

# The Cows Are Calling

*Motivations for Management-Intensive  
Grazing Practices among Beef Farmers  
in Alberta, Canada*

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Master thesis in Culture, Environment and  
Sustainability

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# Abstract

Agriculture is one of the most controversial industries in the world. The population is growing and the need for food is too. But the strain that agricultural production puts on the environment, and the imbalance between industrial production and small-scale farming puts the future of these practices into question. Beef production is problematic in terms of its energy use and emissions, extensive land use, and neoliberal markets, but alternatives in beef production have been growing slowly around the world, with producers turning towards lower impact practices and methods to raise their cattle.

This thesis uses interviews and participant observation to explore the motivations of farmers in Alberta, Canada who use an alternative practice in beef production called management-intensive grazing. Adopting Van der Ploeg's concept of repeasantization, I unpack the contextual influences, implications, and values underlying these farmers' use of management-intensive grazing. I argue that by adopting this practice, these farmers engage in strategies of diversification and co-production to increase the autonomy and the resilience of their farms. In doing so, these farmers defy conventional agricultural practice and engage in a process of repeasantization.



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Sincerely,

Erika Heiberg

November 2017

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# Abbreviations

AAFC – Agriculture and Agri-Food Canada

ABP – Alberta Beef Producers

ACFA – Alberta Cattle Feeders' Association

ARECA – Agricultural Research and Extension Council of Alberta

BSE – Bovine Spongiform Encephalopathy (also known as mad cow disease)

CAFO – Confined animal feeding operation

CLA – Conjugated linoleic acid

EFP – Environmental Farm Plan

EU – European Union

FAO – Food and Agriculture Organization of the United Nations

GF2 – Growing Forward 2

GHG – Greenhouse Gases

GM – Genetically Modified

GMO – Genetically Modified Organism

GoA – Government of Alberta

MIG – Management-Intensive Grazing

NAFTA – North American Free Trade Agreement

NFU – National Farmers' Union

NTSP – National Tripartite Subsidization Program

OECD – Organization for Economic Co-operation and Development

URAA – The Uruguay Round Agreement on Agriculture

USDA – United States Department of Agriculture

VBP/VBP+ - Verified Beef Production/Verified Beef Plus

WWF – World Wildlife Fund

*As I see, the farmer standing in his field, is not isolated as simply a component of a production machine. He stands where lots of lines cross – cultural lines. The traditional farmer, that is the farmer who was first independent, who first fed himself off his farm and then fed other people, who farmed with his family and who passed the land on down to people who knew it and had the best reasons to take care of it... that farmer stood at the convergence of traditional values... our values.*

– Wendell Berry, 2016



# 1 Introduction

This thesis aims to explore, describe and understand the perspectives and motivations of farmers in Alberta, Canada who have adopted management-intensive grazing practices in raising beef cattle. Management-intensive grazing involves giving animals a small portion of pasture (i.e., a paddock) to graze while other parts of the pasture have time to rest and recover. The animals are moved every few days to a new paddock, and the process repeats. This style of grazing management is not new, but its use has grown steadily throughout Alberta in the last few years.

## 1.1 My motivation and rationale

I grew up on a farm in Alberta. My family had a passion for the land and the animals we raised. I looked forward to the annual cattle drive when we gathered with neighbours on horseback to bring the cows home at the end of the grazing season. We would entice them with cattle calls and a bucket of barley to bring them to the gate, and then lead them out onto the gravel road for the trip home. This truly signified the changing of seasons, as the pastures went dormant, the snow began to fall, and the heat that rose out of the cattle herd turned quickly to steam as we trekked across a brisk, prairie landscape. But this is a rare experience – I was the only kid I knew who would be pulled out of school to help bring the cows home.

Owing to my background, the disappearance of family farms in this part of Canada and across North America concerns me. Pastures turn to canola fields and livestock are further concentrated in feedlots, yet management-intensive grazing is gaining ground among many of the remaining farmers in the region. Many are finding ways to maintain their family farms and their livestock despite the trending decline. What drives them to hold on to this livelihood and lifestyle? How do they manage to do so in the context of Western Canada, a place dominated by the modernization and industrialization of agriculture? These questions led me to investigate these farmers' use of management-intensive grazing (MIG).

Through interviews, pasture walks, endless cups of coffee shared around kitchen tables, and many hours of driving through the Alberta landscapes, I strived to learn how and why these farmers have changed their grazing practices from conventional agricultural methods to ones grounded in agroecology.<sup>1</sup>

Research on the motivations for transition and innovation in agriculture is extensive, putting forth various arguments for how and why farmers change their practices (Anderson and McLachlan 2012; Davidson, Jones, and Parkins 2016; Goodman 2004; Läßle, Renwick, and Thorne 2015; Marra, Pannell, and Abadi Ghadim 2003; Mundel 2007; Rogers 2010; Sutherland and Darnhofer 2012). Different events, geographies, socio-economic and -cultural contexts have been examined to find examples of what drives farmers to innovate, and studies show that socioeconomic status, concern for the environment and ‘turning points’ such as market or environmental crisis create situations favourable for farmer adaptation. Van der Ploeg (2008) puts forth the idea that farmer adaptations are a response to the culmination of these factors as agriculture is further liberalized and technologically developed. In the following pages, I aim to explore how Van der Ploeg’s ideas resonate with beef farmers in Alberta who, regardless of size or stature, have adopted MIG practices.

## **1.2 The Alberta context**

The Alberta landscape varies from the steep peaks of the Rocky Mountains to the grassy expanse of the Great Plains, through the Aspen Parkland and up into the dense pines of the Boreal Forest. This province spans almost 662,000km<sup>2</sup> (Norway is just over 385,000 km<sup>2</sup>), with a population of just over 4.3 million (Statistics Canada 2017b). It is the second most western province in Canada, and one of three Prairie Provinces (along with Saskatchewan and Manitoba).

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<sup>1</sup> Agroecology refers to “the science of applying ecological concepts and principles to the design and management of sustainable food systems”(Gliessman 2006, 18).



**Figure 1. Map of Canada. Alberta is the second most western province. Western Canada is made up of British Columbia, Alberta, Saskatchewan, and Manitoba.**

In the Canadian context, Alberta has long been known for its conservative politics. Two right-wing parties have controlled its political history, with the Social Credit Party holding power from 1935-1971 followed by the Progressive Conservative Party for over 40 years, from 1971 to 2015, representing “the longest unbroken period of electoral control in Canadian history” (Jones 2015). In 2015, a drastic change unfolded, when the Alberta New Democratic Party, a social democratic party, was elected to form a majority government.

This conservative history is reflected in the province’s concentration on natural resource extraction and exploitation, a region best known for two things: oil and beef. Alberta has the third largest oil reserves in the world (behind Saudi Arabia and Venezuela) and accounts for approximately 80% of Canada’s annual oil production (Alberta Energy 2015). This oil predominantly resides in the Alberta oil sands, which underlie approximately 35 million acres, of which only 3% is accessible for mining (Alberta

Energy 2015). This natural resource sector accounted for 16% of Canada's GDP in 2016 (Natural Resources Canada 2017).

Agriculture tells a slightly different story. In 2014, the Canadian agriculture and agri-food system accounted for 6.6% of Canada's GDP, of which approximately 26% is made up of government expenditures (AAFC 2016). In Alberta, less than 1.5% of the population work as farm operators, but their presence is anything but small (Statistics Canada 2017a). There are over 40, 600 farms in Alberta, covering more than 50 million acres of land. Of these farms, 12, 282 raise beef cattle (Statistics Canada 2017a).

These farms were home to a total of 5.2 million cattle in 2016. According to Statistics Canada (2017a), Alberta has the largest average headcount per beef farm in Canada at 235 animals, followed by the other Prairie Provinces – Saskatchewan and Manitoba – both averaging at 170 head per beef farm. The national average herd size in Canada is 154. 84% of beef cattle in Canada are in Western Canada, and Alberta alone is home to almost 42% of the Canadian beef population (Statistics Canada 2017a). The sheer number and concentration of cattle in Alberta make this a prime context for exploring an evolving practice in beef farming.

### **1.3 Research questions**

My interest in this project started with wondering what motivates beef farmers in Alberta to use MIG. This called for an examination of the practice; to understand the use of the practice in the Alberta context and how it differs between users, but mostly to develop an understanding of the farmers who use this practice. As I delved deeper into the responses from my participants and the relevant literature, I found that my experiences in the field and the conversations I shared started to align with concepts of agroecology, repeasantization,<sup>2</sup> and a history of ideas that runs counter to the conventional model of agriculture that dominates regional, national and global agri-food systems. Accordingly, I maintained my original research query:

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<sup>2</sup> Repeasantization is the process of farmers using diversification and co-production techniques to gain autonomy within the agri-food system. Discussed in detail in Chapter 3.



1. *How does using MIG differ from conventional agricultural practices?*
2. *What motivates beef farmers in Alberta, Canada to use MIG practices?*
3. *How do the farmers interviewed differ from the conventional agricultural ideal?*

Through a qualitative approach, this research aims to contribute to the broader discussion of rural and agricultural development. I explore the concept of repeasantization in the Alberta beef farming context, and by exploring the motivations of farmers using MIG with beef cattle I hope to contribute to the discussion about the resistance to, and movement from, conventional farming toward agroecology.

## **1.4 Structure of thesis**

This thesis is organized into seven chapters. In this introductory chapter, I have presented my topic of study and research questions. In Chapter 2, I present the Alberta context, background, and supporting literature for the study. In Chapter 3, I present and explore the theoretical framework I have chosen to organize and analyze the data I collected. In Chapter 4, I outline my methodological approach and explain how I collected data through semi-structured interviews and participant observation. My findings are presented and analyzed in Chapters 5 and 6. Chapter 5 explores the use of diversification both off and on the farm in achieving farm goals. Chapter 6 explores farmers' use of co-production to increase carrying capacity and decrease input use. Specifically, these chapters delve into the topics of input and knowledge autonomy, and the different types of risks, benefits and challenges farmers encounter using these practices. Finally, Chapter 7 concludes and summarizes the study, discussing the implications that MIG has on farmers' practices and how farmers' values and ways of understanding the world implicate their use of MIG.

## 2 Background

To make sense of both the focus of this study and the data gathered from farmers, I provide some background information on the agricultural context, and explain different grazing practices and previous research into the implications of grazing. This chapter is divided into two parts: the beef industry in Alberta and its implications for farmers, and grazing practices with beef cattle. I start with an exploration of the cultural importance of beef in Alberta, as well the effects that neoliberalization has had both on policy development and the agricultural context of Alberta. I then provide an explanation of grazing practices and the principles of MIG. The beef industry has been heavily criticized for its environmental implications. As such, I present the debate on grazing and its effects on the environment and discuss how grazing can be considered a response to conventional, industrialized beef production.

### 2.1 ‘If it Ain’t Alberta, it Ain’t Beef’

Beef ranching came to Alberta in the late 1800s,<sup>3</sup> creating an agrarian heritage built on the traditional cowboy persona (Blue 2008, 77). This image is maintained today with annual international events in Alberta that promote and perpetuate the province as ‘cowboy country,’ including the Calgary Stampede, a rodeo and fair held every July in Calgary, and Farmfair International, an agricultural show and sale event held every November in Edmonton in conjunction with the Canadian Finals Rodeo. Additionally, Alberta Beef Producers (ABP), a policy development and advocacy organization, has perpetuated this image with marketing campaigns including ‘I Love Alberta Beef’ bumper stickers (see Figure 2 below) and iconic posters of three cowboys or cowgirls standing in front of a mountain background with the slogan ‘If it Ain’t Alberta, it Ain’t Beef’. These campaigns have helped build Albertan affinity to beef production, and its traditional ‘wild west’ landscapes (Blue 2008, 75).

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<sup>3</sup> Canada became a country in 1867, while Alberta became a province in 1905. Beef ranching opportunities were used as an incentive to draw ranchers and homesteaders to Alberta in the 1880s-1890s (MacLachlan 2006, 15-16).



**Figure 2. I Love Alberta Beef. Bumper sticker created as part of a marketing campaign in the late 1980s and used through to the 2000s by the Alberta Beef Producers (2004).**

Originally these campaigns were developed for the 1988 Calgary Olympics to attract international attention and spark interest in beef consumption at a time when sales were declining (Blue 2008, 76). However, these campaigns have also fostered continued solidarity and support for the beef industry among Albertans, as these images and slogans surged following the discovery of BSE (Bovine Spongiform Encephalopathy or Mad Cow disease) in Alberta in 2003, the E. coli recall at an Alberta meat processing plant in 2012, and the decision of local Western Canadian restaurant chain Earls to buy ‘humane-certified’ beef from American producers instead of Canadian (Bakx 2016; Blue 2008, 71; Glen 2013).

Alberta’s unwavering support for its beef industry through low markets, public health concerns and questions of animal welfare demonstrate how deep-seated beef is to the Albertan identity (Blue 2008, 71). However, this also points towards the province’s lack of tolerance for criticism of the industry. Alberta’s affiliation and dependence on resource-intensive industries, namely beef and fossil fuels, has been associated with a low belief in human-caused climate change across the province (as low as 56% of the population) and lack of support for climate action policies (as low as 35%), compared to the rest of Canada (as high as 75% and 70%, respectively) (Mildenberger et al. 2016, 2, 8). ABP’s current campaign, ‘All for the Beef’, promotes the idea that Alberta Beef is ‘raised right’ and in a sustainable manner (ABP n.d.). Despite a highly industrialized, predominantly feedlot-based reality, photos of open ranges, mountain landscapes, and cowboy hats still dominate the campaign – imagery that continues to capture the hearts of Albertans everywhere.

While the pictures painted by the industry are misleading, unwavering support for the tradition has helped open domestic markets for beef in Alberta and Canada, and strengthened the image of Alberta beef in the global market.

## **The meat market: Export and subsidization of beef**

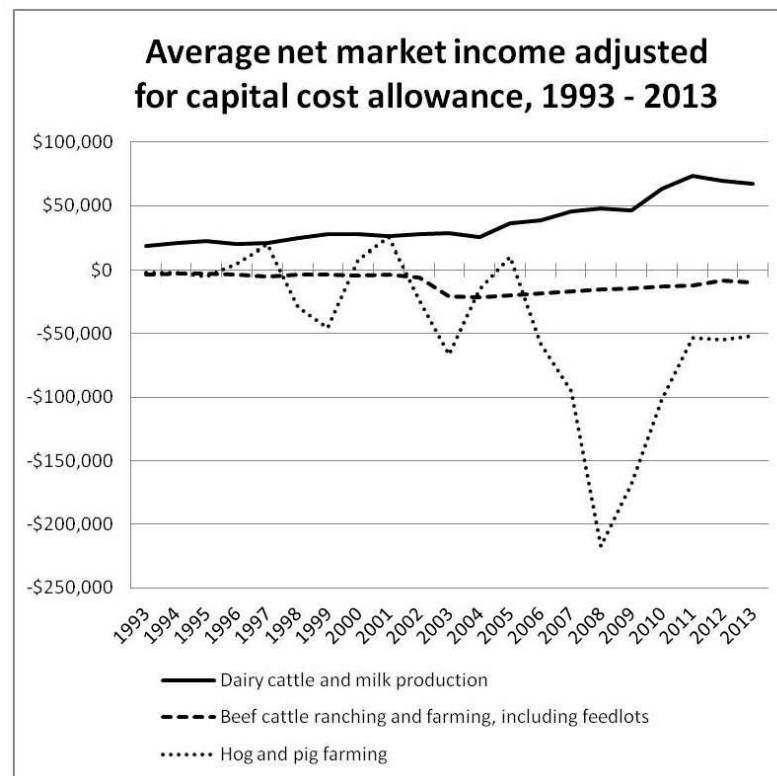
The Canadian beef industry has always been export dependent, first to the British Empire and then the US, which remains Canada's largest trading partner (MacLachlan 2006, 1). This has shaped the subsidization of beef production and the development of neoliberal policies, such as the North American Free Trade Agreement (NAFTA).

Agriculture is one of the most subsidized industries in the world, making it a hot topic for trade discussions and sustainability. Canada ranks as one of the lowest developed countries in terms of agricultural subsidies and support, demonstrating its preference for neoliberal political-economic policies. According to the OECD (2017), Canadian agricultural subsidies only accounted for 9.4% of farm receipts in 2014-2015. In contrast, the European Union averaged at 18.9%, while Norway and Switzerland were highest with over 62% of gross farm receipts accounted for by governmental agricultural support (OECD 2017).

The focus of agricultural policy in Canada is reflected in its current subsidization framework, Growing Forward 2, a partnership agreement between the federal and provincial/territorial governments that includes priority areas: research and innovation, market competitiveness and development, and industry capacity (GF2 2013). Growing Forward's successor, the Canadian Agricultural Partnership, will commence in April 2018 with the following priority areas: research and innovation, markets and trade, environmental sustainability and climate change, value-added agriculture and agri-food processing, public trust, and risk management (AAFC 2017).

Both Growing Forward and the Canadian Agricultural Partnership span the entire agriculture and agri-food system of Canada, whose stakeholders include farmers, processors, farm service providers, animal health professionals, and municipalities and groups (GF2 2013). While this diverse stakeholding creates complexity in itself, policies concerning individual industries in Canada make for an elaborate subsidization structure. Dairy, poultry, and eggs are supply-managed. These industries are based on domestic quota systems which allow farmers to adjust production based on consumer demand and negotiate their own prices. This limits their dependence on exports and competition from imports (FSC 2011, 24). In contrast, hogs, grain, and beef are export-

dependent industries. Globalization has increased competition in these markets, as Canada now competes with several other countries that it may not have before, resulting in increased market volatility (Anderson 2010, 3011). The graph below demonstrates the difference in income stability and profit between supply-managed and export-dependent agricultural industries in Canada in recent years:



**Figure 3. Comparison of income for dairy, beef and hog sectors in Canada from 1993-2013 (Statistics Canada in NFU 2014).**

However, the government is not the only force shaping the beef industry's neoliberal policies. While the Canadian government attempted to assist beef producers in the 1980s through the National Tripartite Subsidization Program (NTSP), the Canadian Cattlemen's Association, a non-profit advocacy group, lobbied against the program as it created tension with the US, resulting in increased tariffs on Canadian beef imports and creating more loss than the NTSP compensated for (MacLachlan 2001, 78). As a result, the program was cancelled and the market further liberalized.

But these policy structures are not without their downfalls. In 2003, Canadian borders were immediately closed to all beef exports following the discovery of Bovine

Spongiform Encephalopathy (BSE or mad cow disease), compromising the industry's reliance on exports and reluctance towards government intervention (Stephenson 2013). The graph in Figure 3 (above, dashed line) shows a stark decrease in income for beef farmers in 2003 (correlating with the BSE crisis). Many studies have been done on the effects of BSE in Canada that account for many recent changes, adaptations and innovations among Canadian beef farmers and the beef industry in general (Anderson and McLachlan 2012; Davidson, Jones, and Parkins 2016; McLachlan and Yestrau 2008; Mount and Smithers 2014; Stozek 2008). This period created a lot of struggle for Canadian beef farmers, and the reality is that with industrialization and neoliberal policies, both subsidization and profits of the beef industry in Canada became even more concentrated. Government funding provided to boost the industry following BSE ended up concentrated among large organizations and private corporations. The three largest packing plants in Alberta at the time, Cargill, XL Foods and Tyson, were all put under investigation for allegations of "excess profiteering" (NFU 2005, 5) following the release of these funds. Today, over 60% of the cattle in Canada are fattened for slaughter in Alberta, primarily in one of 149 feedlots in the province, all of which feed a minimum of 1000 animals each (ACFA 2017). This concentration of power has implications for the industry, which the National Farmers' Union (NFU) has labeled as the main cause of Canada's farm crisis in the cattle sector: "if packers, retailers, or both are taking a larger slice of the beef-sector pie—and if farmers are thus left with a smaller share, the causes of our cattle price crisis become clearer" (NFU 2008, 66).

### **Implications of industrialization and neoliberalization**

Overall, the beef industry in Alberta has expanded over the past century. Farms have grown, feedlots have grown, the number of cattle has grown, and the cattle themselves have grown, but with one exception: the number of farmers has declined. On average, feedlots employ only one worker for every 3,000 animals (MacLachlan 2001, 87). Wendell Berry, American author, cultural critic, and farmer, has long been outspoken about the industrialization of agriculture. His collection of over forty books acts as an extension of his own conviction of agrarian culture and values. He fiercely criticizes the threat that industrialization poses to the environment and society. In 1977, Berry released a critically acclaimed book of essays titled *The Unsettling of America: Culture*

*and Agriculture*, in which he accuses today's agriculture of losing sight of its role – to bridge the gap between ecology, economy, and culture with farming (2015b, Loc 938).

But the industrial model of agriculture is made up of factories, not farms, and instead of uniting these systems to create closed a full cycle, the segregation and intensification of agricultural industries have seriously oversimplified the complexities of how these systems work in practice and in nature (Berry 2015b).

...once plants and animals were raised together on the same farms—which therefore neither produced unmanageable surpluses of manure, to be wasted and to pollute the water supply, nor depended on such quantities of commercial fertilizer. The genius of American farm experts is very well demonstrated here: they can take a solution and divide it neatly into two problems (Berry 2015b, Loc 1174).

According to Berry, beef raised in feedlots are not part of a farm. He claims that a farm is holistic and cyclical, while a feedlot is segregated (2015b, Loc 1165). The feedlot imports feed and exports waste, all the while changing the social, cultural, and environmental landscapes. Multiple studies have looked at the effects and implications of land use change for industrialization (Altieri and Nicholls 2003; Bulluck et al. 2002; Hünerberg et al. 2014; Nguyen et al. 2012). As areas are cleared and levelled for crop production and feedlot development, water sources diverted for irrigation (Amekawa 2011, 124; Hünerberg et al. 2014, 21; Nguyen et al. 2012, 243-244). Similarly, the health of soils, aquatics, and wildlife compromised by the use of technological developments including growth hormone promotants, pesticides, and chemical fertilizers (Altieri and Nicholls 2003, 209; Bulluck et al. 2002, 152-153; Coopriider et al. 2011, 2653). Overall, the conversion of land for agricultural and industrial needs in Canada has resulted in an average loss of 2.78% of its grasslands every year (WWF 2016, 2).

Another important consideration for the industrialization of beef is the production of greenhouse gases (GHG). While GHG emissions per kilogram of beef have decreased over time, the total amount of emissions from Canada's beef production increased by 28% from 1981 to 2011 (Legesse et al. 2016, 162). This increase coincides with further developments of the feedlot system and the segregation of farm industries. According to Nguyen et al. (2012, 245), waste management becomes an issue as manure must now

be stored, transported and deposited, resulting in both direct and indirect emissions from manure production. Similarly, grain feeding requires an immense amount of crop production, which uses equipment and fossil fuels for cultivating, harvesting and transporting from field to feedlot, accounting for a significant portion of GHG emissions (246). And to top it all off, the concentration of both feedlots and slaughterhouses across Alberta increases the transportation of livestock from farm to feedlot, and feedlot to slaughter (MacLachlan 2001, 89). The culmination of these factors brands beef as the worst food product regarding environmental impact, energy use and emissions from production (de Vries and de Boer 2010, 9; Nguyen et al. 2012, 239; Steinfeld 2006, 275).

While technology has transformed what we are capable of in agriculture, it also had implications for the social, economic and cultural contexts. Culturally, industrialization changed the foods we eat. Using beef as an example, prior to the development of the feedlot and grain feeding systems for beef cattle, consumers in Canada preferred the grass-fed beef of the prairies which was typically butchered at three to four years of age. However, through successful labelling and market campaigns, purchasing habits shifted so that by the 1960s, consumers much preferred the flavour, colour, and texture of young (12-18 months), grain-fed beef (MacLachlan 2001, 313). Moreover, the industrialization of meat has significantly lowered the production costs of pork and poultry in comparison to beef, as this smaller livestock can be housed and fed in much closer, concentrated systems. The result has been a growth in the consumptions of these meats and a significant decrease in the market share for beef (Cheeke and Davis 1997, 1).

Technological developments, paired with consumer demands have also created economic implications for the beef industry. External inputs such as chemical fertilizers and pesticides, rising costs of land and technology, and the demand for cheap food has placed farmers between a rock and a hard place: The cost of industrial food production is more than consumers are willing to pay. Van der Ploeg (2008, xvi) refers to this phenomenon as the 'squeeze on agriculture'. Farmers are squeezed between the low prices they receive for their products, but face comparatively high costs to use



conventional agricultural practices. Consequently, farmers now face the decision to expand their farms or exit agriculture in order to earn a living.

However, as most of the pressure put on agriculture today is the result of neoliberal policymaking, farmers criticize the misguided efforts of politicians as the cause of this 'squeeze' rather than its inevitability. Bernstein (1979, 427) uses examples of rural development strategies pushing the increased purchase and use of pesticides, coupled with the opening of the markets to demonstrate that policies have reinforced the economic pressures in agriculture. These strategies are seen in the implementation of Taylorism in American agriculture in the 1930s (Fitzgerald 2003, 27), the Marshall Plan in Western Europe following World War II (Bernstein 2016, 619), and the Green Revolution in developing countries throughout the 1950s-1960s (Fitzgerald 2003, 187). While these systems have had many positive results in terms of production value, they have dismantled the value of small- and mid-scale farmers. In the United States, the average profits of a Midwestern farmer dropped from 35% to 9% from the end of World War II to the end of the 20th century, as agribusiness was given the freedom to move in and take over agricultural production (Moore 2010a, 242). In Canada, this political influence was demonstrated by a quadrupling of food exports, but no increase in farm income from 1999-2009 (FSC 2011, 4). Nettie Wiebe, former president of the NFU, expressed these frustrations in a public address: "In this country, we don't have an agricultural policy: we have a trade policy that periodically disguises itself and masquerades as an agricultural policy" (Wiebe in NFU 1998). At the same time, the consequential decline in farmers has reduced the electoral power and political voice of the agricultural sector, thus reinforcing these neoliberal policies through acquiescence and lack of a political voice (Wiebe and Wipf 2011, 6). The reality has been a rapid decline in small- to mid-sized family farms, replaced with large-scale grain operations, feedlots, agribusiness models and corporate control (Mundel 2007, 14).

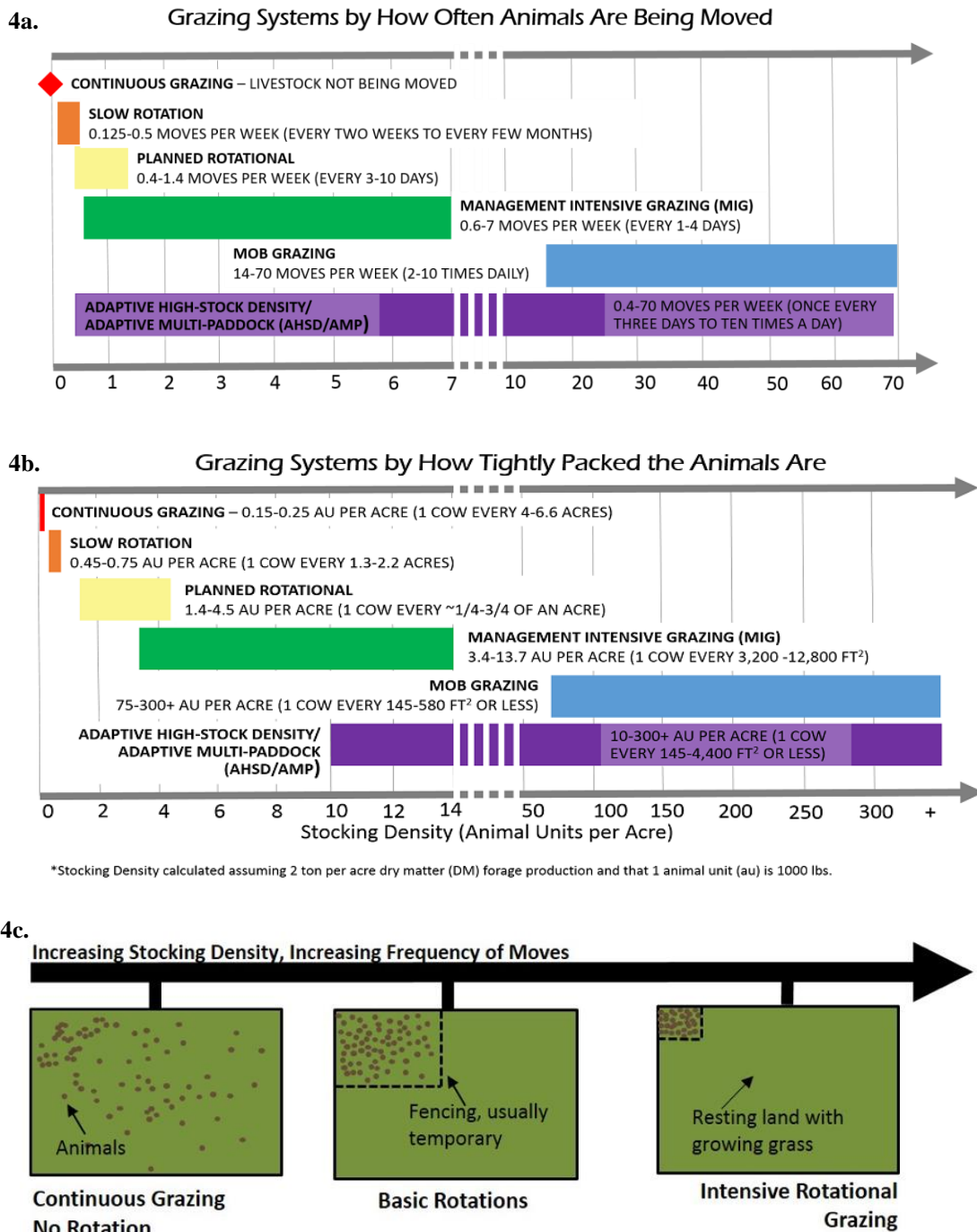
Despite its success in dominating the agriculture sector, the attempt to control policies, markets, and production has made industrial agriculture its own worst enemy. While agricultural production has advanced leaps and bounds with technological advancements, the practice is short-sighted. This industrial model pushes to use all the natural resources it can as fast as it can. In return, it creates an environment that

destroys what industrial agriculture strives for: ever-increasing yields.

How? By forcing nature to react. This has been seen with high levels of soil erosion or diseases such as BSE, but is perhaps best exemplified by an emerging biophysical adaptation: the ‘superweed effect’ (Moore 2010b, 400). A superweed is an invasive plant that is resistant to herbicide treatments, which is a symptom of the technological development of herbicide-resistant crops. The rapid spread of the superweed effect is born out of a group of practices specific to the industrial agricultural model: monoculture cropping, over-reliance on herbicide (specifically glyphosate), and an abandonment of nonchemical weed control, such as cover cropping and livestock grazing (Gurian-Sherman and Mellon 2013, 3).

## **2.2 Is the grass greener on the other side? An explanation of grazing and MIG**

A grazing system varies based on four guiding principles: grazing time in a paddock or pasture, stock density in a paddock, stocking rate and the type of animals or livestock used (Walker 1995, 350). Grazing time is how long animals are left to graze in a paddock before being moved to a different paddock. Stock density is how many animals are in a paddock and how tightly they are packed together. This will affect how well animals are distributed across a paddock, and therefore how evenly a paddock is grazed. Stocking rate is the relationship between the total amount of livestock and the total amount of forage available (all animals, all paddocks) – how much feed there is per animal, and this will all vary based on the type of livestock used (i.e., sheep, goats, cattle) (355). As these concepts vary, different grazing systems emerge. The simplest is continuous grazing, in which animals are placed in a pasture (i.e., single paddock) for an extended period, possibly the entire grazing season. This is the most common and traditional form of grazing in North America (MacLachlan 2006, 22-23). As a grazing system becomes more complex, paddocks become smaller and more frequent. This increases both stock density and frequency of moves, or rotations (grazing time). Figures 4a-c are a visualization of these different grazing systems, provided by Wallace Center at Winrock International (2016):



**Figure 4. Visual representations of different grazing systems based on grazing time (4a), stock density (animals/acre) (4b), and paddock size (4c) (Wallace Center at Winrock International 2016).**

Based on these diagrams, MIG is a modest grazing system. It is not the most rigorous and can fall anywhere between basic to intensive rotations based in Figure 4c. However, the term MIG is favoured because it focuses not only on the rotations or the pasture but the management. As such, definitions can be more complex than just defining rotation times and stock density. More generally, MIG is “any grazing method that utilizes

repeating periods of grazing and rest among two or more paddocks or pastures” (Hancock and Andrae 2009, 1). For some, MIG is not only a grazing system, but a form of grassland management driven by three main goals: lifestyle, financial, and environmental (Gerrish 2004, 13-14). Based on the goals a person has in each of these areas determines how intensely they manage their pastures.

These three goals – lifestyle, financial and environmental – make MIG a whole systems approach to grazing and grassland management and an alternative practice to conventional feedlots or continuous grazing systems for beef cattle (Schoenian 2011). Beef farmers all over the world are turning towards alternative grazing practices because they are thought to be lower cost, lower impact practices and methods to raise their cattle.

### **Can cows save the planet?**

Alternative grazing practices with cattle have been made famous by individuals like Allan Savory. Allan Savory is best known for his program Holistic Management, a whole-systems planning approach that integrates social, environmental, and economic sustainability into farm planning (Holistic Management International 2017). Holistic Management is taught around the world through workshops and seminars, as well as online, and includes Holistic Planned Grazing as a way toward ecological restoration and prevention of desertification (Savory 2016). This practice is similar to MIG in that it takes into consideration the environment, economy, and social/cultural aspects of farming. However, Savory is probably one of the most controversial and polarizing voices within the discussion of land and livestock management and restoration.

Contrary to Savory and MIG practices, many scholars argue that extended grazing exacerbates the already pressing concerns of livestock production, including increased GHG emissions and water contamination. Beef production is generally considered problematic due to methane emissions from enteric fermentation in cattle, and nitrate loss from manure and urine (Cuttle and Scholefield 1995; Hünerberg et al. 2014; McDowell et al. 2008; Nguyen et al. 2012; Stout et al. 2000). But according to some, grassland production can be considered worst as it is less efficient than grain-fed

production and allows for the release of more volatile substances into the environment since cattle spend the majority of their time outside (Nguyen et al. 2012, 246).

In contrast, manure produces higher levels of methane when it is stored, so grazing systems such as Holistic Planned Grazing and MIG may help reduce the emissions that result from manure management (McDowell et al. 2008, 741; Nguyen et al. 2012, 245-246). Moreover, research finds that these grazing systems can aid in carbon sequestration, assist in conserving grasslands and biodiversity, and fertilize the land with manure and urine deposits (Altieri and Nicholls 2003, 208; Alvez et al. 2014, 1007; Bernués et al. 2011, 51; Bocquier and González-García 2010, 1267; Cosyns et al. 2005, 158; Garnett 2009, 495-497; McLaughlin and Mineau 1995, 205-206; Schwartz 2013; Teague et al. 2013).

Debates around beef have also gained ground in public discourse. Red meat consumption has received a lot of negative attention, linked to numerous health concerns and non-communicable diseases, but also the considerable strain that conventional meat production puts on the environment and the land it takes away from human food production. Some suggest that the extended time it requires to produce a grass-fed beef animal may mean this practice is less sustainable than feedlot practices (Kunzig n.d.; McKinnon 2017; McWilliams 2012).

However, the Union of Concerned Scientists published an extensive report comparing grass-fed and conventional beef. They found that grass-fed beef is lower in total fat than conventional grain-fed beef, and that grass-fed beef tends to have higher levels of omega-3 fatty acids and conjugated linoleic acid (CLA), both of which are essential to human health and disease prevention (Clancy 2006, 2). In relation to environmental concerns, grass-based production decreases pollution by eliminating the grain production for feed and concentrated manure runoff that occurs in conventional feedlots (Clancy 2006, 1). These environmental benefits are particularly relevant for MIG, as pastures are carefully utilized and monitored.

Overall, whether cows can save the planet is contested. Some contend that while grass-fed beef produces more methane than conventional beef, the increased carbon sequestration, conservation of grasslands and biodiversity may outweigh the negative

aspects of grazing (Beauchemin et al. 2010, 378; Cheeke and Davis 1997, 2). Others argue that getting the grazing ‘just right’ is complex and often does not happen, so we may be causing more harm than good (Garnett et al. 2017, 119). Still others reason that out of all meat production, beef grazing aligns most closely with the social ethics of farming and husbandry, as animals are kept in their natural environment and not concentrated and housed indoors, addressing concerns for animal welfare and quality of life for livestock (Cheeke and Davis 1997, 1-2). Conversely, beef production consumes more resources than any other meat production (Garnett 2009, 494).

Regardless of these debates, the community of farmers using MIG practices in Alberta has grown substantially over the past decade and is continuing to gain more attention and support. This is evident in the development and growth of Holistic Management Canada and the Agricultural Research and Extension Council of Alberta (ARECA). ARECA is the provincial non-profit association of agricultural and forage research groups that work to link farmers, industry, government and research among farmers across Alberta. ARECA is made up of nine sub-organizations, including the Foothills Forage and Grazing Association and the Peace Country Beef and Forage Association (ARECA 2017). These organizations are all governed by boards of local farmers like the ones I interviewed. In the next chapter, I present the theoretical framework I use to explore the popularity of MIG in Alberta.

## **3 Theoretical framework**

In this chapter, I outline and discuss the theories and ideas that I have chosen to guide this study. With the wide variety of farmers that I interviewed, I felt it was imperative to have a theoretical framework that allowed for a breadth of perspectives and experiences. Van der Ploeg's concept of repeasantization provides a strong and relevant outline for the data I collected. As such, I start with an outline of Van der Ploeg's basis for repeasantization, followed by a discussion of the theoretical concepts and process of repeasantization. As I delved further into this study, I found there was an element missing. While Van der Ploeg's theory provides a useful outline to guide this study, I have chosen to deepen this discussion using a history of agrarian ideas based on the writings of American author and farmer, Wendell Berry.

### **3.1 The modern-day peasant: Van der Ploeg's concepts of farming styles and repeasantization**

Rapid industrialization and neoliberalism have revolutionized the agri-food system, but concerns for sustainability call into question whether these trends can continue given the current state of the environment, economy, and society. In answering these debates, farmers and researchers pursue diverging paths of agricultural development. This divergence speaks to several factors involved in agriculture today, which include the differing values and worldviews that individuals hold. For example, Fairweather and Campbell (2003, 288) found two conflicting worldviews among New Zealand farmers: a systems-level approach to agriculture, which would call for a change in practice to enhance biological activity (such as MIG and Savory's methods), and a technological approach, which uses a technological fix to improve existing agricultural practices (such as feedlot efficiency). To understand how these differences play out, Van der Ploeg (2008, 109) outlined three distinct styles of farming: capitalist farming, entrepreneurial farming, and peasant farming.

#### **3.1.1 Styles of farming**

Capitalist farming is the epitome of modern agriculture, also referred to as conventional

or industrial agriculture. It seeks to maximize profit through expansion and intensification reliant on agricultural expertise and external inputs, such as artificial fertilizers, pesticides, GM seeds, and hormonal growth implants (Van der Ploeg 2008, 108; Nelson and Stock 2016, 8). A defining feature of capitalist farming is the commodification of the labour force (Van der Ploeg 2014, 1004). The feedlot, as described earlier, is an example of capitalist farming where even the owner commutes to work, sits in an office, and then returns home at the end of the day. According to Berry (2015b, Loc 206), capitalist farming includes the roles of agricultural specialists and experts – those who come up with a generalized, routine solution for agricultural development, and responsible for the segregation of agricultural industries.

Entrepreneurial farming focuses primarily on extending commodification (Van der Ploeg 2010, 5). In this sense, land is considered a commodity, as opposed to something that is living and evolving. Land as an inanimate object is enhanced using artificial commodities and technology (Nelson and Stock 2016, 14), and value is added primarily through a horizontal expansion of the land base (Van der Ploeg 2010, 24). That is, bigger means better. As such, entrepreneurial farming is heavily reliant on financing; it is a system of using money to make money through the purchase and sale of various commodities, but excluding labour (Van der Ploeg 2015, 666).

Van der Ploeg (2008, 108) defines peasant farming by its relatively small land base with a heavy focus on self-subsistence and sustained productivity of one's land, as opposed to expanding outwards. As such, peasant farming relies on building capacity from within the farm as opposed to using external inputs. Despite attempts to eliminate peasant farming with industrialization and neoliberalization, peasants remain the dominant group of agricultural producers in the world today (108-109). As control in the agri-food system is increasingly concentrated among multinational corporations, aspects of peasant farming have been re-emerging among farmers (Van der Ploeg 2010, 1-2). However, this re-emergence is not a complete replica of the traditional peasantry, but rather the 'new peasantries'. While the traditional peasant is considered stagnant, fixed in routines, and focused on subsistence, *repeasantization* involves a peasant who is dynamic, adjusting to the natural, political and social forces that affect one's livelihood and farming practices (Van der Ploeg 2008, 7).



Van der Ploeg's farming styles can be further understood in relation to the Danish ethnologist Thomas Højrup's structural life-mode analysis (Højrup 2003). This analysis is based on the diverse cultural relations that exist within a society, in which Højrup (2003, 15) assumes that these differences are based on people's specific life-mode, which form the basis for individual values, ideologies, and practices. The wage-earner life-mode, in which a person's work is a means to an end (i.e., free time and pleasure), is most aligned with the capitalist farming style, as most people are employed on the farm and earn a wage to use in their free time (32-33). In contrast, the self-employed life-mode aligns most closely with the peasant style of farming, in which the person owns their enterprise and means of production (22-23). However, as farmers adjust to the forces affecting their livelihood, they work to secure their self-employment and doing what they can to maintain their farm (22), thus also fitting Van der Ploeg's concept of repeasantization.

### **3.1.2 Repeasantization**

*Repeasantization* was popularized by Van der Ploeg (2008, 6-7) to label the re-emergence of peasant farming. In response to the squeeze on agriculture, described in Chapter 2 (p.12-13) farmers opt for cost reductions on their farms, which results in practices with fewer inputs and lower commodification of labour, often by utilizing the skills and labour of one's family. This repeasantization is defined by a search for greater *autonomy* from political and economic forces using two categories of practices: *co-production*, in which nature and humans are understood as interacting to create mutual and dynamic transformations, and *diversification* of income activities, both on and off the farm (Van der Ploeg 2014, 1017).

#### **Autonomy**

Autonomy for farmers has been discussed from a variety of perspectives, including those of self-sufficiency, stability, distantiation, and emancipation (Van der Ploeg 2014, 1006). The important requirement for autonomy in traditional peasant farming was land ownership and livelihood and having something of equal or greater value to pass on to the next generation (Van der Ploeg 2010, 3). Van der Ploeg draws on the writings of A.

V. Chayanov, a Soviet agrarian economist who describes the autonomy of the peasant as such:

Before us there are millions of peasants, with their own habits, their own ideas about farming. These are men that nobody can command. They do whatever they do according to their own willingness and according to their own concepts (Chayanov 1988 in Van der Ploeg 2014, 1025).

Today this still holds true, but the conceptualization of land and autonomy has changed as modernization has created new agricultural and technological commodities. As such, repeasantization strives to distance itself from the use of these inputs, such as GM seeds and pesticides, to achieve autonomy from the companies and markets that control commodity sales and production. Instead, repeasantization reinstates the concepts of endogenous development and value-added production (Van der Ploeg 2014, 1004). It is important to distinguish autonomy from how entrepreneurial farming defines it. In the entrepreneurial sense, autonomy refers to profit maximization and autonomy from governmental forces through neoliberalization (Stock and Forney 2014, 162). However, in repeasantization, autonomy refers to an aggregated autonomy that focuses on a farmer's well-being and autonomy from multiple elements such as commercial commodity markets, external inputs, and reliance on expert knowledge (162-163).

### **Co-production**

Co-production recognizes that farming is a collection of both financial exchanges and ecological exchanges (Van der Ploeg 2010, 4). While farmers earn money for the commodities they produce, they also engage with nature in an exchange of resources, such as an exchange of nutrients in the soil, or changes in water quality.

The continuation of co-production between humans and nature is debated. While Berry (2015b, Loc 457) suggests that language changes our understanding of this relationship, Van der Ploeg argues that modern thought and industrialization have threatened the continued existence of co-production in agriculture. As natural processes are artificialized, industrialization severs the bond between agriculture and nature, creating an environment which people can act on, take from, and manipulate to fit their wants and demands (Renting and Van der Ploeg 2001, 96). This separation of people and

nature is a hallmark of modernization, as humans were no longer seen as part of nature but above it, and nature was appropriated as a 'free gift' for people to reap the benefits of through commodification and extraction (Moore 2014, 302).

By focusing on the ecological processes and systems in which farming takes place, peasant agriculture works to 're-ground' farming with the land (Van der Ploeg 2014, 1016). By viewing nature and the land as an active participant, farming can work to not only extract from the environment but improve it through a series of ecological exchanges (Van der Ploeg 2010, 4). Understanding how humans and the land interact can strengthen the natural processes of plant-animal production systems without depending on artificial inputs such as fertilizers and pesticides.

### **Diversification**

Diversification is when a farm has multiple ways of generating income. This can be on-farm diversification, in which a farm produces diverse agricultural products, such as cows, pigs, and chickens; diversifies its products, practices, and activities to create a value-added product, such as grass-fed beef or cheese making; employs direct marketing strategies through farm gate sales or farmers' markets; or off-farm diversification, where farmers work outside of the farm. These practices can help relieve the financial pressures on farm operations and improve quality of life (Kinsella et al. 2000, 483-484). Many farmers today also have a job off-farm in order to generate enough income to maintain a rural way of life amidst changing sociopolitical and economic landscapes (Amekawa 2011, 149). The resiliency of a farm can also be increased with diversification within. Diversification allows the peasant farmer to distance him- or herself from neoliberal forces and institutions such as market volatility (Van der Ploeg 2014, 1011-1012). Other activities can be multifunctional, in which activities and practices are expanded on the farm to increase value and purpose of different activities.

### ***Multi-functionality***

According to Van der Ploeg (2015, 665), multi-functionality is the development of products and services (agricultural and non-agricultural) on a farm that go beyond the

production of raw agricultural materials but use the same resource base. However, Van der Ploeg and Roep (2003, 43) argue that multi-functionality includes ‘broadening’ activities that are non-agricultural, such as landscape or ecosystem services management, ‘deepening’ activities that are agricultural and differentiate already existing products to increase value, such as organic production, or milk processing facilities on a dairy farm, and ‘re-grounding’ activities, in which the off-farm income (new set of resources) supports the farm, and/or low-input agriculture, in which MIG is a common practice. Still, others expand multi-functionality to include broader social issues of food security and animal welfare (Cahill 2001, 36). There is also contention regarding whether multi-functionality jeopardizes or enhances global agricultural trade. Advocates of corporate agriculture and the liberalization of trade consider multi-functional policies protectionist and damaging to market competitiveness, as farmers are subsidized for both the commodity and non-commodity goods and services they produce (Niska, Vesala, and Vesala 2012, 453; Potter and Tilzey 2007, 1293). These claims have been disputed in WTO discussions, as multi-functionality “continues to be fiercely defended by farmers and those who represent them” (Potter and Tilzey 2007, 1293). At the Uruguay Round Agreement on Agriculture (URAA) in 2001, Canada positioned itself in line with corporate agriculture, providing little subsidization for the multi-functionality on Canadian farms (Qualman 2001, 37). However, events such as the BSE Crisis in 2003 changed the position of many Canadian farmers and policies towards multi-functionality, which can be seen in the priorities areas of the current subsidization frameworks (see Chapter 2, p. 8).

Given the contentious nature of multi-functionality in agricultural discourse, I have chosen not to use the term, but to separate diversification techniques into off-farm, meaning gainful activities that do not use farm resources, and on-farm, which includes all gainful activities that utilize farm resources.

## **Repeasantization in Canada**

The definition of the peasantry has long been debated among scholars. Marc Edelman (2013, 3) summarized these definitions as historical, social scientific, activist and normative. Historically, the peasantry has referred to the rural poor, considered

backward and inferior to all other social classes. The social sciences typically see the peasantry as those who produce and sell goods for subsistence purposes, generally have little or no land, and often refer to a developing country context (9). However, Van der Ploeg's modern definition of peasantry places this concept in any country where farmers struggle with the current socioeconomic climate (9). This definition is more aligned with that of activist movements such as La Via Campesina, which defines the peasantry as 'people of the land', who work the land with their hands and take care of the land (11). Edelman argues that this is also a normative definition, as it has been adopted by the United Nations (11).

Along with this modern concept of the peasantry, a study of repeasantization has emerged in developed countries, with much research focused on the growth of organic agriculture in the United States, smallholder dairy farms in the Netherlands, and multi-functionality in the United Kingdom (Marsden 1998; Nelson and Stock 2016; Van der Ploeg 2003). Similar examples can be found in Canada, such as farmer adaptations to the BSE crisis in 2003. Since this event, global markets have also increased in volatility, input costs have increased, and regulations have tightened, expanding the pressure to change to confront the so-called squeeze on agriculture. This has resulted in farmers moving between the three styles of farming – capitalist, entrepreneurial and peasant, but of most interest in this study is the process of repeasantization.

### **Repeasantization and MIG**

As MIG focuses on building land productivity, integration of animals with the landscape, and low input production (Teague et al. 2013), MIG fits with the main characteristics of peasant farming. As such, I argue that the farmers I interviewed in this study have gone through a form of repeasantization. These farmers range from organic producers to adapting conventional techniques and from direct marketing to selling in the commercial market. In this sense, they can be placed on a spectrum of repeasantization (Van der Ploeg 2000, 110), with many 'farmers in the middle' who may not fit directly into the category of peasant farming, but both contribute to and engage in some aspects of repeasantization (Nelson and Stock 2016, 8). From the many conversations, farmyard tours and pasture walks I experienced during this study, I

frequently observed the three central concepts of repeasantization – autonomy, diversification, and co-production.

## 3.2 Criticisms of repeasantization

### Peasants and capitalism

The concepts of peasantry and peasant farming are heavily discussed in the realms of political ecology and political economy. One of the most critical voices in the discussion of peasantry and repeasantization is Henry Bernstein, who criticizes both the historical and present meaning of these terms. With the rise of capitalism, Bernstein (2014) claims that there are no peasants in the globalized world. The principal points of his position are:

...the ‘commodification of subsistence’ in capitalism, the transformation of peasants into petty commodity producers, the consequent internalisation of commodity relations in the reproduction of farming households, and inherent tendencies to class differentiation of petty commodity production, whether farming is practised as the sole or principal basis of household reproduction or combined with other activities – in other branches of petty commodity production (including crafts and services) and/or, most importantly, the sale of labour power. (Bernstein 2014, 1044)

As Bernstein points out, commodity producers such as farmers, despite their size or class or goal, are part of the capitalist system of buying and selling. Kees Jansen (2015, 21) agrees with Bernstein that repeasantization is not anti-capitalist, but rather it provides farmers an opportunity to better compete in different markets, but still embedded in the capitalist system. Bernstein also questions the motives behind farmers’ transition to repeasantization, using an example from Tiffen and Mortimore that suggests that movements such as repeasantization are:

... driven by neither agroecological nor ‘community’ values but is the result of farmers seizing market opportunities and investing in conservation to enhance land-intensive productivity and the profit it yields, helped by provision of such public goods as education which do not ‘distort’ market signals. In short, [Tiffen and Mortimore] did not see

farmers in Machakos as capital's other but rather as exemplars of Homo economicus. (1994 in Bernstein 2014, 1047)

Application of the word 'capitalist' to a specific style of farming risks being interpreted as synonymous with the industrialization and modernization of agriculture, making it inherently negative from the position of the peasant farmer (Bernstein 2014, 1037-1039). Bernstein continues in criticizing the 'peasant way' and its characterization as 'capital's other' when in fact many so-called 'peasants' engage in – and rely on – capitalist activities (1043).

The search for alternative markets and lowering costs embeds the peasant style of farming in a capitalist framework. In Van der Ploeg's discussion of the evolution of peasant farming to repeasantization, this embedding is evident, such as the transition from land productivity (peasant farming) to ecological capital (repeasantization) (Van der Ploeg 2010, 2). While Van der Ploeg is not as explicit in his connections, Bernstein criticizes the claim of separation from capitalism clearly, stating "[to] characterise local farming systems in terms of 'social capital' and 'ecological capital' is a discursive own goal – seeing like capital?" (Bernstein 2014, 1050). In this regard, it is important to distinguish capitalism from the industrialization and modernization of agriculture, in which other aspects contradict repeasantization, such as the conquering of nature and value of efficiency over conservation and quality (1037). Alternative agricultural practices, while not congruent with industrialized agriculture, are often still reliant on the development of capitalist markets for their products. Similarly, the so-called peasant may also engage in waged work to supplement their farm income, thus relying on the commodification and capitalization of labour.

### ***Pluriactivity vs. part-time farming***

Pluriactivity refers to the sum of farm and non-farm income-generating activities that members of a farm household engage in to make a living (Amekawa 2011, 148). There are contrasting views of pluriactivity in the literature as both positive and negative in the agri-food system (Amekawa 2011; Bernstein 2014; Bessant 2006; Evans and Ilbery 1993; Van der Ploeg 2008). Bernstein (2014, 1050) criticizes Van der Ploeg's use of pluriactivity to build autonomy and resilience. Bernstein contends that working off-farm

and rural labour is not always a choice but rather a necessity, which does not always translate into greater autonomy but rather a mode of survival for marginalized populations. As well, this act of working off-farm places these individuals firmly in the capitalist system, taking a wage or salary from somewhere else to support the seemingly 'autonomous/independent' farm. Instead of framing off-farm work as pluriactivity, Bernstein suggests calling it part-time farming, to eliminate any contentions or associations that are tied to the term 'pluriactivity', as well as being more inclusive of the activities that many individuals engage in parallel to or in concert with farming activity (1050).

However, in the context of social change, pluriactivity in rural livelihoods is considered a positive adaptation (Amekawa 2011, 149). Bessant (2006, 62) touches on pluriactivity in a Canadian agricultural context, in which it is common for each adult to hold a career. Farm women consider having an off-farm job important for lifestyle reasons such as using skills, personal enjoyment, and family health benefits (62-66). However, Bessant also cautions us to understand the underlying motivations for pluriactivity regarding survival versus choice (66).

### **Peasants vs. Empire: The problem with binaries**

Several scholars have criticized Van der Ploeg's work. A major criticism is his use of binaries to describe the relationship between peasants and 'Empire,' the term he chooses to encompass all the negative connotations of industrialized agriculture, capitalism, and neoliberalism in his book, *The New Peasantries* (Van der Ploeg 2008). Such binary discussions not only fail to recognize the benefits that capitalism has had in terms of agricultural development, but also the interrelated nature of capitalism and farming of all types (Bernstein, 2014, 1039-1040; Mollinga 2011, 614; Jansen 2015, 3). Binary labelling in agriculture may give the impression that all parts of the world are facing similar issues which fails to address the potential differences in challenges faced by small farmers in different parts of the world. These differences may include access to market information, subsidization and insurance against market and weather volatility, access to contracts and the degree of vulnerability among farmers in different contexts (Fischer and Benson 2006, 804-805). Van der Ploeg (2008) draws on examples from



Italy, the Netherlands and Peru, considering their responses to the price-cost squeeze to be equal. However, the conditions in each of these places – political, economic, social – have the potential to create very different situations for farmers who choose (or have no choice but) to engage in repeasantization (Chilvers 2011, 396; Mollinga 2011, 615). This could mean that some farmers engage in practices that fall under entrepreneurial farming, such as expanding their land base, while also using diversification, a repeasantization technique, to earn money to do so.

Despite this oversight, Van der Ploeg's use of Western European case studies has influenced my choice to apply this theory. A comparison between Western Europe and Canada is more linear than one with theories of political economy and food sovereignty based on developing countries in Latin America, Asia and/or Africa in terms of the current economic, political and social conditions (Mollinga 2011, 615).

### **Considerations for application**

Although the critique of Van der Ploeg can be justified, I choose to follow the suggestion of Mollinga that there are “‘variegated peasant modes of farming,’ with different characteristics and prospects for addressing the challenges of poverty, equity, sustainability and social justice” (2011, 5). I will apply Van der Ploeg's theory of repeasantization in a similar manner as Nelson and Stock (2016), in which farmers engaged in processes of repeasantization with varying motivations, and on a spectrum, where some farmers may be more suited to an entrepreneurial farming style but still align with the concepts of repeasantization – autonomy, co-production and diversification (Nelson and Stock 2016; Bernstein 2014, 1049-1050). Van der Ploeg (2008, 7) also stresses that repeasantization is a dynamic and heterogeneous process. This freedom allows me to apply this framework to the data I collected without worrying about fitting it into a rigid model.

In addition, I have chosen to draw on the writings of the American farmer and agrarian critic, Wendell Berry (Berry 1990, 2009, 2015a, b). While Berry often comes across as a romantic idealist, his ideology is reminiscent of historical North American agrarian thought. David Danbom argues that this ‘romantic agrarianism’,

...is especially attractive to Americans because it appeals to cultural myths and values at the core of our existence. It is an individualistic ideology, stressing the possibility – even the necessity of individual solutions to social problems.... And it has a nostalgic quality, like the mythic "family farm" to which it is related, always pulling at the heart-strings and appealing to our social memory (Danbom 1991, 11-12).

In accordance with Danbom's analysis, Berry's writing can enrich Van der Ploeg's re-peasantization with social and cultural understanding. While this study is not in the US American context that Danbom discusses, Canadian agriculture developed from similar immigrant and homesteader roots.

Another point of criticism for Van der Ploeg's work is his omission of gender (Mollinga 2011, 614). I agree that this is a critical topic that should be covered in the peasant dialogue; however, I have not chosen to focus on gender in this study. Female farmers make up a modest percentage of farmers in Alberta, and I considered this in creating a diverse interview sample, which I discuss in the following chapter as part of my methodology.

# 4 Methodology

In this chapter, I present the methods I used to gather and interpret my data and provide a description of the participants in this study. The main empirical contributions to this thesis were gathered through a series of interviews with farmers across Alberta and participant observation as I joined farmers in their fields and pastures and ‘got my boots muddy’ (Syse 2009, 18). I triangulated the information I gathered in the field with an in-depth literature review, media sources and official statistics and documents to fully understand the context in which these farmers and their practices are embedded.

## 4.1 Methodological approach

“Methodology refers to the way in which we approach problems and seek answers” (Taylor, Bogdan, and DeVault 2015, 3). As my aim in this thesis is to gain a better understanding of the personal experiences, motivations, and perceptions of individuals towards a practice that is integral to their livelihood, it was natural to choose a qualitative approach to the subject. I had to set aside my own assumptions and hypotheses to understand why farmers were choosing to use MIG based on their own frames of reference and experiences of the world, and I had to seek out answers from the individuals themselves.

Of course, it is impossible to approach an experience completely unbiased. I entered this project with my own questions and goals, assuming that there were specific, identifiable and definable motivations for farmers in Alberta to practice MIG. I also came to this research project having grown up in this context, among, but not necessarily immersed in, the community of farmers I chose to research. Because of my presuppositions and experiences, I consider it necessary to adopt a constructivist approach to this study. According to Moses and Knutsen, constructivists recognize that based on our own experiences, and a mix of social and contextual influences, “people may look at the same thing and perceive it differently” (2012, 9). I chose to use a collection of diverse types of data, from a diverse collection of people and sources to enrich and broaden my own understandings of the use of MIG in Alberta. My proximity to this community has helped me see past the idyllic and sometimes romanticized picture of farming and

ranching in Alberta to gain insight into the events, landscapes and socioeconomic factors that influence farmers' perspectives, motivations, and actions. While the narratives and experiences gathered in this study can be compared to say something about the practice of MIG in Alberta, it should be kept in mind that someone else's perspective may draw upon these experiences differently. However, the narratives gathered provide insight into the realities of some of the people who grow food that increases in demand every day – beef.

## **4.2 Data collection**

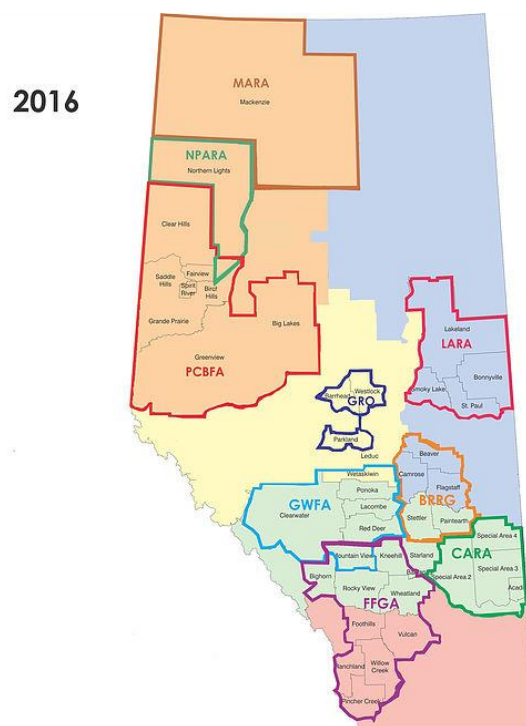
While there are member associations and statistics collected on beef farming in Alberta, there is not a publicized database or registry of farmers using MIG practices with beef cattle, so identifying participants required knowledge of where to start and whom to approach.

I arrived back in Alberta from Norway at the beginning of July and spent some time adjusting to the time change and being back on my family's farm before starting fieldwork. This allowed me to adjust to the context where I would be doing my fieldwork. I spent time in the fields and pastures, worked with cattle and working dogs, and brainstormed with my family – farmers who are engaged in various farming networks in Alberta – to find an appropriate entry point for my fieldwork.

In August, I attended field day events hosted by various groups and organizations including the Government of Alberta Agriculture and Forestry Department, member organizations of ARECA, and Holistic Management Canada. These events and activities introduced me to different topics and issues related to farming and MIG that were prevalent in the region at the time of my fieldwork, ranging from grazing management for different types of forages to succession planning on family farms. I used these events to network with possible interview participants and to gain exposure to farmers and extension professionals who then helped me identify possible participants across the province. This practice, known as snowball sampling, is particularly useful in settings where official databases are not available to draw participants from and when researchers are looking to gain personal insights and

information from participants (Taylor, Bogdan, and DeVault 2015, 47). I could draw on my family's involvement in the farming community to gain support and trust from various individuals who were excited to help me with my project.

Snowball sampling allowed me to expand beyond my own contacts into parts of Alberta that I am not very familiar with. Through connecting with contacts in the Government of Alberta Agriculture and Forestry Department and ARECA, I was able to expand my search beyond the area in which I grew up to span across the province. This also helped me to determine the geographic areas where MIG is most and least practiced. Based on the map in Figure 5, I interviewed farmers from seven of the nine ARECA regions.



**Figure 5. Geographical divisions of ARECA member associations. There are six research associations and three forage associations throughout Alberta (ARECA 2017).**

The snowball method proved effective in introducing me to participants who were highly involved in the topic, at various levels of experience and willing to discuss the topic of MIG at length. I had to keep in mind that snowball sampling could compromise individual's privacy or confidentiality as I was drawing on referrals from others (Taylor, Bogdan, and DeVault 2015, 48). This is a relatively tight community of farmers, so maintaining complete confidentiality is perhaps impossible. The snowball method could also limit the views of my participants to one side of the discussion based on who is

recommended, as well as self-selection as participation in the study was completely voluntary (Taylor, Bogdan, and DeVault 2015, 108). To help overcome these limitations, I contacted over 40 individual farms and organizations and completed interviews with less than half, thus maintaining a level of anonymity, as well as using multiple sources for referrals. In total, I visited 17 farms from September to October of 2016. Due to the low number of participants as well as the close-knit nature of the grazing community in Alberta, exact locations, farms, and farmers will be kept anonymous.

### **Gathering data**

I conducted all of my interviews on the farms of the research participants, either outside, in a truck, on a tractor, or inside the farmer's house. After establishing contact by email or telephone, I arranged to drive to their farms for a morning or afternoon. My rationale for conducting interviews this way was both to be in a comfortable space for the research participants, but also to take a tour of the farm and take part in farming activities. This provided ample opportunity for participant observation. These tours took place on all but three of the farms. I also did interviews on the farms because I recognize how busy farmers are, especially in the autumn months with harvest, and this allowed for flexible location and timing of the interviews.

### ***Interviews***

According to Syse (2009, 19), doing fieldwork on-site provides a much richer set of data, and I experienced this in my interviews. It allowed topics related to grazing practices, history, and personal experiences of the farmers to come up naturally or be sparked by something in our surroundings, whether it was the conditions of the forage plants, the sound of cows munching on grass or a flock of birds flying through the pastures. These experiences helped bring to light some important insights from the participants.

Due to the unique settings of each interview, the questions flowed with the conversation, based on the topics that arose and details specific to each farm. I used an interview guide (see Appendix A, p.127) with set questions to guide the conversation or

provide prompts if participants had trouble answering questions or describing phenomena, but the semi-structured format allowed the conversation to flow naturally and gave participants the opportunity to talk about topics and issues that were most important to them.

While this type of interview structure allows participants to approach questions from their own perspective and lets the conversation flow naturally, open-ended or semi-structured interviews do require more time and flexibility. As there is no set order to interviews, it increases the time needed to reach different discussion points, to transcribe, and to analyze and code the data. As each conversation takes a different direction, it decreases the comparability between interviews, which may limit the data analysis (Aberbach and Rockman 2003, 674).

However, a flowing conversation that is interrupted by the elements around us is more natural. “That suggests a key principle of real-world research—sometimes one does something that is not the ideal because the less than ideal approach is better than the alternative” (Aberbach and Rockman 2003, 674). The in-depth interviews were recorded to allow for my undivided attention on the conversation, interaction with the farmers, and participation in different activities on the farm. This made fieldwork more enjoyable, as I was able to engage fully with participants, but created challenges in analyzing and interpreting the data I collected.

### ***Participant observation***

These experiences helped bring to light important insights from farmers but also allowed for participant observation as another form of data collection (Mundel 2007, 75). According to Syse, “participant observation is a way of using oneself as an instrument for research” (2001, 228). In many ways, my experiences of growing up on a beef farm and my familiarity with the farming community in Alberta were an advantage to me in participant observation. It allowed me to get my boots muddy – literally – with the farmers I interviewed, as I was comfortable working with livestock, around large machinery, driving through bumpy fields and pastures or holding on tight to the back of a small, all-terrain vehicle as we sped between pasture gates. I was able to move freely through landscapes and scenarios with the farmers, which allowed me to see the

practice of MIG up close and was a natural point of connection between the farmer and myself as a ‘farm kid’. At one point, I sat on a combine with a farmer for over six hours, since it was the middle of harvest. At another point, I helped bring a herd of cattle into the corrals and separate them into different groups for tagging and record keeping purposes. At other points, I helped pull stakes and move electric fences. September was a perfect time to experience farmers using MIG. The spring of 2016 had been extremely dry, while the summer was exceptionally wet, meaning many pastures were still lush and green at a time when they would normally be dormant. This combination meant that some farmers were still grazing tame grass pastures, others native grass pastures, and some were on planted forage and cover crops. I was able to observe these variations in person, and it showed me how MIG varies not only between individuals but also between grazing conditions.

However, my comfort in these situations also meant I had to be constantly aware of my role as a researcher, as data collected from observations such as these are highly dependent on the researcher’s perceptions, but also their personalities and interactions with participants (Syse 2001, 229). While I most likely did not maintain analytical distance during these events, I made sure to take time after each farm visit to sit down and reflect on what I had just experienced. I kept a notebook and wrote brief observations and summaries to help map the nature of grazing practices and the grazing community, the settings of interviews and other activities, and participant attitudes.

### **4.3 Data analysis**

As I collected data, I kept notes. From my interactions with farmers and visits to each farm, my interview guide was adapted to better suit the tendencies and issues that arose in the conversation. I transcribed my interviews using the software HyperTranscribe™. I obtained almost 300 pages of transcript that I read through and completed preliminary coding of the data using NVivo11™. The software was handy for organizing codes and creating visualizations of the data I had analyzed, which I then used to find preliminary themes and patterns in the interview data.



Using these themes, I proceeded to look for a theory that would fit well with the information I had collected during my fieldwork. I scanned various journals and articles focused on rural development, rural sociology, and agricultural studies, comparing articles with the preliminary themes I had found and settled on using the repeasantization approach for my study.

I then used the main themes of repeasantization – diversification and co-production – to structure the themes I found in my data and proceeded to do an in-depth analysis of the data I collected to discover patterns and connections. Using my transcriptions, field notes and observations and statistical data and media sources, I triangulated my data to ensure accuracy and to provide support for my arguments.

### **Limitations and clarifications**

As official records of farmers practicing MIG in Alberta are not available, the scope of this study is not necessarily representative. However, the purpose of this study is not generalizability but to provide insight into some of the voices involved in MIG and the beef industry in Alberta. I have done my best to present the voices of these individuals accurately and authentically.

At times, recordings were difficult to hear as interviews moved between kitchen tables to the outdoors, to tractors. Wind and other various noise factors sometimes compromised recordings, but I have done my best to fill in gaps with the use of my notes and observations. As well, while I draw on both my observations and interviews in my analysis, I only use quotes from the interview transcriptions. This has resulted in some participants' voices being more present in the thesis than others, as they were more effective at verbalizing or explaining different concepts or perspectives. However, I tried to choose quotes that helped to illustrate main points within my thesis and that summarize what I found to be the collective among the participants I interviewed.

As a researcher, I tried to remain self-aware, reflexive and objective in my visits, but as I mentioned earlier this was hard at times given the amount of time and activity that I engaged in with participants. However, this is perhaps a necessary risk within qualitative research to best understand a person and their reality (Syse 2001, 228).

## 4.4 The farmers

Participants were located across Alberta and ranged in age from 25 to 70, with farming experience ranging from 1 to 45 years. This spread allowed me to gather a range of perspectives. While I considered gender, the reality is that the majority of farmers in Alberta are male, while approximately 30.8% of farm operators in Alberta are female (Statistics Canada 2017a). Based on my sample, I have a representative number of female respondents and believe that this balance contributed to a well-rounded and representative discussion about MIG practices. I interviewed 23 farmers, including 16 men and seven women.

	Male	Female
<b>Age</b>		
<b>35 and under</b>	2	3
<b>36-40</b>	2	-
<b>41-45</b>	4	-
<b>46-50</b>	1	1
<b>51-55</b>	3	-
<b>Over 55</b>	4	3
<b>Status</b>		
<b>Single</b>	-	1
<b>Married/cohabitating</b>	-	1
<b>Married with children</b>	16	5
<b>Education</b>		
<b>High school</b>	2	-
<b>Trades ticket</b>	4	-
<b>Post-secondary</b>	10	7
<b>Farming experience in years (not including childhood)</b>		
<b>Under 5</b>	2	3
<b>5-15</b>	1	-
<b>16-25</b>	5	1
<b>26-35</b>	4	3
<b>Over 35</b>	4	-

**Table 1. Participants divided by gender into age groups, marital status, education, and farming experience. Recorded at the time of the interviews.**

Each farmer also varied in what and how much they produced. Some were cow-calf producers, meaning they raised a herd of cattle and then sold calves as either meat or breeding stock. Some farmers backgrounded weaned and feeder calves, meaning they capitalized on their grazing resources to fatten calves and then sell them to feedlots or others who finished beef calves. Some of the farmers finished feeder calves, meaning they fattened the animals until they were ready for slaughter. The majority of the

farmers I interviewed used a mix of these production systems, providing them with various options, depending on their feed resources and the markets for different types or stages of cattle (i.e., breeding stock, feeder calves, or market animals). The total number of cattle on each farm during the summer grazing season ranged from 30 to 1600. Yearlings and feeder calves ranged from 30 to 1200 and cow-calf pairs from 50 to 425.

## **4.5 Ethical considerations**

All participants were asked to sign a letter of informed consent (see Appendix B, p.129). I gave participants as much time as they needed to read through the letter and also made space for them to ask questions or to clarify any of the information provided to them about the study. Names and locations of farms were anonymized. While this research does not gather sensitive information, the method used introduced me to participants' personal opinions, concerns, challenges, values, and perceptions. As such, the guarantee of anonymity may have permitted a more open and honest discussion. I placed participants in random order in the table above, and assigned pseudonyms to all of the participants in this study.

## 5 Diversification: Don't put all your eggs in one basket

To understand what motivates farmers to use MIG, I needed to understand the context in which farmers use these practices. In light of the squeeze on agriculture (see Chapter 2, p. 12-13), farmers have been taking up various activities to overcome and relieve the various economic and social pressures they face. This creates very diverse farms and livelihoods, and this chapter explores the different ways the farmers diversify both on- and off-farm, and why they have done so. I start by looking at the benefits of diversifying a farm's income sources, followed by an understanding of the downfalls of diversification. In turn, I look at how deepening already existing enterprises and practices on the farm affect farm livelihood and the motivations farmers have for using MIG.

Every farm I visited was unique. Some had long, winding driveways, the yard barely visible when you turned off the main road. Other farmhouses were just off the gravel, tucked behind a prairie grove of willows, aspens, and spruce. Some farmers walked right out their back door and into the pastures, while others backed onto a woodlot, a vegetable garden, or a chicken coop. And still others had pigs rummaging in the woodlands or sheep scattered across the lawn.

Schedules were just as diverse, with some farmers open to visits at any time of day while others requested that I come on the weekend since they would be away at work during the weekdays. But many were dependent on the weather. As my fieldwork took place during a very rainy harvest season, a lot of farmers had been kept on their toes, never certain when they might be able to harvest their crops. I spent one interview sitting on a combine driving rounds in a wheat field for six hours, followed by a typical harvest dinner in the middle of the fresh stubble. The diversity was thrilling as I never knew what to expect when I pulled into a farmyard. What's more, each farmer had a particular rationale for the diversity in their farming practice.

## 5.1 The great pursuit: A case for diversification

As diversification is a main concept within re-peasantization, the different ways that farmers diversify is an interesting comparison and contrast. All of the farmers I interviewed diversified the moment they decided to integrate livestock with the land using MIG. They took a single enterprise – beef production – and intertwined it with the production of forages and other crops. However, in many ways this was merely a point of departure for this study; as I got to know more and more farmers, it became clear that MIG linked a very diverse group of people.

Diversification, according to Van der Ploeg, is one way that farmers strive for autonomy. These practices can help relieve the economic pressures that farmers face today, including the increased cost of inputs, equipment and regulations, decreased subsidization, and market fluctuations (Van der Ploeg 2000, 501; 2009, 109). These challenges are further exacerbated by increased household expenses and consumption patterns, for which consumers pay more but the increased cost does not trickle down as profit to producers (Amekawa 2011, 148; Bernstein 1979, 424; Macrae, Henning, and Hill 1993, 25; Mount and Smithers 2014, 102; Qualman 2001, 23). In light of these challenges, some perspectives consider diversification strategies a necessity for sustaining rural livelihoods. Based on the Sustainable Livelihoods theoretical approach, Amekawa (2011, 149) argues that social changes such as the neoliberalization of agriculture are inevitable and must be dealt with accordingly. From this perspective, farmers are expected to adapt to the changing agricultural landscape and find ways to cope with the increasing costs of conventional farming and its low returns.

Both on- and off-farm diversification can act as a security measure for farmers. On-farm diversification spreads a farmer's assets around so they do not rely solely on one product. By investing in multiple crops, enterprises can compensate for each other; when grain prices are up, beef prices might be down and vice versa (IPES Food 2016, 37).

Likewise, off-farm diversification provides stability by supplying income separate from the farm. Off-farm jobs are not dependent on natural factors (e.g., rainfall) in the same way that farming is, thus building farmers' resilience in facing challenges such as

droughts and floods (Chapin III and Kofinas 2009, 69; Milestad and Darnhofer 2003, 86; Smith et al. 2009, 185). Similarly, Højrup (2003, 23) suggests that off-farm work can provide self-employed farmers with temporary relief from failing crops or falling prices in the commodity market, thus helping them in their great pursuit of maintaining the farm and remaining self-employed.

I came across many different forms of diversification in my fieldwork. Many of the farmers I interviewed had mixed farms that varied in enterprise diversity. A few had oil or gas wells on their land that contributed to farm income. And some integrated landscape management and conservation strategies based on payment for ecosystem services programs. Similarly, some farmers engaged in off-farm work, including independent contracting and consulting, casual employment, and salaried or waged jobs. To demonstrate the benefits, challenges, and complexities of diversification, I will focus on two examples from my fieldwork: mixed farming and waged jobs.

### **The mixed farm**

Conventional agriculture pushes for the specialization of monocultures, horizontal expansion, and high commodity production, but a diversified farm focuses on polycultures and vertical integration of commodity and non-commodity farm activities. As a result, farmers can produce more with less, at least regarding natural resources such as land and livestock numbers

According to Seré, Steinfeld, and Groenewold, a mixed farming system is one “in which more than 10 percent of the dry matter fed to animals comes from crop by-products, stubble or more than 10 percent of the total value of production comes from non-livestock farming activities” (1995, 12). Based on this definition, all of the farmers I interviewed had mixed farms, as they combined beef cattle with forage and grass production. The diversity of animals and crops on the farms I visited varied from two enterprises – namely beef cattle and forages – to over five different crop and livestock enterprises.

For some farmers, mixed farming allowed them to vertically integrate different enterprises, building upwards on the resource base they already own and taking

advantage of the full resource base capacity. I spent over a day with one farmer, Larry, and his family. After touring his mixed farm, helping to bring cattle in from the pasture for sorting, gathering eggs from the hen house, befriending the guardian dog, and herding dairy cows in for their daily milking, we sat down at the kitchen table where he emphasized how diversifying his farming system expanded his production:

... [W]e realized that you need to have some diversity on the farm and then, of course, we're focused on perennial forages so then we always look at different ways of marketing the crops and whatnot.... The leafcutter bees became a tool.... So, then we focus on pollination and bee reproduction, and of course with seed production then you get seed pollinated so then you've got seed that you can market and harvest and sell.... And then after the seed is harvested, you still have the straw; and the grass and stuff, because it's a mixed, diverse species, you still have that [as] feed for livestock, and of course, then ruminants come into play... [And] the dairy cattle then, we recognize the value of having a milk cow on the farm for good food supply, and we get so many things out of it like butter and cheese.... So it's another means, another form of product conversion and a tool that we can use to harvest the grass, but then it adds a little bit more diversity to the farm (Larry).

Larry is better able to utilize the ecological capital available to him by vertically integrating different enterprises and taking advantage of the symbiotic relationships among diverse species. This sort of integration has also been shown to decrease the need for artificial fertilizers by improving nutrient cycling, as nutrients are not moved off of a resource base but incorporated back into it, creating a closed cycle (Sayre et al. 2012, 8).

In this regard, Larry expands his autonomy by decreasing reliance on outside inputs and increases his capacity without having to expand his land base. According to Van der Ploeg (2014, 1003), this characterizes a contrast between peasant style farming and capitalist style farming. While capitalist farming focuses on an economy of scale, producing more of one variety over a larger scale to increase yield, peasant farming focuses on an economy of scope, where each crop might have lower yield than if it was produced in a monoculture, but together the number of calories produced by the mix of enterprises is greater, thus increasing the productivity of the land (1003).

According to Berry (1990, 541; 2009, 71), this can also increase stewardship, as farmers work with smaller land bases but increase productivity and complexity, thus increasing the number of farmers needed on the land who are also able to care for the land.

### ***'The Good Steward'***

Farmers play a unique role in conserving ecosystems in agriculture, which has drawn attention from policymakers and environmental advocates alike. Payments for ecosystem services can be an economic driver for farmers who pursue diversified farming and agroecological practices, such as MIG (Bowman and Zilberman 2013, 5). Financial incentives for ecological goods and services are increasingly available in Alberta, as grant and subsidy programs grow and global pressure to decrease carbon emissions and ecosystem degradation is high, particularly for the agriculture and the livestock industry (Steinfeld 2006). Some of the farmers I interviewed had received subsidization through GF2,<sup>4</sup> while others participated in Alternative Land Use Services (ALUS), a non-profit organization that provides payments for ecosystems services in select communities across Canada, including 10 in Alberta.

Wendell Berry discusses the concept of agricultural conservation at length, tying it to concepts of stewardship and what makes a good farmer: “*Good* farmers, who take seriously their duties as stewards of Creation and of their land’s inheritors, contribute to the welfare of society in more ways than society usually acknowledges, or even knows” (Berry 2009, 72). The concept of a good farmer as a steward of the land is based on tradition, dating back to biblical interpretations, including John Wesley’s *The Good Steward* (1768). Many of the farmers I interviewed identified with this role, and some identified that their relevance in this role is even more pressing today than in the past. Mark is a farmer in his early 40s, who spoke with great awareness of his surroundings and the unique role he has as a farmer:

We’ve kind of been charged with encouraging and protecting and helping Mother Nature along a little bit. Not a lot of people are in a position to do that...If you live in an apartment in the city, you can reduce your

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<sup>4</sup> GF2 is the current agricultural subsidization program in Alberta. See Chapter 2, p. 8 for more details.



environmental impact by drinking tap water instead of bottled water; I can influence 15 miles of watershed (Mark).

The extent of territory a farmer has influence and control over is far greater than that of a city dweller. With a global trend of rural to urban migration, farmers are charged with a greater responsibility to conserve – more soil, more water, more wildlife, more space – as farmers become fewer and farther between.

However, one farmer I interviewed expressed how the squeeze on agriculture puts farmers in a difficult position in this regard: “I think farmers want to be good stewards of the land, but the first rule is [to] survive. So, you can’t be a good steward if you can’t survive, so [farmers] will compromise that stewardship for survival” (Walter).

Payments for ecosystem services should lessen the difficult choice between survival and stewardship, but this may be difficult in an industry that prides itself on production expansion, rather than landscape conservation. As such, pairing conservation with other forms of diversification may help to encourage and build practices of stewardship.

### ***The antifragile farm***

Research shows that a significant benefit of mixed farming is that it spreads risk. By not relying on one product, farmers can overcome issues with weather, market instability and nutrient deficiencies (IPES Food 2016, 31-44). Harry, a mixed, organic farmer in his mid-40s, talked about his motivations for having a mixed farm in these terms:

...you have to design [your farm] so it can handle changes in the market, changes in drought, changes in the weather. So many farms nowadays with their monocultures, they’re so dependent on one or two features, if one of those is gone, their farm’s gone. So it’s about trying to do diverse things on my farm so I’m resilient to changes in the market. ...I’m not a big fan of grain farming, but organic grain prices are so good that I just about have to do it to make the farm more antifragile<sup>5</sup> because if the beef market goes, I still have the grain income to help me out or vice versa. That’s what I mean by being antifragile; so you can weather the storm (Harry).

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<sup>5</sup> Antifragile is a concept developed and explored by Nassim Nicholas Taleb. It refers to the phenomenon that “some things benefit from shocks; they thrive and grow when exposed to volatility, randomness, disorder, and stressors and love adventure, risk, and uncertainty” (Taleb 2012, 3).

My conversation with Harry consistently circled back to this concept of antifragility. Harry explained how he had transitioned his farm from a grass-based ranch to a mixed farm to make his farm more antifragile, as he was able to produce more resources in-house, reducing his input costs and also working to close his nutrient cycle. As he expressed in this quote, mixed farming also reduces the risks common to specialized, industrial farming. Instead, Harry can work with complementary enterprises, such as organic grain and beef, so that in cases of drought or bad weather, he still has beef to sell if the crop fails, and can use the failed crop to feed his cattle, thus enhancing his beef production. As Harry explained above, it also helps him maintain an income despite market volatility.

For some, mixed farming gave opportunities to catch the attention of customers with one product, and then branch into the other products farmers had to offer:

...eggs are a really nice foot-in-the-door thing for our business. If someone wants to buy eggs...They don't have to commit to \$400 worth of beef. They can just buy 2 dozen eggs for \$10. And then ok, well, now they're familiar with our business and our website and we can invite them out to the farm and so on (Caleb).

For Caleb, a young and relatively new farmer, eggs proved to be more labour intensive than beef, but offered a way to catch people's interest, which has helped to build his business. Caleb may be free to stop producing eggs once he has built a strong customer base for beef, but for now, mixed farming expands his market reach and options. Similarly, farmers may use other income activities to help build their farms, such as off-farm jobs.

### **The off-farm waged job**

When I planned to interview farmers, one of my criteria was that participants considered themselves full-time farmers. Yet, when I started looking for people to interview, I was told it would be difficult to find many full-time farmers these days. I had expected farm families to have diverse sources of income, but assumed that at least one family member spent their working days solely on the farm; after all, that is how I grew up in rural Alberta. But the reality is that many farmers all over the world hold a

second job, and in Alberta, approximately 47% of farmers reported having an off-farm job in 2015 (Statistics Canada 2017a). I reflected on my original plan and chose to open my search to individuals who identify as a farmer, as this would give me a broader range of interviews and help inform me of the values and multi-faceted nature of farming in Alberta today (Berry 2009; Burton and Wilson 2006; Groth and Curtis 2017). As a result, off-farm waged jobs became an interesting point of variance among the farmers I interviewed.

In talking with farmers, I found that people's off-farm income varied quite a lot, depending on their needs, skills, and interests. The off-farm jobs I came across during my fieldwork included skilled trades such as carpenters, millwrights and heavy-duty mechanics, a healthcare professional and an agricultural professional. Some individuals held casual off-farm jobs, such as substitute school bus driving and corporate teambuilding, but these jobs were held for different reasons than other off-farm waged jobs, primarily personal interest and community involvement.

Based on the Sustainable Livelihoods approach, off-farm work is a positive adaptation to sustain farm households that exemplifies the convergence of urban and rural economies today (Amekawa 2011, 135). By working in an urban sector but investing in on-farm activities and rural sectors, off-farm diversification encourages the movement of money and stimulates local economies in both places – rural and urban – thus allowing communities to thrive and retain their rural populations (Bessant 2006, 66; Kinsella et al. 2000, 491). Without the possibility of off-farm work, this inevitably leads to two outcomes: bigger farms and fewer farmers. This creates a domino-effect of destruction in rural communities, according to Kinsella et al., who state that “[if] there was no off-farm employment, the number of farms would fall drastically and this would seriously affect services such as schools, post offices, shops and public transport in the rural parts of the country” (2000, 492). Likewise, Thomas Højrup (2003, 22) suggests that self-employed commodity producers form a life-mode in which their social and cultural relations are structured around their self-employed enterprise. This life-mode, including farmers, considers self-employment as the freedom to work, as opposed to the obligation to work. Thus, the self-employed are geared toward the great pursuit of maintaining the production of their own enterprises and utilize waged work as a means

to support or supplement that enterprise as it helps them achieve their goals of independence through self-employment (23). As such, off-farm, waged work helps to sustain farms and farming communities concomitantly.

I found that the main reason farmers held an off-farm job was to build capital to invest in their farms. Bessant uses Mage's (1976) term 'the aspiring type' to label farmers who "pursue off-farm work with the intention of making the transition into 'full-time' farming, that is, in order to generate the capital needed to expand the agricultural operation" (Bessant 2006, 60). Most of the farmers I interviewed who touched on this phenomenon had already transitioned to farming exclusively, which also changed their goals and management strategies. One farmer in his late 30s, Tom, reflected on when he used to work off-farm. Tom has been farming since he was 18 and expressed the progression of his farm management since starting out:

When I was working off-farm, the biggest limiting factor in the early days was lack of capital. [We] simply [didn't have] enough money to do anything. So, it was always about controlling costs. Today...risk management is a much bigger part of my job (Tom).

Similarly, Louis, who's been farming for 20 years, recalled his experiences of working off-farm while trying to expand his farm:

I used to work off-farm... and we [grazed] a few hundred yearlings and some cows, but not a lot...So that took until midnight all summer...Now the big change is that the [farm] can kind of support itself...so it's a lot more fun (Louis).

Bessant (2000, 271) contends that this 'aspiring type' of farmer is typical of small to medium-sized farms. Compared to other groups of part-time farmers he studied, these farmers hold a positive view of agriculture, tend to have the least motivation to work off-farm, and 'aspire' to farm full-time. For most of these farmers, this transition included expanding the farm to fit an economy of scale; that is, an increase in production to build profits without significantly increasing costs. Højrup (2003, 30) argues that those in the self-employed life mode can easily reconcile working for someone else if they know it is a temporary fix. In other words, working to build capital to further their self-owned enterprise is part of their great pursuit – the freedom of self-employment.

This was echoed by some of my participants. Once a farmer could achieve this aspiration, there was little desire – or time – to return to working off-farm. Tom indicated his satisfaction with the decision to transition to full-time farming, but also that his current situation would not effectively allow for him to work off-farm: “For me, it was always the goal not to [work off-farm]... I only did it because I had to, and now that I don’t have to... it’s not tempting... And we really don’t have the time right now... We’re just too busy” (Tom). This was a prevailing sentiment among participants. Most farmers who had transitioned to full-time farming did not feel they had the time for much else, and those in the midst of transition felt overworked. However, many farmers had a spouse that worked off-farm, which in many ways helped reduce some of the time pressure put on farmers as they had someone to share in the division of farm labour and livelihood.

### ***Spousal off-farm jobs***

Farm families in Canada often have one spouse working off-farm, as explained in Chapter 3 (p. 28), and the farmers I interviewed were no exception. Dual household income is not only observed in farming but appears as a macro trend in Western societies (Rønning and Kolvereid 2006, 407). Some farmers expressed the passion their partner has for their own career, and the farmers have no desire to take that away from them. Michael, who farms full time, indicated his feelings towards his wife and her career:

My wife...is a teacher and that’s her purpose. She’s got a gift... [The students] relate very well to her and it would be a shame to have her come home and help me move cows [compared to] what she [can] do there, but she’s also involved in the farm; she has an interest in it and she does help out as much as she can (Michael).

Michael’s perception of his wife’s off-farm work fit well with Bessant’s (2006, 62) findings that women on farms often consider career- and lifestyle-related issues important in terms of utilizing skills or keeping up with training/education, fulfillment through off-farm jobs and supporting their children’s education and aspirations. Spouses often hold off-farm jobs for purposes that support the household. Health insurance is a primary rationale, as this is something that farmers have to invest in personally and it is

often more expensive for farms to purchase compared to investing in benefit plans provided by off-farm employers (Inwood 2013, 3; Nelson and Stock 2016, 12). According to Nelson and Stock (2016, 12), this is the most peasant-like form of diversification, as farm wives provide supplementary income for the self-sufficiency of the household. However, Inwood (2013, 3) points out that these forms of diversification often mean that farm women are then charged with the roles of off-farm worker, primary caregiver, and farmer. This multiplicity of roles was confirmed by some farmers, as Michael suggests in the quote above. Frank elaborated on how his off-farm activities affected the involvement of his wife on their farm. When asked if taking on new enterprises has affected how they manage their cattle herd, Frank responded:

I probably don't spend as much time [with the cattle] as I should, but [my wife] does. She's a [physiotherapist] in town and she works two days a week. She's got her own business in there and so...like today I'm going to be away [a few days] so she'll keep an eye on things (Frank).

Frank has been farming for over 30 years and in doing so, he has developed a multitude of other roles. As a go-getter and a mentor, he is often on the move and not necessarily on the farm, and while both Michael and Frank demonstrate that a family farm can involve many people and many workers, farm spouses often fill multiple roles both on and off the farm. After becoming the wife of a farmer herself, author Billi J. Miller set out to learn the stories of farmwives in Western Canada following a revelation: "I all of a sudden looked around at where I was and was absolutely in awe of these unbelievable women that were, to me, holding these farms up." (Miller in Christopherson 2016). However, this breadth of roles and responsibilities most likely contributes to the stress experienced by farm women. While the diversification of a farm can help build resilience and stability for farm families, the effects are not always positive. Højrup (2003, 137) suggests that taking on multiple roles can present contradictory life-modes, which may create struggles in various social and cultural relations. So while diversification can provide many benefits in farming, it can also have negative implications.

## 5.2 A finger in too many pies

While diversifying a farm may reduce economic hardships, it has also shown to negatively affect farm life and agricultural production. Trying to balance a multitude of activities spreads a person thin, reducing the time they can devote to each of their different roles, enterprises, and activities. Many of the farmers that I interviewed felt that their biggest challenge was a lack of time regardless of how much they diversified, but those who had combined on- and off-farm diversification conveyed this pressure the most. Greg, who had been farming for three years when I interviewed him, expressed frustration with trying to balance all of his roles and responsibilities: “I’ve got a carpentry business as well, so it’s been just a struggle the last few years running a carpentry business and then running a full-time farm... I’m just burnt out, played out” (Greg).

Multiple studies have found that diversification takes time and attention away from the farm, reduces the resources devoted to farm work (e.g., labour), and can create latency in farm management (Anderson and McLachlan 2012; Knowler and Bradshaw 2007; Läßle, Renwick, and Thorne 2015; McLachlan and Yestrau 2008). Läßle, Renwick, and Thorne (2015, 6) found that innovation dropped as farmers took off-farm jobs. With less time devoted to the farm, the opportunity to seek out innovative techniques, attend information events or field days, or engage with support networks decreases. Furthermore, Kebede (1992) found that risk aversion was higher among Ethiopian farmers in areas where off-farm diversification opportunities existed than where income was solely provided by farming (in Marra, Pannell, and Abadi Ghadim 2003, 221). An off-farm job may allow a person to be comfortable with what they have. Instead of innovation being imperative for survival, farmers with off-farm income can compensate for their inefficiencies or losses on the farm.

Similarly, some of the farmers I interviewed felt that their off-farm work reduced their willingness to make changes to the farm. Greg shared his experiences with off-farm work and making changes to farming practices:

I know so many people on these smaller farms will have an oilfield job or something just to support the farm, but we just keep crutching it and we’re

not making any changes to what we're doing. So, I think sometimes you've just got to bite the bullet and just kind of dive in and go for it...I think [that's] what's going to make things work instead of... just keep slugging away with both of them. We're not going to make the real changes on the farm that have to be done because there'll always be that income coming out of the carpentry side (Greg).

An off-farm job allows the farmer to feel comfortable, despite the inefficiencies that might exist on the farm. By fully committing to the farm, Greg feels he will be more willing to make changes, implement innovations and take the risks that he otherwise might avoid. However, making the transition itself is difficult. In this regard, a lack of off-farm opportunities may make farmers more innovative and open to changing their practices, as they have nothing to 'crutch' or fall back on, as suggested by Kebede (1992 in Marra, Pannell, and Abadi Ghadim 2003, 221).

On the other hand, some farmers expressed caution towards on-farm diversification: "I don't think it hurts to have more species.... Everything kind of has its thing it adds to the environment, but then they do create their own challenges as well" (Greg). While mixed farming has been shown to improve productivity, it also has downfalls. Even farmers like Greg, who has multiple on- and off-farm enterprises, saw the possible adverse effects. He continued:

I think it is important to have... multiple industries [but] I think sometimes people go too crazy with it, like they'll have seven or eight and – just from my experience and what I've seen – is if suddenly you're doing seven or eight things, you're probably only going to have 60% capacity just because it's so much work. I think you're better to have some multiple industries, but just focus on maybe a few and just do a lot better job at those things (Greg).

While Greg has a fairly mixed farm, he recognizes the tipping point at which a farmer is most effective, or overworked. In doing so, he reflects a sense of moderation. Similar to off-farm work, a farmer risks spreading themselves too thin across projects and responsibilities. Courvoisier found that organic farmers in Switzerland agreed with the sentiment that diversifying could "increase the risk of getting lost" (2012, 21). Many of the farmers that I interviewed argued that others might not take up MIG because it's not where their priority lies. If a farmer is seeding in May, they do not want to consider



calving at the same time. If they are harvesting crops in the autumn, they don't want to consider moving their cows every day as well. However, together these factors can encourage latency in farming. As Greg suggests, a farm may only be functioning at 60% capacity, but farmers are too busy to consider alternatives, let alone time to research what types of alternatives are out there.

In addition, while farmers recognize the benefit of rotating crops for soil fertility and stable yield inputs, the market value difference between crops and varieties deters farmers from diversifying (Berry 2015b, Loc 803; Courvoisier 2012, 53; Doane 1944, 375). Walter, who's been a farmer for more than four decades, argued that mixed farming allows farmers to justify disparities between their different on-farm activities or enterprises, but possibly at the expense of their farm:

I think if you're grain farming, it's pretty easy to hide costs of the cow: 'Well we had that tractor anyway, so you maybe count the diesel fuel but you don't count the depreciation, the grain farming pays for that.' Or, 'that crop got hailed so we baled it up, so what did it cost? Well not really anything, we salvaged it.' You can sort of in your mind lowball some of those inputs (Walter).

Many farmers considered mixed farming a risk management strategy, but as Walter points out, these variances can result in enterprises crutching each other through unstable markets and farmers many never actually make a profit. This could reduce the liquidity of the farm as money is tied up in various enterprises, reducing the funds farmers have to invest in further innovations or expand production (Anderson and McLachlan 2012, 88; Bernués et al. 2011, 54).

A willingness to innovate may also be affected by the availability of labour on the farm. As the current socioeconomic context is characterized by a rural-to-urban migration, there is a decreased labour force in rural areas. Thus, despite the opportunity to have more farmers on the land, the farmers are just not there anymore. Some participants recognized that successful operation of their farm depended on an availability of labour. Nellie, who had recently come back to her family farm, conveyed the value of being able to share the farm workload with her family, as well as flexibility in her off-farm job:

... Some of these guys are single person [farm] operators, whereas we're lucky in that sense. Even though [we all] have off farm jobs, we're around on weekends or evenings; or my job's very flexible and I can leave in the middle of the day... So we do have that off-farm income, but we're also involved part-time in the farm. So, when a job does require 2 or 3 of us...we can make that work in our schedules. Some guys don't have that flexibility (Nellie).

Nellie demonstrates that having multiple individuals who invest time in the farm and the flexibility to do so has helped her family to implement new practices, improve farm infrastructure, and work at a pace that best fits the farm, rather than what best fits the individual. However, this is not the reality for many farmers. Therefore, a simplification of farm practices rather than diversification is a common response to a low workforce (Ryschawy et al. 2012, 678). These situations create the argument for specialization – being really good at one thing allows the farmer to put their best knowledge or experience forward. However, this has implications for the inexperienced farmer.

### **An endless game of catch-up: Diversification and 'the squeeze'**

Sarah had recently finished university, and like most of the farmers I interviewed, she required capital to start farming. She was young and unestablished, but grew up on the farm she was now investing in alongside her parents. However, this was no easy feat. The high risk in terms of an unreliable financial return in agriculture (due to volatile weather and unstable markets) made it difficult to secure financial capital without providing significant collateral.

Despite growing up in an area rich with agricultural history, Sarah felt there was a decrease in trust, support, and accommodation of local banking institutions for new and young farmers. Even before her experiences with banking institutions, she chose to attend university and secure an off-farm job located in an urban centre. Her father had worked off-farm, so she viewed this as a necessary measure to establish both a household and maintain the family farm. She felt her decision to work off-farm was confirmed when faced with difficulties in procuring a loan to buy land. To secure a loan, Sarah travelled across Alberta to find a banking institution willing to accommodate her financial situation and plans to invest in agriculture. Sarah's experience could be classified as "operators [that] are obliged to take up off-farm

employment due to financial exigencies or aversive conditions in agriculture” (Bessant 2006, 60). In a review of part-time farming typologies, Bessant uses Bartlett’s (1991) term, the ‘transitional path’, to label farmers like Sarah (in Bessant 2006, 60). These farmers are motivated to take up off-farm jobs to achieve their desire to farm. This fits with Højrup’s (2003, 22-23) life-mode analysis, in that people belonging to the self-employed life-mode are willing to do waged work as long as it supported the success and continuation of their own enterprise.

However, Højrup (2003, 30) also postulates that for the self-employed life-mode to view waged work positively, it needs to be a temporary fix; otherwise, it becomes a burden and possibly a sign of failure – a failure of the main pursuit. Some participants heavily criticized the acceptance of the 'squeeze'. For these farmers, conventional agricultural practices are not a viable option because they require them to work off-farm and rarely as a temporary fix. This rejection of the conventional agricultural trajectory shows a degree of autonomy, as farmers consciously step out of the hegemonic model of today’s agriculture. Greg communicated his dissatisfaction and rejection of this convention, saying:

We’d be considered a small farm, and so for us to be profitable, we really have to start looking at doing things different and the conventional system doesn’t work for a smaller farmer. It’s ridiculous how we have to work an off-farm job to support our farm, so we’re really looking here; what can we do to make this profitable, and that’s kind of where...grazing really plays into [it] (Greg).

While many policy and development experts accept off-farm work as an appropriate adaptation to the price-cost squeeze, most of the farmers I interviewed viewed this squeeze as an unacceptable condition of agriculture. This rebuff demonstrates autonomy of knowledge, as farmers reject what conventional standards tolerate. Greg has used this autonomy to find practices such as MIG that he can adapt to his farm, his circumstances, and his environment. Van der Ploeg (2014, 1006) argues for knowledge autonomy and the use of local knowledge in repeasantization, and that peasant agriculture is characterized by its relatively high availability of labour (Van der Ploeg 2009, 111). However, the adoption of off-farm work has led to an acceptance of conventional agricultural knowledge and a decrease in labour availability in most cases.

In practice, this contradicts Van der Ploeg's positioning of off-farm work as a viable diversification strategy but supports Højrup's analysis of the self-employed life-mode.

Greg continued:

There's just too much of [this] going on. We keep crutching the farm with this other occupation and it's absolute insanity – like no other business. I don't work as a plumber to support my carpentry business. You know, that just doesn't exist (Greg).

The continuous need for off-farm work flustered Greg. Stozek (2008, 89) found that the pressures of off-farm work for farm viability increased worry, anxiety, and depression in farmers following the Canadian BSE crisis in 2003. These reactions were all related to the squeeze on agriculture, as most of the farmers Stozek interviewed attributed these feelings and conditions “to financial hardships and the seemingly never-ending crisis in agriculture” (2008, 89). Based on Højrup's (2003, 30-31) life-mode analysis, this frustration can be understood as an obstacle to or failure of the self-employed farmer's main pursuit – independence through free work. However, both Stozek's findings and the farmers I interviewed blamed the ongoing crisis in agriculture on neoliberal strategies and misguided interests of policymakers in Canadian agriculture.

While many of the farmers I interviewed have adapted to these conditions, they scrutinize the need for supplementary off-farm income and instead advocate for alternative agricultural practices, particularly in grazing and forage production. As such, the economic and social pressures in today's agriculture emerged as a strong motivation for the farmers I interviewed to engage in MIG practices. In contrast to the diversification strategies explored above – mixed farming and off-farm waged jobs – most of these farmers have taken up activities that strengthen or deepen their primary enterprise – namely beef production, and utilize MIG to do so.

### **5.3 'Rolling in the deep': Diversification through deepening activities**

Whereas only some of the farmers I interviewed had mixed farms, even less held off-farm waged jobs, but all of them were involved in deepening activities. Deepening activities are those which increase the value of an already existing product (e.g. organic

production, specialty products, processing of raw materials, direct marketing, etc.). Some farmers earned income by providing resources related to their farming practices, and some diversified their product lines by taking the cattle and forages they produce and turning them into something more, either extending their product line or deepening their value.

### **5.3.1 Value-added products**

Value-adding techniques and practices were the most common forms of diversification carried out by the farmers I interviewed. Value-added agriculture entails taking a raw commodity, such as beef, and changing it in a way that differentiates it from the original. In this study, this includes grass-fed beef, selective breeding, organic and natural (no hormone, no antibiotic) production, and product or farm accreditation.

According to Van der Ploeg (2009, 111), value-adding on the farm distinguishes repeasantization from entrepreneurial or capitalist farming styles, and relates back to the traditional peasantry. Stinner, Glick, and Stinner (1992, 243) contrast agriculture from before and after the Industrial Revolution, stating that value-added products used to be common for farmers to increase cash flow and build capital. The dawn of industrialization brought modern, conventional agriculture, focused on expanded production that resulted in bigger farms that ignored or even diminished value-added processing.

Today, value-added products represent a critical response to conventional agriculture (Davidson, Jones, and Parkins 2016, 367). This was demonstrated during the BSE crisis in Canada, as farmers looked for new markets to sell their beef, ways to add premiums to their products in a time of low market value, and decrease their dependence on exports in the future (Anderson and McLachlan 2012, 87; Davidson, Jones, and Parkins 2016, 367; Fleming 2009, 121; Mount and Smithers 2014, 102). Some farmers used value-adding to stay in the beef industry or expand their production after BSE, while many others exited beef farming or farming in general following the crisis. Founding CEO of Heritage Angus Beef (a farmer-owned natural beef cooperative in Western Canada) Christoph Weder, discussed this strategy in an interview with newspaper Alberta Farm Express. The cooperative formed in 2003 and became known for its

value-added characteristics: hormone and antibiotic free, GMO-free, Halal certified, verification, and traceability. Weder discussed the necessity of value-added agriculture, saying:

We teach everybody ‘produce, produce, produce,’ but really, at the end of the day, we’re producing food products...To continue in agriculture, it’s not just about lower cost of production. It’s also about getting higher value up the chain (Weder 2015).

Many of the farmers I interviewed use MIG to add value to their cattle, as it fits well with premium beef production, including grass-fed and –finishing programs, natural (no hormone, no antibiotic) programs, organics, and accreditation programs.

### **Grass-fed and -finished**

Approximately half of the farms I visited market grass-finished beef.<sup>6</sup> As mentioned, grass-fed beef has gained attention in recent years, promoted as healthier for both eating and the environment. With overall lower fat and higher concentrations of essential nutrients than conventional grain-fed beef, and decreased embedded pollution than feedlot practices (Clancy 2006, 1), grass-based is considered value-added.

However, to take advantage of these values, farmers require the arenas and markets to promote and sell these products, and an animal fit for grass-based production. As a result, farmers can be very selective in the cattle they keep on their farms and attentive to how well animals perform in a feeding and breeding program. In this study, that meant cattle befitting of MIG practices.

### ***The craftsmanship of building a herd***

Selective breeding was a tool used by many of the farmers I interviewed. Most of these farmers have worked to build a herd that is well adapted to competitive grazing conditions like those found in MIG. Some participants indicated the effort they have put into the breeding and genetics of their herds:

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<sup>6</sup> Grass-fed refers to a production system where an animal’s diet consists of grass and forage, but may be supplemented with grain (primarily close to slaughter). Grass-finished means an animal is fattened on *only* grass and forages from birth to slaughter. See p. 17 for more information on grass-fed beef

[W]e've worked pretty hard on our cattle genetics right along with the grass...we want cattle that can perform on that grass. So, we're using Angus genetics and Black Simmentals. We do quite a bit of [artificial insemination]. We've got two bulls we paid a fair amount of money for...and then we collected semen on them and bred those bulls to another 60 cows each...when you go out there you'll see they're pretty uniform – size wise and type wise – and they're growing fast, so that's the best of both worlds. We're working hard on the animal side of it, and we've got records, all kinds of records. Where they probably make the biggest difference is who we pick for a replacement heifer because we've got some numbers behind the dam [*mother*] of that heifer and some numbers on weaning weights and winter gain and what not (Walter).

While Walter may not diversify his livestock, he does put effort into diversifying his cattle. He mentioned the things he looks for in a cow – size, type, calf weight and weight gains. While conventional farmers also look at these characteristics, they might be looking for opposite traits in terms of size and type. A grazing animal needs to be designed to withstand colder weather, plus adapted to eating a wide variety of forages that range in nutritional value, while grain-fed animals need to be better suited to converting high energy feed (grain) into muscle instead of fat. As such, grain-fed cattle are often bigger and leaner than grazing animals. Since grazing animals perform differently than conventional grain-fed cattle, these farmers cannot just go out and buy any old cow from the auction mart. Animals that work best with MIG are of a compact build with a competitive disposition. Greg specified that he is looking for:

...a smaller-medium framed animal [that] is able to carry body condition a little bit better...I'm constantly selecting...an animal that's just able to maintain good body condition... You don't want a big, high maintenance cow...These [cows] don't mess around eating because their neighbour's right beside them eating and if they don't get busy they're not going to have anything. You have to have a different kind of cow for this kind of grazing (Greg).

Greg pointed out not just the physical characteristics that his cattle need for MIG, but also personality – a competitive mentality. He continued,

I think as breeders we need to be looking more at...super hardy cattle instead of just babying with all this stuff and all these extra inputs...That's why I like this Luig breed. They've got some Highlander genetics out of

Scotland, they're crossed with Shorthorn so they're an extremely hardy cow and really good for our Canadian winter... that's kind of my focus here, is a really hardy, maternal, strong cow and then we can cross them with something to get more of that beefier, kind of faster growing animal (Greg).



**Figure 6. Luining cattle © Eileen Henderson (2007). This breed was developed on the island of Luining in Scotland and is known for being hardy and resilient.** Greg implied that time, effort, and research have all gone into building his herd, and expresses the need for others to do the same. Research shows that breeds developed in more rugged terrains distribute grazing more evenly than those developed in flat or rolling terrains (Bailey 2004, E149). This knowledge aids in choosing animals for MIG systems to graze paddocks more evenly, which contributes to overall pasture production and weed control by not allowing certain sections to become overgrown or overgrazed. For Greg, adaptation to the cold Canadian winter is essential, so the breed he works with, Luining, is well adapted to this challenge. Luining cattle have a two-hair coat system that provides extra warmth in the cold and sheds in the summer, allowing them to graze comfortably year round (Smith Thomas 2017).

Most of the farmers I interviewed use Angus or another British breed; that is, a breed of cattle developed in Britain, versus Continental (also known as exotic or European) breeds, which originated in continental Europe. British cattle traditionally grazed on hillsides in cold and wet weather, making them well adapted to grazing in Alberta. They also tend to have a stockier build than Continental breeds and require less time to reach



maturity and less feed for fattening, which works well when the optimal grazing season is limited to just a few months each year (Rinehart 2006, 3). Many of the farmers I interviewed have spent years building a herd that performs well on grass, but it takes time and knowledge of what to look for. For farmers transitioning from a conventional, grain-fed cattle operation to grazing, the idea of what makes a ‘good’ cow must change.

In addition, Mark runs a purebred Angus herd. By raising purebred animals, Mark has selective breeding stock for sale, which increases the value of his animals as customers purchase them for their distinct traits. He uses DNA technology and artificial insemination, which allows him to produce calves of a specific sex, managing the number of heifer (female) calves and bull (male) calves he has in a production cycle, and providing sire verification. This allows him to manage the growth rate of his herd and the stock he has for breeding and meat production. In working with the genetics of his cattle, Mark has built a herd that works with his management style. His herd performs well on grass and forage, demonstrated through high daily weight gains and high fertility rates. As he puts it, “it’s all part and parcel. We manage the cattle, we do extra things health-wise, then...when we market calves, we sell [all of] that to the buyers so they’ll pay a premium as well” (Mark).

### ***Natural and organic beef***

Many farmers also adapted their production systems and techniques to earn a premium. Natural and organic beef have grown in popularity, with markets for these products exploding in the last decade. Both types of production follow certain guidelines to earn their titles. To be considered natural, foods must be produced without the use of artificial ingredients, while certified organic beef must meet the Canadian General Standards Board guidelines and be fed certified organic feed, have access to pasture during the grazing season and the outdoors whenever the weather permits, and be produced without the use of any artificial chemicals (CGSB 2015).

As such, both natural and organic beef are produced without the use of growth-promoting hormones or antibiotics – a controversial topic when it comes to meat production. For some consumers, attributes such as hormone- and antibiotic-free are perceived as higher quality for personal reasons such as nutrition and quality, public

health concerns such as antibiotic resistance, and environmental concerns such as hormone and antibiotic contaminants in feedlot run-off (Coopriider et al. 2011, 2653). However, many researchers dispute these concerns, and animals that receive growth promotants can also be considered more sustainable as they improve feed efficiency (i.e., faster growth/fattening rates), which results in lower water use and lower emissions (2648).

Regardless, consumer interest and concern has created a strong demand for natural and organic beef, in turn adding value to these products. Organic sales in the US more than doubled from 2005 to 2014 (USDA 2017), and EU import restrictions require natural meat production. Together, these factors demonstrate the importance of these production methods in trade negotiations for Alberta's export-dependent beef industry. Simon, who has been raising cattle for almost 40 years, spoke about how these consumer interests influence his farming practices:

I understand why we [give hormone implants], but I don't do it because the consumers don't want it. And that is probably our biggest challenge...consumer perception... The general public doesn't – I believe – understand what we do and why we do [it]. [Farmers] really do care about the environment and the livestock and how they're taken care of, and we want them to be healthy and happy. We're not out to see them just survive. But there is a less informed – I think – consumer than we've had ever (Simon).

In contrast, other farmers felt this demand is the result of a more informed consumer:

We've got to be aware of what our consumers want, and if they want hormone, antibiotic free and they're willing to pay for it, well then sure, let's supply it...I think we've got to be more aware of our consumers...People are more aware of where their food's coming from (Frank).

Increased availability of information regarding organic production has shown to increase purchasing incentive, as consumers become more concerned about quality regarding health, ethics and the environment (Napolitano et al. 2010, 211). One of the organic farmers I interviewed, Harry, recognized access to information as a driver behind increased demand for organic products, saying, "The internet gives people a chance to research...on their own. We don't have to trust experts anymore because if

we just trusted experts, there wouldn't be organic food" (Harry). Harry's thoughts explain the premise for debate around organic food. While it demonstrates that organic products are value-added, including organic beef, it also shows that this is not necessarily proven value, as consumers look beyond research or experts to inform their purchasing decisions.

Three of the farms I visited are certified organic. These are all mixed farms, producing a combination of beef and other livestock and crops. Harry was one of these, and his farm had been certified by the previous generation over 20 years ago, so Harry has always run an organic farm. At the time of succession, Harry's family farm had been a grass ranch, producing only cattle for sale. However, Harry decided to make it a mixed farm so he could produce his own inputs and reduce costs, as of organic resources, such as straw for bedding, are much more expensive and hard to come by than conventional inputs.

The second organic farm certified in 1999. For Larry, this choice came after becoming involved with Holistic Management. After losing a farm to bankruptcy earlier, Holistic Management provided Larry with a management model based on using natural cycles and systems, so he was not using artificial fertilizers, pesticides or growth promotants, and organic certification seemed like a logical next step. "We certified because we were organic, so we certified our farm for marketing" (Larry).

The third farm became certified organic in early 2016. Liam had been running a custom grazing business. After struggling with drought, followed by the BSE crisis and struggling to compete for resources with dairy farmers in the area, Liam felt that organic production would give his farm the value-added boost it needed to continue. He discussed this transition, saying:

So, we decided to switch. Since most of our land had not had any chemicals on it...for several years, we decided going to organic made sense. So now we've got certified organic beef as well as some of our grain products (Liam).

All three of these farmers used organic production to be able to continue farming. This relates well to Højrup's (2003, 22-23) self-employed life-mode, in which individuals in this life-mode work to maintain their own enterprises and their self-employment.

Opposed to working an off-farm job to supplement their farms, Harry, Larry, and Liam found that deepening their farm practices with organics could suffice, and all of them were satisfied with their decision. Organic farming can then be viewed as an ideal solution for the self-employed, as it allows them to delve deeper into their own enterprise, thus strengthening their sense of independence. Using an understanding of the self-employed life-mode (Højrup 2003, 30), the ways in which Larry and Liam recounted their transitions to organics demonstrates achievement in their great pursuit – they can maintain production through free, independent work as opposed to the imposition of waged work. This was a primary motivation of farmers to engage in value-added production and as such, they sought out ways to not only sell their products but the story behind the product.

### ***Selling the story, not just the product***

On one farm visit, I turned through an open gate and onto a long driveway with a typical ranch-style house at the end. Hanging on the gate was a display of different designations: Verified Beef Production, McDonald’s Verified Sustainable Beef and Alberta Environmental Farm Plan. At once, I felt assured that this farm was doing things *right*; they had concern for the environment, kept detailed records of their animals and land, and had the words ‘verified sustainable’ hanging on their gate – they must be doing *something* right.

The value that these programs and certifications add is that they make the meat that these farmers produce more than ‘just beef’. While producers might invest time, money and energy into value-added production, “it is all for naught if the product is not marketed in such a way as to capture that additional value” (Smith 2007, 1). The certifications mentioned by the farmers I interviewed included organic certification, natural beef and EU verification, McDonald’s Verified Sustainable Beef, Environmental Farm Plan, Verified Beef Production and Verified Beef Plus.

Natural beef gained attention in the local media and restaurant industry in 2013 when American fast food chain A&W launched its ‘Better Beef’ advertising campaign based on the company’s new guarantee that its beef is “raised without the use of hormones or steroids” (A&W 2017), while Earls, a Western-Canadian restaurant chain, launched a

similar campaign entitled ‘Conscious Sourcing’ in 2016 (Earls n.d.). In 2014, the international fast food chain McDonald’s launched its Sustainable Beef Pilot in Canada as part of the Global Roundtable for Sustainable Beef. Their five principles of sustainable beef production include: natural resources, people and the community, animal health and welfare, food, and efficiency and innovation (McDonald’s 2016, 4). Based on these criteria, on-farm verifications were completed on 178 beef farms and feedlots in Canada, providing these operations with the value-added title of ‘McDonald’s Verified Sustainable Beef’ (McDonald’s 2016, 30). This pilot program utilized the existing Environmental Farm Plan and Verified Beef Production accreditations to operationalize and measure their principles of sustainable production. These programs are designed to address issues of environmental risk and management, animal care and biosecurity, and on-farm food safety practices (EFP 2016; VBP+ 2017). These programs require farmers to keep detailed records of their livestock, infrastructure, and landscape.

But what do farmers gain from these certifications? For the farmer with the signs hanging on his gate, certifications are part of his marketing plan to build social license:

That’s something we’ve got to be more aware of as well. Knowing who our customers are and what our customers expect out of us. It used to be, ‘farmers, oh they’re good people, they do everything right.’ But that’s going by the wayside now. People are more seeing that ‘oh, you know, animal welfare is part of his priority;’ like on our gatepost down there. We’ve got the Environmental Farm Plan and the Verified Beef program and the McDonald’s as well. So, we’re proactive at doing that...because [we] have to watch and listen to what the consumers are asking (Frank).

These certifications help farmers stand out. While demand for grass-fed, natural, and organic beef is growing, so is the number of farmers and businesses producing them. By adding these certifications, all of which are voluntary, farmers can differentiate themselves from the crowd as responsible landowners and caretakers, attentive to consumer values, not just the demand. However, with increased public attention to the environment and concern for where food comes from, these programs also give farmers the tools to keep detailed records so if they ever need to demonstrate due diligence, they can. As Sherry put it, “[we’re] writing down everything...So, we do a lot more

paperwork than other people do...so that when we get audited, we can say, ‘yes on this day I did this, this, and this.’”

To summarize, these production programs and certifications address different values held by society. Grass-fed, natural and organic beef, environmental certifications and sustainability all demonstrate current social and cultural values including health, family, environment, and society. Harry illustrated this range of values with the following scenario:

... when you look at the increasing rates of obesity, the increasing rates of child autism, the increasing rates of childhood diseases...people are looking for solutions and the fact that they’re looking means that they’re unhappy with the status quo.... It is one thing to deal with a guy who’s interested in CrossFit who wants to get some organic steak because he feels it’s a little bit better for him, but it’s the mother with sick kids ...she’s the driving force because...the mother who looks at it as her children’s lives are on the line, she’s unstoppable (Harry).

Harry touches on health in the beginning, on how the conventional or commercial consumer options do not fulfill the value that society places on health. Similarly, he touches on family values as he stresses the power of mothers fighting for their children. Popular media sources including Time Magazine (2014) and Parenting.com (n.d.) have promoted organic food for children’s health, and Grigg (2004, 249) found that parents concerned about exposure to environmental toxins purchase organic or local foods, as foods with less regulation are perceived as lower standard and biased, as research on environmental toxins in food sources provides conflicting results. This demand demonstrates what makes these products more valuable; consumers see organic, natural, and local products as healthier, sustainable and more environmentally responsible.

### **Do you get what you put into it?**

Grass-feeding and -finishing, selective breeding, natural and organic production, and programs and certifications – all of these add value to farm products, embedding in them a story that is unique and shared with their consumers. However, value-adding strategies require a substantial investment on the farmers’ behalf, including time, energy, and money.

Research shows that value-added production is a common strategy in development policies to maintain small-scale and family farms. These products can increase profits and promote ‘green’ production, such as with organic or grass-fed meats (Buttel 2005, 280; Iles and Marsh 2012, 7), but after all the extra investment, do farmers actually earn a premium? This question ultimately comes down to the success of farmers in marketing their products. Many of the farmers I interviewed discussed being a price maker, not just a price taker. For Harry, this was his first challenge when he entered farming – finding a market that would pay what he felt his product was actually worth:

I really believe I have a world class product – and I’m going to sound completely arrogant – but I believe I grow the best beef in the world; *the best*. And it’s hard growing that product and then just shipping it into the auction mart. So, I poured my life into... developing customers and doing direct marketing, really to the point where I was completely burnt out over it. So, I think the number one challenge is just getting a decent dollar for the product you grow, and that’s the challenge of every farmer. Except with the [value-added] niche, you’ve got so much more invested...and you hate to see it just go away (Harry).

For some farmers, this search for an equitable market has led to direct marketing their meat. All the farmers I interviewed do at least a small degree of direct marketing, but mostly just a few animals each year for friends and family. A few of these farmers are hoping to grow their direct marketing. Violet, a farmer in her mid-40s, recognizes that “a lot of people are willing to pay because they like the flavour of [grass-fed] and they like the whole process of knowing who they’re buying from, being able to drive up, meet us, talk to us.” She expanded on the relationships she develops through direct marketing:

I kind of like the connection...with the people who come out because...I think it’s educating people from the city. For a lot of people that have ordered [beef] from us... they’re brand new to it, have never ordered a half beef, but they’re reading about the benefits of grass finished (Violet).

Other participants enjoyed the connections they make with customers, but also other benefits of grass-finishing, such as not being tied to the schedules and expectations of the commercial market. For Greg, this is important because

...we start calving [at the] beginning of May...That's the nice thing of doing this grass finishing beef, the rules don't apply so much to the feedlot system. I don't care if that first fall my calves are a little smaller because another month isn't going to make a big difference the following year (Greg).

In the conventional system, calving starts in January-February and then calves are weaned and sold between September and December when the grass becomes dormant and temperatures drop. Calves are then sent to feedlots where they are fattened on grain, and the cows can eat, store fat and grow their next calf without the strain of having to produce milk. Calves typically stay in a feedlot for up to five months before butchering. Grass-finishing takes longer than grain-finishing (Coopriider et al. 2011, 2648), so direct marketing gives farmers some autonomy in choosing when to butcher based on the conditions of their animals.

Alternatively, some of the farmers work with intermediaries to market their beef. These are companies, cooperatives or farms that have developed a brand and market directly to restaurants, grocery stores, etc. This can make things easier for farmers, as it means they do not have to market their products themselves, plus intermediaries tend to offer a premium to farmers above commodity prices. However, this varies depending on whether the commodity market is high or low. For some participants, the lack of a guaranteed premium was enough to deter them from participating, but this is not necessarily uncommon. Davidson, Jones, and Parkins (2016, 369) found that a lot of Albertan farmers who use value-added practices do not exhibit affinity to a specific market; when the commodity market is low, they sell in an alternative market, but when the commodity market is high, they will sell their beef commercially.

On the other hand, as the markets for value-added products expand, they increase the attractiveness and competition in these niches, which ultimately drives down the premium that farmers receive (Anderson and McLachlan 2012, 91; Davidson, Jones, and Parkins 2016, 368; Goodman 2004, 9; Mount and Smithers 2014, 103). This has been seen with the conventionalization of organic production, which has not only decreased the premiums farmers receive but also increased the costs of certification, putting it out of reach for some small-scale farmers (Goodman 2004, 8). The power of larger-scale companies, including intermediaries, often undermines individual farmers'



access to processing facility or markets, as agribusiness companies can produce the same value-added product for a fraction of the cost. On the plus side, this may increase the overall quality of products available in the consumer market, as large companies start to produce products that fit these different values, but decreases the accessibility and opportunities for farmers (Anderson and McLachlan 2012, 87).

The overtaking of niche markets demonstrates the reach of neoliberalization, even for farmers trying to escape it. Mount and Smithers (2014, 113) found that farmers who were marginalized in niche markets identified a lack of governmental support and regulation. While policy supports development and investment in these programs, they do not offer any protection for farmers. For Van der Ploeg, this demonstrates the lack of 'space' in society for peasant agriculture to "fulfill its potentials" (2009, 111). However, Van der Ploeg may miscalculate how far farmers need to go to distance themselves from the neoliberalization of the markets, at least in an Albertan/North American context. While there is support for farmers to add value and diversify through subsidization programs, this support is not restricted to small- or mid-scale farmers and can be monopolized by capitalist farming entities/agribusiness. Despite the struggle to distance oneself from these norms, I found instead that some farmers took it upon themselves to create this 'space'.

### **5.3.2 Creating space: Off the farm, but of the farm**

In contrast to value-adding, some farmers deepened their practices by advocating for alternative agricultural practices, particularly in grazing and forage production. As such, the squeeze on agriculture emerged as a strong motivation for the farmers I interviewed to engage in MIG practices. This resulted in many of the farmers I interviewed generating income by distributing knowledge and resources related to their farming practices to others.

Some of the farmers I interviewed worked as farm equipment distributors, including seed and fencing supplies. These positions relate to farmers' own supply needs on the farm, which reduces costs, increases convenience and in some cases, builds enterprises

within the farm. Others engaged in consultancy or workshop facilitation relating to grazing and cropping, or as Holistic Management Certified Educators.<sup>7</sup> These positions involve supplying and spreading knowledge of both hard and soft skills not used in conventional agricultural practices.

### **Supply distribution**

Supply distribution gives farmers the opportunity to save money by accessing supplies at wholesale prices. At the same time, it builds their knowledge of supplies and resources available, and gives them the opportunity to share that knowledge with their customers. MIG is a relatively low-tech practice that requires limited supplies, but two things these farmers cannot live without are fences and forage. Some of the farmers I interviewed worked with fencing equipment, building, and distribution, while others worked as regional forage seed dealers.

### ***Building fences and breaking barriers***

Mark is a full-time farmer heavily focused on his beef production with grazing, but as a result, he maintains pastures and fences on over 3000 acres of land. For him, electric fencing is the most important piece of technology on his farm, as he uses “an ungodly amount” (Mark), and so he started marketing electric fencing supplies as a cost-saving measure. Since he is a distributor for an international company, he can purchase the equipment for his own use at wholesale price, significantly reducing the cost of his fencing equipment. As well, Mark aims to have a highly efficient and effective fencing system, so he does his best to stay on top of the latest technology, which requires both easy access to technological updates and regular upgrades of his equipment. Based on the amount of fencing and advanced technology that Mark uses, marketing electric fences allows him to receive information firsthand on the latest developments, save money on his own purchasing needs. Moreover, he has the practical experience to provide customers with a well-informed account of what is available, as well as distribute knowledge on fencing for grazing systems. Through this off-farm venture,

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<sup>7</sup> Holistic Management Certified Educators are trained to teach and consult farmers in using Holistic Management on their farms. See Chapter 2, p. 16 for explanation of Holistic Management

Mark engages producers in knowledge autonomy by distributing local, farmer-based knowledge and skills, as opposed to the ‘one size fits all’ answer that the New Zealand-based fencing company could otherwise provide Albertan farmers.

Another farmer, George, builds custom fences. He started selling fencing materials around the same time he started using MIG practices, and working with customers familiarized him with different fencing materials and techniques. This increased his willingness to use different fencing methods, breaking through some preconceptions he had regarding electric fencing:

Everything I had been told about [MIG] always involved electric fence. And I was – ugh – you know, I wasn’t sure about electric fence... Because I did some custom fencing and some customers wanted it... I got a little more familiar with it, a little more comfortable with it and then gradually, that’s what kind of started me on [MIG] (George).

Today, fence building is the most critical aspect of his grazing system:

...the only way to get into [MIG] is you Gotta. Build. Fence. You *gotta* build fence. It doesn’t matter if it’s a 4 wire, wood post [fence] - I sell steel posts that are a lot cheaper than wood – or [simple] electric fencing... But you gotta build fence (George).

Since George builds a lot of fence for his own use, it helps reduce his costs by building a surplus and selling it to other producers. But this business also helped build and broaden his farming and grazing knowledge to find the best methods to use in his circumstances. By expanding his knowledge of fencing and materials, he could adapt to fit his own operation best, constructing fencing supplies for his farm, his environment, and his budget:

We have a lot of deer here and moose and even some elk and they’re really hard on [temporary] electric fences and I... find the maintenance is just too high on them. So... I just put up permanent fences [with] 3 wires – not 4 – and space my fence posts out... just to cheapen up my installation (George).

Being a custom fence builder not only generates a supplementary income for George but helps expand his local knowledge and skills of grazing systems, thus enriching his farming practices. As fence building is fully integrated into his farming practices, it

spurs innovation and knowledge building, in contrast to what I found among of the farmers who worked off-farm waged jobs.

### ***Seeds of grass and seeds of knowledge***

Fencing is a tool used to manage the layout of a grazing system, but grass is an essential element of grazing. The types of grasses and forages available for cattle to graze change how a pasture is managed regarding the intensity of a grazing period, the rest required for it to recover and grow back, and any nutritional supplements required for the grazing animals. Different combinations of plants can provide a full spectrum of nutrients, extend the grazing season, and improve soil conditions (Crews and Rumsey 2017, 578).

Some of the farmers I interviewed advocate for more information and greater availability of forage varieties and mixes. In doing so, some of these farmers have established themselves as regional seed dealers for a forage seed distribution company. Frank discussed how he ended up in this role. He had been buying in custom forage mixes from abroad for his personal use and gained attention from neighbours and other producers:

I was just doing it for myself – that was it – and then my neighbours [said], ‘oh get me some’ and ‘get me some.’ One pallet turned into half a [shipping container] ...and I thought, why am I doing this for free? (Frank)

In efforts to improve his own MIG system, Frank emerged as a ‘go-to’ guy for forage production, but after spending a morning with him, this made perfect sense. As we waded through a forage crop growing up past my shoulders, Frank would bend down and pull out a turnip, or follow a pea vine down to the roots to show the soil composition and nitrogen nodules forming. Not only is he a distributor, but he showed a genuine interest and passion. Unfortunately, this is not true for everyone who saw the entrepreneurial potential of forages. Forage production has gained attention in Canadian agriculture in the last few years, with events such as the Western Canadian Grazing Conference and the Western Canadian Soil Health Conference, and national and regional farm newspapers frequently publish articles on forage production. This popularity has led to several people entering forage seed distribution who lack the

knowledge and experience of what works in different areas, climates or soil conditions. Frank expressed frustration with this situation:

...there seems to be a lot more people [selling forage seeds] and also a lot more so-called experts. It drives me nuts. That's the biggest thing right now, is these other seed companies... jumping in and their [sales representatives] live in town... they read the manual and then go out and tell [farmers] what to do, but they don't have a fricking clue. I got a phone call yesterday from a lady... And she said, 'oh I bought my seed somewhere else.' I said, 'oh ok. That's no problem, I'll help you through it'... But the guy [who sold her the seed] told her to [call] me (Frank).

Frank demonstrates the issues that arise with conventional agriculture's focus on scientific knowledge, but lack of local knowledge. The seed dealer mentioned in the quote above has a theoretical understanding of forage production but seems to lack the practical experience and knowledge to troubleshoot problems the customers may experience. The frustration this created for Frank motivates him to advocate for expert and informed knowledge of forage production. His experience in both growing and grazing forage mixes has given him the practical knowledge – not just a textbook explanation – that is necessary to advise his neighbours in using similar products. Like fencing supply distribution, regional dealers create local experts. Among the farmers I interviewed, seed dealers were spread from the southern foothills to the northern regions of Alberta.

### **Knowledge dissemination**

In supply distribution, local knowledge is a side-effect of working with specialized tools of the trade. However, knowledge dissemination is a lucrative off-farm venture in itself for many of the farmers I interviewed. The experiences of participants in this study varied from novice graziers to veterans of MIG practices. As MIG is an alternative to conventional production practices, some participants have taken it upon themselves to educate others on the practice and use of MIG with cattle. Some farmers were more informal in their knowledge dissemination, invited as speakers to local field days and other events where I was able to connect with them. Others work as independent consultants and educators.

### ***Consultation: A business for local experts***

Agricultural consultants provide services to farmers of all shapes and sizes. Funding cuts for government agricultural extension services in the early 1990s led to a centralization of services in Alberta and the transformation from governmental district agriculturalists to agricultural specialists. The removal of local field offices across rural Alberta led to greater privatization of these resources. Consequently, private agricultural consulting emerged to meet the demand for agricultural extension services. Of the farmers I interviewed, four formally offer consulting services ranging in topics from breeding and genetics, to forage production, to grazing system setups, to soil health.

In addition to supply distribution, Mark also works as a breed and genetics consultant, helping producers to improve the genetic makeup of their cattle herds. While breeding and genetic improvement are considered a value-adding strategy, consulting on these issues provides another avenue for Mark to generate income and engage in knowledge autonomy. Mark studied agriculture in university, so he has both the technical and practical background to advise others on the topic. Since he uses these practices on a daily basis, consulting just offers him another avenue to utilize his skills, thus deepening his practice:

Because our operation is quite different than most operations, as far as how we manage cattle and how we do things, a lot of the genetics that are available don't fit what we do, so that...partly drove it too (Mark).

Mark saw a lack of resources and support for farmers wanting to improve their genetics and breeding programs and an opportunity to fill the gap. Since he is working to optimize the genetics of his own herd, his consulting business and farm mutually inform each other and encourage further innovation on his farm, deepening his own practices. Upon being asked how he got into the purebred market, he said, “part of it is personal interest, part of it is because of what we demand in the bulls we buy. We can't necessarily find it, [and] so if we're looking for that, other people might be too” (Mark).

Other participants are grazing consultants, facilitating grazing workshops that focus on biodiversity, business management, grazing management and cattle watering systems. Most of the farmers who consult on grazing stumbled into this role because they were

using alternative practices, similar to Frank's progression into seed distribution. One participant, Kurt, talked about how his consulting and teaching business developed:

...people were just interested because I did things a little bit different and they'd asked me to speak at one little conference and then all of a sudden, I went to another one and it kind of grew and grew...I kind of realized, this is so busy I could start charging for this (Kurt).

For farmers interested in MIG, the knowledge resources available were already limited, but provincial funding cuts to agricultural extension services made the need for private consultants and knowledge dissemination even stronger. Today, the government has four beef and/or forage production specialists for the whole province (GoA 2017). The farmers that I interviewed are often called upon by these specialists to share their expertise and knowledge.

ARECA, the provincial association of agricultural and forage research groups, also works with these farmers and collaborates with Government of Alberta specialists. Most of the farmers who have consulting businesses serve (or have served) as board members for ARECA organizations and are often utilized as a resource for local expert knowledge at field days, grazing schools, and conferences. One of the farmers I interviewed is also a manager of an ARECA organization. Phyllis's role is to provide knowledge and research support to farmers in the area. She coordinates innovative projects that cover topics of concern for local farmers, who make up the governing board of the organization. In this way, Phyllis makes knowledge of different practices available to farmers and how they work in her specific region. By coordinating events, Phyllis networks with farmers who have local knowledge and skills in different practices, such as MIG and forages. Not only does this work benefit the local farmers, but also keeps Phyllis informed on practical innovations and techniques that are utilized and developed across the province that she can use on her own farm.

### ***Holistic Management Certified Educators***

Another avenue for farmers to disseminate knowledge is through Holistic Management. Founded by Allan Savory, this management program was developed to restore grassland ecosystems and prevent desertification (Savory 2016). Some of the farmers I

interviewed started using MIG through Holistic Management, which is based on peer-to-peer teaching. In turn, some of these farmers have become Holistic Management Certified Educators, to teach peers the Holistic Management model, to create goals and objectives using its systems-thinking approach, and how to implement strategies to achieve these goals (Holistic Management International 2017). Their experiences with Holistic Management have inspired them to share the program with others. Liam talked about his motivations for being a Certified Educator, saying:

I enjoy teaching what we have learned here with not only the grazing but also goal setting. I think there's a real need for it. We've had really good reception to it when we do get to go teach...it's something that I like doing. It's an enterprise that I have; it's not extremely busy but it's an enjoyable thing that I do (Liam).

Being a Certified Educator gives Liam an opportunity to share what he has learned and advocate for the Holistic Management approach. In doing so, Liam shares the practices he uses on his own farm, including MIG. But he also likes it because it is flexible, which seemed to be a virtue of both supply and knowledge distribution. Farmers set their own hours, choosing how much time they want to invest in these ventures; they still get to be their own boss (Højrup 2003, 30-31).

Unlike the mixed farming and off-farm waged jobs, distributing and building supplies, consulting on agricultural tools and strategies, and facilitating learning opportunities provide farmers control over their own schedule, rather than having it overrun with different activities. As such, these deepening activities allow farmers to maintain personal autonomy and aid in maintaining farm autonomy by providing cost-saving measures and access to knowledge while keeping the farm at the centre of both on- and off-farm activities.

Deepening activities, including value-adding, supply distribution and knowledge dissemination, open doors and create space for alternative practices like MIG to flourish in the Alberta agricultural context, deepening both the practice of MIG itself and the farmers' practices and production. These activities provide farmers additional income and motivation to be innovative in their own practices with opportunities to stay on top of technological developments through connections with like-minded producers (e.g.,



grass-fed, natural or organic production), intermediaries, agribusinesses and education networks. As well, these opportunities allow farmers to share their own knowledge and skills with other local farmers. Kloppenburg (1991, 533) argues that farmers, particularly unconventional ones, rely heavily on local knowledge because it is empirically adapted to the local context. This has led to greater recognition and interest in the process of ‘farmer first’ knowledge production and dissemination, as opposed to just a technological transfer from laboratories to the field (534). Kloppenburg shows that farmer-driven knowledge dissemination has thrived despite decreased governmental support (535). In Alberta, conservative funding policies created an opening for farmers like the ones I interviewed to provide consultation and education to their peers. Today, the structure of Alberta’s agricultural extension services allows for the collaboration of farmers and government specialists to provide integrated services to Albertan farmers.

## **5.4 Summary**

Despite varying perspectives, every farmer I interviewed felt that diversification in some way or another was an essential aspect of their farm, demonstrating a resistance to the conventional model that thrives on specialization (Berry 2015b, Loc 206; Van der Ploeg 2015, 665-666). While common diversification practices such as mixed farming and working an off-farm, waged job can help create stability and spread risk for farmers, these practices also have a tendency to spread a person thin, limiting their ability to make changes or engage in learning opportunities, in community, or in spending time with friends and family. In contrast, activities that deepen their beef production help farmers gain autonomy by adding value, increasing their market opportunities, social license, engagement with other farmers, and innovation in farming practices.

However, understanding the value of a diversified farm requires a different worldview of agriculture – one that values both commodity and non-commodity production. This results in farmers looking for ways to share their stories. As such, farmers were motivated to use MIG to differentiate their practices and products, and using MIG also motivated them to share their skills and knowledge: a co-production.

## 6 Co-production

In this chapter, I explore how farmers I interviewed use the concept of co-production. As described in the previous chapter, farmers' motivations and use of MIG are co-produced, but these practices also help farmers develop a story – a connection to their farming practices and products. To further understand this story, I look at farmers' practice of MIG. I start with looking at farmers' perspectives of their farming practices, followed by the major effects they achieve in using MIG: increased carrying capacity and decreased input use. I conclude this chapter looking at how an autonomy of knowledge influences these practices.

Wendell Berry, American author, farmer, and agrarian critic, eloquently illustrates how our understanding of the land characterizes our relationship to it:

The concept of country, homeland, dwelling place becomes simplified as 'the environment' – that is, what surrounds us. Once we see our place, our part of the world, as surrounding us, we have already made a profound division between it and ourselves. We have given up the understanding – dropped it out of our language and so out of our thought – that we and our country create one another, depend on one another, are literally part of one another; that our land passes in and out of our bodies just as our bodies pass in and out of our land; that as we and our land are part of one another, so all who are living as neighbors here, human and plant and animal, are part of one another, and so cannot possibly flourish alone; that, therefore, our culture must be our response to our place, our culture and our place are images of each other and inseparable from each other, and so neither can be better than the other (Berry 2015b, Loc 456).

The conception of land Berry refers to was the basis of the traditional peasantry – a co-production of humans and nature. Berry describes a very intimate relationship between people and the land. By going to the farms and seeing what farmers did – visiting their pastures, moving cattle, or driving to the top of a ridge to take in the view – I gained a better understanding of this relationship. As explained earlier, there were several reasons for doing on-site interviews; it could spark conversation or stories, but also reveal the interactions between farmers and places in which MIG unfolded. Observing the movements, emotions, and interplay between farmers and their land helped inform me of their motivations for using MIG, and the values that underlined these motivations

in ways that a conversation alone never could. As Thornton notes, “The experience of making a living in an environment is central to what it means to ‘inhabit’ a place as opposed to simply observing or passing through it” (2011, 25). Many professions today, even agriculture at times, have evolved with industrialization to the point where they are no longer working in an environment, but merely passing through it on their way to work.

However, there are implications of this segregation. In separating from nature, people cease to understand the extent of their actions in nature, seeing just what benefits them, what is immediate to them, and ignoring elements that are beyond this scope or do not fit what they want to see (Berry 2009, 89). For Berry, this is a dominating theme in industrial agriculture. Anything that does not fit within a pragmatic understanding of efficiency, growth, and precision is ignored regardless of its value beyond the industrial economy (2015a, 113-114). Furthermore, when people are made external to nature, they are removed from place. The development of technological ‘fixes’ in industrial agriculture exemplifies this removal. One-size-fits-all solutions such as chemical fertilizers and pesticides were created with little to no concern for local context; solutions were no longer place-based, they were generalized (Berry 2015b, Loc 662).

But landscapes are not generalized; while modern, industrial agriculture thrives on uniformity, nature thrives on diversity (Berry 2015b, Loc 627; IPES Food 2016, 17). Despite efforts of industrial agriculture to extract resources from and impose rules on nature, current environmental crises demonstrate that co-production persists; humans and nature continue to transform each other, regardless of society’s inability to recognize or accept it (Moore 2015, 8). The most pressing case of this is anthropogenic climate change, while the ‘superweed effect’ (Moore 2010b, 400) is a concrete example of neglected co-production in agriculture. The superweed shows that humans do not just act upon nature, but nature responds. If we treat nature violently, exhausting and degrading its resources, nature responds violently, retaliating with equally violent and unassailable defences such as the superweed. Harry, an organic, mixed farmer, echoed this sentiment:

I think that we have forgotten that we are part of the environment, and we think that we’re above it and that we’re lords and masters over it; we can

do whatever we want, but we can't. My grandpa had a saying, 'You can't fight Mother Nature and win.' And I think that our society believes we can fight Mother Nature and win --- and you will lose (Harry).

Harry describes nature as a formidable opponent, while also expressing the role of people as within the environment. His assertion corresponds with Berry's (2015b, Loc 934) concerns that despite our treating nature as an enemy, it is even closer than an ally – nature is a part of us and we part of it. Maintaining nature is imperative to maintain ourselves, while the degradation and exploitation of nature – violence – is more or less a suicide mission for humanity. Without nature, humans cannot sustain themselves. Thus the modern belief that humans and nature are separate needs to change; people will have to alter their perception of how nature is used and treated if they want to survive, as it is mutual to how they are treating themselves. Harry continued:

My role? I am just a steward of the soil that I live on.... it's really like I view the farm as an extension of myself, and on the one hand, there isn't a lot of separation in it, because everything I do is for my soil and my animals (Harry).

While Harry used the term environment, his sentiments correspond well with Berry's description of the relationship between humans and nature. This choice of language may reflect the modern world in which Harry lives, which he is a part of even though he disagrees with it. Despite the conventional view of the farmer as a producer, Harry views himself as embedded in nature through his farm and as a steward of the soil – the foundation of this natural system. Harry reflects the traditional understanding of stewardship described earlier, and demonstrates re-peasantization as he disregards the hegemonic model of agriculture, but instead refers to the intricate relationship between himself and nature – a co-production.

## **6.1 A conversation with nature**

On the other hand, an agriculture using nature, including human nature, as its measure would approach the world in the manner of a conversationalist. It would not impose its vision and its demands upon a world that it conceives of as a stockpile of raw material, inert and indifferent to any use that it may be made of it.... On all farms, farmers would undertake to know responsibly where they are and to 'consult the genius of the place.'

They would ask what nature would be doing there if no one were farming there. They would ask what nature would permit them to do there, and what they could do there with the least harm to the place and to their natural and human neighbors. And they would ask what nature would help them to do there. And after each asking, knowing that nature will respond, they would attend carefully to her response. The use of the place would necessarily change, and the response of the place to that use would necessarily change the user. The conversation itself would thus assume a kind of creaturely life, binding the place and its inhabitants together, changing and growing to no end, no final accomplishment, that can be conceived or foreseen (Berry 2009, 8).

Dialogue helps build understanding, but this is not something people typically think of engaging in with nature. But a conversation like the one Berry describes between farmer and nature creates a situation of ongoing, deliberate co-production. Relating back to repeasantization, Van der Ploeg defines this conversation that Berry presents as co-production: “the interaction and mutual transformation of human actors and living nature” (2010, 4). Both Berry and Van der Ploeg describe the interplay between nature and humans where both parties continue to grow and change. Whether intentional or not, I observed this type of interaction between farmer and nature throughout this study. The way farmers spoke depicted nature as a partner; an active agent that boasts wisdom and skill, alluding to a productive dialogue between farmer and nature:

[L]ong before the white man came here, this was all in grass. And there was no erosion, there was no climate change issues, there was no environmental footprints, none of that. ...The buffalo were managed by the predators; they were moved from place to place. ...We come along, we put up fences, we prevent the movement of livestock, or of ungulates, and we think, well we've got a...quarter section, we plop in 30 cows, and we come back and look at them in October. ...There's nothing anywhere, on any continent where that is what Nature does. Nothing. If there's large animals like this, they're moving; they're moving constantly.... It's all very natural and we as human beings, we think we can perfect it. We can't. Mother Nature was pretty smart when she figured it out (George).

While George, a farmer in his mid-50s, does not refer to a conversation, he does personify nature, giving it agency and referring to the wisdom and skill of nature in maintaining and sustaining a cycle of production. By comparing how nature works and

how humans work, George expresses the superiority of nature, and the need to listen to 'her'. Greg, who is in his mid-30s, similarly expressed his understanding of nature:

... [T]his idea of just sticking 30 head on a quarter section for the summer, it just doesn't work anymore. ...it's just part of people's paradigm and how we go – you know – we'll just graze that for 10 years, then we'll break it, and we'll farm it, and we'll re-seed it... [But] if you properly manage that for 10 years, you're going to have more species there than probably were introduced in the first place. Your land will just be that much healthier. Nature never had to break land and reseed all the time.

Greg alludes to an exchange of ideas, or the need for it. While people have one idea of how to best farm, Greg considers the benefits of mimicking nature to be superior, or longer lasting than the conventional way of farming. George and Greg both expressed that while people and nature each have a way of producing, nature has more experience and success historically.

Similarly, Frank, a farmer in his mid-40s, discussed improving his pastures as an exchange between himself and nature – a dialogue:

[T]he legumes appreciated [MIG] more because they're not overgrazed, and the grass and the legumes are putting seed banks down, and [the cattle are] compacting that into the soil, and you're getting better [pasture] stands the whole time (Frank).

By referring to the ability of legumes to appreciate the use of MIG, Frank gives nature agency, acknowledging the mutual ability of humans and nature to interact and transform each other. Frank gives voice to nature's reaction – the ability to feel and respond – to not being overgrazed. This demonstrates Frank's role as a conversationalist, as one who spends time not only talking but listening and awaiting a response. Others expressed this agency, personification, and conversation with nature, saying things such as: "...the thing that probably makes it all possible is trying to figure out how to work with Mother Nature..." (Mark); and "If you start working with Nature, there's a lot of benefits because Nature has all these systems that start working for you instead of you trying to work against them all the time" (Greg); and "...at the end of the day, it's being really mindful of how you're treating your land so that it gives you big benefits" (Violet). In using MIG, these farmers have engaged in intentional co-

production with nature. Accordingly, we look at two benefits from this process that stood out throughout this study: increased carrying capacity and decreased input use.

### **6.1.1 Carrying Capacity**

All the farmers I interviewed listed increased production as a primary motivation for using MIG. Unlike industrial agriculture, this benefit came without the use of machinery or other external inputs. Instead, farmers use management practices and a continuous awareness and monitoring of the carrying capacity of the land. However, it is hard to know what carrying capacity means due to various definitions of the concept.

From an industrial economic perspective, the carrying capacity of an ecosystem is based on what can be extracted or consumed without overwhelming or polluting the system (Srivastava, Smith, and Forno 1999, 9). By viewing an ecosystem in terms of its extractive or consumable resources, this perspective focuses on the ability of a system to produce commodities but neglects non-commodity goods and services. As a result, natural habitats are replaced to accommodate the production of cash crops and livestock facilities, which compromises the carrying capacity for the native ecology of a place, and ignores the capacity of areas considered unsuitable for industrial agricultural production (Berry 2015a, 6; Cote and Nightingale 2012, 478; Kofinas 2009, 88; Srivastava, Smith, and Forno 1999, 9). This definition fits within the capitalist farming style.

For Garnett (2009, 499-500), carrying capacity can go beyond this view to include the capacity of ‘ecological leftovers’. That is, land and by-products of commodity production that can be used for livestock production but considered unusable by other industrial standards. Also, this definition takes into consideration the effects of bringing ‘leftovers’ into production, such as the GHG emissions and sequestration from these land use opportunities (500). This definition fits within the entrepreneurial farming style, as it extends the commodification of land and resources previously considered unusable.

In contrast, others consider carrying capacity to include the entire ecosystem, such as McLaughlin and Mineau (1995, 207), who consider carrying capacity to include both

commodity production and its effect on wild biodiversity, such as bird populations and their habitats (207). This would take into consideration areas surrounding agricultural production, inclusive of those considered unusable, and protected areas (e.g., wildlife reserves) as these areas could include a lot of affected biodiversity.

Walker, on the other hand, defines carrying capacity in terms specific to grazing management, drawing on a definition from the Society for Rangeland Management (1989). In this regard, carrying capacity is the greatest number of animals that an ecosystem can support while “maintaining or improving vegetation or related resources” (in Walker 1995, 352). This definition aligns most closely with how the farmers I interviewed discussed carrying capacity, as our conversations focused primarily on MIG.

However, Walker’s definition differs from all the others. While the others disagree on scope, Walker approaches carrying capacity from a completely different direction. Instead of asking how much one can take from the ecosystem, Walker asks how to improve it and frames livestock as a tool to generate this improvement. This definition fits best with MIG and the process of re-peasantization, as it implies a co-production of agriculture, but also a measure to secure one’s own land base; to maintain and improve the production of one’s own land base. Accordingly, it opposes the industrial model of agriculture by focusing on not just taking from, but giving back to the land.

When asked about the reasons for using MIG, participant responses reflect Walker’s definition:

[MIG is] a pretty good way to increase the stocking rate of our land...[A]nd you know, you do that by increasing the production of the land. It’s not just about increasing the stocking rate. If we’re not increasing our production, then all that we’re doing is really just overgrazing more intensely. [MIG] has been a really good way of managing our pastures through the livestock (Liam).

MIG is found to increase production by way of increasing carrying capacity, which supports what I heard throughout my interviews with farmers (Anderson and McLachlan 2012, 87; Teague et al. 2013, 702; Walker 1995, 352). Liam, who has been farming for over 30 years, believes that with MIG he is not only maintaining or



improving his land but also increasing his carrying capacity, which demonstrates the co-production implicit in Walker's definition. Mark expressed his understanding of carrying capacity in a similar manner: "I want to improve our ecological footprint, so I want to increase - well I guess the easy way of thinking about it is increasing production. We just increase natural processes, enhance them" (Mark). Mark also takes part in ALUS, a non-profit organization that provides payments for ecosystem services, and he informed me both in conversation and in touring his farm that he was very engaged in the health of his environment and keenly aware of the ecological processes happening on his farm. He demonstrated how some pastures worked well with MIG when the farmer understood what type of grasses there were, in which directions and paths the water drained, and the current conditions of soil compaction and vulnerabilities that the wet summer had created on his land. He also expressed the impacts that his cattle had in different areas, particularly showing care for the native grass pastures he had. Similarly, many farmers combined this understanding and awareness with utilizing and working with marginal land or the ecological leftovers that Garnett (2009, 499) describes:

So [we've] kind of been using that land for the cattle to graze, but also winter feeding them over that area so it incorporated manure and just puts action back on that and then seeding these other species in. ...So that's something that's definitely improving, [and] that's great because years ago...we couldn't use that for anything; it was just kind of a waste. So it's trying to convert areas of your land and make them more productive or healthier (Violet).

Violet described how MIG has helped improve land that was previously considered waste. Some of the land that she now farms used to be her father's and she explained how transitioning to MIG has helped to increase their carrying capacity on these lands just by way of how they manage it:

But for us, [MIG] has been a good management tool for the size of our operation, just because we're kind of maxed out...for the amount of pasture...we have for the amount of cattle that we run. So, then to be able to extend some pieces or keep some areas back for winter grazing, then it gives you the option to be able to do that, rather than just turning them loose on the whole thing.

Overall, MIG helps to increase carrying capacity by improving resources but also by better utilizing the resources that are available. This improved resource usage results in a more compacted farming system: less land is needed for each animal. For many, this was a measure of progress:

So, we started out where I thought it took about six acres to run a cow for a year, and I think we're somewhere at five and a half now. And that's as good of all-encompassing measures [as] I can come up with for progress. That means our pastures are more productive (Walter).

As practices in conventional agriculture are based on using up the resources available, natural systems are often exhausted from use. This results in a decreased carrying capacity over time. However, by working with nature in ways that these farmers discuss – increase natural processes, enhance them (Mark) – they increase their carrying capacity over time, marking a difference between how conventional agriculture and agroecology both measure and achieve progress. Walter has been practicing MIG for over 15 years and has kept careful records of his production. He admits that there have been mistakes along the way and setbacks, but overall, they have been able to increase their production while maintaining the health of their land and that “feels pretty good” (Walter).

### **Continual vs. continuous progress**

A continual process is one that starts and stops, and this sequence repeats indefinitely. Conventional agriculture is designed to be continual, where farmers use up the resources available and then replace them with artificial inputs. While there may be gains made with technological developments such as pesticide-resistant crop varieties, the system ultimately becomes exhausted, as crops require the same nutrients but the means to replace the nutrients is not part of the system. Natural means of nutrient replenishment are removed when habitats are altered to accommodate monoculture production. These conditions result in the eventual need to start again, by plowing up a field or pasture, and a constant reboot of the system with artificial inputs such as chemical fertilizers and pesticides. This demonstrates the continual progress that has to stop and start again every so often. Industrial forms of livestock production – primarily confined animal feeding operations (CAFOs) – have created a similar continual

progression. With the increased use of antibiotics, CAFOs have built up antibiotic resistance in animals, which creates the constant need to develop new strains of antibiotics in order to maintain production (Coopriider et al. 2011, 2653; FAO 2009, 63; NFU 2008, 25). And yet, it seems industrial agriculture has reached a glass ceiling regarding its continual progress, as biotechnology has failed to aid in yield growths, but are still required and struggling to maintain current levels of production (Moore 2010b, 400).

In contrast, agroecological practices like MIG are designed to be continuous, meaning that they help create systems of uninterrupted progress. When appropriately used, carrying capacity improves over time, resources are made stronger, and the production system becomes more efficient without needing a reboot. I asked farmers what changes they have noticed since starting with MIG. Michael's response reflected this contrast in progress between conventional practices and MIG:

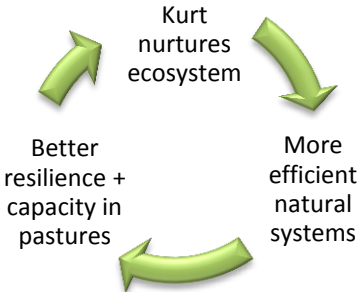
I'm noticing pastures get stronger rather than weaker. ...I remember when we moved here, I had a neighbour ask me how long I thought a pasture should last. You know, would I be plowing everything back up every 6 to 8 years, and I, 'No,' I said 'No, absolutely not, it's a one-time deal.' And with proper management, they should get better and that's what I've noticed. I've noticed water infiltration becoming better, more usable or effective rainfall. I've watched water run off neighbours' fields and nothing's moved from ours. In some fairly heavy rain and snowmelt events, and the last couple springs have been really dry and where I've seen neighbours' pastures that get a green tinge to them, but there's no production out there even though the cows are back out. I've had phenomenal grass production compared to other pastures in very close proximity... (Michael).

Michael is a farmer in his early 40s. He points to a broad definition of carrying capacity with MIG, including resilience and water efficiency. Up until this point, participant views presented on carrying capacity have been quite restrictive, focusing on the land's carrying capacity of agricultural production – the stocking rate – but no mention of the rest of the ecosystem. However, there seemed to be ambiguity in how farmers defined their resources. While some focused on the soil, vegetation, and cattle for commodity production, others were explicit in including other elements of the ecosystem, as

Michael does above. Similarly, Kurt explained how MIG has helped build on the ecological systems within his pastures:

There's a lot of non-cash value that comes out of it...I [have] add[ed] up all the non-cash benefits to [MIG]: pest control, extra fertility, drought insurance or resilience...biodiversity increase, and I end up getting like \$350 an acre of added benefits...The numbers don't really mean anything, but it just makes a big point. There's a lot of value here that doesn't show up in dollars per acre (Kurt).

Kurt's valuation of non-commodity goods and services shows that this is not the conventional way of understanding agriculture or grazing, but also demonstrates that this is not a traditional peasant style of farming, as these farmers are embedded in a capitalist economy reliant on monetary value (Bernstein 2014, 1043).<sup>8</sup> However Kurt, a custom grazer in his early 40s, also draws a direct connection between the nurturing of both land and people. He shows that caring for the natural habitat and environment can also result in benefits for the farmer. This broader understanding of carrying capacity also demonstrates a process of repeasantization in that it utilizes co-production. This co-production can be seen as a feedback loop:



**Figure 7. Co-production can be viewed as a positive feedback loop in MIG that increases carrying capacity and natural resilience.**

As Kurt sees benefits from nature, it influences his management of the land to continue or increase, which nurtures the entire ecosystem, and continues to improve his land and the natural systems he describes – resilience, drought resistance, biodiversity – thus resulting in a cyclical transformation of farmer and nature. When appropriately

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<sup>8</sup> This type of valuation is a basic form of payment for ecosystem services (PES). For a comprehensive look at the benefits and challenges of PES, see Angelsen et al. (2012).

implemented, these practices and processes feed back into each other, build on each other, and create a continuous progression.

### **The danger of knowing too little**

MIG ideally creates this upward spiral, but it is important to note the caveats that these farmers placed on this benefit. An increased stocking rate does not necessarily translate to increased carrying capacity. MIG requires knowledge and experience to recognize when it is safe and responsible to increase stocking rate.

I will tell you, you know, [MIG] has dramatically improved the health of forage stands in Western Canada. Like, improved the land state amazingly so. But it's also done a lot of damage. If you misuse intensive grazing, it turns into controlled overgrazing, and you can hammer pastures and really mess things up. So, you know, you gotta go slow, keep it simple. Don't start with 900 yearlings on an acre on your first day. You know, that's way too exciting (Tom).

Tom seemed to be a cautious farmer. It was clear that risk management and having a clear understanding of what you are getting into before diving in was crucial for him and he stressed this throughout our interview. But Tom's reservations are also apparent in the research surrounding MIG. Several studies stress the possible environmental damages from intensive grazing, including nitrate leaching (Cuttle and Scholefield 1995), unstable phosphate levels (McDowell et al. 2008), and water contamination (Stout et al. 2000). However, others emphasize that with proper management and an understanding of the ecological relationships, MIG can be effective in increasing carrying capacity and improve ecology (Sanderson et al. 2004, 1141; Teague et al. 2013, 702; Teague et al. 2008, 10). Other participants agreed, warning against the dangers of improper grazing management:

We need to understand why it is that we're doing these things, and then being able to monitor for the results. If we're not moving in a positive direction by doing this, then we need to really revisit how we're doing it and then why we are doing it. Because otherwise, we will just quit in frustration and well, it doesn't work right? We just wasted our time (Liam).

Both Tom and Liam brought up issues regarding education around MIG. This is not a conventional way of farming and requires a different use of time and constant

awareness of the conditions in which a farmer is working. Several of the more experienced farmers I interviewed voiced the implications of increased availability and accessibility of resources:

I've been doing [MIG] long enough, but nowadays...there's a pile of information out there. When I started there was none. ...if you talk to [the older/more experienced guys], we all learned from the same people because there was only 2 or 3 of them in the 80s teaching it. Well, now there's an abundance of information and it's not all good. Some of it's not – really – to be honest with you.... And I see that as a big challenge for somebody starting today...to really know if they're being led or instructed correctly, because it's not all equal.... And if you're a beginner you might not know the difference. The 20-year guys, [we] all know the difference because we've tried it. You know, we've made all those mistakes (Tom).

As MIG has gained attention and success, new and old farmers are starting to take it up, but as Tom describes, it can be difficult to know if what they are learning is actually the best way of doing things. Similarly, not all of these farmers have taken the time to understand what it is they are trying to achieve with these practices or know how to measure and monitor their carrying capacity; they do not always understand the intricate relationship between farmer and nature.

So, I'm a bit cynic against those guys, but the guys who've pulled through BSE, are looking at what they're doing, why they've got to change and how they're going to change – which my changes might be different than your old man's changes, or [other farmers in this study]. But knowing your numbers, and knowing what a good pasture stand could do and the carrying capacity of that compared to just a range management kind of thing...because they know that they can't keep beating the soil up the way we've been farming and we can't be buying land like the old boys used to buy land, and machinery (Frank).

One of the issues raised with conventional agriculture is the enormous scale of industrial production. A 'get big or get out' perspective causes farmers to become further spread out across the landscape, both flooding cities with rural-to-urban migration, and decreasing those on the land. This drive has also created an ecological overshoot far beyond the carrying capacity of the land, backed by the understanding that bigger means better (Carroll and Ratner 2010, 20). By concerning themselves with carrying capacity, farmers are forced to adopt a local focus to monitor the conditions of

their land effectively. For Frank, this understanding and adaptation define what it means to be a good farmer. This demonstrates the need for intentional co-production; a conversation between farmer and nature to understand the possibilities, limitations, and needs of the ecosystem of which they are a part.

### **Place-based practices**

In adopting a local focus, farmers are attentive to their own surroundings and needs, thus engaging in place-based practices. Caleb grew up next door to the farm he now works on, and explained how the carrying capacity of his pastures changed with a change in grazing management from conventional grazing to MIG:

Basically, [the pastures] don't get degraded. We have some pastures that are just garbage essentially. What happened to them is because of the old style of grazing where you put [the cattle] in until the grass is gone and then you move them, and it's a long graze period...[T]hey have selected all the good, desirable grasses...don't eat...the undesirable ones, and now the entire pasture is filled with undesirable grasses. So, we're starting to take those [pastures] back a little bit...By not overgrazing too, like leaving a lot of residual grass, when it rains we've seen really clear runoff into the ponds... it's slowed down in the grass... [W]hen you graze that and then you let it regrow, you're able to actually grow more tons of grass per acre by doing that (Caleb).

Caleb indicated that he focuses on the quality of the pasture, not just the quantity. Even though a farmer might have many pastures, conventional grazing practices might create pastures filled with undesirable grasses. This could result in low nutritional value or grasses that the cattle do not readily eat. This relates back to the conventional mode of continual progress. Without a change in management, this pasture needs to be re-cultivated to bring the carrying capacity back up to maintain production.

Caleb also denoted that a local focus with attention to detail is a decisive feature of MIG not present in conventional grazing practices. These features of MIG show that farmers who focus on carrying capacity are place-based; they are tied to their land—not just any land. Nelson and Stock (2016, 14) suggest that this shows a process of repeasantization, as farmers secure their land base through concern for its health and longevity. By investing in these aspects of land use and management, farmers build an affinity to their

land, their place. However, to make MIG effective, it needs to be a long-term investment. Tom advised that MIG will increase carrying capacity, but this takes time and effort:

People say things like ‘you can double your number of cows if you [use MIG].’ You know, twice as many cows...It is sort of true, but there’s two places where that comes from and it takes time... If you were [conventionally] grazing, the first year you went to [MIG] you would increase production; the reason being that you would now get your cows to eat a lot of plants that they did not bother to eat last year. That tall plant that was undesirable – we’re going to raise the stock density and make her eat that plant. So, you’ll increase your pasture production. Then the next increase in pasture production will come when your stand and your land gets healthier, but that may take five years of good management. So it’s true that you increase your production, but you don’t double it on year one (Tom).

Tom’s clarification and warning advise that this is not the conventional way of doing things – MIG requires time and complexity, reliant on the management style of the land, and a nurturing approach. Tom also expressed the importance of being place-based; it is about knowing what types of forage are growing on *your* land and managing to increase the health of *your* land, not just any land. Other farmers made similar claims of increased production but were specific about understanding the quality of their own soil and land, their own topography, and their own climate conditions. Throughout my interviews, farmers shared sentiments of place-based practices which demonstrated that using MIG is not generic; it requires craftsmanship.

### **6.1.2 Input Use**

An input is anything added to the land or used by people to produce an agricultural product. This includes the seed to plant, the tractor used to plant and harvest it, the oil and gas used to fuel that tractor, the fertilizer to aid the seeds to grow, the pesticides to kill any weeds or insects that might hinder the growth of those seeds. In beef farming, these inputs are all embodied by the animal when cattle are fed conventional grain produced for livestock feed. In addition, beef farming can include inputs such as growth promotants, vaccines or parasiticides, and mineral supplements. Most of these are



external inputs, meaning they are not produced on the farm but brought in from outside sources.

Farmers work in different ways to customize agricultural practices to fit their needs. However, external inputs are designed to be one-size-fits-all solutions. Since these inputs have been created and marketed, it has changed the craftsmanship of agriculture in a way that farmers now base their practices on the generic tools they can buy or be contracted into using. What makes MIG exceptional is that these farmers seem to focus more on crafting solutions specific to their situations, not just purchasing them. As such, many of the one-size-fits-all solutions are no longer suitable to their needs, at least not to the extent they may be for conventional farmers. A decrease in purchased or external inputs was demonstrated by all the farmers in this study, which requires an examination of what inputs they decreased, how they manage to decrease these inputs, and why they choose to decrease their use of external inputs.

### **External inputs**

As mentioned earlier in this chapter, industrialization has created numerous inputs for farmers that were designed to replace, and in the short term enhance production. However, these inputs are expensive, and many farmers preferred to decrease their dependence on inputs that increased their farm expenses. The external inputs that farmers decreased their use of fell into two categories: heavy equipment or machinery, and artificial chemical inputs.

### ***Equipment? What equipment?***

When asked what kind of equipment he uses on a daily basis, Frank curved his fingers to form a '0', saying,

We don't turn a wheel to feed cattle; it's totally year-round grazing... We've got a 2009 John Deere out here; it's only got 300 hours on it, bought brand new. So, we just don't use them. And that's the only way you can make money in the cattle business is cut that bottom [line], because we're an industry of price takers, not price makers, but we can push that bottom margin (Frank).

I asked the farmers I interviewed about what kind of equipment they use on a daily basis. The response for many was very little. Most of these farmers do not need to turn on a tractor on a daily basis, unlike many of their conventional peers, and there seemed to be a sense of pride about this. As Harry put it, “One of my skills is *not* working with machinery.” However, this pride is not just in a lack of machinery but in the ability to maintain productivity despite it. Walter demonstrated this with the amount of time and the distance he puts on the different pieces of equipment he has on his farm:

So our key tools, we’ve got a three-year-old Gator with 17000 km on it; it’s been across Canada and back, that machine. We’ve got a 15-year-old tractor with 6500 hours on it that we use about 200 hours a year, we’ve got a 16-year-old truck with a bale deck on it that we use another 100 hours a year or so... If we’re taking one machine it’s always the Gator it seems...we can haul stuff in it... So the input side is pretty lean, and yet if you go see those pastures, they’re pretty productive (Walter).



**Figure 8. Small ATV vehicles. Outfitted quad with portable fencing equipment (left), and typical John Deere Gator (right). These were common among the farmers I interviewed for daily use.**

The vehicle of choice for most of these farmers is a small, all-terrain utility vehicle (ATV), such as a John Deere Gator, quad, or truck. In an industry that has started to pride itself in ‘bigger means better’, this preference demonstrates the counter-hegemonic nature of using MIG.

### ***Chemical inputs***

One of the main benefits that farmers talked about regarding MIG was that it helped them decrease their chemical inputs. These primarily included fertilizers and pesticides

for crop production, as well as livestock parasiticides, antibiotics and growth promotants.

The amount of chemicals that farmers used on their farms varied, depending on the type of farm they were running. Organic farmers did not use any of these chemical inputs as they are not permitted in organic production. Natural beef farmers did not use growth promotants and limited their use of antibiotics. The use of all other chemical inputs varied among the farmers, but they generally aimed to decrease their use and most found that with MIG, there was a lower need for most of these inputs. Some farmers were very critical to the use of parasiticides in livestock (primarily Ivomec, a broad spectrum parasiticide), as they are detrimental to dung beetle populations (Greg, Violet, Harry).

Some farmers expressed hesitancy towards using fungicides (Michael), or insecticides (Phyllis). Many still used some level of glyphosate (a broad spectrum herbicide and main ingredient in Monsanto's Roundup products), but most farmers expressed that they used it in much lower doses or only for concentrated spot spraying on specific weed species (e.g., Canada thistle), or diluted the mix with naturally occurring substances such as fish oil (Frank).

Similarly, artificial fertilizer use was low overall, with some farmers purchasing some, but not much, while others sought out more customizable options that would suit the direct needs of their land/soil. One farmer engaged heavily in mineral balancing, sending his soil samples away for a full spectrum analysis of mineral content to concoct a mineral mixture specific to each field (Larry).

### **The perfect four-legged machine**

MIG is the main tool the farmers I interviewed used to decrease their use of purchased and external inputs. Many farmers talked about the practical elements of MIG that helped create this decreased input use. These included a mix of tools and practices that are rooted in co-production.

*Erika:* Why do you choose to use [MIG] practices?

*Frank:* I can carry way more livestock and also, we're getting the cattle doing the harvesting and doing the fertilizing and soil management too. They do all that; in one four-legged animal, they're the perfect machine really. Those cattle, they can be out there harvesting instead of using machinery, and they're fertilizing at the same time, and by having smaller blocks in your cells, or using strip fencing, you get more fertility control. It's the only way; I don't know why everybody doesn't do it (Frank).

Frank sums it up quite nicely; by using the cattle as a tool, combined with the management strategies of MIG, these farmers are able to eliminate many of their needs for external inputs, particularly heavy equipment or machinery, and chemical fertilizers. All of the farmers spoke about the benefits of having cattle out on the land, and most commonly referred to a decrease in inputs as the cattle worked to fertilize, seed, and harvest crops.

### ***Fertilizing***

Most farmers said that the benefit of MIG was the manure and urine out in the pastures instead of in the corrals. Having cattle out on the land helps cut inputs for beef farmers in two ways: "...we can put the nutrients in the manure...right back on the soil, [and we] don't have it in the corral that [then] needs to be hauled out" (Harry). MIG helps decrease the costs associated with manure management by reducing the need to purchase and transport synthetic fertilizers, as well as the costs of handling manure (storage, transport, distribution, application) (Bernués et al. 2011, 49; McDowell et al. 2008, 750). Similarly, research shows that there are multiple benefits to using manure as opposed to chemical fertilizers. Manure has been shown to increase biological activity and organic matter in the soil (Bernués et al. 2011, 49; Garnett 2009, 497; McLaughlin and Mineau 1995, 208), assist with weed and pest control (Gurian-Sherman and Mellon 2013, 6), and help to create a closed cycle for nutrient recycling, which slows or even reverses soil degradation and exhaustion (Alvez et al. 2014, 1005; Amekawa 2011, 123; Bernués et al. 2011, 49; Bocquier and González-García 2010, 10; McLaughlin and Mineau 1995, 208). Overall, these benefits add up to improved soil quality with better fertility, increased water retention and erosion control, and better yields. Louis uses MIG practices in some fields and pastures but not all. However, he expressed the value

that this management style has for him in recalling one winter that he was not able to graze his cattle on his own land:

So, there's a lot of manure that goes out there in a year. But... [we] had dry years where...we sent some cows away to get fed and...that was probably the thing that I noticed right away. Not only did we pay the guy to feed them, he got all the manure for the whole winter. And it's one of those things that maybe we put a bigger value on than some people do. But it depends on how good your land is. So they've certainly made our land a whole lot better (Louis).

Farmers apply the principles of MIG to winter grazing systems as well, utilizing stored feed, such as bales or swaths of forage crops, instead of pasture grasses. Similarly, animals are given access to a certain number of bales or swaths each day or every few days and then moved to a new paddock or strip. Many of these farmers continue to graze in some form over the winter, and Kurt talked about the unmeasured benefits that having cattle out on the land year round has for him:

I really like bale grazing – low headaches, good nutrition – it just works. ...The big benefit to bale grazing is water holding capacity and the urine....We get a whole bunch of nitrogen in that urine and the water holding capacity of all the residue, that's the big benefit. Then that fertility stays on for years; 5 to 10 years, we've got all the hay and manure breaking down and a whole bunch of other nutrients in there too. So, the fertility of bale grazing is amazing (Kurt).

I spent a lot of time walking through pastures with farmers, and these benefits were noticeable. During a tour through a pasture, farmers would point out different spots of exceptionally luscious, green grass, "This is our bull paddock in the winter - see all the green spots? That's urine. So if you have smaller cells with bigger number of cattle moving through, that's your fertility bank right there" (Frank). Frank points out an important difference between continuous grazing systems and MIG in regards to fertility, and that is the size of the paddocks (cells). By managing the cattle in smaller cells, manure and urine are more evenly distributed across a pasture than in continuous grazing, as animals are confined to smaller areas and moved frequently. This limits their ability to spend time around their 'favourite' spots and can help ensure that an entire pasture is more or less evenly fertilized with a calculated movement of the herd (White et al. 2001, 2187).

We know that 80-90% of whatever a cow eats comes out the back end. So, if we can get that manure on places where we need it, it's so much better. And you can tell if you look at a guy who swath grazes, you can see the manure pats down the rows, right? Back and forth, you can tell where the cows had been standing and eating all winter. And that's where you want it. (George).

The nice thing about cows is, I think a safe number is 75%, but a lot of people say 79% of what they eat comes out their back end, so we're not doing this massive removing all the time of what's on the land like we do with cropping and stuff like that, and we're just realizing now how important the livestock is. ... This land used to be covered with thousands and thousands of buffalo, it's kind of what built the topsoil here, so it's what this landscape needs now, we just need to manage the cattle like those buffalo and we'll be fine (Greg).

Calculating the percentage of what comes out versus what goes in a cow is difficult to calculate, as it depends on water intake, weight, and feed quality. On average, a 450 kg beef animal consumes 12 kg of feed per day, but gains only 1.0-1.6 kg per day (Queensland Government 2011), meaning the remaining 10.4-11.0 kg is disposed of in some form or another. The figure below shows the various contributing factors to 'what goes in must come out':

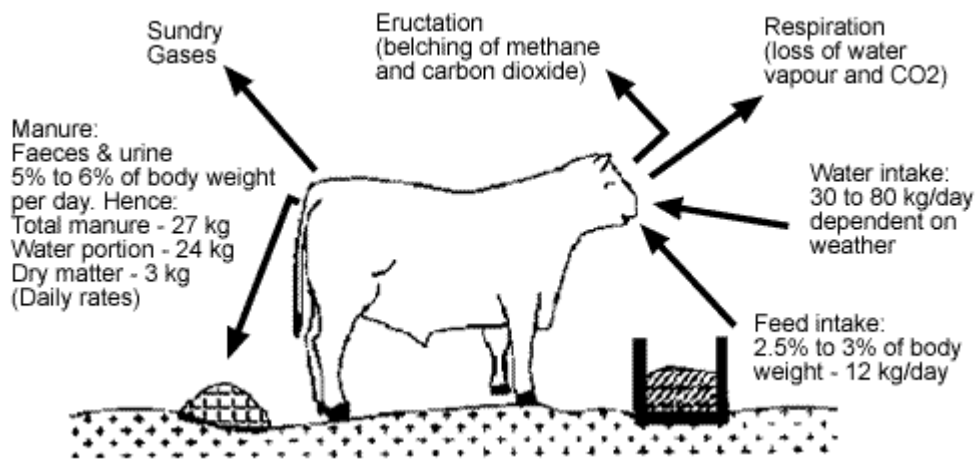


Figure 9. Manure production from a 450 kg animal. Adapted from the Dept. of Agriculture and Fisheries, Queensland Government (Queensland Government 2011).

The farmers I interviewed focused only on the positives that manure and urine have had in their pastures, but as Figure 9 shows, there are various other elements of the metabolic process. As mentioned earlier, these elements create a lot of debate on the sustainability of beef production, primarily regarding GHG emissions from cattle.

Beef production is considered problematic due to enteric methane emissions and nitrate leaching from manure and urine (Hünerberg et al. 2014; Nguyen et al. 2012, 246; Stout et al. 2000). However, manure is more problematic when it must be stored, transported, and deposited (McDowell et al. 2008, 750; Nguyen et al. 2012, 245-246), and the added benefits of increased soil carbon storage and absorption of nitrates into the soil that occurs in grazing systems may help to counterbalance these adverse effects (Beauchemin et al. 2010, 378).

### ***Planting seeds***

Similarly, these farmers have found other ways to use cattle and manure to reduce some of their purchased inputs. “I’ve started introducing legumes into the mineral of the cattle, and you can see they’re shitting it out, shitting alfalfa and sainfoin out all over the place. So look at the diversity in here” (Frank). All of the farmers I interviewed purchase salt and mineral supplements for their cattle. Many of them also had a custom blend made, based on analysis of their fodder. By adding seeds to the mineral blends, farmers work to increase the diversity of species in their pastures with little to no inputs, both purchased and time.

I’ve been feeding seed in the mineral and salt...and just having the cows do their manure spread and hopefully get it going that way....that’s the nice thing about this [MIG]; once you get a few species going, if they’re existing out there, instead of them being chewed out right away, they’ll actually start. If the conditions are right, they’ll start multiplying and growing too; it just takes some time. So that’s what I like about this seeding, if I can just get a few of them going here, [and they’re] properly managed, it’ll just keep multiplying (Greg).

Using animals to disperse seeds is a common practice in nature management and has shown to be successful using cattle (Cosyns et al. 2005). However, Greg underlines an important condition of using cattle to disperse seeds in talking about the need for proper management. In the same manner that overgrazing decreases species variety and density of plants (Hubbard 1951, 26), not providing seeds a long enough time to germinate and sprout can be detrimental to development. Legumes, in particular, are susceptible to overgrazing, as they do not compete well with other, hardier grasses (Keoghan 1980, 9). Legumes can have a symbiotic relationship with grazing cattle if appropriately

managed, as they fix nitrogen from the air, which can help reduce some of the emissions from cattle manure (Ledgard 2001, 53). Greg demonstrates the need for intentional co-production and knowledge of the nature a farmer is working with to develop an effective grazing system. This can also reduce the time input required by farmers to seed pastures in other ways:

I just love walking through here every few weeks to see what's popped up, because I know I've done nothing in there, I've just put seed in mineral. Especially this year, because I can't get in there and seed things properly, so having the cow do it for me out here; yeah, a no-brainer really (Frank).

Frank uses these practices to his advantage, as he provides many services off-farm through consulting. By using his animals to seed pastures, he was not required to be on-farm to do it himself. Furthermore, the summer and fall of 2016 were exceptionally wet in Alberta, limiting farmers' access to pastures and fields with heavy equipment, as it was challenging to maneuver through the mud, but also caused extreme compaction of the wet soil. Using cattle as a tool helped to overcome some of the barriers that technology could not.

### ***Harvesting***

Farmers practicing MIG also use cattle for the most obvious function – harvesting. As cattle graze, they harvest the plants, but one farmer told me about the unmatched benefits that grazing has over mowing or swathing a crop with machines. We had just opened the fence for the cattle to move through to the next paddock. The cows were calling, ready for their patch of fresh pasture. When we opened the gates they flooded into the fresh paddock, and the air was suddenly still. All I could hear was the sound of cows munching on fresh green grass:

It's interesting – I don't want to screw this up. I don't have maybe the right facts here, but I think it's B12 in the saliva of the cow, and so instead of cutting this with the machine, it's a completely different growth [experience] from an animal taking it than cutting it with the machine, and that's I think what it's from, there's something secreted in the saliva...that stimulates that plant to grow. So it's just another thing of nature...the whole system works so well. Yeah, something happens with that pulling



action, with their tongue like that, that stimulate the plants to kind of regrow that we can't mimic with a machine (Greg).

Saliva contains a variety of nutrients, salts, and urea that work to help cattle digest cellulose and other fibrous materials, a unique characteristic of ruminants (Bocquier and González-García 2010, 1264; Gullap, Erkovan, and Koc 2011, 311; Lamy and Mau 2012, 4253; Nardone et al. 2010, 59). Research shows that saliva from ruminants also stimulates plant regrowth and alters some behaviours and characteristics of plants that can result in increased density and biomass by increasing leaf distribution or buds on plants (Lamy and Mau 2012, 4254). Specifically, Gullap, Erkovan, and Koc (2011, 311) found that thiamine (vitamin B1) from bovine saliva created varying increases in the relative growth rate both above and below ground of different grass species, depending on the type of soil in which they were planted. Consequently, this suggests a symbiotic co-production; as cattle graze, they stimulate the plants, which grow back with more density, thus providing even greater volumes of feed for grazing animals.

### ***A habitat for growth***

All of these benefits show that cows are in many ways remarkable animals embedded in nature. However, cattle would not be as successful if it were not for the management practices of the farmers. Stimulating growth without the use of inputs relates back to the discussion of increasing carrying capacity; farmers need to engage in an intentional co-production with nature, wait for nature to react, and then respond accordingly. For these farmers to decrease their external inputs, they need to work with and in nature to create a habitat for growth.

The soil's in good shape and most years I get guys asking me about haying it, and they'll say, 'Uhh, you should hay that.' And I go, 'No. No, no, no; that's the whole idea... the reason why it looks like a really good stand of hay is because I haven't beaten it up' (George).

Most of the farmers I interviewed boasted about how good their pastures looked, but there were reasons for it. Most of that was due to enough recovery time for pastures before the next graze and enough litter (that is: foliage lightly trampled but left on the ground, not eaten) to allow for proper re-growth and avoid overgrazing.

So, kind of our main focus here is just let's get everything knocked down and a bunch of it eaten off and then probably the biggest and most important thing is the rest and recovery period. So yeah, these [cattle] will have been [in this paddock] for about 4 days but then they'll be off of here and this won't be touched for the rest of the year, but it was grazed in early, early spring and now we're back after a 90-day rest period here. Everything has at least 90 days to get its root development back (Greg).

Greg refers back to one of the key principles of MIG: rest and recovery. Teague et al. (2011, 312) found that MIG allows for a recovery period of either 30-50 days in the fast-growing season, or 60-90 days in the slow-growing season helps to optimize both the growth and use of pastures. By allowing time for pastures to rest, plants can regrow after being defoliated. Coming back to the pastures after a suitable recovery period took advantage of the grazing season while plants were still vegetative but before their reproductive stages, ensuring that most of the nutrients were still in the stalks, leaves, and flowers of the plants (312). Larry concurred:

... by allowing for rest periods and allowing for a lot of plant material to be there to capture sunlight, that's it; you have to do that. If you don't do it, then your animals eat it and it's gone, and it's going to take forever to regrow, and so, it's day and night. You can more than double your productivity by [using MIG] and moving your cattle and allowing for rest periods. It's just simple. That's so simple. That's the easiest thing to do is to double your productivity, just by building up plants.

Similarly, others spoke about how litter helps create a habitat for growth, without the use of any external inputs:

You know, we just put a pile of seed down there, and then you put all that mulch on top of it and then it creates a nice habitat for seeds to grow. So yeah, once you get the species in, instead of actually having to introduce seeds, you just use the animals and management to seed things and kind of keep that happening (Greg).

However, this seems to be one of the harder concepts for conventional farmers to understand. How can they justify leaving all of that vegetation on the ground?

Well guys say, 'Oh you're wasting all that grass.' Nothing could be further from the truth. There's no such thing as waste. Nope. You want that trampling, and Allan Savory talks about that, right? Bending over the plant

and creating a thatch to cover the exposed soil, and you want that grass to lay over top of that so the seed heads will bury in that and some animal will come along and drive that seed head into that black dirt (George).

Both Greg and George refer to cattle as a tool for seeding a pasture. However, this seems to be a difficult concept for farmers to understand in moving from conventional practices to MIG, as many of the farmers I interviewed expressed that they were not wasting their resources. This constant need to defend one's actions demonstrates the counter-hegemonic nature of this practice, but also points to a general misunderstanding of co-production:

One of my talks is about weed control. Basically, there's no such thing as a weed; there's always a purpose for a plant. If there's a supposed 'weed' – I always put that in quotation marks – if it's getting out of control, it's probably a management issue. The conditions are favouring it so it's taking over. ...So what's the...underlying problem to address? Most of the time in pastures, it's overgrazing. So you need to properly rotationally graze it and manage accordingly (Kurt).

Kurt alludes to a process of co-production. The overgrazing helps create a habitat that encourages the growth of hardier species – weeds. Similarly, farmers use co-production in MIG to decrease their need for parasiticides with their cattle herds:

So, say there were fly larvae in the manure pads, or parasite larvae or whatever; our cows wouldn't be back to that paddock before those larvae develop and are looking for their next host. So, you remove the host, so you reduce the parasite load. So I mean, things like that, just the fact that they're always moving on to clean ground, fresh grass (Mark).

I think you break the cycle because the disease builds up, I believe. This builds up in the environment, and because their environment is always on the move, it doesn't get that much of a chance to build up (Simon).

How the farmer chooses to respond will, in turn, affect how nature responds. This requires the farmer to understand the nature they are a part of to know how to encourage the growth that they want, rather than weeds or parasites. By utilizing MIG practices, these farmers co-produce with nature to create a production system that uses limited external inputs.

## **The virtue of decreased input use**

Profitability was the most apparent reason for decreasing input use. By decreasing costs, farmers could make more money. The farmers I talked to took pride in being a ‘good’ farmer; regardless of farming style or modes of production, ‘good’ farming is profitable (Sutherland and Darnhofer 2012, 235). However, some farmers also commented on the position of farmers in agriculture as the price takers. While this affects their position in marketing their own produce, it also affects their position in buying supplies and inputs for production. Most external inputs are, in some form or another, a technological development. Usually, private corporations develop and patent the technology, which farmers then have to buy – a defining feature of industrial agriculture. While these developments did wonders for global food production, they removed farmers’ ability to be self-sufficient as they were now reliant on purchases from private corporations.

For some, the industrialization of agriculture is characterized by a change in focus from self-sufficiency and resilient cultivation to maximized productivity, measured by the yield per unit of input (Anthony 2012, 127). Indeed, the development of hybrid corn marked a significant change in American agriculture, as it both increased yields by more than four times and decreased the average cost of food in the United States (Moore 2010a). However, it also produced corn that could no longer be cultivated, putting farmers in a position of always having to “make an annual pilgrimage to seed firms” (Moore 2010a, 236) to purchase seed for the next sowing season.

Industrial agriculture uses external inputs for the simultaneous exploitation of and battle against nature, evident in the different ways that industry has artificialized various natural processes, such as chemical fertilizers, pesticides, greenhouses and genetically modified seeds and hormone implants for livestock. With these tools, humans assumedly have the power to control the nutrients found in the soil, to choose what type of plants will grow (or not) in a given area and even control the weather.

Artificial inputs have been revolutionary in agriculture, and on the surface can seem positively powerful. However, all of this ‘power’ costs farmers money and autonomy. External inputs are controlled by companies and markets that have control of product sales and production. For a farmer, this means that there is always someone else that has

some level of power over their resource base. These artificial products can be taken off the market, increased in price, or changed in makeup as the company wishes, possibly compromising the use of the products by individual farmers. This loss of autonomy was demonstrated with the development of hybrid corn, as farmers gained better yields but lost control and power over their harvest and seed base (Moore 2010a, 236). For one farmer, this is the main reason he practices agroecology including MIG:

... [M]ultinational, foreign corporations are coming in and dictating to us what we can grow when we can grow it. If you get contaminated with their genetics, they can come in and sue you and persecute you and prosecute you. So this is what's happening in [that] system, so that's why I stick to this one (Larry).

Other farmers expressed how they managed to decrease their use and dependence on external inputs with knowledge and craftsmanship:

Well, one of the deciding factors in going to a beef grazing game, away from mixed farming, was I felt like we could create some advantages here using management, using our brain, rather than buying inputs. We're a low input outfit. I mean if everybody did what we're doing, there wouldn't be a machinery dealer left in the country, at least for (miles). There wouldn't be a fertilizer dealer left in the country – or maybe one – because we don't buy much fertilizer. But we've created a profitable business plan by decision making and managing in those pastures, so we had to put in fence posts and water hogs, but then it's all about managing. It's about moving cattle every 2 or 3 days, all year round. So that's a thing that a lot of people don't want to get into, but it's the thing that makes it work for us. And the idea of being able to create an economic advantage without having to buy all those inputs, put that money out all that time, be on the hook for that money all the time, was very appealing. And still is. ... If you get the rain, you grow the grass, our game works. And we're not dependent on price of diesel fuel, or fertilizer, or grain markets. I mean we're dependent on the cattle market, but you're still in the game when other people aren't; you're still making money when other people aren't. So that whole idea of being able to create profit without high input expenses was very appealing. And that still is (Walter).

Walter touches on multiple benefits of decreasing his input use. Not only does he save money by reducing his input purchases, but he also decreases his dependence, which has helped to increase his autonomy; he has the power to negotiate the inputs he uses –

both purchased and knowledge-based – and the power to negotiate the markets he engages with and how. However, Walter also touches on the opportunity to use management skills and knowledge as opposed to using external inputs.

Interestingly, both Larry and Walter utilize MIG to gain autonomy from inputs, but one is an organic farmer while the other produces commodity beef. This reinforces some of the fundamental issues that have created the squeeze on agriculture. As rural development strategies pushed input use and the opening of the markets simultaneously (Bernstein 1979, 427), MIG provides both of these farmers opportunity to gain autonomy from this capitalization of agriculture. Walter also expresses autonomy of knowledge, as he uses MIG to adapt to his needs, his land. This is similar to discussions of diversification strategies, particularly deepening activities, as both of these farmers use their local knowledge and expertise to decrease their need for off-farm income and increase their autonomy in making financial/economic decisions (Van der Ploeg 2014, 1006). Despite different types of farms, Larry and Walter utilize their local knowledge to create profitable farms in different ways.

## **6.2 Knowledge autonomy**

Agroecology is known for being knowledge-intensive, as opposed to input-intensive (Coolsaet 2016, 165). Inherent in a system that does not fit the generic tools of conventional agriculture is autonomy of knowledge. Being able to craft one's own solutions and use one's knowledge of locale, of one's own nature, is required for a farmer to engage in an intentional co-production with nature. Throughout my research, farmers focused on the needs of their local context coupled with a distaste for conventional practices that focused on using external inputs for continual progress in agriculture. Many stressed that their practice was based on doing the opposite:

I guess the biggest one, right off the bat that comes to mind is working with nature and trying to rely on sunshine and rain as our inputs and try and rely as little as possible on outside purchased inputs; trying to manipulate what we have, trying to use what's between my ears for management and what nature can provide to maximize the - or I shouldn't say maximize, because we don't try to maximize, we try to optimize the production for the ranch (Michael).

As Michael described, his goal is to manage his farm with what he knows, rather than what he can buy. By stressing that he optimizes rather than maximizes his production demonstrates an understanding of co-production. Michael shows an understanding of nature's limits and what he can ask of the nature he works with in order to have long-term production. This contrasts with the conventional thinking that bigger and faster means stronger.

However, this also demonstrates that the power to make this change in thinking is essential for farmers to make a change from conventional to agroecological practices. While Van der Ploeg (2008) argues that repeasantization is a struggle for autonomy, the farmers I interviewed demonstrate that engaging in processes of repeasantization also require autonomy of knowledge to be able to work towards an aggregated autonomy – knowledge, input, market, and financial autonomies combined. According to Stock and Forney (2014, 161), knowledge autonomy is central to the farmer identity and not only considered a value in farming, but a tool farmers use to secure their place in the social milieu of agriculture today. Kurt urged the need for this tool in regard to the increasing instability of the agri-food system today:

We have to take care of our resources, take care of our land, so it produces. Someday down the road, you might not be able to get fuel; you might not be able to get fertilizer, [and] you might not be able to get, you know, what we're doing in agriculture to grow. If I'm in line with nature, my land will produce because it's got to be sustainable no matter what the situation (Kurt).

As mentioned earlier, the inputs used in conventional agriculture have reduced the power and autonomy of farmers because farmers lack control over these resources. The use of these tools, when understood as co-production, has ensured the dependence of both farmer and nature on their use. As Kurt describes, this dependence is insecure and unpredictable, as shown in the example of the superweed effect. Berry describes the paradox of this relationship between farmer and external inputs, saying "If, in spite of the evidence against us, we are finding it hard to relinquish our old ambition, we are also seeing more clearly every day how that ambition has reduced and enslaved us" (2009, 9). One farmer, Kendra, touched on this old ambition and the difficulty in giving it up:

I would think if you've been doing conventional agriculture and have been using chemicals and stuff like that, the first little bit would be really hard to wean yourself off of the chemicals because the land itself becomes reliant on it. You have a hard time getting there without using it; I would think (Kendra).

Kendra is relatively new to farming, which perhaps gives an insightful perspective to the industry – old habits die hard. There is an irony in comparing Kendra's insight with Berry's. As farmers are reduced and enslaved by external inputs and the conventional agricultural model, farmers are also dependent on it. Kendra expressed implications that may prevent farmers from transitioning to practices such as MIG, as there is inevitably a transition period required. Farm productivity in terms of yield output and overall production is a central concern for farmers considering a transition to organics. Research shows that this transition typically takes three to five years before production resumes or increases without the use of these external inputs (Bulluck et al. 2002, 158; Cranfield, Henson, and Holliday 2010, 292). In light of the squeeze on agriculture, this would discourage farmers from making this transition, but Larry expressed the urgency of this situation:

We're losing as it is; we're losing farmers, we're losing knowledge, we're losing markets; we're losing all kinds of things. And have become totally reliant on inputs from some foreign corporate entities with chemicals, and fertilizers, and fuels, and machinery; and so our country is becoming non-productive, non-secure, non-sustainable (Larry).

Larry summarized the implications of conventional agriculture that the farmers I interviewed touched on, although not all were as explicit or austere in their description. Larry expressed the need for local knowledge and understanding to overcome the squeeze on agriculture and the reliance on external inputs.

When we adopt nature as measure, we require practice that is locally knowledgeable. The particular farm, that is, must not be treated as any farm. And the particular knowledge of particular places is beyond the competence of any centralized power or authority. Farming by the measure of nature, which is to say the nature of the particular place, means that farmers must tend farms that they know and love, farms small enough to know and love, using tools and methods that they know and love, in the company of neighbors that they know and love (Berry 2009, 9).



When farmers use co-production instead of one-size-fits-all solutions, they utilize their local knowledge of place and nature, demonstrating autonomy of knowledge that is not only autonomous from the technological developments but also the conventional ways of thinking about production. Instead of maximizing production for short-term gains in yield outputs, farmers concern themselves with the longevity of the whole farm.

# 7 Conclusion

In this study, I set out to explore and critically understand the motivations, traits, and implications of MIG use among beef farmers in Alberta. Throughout the previous two chapters, I described and explained the motivations and contextual influences affecting these practices, illuminated through interviews and visits with farmers throughout Alberta. During these visits, farmers expressed various stories of struggle, challenges, and triumphs, which I chose to explore using the concept of repeasantization. I explored farmers' use of diversification and co-production to understand their motivations and worldviews. In doing so, I learned not only about these farmers as individuals, but as a community encircled by a myriad of social, cultural and economic dimensions that depict the state of small- to mid-scale beef farms in Alberta today.

I concentrated my analysis on the farmers' use of MIG and how it fits into their farming practice and found that MIG is useful in different ways: it aids farmers in diversifying their practices, activities and production, and it allows farmers to interact and transform with their land through an intentional co-production.

## **MIG within the contexts of diversification**

In Chapter 5, I demonstrated how these farmers utilize tools of peasant farming as they focus on the production of their land base and diversify their practices and enterprises. This allows them to reduce their reliance on outside inputs and horizontal expansion, but capitalize on the opportunity for vertical expansion and integration.

In exploring farmers' diversification, I drew on the Sustainable Livelihoods approach (Amekawa 2011) in concert with Van der Ploeg's (2008) repeasantization. As farmers find themselves in precarious situations of a price-cost squeeze, dwindling rural populations, volatile markets, and unpredictable climates, farmers draw on different diversification strategies to provide stability and resilience on their farms. However, I also found that this was not always a simple challenge to balance, as farmers easily end up overworked and spread thin. Drawing on Højrup (2003), I found that the constant reliance on off-farm income can create a sense of frustration and disgruntlement as farmers feel they are always in a state of crisis.

These farmers showed through diversification that they are not focused on one enterprise or one industry. Instead, they see the various activities on their farms and in their livelihoods as interconnected. Each activity plays a part in forming their practices, lifestyles, and understanding of agriculture. Walter expressed it in this way:

Well, if you're a beef producer because you love cattle, you've got a different focus. And I know beef producers who concentrate on the cow and not the grass. If you can get past the cow and concentrate on the grass, you'll grow more cow. So it's a matter of where their real interest lies (Walter).

This is the fundamental difference between conventional beef farmers and farmers using MIG – whether or not they focus on the whole picture. If farmers cannot see the farm beyond its beef production or yield output, they cannot adapt to using the tools inherent to MIG. The farmers I interviewed demonstrated this different focus when they explained how they integrate and deepen their farm activities. This is where MIG flourished within diversification. As farmers worked to produce value-added products such as grass-fed, natural or organic beef, MIG provided them with the tools and strategies to optimize the production of both the cattle and land. In turn, their success in these practices opened doors for them to share and network with others. As a result, these farmers built a strong community around the use of MIG and forages. Drawing on Højrup (2003) again, we see that these practices rooted in farming and enhancing farm production help farmers feel independent, successful and resilient in their practices.

### **The co-productive relationship of farmers and their land**

While diversification gave farmers a reason to start using MIG, they developed an affinity to these practices through co-production, reinforcing their use. In Chapter 6, I looked at how MIG increases carrying capacity of the land and improves the quality of grass and forage stands without using (or limiting the use of) external inputs such as chemical fertilizers or pesticides. It gets cattle out of barns and corrals and into the pastures, where manure and urine can directly fertilize and be naturally distributed instead of hauled out and processed as waste. It also allows cattle to graze longer over the course of a year, depending on the geographic context, which reduces the need for stored feed.

In using co-production, these farmers altered their farming approach away from conventional agriculture. However, as demonstrated above, this change requires more than just a substitution of practices, but a change in worldview. For farmers to even conceive of changing their tools and practices, to expand their focus beyond economic gains, farmers had to see beyond the one-size-fits-all solutions of conventional agriculture. Only then were they able to use an intentional co-production to increase carrying capacity and decrease external input use. Drawing on Wendell Berry, I discovered that farmers found freedom in working with nature, demonstrating that a change in perception affects the whole of agriculture.

Using co-production instead of inputs, and relying on local knowledge to build and utilize their resources, farmers create a more profitable and sustainable operation. This includes more than just production, but a nurturing of nature, increasing diversity and building community. According to Van der Ploeg, this change in perspective is “re-grounding farming on ecological capital” (2000, 11), and while the farmers I interviewed varied in how much they distanced themselves from conventional agriculture, they were all concerned with what their farming practice was grounded in.

### **‘So the soil first’: A holistic understanding of agriculture**

“So the soil first, the pasture and then the cattle is the program we use” (Frank). At first glance, it seems like an extreme simplification rather than a holistic understanding, but I quickly learned from the farmers I interviewed that in looking at their soil, they show concern and awareness of their farms as a whole.

I am careful to use the word holistic, especially in relation to farming and MIG as it has specific connotations of Holistic Management, a values-based decision-making framework for regenerative agriculture. Some of the farmers I interviewed are heavily involved in Holistic Management,<sup>9</sup> some had drawn on its concepts and literature, and some did not express any ties to the program or its framework. However, I find that this term is most complete in describing their understanding of agriculture. It is holistic; it

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<sup>9</sup> See discussion on Holistic Management in Chapter 2, p. 16-17 and Certified Educators in Chapter 5, p. 75-76.

encompasses a comprehensive, integrated, and aggregated understanding of their farming practices within their own lives, their farms and all its moving parts, their environment, and their communities as well as the broader society. And so, they start with the foundation.

By combining what I found on diversification and co-production, the many complexities of what farmers did and said became clear. The various layers of their narratives and practices build the stories behind their value-added products, but also explain their encompassing understanding of agriculture. They start with the soil, which builds the base of their livelihood. This demonstrates a concern for their personal well-being and success. They want to be good farmers.

However, they also demonstrated that without focusing on the soil, they could not sustain their farms. As farmers diversified their crops and livestock and decreased their input use, they demonstrated concern for the farm. Farmers can survive on conventional practices for a short while, but phenomena like the squeeze on agriculture and the superweed effect show that these are not long-term solutions for farming. Instead, these farmers moved away from these practices, demonstrating concern for the sustainability of their farms.

As these farmers build on their foundation, they increase their capacity and integrate their enterprises. By expanding upwards rather than outwards, they produce more with less, opening space for more farmers to come in; for more neighbours and greater community. The farmers I interviewed form a tight-knit community. Their various activities that support the dissemination of knowledge, supplies, and practices demonstrate their concern for community in agriculture, as they work to build its resilience, longevity, and fellowship.

What's more, this community opens the possibility for care and stewardship of the land. As Wendell Berry explains,

Ecological sustainability requires a complex local culture as the preserver of the necessary knowledge and skill; and this in turn requires a settled, stable, prosperous local population of farmers and other land users (2009, 16).

People who are tied to their land care for it, and the farmers I interviewed shared with me their concerns for the health of their soils and their environments. As they build community, they also increase those who are able to care for the environment. In turn, this care helps build their foundation through co-production. By having a holistic understanding of agriculture, these farmers are able to create an encompassing and cyclical practice, in which MIG is at the centre.

### **Possibilities for further research**

The practice of MIG is growing and along with it comes implications which have been touched on throughout this study. Currently, research is looking into the contributions and changes in ecosystem services provided by rangelands in Alberta, including soil carbon storage and biodiversity retention (Rangeland Research Institute 2017). As MIG use increases, understanding the role that this practice can play in rangeland health is important. GHG emissions are a pressing issue in local and global society, and governments are in the midst of developing various policies and mandates to cut their emissions. However, policies and programs that provide payments for ecosystem services and other incentives for cutting emissions will need to consider the various practices that farmers use and take into account how practices such as MIG affect ecosystem services.

However, as the farms across North America decrease in number but increase in size (Christison 2000), further investigation is needed to understand the possibilities and implications for MIG in larger operations. Similarly, while value-added beef products and forages are currently niche markets, they are expanding at a fast rate. Understanding how the growth of these markets affects farmers like the ones I interviewed will be important for further research and development, agricultural policy, and support for small- to mid-scale family farms.

While this study focused on a small collection of the farmers practicing MIG in Alberta, there is no doubt more to learn from studying similar practices in other settings and at different scales. It could also be interesting to see how MIG practices are used in this context with livestock other than beef.

## Final Words

It was easy to understand why farmers were motivated to use MIG. They were able to produce more with less, and even earn a premium on top of it all. However, this practice seems to go deeper than just the costs, implicating the value and understanding of agriculture held by these farmers. Walter summarized this understanding with the following:

... We get to work outside, on a healthy landscape, a healthy environment. You know, there's birds in the air, there's critters on the ground; there's a lot of little ways that it feels pretty good, that it's pretty rewarding. We're not mining our soil. My grandfather would've started in 1910, my father in about 1936. By the time I started in 1972, they'd taken half the organic matter out of the soil that we're working with. So, my grandfather by all accounts, by almost all measurements you could use, was highly successful. He started on the bald prairie and created a pretty good business. He built a lot of wealth in his farming career. But he mined the soil to do it. The organic matter went down and my father was – I think the neighbours would say a pretty good farmer, and he mined the soil too. We've stopped that. Our organic matter's going up. Our soil health is going up. So we've stopped it and turned it around, so that feels pretty good, because you can't mine it forever. Now...we have tools that they did not have, so it's not that I'm any brighter than they are, but I recognized the fact that we couldn't keep doing what they were doing. And so that feels good to know that as [the next generation] takes over, things are going the other direction; this land is getting healthier and more productive. So big picture, that's a good feeling too (Walter).

These farmers really do believe they are doing things better, and maybe in this landscape – the temperate grasslands – they are. They have experienced gains financially, environmentally, and socially. They have created a lifestyle and livelihood with which they are satisfied. MIG may not be the answer for every landscape, but for the Alberta landscape it seems to work.

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# Appendix A – Interview Guide

## Section 1: Opening questions and developing context

1. Can you tell me a bit about the history of your farm?
  - a. How long have you been raising beef cattle?
2. Can you please describe your farm?
  - a. Size? What's grown?
  - b. What are the important elements of your farming practices today?
  - c. What technology and equipment do you use?
  - d. Who is involved in various aspects of your farm – how and why?
  - e. What changes have you made over the last 5 years?
  - f. Any additional farm features/activities?
3. Are you a fulltime farmer?
  - a. Do you work outside of the farm/have major sources of income outside of the farm?
  - b. Changes in your role? Have you always worked off the farm?
  - c. Are you considering any new income sources or diversification of your ranch operation?
4. What are some of your goals for the farm?
  - a. Financial, environmental, social?
  - b. Succession planning?
  - c. Other?

## Section 2: Management– intensive rotational grazing practices

In this part of the interview, I will focus in on the MIG practices that are used on the farm, as this is the sustainable practice that I have chosen to focus on. A lot of these may be answered in previous questions, but in case it has not been fully touched on, this list will help make sure I understand the practices each farmer is using.

5. Please tell me about your management practices:
  - a. What feeding practices do you use?
  - b. How long have you been using MIG?
  - c. How did you learn about MIG techniques?
  - d. Why do you practice MIG?
  - e. Have you noticed any changes or impacts since MIG? (Environmental, animal husbandry, other?)
  - f. What types of land ownership do you graze cattle on (i.e., you own it all, leases on public lands e.g., leases on private lands, etc.)?
  - g. Have you faced any challenges using these practices?

### **Section 3: Challenges in beef farming**

In this section I will move towards the challenges that farmers face in MIG.

6. What are the major challenges facing your operation?
  - a. Financial? Environmental? Social? Succession?
  - b. How do you overcome these challenges?
  - c. What was the most difficult aspect of transitioning to different grazing practices?
  - d. Why do you think other farmers are not making changes like you have?

### **Section 4: Demographics**

In this section I will wrap up the interview through gathering some general information that can be used in understanding context and in comparison between participants.

7. What is your age?
8. What is the highest level of education you have completed?
9. How long have you been involved in farming?

# Appendix B – Informed Consent Letter

## The Motivations and Challenges of Beef Farmers in Using Alternative Grazing Practices

*Request for participation in an interview for a research project.*

### Background and Objectives

My name is Erika Heiberg and I am a master's student at the Centre for Development and the Environment, University of Oslo in Norway. I am currently doing research for my thesis concerning alternative beef production in Alberta. The main objective of this project is to explore beef farmers' experiences using management intensive rotational grazing and to discover the different motivations and challenges that come with using this practice.

Identification and selection of participants is done on the basis of word of mouth and snowball sampling. Participants will engage in a semi-structured, in-depth interview. All participants are beef farmers who come from Alberta, Canada. Names of locations and participants will be anonymized.

### Participation in the Study

I will interview 10-15 participants who use management intensive rotational grazing with beef cattle. In-depth interviews require the active participation of the participant, and will last for about one hour. The interviews will be based on semi-structured questions and observation and will be directed towards the attitudes and practices of farmers using management intensive grazing with beef cattle. Interviews will be audio recorded. The questions will in addition to covering grazing practices, also involve questions about the interviewee's background in order to understand the context and to find out about possible motivations for using these practices. Participating in this study is completely voluntary, and you can withdraw at any time without further explanation. I will use an audio recorder during the interview to make sure that our conversation is recorded accurately, however, you can ask me to stop the recorder at any time.

### Personal Information

All communications and information will be treated confidentially, and the final thesis will not include any information that would identify you. Personal data and recordings will be stored separate from other data. Before the interview begins, I ask for informed consent of participation by signing a consent form. The information I receive will be anonymized and the recordings will be deleted when I finish my thesis, anticipated June 1<sup>st</sup>, 2017.

If you have any questions about the research, you can contact me or my supervisor.

Student: Erika Heiberg (phone/email)

Supervisor at Centre for Development and the Environment: Karen Victoria Lykke Syse (email)

I have read and understood the information, and I agree to participate in the study.

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Signature

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Date