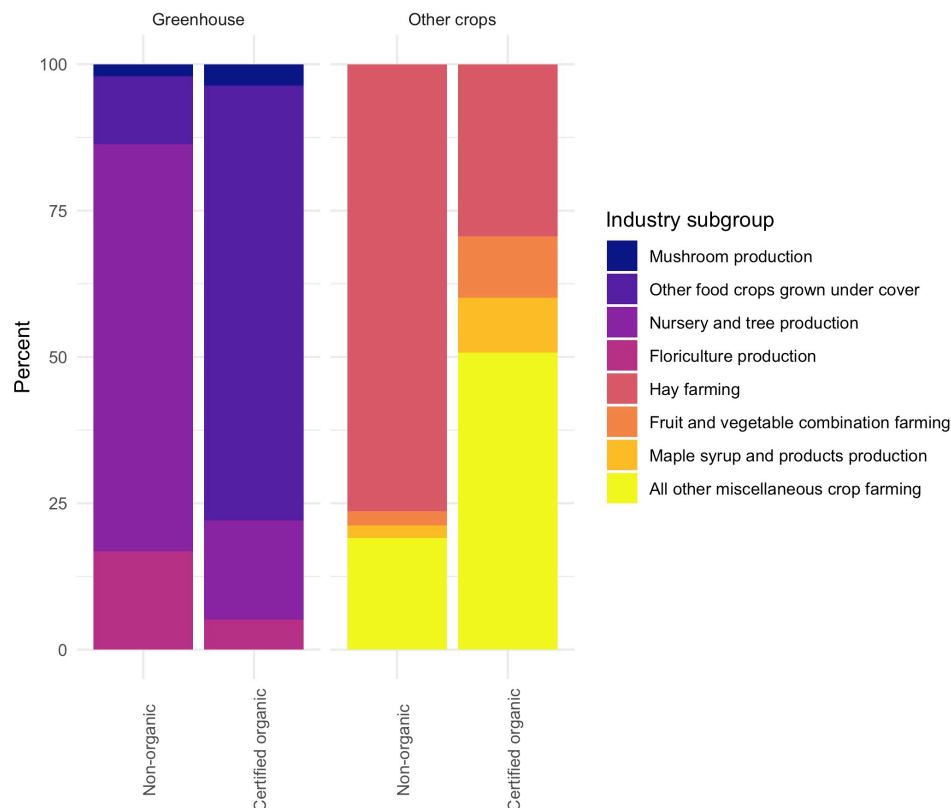


Figure 3.3. Composition of “greenhouse” and “other crops” industry type by industry subgroup.

Industry categories are using the North American Industry Classification System (NAICS) showing differences between organic and non-organic farms. Other industries show more similar patterns in composition.

Overall, farms with certified organic crop production represented 1.5% of total cropland area in Canada in 2016 (see Appendix B.1). The share of organic cropland area varies by province, with Quebec (QC) organic farms representing 4.7% of cropland in the province, while it was only 0.7% in Manitoba. All other regions had between 1% and 3% of cropland in organic production. In terms of industry type, “fruit and tree nuts” had the highest certified organic acreage, with 9.3% of cropland in fruit and tree nuts in Canada. The “greenhouse” category had a relatively small share of its production in organic at only 0.9%. All other industry type categories had organic shares between 1% and 3%. The national share of cropland acreage in organic peaked at 1.7% in 2006, and was 1.5% for the following two census periods. Total cropland acreage for organic farms has increased during the same period, with the biggest increase happening between 2001 and 2006, and smaller increases thereafter. Total farm area for organic farms in 2016 was higher than in 2001, but peaked at just over 2 million acres in 2011. Despite these national increases in acreage in organic, four of seven regions in this dataset showed decreased area in organic cropland acreage, with Saskatchewan, Manitoba and Ontario all showing decreases over the last three census years (see Appendix B.2 and B.3).

The number of organic crop farms in Canada has increased every year and has more than doubled from 1,546 organic farms in 2001 to 3,326 in 2016 (Figure 3.4). The biggest increase occurred between 2001 and 2006, followed by slower growth. These national increases belie more mixed regional trends, where most regions display a decrease in organic farm numbers between 2011 and 2016, including BC, Saskatchewan, Manitoba and the Atlantic provinces. The decrease in Saskatchewan was the most pronounced, where the number of organic farms in 2016 was lower than in 2011 or 2006.

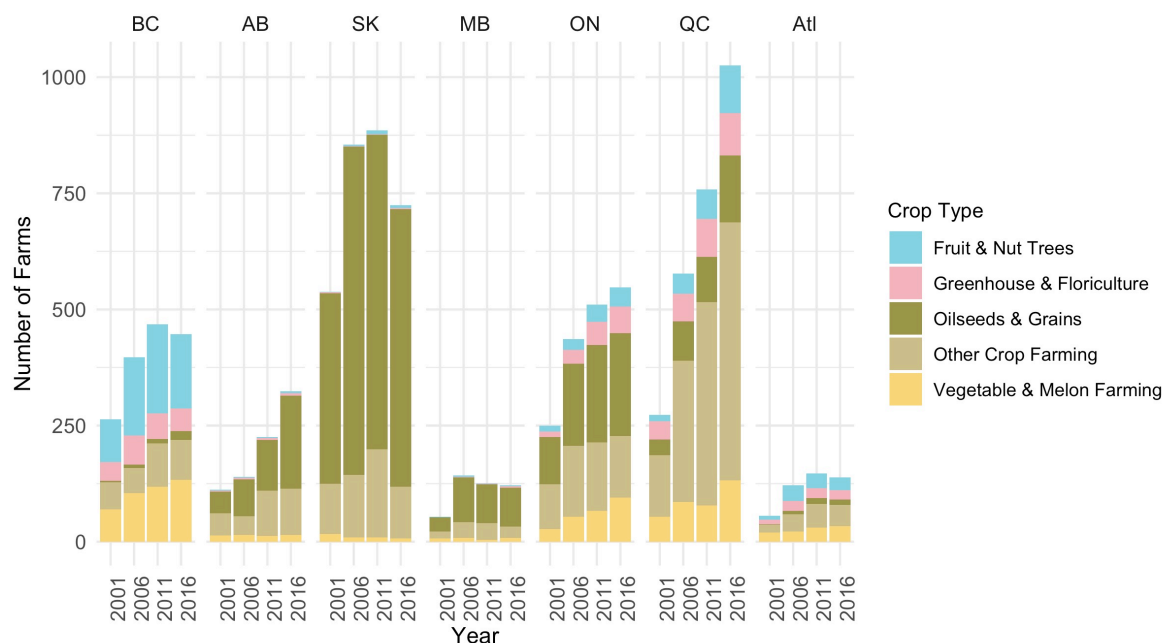


Figure 3.4. Number of organic farms and distribution grouped by industry type and region.

Aggregate national data show that the average size of non-organic farms has increased consistently since 2001 for both measures of land in crops and total farm area (Figure 3.5). For organic farms nationally, both measures of size have also increased since 2001, but have leveled off or declined since 2006. Most regions also show an overall increase in average size of organic farms for both measures, however, the trend was more variable compared to the national data, especially for organic farms. The exceptions to the overall increase in average size of organic farms are Ontario and Manitoba, which both show a decrease. Where increased farm size coincides with a decrease in the number of organic farms (for example, in Saskatchewan), farmland consolidation may be occurring. In general, there is a greater difference between organic vs. non-organic farm size when looking at average land in crops, and organic farms across regions, size categories and industry use less of their total farm area for production (See

Appendix B.4). Organic farms are also smaller than non-organic farms, except for farms in Quebec and farms in the “other crops” and “fruit and tree nut” categories.

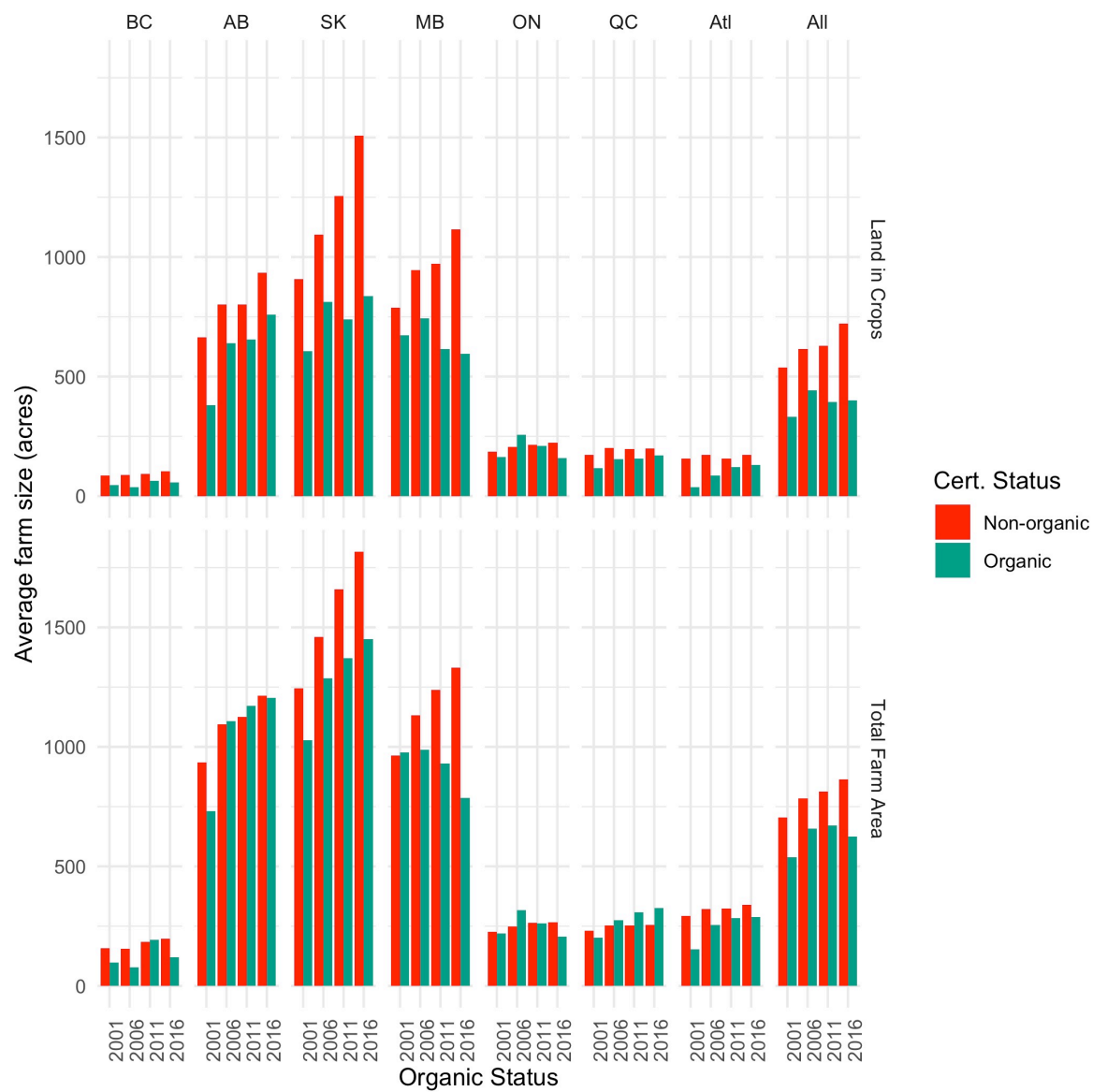


Figure 3.5. Change in average farm size by certification status and by region.

3.3.2 Socio-economic differences

Labour demands. To create relative measures of labour-intensiveness of organic agriculture, we used data on the number of paid employees, and the amount spent on wages in the year prior to the census, and divided each of these measures by the area in crop production or the number of farms. We found that organic farms are, in aggregate, more labour-intensive (i.e. hire more employees per acre and pay more in wages per acre, annually) than other farms in Canada (Figure 3.6, Table 3.3). This overall result is consistent with our hypothesis, which was based on existing evidence that more diversified and organic production systems require higher labour inputs (Garibaldi & Pérez-Méndez, 2019; Morison et al., 2005). For number of employees (per acre and per farm), this result is consistent across farm size categories, but it varies by industry type. In terms of wages per acre, organic farms are more labour-intensive across all control variables where data are available. For wages per farm, this result varies by industry type. Unfortunately, as we do not have data for the duration or type of employment, we cannot make conclusions about worker pay from these data.

For both measures, the more labour-intensive nature of organic farms in aggregate appears to be driven by the distribution of farms across industry type, especially farms in the “greenhouse” category (which includes nursery and floriculture production, and are also smaller farms), which were disproportionately more labour intensive than their non-organic counterparts. This result should be interpreted with some care given the differences in sub-categories of industry type for the “greenhouse” industry category; organic farms in this group are dominated by “other food crops grown under cover” whereas non-organic farms in this group are mostly in the “nursery and tree production” subgroup (see Figure 3.3 in section 3.3.1), which we would expect to be less labour-intensive by nature.

Despite the evidence that organic certification alone does not drive the higher labour demands that we see in aggregate, there are strong empirical foundations for why we would expect organic farms to be more labour-intensive than their non-organic counterparts as a consequence of the farming system design and management approaches (Finley et al., 2018; Garibaldi & Pérez-Méndez, 2019; Montt & Luu, 2019). Moreover, these indicators have significant limitations as they only account for hired workers, not for all labour inputs to the farm. Organic farmers may be more likely to work over-time and not pay themselves a wage, and thus the true labour inputs may not be captured here (Galt, 2013; Weiler, Otero, et al., 2016). More research is needed to explain the variation in labour demands by specific crop and operation types.

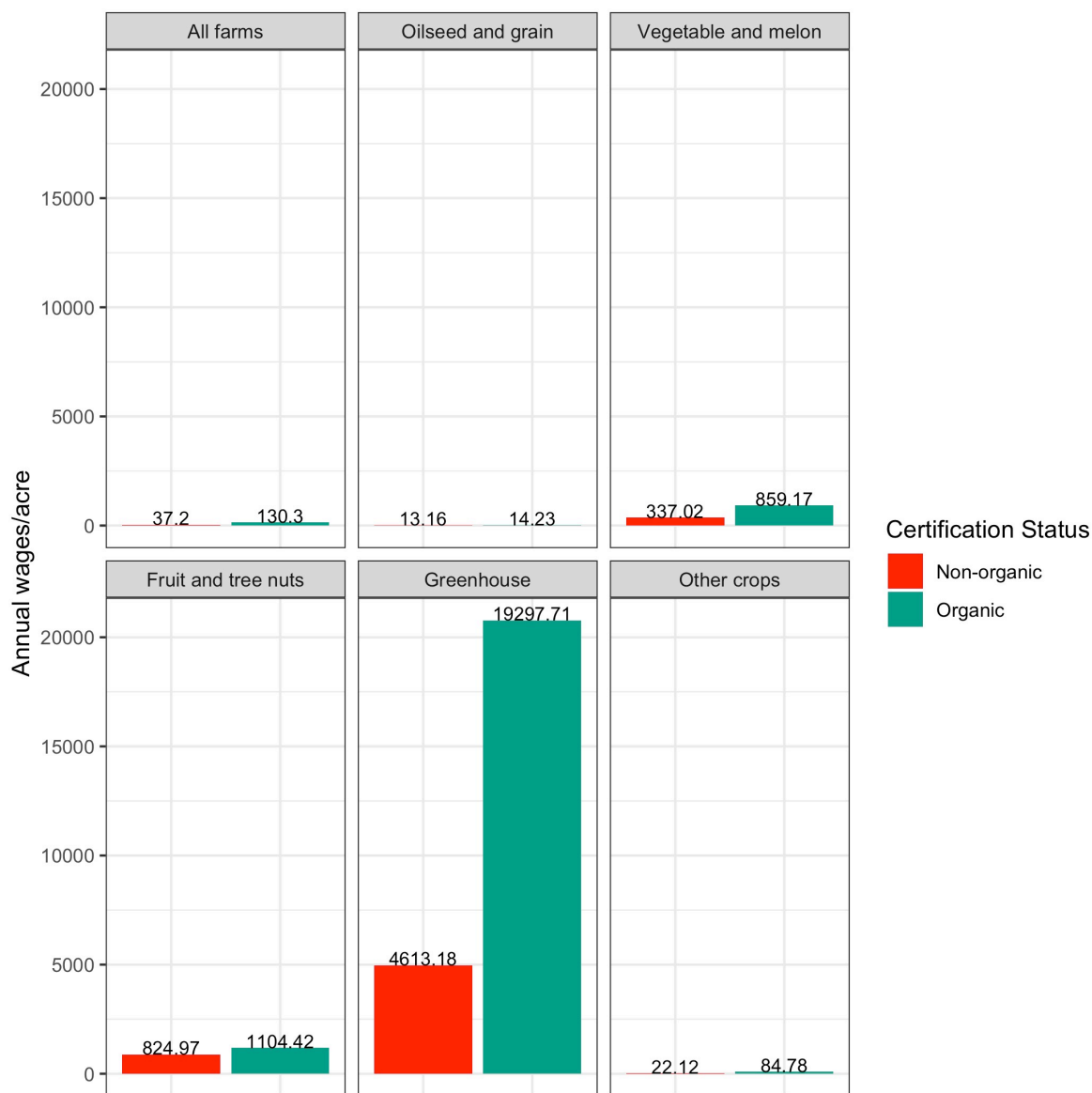


Figure 3.6. Labour intensiveness based on amount spent on wages annually per acre by certification status and industry type.

Note that this data was only available for 2011 instead of 2016 like all other variables in this section.

Table 3.3. Summary of results comparing organic with non-organic farms.

Directionality of results for how organic compares to non-organic farms are shown in aggregate and by each control variable (farm size, industry and region). + indicates where organic farms had higher values for a given measure than non-organic, - indicates where organic farms had lower values, and +/- indicates variable patterns by the control variable. † indicates summary based on available data where some values were suppressed.

Construct	Variable	Measure	Hypothesis	Aggregated Result	Control variable		
					size	industry type	region
Labour	Labour demands	Employees/acre	+	+	+	+/-	+ †
		Employees/farm		+	+	+/-	+ †
		Wages/acre		+	+	+	+ †
		Wages/farm		+	+	+/-	+ †
	Seasonal distribution of labour	Ratio of year-round to seasonal employees	+	+	+/-	+/-	+/- †
Capital	Capitalization	Value in capital/acre	-	+	+	+/-	+
		Value in capital/farm		-	+/-	+/-	+/-
Profit	Profitability	Profit/acre	+	+	+	+/-	+/-
		Profit/farm		-	+/-	+/-	+/-
BMPs	Cover cropping	Proportion of farms	+	+	+	+	+
	Green Manures	Proportion of farms		+	+	+	+
	Windbreaks/Shelterbelts	Proportion of farms		+	+	+	+
Unmanaged habitat	Woodlands and Wetlands	Proportion of farm area	+	+	+	+/-	+
		Proportion of farms		+	+	+	+
	Unmanaged Pasture	Proportion of farm area		-	+/-	+/-	+/-
		Proportion of farms		-	+/-	+/-	+/-
Pesticide inputs	Herbicide Use	Proportion of cropland area	-	-	-	- †	-
		Proportion of farms		-	-	-	-
	Insecticide Use	Proportion of cropland area		-	-	-	+/-
		Proportion of farms		-	-	-	-
	Fungicide Use	Proportion of cropland area		-	-	-	+/-
		Proportion of farms		-	-	-	-
Nutrient inputs	Manure Use	Proportion of cropland area	+	+	+	+	+ †
		Proportion of farms		+	+	+	+
	Fertilizer Use	Proportion of cropland area	-	-	-	-	-
		Proportion of farms		-	-	-	-

Seasonality of labour demands. Using the ratio of year-round to seasonal employees, we found that at the national scale, organic farms do provide more year-round employment than non-organic farms, but that this result varies by industry category, farm size and region (Figure 3.7, Table 3.3). The aggregated result was consistent with our hypothesis based on findings from Guthman (2014), who hypothesized that organic farmers would be more invested in spreading labour throughout the year and ensuring a committed, reliable labour force due to the knowledge-intensive nature of organic production methods. Finley et al (2018) also find evidence of more year-round employment of organic agriculture in the US. Yet, the variation in this pattern by all control variables suggests more research is needed to better determine to what extent and under what conditions the seasonality of labour is a function of organic approaches to agriculture rather than differences in sector makeup between organic and non-organic farms (including crop type and bioregional differences).

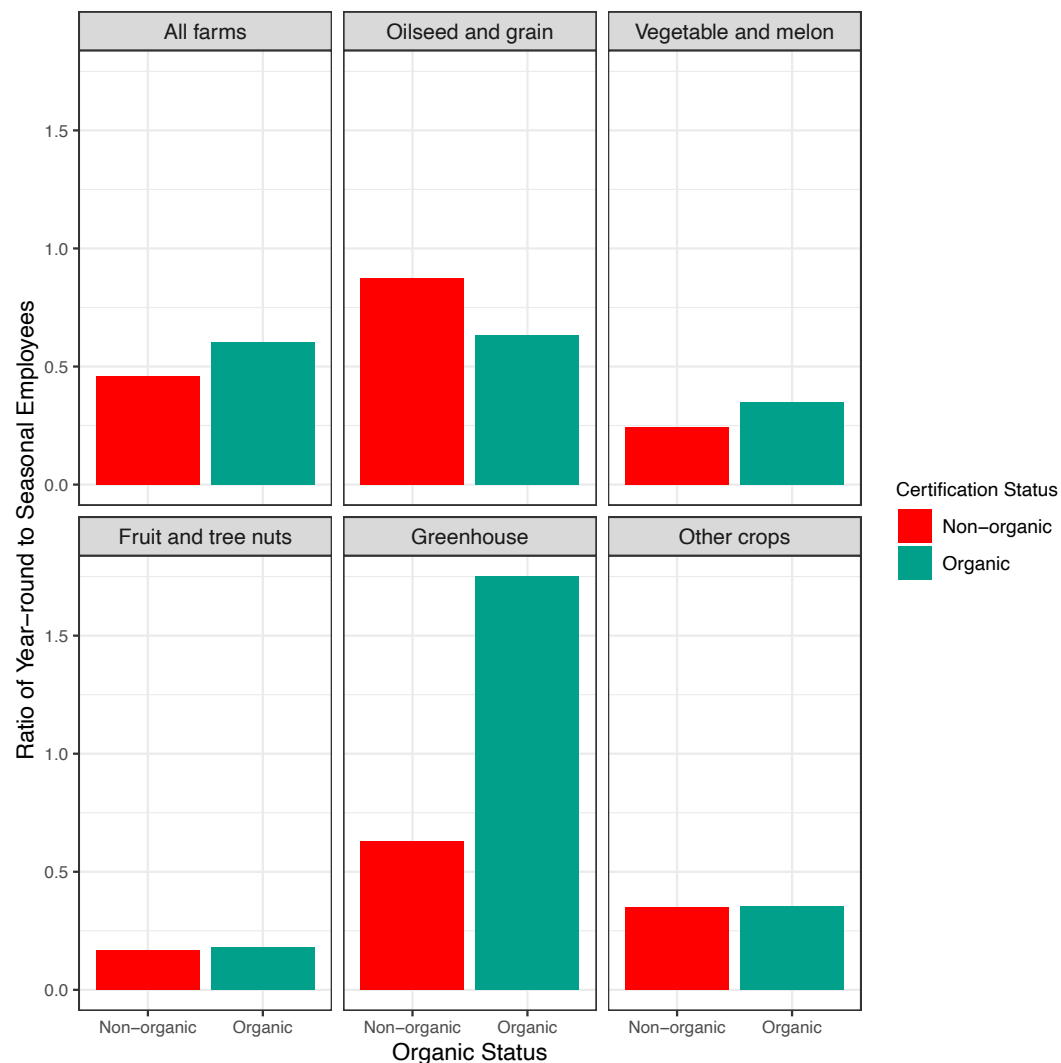


Figure 3.7. Ratio of year-round to seasonal employees on organic and non-organic farms by industry.

Capital. In aggregate, organic farms are more capital-intensive on a per acre basis than other farms in Canada, and this is consistent across farm size, region and for most industry types except fruit and tree nuts. Organic farms in BC stand out as having significantly higher values for capital per acre (Figure 3.8). On a per farm basis, however, non-organic farms are slightly more capitalized, driven by large farms, and farms in the “Oilseed and grains”, and “Vegetable and Melon” industry categories (data not shown). The mixed results by different control

variables and between per farm and per acre measures thus suggest that organic certification does not drive patterns in capitalization.

The imprecise nature of control variables in the census raises further uncertainty. Because these values are largely determined by value in land and buildings, we would expect to see pronounced patterns based on region, as well as by industry. Similar to labour demands, it is likely that more detailed information about region and crop type or industry subgroup would explain more of the variation in capitalization. For example, we might expect the high demand for organic vegetables and fruits in Metro Vancouver to contribute to a relatively disproportionate presence of small organic farms in the Greater Vancouver area and Fraser Valley, where agricultural land is substantially more expensive than other regions in the province where there may be relatively fewer organic farms. This would result in organic farms being more capital-intensive than their non-organic counterparts in BC. And, once again, the higher values for capital on organic farms are also driven by disproportionately high values for organic farms in the “greenhouse” industry category, which has a makeup that is quite different from non-organic farms in the same category (Figure 3.3). In sum, the data do show that certified organic farms have higher values of capitalization on a per acre basis when aggregated at a national scale, but we are not able to discern how much of these patterns are due to more detailed patterns in farm size, industry type or region.

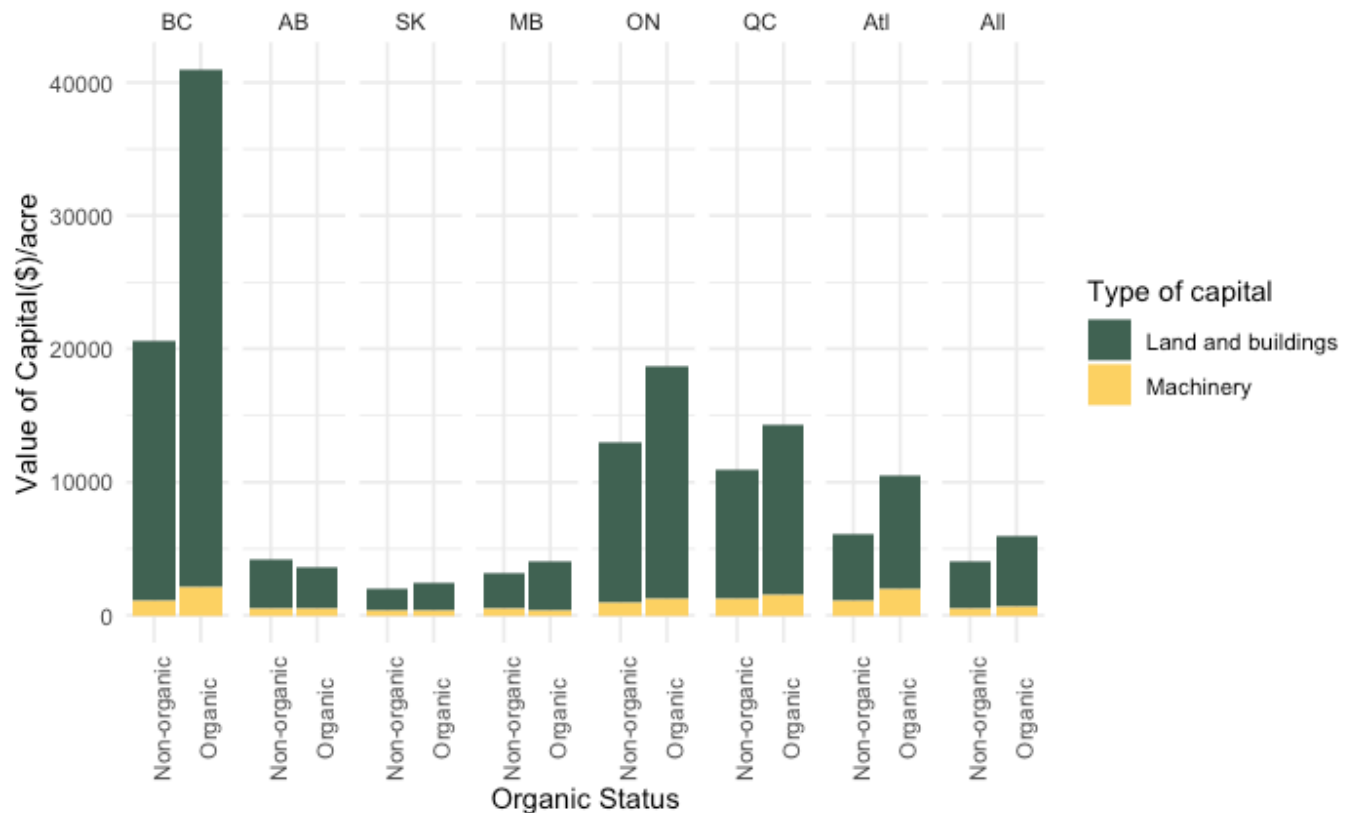


Figure 3.8. Value in capital per acre by type, certification status and region.

Profitability. In aggregate, organic farms are more profitable on a per acre basis across all size categories, and for most types of crops and regions, with the exception being oilseed and grain farms and farms in Alberta, where non-organic farms are slightly more profitable on a per acre basis (Table 3.3). In BC, Ontario and Quebec, organic farms (aggregated by all industry types) were more than twice as profitable per acre than other farms in the region; however, these differences are due at least in part to the presence of highly profitable organic greenhouses. On a per farm basis, however, the results were more mixed, with organic farms being less profitable in aggregate (Figure 3.9). This was largely driven by large farms, oilseed and grain and vegetable

and melon farms, and farms located in the prairie provinces of Saskatchewan and Alberta, where non-organic farms outperform organic farms in terms of profitability.

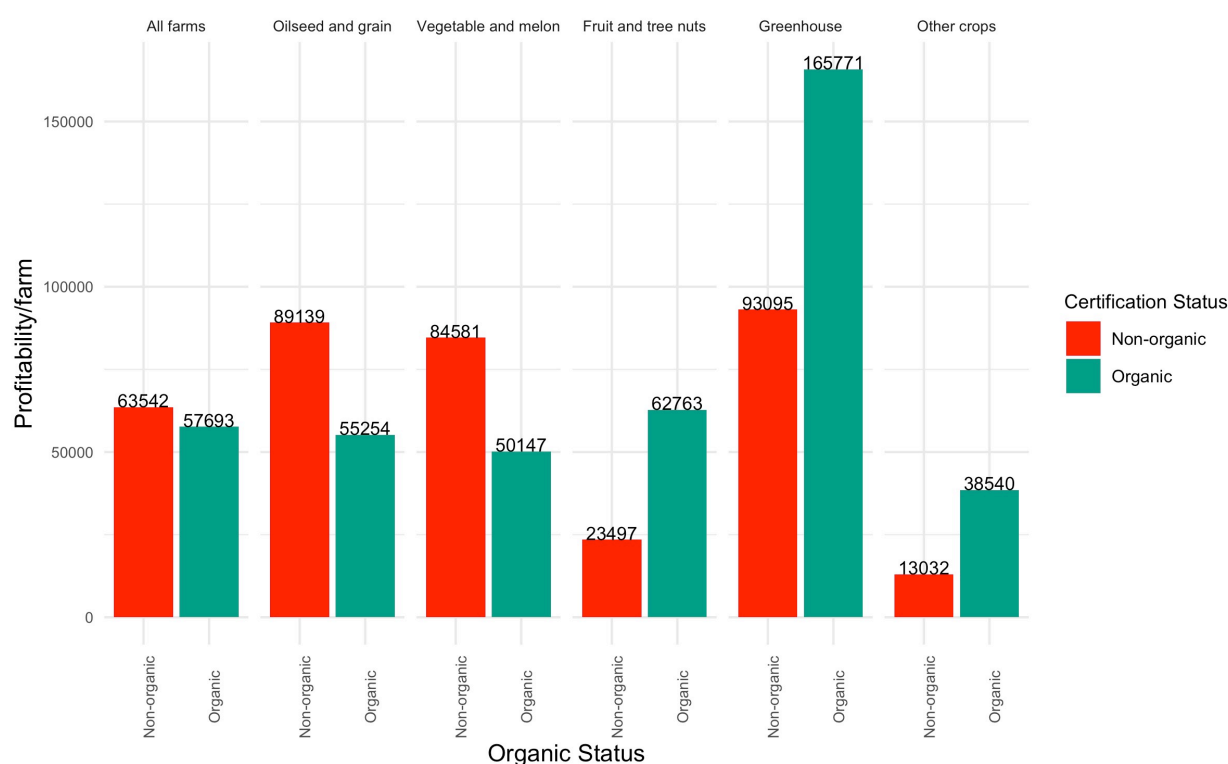


Figure 3.9. Profitability per farm by certification status and industry.

Summary. For all farms at the national scale, organic certification is associated with increased labour demands, capitalization (per acre) and profitability (per acre). Because of the complete and representative nature of the aggregate values in this dataset, these relationships are real. However, the patterns are more divergent when examined by control variables of farm size, industry, and region (Table 3.3). Even where patterns are more consistent (for instance, for the value in capital per acre), we still find divergent patterns when we examine the data by available control variables (with the exception being for wages/per acre as a measure of labour demands). Because of the complex interplay between these independent variables, as well as the imprecise

nature of the categories of control variables, it is difficult to make conclusions about what is actually driving the patterns in these socio-economic variables.

3.3.3 Ecological differences

BMPs. Organic farms use more ecologically beneficial management practices across farm size, region and industry categories (use of cover cropping, green manures, and windbreaks and shelterbelts) (Figure 3.10, Table 3.3). This is consistent with our original hypothesis, which was based on the content and strength of requirements related to BMP use in the Canadian organic standards.

Nutrient inputs. Our results suggest that organic farms are substituting cover cropping, green manures and the application of animal manure for fertilizer use. While we cannot test this relationship directly due to the aggregated nature of the data, the much lower rate of fertilizer use on organic farms on a per farm (Figure 3.10) and a per acre basis corresponds with higher use of cover cropping, green manures and manure use on organic farms. These results were in line with our hypotheses for nutrient input use.

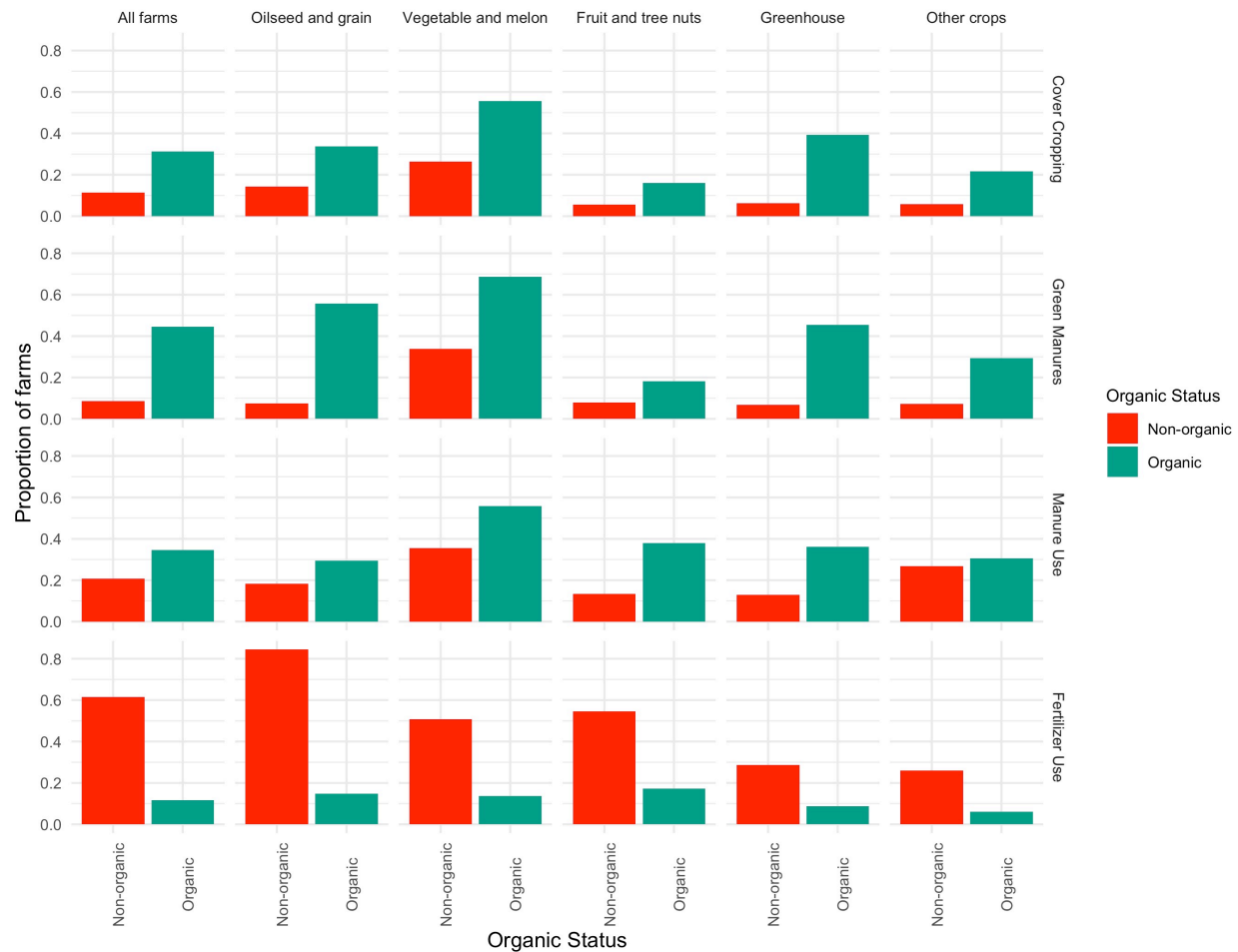


Figure 3.10. Nutrient management strategies (proportion of farms) by industry and certification status.

Pesticide inputs. We also found that a lower proportion of organic farms use herbicides, insecticides, and fungicides compared to non-organic farms (Figure 3.11). In terms of the acreage on which pesticides are applied, organic farms also had consistently lower values, but with one notable exception: the area on which insecticides and fungicides were applied (analyzed as a proportion of total area in cropland) was higher on organic farms than non-organic farms in BC. While this finding seems counter-intuitive given the strict regulations against synthetic input use on organic farms in Canada (Klassen, Luna Perez, et al., 2022), it could be the result of

several contextual factors unique to BC. The first is the relatively higher proportion of organic farms growing vegetable and fruit in BC, which require higher use of pesticides (regardless of organic certification; organic pesticides are available for some pests). The second is the relatively smaller size of organic vegetable farms in BC compared to non-organic counterparts, which also suggests more intensive management of organic farms. However, we cannot test this hypothesis as the data are suppressed when looking at aggregated values by industry and crop type at the same time. It is also important to note here that neither of these measures (proportion of farms using products, or the area on which products were applied) indicate the concentration of use or the toxicity/environmental impacts of products applied, as these are not specified in the census collection process.

Despite this anomaly, overall organic farms show consistently lower rates of pesticide use, including in terms of proportion of area on which pesticides are applied by industry type. Given the stringency of Canadian organic standards in terms of both nutrient and pesticide input use, it is not surprising that we would find that certification is strongly and negatively associated with their use across farm size, industry and region categories.

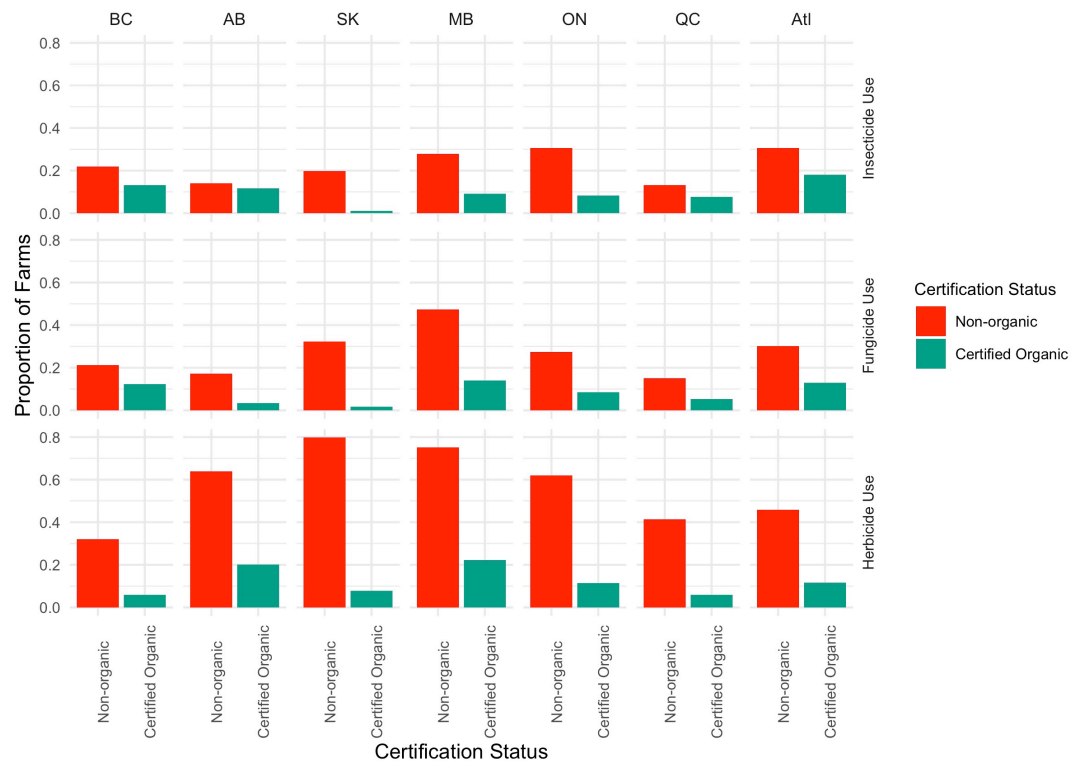


Figure 3.11. Proportion of farms using pesticide inputs by organic status and region.

Unmanaged habitat. The two variables for unmanaged habitat, woodlands and wetlands and unmanaged pasture, show different patterns when comparing certified organic and non-organic farms. Organic farms have higher presence of and area in woodlands and wetlands across nearly all control variables (Table 3.3), with the exception of the value for fruit and tree nut farms standardized by area (Figure 3.12). In terms of unmanaged pasture, organic farms have lower values in aggregate, but the control variables showed more variable patterns (Table 3.3). Organic farms have higher values for proportion of farms reporting unmanaged pasture for all industry types other than “other crop farming”, where the presence of unmanaged pasture was much higher, likely because of the significantly larger proportion of farms in this category in hay production, which is more likely to be a part of or adjacent to unmanaged pasture. The patterns

in unmanaged pasture across regions were similar, with the exception being farms in BC and Alberta, where non-organic farms reported slightly higher values than organic.

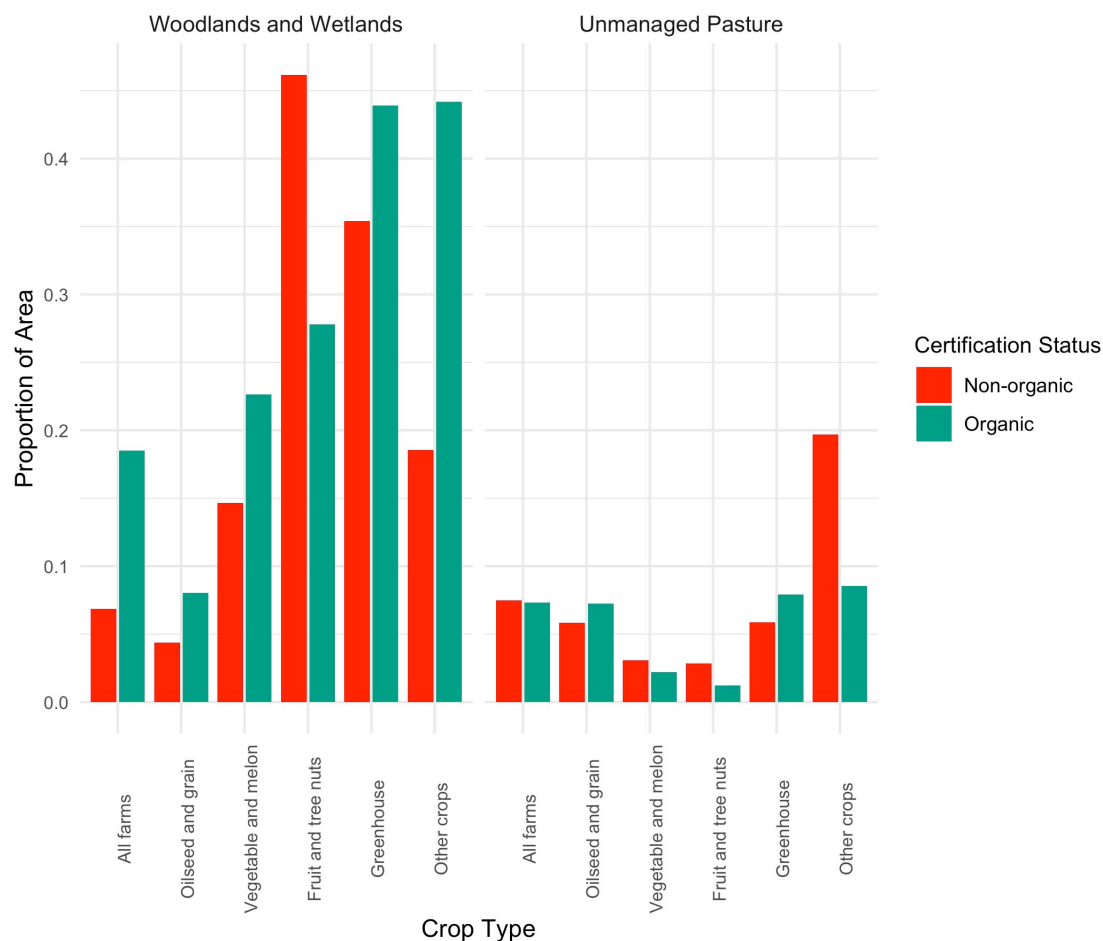


Figure 3.12. Proportion of area in unmanaged habitat by industry type and certification status.

Summary. In general, we found consistent results across all control variables for higher levels of ecological management in organic farms, with data showing higher BMP and manure use, lower pesticide and fertilizer use, and higher presence of habitat. The exception was unmanaged pasture, which varied by size, industry and region. In their survey of organic fruit and vegetable farmers in the US, Liebert et al. (2022) found strong evidence that larger farms were less likely to adopt agroecological practices such as cover cropping and border plantings. In stark contrast, our population-level data for vegetable and melon farms in Canada show consistently higher

values for BMP use and habitat variables for larger farms than smaller farms (in terms of the proportion of farms using a given practice) (Figure 3.13). While further research is needed to understand why larger farms are more likely than smaller farms to adopt many of these BMPs, this finding supports our conclusion that organic certification supports more ecologically sustainable farming practices in Canada.

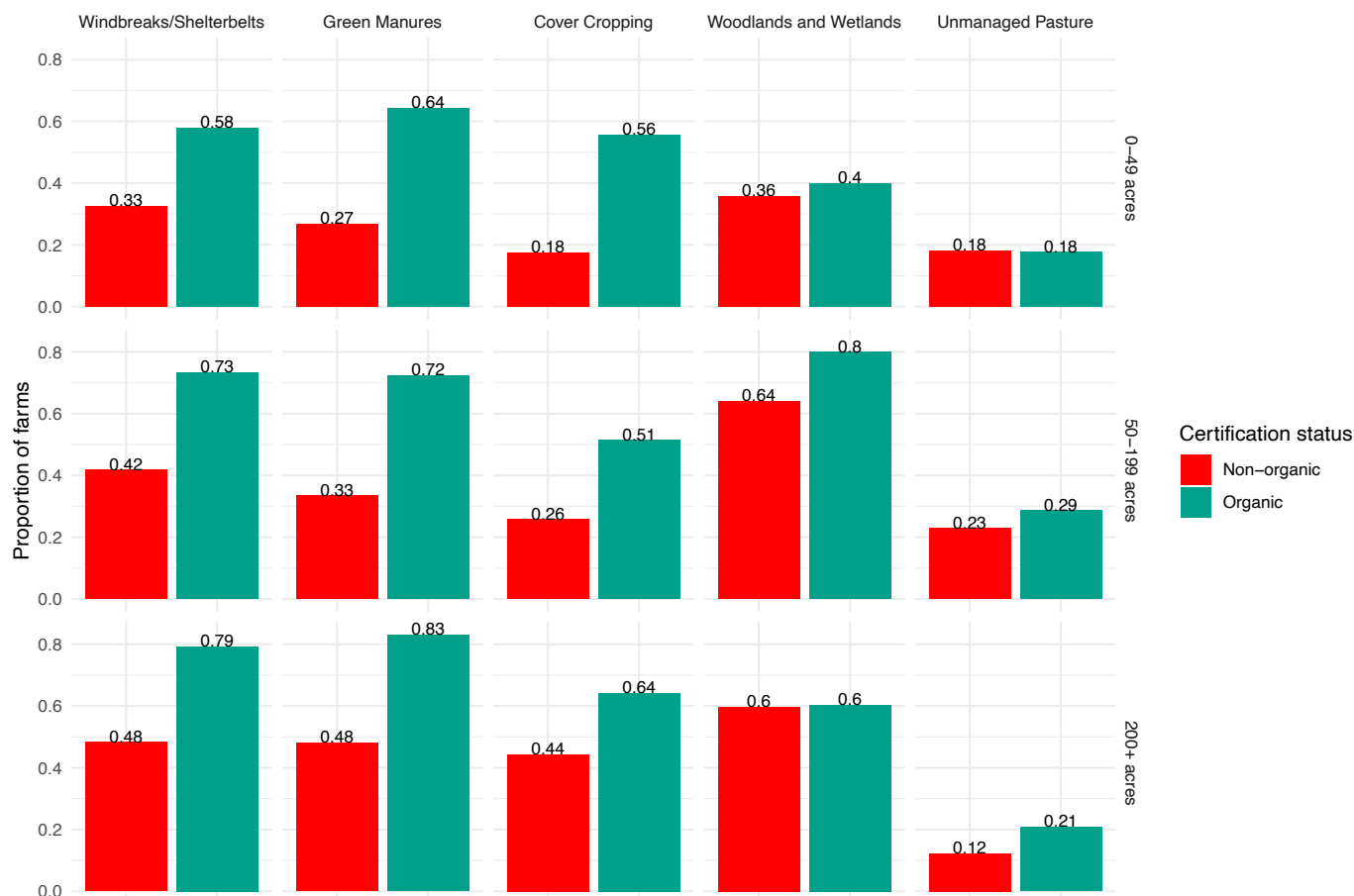


Figure 3.13. Ecological management practice adoption by farm size category for vegetable and melon farms.

3.3.4 Socio-ecological change over time

Organic farms show a faster increase over time and higher absolute values for all three socio-economic variables of farm management – value of wages paid to employees, capitalization, and profitability – on a per acre basis (Figure 3.14a, c and e). The value of wages

(per acre and per farm) on organic farms increased at a much faster rate for organic farms than non-organic farms (Figure 3.14e and f), contrary to our hypothesis (Table 3.4).

The value of capital per acre increased faster for organic farms than non-organic farms, with higher absolute values for all years (Figure 3.14a). However, on a per farm basis, the relative increase in capital was larger for non-organic farms between 2011 and 2016 (Figure 3.14b). This is not unexpected given that non-organic farms are larger on average. Trends in profitability show a similar trend to capital, with organic farm profitability per acre increasing faster than for non-organic farms (Figure 3.14c), and showing a similar rate of increase on a per farm basis (Figure 3.14d). Our results for capital and profit were in line with our hypotheses (Table 3.4). These results suggest that organic farms are, in aggregate, intensifying in terms of socio-economic aspects of production – with higher capital investments, profits and more money spent on wages per unit of farm area – at a relatively faster rate than non-organic farms. See Appendix C.1 for relative changes in socio-economic variables.

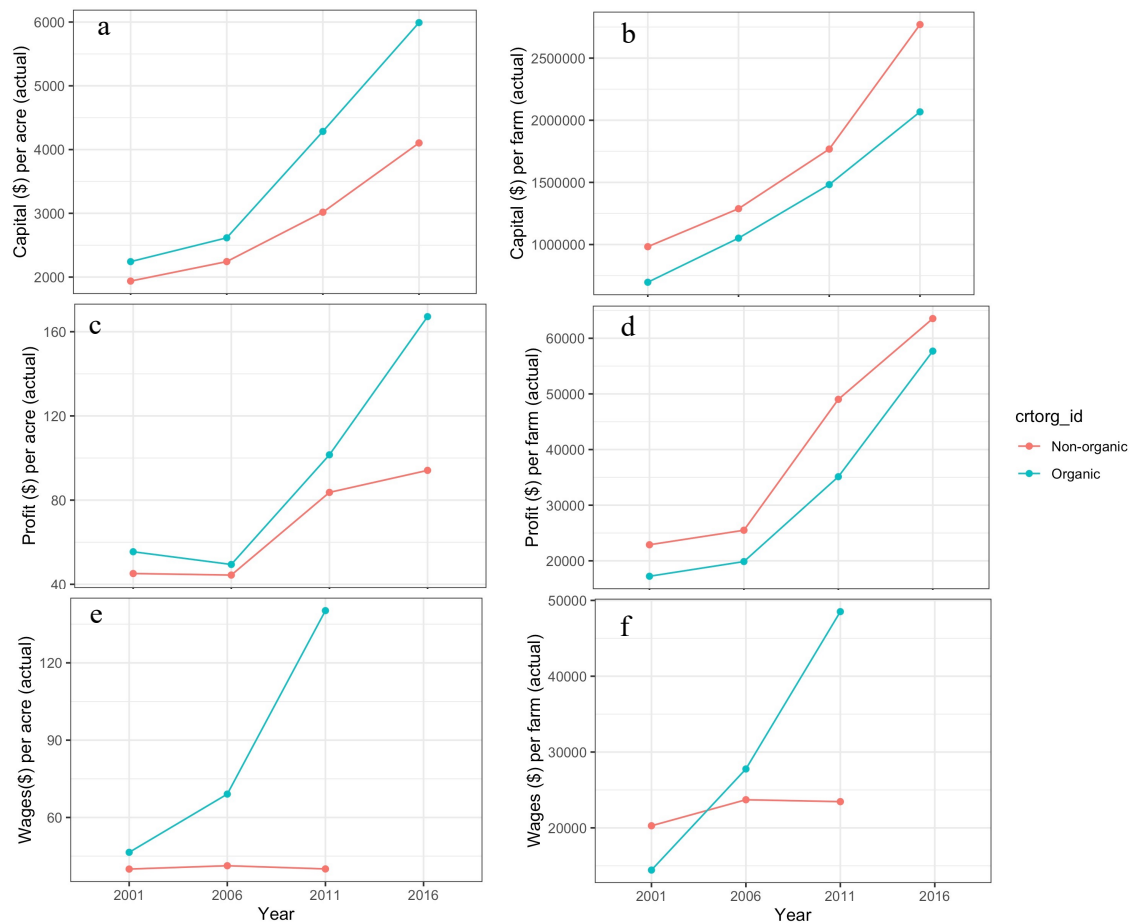


Figure 3.14. Absolute change in socio-economic variables (2001-2016).

Figure shows value of capital per acre (a), value of capital per farm (b), profit per acre (c), profit per farm (d), value of wages per acre (e) and value of wages per farm (f). All values have been adjusted for inflation. See Appendix C.1 for relative change in socio-economic variables.

Table 3.4. Summary of results relative to hypotheses for change over time, relative to non-organic.

Teal indicates an increase in the measure for organic, whereas orange indicates a decrease. The lightness or darkness of the colour indicates how organic changed relative to non-organic, where darker colours indicate a faster rate of change for organic than non-organic, and lighter indicates a slower rate of change.

Construct	Measure	Hypothesis	Result
Labour Demands	Wages per acre	(-) Labour demands on organic farms will decrease at a faster rate	(+) Increased at a much faster rate
	Wages per farm		(+) Increased at a much faster rate
Economic Capital	Capital per acre	(+) Value in capital will increase over time at a faster rate	(+) Increased at a faster rate
	Capital per farm		(+) Increased at a slightly slower rate
Profitability	Profit per acre	(+) Profitability will increase at a faster rate	(+) Increased at a faster rate
	Profit per farm		(+) Increased at a similar rate
BMPs	Proportion of farms adopting windbreaks/shelterbelts	(-) Ecologically beneficial management practice use will decrease for organic farms, but increase for non-organic farms	(+) Increased at a similar rate
	Proportion of farms adopting green manures		(-) Decreased at a faster rate
	Proportion of farms adopting cover cropping		(+) Increased at a similar rate
Unmanaged habitat	Proportion of area in woodlands and wetlands	(-) Unmanaged habitat will decrease at a similar rate	(+) Increased at a faster rate
	Proportion of farms with woodlands and wetlands		(+) Increased at a slightly faster rate
	Proportion of area in unmanaged pasture		(-) Decreased at a similar rate
	Proportion of farms with unmanaged pasture		(-) Decreased at a slightly faster rate
Nutrient inputs	Fertilizer use (proportion of cropland)	(+) Nutrient input use will increase at a faster rate	(-) Decreased at a faster rate
	Fertilizer use (proportion of farms)		(-) Decreased at a similar rate
	Manure use (proportion of cropland)		(+) Increased at a faster rate
	Manure use (proportion of farms)		(-) Decreased at a similar rate
Pesticide inputs	Herbicide use (proportion of cropland)	(+) Pesticide input use will increase at a faster rate	(-) Decreased at a faster rate
	Herbicide use (proportion of farms)		(-) Decreased at a similar rate
	Insecticide use (proportion of cropland)		(+) Increased at a slower rate
	Insecticide use (proportion of area)		(+) Increased at a similar rate
	Fungicide use (proportion of cropland)		(+) Increased at a much slower rate
	Fungicide use (proportion of farms)		(+) Increased at a slower rate

In terms of relative changes in ecological management, organic farms show similar trends to non-organic farms on a per farm basis, with one notable exception: there was a relative decrease in the number of organic farms that use green manures compared to non-organic farms (see Appendix C.2). The decreased use of green manures on organic farms was in line with our original hypothesis of decreased BMP adoption over time. However, absolute values still show much higher adoption of this practice among organic farms (Figure 3.15). Furthermore, the other two BMPs show either increased or similar rate of use by organic farms compared to non-organic farms, which contrasted with our hypothesis. Relative changes for pesticide use, nutrient inputs and habitat measures were all similar on a per farm basis. See also Appendix C.3 for absolute changes in all ecological management variables on a per farm basis.

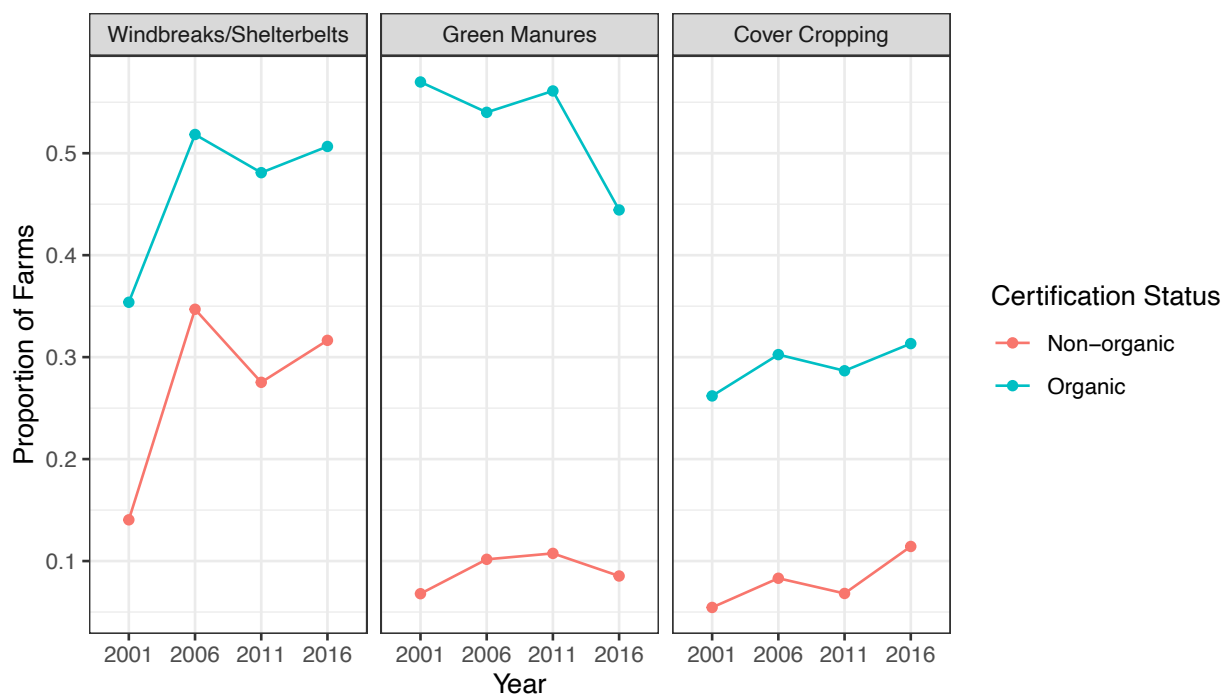


Figure 3.15. Absolute change in the adoption of BMPs over time by organic certification status.

The measures for the proportion of farm area associated with different management practices shows a slightly different picture, as most variables showed different trends for organic farms than non-organic farms (Figure 3.16), and none of the results were in line with what we hypothesized (Table 3.4). Organic farms showed a decrease in the use of herbicides and a relatively flat trend in fungicide and insecticide use, whereas non-organic farms showed a marked increase in fungicide use, and smaller increases for insecticides and herbicides. For nutrient inputs, manure use increased for organic farms but decreased for non-organic farms, and fertilizer use decreased for organic farms but increased for non-organic farms. Finally, we saw an increase in the proportion of area on organic farms devoted to woodlands and wetlands, whereas this measure remained constant on non-organic farms, and a very slight decrease in the amount of unmanaged pasture on organic farms, whereas this remained constant for non-organic farms. As discussed in the previous section, absolute values for pesticide use and fertilizer use were higher on non-organic farms, and rates of manure use and habitat measures were similar (see Appendix C.4).

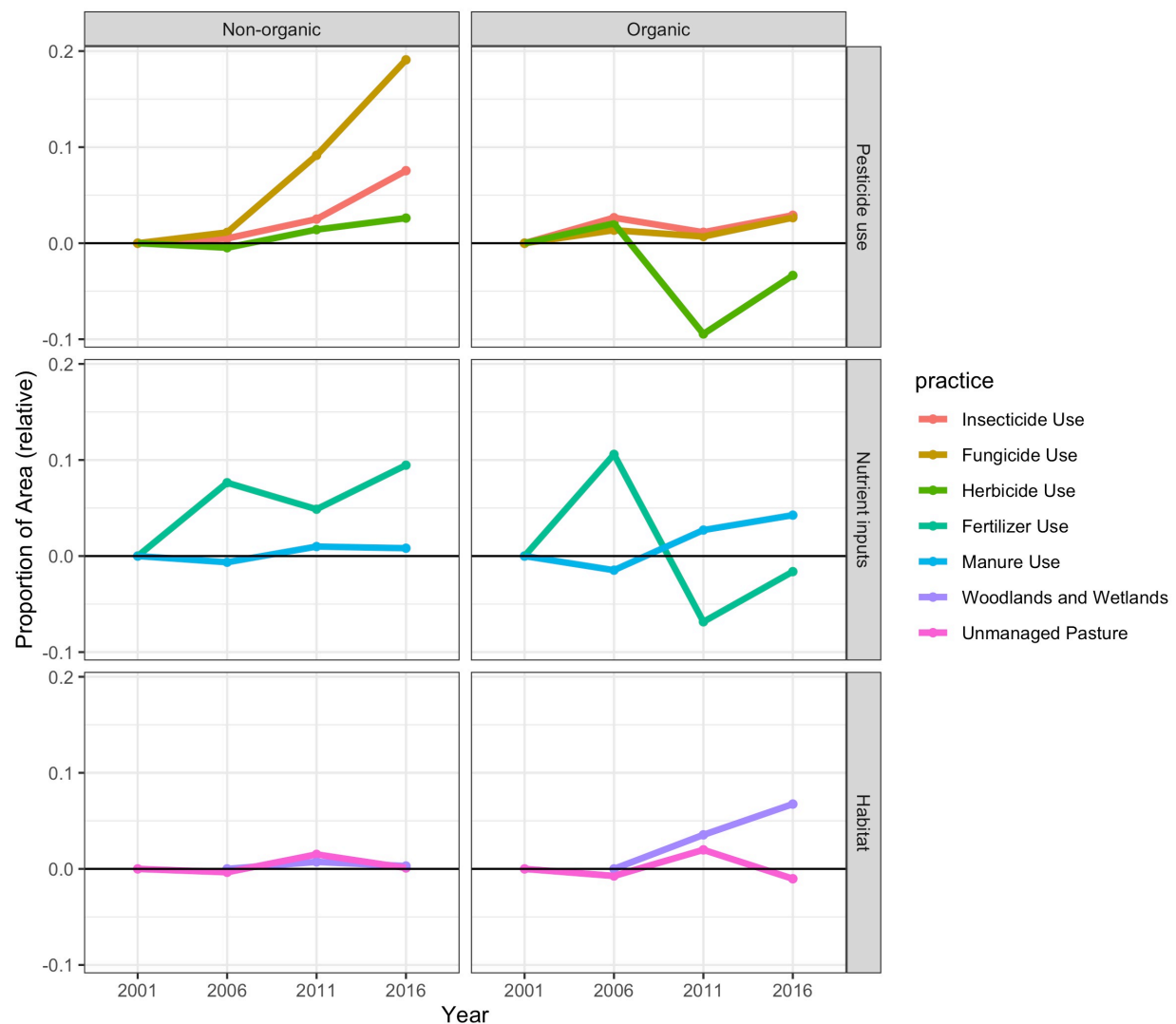


Figure 3.16. Relative change in ecological management (proportion of area)

However, as with the results from section 3.3.3, many of these trends vary by industry type. For instance, in contrast to the nationally aggregated data across all industries, organic farms in the fruit and tree nut category show an *increase* in average area on which herbicides are applied between 2006 and 2011, and an increase for the same years for farms in the greenhouse category (Figure 3.17). Unfortunately, the values for the 2016 census year are suppressed for

both industry categories. While exploring trends in all management variables by all control variables is outside the scope of this paper, it is important to acknowledge the role that crop type, region, farm size and other factors embedded in the context of production that are not captured in this research.

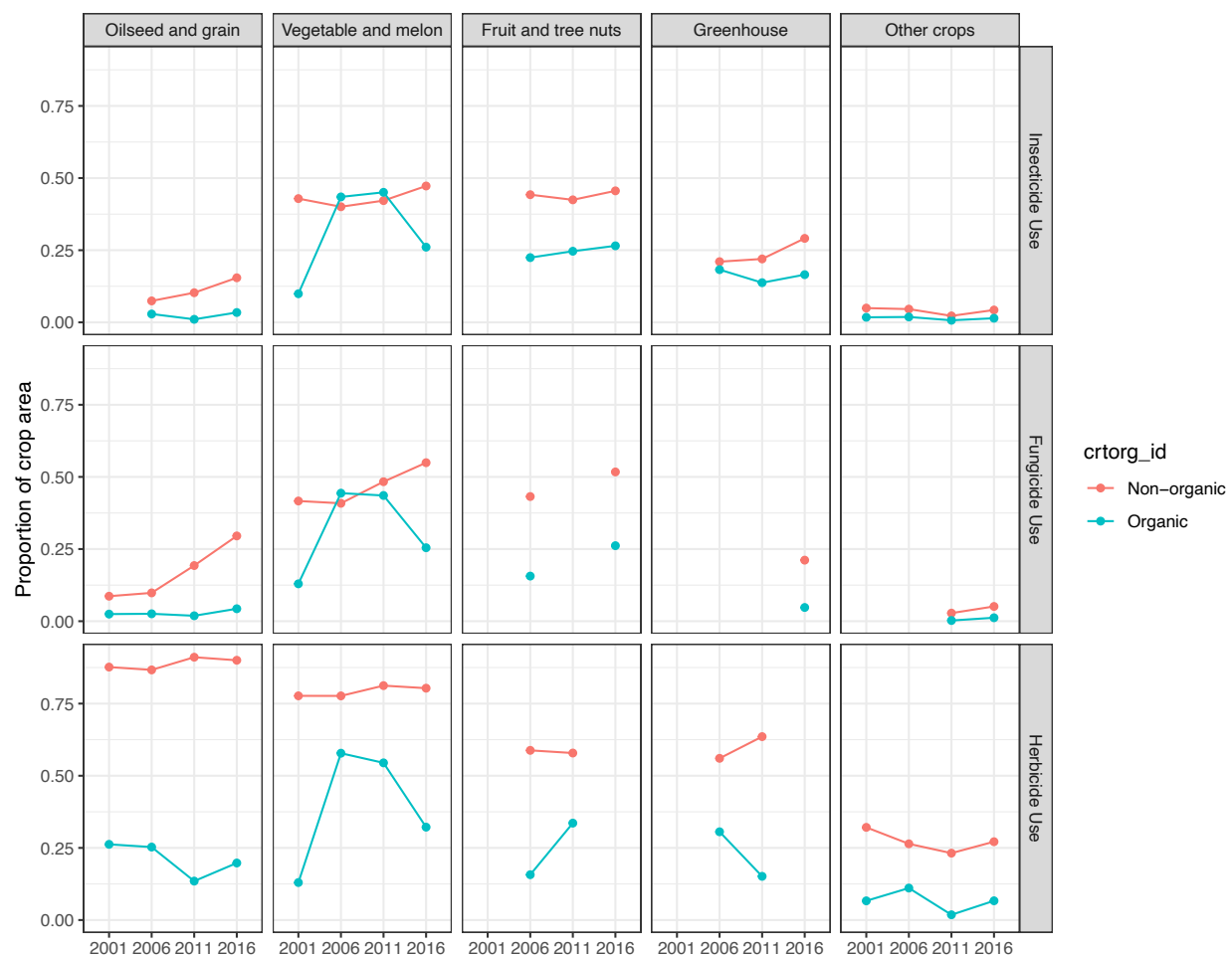


Figure 3.17. Change in pesticide use (proportion of area) over time by industry type.

Plot shows several suppressed values for fruit and tree nuts, greenhouses and other crops.

In summary, we found that relative trends for several management variables on organic farms were similar to non-organic farms, especially measures that looked at data on a per farm basis (e.g. nutrient inputs, habitat, and profitability per farm). Despite these similarities in

relative trends, many of the actual values are quite different between groups, such as for proportion of farms adopting cover cropping and reporting windbreaks/shelterbelts. The similar trends for many variables suggests similar pressures and contexts of production over time, despite differences in socio-ecological characteristics.

The findings of this study do not support our hypothesis that organic farms in Canada are becoming more ‘conventionalized’ writ large, and instead, suggests a more complex picture of change happening in the organic sector in Canada than conventionalization theory would suggest (Hall & Mogyorody, 2001). While it is difficult to make conclusions about what is driving these patterns, the data support an overall trend of intensification of people, process and profit-related inputs in the organic sector in Canada, with relatively greater increases in labour inputs, cover cropping, windbreaks/shelterbelts and manure use coupled with decreased or similar use of pesticides and fertilizers on a per acre basis.

3.4 Conclusion

The patterns illustrated above suggest that organic farms are, in aggregate, distinct from other farms in terms of the socio-economic and ecological aspects of farm management, and have evolved significantly over the 15 year period included in this analysis. The data suggest that organic farms are relatively more intensified in terms of socio-economic variables – that is, they show higher values of capital, labour inputs, and profit per acre than non-organic farms. However, variability in these patterns by control variables of industry, farm size as well as limitations of the data make it challenging to conclude what drives these patterns. In contrast, ecological variables indicating use of BMPs, pesticides, nutrient inputs and habitat management show more consistent results across control variables, and benefit from more complete data. The

data show patterns of more ecologically intensive and process focused management in organic relative to non-organic, that is, higher use of BMPs on organic farms to complement lower fertilizer use, lower use of pesticide inputs, while also showing evidence of conservation of woodlands and wetlands (Bommarco et al., 2013; Kremen & Miles, 2012). Perhaps unsurprisingly, the most consistent of these results were in line with regulated organic practices as outlined in organic standards such as replacing pesticide and fertilizer inputs with ecological approaches to farm management. The analysis of changes over time also reflect intensifying socio-ecological management (more rapid increases in people, profit and many ecological processes per acre) in organic than non-organic, and complicates hypotheses based on theories of the conventionalization of organics.

A significant contribution of this research was the inclusion of labour in our analysis both as a farming system input and an aspect of social sustainability. However, limited data, inconsistent measures between years, and suppressed values made any patterns and trends in labour-related variables difficult to discern. As food systems researchers, we feel it is worthwhile to underscore this as a constraint in understanding this crucial component of the farm business (Meyfroidt et al., 2019; Minkoff-Zern, 2017). Moreover, the measures leveraged here are themselves limited as they obscure labour that is unpaid, including domestic and reproductive labour that support the farm business as well as the labour inputs of operators that do not pay themselves a wage or salary. Scholars have cautioned against such an approach to accounting for labour specifically in organic production systems (Jansen, 2000). Other than our indicator of the seasonality of labour, there is little information captured by the census relating to the quality of work in agriculture despite its importance for sustainable food futures (Klassen, Medland, et al., 2022). For instance, more information on pay type or wage structure (e.g. piece rate pay) would

be extremely informative, as this has been shown to be an important predictor of working conditions in agriculture (Soper, 2019, 2021).

A major limitation in this analysis was the granularity of control variable categories. Especially for socio-economic variables, many of these differences between organic and non-organic did not bear out across farm size, industry or region. For instance, measures relating to labour demands and capital (especially on a per acre basis) revealed that values for the greenhouse, nursery and floriculture sector were consistently and disproportionately higher than their non-organic counterparts than for other industry types. While this does not negate the overall result, it is likely explained by the relatively higher proportion of vegetable greenhouses as opposed to tree nurseries, in other words, variation within this very broad category of industry type. The classification of farms based on their “primary industry type” does serve analytical purposes, but it also obscures secondary and tertiary cropping systems that may be equally or even more important to the farmer themselves for reasons other than area or extent of production.

Improving access to disaggregated farm-level data (micro data) would enable a much greater understanding of the circumstances under which farmers adopt key practices for socio-ecological sustainability, as it would enable ‘apples to apples’ comparisons of this adoption. For instance, micro-data would enable researchers to examine sub-regional patterns and trends that coincide with patterns in land prices, market demands and bio-regions. The way that census data are classified and made available to researchers limits our understanding of the possible socio-ecological benefits and services being supported in Canadian agriculture. At least 11 countries provide publicly accessible micro data for agriculture, including Mexico, Colombia, Namibia and Indonesia (FAO, 2021). Solutions-oriented research and public policy development depend not only at looking at dominant trends and what neatly fits into pre-conceived categories, but our

ability to examine the cases (in this case, farms) that depart from what we consider the “norm”, and the variation within categories.

Despite the limitations of the agricultural census dataset, this analysis highlights the distinctiveness of organic farming operations in Canada, while also underscoring the imperative to look beyond the averages of the diverse category of organic farms and look at the diverse patterns within it. We are wary of re-enforcing the tired organic-conventional binary (Mehrabi et al., 2017; Sumberg & Giller, 2022), and wish to underscore the limitations of the dataset presented here and suggest that the results presented here should be interpreted with caution. Over and above our conclusions about aggregate trends, this analysis offers a cautionary tale about conflating broad categories of organic certification with more structural trends driven by socio-economic context and realities of specific industries and crop types.

Chapter 4: Diversification, job quality and organic certification: A survey-based analysis of BC vegetable farms

4.1 Introduction

Ongoing socio-ecological crises have underscored the imperative to transition to more sustainable ways of producing food (Crippa et al., 2021; IPES-Food, 2020; Vandermeer et al., 2018). While technology-focused propositions of worker-less fields and lab-grown meat are advanced by corporations and entrepreneurs, diverse groups including peasant-led social movements, scientists and urban eaters are calling for an agriculture that promotes both social wellbeing and ecological health (IPES-Food et al., 2021). Two components of a more sustainable approach to food production are agroecological diversification and job quality. Diversified farming systems have been shown to have numerous sustainability benefits, including pest suppression, drought resilience, improved pollination, and soil health (Kremen & Miles, 2012). Diversified farming systems also tend to be less reliant on product-based inputs and mechanization, replacing these with ecological and manual processes that can be more labour intensive, with implications for rural employment and labour costs (Crowder & Reganold, 2015; Finley et al., 2018; Garibaldi & Pérez-Méndez, 2019; Montt & Luu, 2019; Morison et al., 2005).

Yet, research into management practices used on organic farms and the standards that guide organic production have made it clear that certified organic agriculture is not necessarily ecologically diversified (Guthman, 2014; Klassen, Luna Perez, et al., 2022; Seufert et al., 2017). Despite research demonstrating that organic farms foster higher biodiversity than “conventional” ones (Bengtsson et al., 2005; Crowder et al., 2012; Gabriel et al., 2010; Tuck et al., 2014), other scientists have challenged the widely held view of organic as the best way to achieve more

biodiverse agriculture (Tschamntke et al., 2021). As such, more research is needed that investigates the variation within and drivers of diversification practices in organic systems, and the role that organic certification plays in supporting them.

At the same time, those who labour in agriculture experience some of the worst working conditions, including structural precarity (Preibisch & Otero, 2014; Strauss & McGrath, 2017; Weiler, Sexsmith, et al., 2020), coercive working conditions (Caxaj & Cohen, 2019), low remuneration (Sachs et al., 2014), isolation (Meierotto et al., 2020), suppression and exclusion from accessing rights (Gray, 2013), lack of access to healthcare (Hennebry et al., 2016), unsafe and toxic workplaces (Holmes, 2013), food insecurity (Minkoff-Zern, 2014b), and frequent injury (Simpson et al., 2004; Tricco et al., 2006). So, while growth in organic or diversified agriculture can potentially increase rural employment opportunities, providing more jobs in agriculture does not necessarily equate to greater social benefits. Progress toward diversified farming is not sustainable if it is at the expense of worker wellbeing.

As such, an important, but poorly understood, aspect of organic farming is labour relations and working conditions (Seufert & Ramankutty, 2017). Several pioneering studies looking at labour conditions in California challenged the assumption that organic agriculture's more holistic approaches to fostering a healthy agroecosystem extends to farm workers (Getz et al., 2008; Guthman, 2014; Shreck et al., 2006; Storch et al., 2009). While Medland (2016) found that workers in El Ejido, Spain, preferred working on organic farms due to health concerns, she also found a general "sameness" in terms of labour markets and conditions of production between organic and nonorganic farms in the region. Others have found that organic farms provided similarly poor working conditions to non-organic or "conventional" farms (Cross et al., 2008; Dumont & Baret, 2017). Soper's (2019) ethnographic research found that

economically vulnerable migrant workers often prefer working on conventional farms because of higher pay rates, despite their awareness of the health risks due to toxic pesticide exposure (Soper, 2021). Weiler and colleagues (2016) have shown how some farmers in Canada normalize farmworker precariousness, and obscure the systemic vulnerabilities and material realities of workers by focusing on individual goodness of farmers, inhibiting possibilities for collective action. In Canada, while some organic community members are working to better integrate “Fairness” for farmworkers into organic certification, these efforts are nascent (Klassen, Fuerza Migrante, et al., 2022). Moreover, while the increased labour demands of diversified and organic agriculture is clear, the relationship between diversification and job quality has not been well-investigated. This research seeks to better understand the variation in and drivers of diversification and job quality for hired workers in organic agriculture.

4.2 Diversification and organic certification

Diversified farming systems utilize practices that support functional biodiversity at multiple spatial and/or temporal scales (Kremen et al., 2012). Research has demonstrated broad benefits in terms of ecosystem services at farm and field scales (Kremen & Miles, 2012), overall ecosystem health (Isbell et al., 2017), landscape-scale biodiversity (Kremen & Merenlender, 2018), and nutrition and food security benefits (Amugsi et al., 2016; Bezner Kerr et al., 2007, 2021; Islam et al., 2018). Diversification practices of crop rotation and multi-cropping have been shown to benefit productivity in organic systems (Ponisio et al., 2015). However, the food supply (Khoury et al., 2014) and the biodiversity on which agriculture depends are generally becoming less biologically diversified in recent decades (Foley, 2005; Martin et al., 2019), even while

communities around the world support agrobiodiversity conservation through saving seed, maintaining traditional varieties and making new landraces (Montenegro de Wit, 2015).

A significant body of scholarly work has investigated pathways and barriers to agroecological diversification. This research has highlighted the important role that social networks, institutions and organizations play in supporting farms to diversify (Altieri & Toledo, 2011; Wittman, 2009). At the farm-level, motivations related to biodiversity conservation, farm income and financial capacity, farm size, and availability of labour have been highlighted as important predictors of diversification practices (Baumgart-Getz et al., 2012; Bowman & Zilberman, 2013; Prokopy et al., 2019). The complex array of enabling and disabling factors operate at multiple scales, and interact with one another (Blesh et al., 2021). Because organic management standards encourage (and in some cases, require) diversification practices, we would expect these practices to be more common on organic farms than non-organic farms (Klassen, Luna Perez, et al., 2022). Organic certification has the potential to help farmers overcome both financial and structural barriers to diversification, as it enables farmers to charge a premium for their products (Crowder & Reganold, 2015), and provides them with support and access to information through the array of organic networks and associations (DuPuis & Gillon, 2009).

Yet, several notable dynamics complicate the assumption that certified organic farms will have higher levels of diversification practices than other farms. First, the establishment, growth, and institutionalization of the organic movement into the contemporary organic industry has, in many cases, diluted sustainability-based principles (including diversification) on which the movement was based (Guthman, 2004). While the extent and nature of these changes are context-specific (Klassen, Luna Perez, et al., 2022), the continued evolution of organic

agriculture has compelled scholars to interrogate the variation within and overlap between different archetypes of production when it comes to agroecological management (Mehrabi et al., 2017).

Though relatively less well studied, a second and related development has been resistance to the transaction costs related to regulated third-party certification schemes, resulting in a significant group of farmers who subscribe to the organic movement's ideology and practices but choose not to certify as organic (Veldstra et al., 2014). In addition, public policies and programs across the globe have promoted environmental Best Management Practices (BMPs) among non-organic farms including diversification practices such as cover cropping and conservation or no-till agriculture (Awada et al., 2014; Wallander et al., 2021). The growth of "regenerative" agricultural approaches (which also overlap with diversified management practices) outside of organic certification have further blurred the lines between commonly held associations of environmentally friendly organic farming, and environmentally harmful "conventional" farming (LaCanne & Lundgren, 2018; Newton et al., 2020). So, while the barriers to and drivers of adoption of diversified management practices have been well studied, there are still gaps in our knowledge about their patterns of adoption on certified and uncertified organic farms relative to other farms.

4.3 Job quality for sustainable agriculture

What makes a job "good"? Job quality is a multi-dimensional concept that reflects the benefits and conditions of work, including monetary and non-monetary aspects (Kalleberg, 2013). Despite its context-dependent nature, scholars have sought to develop more concrete approaches to theorizing, defining, and assessing job quality (Findlay et al., 2013). Kalleberg

(2013, p. 9) specifies five elements of a good job: 1. Pays relatively high earnings and—perhaps more importantly provides opportunities for increases in earnings over time; 2. Provides adequate fringe benefits, such as health insurance and retirement benefits; 3. Enables the worker to have opportunities for autonomy and control over work activities; 4. Gives the worker some flexibility and control over scheduling and terms of employment; 5. Provides the worker with some control over the termination of the job.

Job quality has become increasingly relevant to food system sustainability as the inequities and injustices experienced by food workers have been brought to the fore (Haley et al., 2020; Klassen & Murphy, 2020; Minkoff-Zern & Mares, Under Contract), and the calls for ‘good work for good food’ are being advanced by scholars, activists and eaters alike (Klassen, Medland, et al., 2022). There is a growing body of research that looks at working conditions in relation to more sustainable modes of agriculture (Dumont & Baret, 2017; Ekers et al., 2016; Ekers & Levkoe, 2015; Galt, 2013; Gray, 2014; Guthman, 2014; Medland, 2016; Reid-Musson, 2017; Soper, 2019; Weiler, Otero, et al., 2016), but few studies have operationalized the concept of job quality to examine hired labour in the organic sector.

Harrison and Getz (2015) examined two case studies (organic farms in California and dairy farms in Wisconsin) to look at the relationship between farm size and job quality for hired workers. They found that in both cases, larger farms had higher or similar job quality according to their metrics than their small farm counterparts. For the case of organic farms in California, there were two notable exceptions to this trend: (1) the use of Farm Labour Contractors (FLCs), which have been shown to have exploitative working conditions and were more likely to be used on large farms; and, (2) strategies to reduce repetitive motion, which were more common on small farms.

While not focused on hired workers, Dumont and Baret (2017) examined working conditions for vegetable producers in Belgium and found that more agroecological producers (some of which are organic) did not experience better working conditions writ large, and that the size of farm is an important factor in predicting work conditions (for instance, small market gardens showed some of the worst working conditions for producers, whereas medium-scale market gardens had some of the best working conditions). They also found that low profitability of agroecological production systems was contributing to trade-offs between social, ecological and economic dimensions.

The limited consideration of job quality in the study of agriculture reflects a premise of agricultural exceptionalism – the idea that the agriculture sector deserves special state support or regulatory exemptions as it is uniquely subject to uncontrollable factors such as weather, and that it contributes disproportionately to national interests such as food security (Skogstad, 1998) – that allows poor working conditions for farmworkers to persist. Critiques of agricultural exceptionalism argue that national food security and employers' agrarian livelihoods should not be prioritized at the expense of worker wellbeing (Getz et al., 2008; Weiler et al., 2017), and is contrary to a rights-based approach to human wellbeing and food systems.

Here, we empirically examine diversification and job quality for hired workers in relation to organic certification on farms that share a similar socio-political context. Despite the uncertainties around sustainability-related practices on organic farms, the organic community in Canada has demonstrated a commitment to fairness for workers (Klassen, Fuerza Migrante, et al., 2022) and biodiversity-based management feature prominently in the organic standards (Klassen, Luna Perez, et al., 2022); thus, there are theoretical reasons to expect higher levels of diversification and job quality on certified organic than other farms.

This research seeks to answer four research questions:

RQ1. What is the variation in job quality and diversification on organic vegetable farms (certified and uncertified) in British Columbia?

RQ2. Does organic certification correlate with better job quality and higher diversification when compared to uncertified and non-organic farms?

RQ3. What explains the variation in job quality and diversification?

RQ4. What do organic farmers view as the biggest barriers to job quality and diversification?

4.4 Methods

We conducted an online survey using Qualtrics software targeting the primary operators of farms who grow vegetables for sale in the province of British Columbia, Canada. Because we wanted to study farm management decisions around multi-faceted concepts of job quality and diversification, and farm characteristics are associated with them, we targeted farm operators as participants.¹⁴ BC has the largest share of organic vegetable farms of any province or territory in Canada (Statistics Canada, 2016b), and also exemplifies many agricultural trends elsewhere in North America, including challenges with farmer succession, climate change, market volatility and rising costs of land and production (BC Agriculture and Food Climate Action Initiative, 2012; Wittman et al., 2017). We recruited participants through agriculture and food organizations, as well as direct recruitment of farmers at relevant events, via social media and

¹⁴ The study was approved by the University of British Columbia Behavioural Research Ethics Board (ID Number H19-02615), and followed procedures of free, prior, and informed consent (in this case, written consent).

through existing relationships. We removed incomplete/invalid responses (e.g. those completed in less than 8 minutes and duplicate responses) and those that did not meet our inclusion criteria. The final study sample was $n=143$.

While we sought and recruited both organic and non-organic farmers, our final analyzable sample included 73 certified organic farms, 62 farms that identified as practicing organic but who were not certified (uncertified organic farms), and only 8 responses from non-organic farmers. This limited sample from non-organic farms was insufficient to do a detailed statistical study comparing them with organic farms; however, we do include results from non-organic participants in some cases below to help situate our results for certified and uncertified organic farms. For clarity, we refer to the collective of certified and uncertified organic practicing farms as “organic farms”, and always use either “certified” or “uncertified” to qualify these two groups within the larger umbrella of organic farm management. We refer to non-organic farms as such, and view them as distinct from the two groups of organic farms who both self-identify as practicing organic (whether certified or not).

By including uncertified organic farms in this analysis, we shed light on the practices and approaches of this segment of the organic movement who are otherwise excluded from official statistics and record-keeping about organic production. Based on data from the Canadian census of agriculture, our sample of certified organic farms is representative of the target population at a 95% confidence interval and 10% margin of error, and our sample of uncertified organic farms is representative of the target population at a 90% confidence interval and a 10% margin of error (Statistics Canada, 2006, 2016b). Data from the 2016 Census of Agriculture was used to calculate the target sample size for certified organic farms. As data on uncertified organic

products was only collected for one census year in 2006, we used this data to calculate a representative sample size of uncertified organic farms.

The survey tool asked about the practices implemented on their farm, their individual attitudes, approaches and motivations related to diversification and job quality for hired workers, and what they perceive to be barriers and supports for these outcomes. All questions in the survey instrument were structured either as likert scale or multiple-choice questions, except the questions about supports for diversification and job quality, which were asked as open-ended short answer questions.

4.4.1 Dependent variable 1: diversification

We constructed two scales to measure *practices* (agro1) and *attitudes* (agro2) related to diversification. For diversification practices, we created a series of questions that asked participants to indicate their management on a 5-point spectrum, from practices that least support diversification to most (Table 4.1). For agro2 (Table 4.2), we provided a series of statements relating to different aspects of farm management, with responses on a 5-point likert scale from ‘Strongly Disagree’ to ‘Strongly Agree’. This second scale thus reflects farmers’ *attitudes* about diversification, rather than motivations or values, which tend to be more strongly held and less easily influenced or changed. Variables were designed to be complementary between practices and attitudes (e.g. type of pesticide inputs versus strategies for pesticide use), without significant overlap or redundancy to avoid double counting.

In addition to examining patterns in individual variables for both agro1 and agro2, we combined variables into indices for each farm (separate indices for agro1 and agro2) by assigning numeric values to the different ordinal levels, and taking an average for each

observation (farm). By doing this, we make the assumption that the difference between each level of the ordinal scale is equal (e.g. that the difference between no crop rotation and a moderate crop rotation of 4-5 years is equivalent to the difference between a moderate crop rotation of 4-5 years and a very long crop rotation of 10+ years). While this is an imperfect approximation, it allows us to evaluate these two aspects (practices and attitudes) of the dependent variable as a whole for each farm, to determine overall differences between groups (RQ2), and to assess which independent variables are most strongly associated with diversification (RQ3).

Table 4.1. Diversification practices scale (agro1).

	Variable	Score				
		1	2	3	4	5
agro1.1	Fertilizer use	I use all synthetic fertilizers		Mixed		I use all organic fertilizers
agro1.2	Tillage	I use conventional tillage		I use conservation tillage		I use “no-till” management
agro1.3	Windbreaks/ Shelterbelts	I have no trees or shrubs on my property		I have trees and shrubs surrounding some of my fields		I have trees or shrubs all over my farm
agro1.4	Use of cover crops	I do not use cover crops		Some of my fields have exposed soil, others have green cover		I keep the soil covered at all times with mulches, cover crops, etc.
agro1.5	Pest management	I use all synthetic pesticide treatments		I use a mix of natural and synthetic pesticides		I use all natural pesticide management (e.g. botanical, biological)
agro1.6	Crop species	I grow a single crop		I have a moderately diverse cropping system (5-7 crops/year)		I have a very divers cropping system (15+ crops/year)
agro1.7	Nutrient input sourcing (e.g. compost, manure or fertilizer)	I use only nutrient inputs form off-farm sources		Half are generated on-farm, half from external sources		I use only nutrient inputs generated on-farm
agro1.8	Crop rotation	I do not use a crop rotation		I have a moderate crop rotation (4-5 years)		I have a very long crop rotation (10+ years)
agro1.9	Use of intercropping, relay cropping, polycultures	I plant only 1 crop in a field at a time		I <i>sometimes</i> grow 2+ crops in the same field at the same time		I <i>always</i> grow 2+ crops in the same field at the same time

Table 4.2. Diversification attitudes scale (agro2).

Item number	Question	Response Scale
agro2.1	I use pesticide inputs following a regular schedule, including preventative applications for particular pests.	
agro2.2	I manage my farm as a whole, living system.	
agro2.3	I manage my farm to maximize production, first and foremost.	- Strongly Agree (5)
agro2.4	I always try other strategies for pest management (e.g. mechanical, cultural, biological control) before applying any pest control treatment products.	- Agree (4)
		- Neutral (3)
		- Disagree (2)
agro2.5	I always try to optimize organic matter decomposition and nutrient recycling on my farm.	- Strongly Disagree (1)
agro2.6	My farm management focuses on enhancing biodiversity like natural enemies and creating appropriate habitats.	

4.4.2 Dependent variable 2: job quality

In parallel to diversification, we constructed two scales to measure job quality for hired workers based on an adaptation of the five principles for job quality from Kalleberg (2013), and Harrison and Getz (2015). The first scale (jq1) assessed the extent to which different employment *practices* were adopted by farmers and how accessible they were to employees (Table 4.3). Our second scale (jq2) measured the level of agreement with a series of statements related to employment conditions and approaches (Table 4.3), reflecting employers' *attitudes* toward job quality and employment approaches. The jq2 scale measures several aspects of job quality that are not captured by the job quality practices scale, such as the frequency of interaction between employers and employees, and employees' self-determination in terms of their own conditions and benefits of employment, reflecting aspects of contributive justice put forward by Timmerman and Félix (2015). We also calculated separate indices for jq1 and jq2 for each farm following the same method as described above for diversification.

Table 4.3. Job quality practices (jq1) and attitudes and approaches (jq2) scales.

Item	Question	Response scale and numeric value
<i>Job Quality – Practices (jq1)</i>		
jq1.1	Do you have advancement and promotional procedures?	
jq1.2	Do your employees have access to an employee manual to explain HR and management procedures?	
jq1.3	Do you use employment contracts to formalize expectations and conditions of employment for workers?	
jq1.4	Do you have formal grievance procedures?	- Yes, for all employees (2)
jq1.5	Do you provide training or resources on occupational safety and health?	- Yes, for some employees (1)
		- No (0)
jq1.6	Do your employees have access to extended health and dental benefits as part of their employment contract?	
jq1.7	Do your employees receive paid time off (e.g. sick days) as a part of their employment contract?	
jq1.8	Do you have any profit sharing or other mechanisms that contribute to remuneration for your employees?	
jq1.9	Do you have workplace policies and procedures available in all non-English languages spoken by workers?	- Yes, for all languages (2)
		- Yes, for some languages (1)
		- No (0)
jq1.10	Do you use strategies/procedures to reduce repetitive motion for employees (e.g. limit amount of hand-weeding done in a day)?	- Yes, we do everything possible to limit repetitive motion and tasks (2)
		- Sort of, we do what we can (1)
		- No, we don't have strategies to do this (0)
<i>Job Quality Attitudes and Approaches (jq2)</i>		
jq2.1	My employees have told me that they value the non-monetary rewards of working on my farm.	
jq2.2	My employees are like family.	
jq2.3	(-) I don't involve my employees in farm management decisions.	- Strongly Agree (5)
jq2.4	My employees have flexibility with their hours and scheduling.	- Agree (4)
		- Neutral (3)
jq2.5	I value the input and opinions of my employees when making decisions about my farm.	- Disagree (2)
		- Strongly Disagree (1)
jq2.6	I often learn from my employees.	
jq2.7	(-) I seldom interact with my employees directly.	
jq2.8	My employees have opportunities to shape their own learning while working on my farm.	

In addition to these two scales for practices and attitudes (jq1 and jq2, respectively), we also collected data about (1) the lowest, average and highest wage paid to workers on farms, (2) the share of seasonal versus year-round labour, and (3) the extent of unpaid labour. This last measure was the only exception to the focus on hired workers, where participants were asked

about any unpaid labour (including those of family members, owner/operators, and apprentices). We will report on these results alongside the two job quality scales below.

4.4.3 Data analysis

Descriptive and statistical data analyses were performed using R Software (Version 4.0.5). To answer RQ1, we conducted descriptive analysis of all DV scales (job quality practices and attitudes, and diversification practices and attitudes) to determine the variation in aspects of job quality and diversification amongst all organic farms (both certified and uncertified). These results for organic farms are summarized in section 4.5.1. To answer RQ2, we used statistical tests to determine whether there were significant differences in group means for each of the DVs by organic certification status. To do this, we first determined whether data were normally distributed using Shapiro-Wilks tests and visually using histograms, and then used the appropriate difference in means tests accordingly. These results in section 4.5.2 include all three groups of farms, as indicated throughout. To answer RQ3, we conducted a series of regression models to see which independent variables were associated most strongly with dependent variable scales (jq1, jq2, agro1 and agro2) on organic farms only (Figure 4.1). We first tested all independent variables for correlations, and eliminated those with significant correlation coefficients (using a threshold of 0.40). Finally, we summarize the barriers and supports reported by all farms as a response to RQ4 in section 4.5.4.

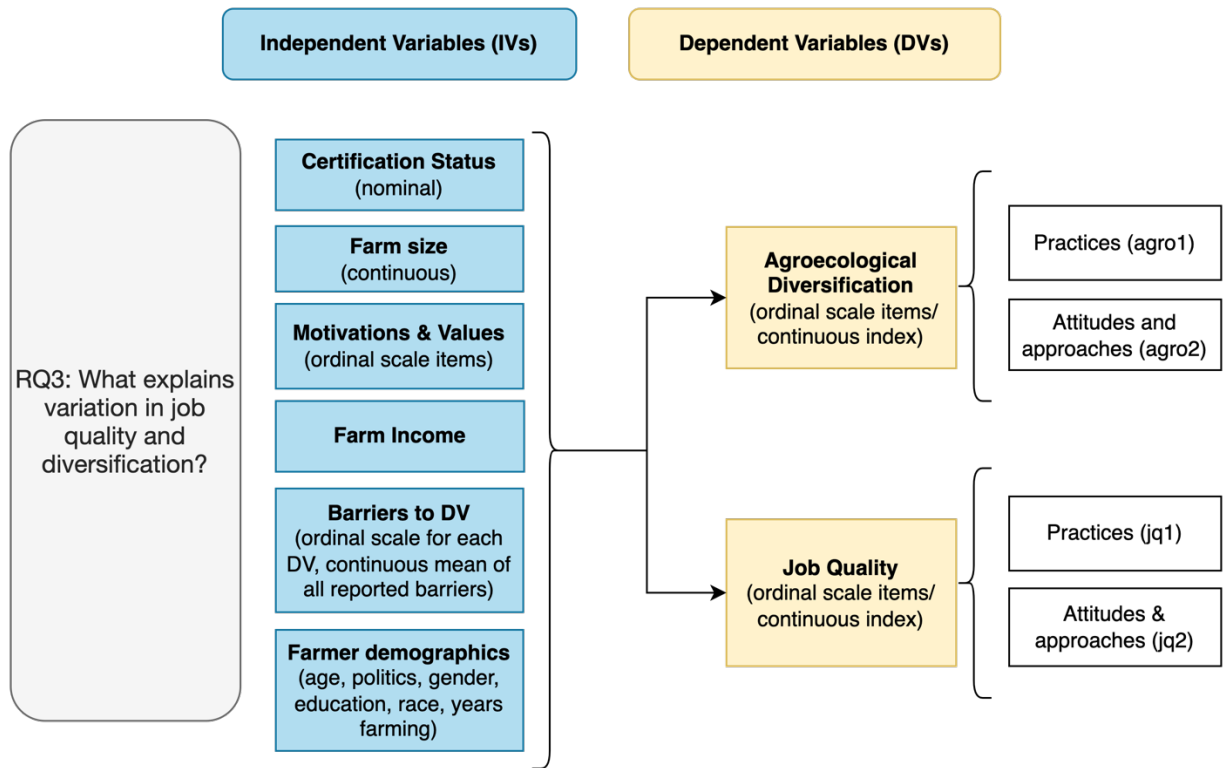


Figure 4.1. Conceptual representation of regression model variables.

4.5 Results

We first summarize some basic characteristics of our sample of farms, and then examine each of the four research questions in turn. Certified and uncertified organic farms were very similar in terms of farm size (acreage), land tenure, farmer age, gender, race, education and political leaning (Table 4.4). However, certified organic farms had notably higher value of gross farm receipts (another measure of farm size), net revenue, and were much more likely to hire workers than uncertified organic farms. In contrast to both groups of organic farms, non-organic farms that responded to our survey were larger by all measures of size, had a higher percentage of land owned, higher revenues, and hired more workers. Non-organic farm operators were much more likely to be older, identify as male, self-identify as racialized, and be more politically

conservative than both groups of organic farmers. While our sample of non-organic farms is small and not representative, we include them here to situate patterns in the two groups of organic farms relative to non-organic in our exploration of how certification is associated with differences in job quality and diversification in 5.2.

Table 4.4. Farm size and demographic variables by organic certification status.

Variable	Certified organic farms	Uncertified organic farms	Non-organic farms
Number of farms	73	62	8
Mean total farm size	41.24 acres	31.86 acres	126.50 acres
Mean area in crop production	13.94 acres	11.19 acres	87.00 acres
Area in vegetable production	6.44 acres	2.82 acres	53.5 acres
Mean gross farm receipt value	\$193,080	\$43,861	\$7,528,000
% farms that own their land	57.5%	58.7%	87.5%
% farms with net revenue < \$30,000	49%	78%	38%
Mean age of farmer	50.03	47.37	57.86
% non-male (female or other/non-binary)	53%	69%	12.5%
% racialized	14%	8%	25%
% with bachelors	58%	52%	50%
% liberal or very liberal	73%	63%	38%
% of farms that hire workers	84%	48%	88%
Mean number of hired workers	5.66	2.91	51.00

4.5.1 RQ1: What is the variation in diversification and job quality on organic farms?

4.5.1.1 Variation in diversification amongst organic farms

Figure 4.2 demonstrates responses for diversification practices for all organic farms (certified and uncertified). Two practices (type of fertilizer inputs and use of natural or alternative pest management strategies) showed very little variation, with all responses at the mid-point or higher on the diversification scale. Crop species diversity and intercropping showed slightly more variation, but were still highly skewed towards the upper end of the diversification

spectrum. Other practices (tillage, extent of crop rotation, and nutrient input sourcing) showed a more normal distribution. This implies that the first two practices are less effective/appropriate for capturing variation in diversification practices on organic farms (given the strength of standards for these two areas of production, this is not surprising), but that there is variation across farms for most other practices. In other words, organic farms are not homogenous in terms of their adoption of diversified management practices.

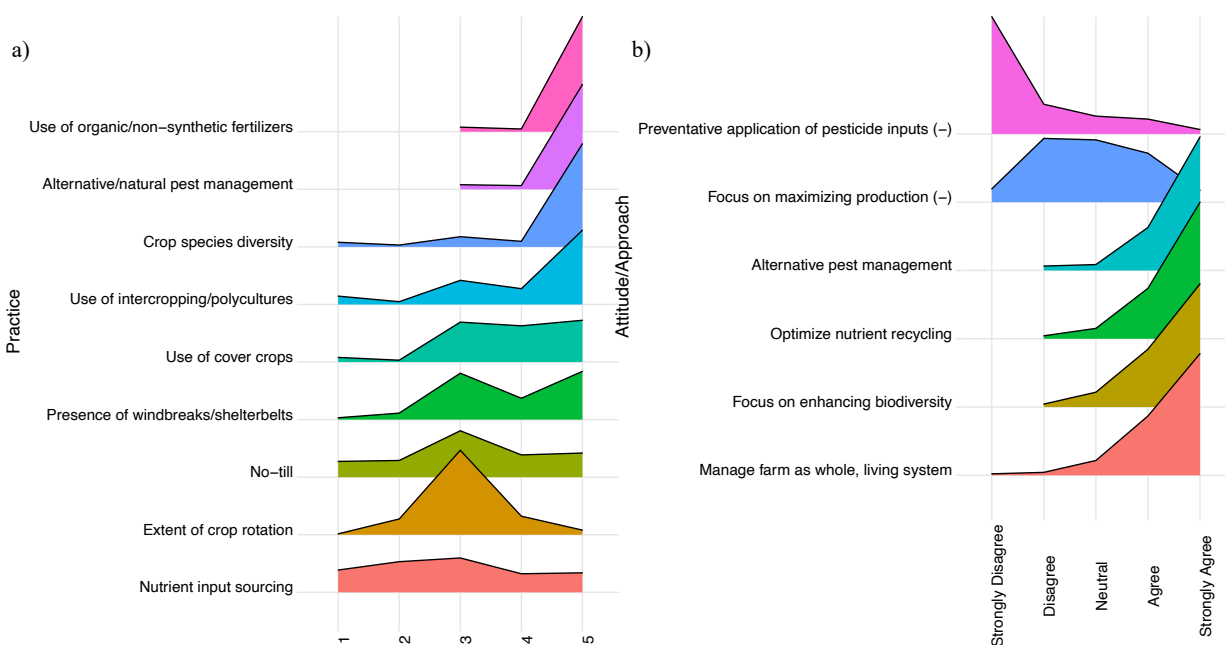


Figure 4.2. Variation in a) diversification practices and b) attitudes and approaches on organic farms (certified and uncertified).

In contrast with practices, which showed some variation across the diversification spectrum, organic farmers were more homogenous in terms of their attitudes and approaches to diversification (agro2) on their farm (Figure 4.2). The exception was “focus on maximizing production”, which showed a roughly normal distribution, suggesting that organic farmers are

divided in their attitudes related to maximizing production at the expense of other dimensions of their farming system.

We also examined correlations between all variables in each of the practices and attitudinal scales, as we expected to see positive correlations between diversification attitudes and practices. While most variables for attitudes and practices for diversification were positively correlated, very few of these correlations were statistically significant (only nutrient recycling, focus on managing for biodiversity, and holistic approach to farm management were correlated). This was contrary to what we would expect given the expected synergies and similarities between different variables (e.g. managing for biodiversity as an attitude, and practices demonstrated to enhance biodiversity). This discrepancy suggests that farmers could be doing more to enact their attitudes and approaches to diversification on their farms.

4.5.1.2 Variation in job quality amongst organic farms

We found that most organic farms had low job quality, where most or all employees did not have access to benefits, procedures and practices that would improve the rewards, transparency and conditions associated with their work (Figure 4.3). The job quality practices that directly cost the employer money were the least common (e.g. extended health and dental benefits and paid time off). Many practices that would not have trade-offs in labor productivity other than the initial time of setting systems in place (e.g. having employment contracts and access to an employee manual) were still relatively uncommon on organic farms. The two practices where organic farms scored highest were with regards to occupational health. Most farms reported at least some effort or some strategies to reduce repetitive motion for employees,

and that some or all employees had access to occupational health and safety training and resources.

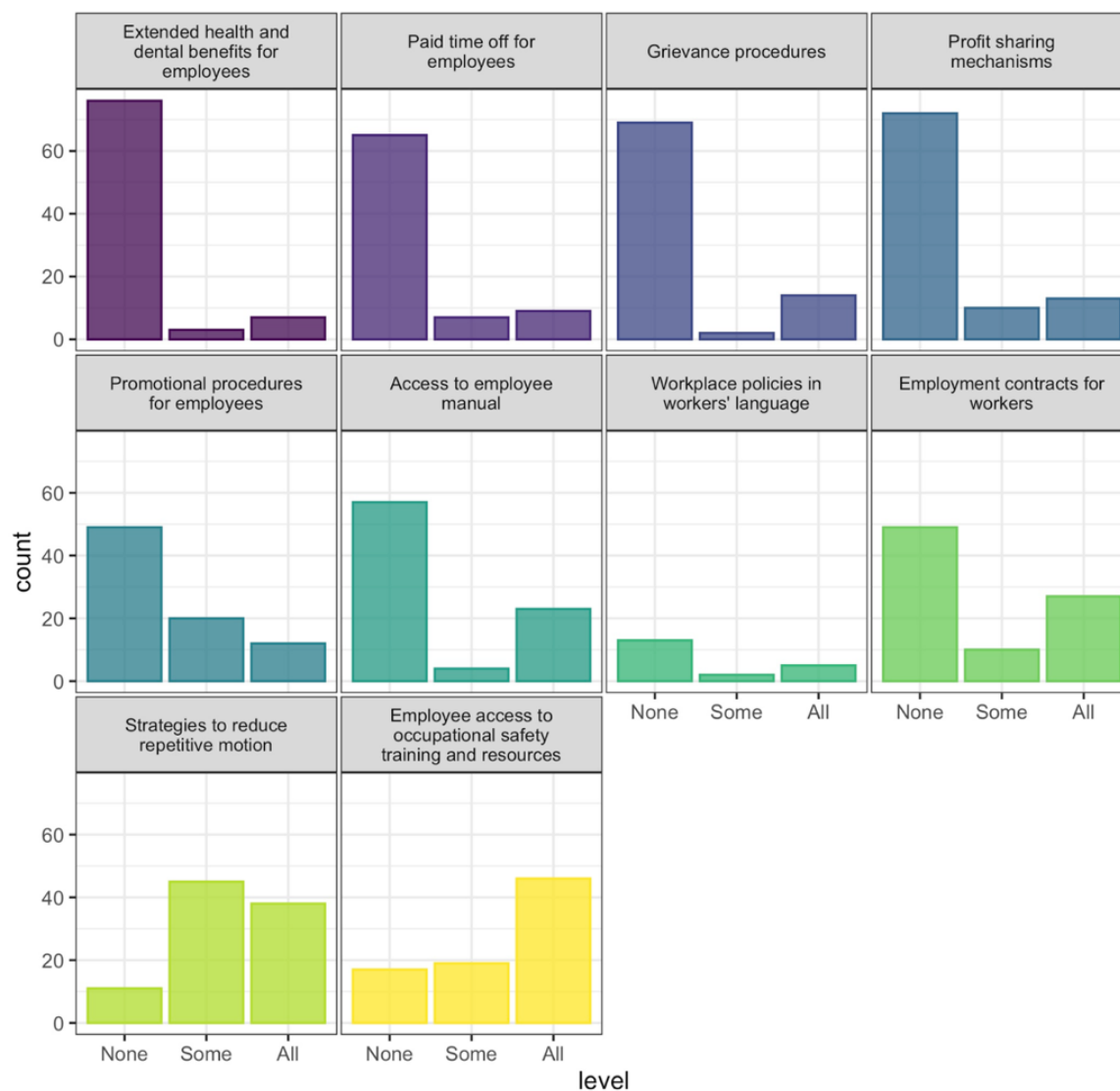


Figure 4.3. Variation in job quality practices amongst organic farms (certified and uncertified).

In contrast to job quality practices, there was strong agreement among organic farmers with respect to attitudes and approaches to job quality (jq2) (Figure 4.4). In general, organic farmers agreed strongly with all positive statements about approaches to employment, including

valuing input from employees, that employees had expressed valuing the non-monetary rewards of working on their farm, and offering opportunities for employees to shape their own learning. We also included two questions where we asked for level of agreement with a statement associated with poor job quality or employment practices—involvement with decision-making, and direct interaction with employees. The results for these two items showed moderate and strong disagreement, respectively.

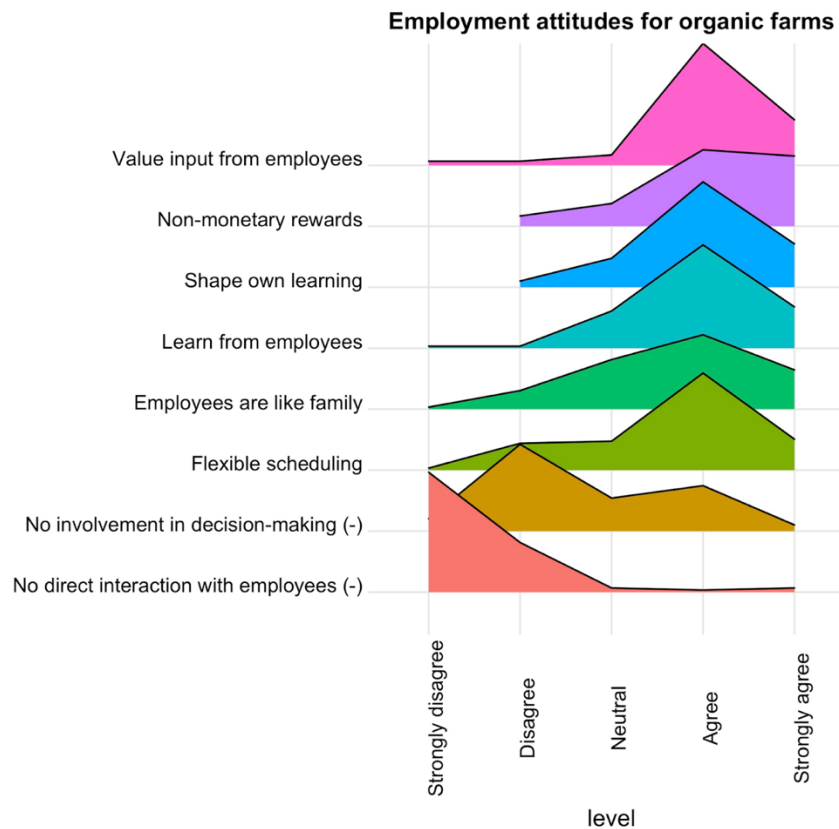


Figure 4.4. Variation in attitudes and approaches related to job quality (jq2) amongst organic farmers (certified and uncertified).

Our two job quality scales (practices and attitudes) were not significantly correlated with one another (neither the individual items nor the indices reflecting the mean of all variables, jq1 and jq2). However, there were several significant positive correlations within job quality

practices, such as contracts, grievance procedures and promotional procedures (Figure 4.5). There were also significant negative correlations between several job quality practices and wages (specifically, the lowest wage paid to workers on farms). The matrix also suggests a possible trade-off between more formal workplace procedures and attitudes about valuing employee contributions, meaning that there may be a trade-off between different ‘types’ of job quality (formal procedures and hierarchy vs learning from employees). It also showed significant negative correlation between wages and several other job quality practices (e.g. agreement with the statement that employees were “like family”), suggesting that employers who do not offer more formal job quality benefits make up for it with higher wages, or vice versa.

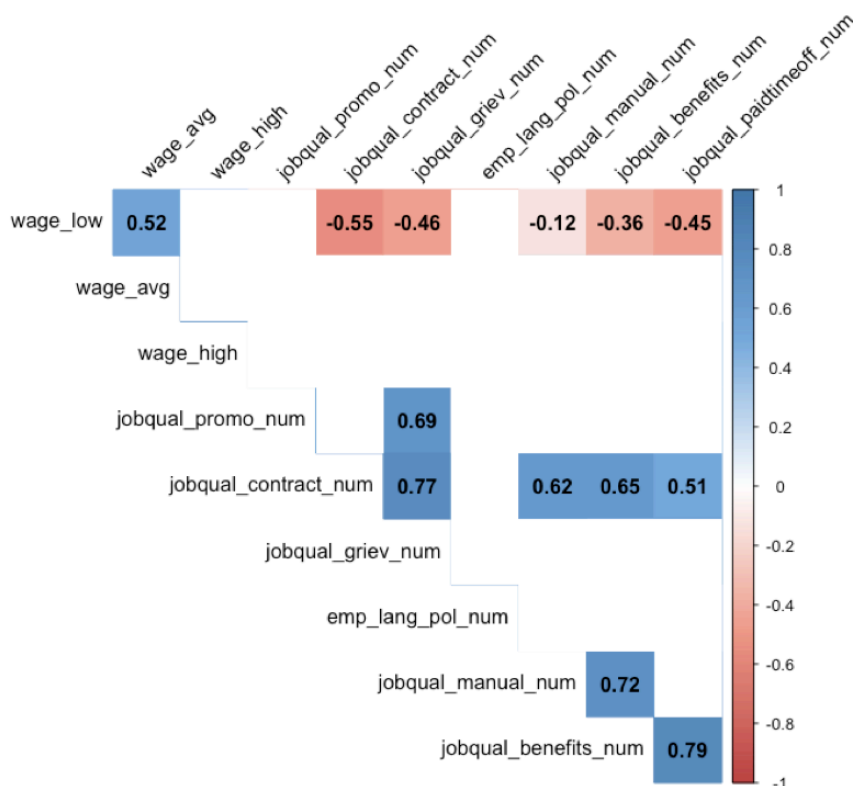


Figure 4.5. Correlation matrix of different aspects of job quality practices.

Variables include wages and all variables from job quality practice scale (see Table 4.3). Only statistically significant correlations are shown.

4.5.2 RQ2: Does organic certification correlate to higher diversification or job quality?

Uncertified organic farms had slightly higher diversification than certified organic farms (Figure 4.6). However, this difference in the composite index was driven largely by uncertified organic farms' use of no-till management and sourcing nutrient inputs from their farm; as such, it should be interpreted with some caution. No-till management without the use of herbicides is possible but challenging (Beach et al., 2018; Halde et al., 2017), and the higher proportion of uncertified farms adopting no-till may be enabled by herbicide use, however judicious (a diversification trade-off). Our data also suggest that uncertified organic farms are less intensively managed, and so differences in nutrient input sourcing could reflect less intensive nutrient input needs, or lower productivity because of nutrient deficits. Regardless of these explanations, our analysis finds no evidence that suggests that certified organic farms support higher agroecological diversification than uncertified organic farms.

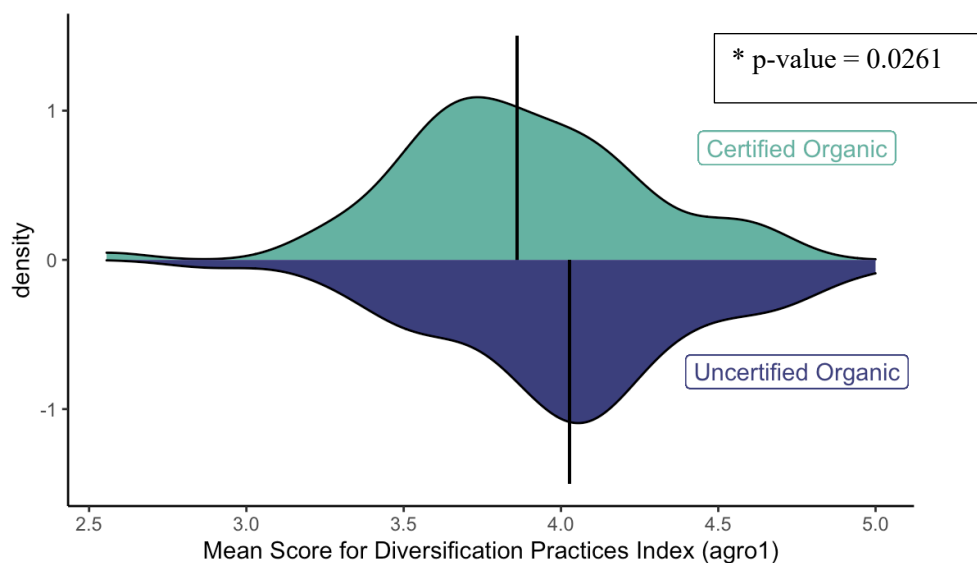


Figure 4.6. Distribution of scores for diversification practices index (agro1) and the difference in means.

We found significant differences in diversification practices between organic and non-organic farms for most variables (alternative pest management, nutrient input sourcing, extent of crop rotation, use of intercropping, type of fertilizers used, and no-till) and the composite index (average practice score for jq1) (Figure 4.7). As such, the evidence supports the conclusion that certified and uncertified organic farms support higher diversification than non-organic.

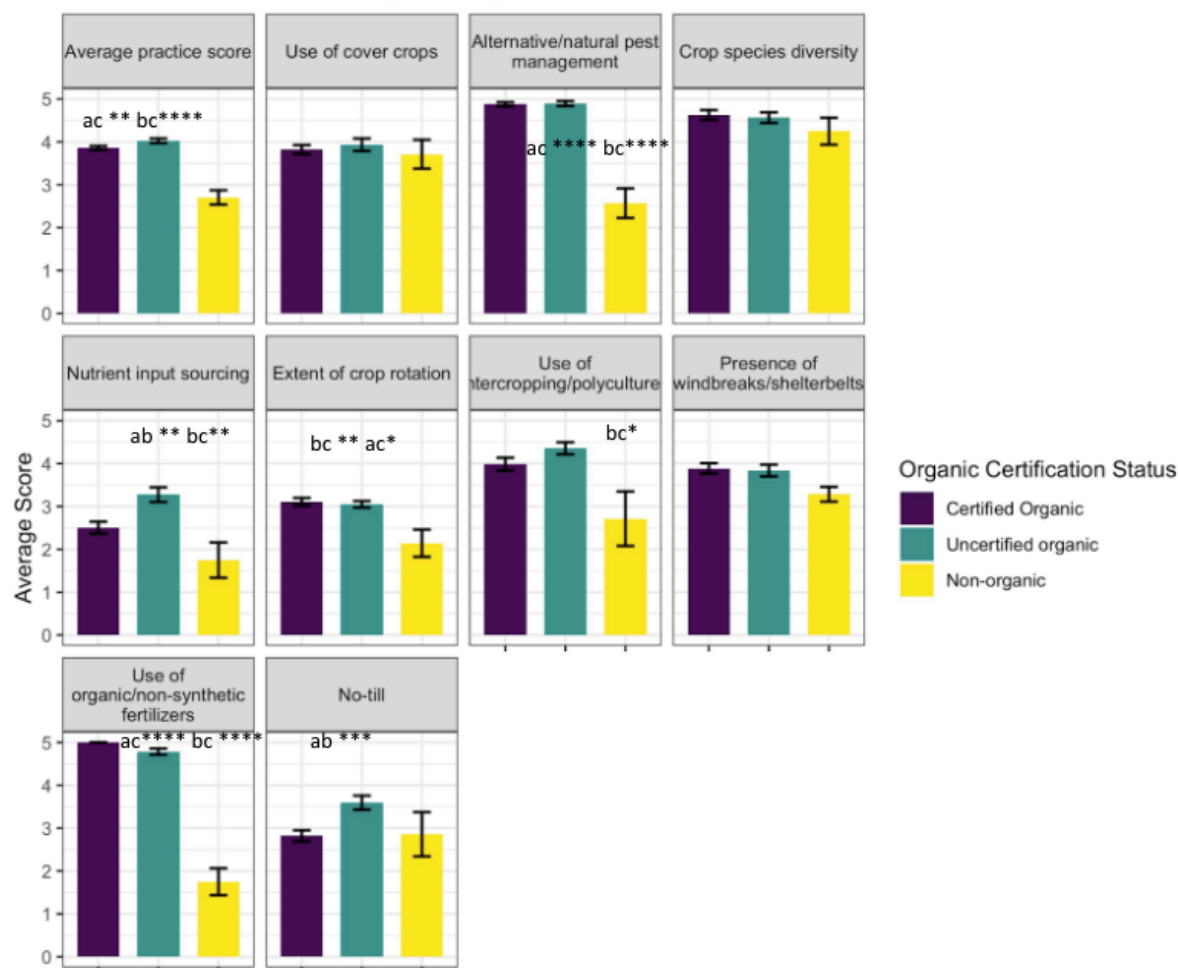


Figure 4.7. Three-group mean comparison of diversification practices (agro1) with standard error by Certified Organic (a), Uncertified organic (b), and Non-organic (c) farms.

Annotations reflect statistical significance of Kruskal-Wallis tests.

In terms of attitudes and approaches related to diversification, certified and uncertified organic farms were very similar, with no significant difference in the agro2 index, or most of the individual variables. The exception was “focus on enhancing biodiversity”, where uncertified organic farms showed significantly stronger agreement than certified organic farms, although this difference is quite small (both organic groups showed significantly stronger agreement with this item than non-organic). Non-organic farms showed significantly lower agreement with attitudes and approaches to diversification (agro2 index as well as alternative pest management, focus on enhancing biodiversity, optimizing nutrient recycling, and approaches to pesticide input application) (Figure 4.8).

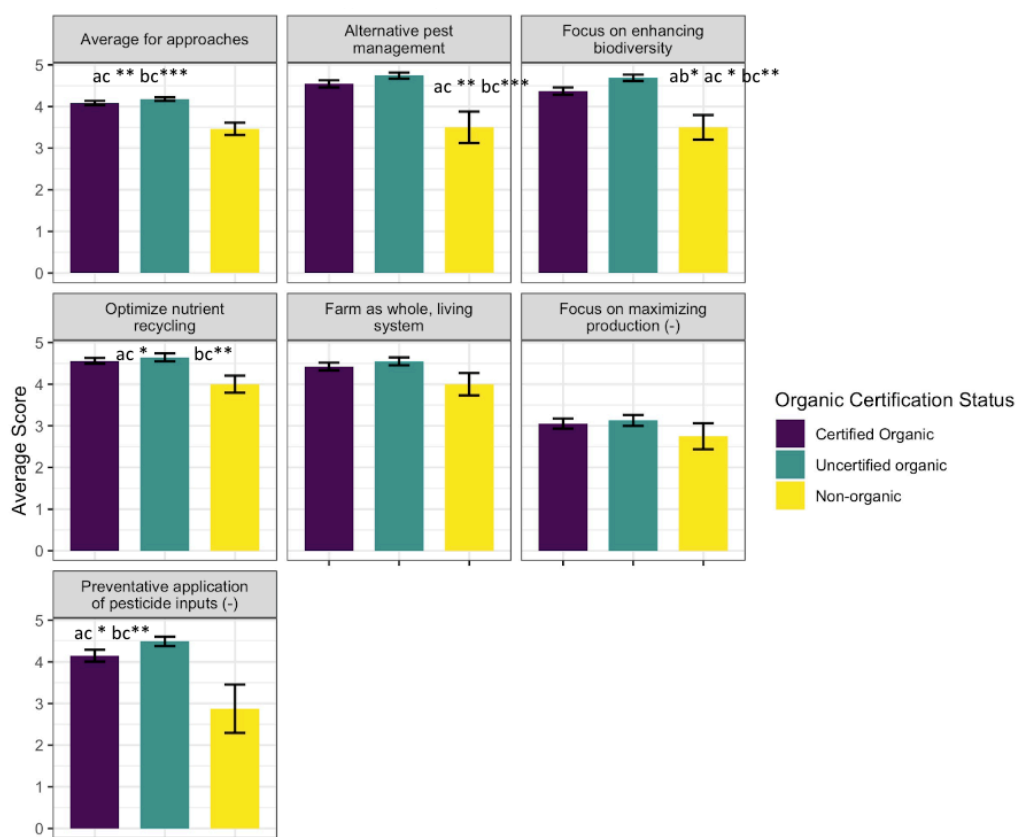


Figure 4.8. Three-group mean comparison of diversification attitudes and approaches (agro2) with standard error by Certified Organic (a), Uncertified organic (b), and Non-organic (c) farms.

Annotations reflect statistical significance of Kruskal-Wallis tests.

We found no significant difference in job quality practices between certified and uncertified organic farms for either the composite index (jq1), or any specific measure (Figure 4.9). While our sample shows higher job quality for non-organic farms (n=8) than organic farms (certified or uncertified), only 1 scale item showed a significant difference between group means (the establishment of grievance procedures). While not statistically significant, non-organic farms surveyed had a higher proportion of farms reporting availability of promotional procedures, workplace policies in workers' language, and offering employee manual.

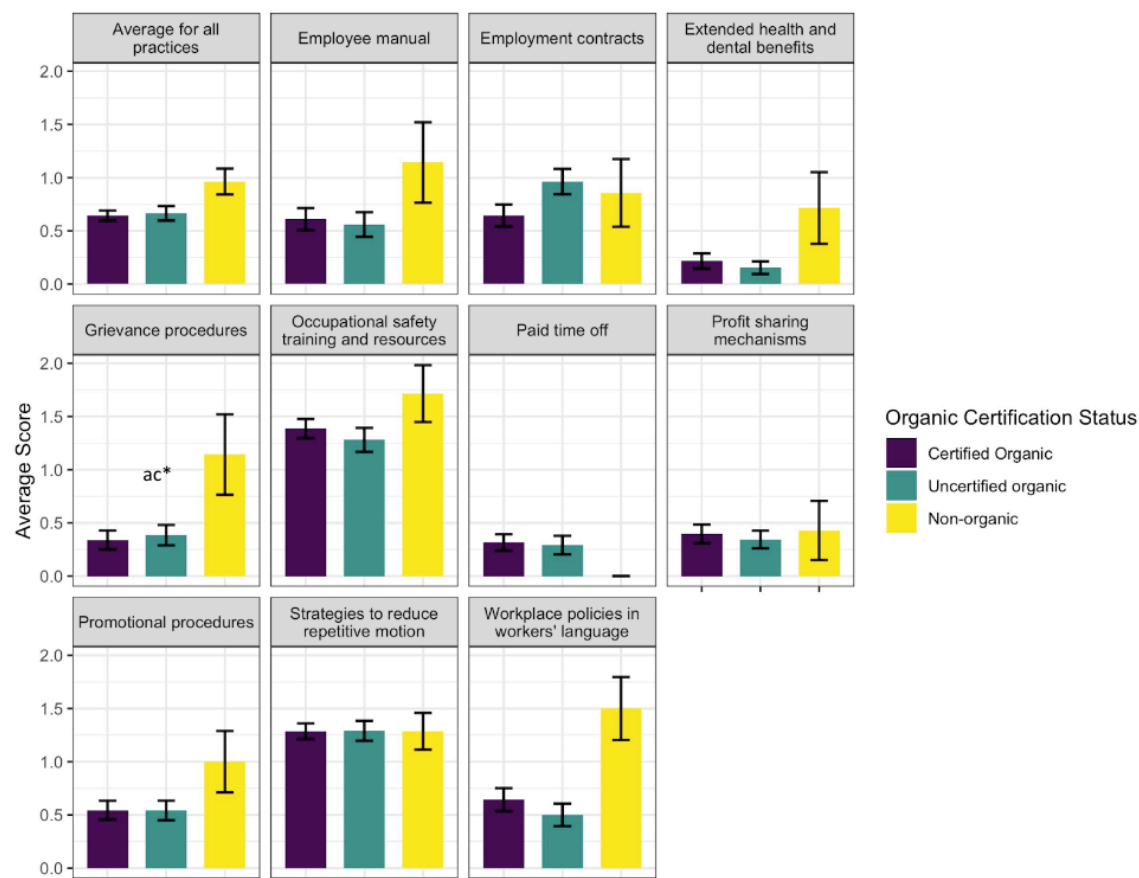


Figure 4.9. Comparison of average scores for job quality practices by Certified Organic (a), Uncertified organic (b), and Non-organic (c) farms.

Annotations reflect results from Kruskal-Wallis three group means comparison tests.

For the job quality attitudes scale (jq2), uncertified organic farms scored significantly higher when looking at the composite index, but the difference in means is small and the distribution of scores is similar (Figure 4.10). When looking at job quality attitudes across certified, uncertified and non-organic farms, we found very little differences between groups (Figure 4.11). The only significant differences between both groups of organic farms and non-organic farms for the index and scale item for monetary rewards, where organic farms generally scored higher than non-organic (the opposite from practices).

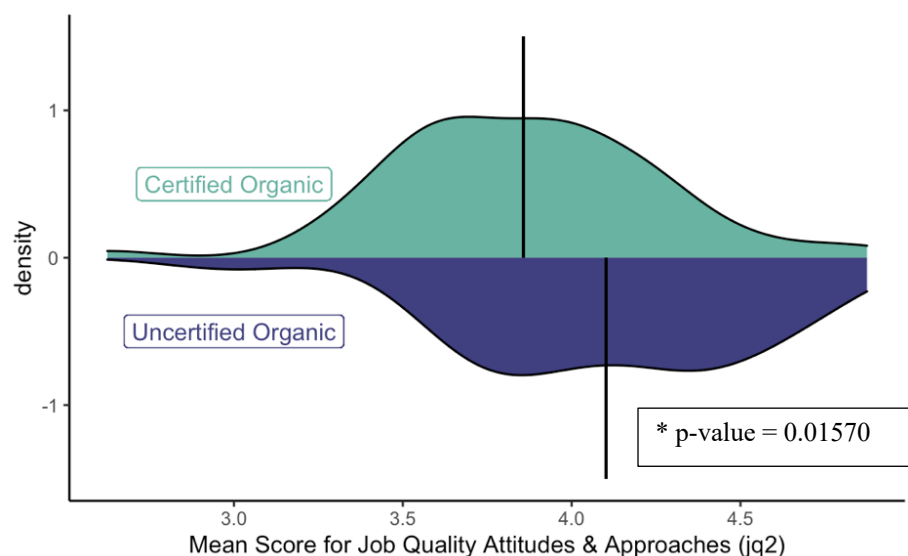


Figure 4.10. Distribution of scores for job quality attitudes and approaches index (jq2) and the difference in means.

In comparison to job quality practices, organic farms were much more similar to non-organic in terms of their job quality attitudes. However, it is notable here that these two scales are capturing slightly different aspects of job quality. As discussed in the methods section, jq1 captures formal workplace management procedures and other formal benefits, which are often characteristic of more hierarchical workplaces, whereas jq2 captures approaches that reflect more

horizontal workplace structure and worker self-determination. Despite these differences, the responses from the non-organic group suggest that offering formal benefits while also enabling – or at least agreeing with approaches that enable – worker self-determination are not mutually exclusive.

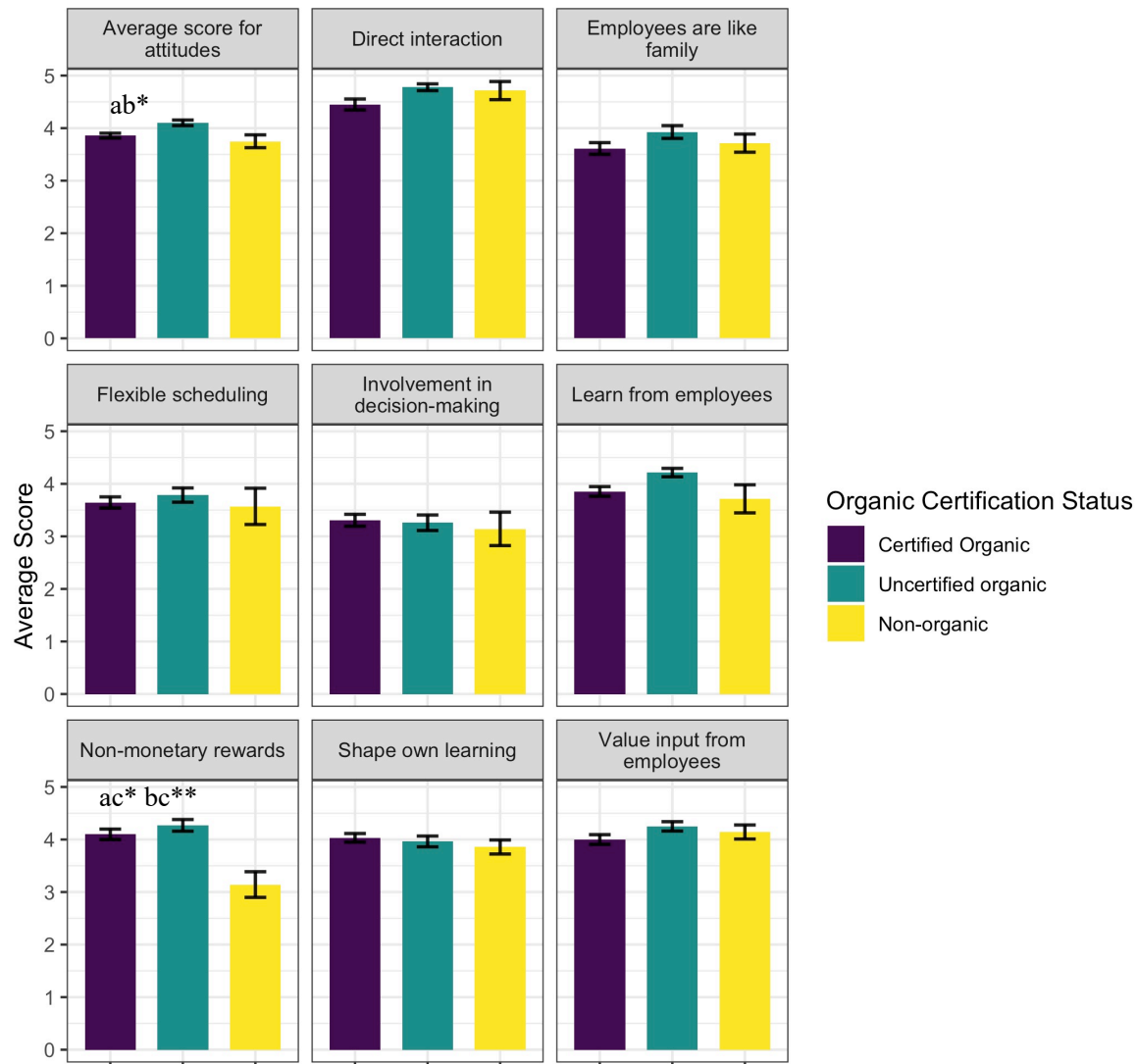


Figure 4.11. Three-group mean comparison of job quality attitudes and approaches with standard error by Certified Organic (a), Uncertified organic (b), and Non-organic (c) farms.

Annotations reflect statistical significance of Kruskal-Wallis tests.

A comparison of means for wages, unpaid work and seasonality of work further showed that certified organic farms do not offer better working conditions than other farms. While differences in wages were not significant, wages on certified organic farms (lowest, average and highest wages) were the lowest of all three groups, and non-organic farms reported the highest wages (although these differences were small) (Figure 4.12). More uncertified organic farms reported unpaid labour (for employees or operators) than certified organic farms. However, when comparing only farms who reported unpaid labour, the proportion of work hours that were unpaid was higher on certified organic farms (Figure 4.13). In other words, unpaid labour was less common on certified organic farms, but when it occurred, it was a higher percentage of total labour than for uncertified organic farms. In most cases this was self-exploitation on the part of the operators themselves. Non-organic farms did not report any unpaid work. Finally, results also suggest that certified organic farms may rely more heavily on seasonal as opposed to year-round labour, though group means comparison tests were not significant (Figure 4.14). When looking specifically at workers hired through the Seasonal Agricultural Worker Program (SAWP), non-organic farms that responded to this survey hire more SAWP workers both in total and as a percentage of their paid workers than certified organic farms, and uncertified organic farms hire the fewest SAWP workers (Table 4.5).

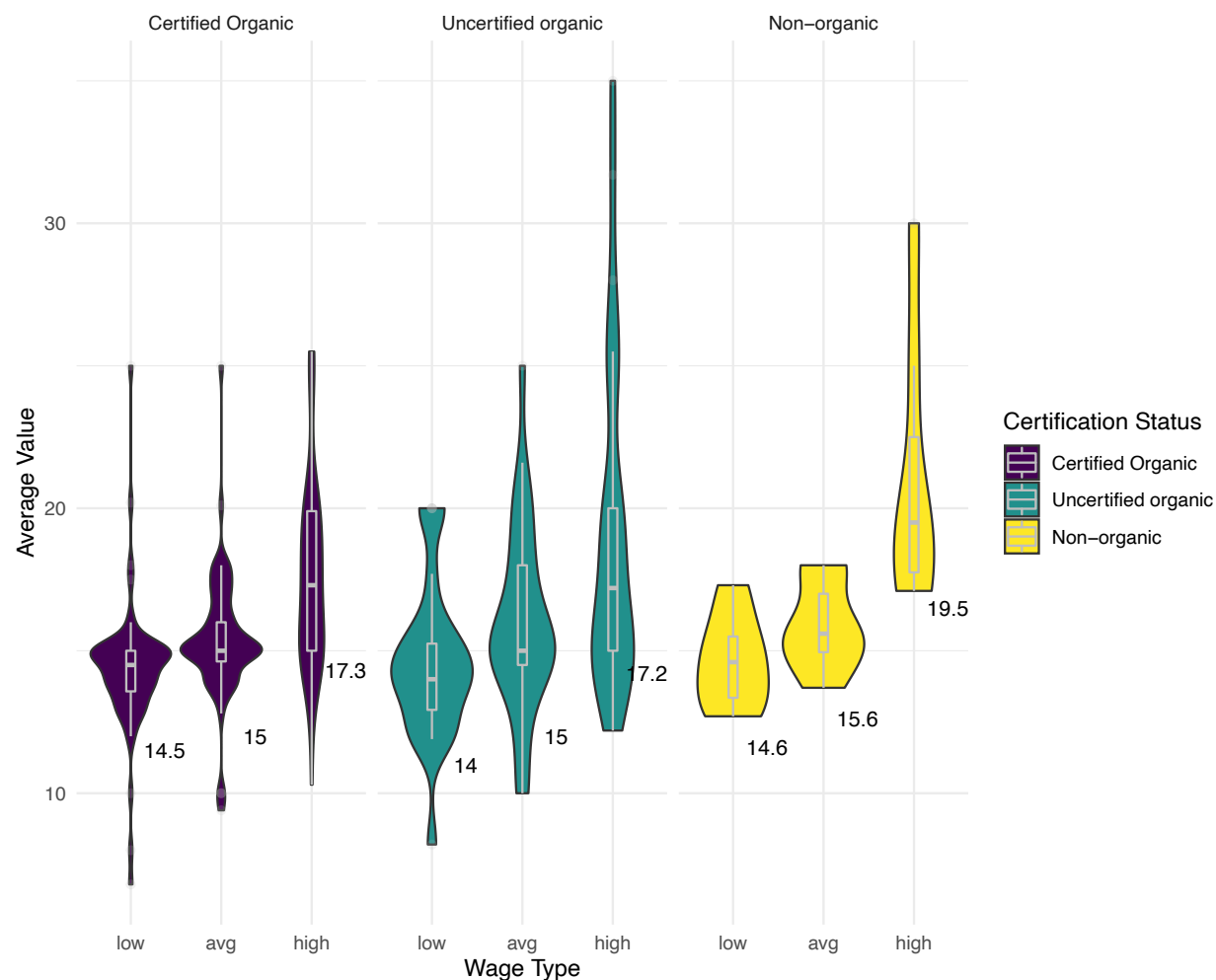


Figure 4.12. Violin plot comparing wages (low, average and high) reported for certified organic, uncertified organic and non-organic farms.

Differences were not statistically significant according to Kruskal-Wallis tests.

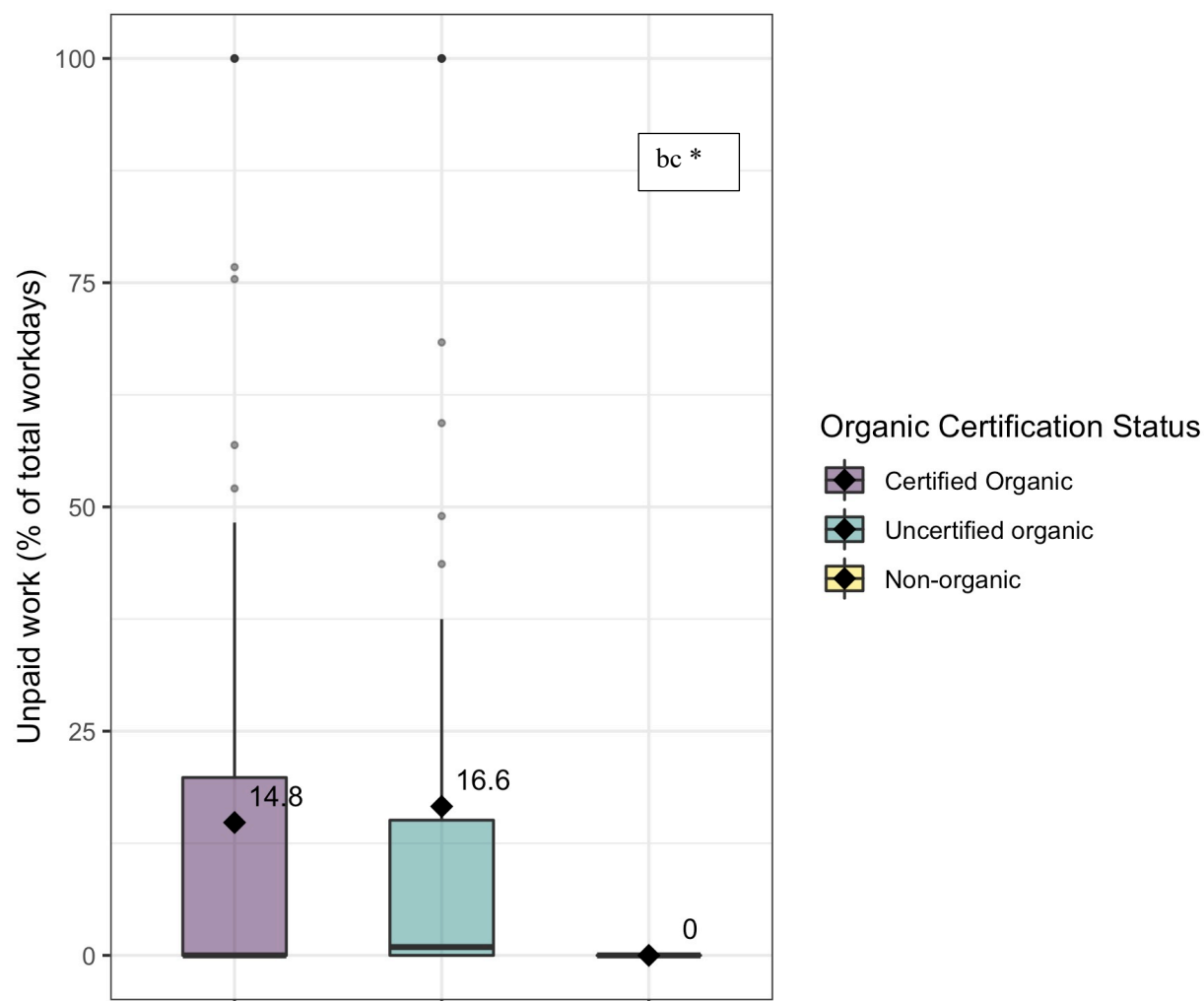


Figure 4.13. Comparison of percent of labour that is unpaid by Certified Organic (a), Uncertified organic (b), and Non-organic (c) farms.

Boxplot shows median (thick horizontal line), mean (diamond) and standard error bars for each group of farms.

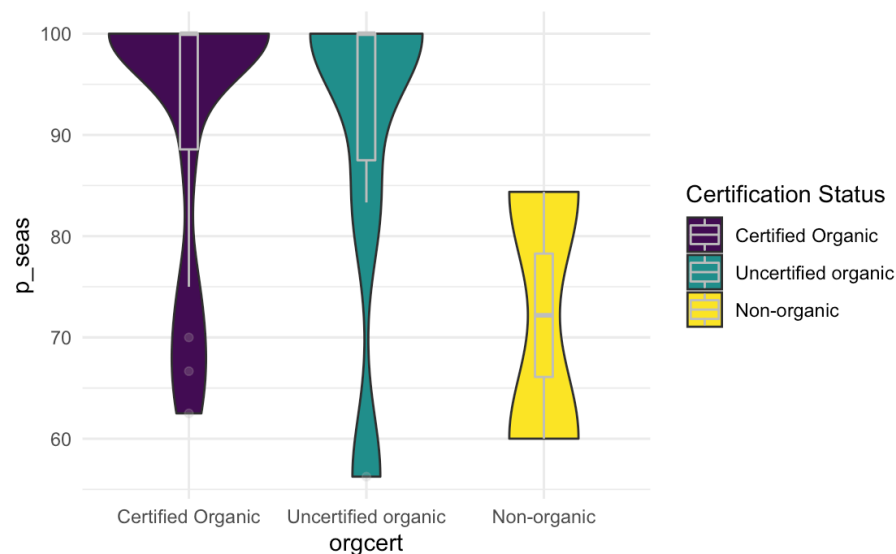


Figure 4.14. Comparison of proportion of paid work that is seasonal versus year-round, by certified organic, uncertified organic and non-organic farms.

Differences were not statistically significant according to Kruskal-Wallis tests.

Table 4.5. Workers hired by certification status.

Certification Status	Sum of hired workers	Sum of SAWP workers	Sum of FLC workers	Proportion of workers hired through SAWP
Certified Organic	351	31	34	8.83
Uncertified Organic	96	5	2	5.21
Non-organic	357	78	130	21.85

4.5.3 RQ3: What (else) predicts diversification and job quality on organic farms?

In this section, we examine how farm size, motivations, farm income, reported barriers and farmer demographics, in addition to organic certification, correlate with diversification and job quality. Which variables are the strongest predictors (that is, most strongly associated with; we do not imply causation) these outcomes? To answer these questions, we ran four linear regression models (Table 4.6), one for each index calculated from the four scales: job quality practices (jq1), job quality attitudes (jq2), diversification practices (agro1), and diversification attitudes (agro2). Due to missing responses for some questions, we did not have sufficient

sample size to include all independent variables in the models; those for job quality were particularly limited as many farms do not hire paid workers and thus did not report on job quality metrics. Additionally, several independent variables were removed due to multicollinearity.

For diversification practices, farm size (p-value = 0.0003), motivations for land stewardship (p-value = 0.003), certification status (p-value = 0.04) and education (p-value = 0.04) were all significant predictors. Motivations for profit (p-value = 0.01) were significantly inversely correlated with diversification practices. In contrast, the only significant predictor of diversification attitudes was motivations for land stewardship (p-value <0.0001). All models were statistically significant.

Gross farm receipts (p-value=0.0001) and net revenue (p-value = 0.01) were both significant predictors of job quality practices. Higher farm receipts were associated with higher job quality practices, and net revenue less than 30,000 per year was negatively associated with job quality practices (thus farms with net revenue higher than 30,000 a year were more likely to have higher job quality). In contrast to job quality practices, motivations for social justice was the only significant predictor of job quality attitudes (p-value of 0.002).

Table 4.6. Regression results table showing results from four linear regression models run for two indices for each diversification and job quality.

*, **, and *** indicate statistical significance at <5%, <1% and <0.1%, respectively.

Independent variables	Dependent variables							
	Diversification practices (agro1)		Diversification attitudes (agro2)		Job quality practices (jq1)		Job quality attitudes (jq2)	
	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value
(Intercept)	3.322e+00	<.001 ***	2.849e+00	<.001 ***	7.289e-01	.005213 **	3.500e+00	<.001 ***
Farm size – gross receipts	1.748e-07	.140255	9.769e-08	0.385	5.084e-07	<.001 ***	1.459e-08	0.90657
Farm size – land in crops	-4.828e-03	<.001 ***	7.471e-04	0.537	-1.135e-03	.450270	-2.491e-03	0.08826 .
Motivations for social justice	NA	NA	NA	NA	3.430e-02	.374370	1.197e-01	0.00207 **
Motivations for land stewardship	2.019e-01	.003261 **	2.875e-01	<.001 ***	NA	NA	NA	NA
Motivations for profit	-8.790e-02	.017658 *	-5.066e-02	0.127	NA	NA	NA	NA
Farm income (net revenue less than \$30,000)	-1.201e-01	.132439	-7.353e-03	0.920	-2.435e-01	.010101 *	-5.766e-02	0.52221
Barriers to DV (average of barrier scores)	[reduced model fit]	[reduced model fit]	-4.392e-02	0.433	-8.866e-02	.179272	-1.015e-02	0.87273
Certification (Uncertified)	1.629e-01	.036901 *	4.688e-02	0.511	1.496e-01	.139407	1.551e-01	0.11775
Farmer age	2.222e-03	.448853	3.963e-03	0.148	NA	NA	NA	NA
Education (bachelors or higher)	-1.585e-01	.040268 *	1.042e-01	0.133	NA	NA	NA	NA
Farmer race (non-white)	-8.233e-04	.994002	-1.152e-01	0.240	NA	NA	NA	NA
Political spectrum (liberal or very liberal)	NA	NA	-1.051e-01	0.163	NA	NA	NA	NA
Observations	94		106		72		71	
Adjusted R-squared	0.2411		0.1875		0.2605		0.1727	
P-value	4.36e-05		0.0003039		8.544e-05		0.003069	

4.5.4 RQ4: What do organic farmers view as the biggest barriers to diversification and job quality?

Overall, the biggest barrier to diversification according to organic farmers was labour demands, followed by cost, management complexity, lack of industry support and lack of information (Figure 4.15). Labour demands, management complexity and incompatibility with technology were all reported as significantly higher barriers for certified organic farms than for uncertified organic. Uncertified organic farms reported neighbours' opinions as being a significantly higher barrier to diversification than certified organic farms, which might suggest that uncertified organic farms' neighbours approach agriculture in a way that relies more on industrial monoculture approaches than diversified ones.

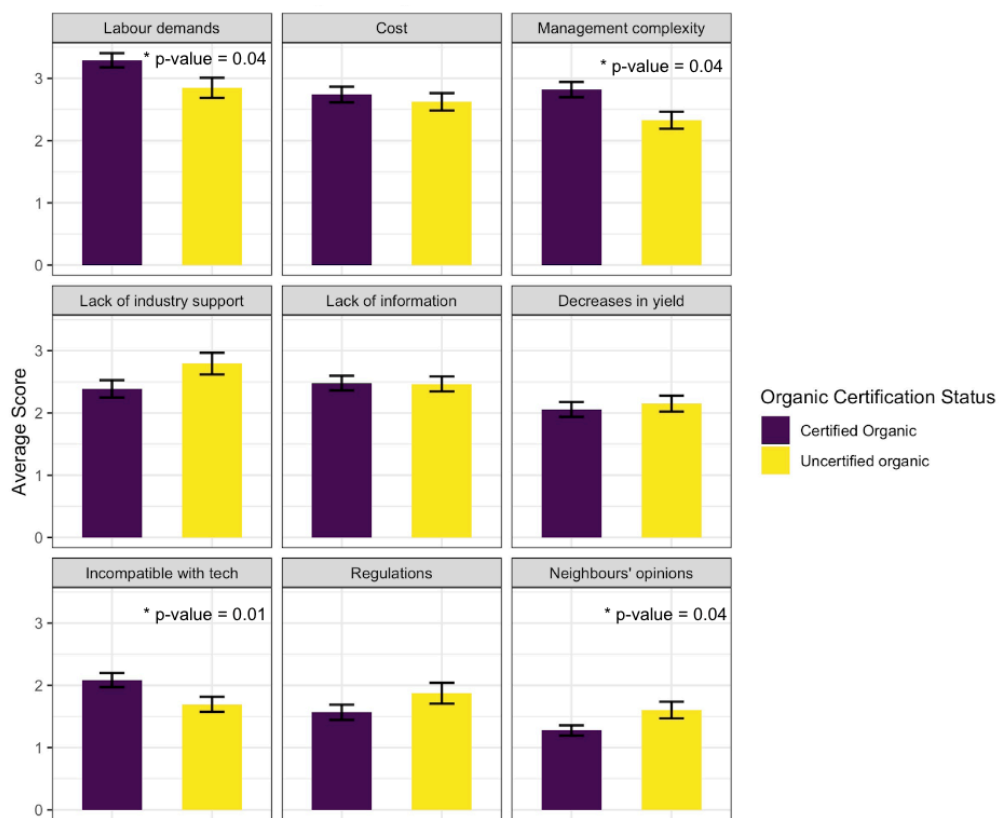


Figure 4.15. Barriers to diversification by certification status on organic farms (certified and uncertified). Barriers are ordered by average score in descending order, and showing results of Mann-Whitney-Wilcoxon Test where p-values < 0.05.

In terms of support for diversification, farmers offered a range of responses including non-profits including Young Agrarians, Farm Folk City Folk and the Society Promoting Environmental Conservation (SPEC); cooperatives such as the BC Eco Seed Coop; and, a regional extension group (Kootenay Boundary Farm Advisors). The most commonly cited type of support for both certified and uncertified organic farmer was organic associations and certifiers including the provincial Certification Association (Organic BC) and regional certification bodies within BC. As such, both uncertified and certified organic responses capture notable support from organic associations all over the province for diversification.

The biggest barriers to job quality for organic farmers in this survey were cost, management complexity, lack of industry support, and lack of information (Figure 4.16). Other than labour demand, which was not included as a possible barrier for job quality, the relative rank of barriers was identical to those for diversification. While we found that diversification and job quality were uncorrelated, the fact that the reported barriers were so similar suggests that interventions to reduce barriers could be leveraged to benefit both of these in tandem. There were no significant differences in reported barriers between certified and uncertified organic farms.

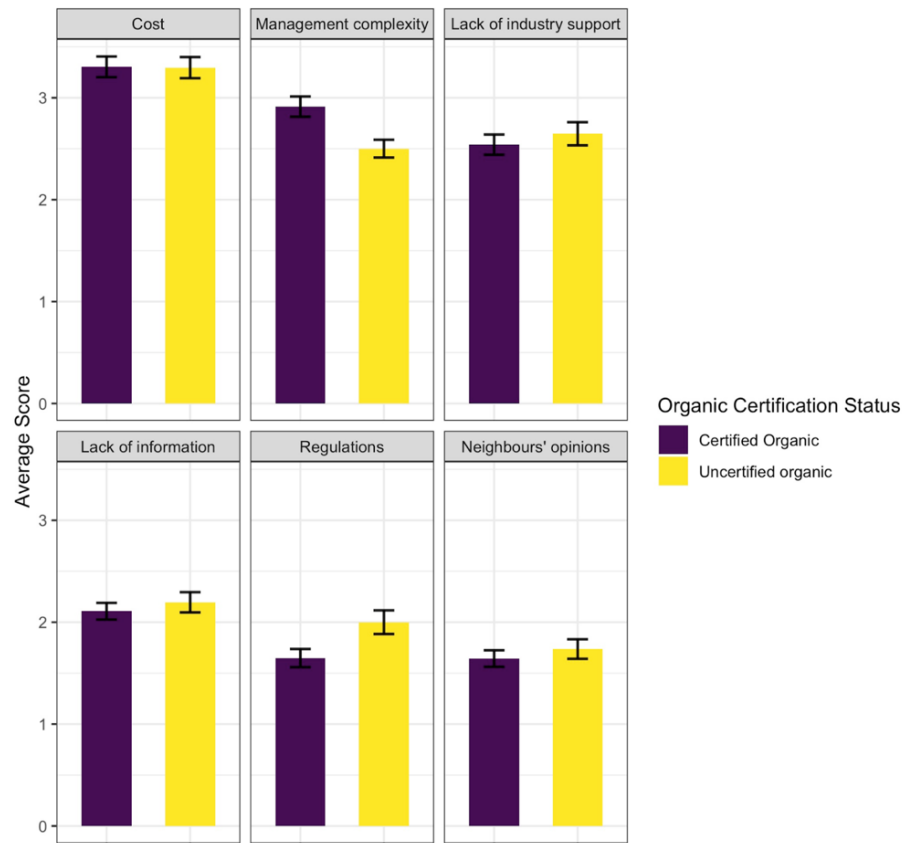


Figure 4.16. Barriers to job quality by certification status on organic farms (certified and uncertified). Barriers are ordered by average score in descending order. No differences between groups were statistically significant according to Mann-Whitney-Wilcoxon tests.

In general, participants named fewer supports for job quality than for the question about supports for diversification . The most commonly named supports amongst organic farmers were AgSafe and Worksafe BC—both government supported agencies dedicated to supporting occupational health for workers in the province. The Columbia Basin Trust (a Trust created by an Act of the BC government legislation that supports local food production, ecosystem health and other priorities in the Columbia Basin region) was also named by several participants. Notably, several certified organic farmers named learning from other farms about how to improve job quality on their farms, whereas no uncertified or non-organic farmers named this as

a support. Organic associations and even a specific organic farms were also listed by a number of certified farmers as supports for job quality improvements. The data here suggest certified organic farms appear to be more networked, and are aware of more supports with respect to improving the quality of jobs on their farms.

4.6 Discussion and conclusion

In summary, we found greater variation in organic farmers' (both certified and uncertified) practices than in their attitudes and approaches regarding diversification. Further, we found there were no significant positive correlations between attitudes and practices for diversification. As such, our results suggest that organic farmers' attitudes about diversification are stronger than their management practices. We also found no evidence that certified organic farms have higher diversification than uncertified farms, and for some practices, uncertified organic farms in our sample were more diversified. This was contrary to what we would expect given the strong principles and practice requirements related to agroecological diversification in the Canadian organic standards (Klassen, Luna Perez, et al., 2022), but could be driven by socio-economic factors that drive certain types of vegetable farms to get certified in the first place.

Importantly, our regression results show that farm size and motivations were more significant predictors of diversification practices than certification when looking at both groups of organic farms, and in fact, uncertified organic farms were more strongly correlated with diversification. This is consistent with other literature that finds that smaller farms are more diversified globally (Ricciardi et al., 2021) and amongst organic fruit and vegetable farms in the US (Liebert et al., 2022), and with scholarship that highlights the importance of motivations and values in the adoption of beneficial management practices (Darnhofer et al., 2010; Prokopy et al.,

2019). In other words, amongst organic vegetable farms in BC, small and ecologically motivated farmers were more strongly associated with diversification than those who are organic certified.

Despite the sector's stated value of Fairness, high scoring attitudes toward job quality, and data suggesting strong supports within the organic movement and network, certified organic farms did not fare better than uncertified organic farms in terms of job quality, and scored poorly on practice measures. Further research into more specific aspects of vegetable systems and more detailed look at socio-economic context of production, including but not limited to markets, may shed light on the reasons for the small but significant differences in agroecological management between certified and uncertified organic farms.

Similar to diversification, we found no evidence that certified organic farms provide better quality jobs than other farms, and in many cases certified organic farms scored the lowest for job quality. This is also in contradiction to the organic sector's clearly stated ideological commitment to Fairness (Klassen, Fuerza Migrante, et al., 2022). One exception to this was the proportion of labour that is unpaid, which was slightly higher for uncertified organic farms, and may be the result of efforts within the organic sector to curb the practice of unpaid apprenticeships (Ekers & Levkoe, 2015; Weiler, Otero, et al., 2016). Unpaid labour aside, the majority of organic farms (certified and uncertified alike) showed relatively poor job quality practices, and similar wages. On the whole (and similar to diversification), organic farmers showed strong agreement with the job quality attitudinal scale variables (jq2), but scored relatively poorly on actioning these attitudes through job quality practices (jq1). This discrepancy between attitudes and practices is likely not uncommon. Reid-Musson and colleagues similarly reported that participants in their study in Alberta "placed a high value on safety and health in agricultural operations, for family members, farm visitors and employees;

however, farm safety values did not translate into farm health and safety practices” (Reid-Musson et al., 2020, p. 8).

Why do we think that certified organic farms did not fare better in terms of job quality? Our data suggest that the price premiums of organic are insufficient to overcome the added complexity and cost of management that come with improvements to the dependent variables, even in combination with motivations and attitudes in line with these improvements. The only two significant predictors for job quality practices on organic farms were gross farm receipts (a measure of farm size) and farm income (both significant and positive correlations), consistent with results from Harrison and Getz (2015) that larger farms had higher job quality. Our analysis of differences between certified organic and uncertified organic farms show little difference values or motivations, but notable differences in economic indicators of gross farm receipts and net revenue. As such, it is possible that the certified organic farms in this sample experience a deeper integration into capitalist agri-food markets, and are thus under more pressure to produce more with less.

Despite theoretical reasons for the link between diversification and job quality, such as reduced pesticide exposure, the emphasis on building ecological knowledge and skills, and the presumed increased diversity of tasks (Carlisle, Montenegro de Wit, DeLonge, Iles, et al., 2019; Timmermann & Félix, 2015), we found no strong link between the two dependent variables. However, this null result could be because of the aspects of job quality we deployed in this research. We would not necessarily expect these important aspects of job quality as determined by sociological research (such as HR procedures, level of interaction with employees, or wages) to be associated with diversification. However, we did find that values of (universalism and

benevolence) and motivations that were associated with diversification were also associated with job quality.

A priority for future research focusing on labour and sustainable agriculture is to further develop theory and empirical applications of the multi-faceted concept of job quality for hired farm workers. We found evidence of synergies and trade-offs between the different variables we tested in our jq1 and jq2 measures. Kalleberg (2013) writes that while there are theoretical reasons to expect some aspects of job quality to be positively correlated, it is also common that jobs exhibit “compensating differentials”, that is, when employers compensate for the lack of one benefit (e.g. opportunities for advancement and promotions, or formal workplace contracts) with another (wages) (Kalleberg, 2013, p. 11).

In addition to exploring trade-offs *between* indicators of job quality, there is also uncertainty about how individual indicators play out in practice. For instance, the extent of interaction between employers and employees can be considered an indicator of job quality. However, Gray (2014) illustrates the “paternalistic price of proximity”, where close relationships between workers and employers have been used to discipline and coerce workers on small family farms by offering workers benefits that they can only reciprocate with good behaviour in the workplace (Gray, 2014, p. 53). As such, this indicator should not be used uncritically, and indicator-based approaches should be coupled with qualitative and ethnographic research that focuses on worker perspectives to be able to assess job quality more accurately.

Future research could explore whether different aspects of job quality might be offered by different types of farms, and should prioritize advancing empirical understandings of how farmworkers themselves define and envision job quality in agriculture. Investigating what good

quality jobs in agriculture could look like is an important part of envisioning alternatives and identifying improvements that farmers and the institutions that support them can make.

In conclusion, we cannot assume sustainable farming will be achieved by addressing field management practices alone, and for aspects of job quality explored herein, there is no reason to believe that more diversified farms (or organic farms) will necessarily provide better jobs for employees. Thus, agroecological transitions risk causing sustainability trade-offs if farmers are not supported to address job quality alongside ecological diversification.

Chapter 5: Sharing the struggle for fairness: Exploring possibilities for solidarity & just labour in organic agriculture



Painting by members of Fuerza Migrante in collaboration with BC Migrante and Company Erasga, created in 2018.

5.1 Introduction

The contemporary organic sector¹⁵ stems from diverse foundations, from the agricultural communities of India where Sir Albert Howard developed the so-called “Indore method,” to the

¹⁵ We use the term “organic community” to refer to the collective of individuals who advance the work of the organic movement, and who are active in the discussions and activities that define it. We use the term “organic sector” to refer to the larger assemblage of official processes and institutions, including the market-oriented dimensions of organic agri-food production, which are animated by the organic community. While the organic community also includes eaters, processors, and others who play a crucial role in the evolution of the organic sector

environmental movement spurred by Rachel Carson's *Silent Spring*.¹⁶ Though perhaps a lesser-known link, the organic movement was also bolstered by hundreds of thousands of Mexican migrant farm workers in the late 1960s, around the same time that the organic food movement was starting to gain traction among both farmers and consumers in the U.S. The United Farm Workers (UFW) protested hazardous working conditions caused by unsafe application of toxic pesticides, and under the leadership of Cesar Chavez, Dolores Huerta, and others, and in collaboration with allies like the Black Panther Party, succeeded in mobilizing millions of consumers to boycott the grapes and lettuce they were working to produce (Araiza, 2009; Garcia, 2013). The coalitions they formed were a radical act of labor and racial solidarity (Minkoff-Zern, 2014a), and the resulting boycott bridged the linked struggles for farmworker justice and the interests of health and social justice-minded consumers—a boon for the organic market (Obach, 2015; Sligh & Cierpka, 2007). They also succeeded in bargaining with producers for the first-ever farm labour contract in the history of California (Garcia, 2013).

Despite this early connection to the labour movement and other social movements of the 1970s, scholars, activists, and the public question the current extent of the organic sector's commitment to social justice in certified organic farming. Legal organic standards do not usually govern social aspects of production, such as working conditions (Klassen, Luna Perez, et al., 2022; Seufert et al., 2017). Many alternative food movement spaces occupied by the organic sector (e.g., farmers' markets) recreate and perpetuate hierarchies of power and privilege (Alkon, 2008) and invisibilize the work of food and farm workers, many of whom are racialized migrants

through their participation in organic supply chains, the focus of this paper is on those who participate in or work on organic food *production*, specifically.

¹⁶ Other scholars have detailed the diverse origins of the organic sector globally. For an exploration of this important history, see Heckman, 2006 and Lockeretz, 2007.

(Alkon, 2013; Sachs et al., 2014). Combined with consumer fears about pesticides and ideals about ethical and “good” foods, the economic barriers of higher-cost organic produce can also reinforce diet- and nutrition-related inequities (Cairns et al., 2013; Huang et al., 2016).

While the contemporary dominant notions of “organic” may have strayed from its social justice foundations, some argue that those foundations may never have been stable to begin with. Organic farming is not entirely independent from the agrarian colonial project, which was used as a tool for dispossession and displacement of First Nations when the first white settlers arrived in North America (Carter, 2019; Daschuk, 2013). Many practices that are foundational to organic and regenerative farming (e.g., polycultures and agroforestry) are built on Indigenous knowledge and cultivation methods, often without acknowledgement, contributing to the white-washing of sustainable agriculture (Heim, 2020). Through temporary foreign worker programs, agriculture in much of North America depends on the labour of migrants, including Indigenous peoples of Mexico, who seek work in the U.S. and Canada due to the impacts of liberalized trade and structural adjustment on their home communities (Holt-Giménez et al., 2010; Rosset, 2006). Others have argued that the individualist “back to the land” movement (to which many organic farmers subscribe) is white supremacist and European settler-centric at its core (Calo, 2020; Philpott, 2020).

While acknowledging these injustices, this paper focusses primarily on openings for possible just futures. This research was sparked by the incipient development of relationships between members of an organic farming association, Organic BC (formerly the Certified Organic Associations of BC or “COABC”), a migrant rights collective (Fuerza Migrante) and university researchers with the possibility of becoming a “progressive-radical alliance” (following Holt-Giménez & Shattuck, 2011). Here, we seek to explore the ways in which actors

in the organic sector are working towards more fair and just labour in organic agriculture. We draw from data collected through qualitative interviews, participant observation, and document analysis, and several years of participatory research and engagement by Fuerza Migrante, Organic BC, and university researchers relating to labour and migrant workers in the organic sector.

We examine how approaches to addressing labour-related injustice taken by the organic community and those fighting for migrant justice challenge and/or complicate one another (Rosol et al., 2022). In particular, we ask whether the “progressive” organic community’s recent work related to labour issues signals an opening towards the more “radical” struggles for rights and status advanced by the migrant justice movement (Holt-Giménez & Shattuck, 2011). We draw on theoretical work on emancipatory social science and transformations (Wright, 2010) and post-capitalist relations (Gibson-Graham, 2006) to help us assess the potential of these efforts to support transformational change. Both of these bodies of theoretical and conceptual work illuminate a “politics of economic possibility” (where we want to go) as well as different strategies for transformation of social institutions (how to get there).

We begin by considering the relationship between the organic sector, “social fairness,”¹⁷ and labour, focusing on migrant labour in the Canadian context. We then provide an overview of our theoretical groundings and a description of the methodology used for this article. In our findings section, we discuss efforts by a subset of the organic community in BC and in Canada to better share the struggle for fairness with farm workers, and assess how these efforts align with

¹⁷ For the purposes of this paper, we use “social fairness” to refer to relationships among and between human beings, with a focus on, but not limited to, the relationships between farm operators/employers and farm workers. The principle of fairness as defined by IFOAM refers more broadly to relationships with other living beings, including plants and animals.

the demands and struggles of migrant workers. We then discuss possible transformative openings for the organic community to work towards solidarity. We conclude with lessons for more just food movement futures and the ways that complementarity between movements can give rise to them.

5.2 Background: Organics, justice & agricultural labour in Canada

5.2.1 Just organics?

We conceptualize the “organic community” as part of a broader social movement linked to the organic agri-food sector, operating both within and adjacent to organic institutions, including legal standards frameworks and research centres. Many actors in the organic community align themselves with the principles articulated by the International Federation of Organic Agriculture Movements (IFOAM): Ecology, Health, Fairness and Care. Yet, for many food system actors today, the word “organic” evokes a different narrative. Over the course of several decades, the global organic movement has achieved major milestones with the creation of national organic standards and regulations.¹⁸ These legal and regulatory developments have ushered in a wave of interest from new actors, including governments and larger corporate agri-food firms, who in turn have wielded their influence on the sector. A growing body of research and scholarship has examined these changes of rapid growth, market mainstreaming, and corporate cooptation, and has called into question the adherence of the contemporary organic sector to its principled roots (Buck et al., 1997; Guthman, 2004, 2014; Jaffee & Howard, 2010).

¹⁸ In Canada, voluntary national standards were released in 1999, and federal organic regulation to accompany the standards was put into place in 2009. In the United States, the Organic Foods Production Act was passed in 1990, and the final rule that established the United States Department of Agriculture (USDA) National Organic Program were released in 1999. Globally, sixty-eight countries currently have fully implemented organic regulation, and twenty countries endorse regional voluntary standards (Willer et al., 2020).

Many of these scholars have concluded that the capitalist context in which organic agriculture operates, including its dependence on extractive processes and low wages, has limited it from achieving its radical potential (Allen & Kovach, 2000; Friedmann, 2005).

As the organic sector has evolved to include larger farms with higher labour demands, and markets have expanded to include international trade, the fairness principle has been the subject of increased discussion and debate (Kröger & Schäfer, 2014; Sligh & Cierpka, 2007). To address gaps in organic standards with respect to fairness, IFOAM first included a section on social fairness in the 1996 standards, which now include requirements and recommendations for working conditions, local community impacts, and Indigenous land rights (IFOAM-Organics International, 2019). While the IFOAM standards represent concrete commitments to social justice that go beyond a statement of principle, the IFOAM standards—unlike national standards in countries with organic laws and regulation—are *voluntary*. As such, it is unclear how these ideological commitments translate to concrete practice in organic production in different jurisdictions.

There are strong theoretical arguments for why diverse, organic and agroecological farms may create the conditions for more just labour (Carlisle, Montenegro de Wit, DeLonge, Iles, et al., 2019; Timmermann & Félix, 2015). While some research has posited social benefits of organic agriculture due to increased labour demands that can provide rural employment (Reganold & Wachter, 2016), this presumed positive outcome rests on the unproven assumption that organic agricultural jobs are “good” jobs. Yet, scholarship and activism focusing on injustice in the food system have highlighted the problematic nature of labour relations on organic farms and the associated struggles for rights, justice and decency for workers (Gray, 2014; Sbicca, 2015; Weiler et al., 2016).

While agricultural jobs in general have been shown to be unsafe, poorly paid and with fewer opportunities for advancement, there are few large-scale studies that examine whether organic farms provide better conditions for farm workers (Seufert & Ramankutty, 2017). Emerging research shows that organic farms are not exempt from inequities that farmworkers experience in the broader agriculture sector, including the un[der]paid labour of farm apprentices, the moral economy of self-exploitation by organic farmers, and the use of “unfree” racialized migrant farm workers (Ekers et al., 2016; Galt, 2013; Weiler, Otero, et al., 2016). Moreover, unpaid apprenticeships on organic farms (e.g., WWOOFing) may contribute to devaluing farm work more generally, as they provide a source of free labour (albeit less skilled) without engaging in a politics of solidarity with waged and often racialized farmworkers (Gray, 2014; Guthman, 2017).

While both the public and researchers anticipated occupational health gains for labourers on organic farms, the evidence paints a more complicated picture. In what is perhaps the largest quantitative study comparing working conditions on organic and conventional farms, Cross et al. (2008) found no difference in the overall health outcomes of workers, with all workers scoring well below what is considered “normal” in the non-farmworker population. While there is some evidence of decreased pesticide exposure on organic farms (Costa et al., 2014), workers face significant risks to safety and wellbeing in the form of musculoskeletal disorders, traumatic injuries, infectious diseases, and mental health challenges which happen irrespective of pesticide use (Hennebry et al., 2016; Villarejo & Baron, 1999). Moreover, the “naturalness” or non-synthetic nature of an allowable organic input is not necessarily a proxy for non-toxicity.¹⁹

¹⁹ For example, elemental sulfur is an allowable input in organic production in both the U.S. and Canada (CGSB, 2020b; USDA, 2018), but has been documented as one of the leading causes of pesticide poisoning for farmworkers in California (Reeves et al., 2002).

In a recent project, Soper (2019, 2021) found that workers prefer working on conventional farms due to improved earning potential. When assessing job quality (e.g., wages and employment procedures) across farm size, Harrison and Getz (2015) found that larger organic farms provided better quality jobs than their smaller counterparts, and that job quality benefits were disproportionately afforded to white workers in managerial positions across farms. In their exploration of precarious labour used in “alternative” food production, Weiler et al. (2016) found actors used a moral economy frame based on the ethical foundations of “alternative” food production to rationalize the exploitation of migrants and unpaid interns.

At the same time, organic farms in Canada require more labour: farms with organic products for sale account for 7 percent of all hired employees in agriculture in Canada, even though they only account for 2.9 percent of farms and 2.1 percent of farm area (Statistics Canada, 2016b). Data about the use of migrant labour on organic farms is limited, but preliminary analyses of a survey of BC vegetable growers and publicly available data suggest that organic farms utilize migrant farm workers at a rate that is similar to other farms (Klassen et al., 2022). Instances of abuse, neglect and unfair treatment of migrants have been documented on Canadian farms with organic production (Keung, 2010; Woodward, 2019a, 2019b). While organic farms represent a fraction of overall production, the organic sector holds significant potential for making progress towards labour fairness in practice because of its unique social movement legacy, stated values and intentions towards social justice, and disproportionate reliance on hired manual labour.

5.2.2 Unfair and unfree: Migrant agricultural workers in Canada

Since 1966, seasonal agricultural worker programs have facilitated the migration of individuals to perform agricultural work that Canadians or permanent residents are unwilling to do (Government of Canada, 2021b).²⁰ More than 72,168 positions for Temporary Foreign Workers were granted for primary agriculture in 2019 (Employment and Social Development Canada, 2020a). The majority of these (46,719 positions) were designated under the Seasonal Agricultural Worker Program (SAWP), facilitated by bi-lateral agreements between the national governments of Canada, Mexico, and participating Caribbean countries.

Conditions of employment for agricultural migrant workers in Canada have been characterized by the maxim of the four Ds: dangerous, dirty, difficult, and devalued (Otero & Preibisch, 2010). Migrant workers experience unique structural and socioeconomic vulnerabilities that exacerbate issues that stem from the nature of their work. Individuals who come via the SAWP receive work permits that are tied to one employer, meaning they cannot easily leave poor conditions on one farm to find better conditions elsewhere (Otero & Preibisch, 2015). These “unfree” conditions, combined with the impacts of neoliberal restructuring on working conditions in workers’ home countries, can result in workers accepting or submitting to conditions that other workers would flee (Binford, 2009; Otero, 2011). Migrant workers face unsafe working conditions, barriers to accessing healthcare, unsanitary housing, and isolation from their families (Caxaj & Cohen, 2019). If a migrant farm worker experiences abuse or a

²⁰ The TFWP includes several “streams” through which workers are brought to Canada to labour in agri-food operations, including the Seasonal Agricultural Workers Program (SAWP) (where workers come for a maximum of eight months at a time to work in primary agriculture), the “Agriculture stream” (where workers come for up to twenty-four months at a time to work in primary agriculture), and the high- and low-wage streams (for work in other sectors, including agri-food but not including primary agricultural commodity production) (Employment and Social Development Canada, 2020b).

violation of their rights, there are significant barriers for them to access justice due to their precarious status, which is why they are considered to be amongst the most vulnerable workers in Canada (Faraday, 2012; Preibisch & Otero, 2014; UFCW Canada & Agriculture Workers Alliance, 2015).

A growing number of organizations, coalitions, and networks are working towards rights and justice for migrants in Canada. While some have existed for decades (e.g., Justicia for Migrant Workers), others have emerged more recently in response to emerging regional advocacy needs, expanding alliances and networks, as well as junctures stemming from different priorities or ways of working. Most of these organizations provide forms of direct support, including material support, facilitating culturally relevant celebrations, and accessing their rights and services.

Together with other experts and advocates, and in light of exacerbated inequities caused by COVID-19, migrant justice groups have called on the federal and provincial governments for structural changes to the TFWP, including: (1) regularized/resident status for all migrants upon arrival and the end of repatriations; (2) granting of open work permits to migrants; (3) improved protections and benefits; (4) improved procedures to follow-up on complaints from workers; (5) stronger mandates and supports for employers; (6) improved inspection regimes; (7) improved access to information for workers; and, (8) improved representation of migrant organizations in planning and implementation of supports (Barnetson et al., 2020; Haley et al., 2020; Migrant Workers Alliance for Change, 2020; Weiler, McLaughlin, Janet, et al., 2020).

5.3 Theoretical grounding: Transforming labour relations, building solidarity

In his influential book *Envisioning Real Utopias*, sociologist Erik Olin Wright lays out the logic and potential of emancipatory social science and pathways of social transformation towards “the elimination of oppression, and the creation of conditions for human flourishing” (2010, p. 10). Wright’s theoretical framing offers several important insights for transforming agricultural institutions towards fair labour relations. The first is a common understanding of “the ways in which existing social institutions and social structures systematically impose harms on people” (Wright, 2010, p. 11), and the role of economic structures of capitalism in doing so. Social justice—the equal access to the necessary material and social means to live flourishing lives—animates critiques of capitalism, as capitalism depends on extracting as much labour effort from workers at as little cost as possible, and incentivizes increasing the vulnerability of workers, making it inherently exploitative. Though not always framed as an explicit critique of capitalism, broader labour movements in agriculture in North America similarly challenge the economic and political structures that create systematic vulnerabilities for workers in the food system (Alkon, 2014). Indeed, the historical development and evolution of agri-food systems globally has been premised on the systemic vulnerabilities of workers (McMichael, 2005; Moore, 2003).

Second, Wright (and other public scholars) advocate for a role for social science beyond diagnosis and critique, towards the task of identifying where we want to go instead, and how to get there. This approach is complementary to J.K. Gibson-Graham’s alternative project of “reading the economy for difference rather than dominance”, to give the full diversity of alternative economic relations and practices “space to exist” (Gibson-Graham, 2006, p. 59). While economic alternatives that re-socialize economic relations are not new to sustainable food

movements (e.g., Community Supported Agriculture where eaters have a direct relationship with the farm and share in the risk of farming), viable alternatives that challenge the exploitative nature of capitalism and create progress towards social justice remain elusive, impeded by the confines of what Gibson-Graham call “capitalocentrism” or the inability to conceive of economic relations beyond the dominant capitalist model. In other words, we need to do the work to envision, enact and articulate the various dimensions of alternative futures beyond capitalism for them to be possible.

A third aspect of Wright’s theory of social transformation provides language to differentiate between strategies for the transformation of social institutions. Wright’s framework highlights important complementarity between different strategies, such as the way that “symbiotic” strategies within the bounds of state-sanctioned institutions complemented by “interstitial” strategies outside of the terrain of the state create incremental change and open up spaces from where more “ruptural” strategies might become possible.

This paper seeks to better understand efforts and actions by the organic community towards fairness in labour relations in relation to the demands and struggles of racialized migrant farm workers as a counter-narrative to the overall erasure of worker perspectives and privileging of white settler voices in the food movement. Following from the organic community and migrant workers’ linked struggles against the exploitative conventional agricultural model, and drawing from Wright and Gibson-Graham to assess efforts to improve social fairness in organic agriculture, we ask: how do the organic community’s efforts to enact fairness compare with demands from the migrant justice movement? How do they complicate or complement one another? And, how might they work together to define viable alternatives (where they want to go), and pathways to transformation (how to get there)?

5.4 Methodology

This research emerged from a nascent alliance between two BC-based food movement organizations: Fuerza Migrante, a migrant worker collective; and Organic BC, an umbrella association that represents organic certifying agencies in BC. Fuerza Migrante is a volunteer-based organization made up of migrant farm workers and their allies working to build the power, autonomy, and liberty of migrant workers through mutual aid and community support. With shared goals of better understanding the working conditions for migrants employed in organic agriculture, and supporting action in solidarity with them, Fuerza Migrante and the first author (Klassen) co-organized a 2020 conference session on allyship with migrant workers at the annual Organic BC conference. The co-authors have also worked together to share information and knowledge with the organic sector and in other food movement spaces about the struggles of migrant workers (Fuerza Migrante & Klassen, 2020), and what action in solidarity with migrants looks like (Food Secure Canada, 2020).

Organic BC was formed in 1993 to ensure the consistency and credibility of organic certification in BC, and convenes the provincial organic community—including farmers, inspectors, program administrators, food businesses, and researchers—through their annual conference. This paper specifically examines work towards social fairness emerging from organic community actors affiliated with Organic BC, but some of these initiatives are national in scope (e.g., efforts to integrate social fairness into the national organic standards). We also consider perspectives from across provincial and national borders, as many leaders in the BC organic community are also members of national and international bodies working toward more just food production systems.

The findings presented in the next section are drawn from several distinct phases of data gathering. The first author conducted thirteen semi-structured qualitative interviews with organic community members who have been involved with the efforts to advance labour fairness in organic agriculture. The majority of these participants were from British Columbia (seven) and are actively involved with Organic BC and national organic policy work. Additional interview participants from elsewhere in Canada (four) and the United States (two) were recruited based on their involvement as members of the national organic standards committee and with parallel efforts on labour justice certification standards. These participants included farmers, verification officers, and organic movement or sector leaders, and were conducted between September 2019 and April 2021.²¹ One interview was also conducted with another BC-based migrant rights organization that has collaborated with Organic BC in the past. These interviews were transcribed and coded in NVivo using an inductive coding strategy in order to be sensitive to the specific framing, language and key issues shared by participants.

Findings are also drawn from dozens of hours of participant observation in meetings and gatherings related to farm worker justice, fairness in the organic sector, and solidarity with migrant workers. These sessions occurred between November 2018 and November 2020, and included two gatherings and one panel session in BC, and two national workshops involving BC-based migrant justice organizations. Notes and transcriptions of these sessions were also coded using NVivo software, and were used to triangulate and complement data from interviews. In addition to data gathered through interviews and participant observation, perspectives on and demands for migrant justice were contributed by the Fuerza Migrante collective in their capacity

²¹ As per our procedures of consent as approved by the Behavioural Research Ethics Board at the University of British Columbia, interview participants who agreed to be identified have been identified by their position where relevant to the research or remain anonymous.

as a co-author of this paper. Finally, we also analyzed migrant advocacy organizations' websites, reports, and advocacy materials.

5.5 Findings: Working towards fairness in organics

According to the IFOAM, the principle of fairness is “characterized by equity, respect, justice and stewardship of the shared world, both among people and in their relations to other living beings” (IFOAM - Organics International, 2020). Despite the inclusion of fairness as a guiding principle of the Canadian Organic Standards, the standards themselves do not contain a single requirement relating to social fairness, including for workers (CGSB, 2020a; Klassen, Luna Perez, et al., 2022). Yet, the principle of fairness has been the basis of dynamic conversations across the organic sector. Here, we draw from interview and participant observation data to explore efforts by a group of organic community actors to integrate the principle of fairness into organic agriculture in Canada (section 5.1), including efforts to centre migrant worker voices (section 5.2). In the last part of this section (section 5.3), we interrogate how these efforts and the logics behind them are complicated by the demands of migrant workers and migrant advocacy organizations like Fuerza Migrante.

5.5.1 Integrating labour into organic certification

In Canada, the national organic standards are governed by the Canadian General Standards Board (CGSB) Committee on Organic Agriculture (“the Technical Committee”). This multi-stakeholder committee includes over forty representatives from organizations and

associations from across the country (Government of Canada, 2019). They oversee the standards review process that occurs every five years.²²

In recognition of the disconnect between the organic sector's stated principles and its required practices, several individuals came together to propose a new chapter on social fairness to be added to the standards in the most recent revision process (see Appendix E). The proposal included eleven clauses, most of which are focused on actions for employers to improve conditions for workers.

Despite lengthy discussions, the Technical Committee was not able to achieve consensus about the proposed addition during the latest revision process completed in December 2020. According to several interview participants, some actors involved with discussions at the Technical Committee objected to the proposal based on the feasibility of implementation for farmers, which mostly centred around the clause recommending that employers pay a living wage, which brought up tensions about the perceived trade-offs between producer viability and conditions for workers. Participants also described the challenge that the Technical Committee faces in balancing enforceability—a crucial aspect of successful standards—with the more aspirational nature of some of the social fairness ideals reflected in the proposed addition. However, reflecting on the debate that they observed at the Technical Committee, one interviewee challenged a common assertion that social fairness standards would be difficult for organic inspectors to enforce: “[You could] check if there are contracts, and for example, if they have a policy for resolving disputes, maybe some time sheets, like if you've got workers...any business is going to have stuff like that! And you could ask a couple of questions and look on the site and it would be like five extra minutes...so I really don't see why they were complaining that

²² See Nawaz et al., 2020 for further discussion of this process.

it was too many hoops. If they don't have contracts or some arrangement with people they have in, or if they say they are providing housing and they don't" (Interview 11, October 21, 2020).

Other participants felt that the requirements were an unnecessary duplication of existing labour laws. While some participants (both in interviews and participant observation) voiced that they felt the relatively more rigorous inspection regime of the organic sector would be an opportunity to improve compliance with provincial and federal laws, others stated that adding labour-related organic requirements would create an undue burden on the sector to enforce standards that should be the responsibility of the government. While this view was not held by all, the Chair of the Technical Committee elaborated on this as a central reason for objecting to the inclusion of labour clauses in the organic standards: "The overall intention of fairness, from an IFOAM perspective globally, is sometimes seen as being a different conversation in Canada...we have fairly good labour standards in Canada, and we have regulations in Canada. So, it's hard for us to incorporate regulations for labour within the organic standards because that's regulated at a pretty good level" (Interview 5, February 5, 2020).

The assumption that Canada's "fairly good" labour standards and regulations will result in better job quality for workers compared to other jurisdictions is challenged by workers themselves. Advocacy groups emphasize that farmworkers in Canada endure poor working conditions, abuse, and stifled rights, and there are also many barriers to obtaining justice when standards and regulations are not followed (see section 2.2). Furthermore, agricultural work is often excluded from employment standards and legal protections, such as the provincial hourly minimum wage in BC (Weiler & Fairey, 2021), or the right to unionize in Ontario (Vosko, 2018). Moreover, Weiler and Encalada Grez (2022) demonstrate the ways that governments in

Canada have “long relegated migrant farmworkers to a legal space of exclusion, exemption, and exceptionalism” (pp. 45)

Rather than the addition of enforceable clauses around working conditions, the committee put forward the addition of an expanded definition of the principle of fairness (Table 5.1), now included as an annex in the 2020 Canadian Organic Standards (CGSB, 2020a).

Table 5.1. Expanded definition of the principle of fairness in the Canadian Organic Standards

IFOAM Organics International describes fairness as: Organic Agriculture should build on relationships that ensure fairness with regard to the common environment and life opportunities. <i>[Expanded definition]</i> Fairness is characterized by equity, respect, justice, and stewardship of the shared world, both among people and in their relations to other living beings. This principle emphasizes that those involved in Organic Agriculture should conduct human relationships in a manner that ensures fairness at all levels and to all parties— farmers, workers, processors, distributors, traders, and consumers. Organic Agriculture should provide everyone involved with a good quality of life, and contribute to food sovereignty and reduction of poverty. It aims to produce a sufficient supply of good quality food and other products. This principle insists that animals should be provided with the conditions and opportunities of life that accord with their physiology, natural behaviour, and wellbeing. Natural and environmental resources that are used for production and consumption should be managed in a way that is socially and ecologically just and should be held in trust for future generations. Fairness requires systems of production, distribution, and trade that are open and equitable and account for real environmental and social costs.
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Well-defined principles do not guarantee any concrete improvements for farm workers; however, the processes of deliberation and discussion that resulted from the proposal were seen by many interview participants to represent progress towards actualizing fairness in the sector. According to interview participants who have been involved with the organic standards writing process, the Canadian standards allow the stated intent of organic production to guide the interpretation and enforcement of the standards. One organic inspector who was part of the effort to add social fairness requirements described how even the older, more abbreviated definition of fairness has enabled her to investigate working conditions on organic farms: “As I have

inspected increasingly large operations across Canada and the US, I see that they have temporary foreign workers, and I have—based on the principles of the organic standards, fairness—asked to see the housing that the people are receiving, and to ask some questions [about working conditions]” (Interview 11, October 21, 2020). As such, the expanded definition of fairness may open up possibilities for verification officers, certification bodies, and the Standards Interpretation Committee to consider alignment between this principle and practices on organic farms, and grounds to decertify or raise complaints about farms who do not demonstrate commitment to fairness in practice.

Another proposition brought forward both in national and provincial discussions was to add voluntary questions about fairness and labour to the certification process. One farmer who also serves on the Technical Committee (Interview 6, February 6, 2020) described this option as a possible “first step”, where farmers can describe some of their practices related to fairness in order to “introduce the idea slowly” to farmers. Reporting on this question could nudge farmers towards making some changes that benefit workers on organic farms, and could also help avoid some of the resistance by farmers that would likely result from suddenly introducing a series of mandatory labour requirements. Nearly every individual from the organic community interviewed for this research spoke of the importance of a more incremental approach, coupled with intentional dialogue within the community. The Chair of Organic BC board explained:

I have been involved in informal conversations on [labour and social fairness] and I have seen that needle move a lot.... So I feel like informal conversations about social fairness are of huge value, and I don’t know if formal edits to standards.... I feel like the informal conversations and formal changes to standards should sort of support each other. I feel like the organic movement just has to—especially on this particular issue—the community can’t be dragged kicking and screaming (Interview 12, December 17, 2020).

Participants articulated an awareness that small changes to certification standards for organic farms do not fully address the many inequities experienced by farmworkers across the agriculture sector more broadly. They also consistently expressed a desire to identify feasible measures that they could take within the bounds of the institutions, expectations, and norms of the organic sector. In other words, participants expressed feeling constrained both by what they perceived as being feasible to implement in the certification process, and what aspects of the organic sector they felt they were in a position to change.

5.5.2 Bringing migrant worker struggles to the fore

Conversations about the links between labour and fairness in the organic sector are not new. In the past, the organic community has paid attention to un[der]paid interns and apprentices after allegations surfaced of exploitation. However, several interview participants noted that the organic sector has “moved away from the WWOOFing and apprenticeships,” implying that possible fairness issues associated with these work arrangements have subsided. The feeling that the community has addressed or moved on from these issues has left more space to discuss the unique struggles of migrant workers, the other major group of workers experiencing unfair conditions in the sector. Where labour fairness issues have been discussed in a broader sense in progressive food movement spaces, the perceived comparison between the experiences of un(der)paid white apprentices with racialized migrant farm workers has resulted in significant tension and warranted pushback from session participants. Based on participant observation in these spaces, elucidating the unique structural conditions that make migrant workers distinctly vulnerable to abuse, exploitation, and health inequities, must be a precursor for enacting labour fairness in organic agriculture.

A central aim of the sessions we have been involved with as part of alternative agriculture and food gatherings—and a central demand from migrant justice organizations—is to make space for and listen to migrant workers themselves, and to centre their voices and demands. At the 2020 Organic BC Conference, members of Fuerza Migrante shared their experiences and their work to foster migrant power through mutual aid strategies. The conversation was focused on the forms of coercion used by employers as well as the structural barriers for workers to access benefits and realize their rights while in Canada. In particular, a significant portion of the discussion focused on the lack of worker voice in, and knowledge about, their own employment contracts. During this session, a member of Fuerza Migrante described this situation: “[The contract] is always negotiated between the Canadian government, the Mexican government, and employers. The voices of the workers are not included in this situation. We can see that workers of course have a lot to say about the contract, but there is nothing really in place to have their voice included.”

Another collective member from Fuerza Migrante also raised that sometimes workers don’t even have access to their contracts, either because they are not given a copy, or they are only given a copy in English. Reflecting on this session several months later, one interview participant from the organic community recalled: “That was the thing that made my jaw drop about their presentation. [That there is] no representation of workers around the tables where these agreements are being negotiated is like —Wait. What? That doesn't even make any sense! [Contracts] provided in English only. Like oh my god this is freakin crazy!” (Interview 12, December 17, 2020). In response to this and other instances of the structural disempowerment of workers, conference participants brainstormed possible actions that they could take, echoing the concerns and issues being raised.

Both attendees and organizers of these sessions seem to recognize the imperative to centre the experiences and voices of migrant workers themselves. However, Fuerza Migrante reminds us that these efforts are still preliminary, and better representation of migrant workers in these conversations is still needed. In a discussion session about allyship with food workers at a recent food movement gathering, a member of Fuerza Migrante put it frankly, describing the concrete improvements they are seeking: “The employer asks that [the worker] complies with the working hours, with the farm regulations...but he hardly fulfills his part of the contract to be responsible for our health, for our payments, our housing conditions.... And that is what I would like to see at the end of all this. Thank you for the invitation [to speak], but still.... I would like everyone to reach a more physical contribution, a more sincere contribution, a significant contribution...to really raise awareness.”

Discussions within the organic community about social fairness and labour, even when focused on struggles of migrant workers, have largely been limited to the scope of the organic certification processes; however, they do show indications of the beginning of a process of reckoning about the responsibility of the organic sector to better understand and advocate for the issues facing migrant agricultural workers. Along these lines, the author team has been involved with several efforts to improve access to data about employment of migrant workers on organic farms, and access to information for organic farmers who employ migrant workers (Fuerza Migrante & Klassen, 2020). Recently, an Organic BC board member who sits on a federal agriculture committee raised concerns with the committee’s chair that a push for “less red tape” for bringing migrant workers to Canada could translate to lower standards, and suggested the government consult with a migrant rights group before making any changes to the TFWP. However small, they attributed this action on their part to their enhanced awareness of migrant

worker struggles as a result of one of the sessions with Fuerza Migrante at the Organic BC conference.

In Table 5.2, we summarize the propositions from the organic community to recognize the voices and challenges of migrant workers, and to integrate labour fairness into the organic certification process. These efforts contribute to educating a larger public about the structural injustices facing migrant workers, but they also help to position these injustices as ones that should be shared by the broader food movements—for food security, sovereignty, and justice—that they represent.

Table 5.2. Efforts and proposed actions proposed by the organic community to address social fairness for workers.

Effort or Proposed Action	Goal	Scale/Location of Observed Intervention	Status
A. integrating fairness requirements into the Canadian Organic Standards	include working conditions in organic inspections; possibility to de-certify for infractions	national; discussion happening at the technical committee of the CGSB process	proposed; deferred until 2025 revision process
B. expanding the definition of fairness in the Canadian Organic Standards	further articulate the centrality of fairness in organic agriculture, including for farm workers; open up space for further integration of concrete standards	national; decision made by the technical committee of the CGSB process	published in Appendix C of 2020 organic standards.
C. integrating labour considerations into the certification process in a voluntary way	raise awareness about what is expected of organic farmers and employers; employer education that could lead to possible action	proposal has been raised both at the national technical committee, and for a subset of BC organic certification bodies	proposed
D. increasing employer education on labour fairness issues in organic sector	improve organic sector's access to information about migrant workers on organic farms; inspire action to support improvements	provincial in BC (but likely happening elsewhere in decentralized ways)	nascent; preliminary interest and action by organic association in BC
E. centering voices and experiences of migrant workers	community education and representation; make visible and listen to the experiences of racialized migrant farm workers within organic and broader food movement spaces	national; many spaces and organizations across Canada (e.g., the national farmers union, food secure Canada), including at gatherings of organic BC	nascent
F. amplifying demands from migrant workers (e.g., status for all on arrival)	increase collective power of these calls for action; democratic participation as citizens as opposed to individual action as employers or consumers	N/A	nascent; preliminary interest and action by some organic community members.

5.5.3 A progressive-radical alliance?

The efforts by the organic community described in the preceding sections represent progress towards the principle of fairness in the Canadian organic sector. However, towards the goal of solidarity and alliance-building with more “radical” demands for justice, we must ask how the logics and strategies espoused by those working towards fairness in organics complement and contrast with the central demands of migrant justice organizations like Fuerza Migrante.

Table 5.3 summarizes some of the key efforts, logic, and strategies being advanced by movements advocating for migrant justice and fairness in organics, respectively. When it comes to fairness, participants from the organic community have focused significant efforts on making institutional changes within the sector to address labour as an aspect of social justice (as outlined in section 5.1). However, the proposal to add a clause recommending workers be paid a livable wage has prompted objections from producers based on perceptions of financial viability and competitiveness, which is linked to larger debates about how our current capitalist societies artificially determine the cost of food with little regard for sustainability and community needs. Moreover, the demand for higher wages is not always articulated as a priority demand for migrant workers.²³ The organic community’s focus internally is in contrast to the clearly articulated demands of migrant worker advocacy groups from across Canada for broader structural changes to the federal government programs across all agricultural sectors (see migrant justice demands summarized as background in section 2.2), interventions that will require more collective power.

²³ While some migrant advocacy groups do not articulate higher wages as among their key demands for change, in their work to build a worker-centred contract for migrant agricultural workers, Fuerza Migrante articulates higher wages as one of several demands.

Table 5.3. Contrasting strategies and logics of the movements for fairness in organics and Migrant Justice.

	Migrant Justice	Fairness in Organics
Diagnosis of problem	• Explicit calls for multi-dimensional solidarity rooted in anti-oppression, anti-capitalist, and anti-patriarchal critiques.	• Acknowledges role of capitalism and colonialism in creating food systems injustices.
Gaps in knowledge or capacity identified	• Importance of internal capacity building in anti-oppression strategies (including anti-colonial and anti-paternalistic).	• Acknowledges gaps in knowledge about worker experiences and extent of migrant labour on organic farms.
Concepts employed in framing of solutions	• Framed around concepts of solidarity, liberty, mutual aid, collective power, justice, community.	• Framed around concepts of regeneration, sustainability, fairness, care, humane treatment, social/food justice, community.
Central proposal or strategy for change	• Structural reform of migrant worker programs focusing on status for all on arrival, equal access to rights and protections, and an end to tied work permits.	• Integration of labour and broader fairness considerations into certification processes.
Additional strategies for change	• Education and support for workers to realize their rights. • End the “whitewashing” of agriculture. • Incorporate workers’ voices in decision making processes that impact them.	• Education for employers. • Support more racially and culturally diverse voices within organic sector. • Incorporate worker perspectives into organic sector discussions.

Migrant justice organizations, researchers and advocates aren’t only advocating for an overhaul of the structure of TFWPs, but improved enforcement of existing rules, regulations, and laws that are in place to protect workers. Fuerza Mirante has voiced a need for effective ways to ensure compliance with existing regulations, and the fair application of existing laws to migrant workers’ claims and complaints. In some ways, this way of thinking is in line with some arguments made at the Organic Technical Committee against the integration of labour standards into organics, as these should be the responsibility of the government to enforce.

These policy and regulations-focused actions are not the only strategies being advanced by migrant justice organizations. Fuerza Migrante is also working to build collective migrant power through mutual aid strategies. In other words, they see value in intervening *outside* of state-sponsored programs and political institutions, including conventional union structures (Fuerza Migrante, 2020). One aspect of this capacity building involves educating workers about

the rights they are entitled to, and providing support for them to access these rights. According to one migrant advocate:

Our view is that educating the workers is much more effective than educating the employers because first of all, the employers already have a legal obligation to know the laws. And, when workers are empowered to know what their rights are, they can take steps to stand up for them. You can educate employers all you like, but if they know they have a workforce that is uneducated about the same things, there is really nothing to stop them from taking advantage of that lack of education (Interview 8, October 14, 2020).

In this interview, this participant went on to offer for their organization to conduct workshops with migrant workers on organic farms to better educate them about the rights, protections, and benefits that they should have access to in Canada. A focus on worker empowerment through education was not explicitly discussed by participants from the organic community, whose emphasis has largely been on employer-focused changes. This conflicts with the views expressed by many migrant justice organizations, as exemplified in the preceding quote, who have articulated not only the imperative to empower *workers* (as opposed to educating employers), but also for this education to come from worker-led movements themselves. The focus on employers, standards, and certification is likely a result of the perceived room to maneuver with farmers being the focus of the organic sector; however, the tensions observed here suggest that supporting migrant justice organizers to educate workers on organic farms (i.e., education by migrant workers for migrant workers) could represent a complementary approach to the organic community's efforts to change standards and certification processes (Table 5.3).

Migrant worker advocacy groups also highlight the racialized dimensions of labour inequities, and the imperative to take structural racism into account when identifying or pursuing

solutions. Organizations advocating for migrant justice prioritize discussions of race and racism, such as the recent campaign on Twitter by J4MW to “Stop whitewashing agriculture” (Justice4MigrantWkers, 2020). Fuerza Migrante names racism as a structural problem impacting the lives of migrant workers, and is working to build internal capacity to integrate anti-oppression strategies, including anti-paternalistic and anti-colonial practice, to ensure they are not perpetuating these systems and structures within their own organization. They have also articulated the imperative for those aspiring to be “allies” to work to address the structural oppression faced by migrant workers in several of the gatherings and conference sessions they have been a part of. For example, one collective member articulated in a gathering how true allyship would “contribute to the destruction of dynamics of power and oppression of the temporary foreign workers.... So if you really want to support migrant workers, you need to take this seriously, and you need to understand that you come to support the workers’ struggle, and for their benefit. Not for your benefit” (Fuerza Migrante, November 16, 2020).

Like many “progressive” food movement factions, organic sector participants from Organic BC have voiced the importance of having more racial and cultural diversity at the decision-making table (Participant observation, February 2020), and two interview participants brought up their personal work towards decolonization and anti-oppression in their local communities and personal lives. However, during the course of this research, neither Organic BC nor the national organic sector institutions explicitly named the role of structural racism and their responsibility to address it. When asked how much the organic community explicitly talks about systemic racism, especially in relation to labour and farm workers, the Organic BC Board Chair responded: “At the [Organic BC] level, not much. Except on committees where again we are like, ‘okay we’re not very inclusive at this organization’.” The difference in explicit structural

analysis of the roots from where social justice issues stem between “progressive” organizations like Organic BC and more “radical” ones like Fuerza Migrante may present a barrier to a productive and positive alliances in the future.

Fuerza Migrante has also expressed caution against the tokenistic representation of people of colour seen in many food movement spaces, and the importance of migrant workers themselves bringing their experiences and voices to weigh into decisions made about the conditions that impact their lives. Perhaps the most visible tension that arises from contrasting these strategies is current paucity of migrant worker voices or representation at any formal decision-making table in the organic sector (e.g., as a voting member of the Technical Committee). If the organic community is to take seriously the demands for improved representation of migrant justice organizations in planning and decision making, more formal representation in governance may be the most logical place to start—for instance, inviting and providing appropriate supports for migrant justice organizations to sit on the CGSB Technical Committee as a voting member.

While the two groups articulate different analyses of the problems at hand with respect to fairness and justice in the food system (see Table 5.3), they share a common recognition of the role that capitalism has played in the exploitation of both human and ecological systems. This is exemplified by the synergies between the key concepts used in their framing of solutions and better futures rooted in justice, fairness, and community. We would like to emphasize that not all organic community members identify with an opposition to, or desire to move beyond, capitalism. This was an issue raised by several interview participants, naming that “[they’re] not all lefties” (Interview 3, January 16, 2020). However, many members of the organic community moving this agenda forward in BC and elsewhere in Canada have explicitly raised the role of

capitalism as the root of problems facing the organic sector, both in interviews and more public fora.

Despite some complementarity, the differences between approaches and the informal nature of the current collaboration—facilitated in large part through scholar-activism—should not be overlooked. The majority of the efforts by the organic community highlighted in this research (Table 5.2) do not respond to the principal demands by migrant justice organizations and their allies (see section 5.2.2). *Fuerza Migrante*, the authors and Organic BC, are still “feeling our way” through a potential form of collaboration that can be helpful to each of our respective lines of work, and no formal plan, project, or initiative, nor working group has as yet been formed. Contrasting the central demands of these two movements may help facilitate this process by naming and working through the political tensions between the two groups (e.g., the employer-focused nature of Organic BC, and the worker-focused nature of *Fuerza Migrante*). Perhaps these differences will also encourage the organic community to look past organic standards and certification reform to the broader horizon of political demands and representation of migrants in discussions about more just agriculture and food futures.

5.6 Discussion

What does theory about social transformation tell us about the efforts by members of the organic community to advance social fairness? The strategies and efforts in Table 5.2 can be characterized in terms of different logics of transformation articulated by Wright (2010): (1) interstitial transformations, where actors build new forms of social empowerment in the niches and margins of capitalist society where they do not appear to threaten dominant classes and elites; and (2) symbiotic transformations, where increases in social empowerment are sought in

ways that simultaneously solve problems for the dominant class on the terrain of the state or by using the state.

Through our conversations and engagement with organic community members advancing work on social fairness, we can see processes of *interstitial* transformation at work in the social movement spaces convened by organizations like Organic BC, which are reinforcing links between migrant struggles and the alternative enterprises and labour relations that the organic movement seeks to foster. This is the social movement work of the organic sector, where a heterogeneity of interests, identities, and constituencies are coming together under shared and articulated values. For Wright (2010), success in interstitial strategies depends on the identification of inhabitable niches; organic actors who participated in this research identified several of such “niches” outside the institutional bounds of organic standards, such as centering the voices of migrant workers in community gatherings and public fora, and advocating for migrant worker participation in decision making.

The petition to add enforceable clauses to the national organic standards can be considered a form of *sympiotic* transformation. Here, actors from the organic community proposing the addition of labour requirements have identified a strategic convergence of interests between consumer expectations and organic values. The expectations of the public that organic should foster an ethic of social justice is not only in alignment with the sector’s stated value of fairness, but with the interest of the organic sector as a whole to maintain its status as a more ethical alternative to “conventional” food production (D. A. Bell, 1980; Seufert et al., 2017).

This work to change the standards is in many ways typical of the “progressive” faction of the food movement, as it seeks to advance a practical alternative to the conventional food system (Holt-Giménez & Shattuck, 2011). Yet, the transformative potential of this work seems to be

challenged by a broader tendency of food movement actors to focus on the food system itself, and especially on individuals' food-related choices, rather than broader politics of societal change (Wilson & Levkoe, 2022). Many critical scholars have identified shortcomings of certification and consumer-focused labelling strategies, including the burden they place on the consumer (Weiler, Levkoe, et al., 2016); the lack of involvement and voice of farmworkers in their development (Sowerwine et al., 2015); and the way that they excuse inaction by governments (Brown & Getz, 2008). Fuerza Migrante and other migrant rights advocates have made complementary arguments, advocating for improved representation of migrant workers, improved enforcement of existing laws and regulations by governments, and the end to the “agricultural exceptionalism” and unwillingness to upset farmers, which has played a key role in reproducing unfair labour conditions (See also Erwin, 2016; Rodman et al., 2016).

Notwithstanding these critiques, Wright points out the value of such symbiotic strategies to “open up” spaces for future transformation. For participants who engaged with us for this research, making changes to the organic certification process is the most accessible form of systemic intervention available to them. If changes to these institutional frameworks can also be a pathway for farmworker voices and demands to enter into the discussion, struggles over changes to the national organic standards could be a space for solidarity and movement building for food justice (Alkon, 2014; Allen & Kovach, 2000). To do so effectively, the organic community will need to work through some of the tensions between these movements outlined in section 5.5.3 (such as a more explicit analysis of structural oppressions), and of course, migrants, migrant justice organizations, and their allies will then decide for themselves whether this kind of alliance is worth their time and energy to build.

Previous research has highlighted the resistance of alternative food movement actors to formal accountability systems and added bureaucracy, and cautions that this aversion may limit the possibilities for fair and dignified work (Weiler, Otero, et al., 2016). However, the perspectives shared by participants in this research suggest that this aversion to formal accountability mechanisms may have been surmounted following the creation of the Canadian Organic Regime. Several participants from the organic community admitted that they had been hesitant to support the institutionalization of organic certification processes at the national scale, but now see the benefits of working with government to legitimize the sector. Viewing the strategies summarized above in Tables 5.2 and 5.3 in this light, the institutionalization of the organic sector over the last several decades may actually help overcome the “anti-politics” barrier discussed by Weiler et al, (2016) and open up further possibilities for the organic community to work with and within institutions under the purview of the state (e.g., national certification) through symbiotic strategies, in addition to working outside of it through interstitial strategies.

The organic community’s efforts to enact institutionalized improvements toward fairness (which may act as guarantees for consumers) may be seen as a continued attempt to persist and compete within a predominantly capitalist, industrial, and large-scale farming industry (Ekers et al., 2016). While improvements that require financial investments (e.g., requiring organic farmers to pay a living wage) may disadvantage organic farmers in the marketplace, improvements to labour conditions and job quality on organic farms that are predicated on social empowerment and non-monetary benefits may aid the sector in differentiation from conventional methods, re-asserting their claim over their alternative agricultural niche and its consumers. Moreover, these improvements to job quality could accrue broader benefits to the organic sector

by attracting and retaining workers, including the children of organic farmers. Several of the core demands of migrant workers also hold potential to “level the playing field” between organic producers and their conventional counterparts, such as the end to tied work permits and granting of permanent residency status, which would enable workers not only to safely flee poor working conditions without risk of repatriation, but to move freely to operations that offer more fair and safe alternatives.

In a sense, both the organic community and migrant advocacy groups are already engaging in a politics of possibility for constructing new forms of “economic politics” (or re-socializing economic relations), though they engage with these alternatives in different ways, and for the most part they are doing so separately. Through their strategies of mutual aid and collective governance, migrant workers and allies are engaging in new practices of the self through self-development as citizens and collective members, and through their cultivation of multidimensional solidarity. Though from an objectively more privileged position, the organic community members seeking changes to norms and practices in the organic sector are finding ways to exercise this power after realistic consideration of the limits and constraints that affect their ability to maneuver (Gibson-Graham, 2006, p. xxv).

For these symbiotic strategies to be successful and create fertile ground for alliances, the organic community will need to be careful not to tokenize participation or representation of migrant workers in their efforts to maintain consumer trust, as this could cause harm to migrant communities in the process. As Saima Habib thoughtfully describes in her reflection on her work in poverty reduction and community food security, transformative work must stem from a place of interconnectedness and mutuality, and be rooted in relationships (Habib, 2022). Similarly, Laura-Anne Minkoff-Zern’s (2014a, 2018) research shows the transformative potential of

redistributing power to workers, including where workers were embraced as leaders, and where traditional producer-consumer and employer-worker binaries are challenged. What offers the most potential based on our analysis would be for the organic community to deepen their conversations about the role of capitalism, racism, and patriarchy in the exploitation of people and the land, which holds potential for common struggle, and to use their institutional influence to advance migrant worker demands.

5.7 Conclusion

For the majority of participants in this study—including those who were interviewed, those who participated in the many discussion sessions, and the author team—the current unjust labour relations in agriculture are not immutable. In an attempt to make visible this work towards fairness in organics, we have summarized current efforts for change, highlighted instances of interstitial transformation (alongside efforts for more symbiotic transformation), and raised possibilities and barriers to igniting alternative relationships between farm workers and the organic community, particularly those of solidarity. Perhaps more powerful than the actions towards making concrete changes to the organic certification process, this paper documents nascent efforts towards redistribution of power and the re-centering of voices in a way that could be transformative.

While efforts towards fairness by the organic community appear promising, these efforts and the logics that they emerge from are complicated by those of migrant justice movements, which epitomize labour-related struggles for justice in the food system. Indeed, the primary concerns and demands raised by migrant workers and their allies are for large-scale structural changes to TFWPs, such as the end to tied work permits, and improved oversight and

enforcement of existing regulations designed to protect migrants. These are not yet mirrored by the organic sector's efforts to improve fairness in labour relations; however, evidence presented here does not preclude such political and collective action by the organic association and its members. The organic sector has a history of wading into politically controversial topics (for example, the governance and regulation of genetic engineering technologies), and both movements identify with goals of justice, and articulate a common enemy of industrial, extractive, and exploitative agricultural production.

Despite this potential, true solidarity with migrant workers must go beyond incorporating fairness into organic certification to include real actions from the organic community to redistribute power and voice to workers, and demonstrated commitment to using their relative privilege to add weight to migrant worker demands for structural changes to TFWPs. Such changes could represent progress toward crafting a true alternative to the dominant food system in terms of labour relations. These moments of interstitial transformation appear to be opening up spaces for further expansion of social emancipation for workers on organic farms; whether this will open up a pathway for meaningful alliances with migrant workers struggling for justice is yet to be seen.

Chapter 6: Conclusion

This doctoral dissertation has contributed theoretical and empirical insights to the question of how organic farming contributes to socio-ecological sustainability in Canadian agriculture. Drawing from a comparison of organic standards documents between Mexico, the US and Canada, I have shown that there are important differences in how these countries reflect sustainability principles and practices in their organic standards, and the governance and legal mechanisms that shape them. Using census and survey data, I explored the variation in management of organic farms relative to non-organic farms. Finally, drawing from qualitative interviews, document analysis, legal comparisons and participant observation, I have shown the importance of governance and advocacy efforts by the organic community in advancing socio-ecological sustainability and fairness. Below I describe the key findings first by subject, and then by chapter.

6.1 Summary of findings

A synthetic look at the findings related to fairness and labour demonstrates a complex picture. The organic community in Canada is looking for ways to integrate the principle of fairness into practice, and chapter 5 illustrates the importance of these efforts for emancipatory social change. As a complementary insight, Chapter 1 illustrates the unique governance structures in place in Canada that give relatively more power to the actors in the organic community who are seeking to make these changes by integrating practice requirements for social fairness into the organic standards. At the same time, Chapter 1 also shows that, as of yet, no organic standards of any North American country guarantees or even encourages any

practices that relate to fairness generally, or improvements in working conditions for farmworkers, specifically. Our findings from the survey analysis reflect this lack of standardized requirements: certified organic farms in BC do not appear to provide better jobs for farmworkers than other farms. Rather, amongst organic farms, our survey data suggest that a combination of motivations for social justice and farm revenue enable farmers to improve job quality and employment practices on their farms.

The second area of focus for this dissertation was an examination of ecological management practices, and I found clear evidence that organic agriculture contributes to more diversified and agroecological management practices in Canada, reflecting relatively strong practice requirements and ecological principles in the Canadian organic standards. We found, however, substantial variation within organic farms. In BC, we found that certification per se did not guarantee better practices, as uncertified organic farms showed higher adoption of many of these practices than certified organic farms. While adoption of ecological management practices was consistently higher for organic certified farms compared to all other (non-organic) farms nationally, there was some variation across other dimensions such as crop type, farm size and region. The census and survey results combined show the significance of these variables, especially differences between broad industry types, and between certified and uncertified organic farms.

Looking at the results by chapter, my analysis of organic standards and their governance in North American countries (chapter 2) showed that Canada has the strongest expression of sustainability principles, and the US the weakest. Mexican and Canadian standards are stronger in terms of sustainable management practices than the US. No standards contained requirements related to social and employment standards. I also found that some of these differences could be

explained by differences in the governance processes between the 3 countries, and that the laws that govern organic regimes do not necessarily reflect the content of the standards.

In my analysis of data from the Canadian census of agriculture, I find strong and consistent evidence for the replacement of pesticide and fertilizer inputs with ecological management and higher use of beneficial management practices (BMPs) on organic farms relative to non-organic farms. I also find evidence of increased labour requirements on organic farms. However, most of the socio-economic dimensions of management assessed in this study seem to be more driven by industry type than organic certification status. Trends over time for organic farms as a whole show evidence of more intensive use of labour demands and BMPs, and decreases in pesticide and fertilizer use on a per acre basis; however, some of these patterns vary depending on farm size, industry type and region.

Drawing from primary data from surveys in chapter 4, I found no evidence that certified organic farms have higher diversification or provide better jobs than uncertified organic farms, or that diversification was correlated with job quality. While motivations for social justice were the most significant predictor of attitudes related to job quality, gross farm receipts and net revenue were the only significant predictors of job quality *practices* on organic farms. Farm size and motivations were more significant predictors of diversification practices than certification amongst organic farms. Despite certification not being strongly associated with higher diversification attitudes or better job quality, organic associations and organizations were frequently named by participants as supports for both job quality and diversification. A significant contribution from this chapter is the operationalization of job quality as part of a survey tool.

Drawing from participatory action research in Chapter 5, I describe various efforts by the organic community to integrate and enact the principle of fairness, especially in relation to farmworkers. I found that their efforts have the potential to contribute to social transformations through the redistribution of power and centering of workers' voices, but that their efforts do not yet respond to the primary demands for justice raised by migrant workers and their allies (e.g., structural changes to temporary foreign worker programs). The chapter includes some recommendations for how the organic community could best advance fairness based on theories of social transformations, postcapitalist relations, food justice and migrant justice priorities.

This dissertation highlights several ways in which organic agriculture's guiding principles have yet to be enacted in practice. Indeed, justice is itself "just in principle" – the principle of fairness (though not synonymous with justice, intimately tied to it) is not yet formalized in any official way in organic agriculture in Canada. However, this dissertation did find instances of fairness and justice being enacted through the relatively more democratic standards governance mechanisms in place in Canada, and in the efforts by organic community actors to centre and amplify migrant workers in sector-related conversations. In contrast, this research shows that ecological approaches associated with organic agriculture are not just "in principle". Overall, this research provides a cautionary tale for assuming values-based commitments will translate to action, especially with respect to social equity, labour and conditions experienced by farmworkers.

6.2 Limitations and emerging questions

There were several questions that emerged from this research, some of which were related to limitations of the data or methods used. The first broadly salient limitation of this work

was a limited engagement with worker perspectives on labour on organic farms. While chapter 5 engages with these perspectives most directly through collaboration with Fuerza Migrante and the work of similar organizations advancing migrant justice, other data sources do not include worker perspectives on what qualifies as a good job.

Another major question that remains unaddressed is an in-depth look at the ‘bright spots’ of job quality on organic farms. For those farms identified as leaders in providing fair, safe and decent conditions of work for their farmworkers, what are the conditions that supported them to do so? This was part of the original conceptualization of this research project, but the logistics and timelines for fieldwork were hampered by the COVID-19 pandemic, and so this remains a missing capstone piece to this body of work. I look forward to addressing these gaps of worker perspectives and bright spots of job quality as part of my postdoctoral research.

This research, especially qualitative interviews with organic inspectors and members of organic associations, called attention to the significant role of the agencies, organizations and individuals that operate in between organic standards and organic farms. Further research could build on the insights from this dissertation to focus on the role of certification bodies and inspectors more explicitly, and the variation in how standards are enacted, translated and enforced on the farm.

There were also several limitations that resulted from methodological choices, including data sources and analysis methods. Perhaps the most significant of these limitations was in terms of the data source and methods used in chapter 3, which limited my ability to make nuanced conclusions about what was driving patterns in management, especially socio-economic aspects of farm businesses as they relate to fairness and justice. These limitations are discussed at length in the chapter itself, but they include what and how questions are asked, the barriers to

accessing the data, the limitations of aggregated data, and the lack of transparency about the logic for suppressed values. The quantitative-only approach used in chapter 4 similarly limits our ability to make nuanced conclusions about the causal relationships driving patterns, and would have been notably augmented if coupled with qualitative interviews with farmers' (and employers') views on job quality, diversification and organic certification.

Finally, while I set out to collect primary data that would enable us to systematically compare working conditions on organic and non-organic vegetable farms, this gap remains unfilled due to challenges with survey recruitment at a distance, made more complicated by the pandemic. While I was not able to make conclusions about whether organic farms provide better jobs than non-organic farms, the survey tool I developed could be leveraged to systematically analyze and compare farms using the multi-dimensional concept of job quality. This would be an exciting area for future work.

6.3 Recommendations for policy, advocacy and organizing

Each chapter contains insights that are relevant for those working to improve our food system. Here I synthesize several broadly relevant insights that emerged from this research for policymakers, non-profits, organic associations, scholar-activists and social movement organizers alike:

On labour and diversification:

- Consider and assess labour-related implications of changes to agricultural systems, including policies, programs or initiatives that support or incentivize the adoption of agroecological management (Chapters 2, 3 and 4).

- Provide targeted support for farmers to improve the quality of jobs on their farms (Chapters 2 and 4).
- Assess the potential for integrated approaches that support the adoption of (or reduce barriers to) diversification and job quality (Chapter 4).
- Provide sufficient and sustained funding to farmers to overcome cost barriers to improving job quality and diversification, which both provide public goods and long-term benefits for communities and territories, but may create a competitive disadvantage in a global marketplace (Chapters 2 and 4).

On organic governance

- Protect the democratic governance processes in place for organic standards in Canada (Chapters 2 and 5).
- Increase the representation and power of farmworkers in the organic sector to enact fairness, for example, by adding farmworker representatives to the Canadian Standards Committee on Organic Agriculture (Chapters 2 and 5).
- Continue to support and advance efforts to integrate fairness for farmworkers into organic activities and certification processes (Chapters 2 and 5).

On the Census of Agriculture and agricultural data in Canada

- Improve access to data from the Canadian Census of Agriculture for researchers (Chapter 3).
- Integrate and improve data collection about labour in the Canadian Census of Agriculture by consulting with social scientists who work on labour and organizations who represent farmworkers, including migrant workers.

6.4 Final reflections

As I was doing some (re)reading for the conclusion of this dissertation, I came across an essay titled *Is organic enough?* published in the quarterly newspaper of an organic farming association (Duesing, 1995). The title gave me pause, not because I found it to be a particularly provocative question in that moment, but because I imagine that in 1995, it likely was. My answer to it now is the same as what it would have been before I began this work: of course not. In this dissertation, I wanted to answer a more nuanced question that was less of a blunt force tool, and more a careful separation of some of the many threads of what organic agriculture does (and doesn't) do in the context where I find myself, in so called "Canada". I felt frustrated by the gross oversimplifications about organic agriculture that result from binary questions, and saw an opportunity to add nuance and evidence to debates – in both public and academic realms – that many may have thought settled. I have felt at many points that this was not a particularly groundbreaking line of inquiry (or that perhaps others would not find it so), but I also felt that it was an important contribution that I was well-positioned to make.

This dissertation enabled me to explore some of the realities of organic agriculture in Canada from several angles, including to assess what it is accomplishing, to confront where it falls short and to use my scholarship to advance the struggle for fairness and sustainability in the organic sector. In sum, I think organic agriculture – as a movement, policy and regulatory framework, and approach to farming – makes numerous valuable contributions to a more sustainable food system a more sustainable approach to agriculture in Canada. As an eater, aspiring farmer, scholar-activist and community member, I support organic farming whole heartedly. My partner and I plan to certify our own farm as organic, I will continue to participate in organic community gatherings in BC, and support other farms who engage with and advance

organic principles (whether certified or not). At the same time, organic agriculture is just one entry point to transforming a food system in many ways needs to be re-imagined and built anew, and I will not hesitate to point out organic agriculture's shortcomings, whether to neighbours or colleagues. If nothing else, I feel this dissertation has helped draw attention to the uniqueness of and diversity within the Canadian organic sector – especially in terms of its governance – that had not yet been reflected in any scholarship I had come across. It is my hope that this work has at once made visible the important efforts by many actors to change our food system, while also illuminating some of the terrain that is yet to be travelled if organic agriculture is to (continue to) make meaningful contributions to a more sustainable and fair future.

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Appendices

Appendix A Chapter 2

A.1 Practice Assessment Framework

Domain	Sub-domain	Benchmark Practice	Key References for Domain
Crop and Land Management	Cropping system design	Crop Rotation	Altieri & Rosset, 1996; Bommarco et al. 2013; Kremen & Miles, 2012; SOAAN 2013; Kremen et al. 2012
		Crop and variety selection for ecological compatibility	
		Agroforestry	
		Intercropping	
		Animal integration	
	Soil & fertility	Fallow Period	
		Cover crop or green manure	
		Conservation tillage	
		Nutrients are recycled from the farm itself	
		Judicious application of compost, manure & fertilizer	
	Pest control	Cultural practices are used (e.g. natural enemies) instead of synthetic and toxic pesticides	
		Dead soil cover	
		Synthetic and toxic pesticides are avoided	
	Conservation areas	Protect native vegetation	
		Include conservation set-asides	
		Maintain or re-establish natural vegetation	
		Natural wetlands should not be drained.	
	Semi-natural habitat	Maintain or re-establish wildlife corridors	
		Riparian buffers	
		Insectary strips	
		Woodlots, meadows, forests	
	Water Management	Living Barriers/ Hedgerows	
		Border plantings	
		Quality of irrigation water	
		Does not deplete water sources or impair ecosystem function (water use; quantity)	
		Water use is efficient and water is recycled wherever possible	
		Waterway construction does not block migration or movement of wild species	

Animal Management	Sourcing and treatment of genetic material	Contribute to improving genetic material	SPCA, American Humane, SOAAN 2013; Fraser 2018.
		Protect the vigor of Indigenous landraces and species, if working with them	
		Source seeds and other genetic material grown/produced organically and for organic growing conditions	
	Energy Use	Use of renewable energy	
	Food & water	Feed is free from antibiotics	
		Feed does not contain mammalian or avian derived products	
		Feed is organic	
		Nutrition plan developed with professional	
		Access to water at all times	
		Access to feed at all times	
		Natural diet for resilience & vigor	
		Forced feeding is prohibited	
	Housing (indoor requirements)	Space requirements for free movement and exhibiting species-specific natural behaviours	
		Non-slip floors in housing & handling facilities	
		Provision of dark period to allow rest/ Lighting program	
		Access to resting space	
	Outdoor requirements	Outdoor access provisions	
		Inspection of animals and the outdoor facilities, conducted twice daily as a minimum;	
		Maintenance of shade and screening to prevent entry of predators, rodents, and wild birds	
		windbreaks, shade and sprinklers for cooling	
		Enable access to natural food in the field as much as possible (e.g. foraging for insects)	
		Species specific outdoor requirements	
	Painful Procedures & Slaughter	Surgical procedures regulated by age and use thorough pain control	
		Humane slaughtering practices	
		Stunned before bleeding	
	Health & Wellness	Monitoring and other measures to prevent illness and lameness	
		Flock/herd health plan	
		Prohibition of forced or induced molting	
		Veterinary treatments are permitted where appropriate, following preventative measures.	
	Transportation & handling	Fitness assessment	
		Feed and water before loading	
		Transport time and handling must be kept to a minimum	
		Employee training in transport Standard Operating Procedures	

Social and Employment Standards		Holding prior to loading	Weiler et al. 2015; Harrison & Getz 2015; SOAAN 2013; Kalleberg 2013.
		Use of electric prods or other electric implements	
		Other considerations of wellbeing while in transit, including light and sound	
		Impact of manure management on surrounding environment	
	Manure management		
	Breeding and sourcing of genetic stock	Breed selection for resilience and suitability for local conditions	
		Contribute to improving genetic material (e.g. by on-farm breeding)	
		No GMO or GE breeds	
	Farm Policies & Plans	Code of conduct and company policies available to all employees in their native language	
		Biosecurity & Sanitation plans	
		Building checklists	
		Emergency response plans	
	Remuneration and hours of work	Remuneration amount (living wage)	
		Opportunities for increased earnings over time	
		Pay hourly wages (reduce injuries)	
		Limit excessive work hours	
		Paid time off	
	Employment Stability and Mobility	Labour market freedom	
		Stable and long-term contracts	
		Use of the FLC system	
	Social Benefits	Access to health insurance	
		Paid time off	
		Access to Retirement/Pension	
		Additional fringe benefits, e.g. dental benefits	
		Access to Employment/unemployment insurance	
		Families of workers should also gain access to social benefits	
	Workplace/ HR policies	Employee manual	
		Advancement and promotion policies	
		Formal grievance procedures	
		Formal job descriptions	
		Employment contracts	
		Discipline and termination policies	
		Policies in languages spoken by workers	
		Equity and non-discrimination policy	
		Formal social justice policy	
	Workplace benefits	Flexible work hours	
		Housing (if housed on farm)	
		Training and development opportunities	

	Inventive and rewards programs
	Intrinsic benefits
	Opportunities for autonomy and control over work activities
Occupational health measures	Limit hand weeding
	Varied work tasks; Reduce repetitive motion
	Limit exposure to hazards/use of Personal Protective Equipment
	Workers are trained about hazards inherent in their work environment.
	Access to clean and safe drinking water
	Clean and sanitary place to eat
	On-site sanitation facilities
Equity	Share of benefits and risks amongst employees and operators
	Proactive supports for employees from oppressed groups
	Gender equity (e.g. of pay)
	Racial equity (e.g. of pay)
Benefit sharing	Profit sharing mechanisms with employees
	Investment of profits in community
	Benefit and risk sharing models (e.g. CSA)
	Other redistribution mechanisms
Political processes	Enable workers to collectively organize
	Support workers to participate in food system governance (e.g. food policy councils)
Fair prices	Prices reflect costs of production
Indigenous rights	Respect and uphold the rights of Indigenous peoples
Economic policies	Select financial institutions with sustainable investment portfolios
	Diversify income sources

A.2 Sensitivity analysis of principle scoring

Sensitivity analysis looking at principle scoring by researcher, method and country. In addition to the measure of relative coverage reported in the main text, which is based on the percentage of characters devoted to a given principle of total characters coded (Measure 2 below), we also analyzed the results by absolute character count (Measure 1 in table below). The sensitivity analysis shows some variation between reviewers for principles that ranked in the middle, but little variation by measure. The broader patterns are reflected in main results.

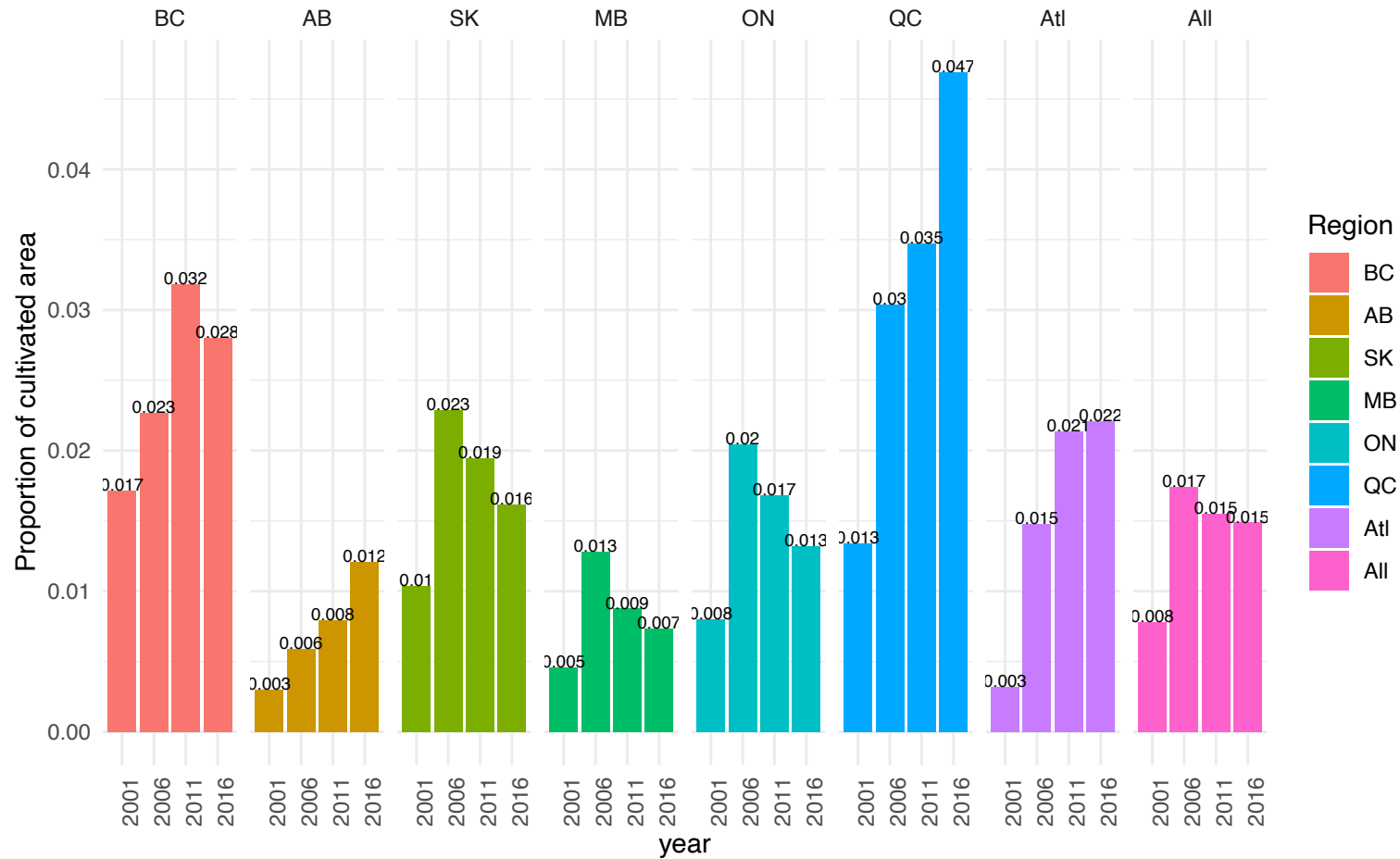
Reviewer		Canada		Method Mexico		US	
		Measure 1	Measure 2	Measure 1	Measure 2	Measure 1	Measure 2
Animal Welfare	1	300	300	285.27	285.78	175.03	193.55
	2	292.73	292.73	273.33	273.81	230.71	255.14
	3	298.51	298.51	275.09	275.58	175.34	193.91
Product Contamination	1	235.71	235.71	172.57	172.87	247.57	273.78
	2	259.93	259.93	248.39	248.83	241.83	267.43
	3	285.32	285.32	210.47	210.85	260.3	287.86
Soil Health	1	225.33	225.33	238.46	238.89	226.8	250.81
	2	224.79	224.79	239.27	239.69	232.02	256.58
	3	262.41	262.41	235.41	235.82	232.34	256.94
Natural	1	249.89	249.89	225.38	225.77	128.94	142.59
	2	226.81	226.81	225.28	225.68	50.11	55.42
	3	255.27	255.27	232.8	233.21	60.45	66.85
Environmental Contamination	1	195.05	195.05	139.23	139.47	136.84	151.33
	2	50.66	50.66	232.74	233.15	222.33	245.86
	3	250.46	250.46	97.76	97.94	72.87	80.58
Holism	1	147.05	147.05	211.26	211.63	53.81	59.5
	2	127.94	127.94	217.77	218.15	50.11	55.42
	3	239.69	239.69	197.87	198.22	0	0
Watershed Health	1	140.65	140.65	136.86	137.1	63.3	70
	2	135.93	135.93	212.15	212.52	61.49	68
	3	153.12	153.12	138.07	138.32	118.61	131.16
Productivity	1	65.27	65.27	78.82	78.96	58.67	64.89
	2	139.69	139.69	121.65	121.87	131.05	144.92
	3	158.33	158.33	196.66	197	124.01	137.14
Regeneration	1	217.72	217.72	115.9	116.1	44.32	49.01
	2	128.62	128.62	120.41	120.62	44.32	49.01
	3	228.92	228.92	112.12	112.32	44.32	49.01
Biodiversity	1	65.85	65.85	60.26	60.37	41.34	45.71
	2	139.27	139.27	147.86	148.12	51.5	56.95
	3	155.27	155.27	136.86	137.1	37.14	41.07
Local	1	58.82	58.82	67.78	67.9	44.32	49.01
	2	64.02	64.02	152.6	152.87	0	0
	3	154.94	154.94	147.06	147.32	59.89	66.24
Human Health	1	64.21	64.21	57.95	58.05	56.52	62.51
	2	126.05	126.05	47.56	47.64	0	0
	3	153.51	153.51	64.42	64.54	0	0
Social Fairness	1	51.65	51.65	57.05	57.15	0	0
	2	51.65	51.65	45.25	45.33	0	0
	3	63.28	63.28	61.56	61.67	0	0
Social Development	1	0	0	0	0	0	0
	2	43.48	43.48	48.88	48.97	0	0
	3	0	0	58.78	58.88	46.63	51.56
Climate Change Mitigation	1	0	0	0	0	0	0
	2	0	0	0	0	0	0
	3	0	0	0	0	0	0
Average	1	134.48	134.48	123.12	123.34	85.16	94.18
	2	134.11	134.11	155.54	155.82	87.7	96.98
	3	177.27	177.27	144.33	144.58	82.13	90.82

A.3 Practice scoring results

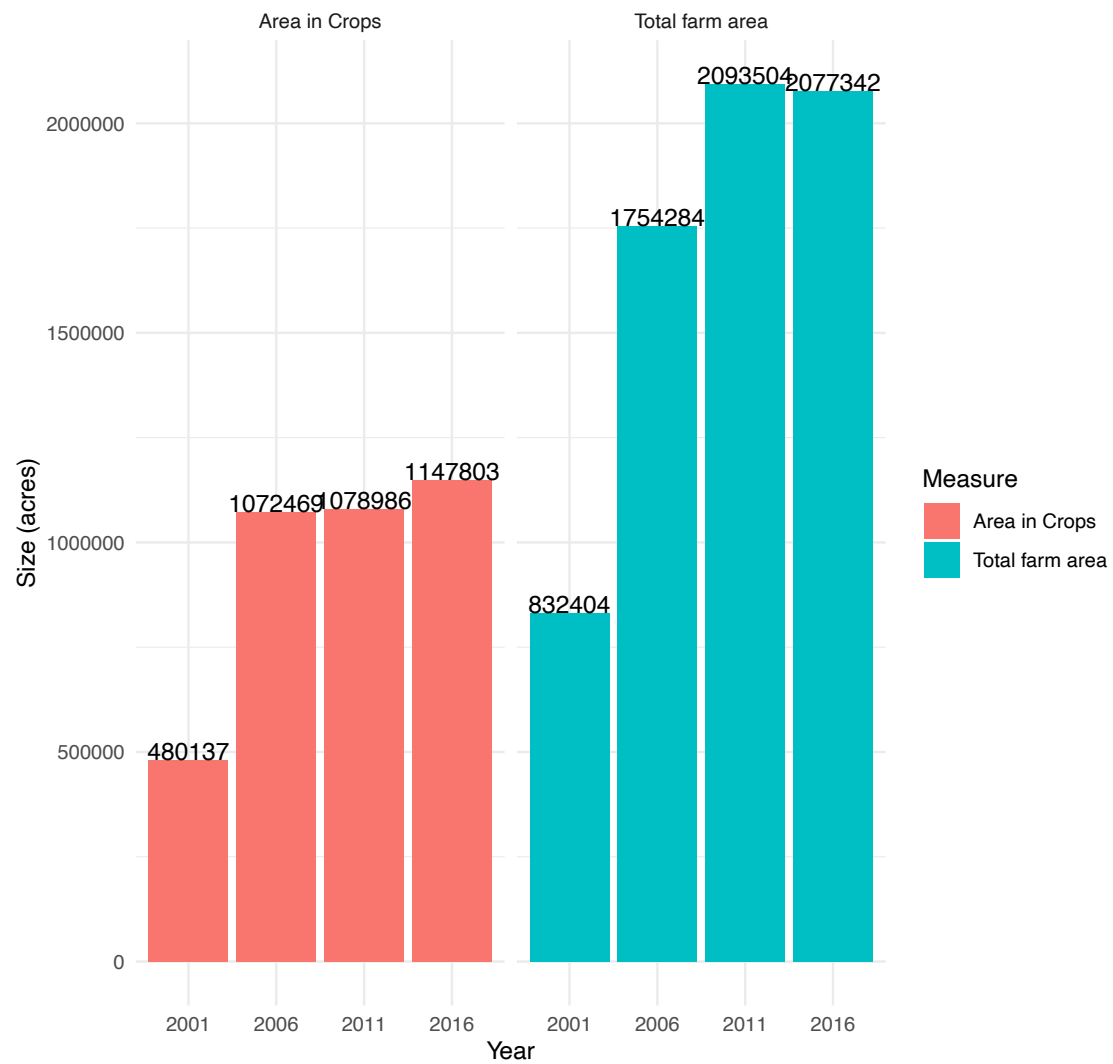
Domain	Sub-domain	Canada	Mexico	US
Crop and Land Management	Diversification of cropping systems	1.0	1.9	1.5
	Soil health and fertility	1.4	2.1	2.0
	Alternative pest control	2.6	2.6	2.4
	Presence of conservation areas	1.2	1.2	0.2
	Presence of semi-natural habitat	1.5	1.2	0.6
	Sustainable water Management	0.4	1.9	0.0
	Sourcing and treatment of genetic material	0.8	1.3	0.7
	Sustainable energy use	0.0	0.0	0.0
	AVERAGE	1.1	1.5	0.9
Animal Management	Food and water quality and availability	2.3	2.1	1.6
	Housing requirements	2.4	2.6	0.8
	Outdoor access requirements	1.8	1.9	1.2
	Regulation of painful procedures and slaughter	2.1	1.9	0.6
	General health and wellness	2.7	1.1	1.1
	Requirements for transportation and handling	2.0	1.0	0.0
	Best practices for manure management	3.0	3.0	2.0
	Breeding and sourcing of genetic stock	1.9	1.1	1.8
	Farm policies, plans and records	0.3	0.5	0.0
	AVERAGE	2.1	1.7	1.0
Social and Employment standards	Remuneration and hours of work	0.0	0.0	0.0
	Employment stability and mobility	0.0	0.0	0.0
	Social benefits	0.0	0.0	0.0
	Workplace/HR policies	0.0	0.0	0.0
	Workplace benefits	0.0	0.0	0.0
	Occupational health measures	0.0	0.0	0.0
	Equity	0.0	0.0	0.0
	Benefit sharing	0.0	0.0	0.0
	Political processes	0.0	0.0	0.0
	Fair prices	0.0	0.0	0.0
	Respects labour laws in country	0.0	0.0	0.0
	Indigenous rights	0.0	0.0	0.0
	Economic policies	0.0	0.0	0.0
	AVERAGE	0.0	0.0	0.0

Appendix B Chapter 3

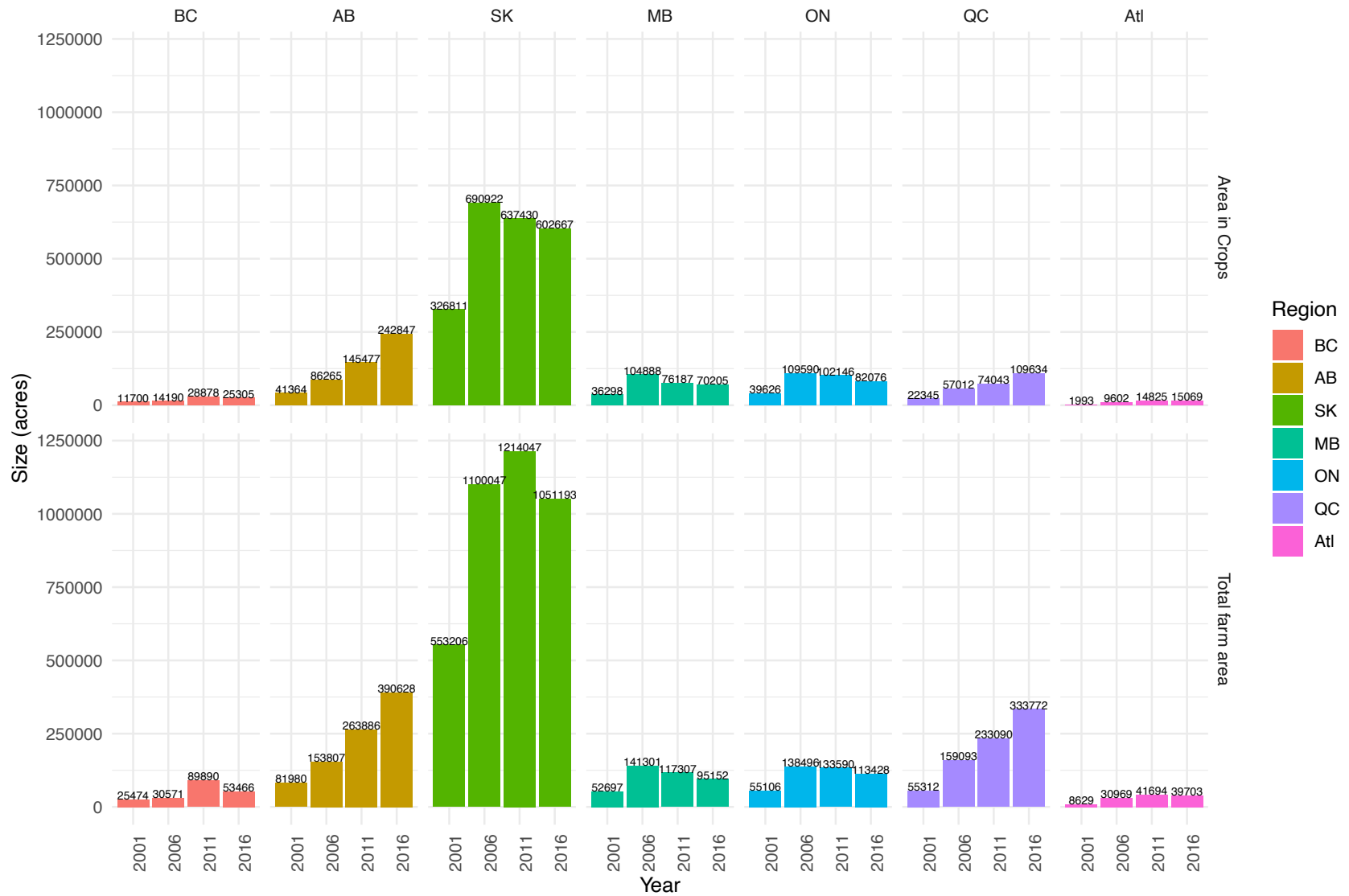
B.1 Organic proportion of total cropland area by province, 2001-2016.



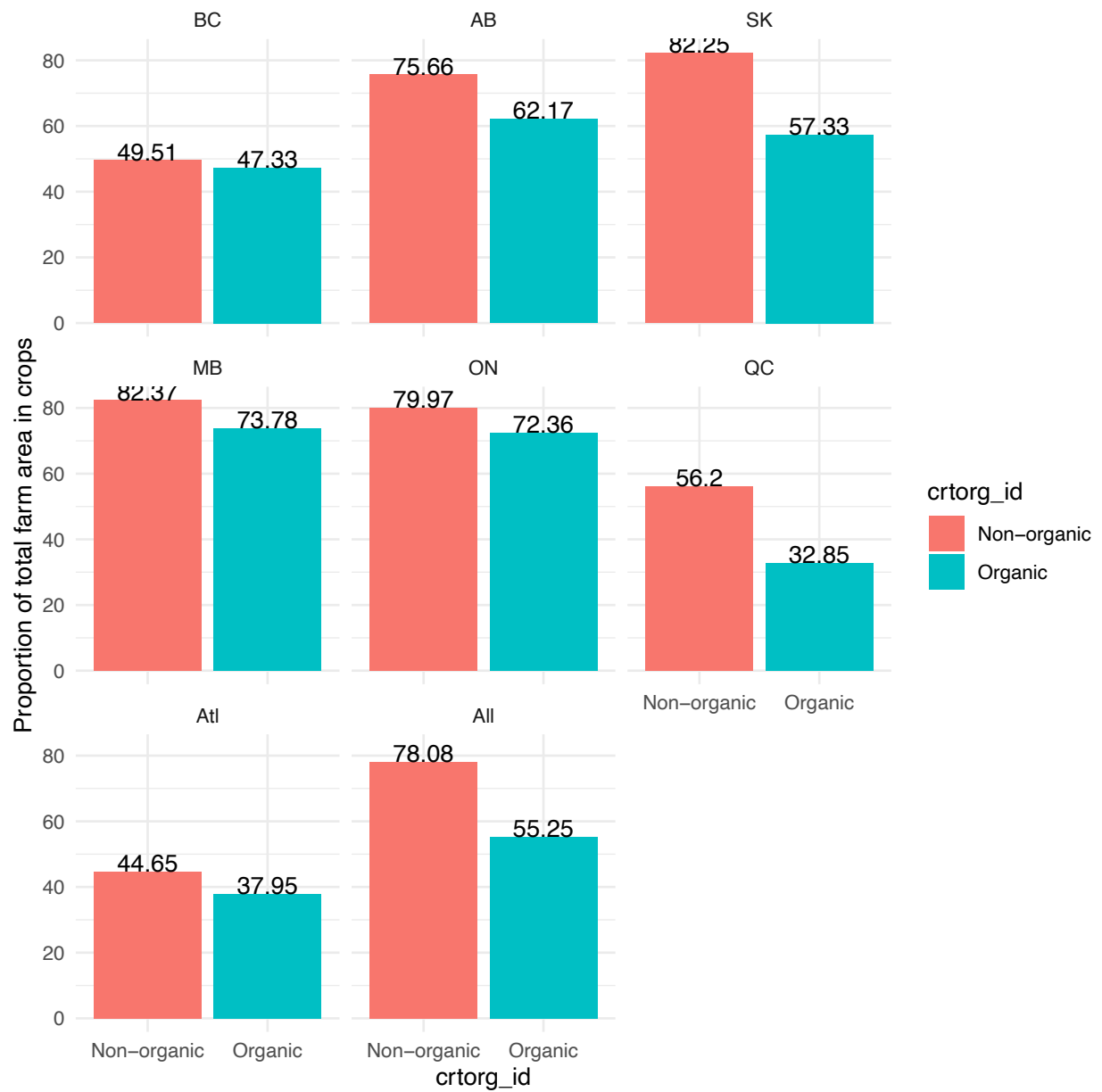
B.2 Area in organic agriculture (crop farms only) in Canada by area in crops and total farm area, from 2001-2016.

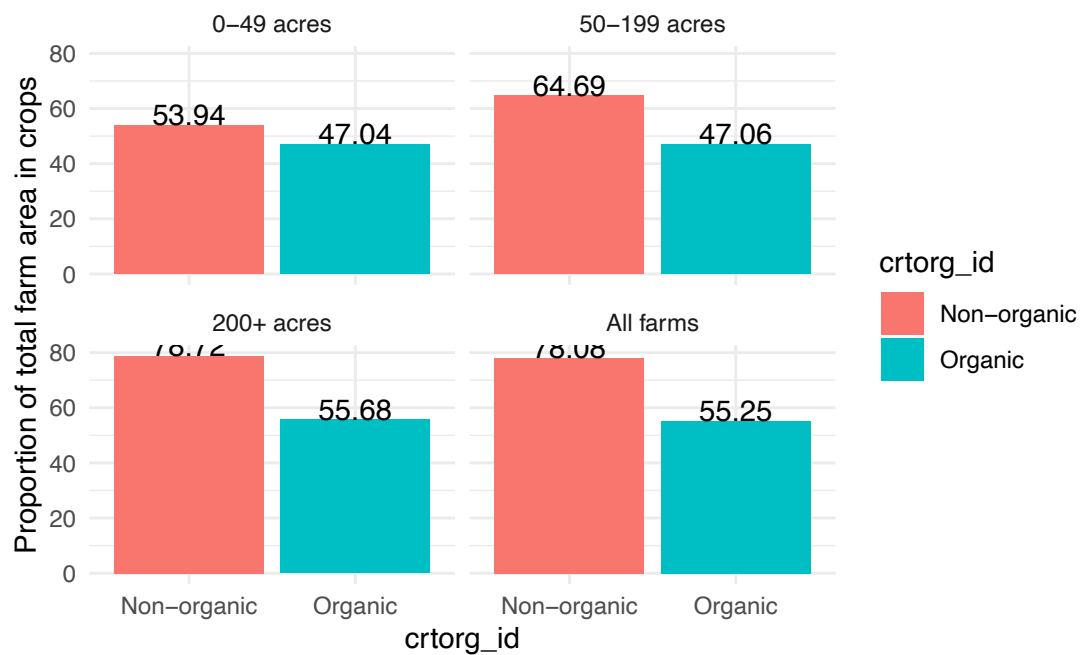
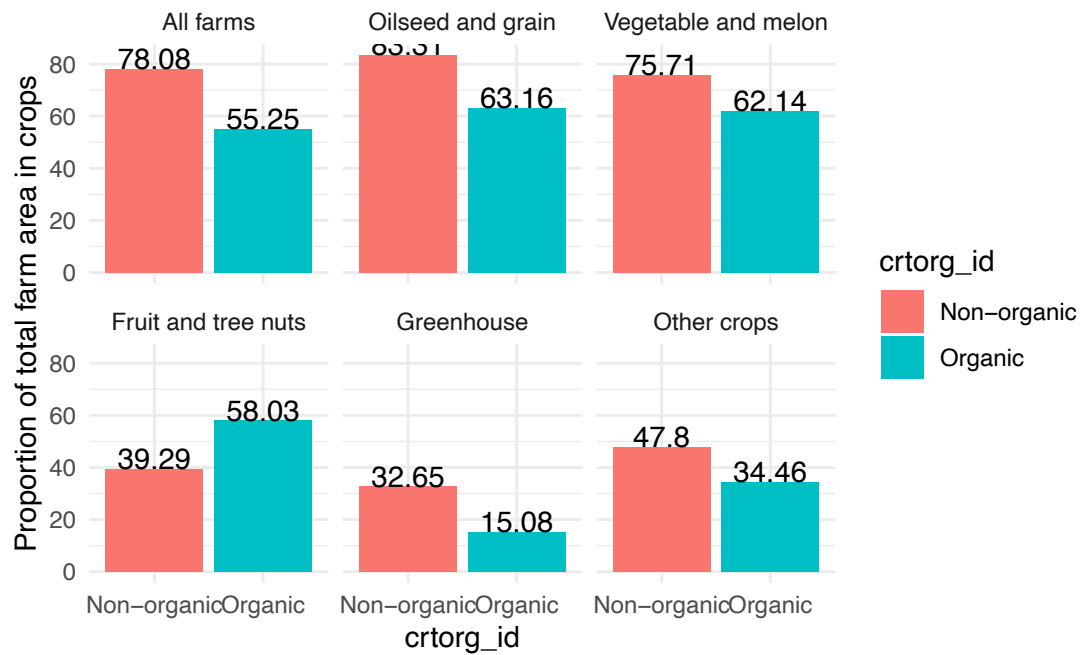


B.3 Area in organic agriculture (crop farms only) by province from 2001 to 2016



B.4 Percent of farm area in crops by region, industry and size

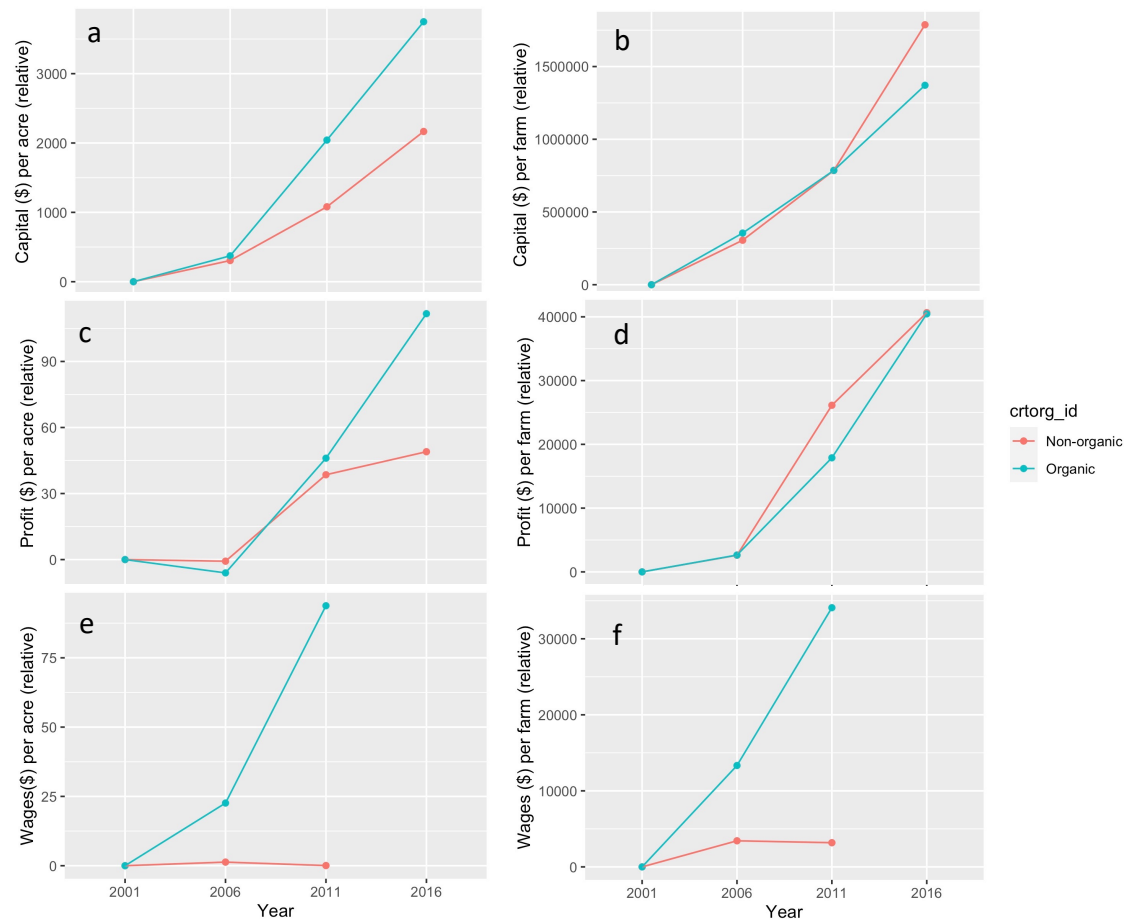




Appendix C Chapter 3

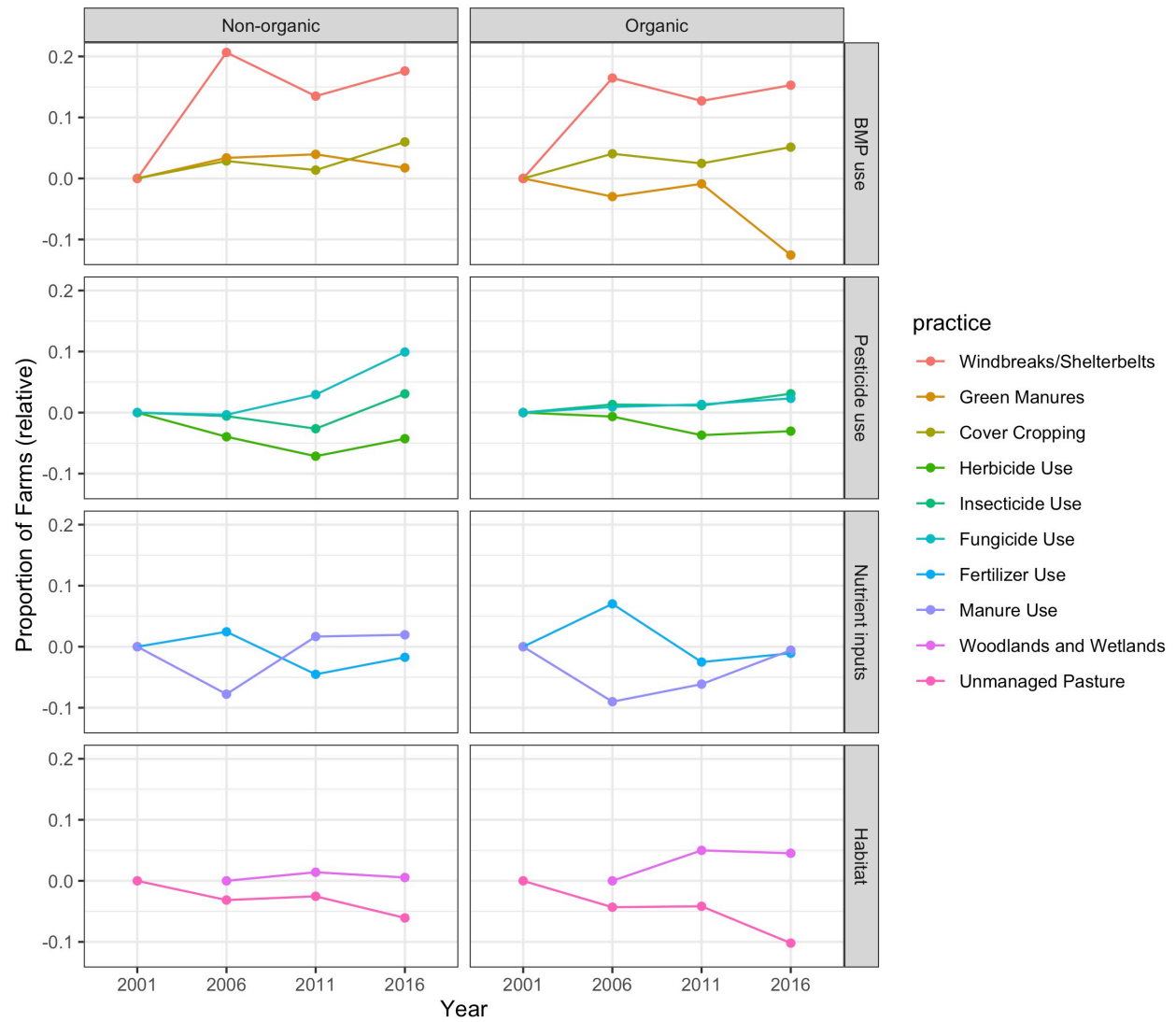
C.1 Relative change in socio-economic variables (2001-2016)

Figure shows value of capital per acre (a), value of capital per farm (b), profit per acre (c), profit per farm (d), value of wages per acre (e) and value of wages per farm (f). All values are plotted to show change relative to 2001, and have been adjusted for inflation.

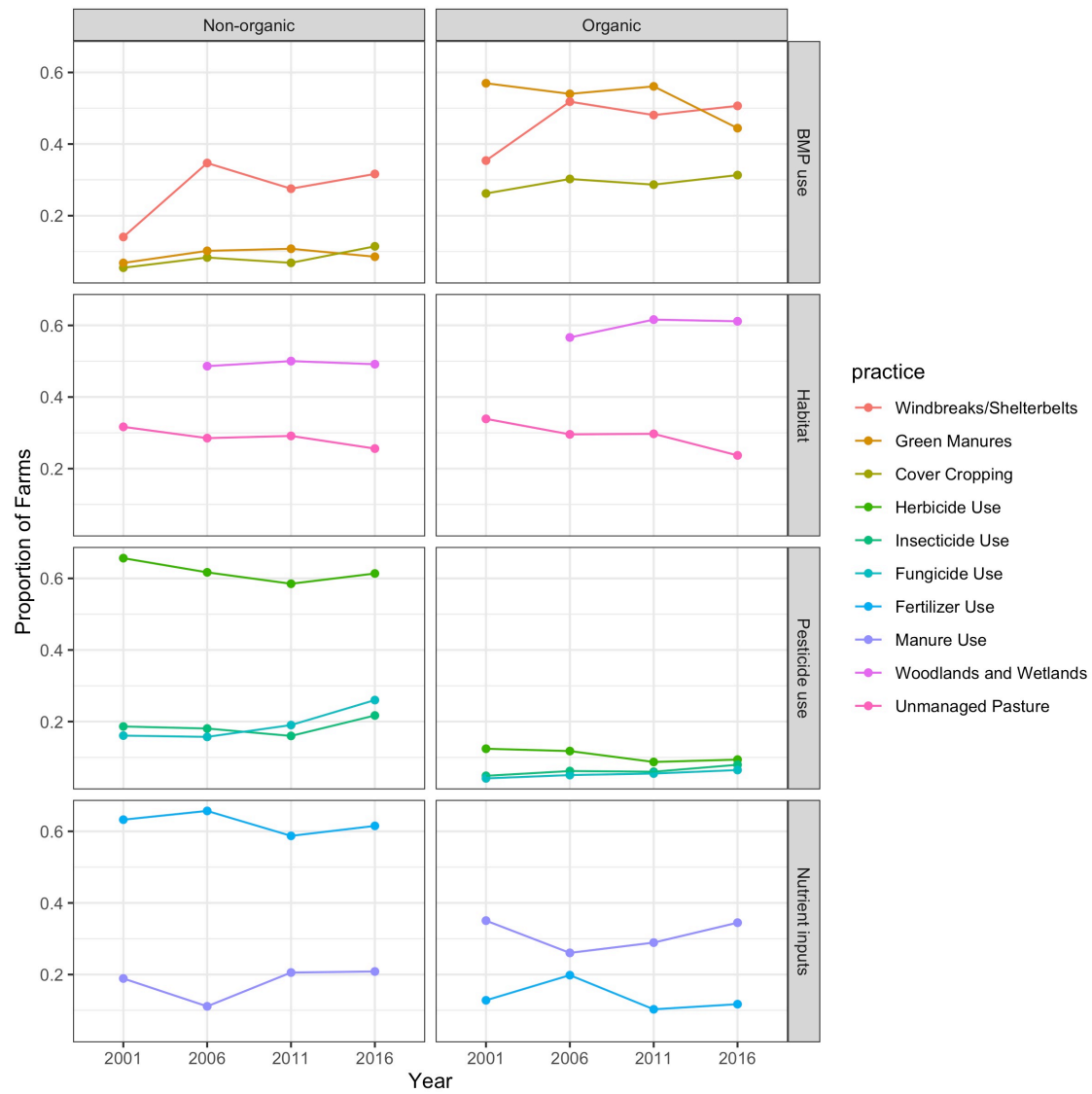


C.2 Relative change in ecological management variables (proportion of farms)

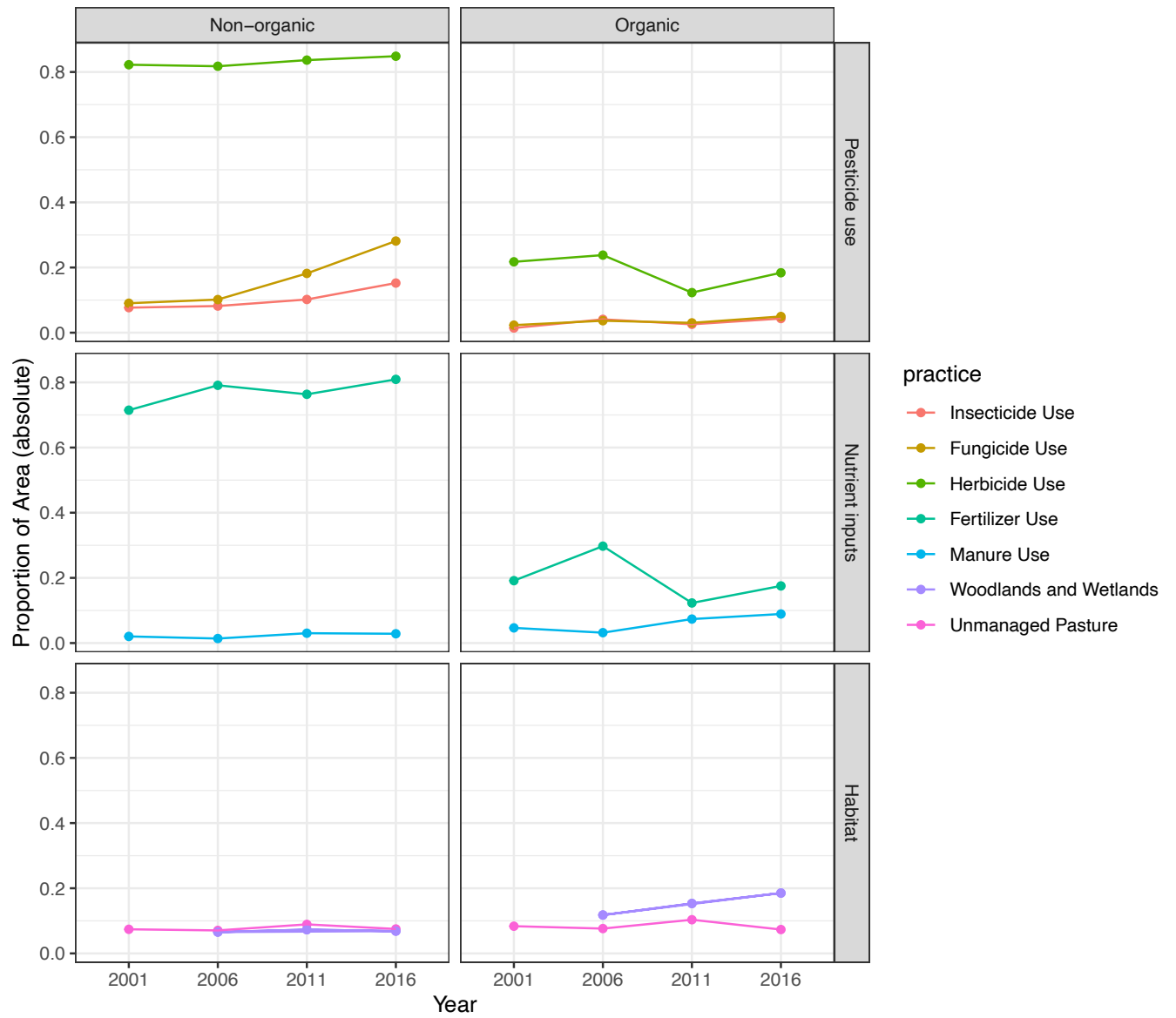
All figures show change relative to 2001 levels.



C.3 Absolute change in ecological management variables (proportion of farms)



C.4 Absolute change in ecological management variables (proportion of area)



Appendix D Chapter 4

D.1 Survey Instrument

First of all, we'd like to get a sense of your farm management practices. Please indicate the point on the scales below that best describes your management practices. Read each scale item carefully, and respond using the 2018 growing season as a reference.

Fertilizer use	I use all synthetic fertilizers (1)	(2)	Mixed (3)	(4)	I use all organic fertilizers (5)	N/A
Tillage practices	I use conventional tillage (1)	(2)	I use conservation tillage (3)	(4)	I use "no-till" management (5)	N/A
Presence of windbreaks, shelterbelts, etc.	I have no trees or shrubs on my property (1)	(2)	I have trees or shrubs surrounding some of my fields (3)	(4)	I have trees or shrubs all over my farm. (5)	N/A
Use of Cover Crops	I do not use cover crops (1)	(2)	Some of my fields have exposed soil, others have green cover (3)	(4)	I keep the soil covered at all times with mulches, cover crops, etc. (5)	N/A
Pest Management	I use all synthetic pesticide treatments (1)	(2)	I use a mix of natural and synthetic	(4)	I use all natural pesticide management (e.g.	N/A

			pesticides (3)		biological, botanical) (5)	
Crop species grown	I grow a single crop (1)	(2)	I have a moderately diverse cropping system (5-7 crops/year) (3)	(4)	I have a very diverse cropping system (15+ crops/year) (5)	N/A
Nutrient input sourcing (e.g. compost, manure, or fertilizer)	I use only nutrient inputs from off- farm sources (1)	(2)	Half are generated on-farm, half from external sources (3)	(4)	I use only nutrient inputs generated on-farm (5)	N/A
Crop rotation	I do not use a crop rotation (1)	(2)	I have a moderate crop rotation (4- 5 years) (3)	(4)	I have a very long crop rotation (10+ years) (5)	N/A
Use of intercropping, relay cropping, polycultures	I plant only 1 crop in a field at a time (1)	(2)	I sometimes grow 2+ crops in the same field at the same time (3)	(4)	I always grow 2+ crops in the same field at the same time (5)	N/A

We are interested in your opinions on different management approaches. On a scale from strongly agree to strongly disagree, please indicate your level of agreement with the following statements:

	Strongly Agree (1)	Agree (2)	Neutral (3)	Disagree (4)	Strongly Disagree (5)	Don't know/ Doesn't apply
I use pesticide inputs following a regular schedule, including preventative applications for particular pests.						
I manage my farm as a whole, living system.						
Hybrid seeds are important for the success of my farm.						
I manage my farm to maximize production, first and foremost.						
I always try other strategies for pest management (e.g. mechanical, cultural, biological control)						

before applying any pest control treatment products.

I always try to optimize organic matter decomposition and nutrient recycling on my farm.

My farm management focuses on enhancing biodiversity like natural enemies and creating appropriate habitats.

We are interested in diversification practices, including growing multiple crops in one field, integrating a crop rotation, or improving natural habitat on your farm. Please indicate whether the following factors act as a barrier or pose challenges to the use of diversification practices on your farm.

	Not a barrier (1)	Minor barrier (2)	Somewhat of a barrier (3)	Major barrier (4)	Extremely significant barrier (5)	Don't know / Doesn't apply
Decreases in yield	☐	☐	☐	☐	☐	☐
Increased costs	☐	☐	☐	☐	☐	☐
Higher labour demands	☐	☐	☐	☐	☐	☐

Lack of
knowledge,
information
or experience

☐☐☐☐☐☐

Not enough
support from
my industry
association(s)

☐☐☐☐☐☐

Other
farmers and
neighbours
may not like
it

☐☐☐☐☐☐

Incompatible
with the
technologies
and/or
machinery I
use

☐☐☐☐☐☐

Increased
management
complexity

☐☐☐☐☐☐

Regulations
prevent me
from
diversifying

☐☐☐☐☐☐

Other

☐☐☐☐☐☐

[Optional] Which groups or resources have ***supported*** you to increase the level of diversification on your farm (for example: organizations, associations, extension websites, informal groups)?

Which of the following best describes your operation?

- ☐ Certified Organic
- ☐ Use organic practices, but not certified
- ☐ In transition to organic
- ☐ Split operation/parallel production (some organic certified)
- ☐ Non-organic, or conventional
- ☐ Other _____

Which of the following applies to your certification:

- ☐ Certified organic within province only
- ☐ Certified organic nationally

What is the name of your Organic Certification Body? (If several certifications, please list all)

Please indicate which digital technologies you currently use on your farm (Select all that apply):

- ☐ Farm management software (e.g. smartphone/tablet applications to track farm data)
- ☐ Unmanned Aerial Vehicles (UAV)/Drones
- ☐ Field mapping with GIS (Geographic Information Systems) (e.g. for yield monitoring)
- ☐ Satellite based image systems (e.g. remote sensing)
- ☐ Variable rate application (VRA)
- ☐ Sensors (e.g. for soil, water, pH, temperature, chlorophyll, greenness or soil conductivity)
- ☐ Automated machines (e.g. GPS-guided tractors)
- ☐ Radio frequency ID tags
- ☐ Hand-held sampling devices
- ☐ Other _____

Of the technologies selected in the previous question, please **rank** them in terms of their importance to your operation by dragging them from the list on the left to the box on the right (1 = the most important).

Most important technologies	
_____ Farm management software (e.g. smartphone/tablet applications to track farm data)	(x1)
_____ Unmanned Aerial Vehicles (UAV)/Drones	(x2)
_____ Field mapping with GIS (Geographic Information Systems) (e.g. for yield monitoring)	(x3)

- _____ Satellite based image systems (e.g. remote sensing) (x4)
- _____ Variable rate application (VRA) (x5)
- _____ Sensors (e.g. for soil, water, pH, temperature, chlorophyll, greenness or soil conductivity) (x6)
- _____ Automated machines (e.g. GPS-guided tractors) (x7)
- _____ Radio frequency ID tags (x8)
- _____ Hand-held sampling devices (x9)
- _____ Other (x10)

For the most important digital technology you selected in the previous question (or, if you use only one technology on your farm), how has this technology impacted your operation?

	Strongly Agree (1)	Agree (2)	Neutral (3)	Disagree (4)	Strongly Disagree (5)	Don't know / Doesn't apply
It has made managing my farm easier/simpler						
It has has increased the productivity of my farm						
It has decreased labour demands						
It has improved working conditions						
It has improved product quality						
It has reduced my						

environmental
impact

It has reduced
product loss
and waste

Other

We are interested in knowing more about labour on your farm. Please answer the following questions regarding employment in primary production on your farm with reference to the most recent growing season (2018).

Do not include employment associated with any agri-food processing.

For the purposes of this section, an operator refers to the person or people responsible for the management and/or financial decisions made about the agricultural production.

How many operators are there on your farm?

- ☐ I am the only primary operator
- ☐ Two primary operators
- ☐ More than two primary operators

Do you (as a primary operator):

- ☐ Pay yourself a wage or salary? (Select if yes)
- ☐ Have extended medical and dental benefits? (Select if yes)

Does the other operator pay themselves a wage or salary?

- ☐ Yes
- ☐ No
- ☐ Not sure

Do other operators pay themselves a wage or salary?

- ☐ Yes
- ☐ Some of them
- ☐ No
- ☐ Not sure

Does the other operator have extended medical and dental benefits?

- ☐ Yes
- ☐ No
- ☐ Not sure

Do other operators have extended medical and dental benefits?

- ☐ Yes
- ☐ Some of them
- ☐ No
- ☐ Not sure

Were there any individuals who worked on your farm in 2018 who were **not paid** either a wage or a salary, including family members, operators and apprentices?

☐ Yes

☐ No

How many individuals were unpaid? And roughly how many days did they work in 2018?

	Number of individuals	Days of work
Operators		
Family members (who are not operators)		
Apprentices		
Other		

Did you **hire any paid employees** (not including operators) on the farm in 2018?

☐ Yes

☐ No

For the remaining questions, please answer only for paid employees (not including operators) that have worked on primary agricultural production (i.e. not food processing). Please indicate how much you agree with the following statements.

	Strongly agree (1)	Agree (2)	Neutral (3)	Disagree (4)	Strongly disagree (5)	N/A
My employees have told me that they value the non-monetary rewards of working on my farm.						
My employees are like family.						
I don't involve my employees in farm management decisions.						
My employees have flexibility with their hours and scheduling.						
I value the input and opinions of my employees when making decisions about my farm.						
I often learn from my employees.						
I seldom interact with my employees directly.						
My employees have opportunities to shape their own						

learning while
working on my
farm.

Please indicate whether your employees have access to the following:

	Yes, for all employees (1)	Yes, for some employees (2)	No (3)	Prefer not to answer / N/A
Do you have advancement and promotion procedures?				
Do your employees have access to an employee manual to explain HR and management procedures?				
Do you use employment contracts to formalize expectations and conditions of employment for workers?				
Do you have formal grievance procedures?				
Do you provide training or resources on occupational safety and health?				
Do your employees have access to extended health				

and dental
benefits as part
of their
employment
contract?

Do your
employees
receive paid time
off (e.g. sick
days) as a part of
their
employment
contract?

What are the primary languages (mother tongues) of employees on your farm? Please check all that apply:

☐

Punjabi

☐

Spanish

☐

English

☐

French

☐

Cantonese

☐

Mandarin

☐

Other _____

Do you have workplace policies and procedures available in each of those languages checked above?

- ☐ Yes, all languages
- ☐ Some languages
- ☐ No, only in English

Do you use strategies/procedures to reduce repetitive motion for employees (e.g. limit amount of hand-weeding done in a day)?

- ☐ Yes, we do everything possible to limit repetitive motion and tasks for employees.
- ☐ Sort of, we do what we can.
- ☐ No, we don't have strategies to do this.

How many paid employees (not including operators) did you hire on the farm in 2018?

Of the paid employees for primary agricultural production, **how many employees are seasonal, year-round, full or part time?** *Please include Seasonal Agricultural Workers hired through the SAWP program and contract workers hired on a day-to-day basis. 'Seasonal' refers to employees working less than 120 work days per year (including contract workers hired on a day-to-day basis, and employees hired through the SAWP program). 'Part-time' refers to employees working less than 20 hours per week.*

- ☐ Number of **seasonal, part-time** workers
- ☐ Number of **seasonal, full-time** workers
- ☐ Number of **year-round, part-time** workers
- ☐ Number of **year-round, full-time** workers

How many of these workers are hired via a Farm Labour Contractor? *A **Farm Labour Contractor (FLC)** provides labour to producers for planting, cultivating or harvesting of*

agricultural products. Although the workers may work on a variety of farms owned by different producers, they are the employees of the farm labour contractor.

How many workers are hired via the **Seasonal Agricultural Workers Program (SAWP)**?

We are interested in the range of wages paid to workers on your farm. Please use the sliders below to answer the following questions:

Not Applicable

0 4 8 12 16 20 24 28 32 36 40

What is the <u>average</u> hourly wage paid to workers? ()	
What is the <u>lowest</u> hourly wage paid to workers? ()	
What is the <u>highest</u> hourly wage paid to workers? ()	

Do you have any profit sharing or other mechanisms that contribute to remuneration for your employees?

- ☐ Yes
- ☐ Yes, for some employees
- ☐ No

Of those paid employees in more **senior or management positions** (not including operators) please indicate the number of individuals from each of the following ethnic groups:

- ☐ White:
- ☐ Latino/Latina/Latinx:
- ☐ Black:
- ☐ Southeast Asian:
- ☐ Indian, Pakistani, Nepalese or Sri Lankan:
- ☐ Indigenous (North American):
- ☐ Indigenous (Other):
- ☐ Multiracial or Multi-ethnic:
- ☐ Other (fill in number of individuals only):
- ☐ Don't know / Prefer not to answer

Of the **remaining employees** (*not* including those in senior or management positions from the previous question), please indicate the number of individuals who belong to each of the following ethnic groups:

- ☐ White:
- ☐ Latino/Latina/Latinx:
- ☐ Black:
- ☐ Southeast Asian
- ☐ Indian, Pakistani, Nepalese or Sri Lankan
- ☐ Indigenous (North American):
- ☐ Indigenous (Other):
- ☐ Multiracial or Multi-ethnic:
- ☐ Other (fill in number of individuals only:
- ☐ Don't know / Prefer not to answer:

How many workers are paid using a piece wage (\$ per pound harvested)?

- ☐ 0
- ☐ 1-5 workers
- ☐ 5-20 workers
- ☐ 20+ workers

On a scale from 'not at all a barrier' to 'extremely significant barrier', **how much do the following factors act as barriers to improving your terms and procedures of employment?**

(do not include wage increases, but for non-wage benefits, for example: improving information exchange between workers and farm operators, providing extended health benefits, decreasing occupational health risks to employees).

	Not a barrier (1)	Minor barrier (2)	Somewhat of a barrier (3)	Major barrier (4)	Extremely significant barrier (5)	Don't know / Doesn't apply
Too costly	☐	☐	☐	☐	☐	☐
Not enough support from my industry association(s)	☐	☐	☐	☐	☐	☐
Lack of knowledge, information or experience about how to create a good workplace	☐	☐	☐	☐	☐	☐
Other farmers and neighbours aren't doing it	☐	☐	☐	☐	☐	☐
Increased management complexity	☐	☐	☐	☐	☐	☐
Regulations prevent me from providing certain benefits	☐	☐	☐	☐	☐	☐
Other:	☐	☐	☐	☐	☐	☐

[Optional] Which groups or resources have ***supported*** you to improve job quality on your farm (e.g. organizations, associations, extension websites, informal groups)?

What motivates the decisions you make about your farm?

	Not motivating (1)	A little motivating (2)	Motivating (3)	Significant motivation (4)	Extremely significant motivation (5)	Don't know / Doesn't apply
Gaining access to new markets						
Reducing negative impacts on the environment						
Being appreciated by my community/ society						
Improving the quality of the food I produce						
Improving the health of my land and soil						
Improving my health and that of my family						
Taking care of the land for future generations						
Profit and earning a higher income						
Dissatisfaction with other methods of farming						

- Creating a more socially just food system
- Feeding people healthy food
- Building community and relationships
- Being competitive in my farming sector
- Other

Please rate the importance of the following values as life-guiding principles for you. Use the 8-point scale, in which 0 indicates that the value is opposed to your principles (on the far left), 1 indicates that the value is not important for you, and 8 indicates that the value is extremely important for you (on the far right).

	Importance of Value 0 = Opposed to my principles 1 = Not at all important 8 = Extremely Important									
	0	1	2	3	4	5	6	7	8	N/A
Power (social power, authority, wealth)										
Achievement (success, capability, ambition, influence on people and events)										
Stimulation (daring, a varied and challenging life, an exciting life)										

Self-direction
(creativity,
freedom, curiosity,
independence,
choosing one's own
goals)

Universalism
(broad-
mindedness, beauty
of nature and arts,
social justice, a
world at peace,
equality, wisdom,
unity with nature,
environmental
protection)

Benevolence
(helpfulness,
honesty,
forgiveness,
loyalty,
responsibility)

Tradition (respect
for tradition,
humbleness,
accepting one's
portion in life,
devotion, modesty)

Conformity
(obedience,
honouring parents
and elders, self-
discipline,
politeness)

Security (national
security, family
security, social
order, cleanliness,
reciprocation of
favours)

To complete the survey, we need to ask you a few questions about your farm and yourself as the primary operator.

How big is your farm? Please respond in whatever unit you prefer (e.g. acres or hectares) but please indicate the unit in the column on the right.

	Number (e.g. 15)	Unit (e.g acres)
Overall size of property		
Area in production (all crops)		
Area in vegetable production		

What was the value of gross farm receipts in 2018? (in Canadian dollars)

What is the dominant form of land access/land tenure that applies to your agricultural production?

- ☐ I/we own the land
- ☐ Short-term lease
- ☐ Long-term lease
- ☐ Incubator plots
- ☐ Informal arrangement with owner
- ☐ I am a hired operator/staff member
- ☐ Other _____

How would you describe the operating arrangement on your farm?

- ☐ Individual enterprise
- ☐ Multiple independent enterprises
- ☐ Non-profit
- ☐ Informal group
- ☐ Cooperative
- ☐ Other _____

Please rank your **top 3 most important market channels** for selling your vegetables (drag your top 3 choices from the list on the left to the box on the right).

Top 3 Market Channels

_____ Direct to retailers/grocers
_____ Broker
_____ Produce distributor/packer
_____ Processor
_____ Direct to restaurants
_____ Direct to eater via Farmers Markets
_____ Direct to eater via Community Supported Agriculture (CSA)
_____ Other:

In addition to vegetables, do you grow or produce anything else on your farm? Please check all that apply.

- ☐ Legumes (e.g. green beans, peas)
- ☐ Berries (e.g. blueberries, raspberries, strawberries, blackberries)
- ☐ Tree fruits (e.g. apples, peaches, plums, cherries)
- ☐ Nuts (e.g. walnuts, hazelnuts)
- ☐ Grapes
- ☐ Field crops (e.g. corn, soybean)
- ☐ Grains (e.g. wheat, barley, oats)
- ☐ Hay or forage
- ☐ Nursery, greenhouse, or floriculture
- ☐ Livestock
- ☐ Other crops (please specify)

How long have you been farming?

- ☐ 1-2 years
- ☐ 2-5 years
- ☐ 6-10 years
- ☐ 11-20 years
- ☐ More than 20 years

Do you have any processing or value-added as part of your farming business?

☐ Yes

☐ No

Do you consider yourself... (check all that apply)

☐

A full-time farmer

☐

A part-time farmer

☐

A hobby farmer

☐

A subsistence farmer

☐

Part of a family farm

☐

An urban gardener

☐

A community gardener

What is the postal code of your farm?

What gender do you identify with:

☐ Female

☐ Male

☐ Transgender, transitioning

☐ Other

What year were you born?

What is your highest level of education?

- ☐ Doctorate or Professional degree
- ☐ Masters
- ☐ Bachelors
- ☐ Associates (2-year degree)
- ☐ College or technical certificate
- ☐ Some college or university, no degree
- ☐ Highschool diploma or GED
- ☐ 9th-12th grade, no diploma
- ☐ 8th grade or less

Where would you place yourself on the following political scale?

- ☐ Very liberal
- ☐ Liberal
- ☐ Moderate
- ☐ Conservative
- ☐ Very Conservative

What is your ethnic background? Do you consider yourself:

- ☐ White
- ☐ Latino/Latina/Latinx
- ☐ Black
- ☐ Southeast Asian
- ☐ Indian, Pakistani, Nepalese or Sri Lankan
- ☐ Indigenous (North American)
- ☐ Indigenous (Other)
- ☐ Multiracial or Multi-ethnic
- ☐ Other
- ☐ Don't know / Prefer not to answer

Which of the following best describes your net farm revenue from 2018?

- ☐ Less than \$10,000
- ☐ \$10,000 - \$30,000
- ☐ \$30,000 - \$50,000
- ☐ \$50,000 - \$75,000
- ☐ \$75,000 - \$100,000
- ☐ \$100,000 - \$150,000
- ☐ \$150,000 - \$200,000
- ☐ \$200,000 - \$300,000
- ☐ \$300,000 - \$500,000
- ☐ \$500,000 or more

Appendix E

E.1 Petition to Technical Committee for social fairness standards

Add new Section 11: Social Fairness:

The operator shall demonstrate commitment to fairness in organic food systems in the following ways:

- a) All workers shall have a right to safe working conditions, just treatment and fair compensation;
- b) All farmers/ranchers/managers and workers shall be treated with dignity & respect, without physical, psychological, verbal, or other abuse or harassment;
- c) Employers shall have in place an internal conflict resolution procedure available to all workers;
- d) Contracts between parties (e.g., operators, workers, buyers,) shall be written, fair, equitable, and transparent and not terminated without just cause;
- e) Operators shall not require workers to work more than the regular and overtime hours allowed by national/provincial legislation and may take into consideration time in lieu to compensate for longer working hours in seasons of seeding or harvest when additional hours may be expected;
- f) If housing is provided, it shall ensure a reasonable level of comfort, be safe, and provide for basic necessities including adequate heating and water for cooking, drinking, and bathing;
- g) Farm internships shall provide for practical skills acquisition and learning opportunities with a formal agreement in place covering working conditions and expectations of both parties;

- h) Employers shall inform workers of any hazards and precautionary practices based on the type of agriculture being practiced or machinery being used;
- i) As economic conditions allow, employers shall aim to pay a living wage based on the region's cost of living;
- j) Payments made to farmers shall be fair and reflect the cost of production.

Add wording to Section 4 to ensure these concepts are covered in the organic plan:

4.1 The operator shall prepare an organic plan outlining the details of transition, production, preparation, and management practices including those relating to fairness in human interactions.