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Carlisle Kent & Kate Sherren

# THE VIEW FROM THE FARM SECTOR

## DISCOURSE IN PRODUCER ORGANIZATIONS AROUND CLIMATE, SCIENCE AND AGRICULTURAL POLICY, 2010-2015



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## Abstract

Producer organizations are powerful change agents and advocates for their industries. They give a voice to individual producers spread far and wide, and ensure that hardships endured and criticisms are heard from this sector, as it works to provide food and fibre for Canadians. This report describes the discourse by farming organizations around climate, and resulting hardships are expressed to a range of audiences, across different scales (Canada and Alberta) and commodity groups. We collected almost a hundred documents that represented the climate-related public and policy engagement of Canadian and Albertan livestock producer organizations from 2010 to 2015. We did not seek to track any trajectory over that time, because of small and/or uneven numbers of documents in any given year, but rather use those documents to take a snapshot of discourse. Qualitative coding across a range of themes and classifications (organization scale, producer group, and intended audience) has allowed generalizations appropriate to answering several questions:

1. **How do producer organizations at a national and provincial scale, specifically Alberta, discuss climate and weather, and its impacts on livestock operations in particular?** National organizations are much more likely to talk about climate change and Alberta organizations about weather. This pattern is similar for umbrella versus livestock/forage organizations, and documents for a government/public audience compared to membership. Those 'closer' to farmers are still thinking in terms of short-term events rather than long-term change. Those working at the national level speak more systemically about the trends afoot and their solutions.
2. **What barriers do they see to a productive industry under climate change, and what adaptive practices and other solutions do they discuss as necessary for their industry to cope?** Those discussing climate see the need for increased regulation and are less interested in insurance or relief programs. Those discussing weather have a very long list of complaints as well as a range of desires for compensations. On-farm management recommendations differ, except for rotational grazing, also referred to as controlled grazing or grazing management, was the only beneficial management practice (BMP) appearing in the lists for both climate and weather recommendations.
3. **How prevalent is the farmer voice, compared with other sources of evidence?** Farmers are rarely presented as experts in this advocacy work, rather they are described as a demanding or needful audience. Science is presented more neutrally as a source of evidence.

## 1. Introduction

Livestock production is a critical topic, globally. We are eating more meat – because of increasing population but also growing affluence – and that meat production has a growing global footprint (McAlpine et al., 2009; Foley et al., 2005; Tilman et al., 2002). Livestock production now covers a quarter of the terrestrial globe (Erb et al., 2007), the environmental costs of which include deforestation leading to biodiversity and carbon sequestration losses, increased greenhouse gas emissions, and what has controversially been called desertification (Asner et al., 2004). Yet livestock production is a critical livelihood strategy for many producers, especially small landholders (Herrero et al., 2013). We must seek management alternatives to reduce the environmental impact of livestock production, particularly in the face of the uncertainties that global climate change presents (Beilin, Sysak, & Hill, 2012; Foresight, 2011; Asner et al., 2004). All too often debates between alternative and conventional farming methods are oversimplified and atrophied, when they present a rich opportunity to reflect upon the cognitive and discursive dimensions of agricultural practice.

Many of Canada's farming areas, particularly the Prairies, are projected to become increasingly warm and arid (Amiro, Rawluk, & Wittenburg, 2014; Sauchyn & Kulshreshtha, 2008), bringing some opportunity for agriculture but also uncertainty around water supply (Wandel, Young, & Smit, 2009). In these and other areas, unpredictable rains increasingly come in severe storms, causing flooding and erosion as well as threatening livestock. What are viable strategies for climate adaptation in such agricultural systems? There are four broad ways to adapt farming to exogenous changes such as climate: technological developments, government programs and insurance, farm production practices, and farm financial management (Smit & Skinner, 2002). The first two are described as 'buffering' or 'techno-fixes' by Fazey et al. (2010) and are perhaps less preferable because they do not require behavioural change. Such adaptations may in fact reduce resilience to future change, as observed by Adger et al (2011) in the context of international agricultural drought policy, but this reduction may be hidden by the ongoing anthropogenic inputs that camouflage its ecological signals (Rist et al., 2014). The last two options empower the producer, and the best strategies will: (1) aim to remove the drivers of negative changes; (2) keep or increase the potential number of future management options; and, (3) improve producer adaptive capacity (Fazey et al., 2010; Wandel et al., 2009).

Farmers are the ultimate applied researchers: they experiment and observe, learn and adapt, yet the farmer voice is sometimes difficult to hear in grazing or climate science and policy (Sherren and Darnhofer, in review). Our larger project aims to reconcile producer perceptions and experimental science on adaptive grazing practices in a context of climate change, and reflect not only upon how we practice farming, but also how we practice science, and make policy recommendations as a result. Here, we set out to understand how producer organizations frame their climate challenges and preferred solutions, by reviewing discourse and policy engagement of farmer organizations. Specifically:

1. How do producer organizations at a national and provincial scale, specifically Alberta, discuss climate and weather, and its impacts on livestock operations in particular?
2. What barriers do they see to a productive industry under climate change, and what adaptive practices and other solutions do they discuss as necessary for their industry to cope?
3. How prevalent is the farmer voice, compared with other sources of evidence?

## 2. Methods

### 2.1. Data collection

In this project, we examine the ways in which producer organizations in Canada discuss climate-related challenges and related agriculture policy. To obtain the “voices” of these organizations, we selected ten producer organizations, representing general agriculture, livestock, and forage practitioners at both a national and provincial scale – specifically the province of Alberta in the Canadian Prairies, which has the largest grazing economy in the country. We gleaned a selection of publicly available documents from each organization for the years 2010 through 2015. This timespan was selected due to an observed shift in discussion of climate change in the agricultural community following the Copenhagen Climate Change Conference in 2009. Additionally, we believe this timespan allows us to gain a thorough understanding of Canadian agriculture while minimizing inconsistencies in data types and posting frequency. The organizations were inconsistent in terms of the document types and temporal coverage available, so a direct ‘apples to apples’ comparison or quantitative summary is not possible. However, the final breadth of practitioner type and document type represented in our document set (Table 1) supports an in-depth analysis to understand how Canadian agricultural systems, particularly livestock commodities, consider climate change today, and in the future.

*Table 1 Organizations and document types included in this study, by audience type, including: NR = News releases; PD = policy documents; LR = lobbying registrations; M = minutes; AR = annual reports; NL = newsletters.*

		<i>Document types used</i>						
		<i>Audience:</i>		<i>Government</i>		<i>Membership</i>		
<i>Scope</i>	<i>National</i>	<i>Public</i>	<i>Government</i>	<i>LR</i>	<i>M</i>	<i>AR</i>	<i>NL</i>	<i>Provincial</i>
<i>General</i>	Canadian Federation of Agriculture (CFA) <i>n</i> =12	CFA	CFA	CFA				Alberta Federation of Agriculture (AFA) <i>n</i> =10
	National Farmers Union (NFU) <i>n</i> =30	NFU	NFU					
		AFA	AFA					
<i>Livestock</i>	Canadian Sheep Federation (CSF) <i>n</i> =2	CSF		CCA	CSF	CSF		Alberta Lamb Producers (ALP) <i>n</i> =1 Alberta Beef Producers (ABP) <i>n</i> =15 Western Stock Growers Association (WSGA) <i>n</i> =3
	Canadian Cattlemen’s Association (CCA) <i>n</i> =15	CCA				CCA		
		ABP		ABP	ABP	ALP		
		WSGA	WSGA			ABP		
<i>Forage</i>	Canadian Forage and Grasslands Association (CFGGA) <i>n</i> =5		CFGGA				CFG A	Alberta Forage Industry Network (AFIN) <i>n</i> =2
							AFI N	



## 2.2. Data analysis

We evaluated each document to determine whether it was pertinent to the topic of our study, that is, Canadian agricultural producers' experiences with and attitudes toward climate change and climate-related challenges, and their efforts to influence agriculture policy accordingly (Figure 1). Documents were searched for relevant terms<sup>1</sup>, determined through preliminary review of available documents, to identify relevant passages. Associated passages were reviewed to ensure they were topical. Suitable documents were then coded using NVivo 11 (QSR International, 2015) software to identify emergent themes.

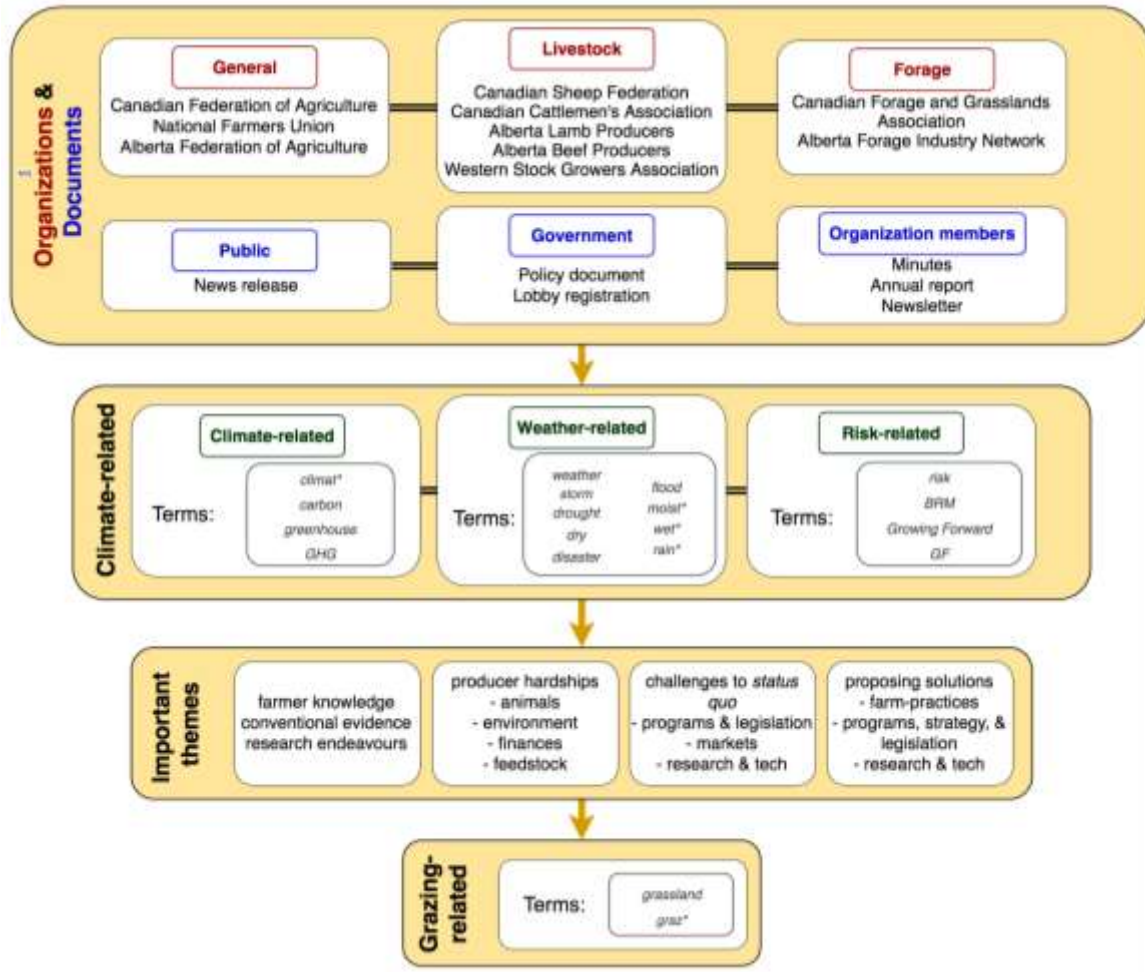


Figure 1 Process used in our analysis – selecting the organization and the relevant documents, followed by searching for designated topical terms in order to analyze surrounding context to gain insight into how farmers and producers discuss climate change and weather, and further, how graziers in particular discuss these issues.

<sup>1</sup> Documents were reviewed to find the following terms: climate, weather, storm, flood, moist, wet, rain, drought, dry, disaster, carbon, greenhouse, and GHG (greenhouse gas). Additional terms indirectly refer to climate-oriented risk and planning: risk, BRM (Business Risk Management), Growing Forward (and GF) (see Box 1).

Sources were coded using an inductive approach, with many themes identified as we progressed. Sources were reviewed iteratively as new themes were identified, to ensure consistency. Analysis included exploration by major subject themes (e.g., weather and climate, producer hardships, critiques and suggestions, sources of knowledge and evidence, and stakeholder engagement), as well as exploration by scope and document (and thus whether the discourse is directed at the public (NR), government (PD, LR), or organization members (M, AR, N); see Table 1 for document type codes).

#### *Box 1 Key terms and concepts*

**Growing Forward (GF)** is an investment package and policy framework carried out by a federal-provincial-territorial partnership, currently in its second iteration, known as Growing Forward 2 and running 2013-2018 (Alberta Government, n.d.). Through a broad suite of programs tailored to regional needs across Canada, GF aims to foster innovation, competitiveness, and market development in the agriculture and agrifood sector (Alberta Government, n.d.).

According to the Alberta Government (n.d.), GF2 programs were designed in response to stakeholder desire for programs focusing on research and innovation, business management, market development, biosecurity, traceability, livestock welfare, food safety, environmental stewardship, energy efficiency, and water management. To this list, Alberta stakeholders have added adaptability and industry capacity (Alberta Government, n.d.). The majority of Programs are funded by both federal and provincial or territorial governments, and carried out at the provincial and territorial level.

**Business Risk Management (BRM)** programs, such as AgriInsurance, AgriInvest, AgriStability, and AgriRecovery, form a suite that is part of the GF package (Alberta Government, 2013). The federal government operates three additional programs: AgriInnovation, AgriCompetitiveness, and AgriMarketing (Alberta Government, n.d.). BRM programs support producers in managing both normal risk in the course of business activities, such as minor and moderate economic shortfalls, as well as catastrophic challenges, such as extreme flooding, disease outbreaks, and market crashes.

## 3. Results

The analysis that follows examines six major themes: climate and weather, producer hardships, challenges to the *status quo*, proposals to improve the production environment, research and evidence, and stakeholder engagement. Within each theme, we uncover patterns and distinctions across three different aspects: **producer group** types (i.e., ‘umbrella’ agriculture and agrifood producers, livestock producers, and forage production), the **scale** at which each group works (i.e., national or provincial), and the **‘document class’**, or, intended audience for the documents examined (i.e., public audience, government officials, or the organizational membership). Illustrative excerpts are found in Appendix A, with references to these documents found in Appendix B.

### 3.1. Climate and weather

While our study was predominately interested in climate change as it affects producers, we were mindful that not all documents would refer overtly to this challenge, and that shorter term weather has presented a perennial management challenge for producers. Given this, we examined the documents for references to climate change and related aspects, for catastrophic weather events and other weather patterns.

### 3.1.1. Climate

The documents analysed were reviewed for commentary and discussion about the climate and of climate change impacts, including increased pests and greenhouse gas (GHG) emissions. Several interesting distinctions arose.

**National** organizations proved to be more likely than **provincial** groups to discuss climate issues for the years 2010 through 2015, just as **umbrella agriculture** groups and documents created for a **government audience** discussed climate more than their counterparts (Table 5). This was determined through the groups' use of terms like 'climate', 'climate change adaptation' or 'mitigation', 'greenhouse gas', and increased pests, rather than 'weather', 'storm', 'flood', 'drought', or other terms suggesting short-term issues.

Occasions where climate was discussed were most often associated with challenges to the *status quo* in the production environment, and relating to livestock (Table 6). The emphasis on livestock is more likely a relic of our coding bias than a reflection that producer organizations consider livestock to be more threatened than cropping. When **national** organizations and **umbrella agriculture** groups discussed climate, they placed an emphasis on challenging the existing production environment over simply reporting on hardships or government actions. **Umbrella agriculture** groups targeted changes to legislation, government programs, and what they saw as a lack of research. Existing programs and strategies were critiqued for not adequately considering or preparing for climate impacts; the National Farmers Union demonstrated a tendency to be particularly scathing in this regard. Documents for a **public audience** and for the **government** tended to challenge the available programs and legislation, and at times applauded government actions.

Documents for a **public audience** reported on producer hardships, especially financial hardships (Table 6). Climate change was seen as a challenge to producers on the ground, but one that must be dealt with at a global level through negotiations and international agreements. Extreme weather events were also mentioned in the context of climate change, and their effects on producers and the implications for agricultural policy.

Proposals and comments regarding planning were prevalent in climate discussions (Table 7). **Umbrella agriculture** groups were more likely than other producer groups to propose action to ease the challenge of farming under climate change, some popular ones being research and innovation, and government programs and strategies. **National** organizations discuss climate as a risk factor to agriculture and agri-food producers, and describe their interest in and desire to be involved as stakeholders in national and international discussions and planning on climate issues. Indeed, often they assert leadership. They proposed solutions to government, such as increased research and collaboration, strategic policies, technological developments and programs. Documents for **government audiences** discussed climate at a policy level, acknowledging the future challenges and the need to participate in international discussion and efforts. **They** attempted to remind the government of producers' contributions to climate efforts through environmental efficiencies and the environmental contributions of agriculture such as carbon sequestration and erosion control, as well as at times applauding government action on specific programs and policies. Documents for **public audiences** advocated for further research and technological developments aimed at efficiency, as well as government programs and to a lesser extent legislation and farm-level practices.

More specific aspects of the discussion around climate were GHG emissions and adaptation and mitigation measures (Table 8). Documents for **organizational members** directly referred to climate less

often than other document classes, and demonstrated similarities to **livestock** organizations. When discussing climate issues, documents for **organizational members** and **livestock** groups demonstrated a strong preference for discussing GHGs. Across all documents reductions in GHG emissions were largely discussed as a means to measure and rationalize the environmental efficiency measures by the agriculture sector and to generally support the relatively benign nature of agricultural activities. However, in several cases (in particular those documents created for organizational members), GHGs were discussed as a consideration in farm-level management (e.g., endorsing the reduction of emissions from ranching operations). **National** organizations referred often specifically to GHGs, while their **provincial** counterparts only rarely discussed GHG emissions.

**National** groups also referred to climate change adaptation and mitigation, while **provincial** organizations never did (Table 8). Documents intended for **government audiences**, and to a slightly lesser extent those written for the **public**, were most likely to refer to climate change adaptation and mitigation, while documents created for **organizational members** never did. Similarly to GHGs, adaptation and mitigation were associated with research into emission reduction technologies and environmental efficiency, as well as actions and approaches such as managed grazing (e.g., rotational grazing). Climate change adaptation was additionally associated with addressing risk, and technological fixes, such as crop varieties to suit new conditions, were often suggested.

### 3.1.2. Weather events

We considered reports of extreme weather events and disasters to be separate from general discussion regarding weather patterns. Weather events were identified by terms such as ‘flood’, ‘drought’, ‘hail’, and ‘disaster’. Weather events proved to be a critical topic in our study.

Because weather is a mostly localized phenomenon, the narratives presented generally applied to distinct regions or provinces (Table 9). When reported by **national** groups, this provincial subject was then broadcasted to a national audience, expanding awareness of regional hardships across all of Canada. However, there is a notable difference in the types of weather events discussed at the **national** and **provincial** levels of organizations: our **national** organizations were slightly more likely to discuss floods than droughts, whereas **provincial** organizations were considerably more likely to discuss drought. This may be due to the fact that the province selected, Alberta, is prone to dry conditions, while the **national** organizations cover all provinces and a wider array of local conditions. **Provincial** organizations did emphasize one extreme precipitation event more than their **national** counterparts: hail. Alberta is prone to severe hailstorms during the hottest months, beginning in June (660 News staff, 2014).

In general, weather events were primarily discussed in the context of the challenges they present to producers (Table 9). In terms of livestock, these challenges related most often to the availability of feedstock and the wellbeing of animals, as well as environmental conditions and lastly producers’ own finances as they are hit by weather events (in that order of importance across all documents). **Umbrella agriculture** groups were much more likely than **livestock** or **forage** organizations to speak generally without reference to specific effects of events. When they did specify, these organizations reported more often on effects to feedstock and crop supplies than on financial effects or impacts to livestock. When challenging the *status quo* in the context of extreme weather events, groups representing **livestock producers** tended to focus their attention on unacceptable market conditions and unfavourable government programs.

As extreme weather events are often catastrophic in nature, stories and suggestions of remedies were often associated with reports of disasters (Table 10). **National** organizations frequently proposed remedial action following extreme weather events in the form of programs and insurance, sometimes brand new, and sometimes existing, such as AgriRecovery. Other proposals, especially from the Canadian Forage and Grasslands Association and the Alberta Federation of Agriculture, revolved around technological innovations, in particular improved crop varieties, to adapt to new and/or erratic climatic conditions. In a few cases, and more often by **provincial** organizations and documents created for **organizational members**, documents report on practical, adaptive practices instituted by producers to mitigate the impacts of extreme weather events.

Across the board and in stark contrast to discussions about general weather patterns (3.1.3. Weather patterns, below) and climatic effects (3.1.1. Climate, above), the documents we analyzed, including in particular **provincial** and **umbrella agriculture** groups, endorsed government actions when reporting on weather events, especially when emergency measures and support programs are put in place.

### 3.1.3. Weather patterns

Weather patterns were regularly discussed, as identified using terms such as ‘weather’, ‘rain’, ‘moisture’, ‘wet’, and ‘dry’ (Table 11). **Provincial** organizations discussed weather with much more frequency than **national** organizations. This is likely due to the fact that an overwhelming number of references to weather by **provincial** organizations were made by Alberta Beef Producers. Weather conditions and extreme weather events were the most important topics across all three producer groups, but most evidently so for **forage** organizations. **Forage** groups especially emphasized weather patterns, such as dry conditions, rainfall, and hail.

Weather has posed a challenge for agricultural and agrifood producers for as long as humans have been practicing agriculture, and producer organizations frequently report on the hardships and provide criticisms of the *status quo* (Table 11). Documents for **organizations’ membership** discussed weather patterns more often than the other document classes. Both these documents and **provincial** organizations placed discussion about weather patterns in the context of producer hardships (particular emphasis here) and challenges to the existing production environment. **Livestock** organizations’ and **forage** groups’ reports about weather also relied heavily on accounts of producer hardship. Both shared numerous reports of producers struggling with damaged environments and negatively affected feedstock due to adverse weather conditions.

**Umbrella agriculture** groups, that is, those groups that represent all agriculture and agrifood producers in a jurisdiction, challenge the existing production environment when discussing weather patterns. They complain about the effect that poor or erratic weather has on local and global markets, and the vulnerability of crops and forage to weather. There are several instances when **these groups** criticize programs for making it more difficult for producers to face weather-related challenges.

**Livestock** and **forage** groups, as well as documents created for **organizational members** made proposals to remedy challenging circumstances wrought by weather, such as government programs and insurance like Business Risk Management programs and production insurance, and in the case of **forage** groups, by adopting farm-level practices (Table 12). The documents for **organizational membership** introduced programs designed to address normal weather risk, especially precipitation in the form of hail and rainfall. **Provincial** organizations propose action and changes to programs, such as improved data. **Livestock** groups also proposed improvements to data, for example through better weather monitoring stations. Documents created for **organizations’ members** frequently suggested increased research

capacity and technological developments. **Forage producers'** groups reported on technological developments such as crop varieties. While **provincial** organizations sparsely mentioned actions at the farm level that producers may undertake to counteract unfavourable weather, **livestock** organizations often suggested farm-level practices, such as stockpiling forage to prepare for lean months. **Forage** groups discussed grassland management and risk management as important considerations when facing challenging weather patterns.

## 3.2 Hardships and recommendations

### 3.2.1 Producer hardships

Producers face many challenges and experience many hardships as they work to grow crops and forage and raise livestock for their communities and the markets. Across all documents, references to hardship are most often general in nature rather than specific explanations, and frequently are associated with weather. When producer organizations presented general reports of their members' hardships in the face of challenges, they commonly referred to difficult weather conditions and livestock management, at times mentioning issues such as unfavourable market conditions and challenging policies, programs, and legislation. Documents for **public audiences** discussed producer hardships most often, sometimes challenging current programs and making suggestions about programs and insurance, and frequently endorsing government action. They also discussed managing risk and the difficulties producers face in this regard.

Financial hardships represented one of the main, specific hardships faced by producers (Table 13). Documents created for the **public** and those directed at the **government** emphasized financial struggles—it is worth noting, however, that documents created for the **government** reported on producer hardships less often than other document classes. Documents for the **public** and **government** reflected on financial hardships in association with climate and weather events, criticisms of the *status quo*, and proposals for programs and other government actions to address identified challenges. Documents coded from **national** organizations or from **umbrella agriculture** organizations also discussed financial hardships more than their counterparts. In the case of **national** groups, this is likely due to organizational proximity to policy-makers. Organizations representing **umbrella agriculture** have a wide-reaching membership base of all agriculture and agrifood producers, which likewise places them in a strong position with policymakers. These two categories of organization, **national** and **umbrella agriculture**—which overlap in the cases of Canadian Federation of Agriculture and National Farmers Union—are more often involved in lobbying efforts than their counterparts; financial concerns are quantifiable and easy to incorporate into strategy and proposals to government officials. Financial hardships were most often associated with the weather and livestock management.

Other important specific hardships were those related to feedstock, animals, and the environment (Table 14). With the previously noted exception of financial hardships, **national** and **provincial** organizations presented similar patterns in reporting producer hardships. Documents directed at the **public** and groups representing **livestock** and **forage producers** discussed hardships relating to feedstock more than their counterparts. One particularly interesting story is HayEast, a 2012 grassroots program organized to provide feedstock to drought-stricken producers in Ontario and Quebec (Alberta Federation of Agriculture, 2012). This program was a reincarnation of a similar grassroots program, HayWest, which saw drought-stricken producers in Western Canada receiving donated feed and cash by their eastern peers (Alberta Federation of Agriculture, 2012).

**Livestock** organizations, in addition to their emphasis on difficulties relating to feedstock, complained of hardships for livestock. Hardships affecting animals and feed were linked primarily with weather conditions, as well as proposals to address the situations through programs and technological developments.

**Livestock** groups were less likely than **forage** groups, however, to discuss challenging environments. Environmental challenges were exclusively related to sporadic and unpredictable weather patterns, such as unusual moisture or dryness. Unlike **livestock** and **umbrella agriculture** organizations, **forage** groups did not present solutions, or discuss research and development efforts. On the theme of environmental hardships, documents created for **organizational membership** discussed how climate and weather conditions had a negative impact on land quality and herd and crop health. These documents proposed solutions such as farm-level practices and government programs to support farmers as they faced these challenges.

### 3.2.2 Challenges of the production environment

The documents surveyed referenced many challenges to the existing production environments, that is, complaints of unfavourable conditions and critiques of the *status quo* maintained by the government and industry.

The most common criticisms were about government programs and private insurance offerings ([Error! eference source not found.](#)). **National** organizations challenged the *status quo* more often than **provincial** organizations. Of these challenges, the most common cause for both **national** and **provincial** groups was existing programs, however within this category the two groups still differed. **National** organizations, as well as **umbrella agriculture** groups and documents created for a **public audience**, demonstrated that they were more likely to have a general complaint about an existing program, without identifying any non-functioning aspects or gaps in the program. It is worth noting that despite the lack of specific complaints, documents for **public audiences** were the most likely to identify that programs were faulty due to disparities in execution, usually between provinces. This was a particular complaint of the federal Growing Forward suite of programs, which are carried out at a provincial level. Generic complaints were frequently voiced about programs that affect livestock and livestock producers, as well as weather events and particular programs such as the Business Risk Management programs.

**Provincial** organizations tended to focus on identifying programs as non-functioning or pointing out gaps in programs. These programs applied most often to issues around livestock management (a pattern that may be due to our coding bias for livestock without coding other forms of agriculture production), but also to weather and risk management. **Livestock** organizations also revealed a preference for criticizing non-functioning programs, and in particular emphasized the AgriStability, AgriInvest, and Business Risk Management programs, and crop and other insurance products offered by both private organizations and government agencies. When challenging programs, **livestock** organizations often discussed producer hardships and made suggestions for improvements at the same time. Documents created for the **organizational members** complained about flawed programs as well. These documents reported producer hardships and proposed government programs and farm-level practices. Interestingly, financial hardships were common when documents for **organizations' membership** challenged the existing production environment, while they remained uncommon in other discussion by this document class.

Throughout the documents we analyzed, there were other explicit challenges to the *status quo* as well, specifically criticizing research and technological development capacity, current market situations, and

legislation (Table 16). **Umbrella agriculture** organizations challenged the lack of research investment, while **forage** groups reported on this deficit less often. It is notable that **livestock** organizations rarely expressed a need for further research or improved technologies.

Documents for **public audiences** emphasized challenging markets, and were more likely to do so than the other document classes. **Provincial, national,** and **umbrella agriculture** organizations similarly criticized market conditions. The global economy and local markets were associated with climate and weather-related events that created unfavourable conditions. Documents intended for the **public** recognized that government programs can ameliorate market conditions, and therefore endorsed government actions and provided suggestions for improvements to programs. Documents intended for **government audiences** were much more likely to criticize legislation than other types of documents, including challenging budget decisions (budgets are presented as bills) and other statutes and bills (e.g., Bill C-18 regarding plant breeding and farmers rights with their seeds).

### 3.2.3 Proposals for programs

The documents in our study often proposed solutions to identified problems and challenging situations. At times these were specific, and in other cases they were more general.

Proposals about programs were the most common across all documents (Table 17), with the exception of **forage** organizations. Programs mentioned in proposals across the board were those in under the Growing Forward funding package, including AgriStability and other AgriSuite programs, Business Risk Management programs, and government and private insurance products. Programs were discussed in the context of producer hardships, climate and weather, overall production risk, and technological innovations.

**National** and **provincial** organizations frequently forwarded program proposals in hopes government would remedy the identified problems. Like **provincial** organizations, **national** groups most often proposed changes to existing programs. However, **national** organizations also frequently suggested new programs and encouraged not changing existing programs, while **provincial** groups seldom advocated these actions. **Livestock** groups and documents created for **organizations' membership** most often proposed programs, both generally and, like **national** and **provincial** groups, with particular suggestions for changes to existing programs. Documents for a **public audience** demonstrated a similar preference for changes to existing programs, as well as proposing new programs. At times the documents for **public audiences** praised the government for beginning to address an identified problem, and urged officials to continue their good work.

Research and technological innovations featured prominently in the documents we analyzed (Table 18). In addition to their emphasis on programs, **national** groups also encouraged improved or new technological developments, especially in relation to climate, feed for livestock (e.g., crop varieties), and grassland management. Technological innovations were matched by suggestions for further research on important topics and issues at hand, such as climate and weather, livestock, and risk, and at times direct suggestions to adjust legislation. **Livestock** and **forage** groups also emphasized research and technological developments.

Documents created for a **public audience** proposed research more than other document classes—although documents intended for the **government** and for the **organizations' members** also discussed research. Documents written for the **public** tended to urge the government to invest in research to address challenges and improve environmental and economic efficiency of the industry.



**Forage** groups placed a stronger emphasis on technological innovations than other producer groups, just as documents intended for **organization membership** were more likely than other document classes to propose technological advances. For both, technological developments were proposed around challenging and unpredictable weather conditions, and livestock and grassland management. They most often referred to hardy crop varieties and other production efficiency measures, as well as minimizing GHG emissions. Preference toward government programs, and especially a preference for technological development, suggests an inclination toward “techo-fixes” as opposed to behavioural change in the face of new environmental challenges.

Suggestions to adopt adaptive practices at the farm level were of particular interest to us in the course of this study, and they were evident in several contexts (Table 19). After program proposals, **provincial** organizations demonstrated a secondary emphasis on proposing farm-level practices to address identified challenges. Examples of these practices range from vaguely advocating the adoption of best practices for air, land, and water use, to stockpiling forage in preparation for lean years, to adopting rotational grazing strategies. **Umbrella agriculture** and **forage** organizations, as well as documents intended for **organizational memberships**, also emphasized farm-level practices. Farm-level practices were suggested to address challenges and to manage risks associated with normal business activities, livestock, and weather.

### 3.3. Experience and evidence

Our study identified two different types of evidence used in the documents analyzed: farmer knowledge gained through producers’ experience working the land, and conventional evidence, for example garnered through physical or social science research. Additionally, there were references throughout the documents to research undertaken by government bodies, industry groups, and universities. While knowledge, evidence, and research were not prominent topics, they were important points for discussion.

#### 3.3.1. Farmer knowledge

Farmer knowledge represents the knowledge and information imparted by agriculture and agrifood producers, obtained through their lived experiences and expertise (Table 20). This research is particularly interested in knowing if and how farmer knowledge is used as evidence in policy contexts.

While **provincial** organizations did not emphasize evidence and research in their documents, they were much more likely than **national** organizations to present farmer knowledge. This is interesting because it emphasizes the proximity of **provincial** organizations to their members, compared to **national** groups. Documents intended for the **public** were similarly likely to discuss farmer knowledge. In the case of **provincial** organizations, their preference for farmer knowledge emphasizes their “eye-to-eye” position with producers. Considering documents created for the **public**, emphasizing farmer knowledge demonstrates the role of such documents in broadcasting farmers’ voices to a larger audience. For these two coding categories, farmer knowledge was presented in the context of producers’ opinions and input into important policy and program decision-making, and to a lesser extent to provide evidence of producer hardships. Some important policy and program issues included insurance product structures and premiums, global conventions on climate change, and Business Risk Management and Growing Forward program revisions.

Within the **umbrella agriculture** organizations (i.e., those representing all agriculture and agrifood producers) knowledge and evidence were emphasized over research projects, which is considerably

different from the patterns found in **livestock** and **forage** groups or documents created for **government** or **organization member** audiences. Farmer knowledge was presented in the context of producers' opinions and input to important policy and program decision-making, and to a lesser extent to provide evidence of producer hardships. Some important policy and program issues included insurance product structures and premiums, global conventions on climate change, and Business Risk Management and Growing Forward program revisions. Documents created for the **government** (i.e., lobby registrations and policy documents) seldom discussed farmer knowledge, but when they did it was about instances of farmer consultation in government planning. Documents for the **organizations' members** also emphasized farmer consultation and farmer opinions in risk and business management, and program planning.

### 3.3.2 Science

Overall, evidence coming from non-specific sources or garnered through the physical sciences was the most prevalent, with extremely rare references to social science approaches to evidence (Table 21). Social science approaches amounted to surveys or focus groups to gain feedback, while other evidence sources used approaches like numerical data and chemical analysis to assess emissions, watershed and soil functions, and much more. Across all organization types and document classes, there were many references to using 'science' and 'scientific' approaches, without any further elaboration, suggesting that the organizations in our study prize physical science and its methods over social science approaches. Evidence was often used to support claims of environmentally efficient practices and to measure greenhouse gas emissions. Documents created for the **public** in particular advocated that science-based triggers and models be incorporated into programs for more consistency and effectiveness.

**National** organizations, all three types of producer groups, and documents created for the **public** and **organizations' own membership** were likely to report conventional sources of evidence. Of all the organization types and document classes, only **livestock** and **forage** groups evenly reported conventional evidence and farmer knowledge; none of the coded categories demonstrated a preference for conventional evidence.

### 3.3.3. Industry and government research

Research represented an important topic of discussion throughout the documents analyzed, even when not distinctly identified as science or social science. Generally speaking, government research efforts were sparsely reported across all documents, but they served to assess the extent of environmental disasters such as flood and drought, and improving the industry's efficiency and environmental footprint (Table 21).

**National** organizations and documents created for **government** audiences or **organizations' members**, in contrast to **provincial** organizations and documents for the **public**, prominently discussed research projects, in particular research coming from government and trade organizations. While **provincial** groups were less likely than their **national** counterparts to refer to ongoing research projects, they demonstrated a preference for trade research. Reports of trade and government research appeared alongside a wide variety of other subjects, including proposals for projects and technology, concerns about producer hardship and management practices, and climate- and weather-related topics.

**Livestock** and **forage** organizations were more likely to discuss research projects than farmer knowledge or science. Like **provincial** groups, **livestock** organizations showed a slight preference for trade research

efforts over government research, and reported on research that strove to improve industry efficiency and environmental food, as well as to investigate the effectiveness of current programs and practices. **Forage** organizations reported research projects from each sector fairly evenly, and research was primarily in realm of crop varieties to tackle climate and weather conditions, as well as grassland management and carbon sequestration.

Documents for **organizations' membership** appeared to report on research activities as a means of informing the organizations' membership of activities taking place at the policy and decision-making level, often reporting current reviews or innovation efforts. These especially related to assessing the value of programs, as well as developing crop varieties and technological "fixes" and assessing the environmental footprint of agricultural activities or the extent of the impact from catastrophes.

#### 3.3.4. Stakeholder engagement

Stakeholder engagement was used to describe reports of organizations' and producers' involvement and consultation in decision-making, as well as instances where involvement was advocated but as yet unrealized. While marginal compared to the frequency of other topics, the examination below of stakeholder engagement reveals some interesting distinctions (Table 23)

**National** organizations discussed stakeholder engagement much less often than the **provincial** groups in this study. However, when they did, they focussed on the organization's own involvement in consultative and advisory activities. In contrast, **provincial** organizations were more likely than their **national** counterparts to discuss producer involvement in government processes and decision-making. Organizational involvement was related to issues such as ongoing programs, and short-term issues like weather and catastrophic events, and producer hardships. Producer involvement was related to proposals and programs, as well as climate topics.

**Livestock** organizations stood apart from groups representing **umbrella agriculture** and **forage producers** in their emphasis on the organizations' involvement in government decision-making and activities, minimizing discussion of producers' engagement as stakeholders. Organizations were most often reported by **livestock** groups to be engaged in matters relating to weather and weather events, proposals, and current programs. They express a desire to be consulted and engaged in the planning and research process.

Documents for **organizations' membership** only seldom mentioned stakeholder engagement in their publications, but when they did, they emphasized organization involvement far more than producer involvement. This was a departure from their counterparts, which more evenly discussed the two stakeholder groups. Documents for **organizations' members** reported on the organizations' contributions and activities toward program and policy development and assessment. Often this amounted to lobbying efforts.

#### 3.4. Synthesis

Qualitative research is often difficult to synthesize, particularly in the absence of a comprehensive sample that enables metrics. In the following sections, the above themes are aggregated using categories, language, and frameworks from the literature, as appropriate to illustrate patterns within the data.

**Climate and weather are being discussed by very different organizations to very different audiences.**

Across eight tables in Appendix A, illustrative excerpts about climate and weather were divided into thematic categories based on organizational scale, commodity and document types. It is clear from a

summary of where each theme is discussed that there are dichotomies at play (Table 2). Climate is a topic discussed largely by **national** organizations in documents facing **government** and the **public**; Weather is discussed largely by **Alberta** organizations in documents facing organizational **members**. **Umbrella** organizations cover both climate and weather, but those covering specific commodities – **livestock** or **forage** – were more likely to discuss weather. The exception was the Canadian Cattlemen’s Association, a **livestock** organization, which discussed GHG reduction with their **members**. **Forage** organizations were exclusively concerned with weather patterns.

*Table 2 Synthesis of climate and weather-related content across organization scale, commodity type and intended audience.*

Theme	Organization Scale	Producer Group	Intended Audience
Climate (Table 5)	National	Umbrella	Government
Climate-related hardships and challenges (Table 6)	National	Umbrella	Government Public
Climate proposals and planning (Table 7)	National	Umbrella	Government Public
GHG emissions and climate adaptation and mitigation (Table 8)	National	Livestock	Government Members Public
Weather event-related hardships and challenges (Table 9)	National Alberta	Umbrella Livestock	
Weather event-related proposals and endorsements (Table 10)	National Alberta	Umbrella	Members
Weather pattern-related hardships and challenges (Table 11)	Alberta	Umbrella Livestock Forage	Members
Weather pattern-related proposals (Table 12)	Alberta	Livestock Forage	Members

**Beyond the above differences in how climate and weather were discussed – by and with whom – a summary of the specific phenomena mentioned and their implications reveals differences too.**

Language associated with climate is more system-focussed and long-term, consistent with the concept, largely illustrative of trends that need to be planned for rather than discrete events (

Table 3). The on-farm implications were also discussed differently, at least in quantity. The number of challenges evoked by weather events or patterns is very long and detailed compared to climate, the former sometimes even described as “anomalies” or “extreme” (e.g. Alberta Beef Producers, 2015 July 22). The weather discussions were the only ones that suggested a risk of exiting the industry as a result.

Table 3 Language associated with climate and weather, both describing the phenomena and on-farm implications.

	<b>Climate</b>	<b>Weather</b>
<b>Phenomena</b>	Variability Volatility Altered hydrological cycles Flooding Saturated soils Increased diseases and pests Summer droughts	Wet/dry conditions Hail Frost Drought Flood Wind/tornadoes Midwinter thaw Late rain
<b>On-farm implications and hardships</b> (including Table 13 and Table 14)	Seeded acres Yields Crop rotations Flooded infrastructure Water supply	Crop failure Feed shortages Water shortages Increased culling Infrastructure damage Late or no planting/harvesting/baling Fluctuating price of cattle, feed, rental pasture Exiting farming industry/loss of family farms Competition with struggling wildlife for feed Transporting water and feed Muddy conditions for stock Delayed haying reducing quality Fires/drought driving wildlife into crops

Unlike in relation to climate and weather, no patterns emerged in relation to hardships and recommendations across scale, group or audience. **The specific recommendations or requests being made by producer organizations, however, differed whether they were talking about climate or weather effects.** Those discussing climate were more likely to suggest regulation and those discussing weather were more interested in insurance and relief payments as well as buffering via increased feed storage (Table 4). For instance, hail insurance is described as an alternative way to “protect their crops from Mother Nature’s white combine” (Alberta Federation of Agriculture, 2010 May 31), when it is not a protection but a compensation and risk management initiative. Notably, the National Farmers Union (2013 January 28) argued that if drought trends continue then crop, hay and pasture insurance were going to be less and less helpful to farmers. It is also notable that despite advocating emissions reductions, the Canadian Federation of Agriculture (2011b) argued to have agriculture excluded from any cap-and-trade system. Those discussing climate and weather both endorsed technological fixes like new breeds and varieties and better modelling. On-farm management changes were also mentioned by those discussing climate and weather alike. Both **recommended rotational grazing or grazing management** but beyond that they differed, with climate discourse focussing on BMPs like shelterbelts to create more resilient farm landscapes.

Table 4 Recommendations by category of adaptation (across Table 7 to Table 10, Table 12 to Table 19)

Category of adaptation	Climate	Weather
Regulation	<p>Enforceable water policy</p> <p>Reduce GHG emissions, often without including farming in any cap-and-trading programme, despite high emissions from livestock</p>	
Technological fixes	<p>Crop varietal development</p> <p>Raising feed-efficient fast-finishing cattle (less waste and resource use)</p> <p>Sequestration technology</p> <p>Improvements to Holos GHG calculator</p>	<p>More resilient annual and perennial forage varieties</p> <p>New hydrology models, e.g. to predict flood and drought, inform insurance</p> <p>Better weather data (e.g. hail mapping)</p> <p>Remote sensing for damage assessment</p>
Insurance		<p>AgriRecovery with scientific ‘triggers’ and responses</p> <p>Improved forage insurance</p> <p>Spot loss hail damage insurance</p> <p>Insuring stubble fields against spring flooding</p> <p>Disaster fund for consecutive losses</p> <p>Quick-response disaster funds</p> <p>Defer taxes on destocking sales</p> <p>Improved relief/insurance rates</p> <p>Livestock production insurance</p>
Infrastructure	<p>e.g. trains rather than trucks for grain to reduce GHG (freight rates, car rights)</p>	<p>Infrastructure maintenance funding for better culverts, etc.</p> <p>More weather stations</p>
Buffering		<p>Increased feed storage/forage carryover</p> <p>Seed storage and reuse</p>
On-farm management	<p>Managed grazing</p> <p>BMPs that reduce GHGs</p> <p>Well-maintained grasslands</p> <p>Small-scale production</p> <p>Shelterbelts (reverse program loss)</p>	<p>Controlled grazing/stock rotation</p> <p>Use drought-affected forage as pasture (use feed and animal impact improves water infiltration later)</p> <p>Use drought affected crops as feed</p>

**There is little evidence of farmers being considered experts, compared for instance, with scientists in universities and government organizations.** Throughout this work we were listening for the farmer voice, and how it was used in discourse compared to conventional scientific evidence or industry-focused research. Unlike climate and weather discourses, these did not differ in predictable ways across scale, group or audience. More telling is the way that each is discussed. Farmer knowledge was most often conveyed as farmer desires in relation to support rather than a form of expert knowledge. The language says it all: “producer feedback/input/consultation on programs”, “producers have been asking”, “grassroots delegates”, “wishes/want” (Table 20). An exception comes from two mentions from the Forage sector: “priority areas [in forage research] have been established based on producer input of gaps” (Alberta Beef Producers, 2015 May 25), and, “Grass farmers have a story to tell. A lot of the land we have forages on are best suited for forages and don’t work for canola, wheat or other crops. Forage/cattle are a green business” (Alberta Forage Industry Network, 2012). By way of contrast, science is used as a source of *neutral* evidence and authority: “science-based decisions”, “sound science”, “scientific approach” (Table 21). While government organizations like Agriculture and Agri-Food Canada (AAFC) were often included in those doing ‘science’, they were also included in the more industry-oriented research that was often described as happening in partnership with the farming organizations themselves and associated groups like the Beef Cattle Research Council. The farming groups also frequently described to Members the work that they did advocating for farmers at various government stakeholder processes (Table 23).

## 4. Summary

### Climate and weather

Within each of the three lines of analysis, national groups, umbrella agriculture groups, and documents created for government audiences were the most likely to discuss climate issues directly. National groups and umbrella agriculture organizations are the most high-level and broadly representative agriculture and agrifood producer groups in Canada, and the ones ‘closer’ to government in terms of policy engagement – their counterparts demonstrate closer links directly with producer members, as is shown in the rest of this analysis (e.g., section 3.2 and 3.5.1). Climate issues were closely related to criticisms of the *status quo* in agricultural productions, demonstrating a conviction that the industry’s current production environment is not sufficient in the face of a changing climate and the challenges it brings. When producers’ hardships are reported, the underlying attitude throughout the collection of documents analysed here, is that this highly localized problem must be dealt with at a global scale, through negotiations and international agreements. Environmental efficiency efforts adopted by producers at the local farm scale are also seen as important, and must be supported by government programs and based in scientific evidence (with an overt preference for natural sciences over social science), supplemented by farmers’ knowledge and experiences.

On the ground, so to speak, the marked preference demonstrated by documents created for organizations’ members and livestock groups, for discussing greenhouse gas emissions suggests that these types of publications are reluctant to refer directly to climate change. This may have to do with the audiences. Producer members reading newsletters published by their representative organization are perhaps more concerned with the short-term consequences of weather and extreme events like



storms and drought. In the case of livestock groups, they represent an industry maligned in the media for methane and other emissions.

Weather presented a major topic of discussion, as it has enormous effects on all aspects of agriculture and agrifood production, from animal and environmental wellbeing, to supplies like feedstock, to producers' livelihoods. These aspects are inextricable from one another, and therefore from the weather, a fact that was evident throughout the documents in our analysis. Extreme weather events were reported in the context of the challenges they posed for producers, especially to animals and feedstock, and by extension to producers' financial wellbeing.

Inclement and unusual weather was more often reported by organizations "closer" to producers, that is, provincial groups and livestock and forage organizations. Documents created for organizational members likewise were more likely to report on weather patterns. Unfavourable weather patterns represented an ongoing challenge for producers, one that they believed the government was not sufficiently engaged in relieving.

### Hardships and recommendations

The documents proposed solutions that government may adopt to remedy or relieve the pressures to producers wrought by unusual weather and extreme weather events, often opting for government program and insurance "fixes" (Fazey et al., 2012). Government actions following disasters like droughts and floods were often praised by the organizations, hinting at the reliance of the agriculture and agrifood industry on government supports and current lack of adaptive capacity, as well as the government listening to producers' needs. In contrast, when discussing ongoing weather patterns, government actions were criticized by some organizations for making it more difficult for producers.

Reports of producers hardships came from all document classes, but those created for public audience were more likely than their counterparts to include them. Given the intended audience, Canadian public at large, it is possible that the producer community is attempting to encourage sympathy and support from their fellow citizens for the struggles they face in growing and raising food for Canadians. Financial hardships were a particularly hot topic across all documents; this represents a struggle that is both recognizable and quantifiable, and therefore most likely to strike a chord with readers and decision-makers. Organizations that have strong relations with policy-makers, namely national and umbrella agriculture groups, favoured reports of financial hardships.

Reports of other hardships, affecting livestock and available feed following extreme weather events and challenging weather conditions, were also used and at times featured. For example, HayEast 2012, a grassroots program in which western producers provided feedstock and cash influxes to their drought-stricken peers in eastern Canada, was heavily reported, and praised as an example of the nation-wide agricultural community support.

These challenges most often targeted government programs, including program gaps and non-functioning programs. Other challenges were less frequent, but important to note. Existing research and technological development capacity loomed on the minds of producer organizations. Given the importance of these capacities in addressing production challenges and in assessing the success of solutions, they represent a major thread throughout the documents. Challenges to the current market conditions, battered by problematic weather and global trade issues, were also common, as well as a few pointed criticisms of legislation and international agreements, such as those related to the budget

and plant breeders' rights. Producer organizations protested the unreasonable burden associated with producing and raising the food necessary to feed Canadians and satisfy global markets.

Proposals concerning government programs and insurance were the most frequent of all proposals coded in our study. The documents we analyzed often advocated altering existing programs (or, in contrast, suggest not making changes to programs), suggesting a comfort with foundational government support of the agriculture industry. Proposals for research and technological development were also popular in the documents we analyzed, most especially with documents created for public and government audiences. These documents were in contrast with those created for organizations' members, which were more likely to suggest investment into technological innovations. The intended audience plays a large role in this distinction: organization members are practitioner specialists, who understand the value and complicated nature of technological innovations for agriculture and agrifood production, while non-specialists are more accustomed to conversations about 'research' in general.

Finally, proposals to adopt farm-level adaptive practices were particularly interesting. Provincial organizations referred to adaptive farm-level practices more than national groups, supporting our observation that these types of organizations are 'closer' to the producers. Adoption of farm-level practices was also common among documents created for organizations' members, reinforcing the idea that this discussion topic is carried 'close' to the producers themselves.

## Evidence

Similarly to encouraging the adoption of farm-level adaptive practices, provincial organizations also frequently referred to farmers as a source of their advocacy. This again supports their position as proximate to the producers. Documents created for the public served to broadcast producers' voices to the broader population of Canada by emphasizing farmer experience. In contrast, the other document classes discussed farmer knowledge in the context of input into program planning and normal business process management (e.g., risk management). This information provided vital evidence for government decision-making, and demonstrates producers' efforts to engage with agricultural policy-making processes. Nonetheless, most of the content crediting farmers this was framed more in terms of desires than knowledge.

The distinction between national and provincial groups as being, respectively, closer to government and closer to the producers, appears again in reports of stakeholder engagement. National organizations were proved more likely to discuss the organizations' own involvement with government, while provincial organizations reported more often on producers' direct consultation and advisory engagements with government. Within the stakeholder engagement discussion, an interesting pattern appeared, in contrast with other findings. Direct producer engagement was often on the topic of climate change, while organization engagement was more likely to be on the topic of weather. This contradicts findings that emerged elsewhere, which suggested that national organizations – the same ones most likely to discuss organization engagement – were most likely to discuss climate change, while provincial organizations – favouring reports of producer engagement – were more likely to report on weather. The distinction here is important in that it demonstrates the complex nature of our data. Our three scales of analysis (regional scale, producer type, and document class) painted interesting patterns across the data, but a pattern emerging at one scale did not preclude a contradictory pattern at another scale, affecting the same document.

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## Appendix A: Supporting quotes

This appendix houses a series of tables containing indicative quotes to support each of the Results sections. All tables provide excerpts, with significant components bolded, along three aspects: organizational scale (headings in red), producer group (headings in green), and intended audience (headings in purple). Not all elements of each aspect are represented, but none are excluded unless there were no suitable examples. As such, an absence in these tables can be interpreted as an absence of discourse on that topic from that particular category.

Table 5 Excerpts about climate, supporting section 3.1.1. Climate on page 11.

<b>NATIONAL</b>
<p>“In order of <b>highest inherent risk the issues are: climate variability, greenhouse gas emissions</b>, species at risk, and manure management.” (Canadian Cattlemen’s Association, 2010b)</p> <p>“[Expressing intent to lobby regarding the] Federal Budget, in respect to <b>increased public research funding for climate change adaptation &amp; crop varietal development</b>, promoting investment in future risk mitigation [...]” (Canadian Federation of Agriculture, 2015)</p>
<b>UMBRELLA AGRICULTURE</b>
<p>“Transportation requirements are <b>linked to many other factors including [...] climate change [...]</b>.Climate change is altering global hydrological cycles. This will have an <b>impact on seeded acres, yields and crop rotations</b>. It will also have an impact on railroad capacity because <b>infrastructure will increasingly be affected by flooding and saturated soils</b>.” (National Farmers Union, 2014 June 20)</p>
<b>GOVERNMENT AUDIENCES</b>
<p>“The <b>reality of the impact of climate change</b> does not seem to be factored in. [...] [The NFU recommends] that the Government of Prince Edward Island direct the development of an enforceable water policy, which truly protects PEI water for the current and future generations (based on true science <b>and the present and future reality of climate change</b>).” (National Farmers Union, 2014 March 6)</p>

Table 6 Excerpts about climate-related hardships and challenges to the status quo in the context of climate issues, supporting section 3.1.1. Climate on page 11.

## NATIONAL

“Current policies include a **lack of careful planning for the impacts of climate change.**” (National Farmers Union, 2012 September 10)

“[...] **neither climate change impacts nor mitigation** is specifically mentioned as an environmental concern in the available GF2 [Growing Forward 2] documents, yet it is certainly an **increasingly serious problem for agriculture that needs to be addressed through effective policy measures.**” (National Farmers Union, 2013 February)

## UMBRELLA AGRICULTURE

“To execute the project, AFA will team up with private consultants experienced in agriculture risk and with world-renowned hydrologic and **climate change scientists.**” (Alberta Federation of Agriculture, 2015 March 19)

“And still other **risks are due to the increasing volatility of our weather and changes in disease pressures and pest populations as a result of climate change,** which will only worsen as a result of Canada’s and other countries’ **unwillingness to reduce emissions and take effective action** to reduce the amount of carbon dioxide in the atmosphere.” (National Farmers Union, 2012)

“Many proposals for the mitigation of climate change being discussed inside the talks will not reduce our consumption of fossil fuels or lower carbon dioxide levels. These **so-called solutions are merely attempts of governments to capitalize on new markets created by the business of climate change.**” (National Farmers Union, 2010 December 8)

## PUBLIC AUDIENCES

“At present we have a **complex and often disjointed network of agriculture and food related policies that do not adequately foster long-term sustainability** for the agri-food sector. The world's population is expected to double by 2050, **climate change will affect production patterns, and farmers are facing unprecedented economic challenges** - all of these issues have major implications for the future of our food supply and **need to be addressed.**” (Canadian Federation of Agriculture, 2010b)

“**CFA was disappointed** to see that certain barriers to intergenerational transfers were not addressed and **commitment for investment in crop varietal development research and climate change adaptation was not made.**” (Canadian Federation of Agriculture, 2015 April 21).

“[I]f climate change means that farmers will face more variable weather, and summer droughts become more common, long term averages will decline, meaning **crop insurance payments are going to be less and less helpful;** similarly, if climate change leads to more variable weather, in terms of more rainfall from events like thunderstorms, using a limited number of rainfall collection stations will make **hay and pasture insurance less and less helpful to farmers [...].**” (National Farmers Union, 2013 January 28)

## GOVERNMENT AUDIENCES

“In spite of the move towards centralized decision-making, **neither climate change impacts nor mitigation is specifically mentioned** as an environmental concern in the available GF2 documents, yet it is certainly an increasingly serious problem for agriculture that **needs to be addressed through effective policy measures.**” (National Farmers Union, 2013 February)

“The federal government’s top priority is the oil industry. **Policies and programs that would reduce fossil fuel use and mitigate climate change are being ended and rolled back.** Thus, Canada is contributing to, rather than reducing climate change” (National Farmers Union, 2012 May)

Table 7 Excerpts about proposals and planning relating to climate, supporting section 3.1.1. Climate on page 11.

### NATIONAL

“The National Farmers Union recommends that the federal and provincial governments **make climate change mitigation and adaptation a top priority.**” (National Farmers Union, 2012)

“The Canadian Cattlemen’s Association (CCA) is looking forward to **learning more about the global climate change agreement** reached in Paris on Saturday [...]” (Canadian Cattlemen’s Association, 2015 December 14)

### UMBRELLA AGRICULTURE

“The government is allotting \$58 million to projects to improve understanding of climate change impacts. As agriculture is one of the sectors most affected by climate change, the **CFA recommends much of this money be invested into exploring the impacts on the sector and production patterns.**” (Canadian Federation of Agriculture, 2011)

“Develop **strategies to counteract detrimental effects of the agrifood system on climate change and reduce vulnerability to such change.**” (National Farmers Union, 2013 February)

### PUBLIC AUDIENCES

“The **Canadian Federation of Agriculture (CFA) is encouraged** by the National Round Table on the Environment and Economy’s (NRTEE) analysis of **Canada’s potential climate change policy direction** and the prospect of harmonization with the United States. The report, “Parallel Paths: Canada-U.S. Climate Policy Choices,” examines the creation of a regulated cap-and-trade system that would cover all energy and process emissions. In particular, the report highlights that **agriculture should not be included as a regulated and capped industry.**” (Canadian Federation of Agriculture, 2011b)

“It is astounding that in an **era of global climate change**, governments allow railways to undertake policies that force grain onto the road to be trucked when rail is far more fuel efficient. We are experiencing unprecedented amounts of rain on the prairies and **climate change models suggest that global warming will create these wide climatic swings.** Meanwhile, the government is allowing policies that create even more greenhouse gases. They could begin to **address climate change by standing up for farmers’ producer car rights, and fair and equitable rail freight rates.**” (National Farmers Union, 2010 July 6)

### GOVERNMENT AUDIENCES

“[Expressing intent to lobby for an] Agricultural safety net policy or program to **ensure that Canadian farmers are adequately protected from unforeseen, uncontrollable falls in income due to weather, insects, disease, trade action, market failure or international trade distorting subsidies.**” (Canadian Federation of Agriculture, 2013)

“The **CFIA and Health Canada should deny the application** by Monsanto Canada Inc. and Forage Genetics International LLC for approval of alfalfa genetically modified for reduced lignin because: [...] **reduced lignin has implications for disease and insect pest pressures [...].**” (National Farmers Union, 2013 July 17)

Table 8 Excerpts about greenhouse gas emissions and climate change adaptation and mitigation measures, supporting section 3.1.1. Climate on page 11.

<p><b>NATIONAL</b></p> <p>“Canadian beef cattle producers are already among the most efficient in the world. They are utilizing <b>tools like managed grazing and raising genetically feed-efficient cattle</b> to maintain that trend. Canadian scientists <b>calculate that greenhouse gas (GHG) emissions/kg live animal weight decreased</b> from 16.4 to 10.4 kg of CO2 equivalent from 1981 to 2006.” (Canadian Cattlemen’s Association, 2011 April 1)</p> <p>“These technological advancements have their dark side as well – agriculture is one of the <b>largest emitters of the greenhouse gases that drive climate change.</b>” (National Farmers Union, 2014 April 30)</p> <p>“Canada’s <b>withdrawal from the Kyoto protocol, the cancellation of numerous programs that mitigate climate change and reduce levels of greenhouse gas emissions, the closure of climate-change-oriented research institutions</b> and the strong support for expanding the oil and gas sectors are all at cross purposes to the AgriRecovery program.” (National Farmers Union, 2012)</p> <p>“The CFA encourages the federal government to work with their provincial partners in focusing climate change research on two key themes: <b>Emission reduction and sequestration techniques and technology, [and] Adaptation.</b>” (Canadian Cattlemen’s Association, 2015b)</p>
<p><b>LIVESTOCK</b></p> <p>“Improvements in feed efficiency and shortening the required number of days needed to finish fed cattle <b>reduces the amount of methane and manure produced and resources used per pound of beef.</b>” (Canadian Cattlemen’s Association, 2012)</p> <p>“In Canada, <b>cattle production contributes only four to five per cent of man-made GHGs</b>, while well-maintained grasslands <b>sequester as much atmospheric carbon as old-growth forests.</b>” (Canadian Cattlemen’s Association, 2013 September 27)</p>
<p><b>PUBLIC AUDIENCES</b></p> <p>“Environmental concerns are paramount to securing a sustainable future for agriculture. <b>Water use planning initiatives, habitat conservation strategies, access to innovative crop protection materials and climate change mitigation strategies must be designed with farmer consultation.</b>” (Canadian Federation of Agriculture, 2010c)</p> <p>“But the majority of the world’s peasants, including those right here in Quebec, know that truly sustainable agriculture lies in small-scale production, one that is having a <b>massive impact on mitigating climate change</b> and preserving biodiversity while feeding communities.” (National Farmers Union, 2014 April 9)</p>
<p><b>GOVERNMENT AUDIENCES</b></p> <p>“In order to mitigate the risks associated with this [increased weather] volatility, CFA recommends the <b>Canadian government increase funding directed towards agricultural climate change adaptation and risk mitigation efforts.</b>” (Canadian Federation of Agriculture, 2014)</p> <p>“In an effort to ensure there is awareness of the need for agriculture to be on the international climate change agenda, a <b>number of global initiatives have formed in an effort to contribute to climate change mitigation and adaption</b>, along with developing research and policy on the issues.” (Canadian Federation of Agriculture, n.d.)</p>
<p><b>ORGANIZATIONS’ MEMBERS</b></p> <p>“In early November, the <b>CCA attended a Global Conference on Sustainable Beef</b>, organized by the World Wildlife Fund US (WWF), and sponsored by Cargill, JBS, McDonald’s, Walmart, and Intervet Schering-Plough. The <b>purpose was ‘to achieve greater clarity and a deeper alignment around key environmental issues, e.g., greenhouse gas, biodiversity, energy, community, land management, labor &amp; business, nutrition &amp; safety, and water.’</b>” (Canadian Cattlemen’s Association, 2010)</p> <p>“The end products [of program proposals submitted to Growing Forward] are technology transfers to producers in three ways; <b>demonstrations of BMPs that reduce GHGs; economic analysis of adopting BMPs; and improvements</b></p>



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to the **Holos greenhouse gas calculator** [Alberta Government supported online GHG tracker].” (Canadian Cattlemen’s Association, 2010)

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Table 9 Excerpts about producer hardships and criticisms of status quo in the context of extreme weather events, supporting section 3.1.2. Weather events on page 12.

## NATIONAL

“Cattle producers could face a tough time this fall if millions of acres of farmland go unseeded. The **widespread wet conditions on the prairies** may result in feed shortages, particularly with respect to feed grains.” (Canadian Cattlemen’s Association, 2010)

“Farmers suffer crop losses each year from natural hazards such as **hail, drought, flood, frost, wind**, wildlife, etc.” (National Farmers Union, 2010 January 26)

“Recovery from the 2011 flood [in Manitoba] continues, and the subsequent **impact on producers** lingers. Manitoba Beef Producers (MBP) is seeking timely processing of outstanding [insurance] claims to reduce the **strain on producers**. [...] Manitoba Agriculture estimates that more than 400,000 acres of land were still flooded in the spring of 2012. This pasture and hayland was not productive this year leading to forage and pasture **shortfalls which resulted in many producers exiting the industry**. [...] Some producers, especially in southeastern Manitoba, faced drought in 2012. Producers having to source feed and in some areas water supplies have also been a concern.” (Canadian Cattlemen’s Association, 2012)

“Contributing to **decline of the [global sheep] flock** are persistent dry conditions, the rising cost of wool production relative to returns, and continued enterprise shifts away from sheep and into cropping.” (Canadian Sheep Federation, 2010)

## PROVINCIAL

“Between July 2014 and 2015, mature sheep in Alberta decreased by 0.9%, which is lower than the national average for the same period (1.9%). However, **the drought may have unknown effects on culling rates**.” (Alberta Lamb Producers, 2015)

“WSGA president Bill Hanson recently stated, ‘With the increase in wildlife numbers ranchers also experience an increase in problems.’ For example, ranchers in the Peace River area, **hit hard by drought last summer**, are now experiencing **significant losses of expensive forage to both deer and elk**.” (Western Stock Growers Association, 2011)

## UMBRELLA AGRICULTURE

“Since 2007, **governments have responded sixteen times through the AgriRecovery Framework to disaster events related to water issues** on the Prairies (excessive moisture, flooding or drought) at a cost of \$885 million (federal and provincial shares).” (Alberta Federation of Agriculture, 2015 March 17)

“As farming is extremely weather-dependant, **farmers bear a heavy burden when extremes such as flooding, drought, tornadoes, early frosts, midwinter thaws, etc.** cause losses of land, livestock, equipment, infrastructure, or prevent us from planting or harvesting at all.” (National Farmers Union, 2012 May)

## LIVESTOCK PRODUCERS

“The 2014 flooding and excess moisture conditions led to **some challenges with the new forage programs being identified**.” (Canadian Cattlemen’s Association, 2011)

“Canadian beef producers experienced several unavoidable multi-year disasters from 2002 through 2009, including BSE-related costs and restrictions, **flooding, drought**, a global recession and at least three major swings in the Canadian dollar exchange rate.” (Canadian Cattlemen’s Association, 2011 April 1)

Table 10 Excerpts about proposals and endorsements in the context of extreme weather events, supporting section 3.1.2. Weather events on page 12.

## NATIONAL

“[Suggesting adaptive grazing practice] **Proper rotation** allows for increased grass utilization, even during times of drought.” (Canadian Cattlemen’s Association, 2012)

“Canadian beef producers experienced several unavoidable multi-year disasters from 2002 through 2009, including [...] flooding [and] drought [...]. **Neither AgriStability nor Canadian Agricultural Income Stabilization (CAIS) were designed** to help agricultural producers through multi-year disasters. This is where AgriRecovery could help but the recent experience with the program is a **varied implementation** depending on the year, province and election cycle. AgriRecovery **needs clearer science based triggers** and defined responses when those triggers are met. An improved forage insurance program would also **take pressure off** AgriRecovery following weather events that affect hay and forage production.” (Canadian Cattlemen’s Association, 2011 April 1)

“CFGAs recognize a **need for more support in the development of annual and perennial forage varieties** with improved establishment, increased yield, improved adaptation to stressors such as drought, flooding and saline soils [...]. Key characteristics of the commonly used grasses are winter hardiness and reasonable tolerance to drought.” (Canadian Forage and Grasslands Association, 2014 October)

“[NFU requests that:] **spot loss hail damage [insurance]** to crops be instituted in each province [...], **coverage be provided** to allow farmers the option of insuring stubble fields against the possibility of spring flooding [...], and] a **disaster fund be established** to compensate farmers suffering a series of consecutive crop losses.” (National Farmers Union, 2010 January 26)

“**Disaster relief funds [following flooding in Manitoba] need to flow quickly** so that individual farmers and Rural Municipalities are not left wondering when they will be able to pay their bills.” (National Farmers Union, 2014 July 3)

## PROVINCIAL

“**New [hydrology] simulation models designed to predict the effects of overland flooding and drought** could pave the way to new and better insurance coverage for agricultural producers. Member of Parliament for Wetaskiwin Blaine Calkins, on behalf of Agriculture Minister Gerry Ritz, today announced \$1.3 million in federal support to the Alberta Federation of Agriculture to develop the new model.” (Alberta Federation of Agriculture, 2015 March 17)

“With spring seeding nearly finished across most of Alberta and another hail season on the horizon, Alberta’s provincial crop insurer [Alberta Financial Services Corporation (AFSC)] is **giving farmers an alternative way to protect their crops from Mother Nature’s white combine**. [...] ‘We’re making Straight Hail insurance available online this spring so farmers have more immediate access to hail protection around the clock. They can still purchase hail coverage through AFSC offices and hail agents, but **online access is something producers have been asking for,**’ says Lorelei Hulston, Provincial Insurance Manager with Agriculture Financial Services Corporation [...]” (AFSC via Alberta Federation of Agriculture, 2010 May 31)

## UMBRELLA AGRICULTURE

“Wild Rose Agricultural Producers [now Alberta Federation of Agriculture] **welcomed the joint federal-provincial announcement** that farmers inundated by excessive moisture in Alberta, Saskatchewan and Manitoba this year will be able to seek relief through the AgriRecovery program. [...] Livestock producers who have incurred additional costs as a result of excess moisture, such as renting pasture or transporting feed or livestock, are also included in the AgriRecovery initiative.” (Wild Rose Agricultural Producers via Alberta Federation of Agriculture, 2011 August 5)

“This **investment [into flood risk modelling] by the Government of Canada represents an innovative approach to assess all water-related risk facing agricultural producers**. The project will showcase a model that can underpin practical insurance solutions for agriculture that have application to any rural area in Canada. The **benefits will also be readily transferrable to urban settings** where water-related events can have devastating consequences.” (Alberta Federation of Agriculture, 2015 March 17)

**“Years of under-funding infrastructure maintenance** mean that a lot of roads, culverts, and bridges will need to be rebuilt soon, even in areas that have not experienced devastating floods. Let’s **make sure that RMs can rebuild to one-in-500-year storm standards**. With global CO2 level at 400 parts per million and still rising, **the past is no longer a guide to the future when it comes to the water cycle.**” (National Farmers Union, 2014 July 13)

#### ORGANIZATIONS’ MEMBERS

“Many producers have mitigated this risk [the lack of livestock production insurance] with **carryover or stockpiled forage as a form of self-insurance** which has allowed herds to be fed during droughts.” (Alberta Beef Producers, 2014)

“The Board held a long discussion about the very dry conditions affecting many parts of the province. There was talk about **producers being able to use insured forage land for pasture, both to salvage some feed from the forage and to put the stand into better condition to respond to rains** that hopefully will come. There also was discussion about using insured grain crops for pasture or feed. Producers who are forced to sell cattle due to the drought would **benefit from being able to defer the taxes on these sales.**” (Alberta Beef Producers, 2015 June 8)

Table 11 Excerpts about hardships and challenges to the status quo in the context of weather patterns, supporting section 3.1.3. Weather patterns on page 13.

## PROVINCIAL

“The **abnormal weather on the Prairies, leaving many areas saturated with water**, will no doubt be one of the major stories of 2010.” (Alberta Beef Producers, 2010)

“**Hopefully, better weather conditions next year** and continued good prices will see us start to rebuild the cow herd. [...] While **late rainfall across a broad swath of Western Canada alleviated the situation somewhat**, the precipitation came too late for many crops but benefitted pastures and later seeded cereals. [...] With **dry conditions in many parts of the province**, and other areas where precipitation arrived too late, feed supplies may be tight for some producers this winter.” (Alberta Beef Producers, 2015)

## UMBRELLA AGRICULTURE

“Alberta farmers have a lot on their minds as they wait for the snow to melt and prepare to seed their crops this spring. ‘Uncertainty around the **high grain prices we’re seeing and Mother Nature are the two biggest issues** facing producers this year,’ says provincial crop market analyst Charlie Pearson.” (Alberta Federation of Agriculture, 2011 April 4)

“[I]f climate change means that **farmers will face more variable weather**, and summer droughts become more common, long term averages will decline, meaning crop insurance payments are going to be less and less helpful; similarly, if climate change leads to more variable weather, in terms of **more rainfall from events like thunderstorms, using a limited number of rainfall collection stations will make hay and pasture insurance less and less helpful to farmers**; farmers would like **quicker response times and faster processing of payments** by Agricorp [...]. These considerations, point to the **need to maintain strong disaster relief programs and to make sure they are available to farmers when they face unusual weather conditions.**” (National Farmers Union, 2013 January 28)

## LIVESTOCK PRODUCERS

“Unseeded crops as well as increased mud conditions in feed yards, and in some cases pastures, **have created and will continue to create incredible challenges** for some producers in the short term.” (Alberta Beef Producers, 2010)

“With **dry conditions in many parts of the province, and other areas where precipitation arrived too late, feed supplies may be tight** for some producers this winter.” (Alberta Beef Producers, 2015)

## FORAGE PRODUCERS

“A **dry fall in 2011 and a dry start to the spring of 2012 left many concerned** about the 2012 forage year. Rains were slow to start in early spring but once they came they were more frequent and were generally in greater amount than we are used to. **Humidity was higher this year** than many of us have ever seen. [...] At Fort Vermilion **producers have had to sell animals, or find salvage grain crops** to make up for feed shortfalls over the last two years.” (Alberta Forage Industry Network, 2012)

“The lower forage council, BCFC, President Doug Hatfield, said most of the **producers were fighting with a year of too many rains at the wrong time**, and yields and quality both were down.” (Canadian Forage and Grassland Association, 2013 October)

## ORGANIZATION MEMBERS

“[...] producers have faced a **roller coaster ride of price swings and weather conditions** this year. This summer has brought generally better weather conditions across the province after a terrible spring. [...] There has been some optimism in the industry but still many challenges remaining [*sic*]. The wet spring in the south this year was **catastrophic for many feedyards**, some of which haven’t yet recovered.” (Alberta Beef Producers, 2011)

“With the **ongoing weather problems this year**, the North American **beef herd continues to shrink.**” (Canadian Cattlemen’s Association, 2012)

Table 12 Excerpts about proposals to address weather patterns, by organization scales, producer groups, and document classes, supporting section 3.1.3. Weather patterns on page 13.

### PROVINCIAL

“Dr. Daniel Itnefisu, ARD [Alberta Agriculture and Rural Development], discussed the Alberta agro-meteorological network and current weather conditions. **There is a need for quality weather data.** They [ARD] use Alberta historical weather data and current weather data for projections.” (Alberta Beef Producers, 2011)

“[Reporting input provided to Alberta Financial Services Corporation on existing Business Risk Management programs] Some **improvements for present programs** included an increase [*sic*] **number of weather stations** in sensitive areas.” (Alberta Beef Producers, 2015 January 22)

### LIVESTOCK PRODUCERS

“The weather in Alberta during this period was truly a natural disaster. **ABP and the CCC worked to have a disaster program implemented.** [...] On behalf of close to 27,000 cattle producers, ABP requested the Alberta Minister of Agriculture contact the Federal Minister of Agriculture to **initiate the Agirecovery process.**” (Alberta Beef Producers, 2010)

“At times like these [extremely dry weather conditions], **measuring ration costs against the fluctuating price of cattle** becomes an increasingly **important factor in the management decisions of producers.**” (Alberta Beef Producers, 2012)

### FORAGE PRODUCERS

“The dry conditions through August have **stopped growth on pastures not managed by controlled grazing.** ‘It is very notable by fall forage growth which pastures were or were not using managed grazing,’ said Carla Amonson, manager of the West Central Forage Association in Evansburg. That is true elsewhere also.” (Alberta Forage Industry Network, 2013)

“The **dollars available to mitigate drought or flood impacts could be much larger through insurance programs compared to disaster relief** provided by government on an ad hoc basis. [...] The goal is to offer **producers insurance or other risk management options that better address their needs** in the event of forage and pasture shortfalls due to weather conditions.” (Canadian Forage and Grassland Association, 2012 June)

### ORGANIZATIONS’ MEMBERS

“Perhaps have **weather triggers at township level.** If crops are hailed are [*sic*] looking at having field strips and **hail mapping as a pilot project** as part of the crop inspection process. Will be looking at **remote sensing for individual farm crop damage assessment.**” (Alberta Beef Producers, 2015 June 10)

Table 13 Excerpts about financial hardships, supporting section 3.2.1 Producer hardships on page 14.

## NATIONAL

“Ontario beef producers faced a number of production challenges in 2012, with the historic drought which plagued the majority of the province the most significant challenge. Cow-calf producers were faced with a shortage and **rising price of hay** which placed increased pressure on winter feed supplies. Meanwhile, feedlot producers continued to **struggle with the high price of replacement cattle and feed costs.**” (Canadian Cattlemen’s Association, 2012)

“The drought in this region over the last couple of years has left pastures in very poor shape and, as a result, **producers have had to buy feed—and in some cases, are still buying feed—or have had to rent pasture,**’ Toews said. ‘The program announced today helps to **address those extra costs.**” (Canadian Cattlemen’s Association, 2010 May 31)

“[...] we urge you to consider the following points as you begin to look at options to provide disaster relief to Ontario farmers: [...] there is little hay available to purchase in the province, and the **price is skyrocketing;** with more beef farmers deciding to cull animals and cut down on their breeding stock, the **price farmers receive for cattle is dropping [...]**” (National Farmers Union, 2012 August 3)

## UMBRELLA AGRICULTURE

“Between the **loss of income and the high cost of feed for livestock,** the drought will lead to the **loss of family farms in Ontario.**” (National Farmers Union, 2012 August 3)

“The National Farmers Union in Ontario acknowledges the provincial government’s support for matching funding for transportation of hay through the Hay East program and funding through AgriRecovery to **cover the costs of transporting feed to breeding stock or to move breeding stock to feed.**” (National Farmers Union, 2013 February 5)

## PUBLIC AUDIENCES

“An **improved forage insurance program** would also take pressure off AgriRecovery following weather events that affect hay and forage production. **CCA would like to see the disaster response aspect of AgriRecovery improved and to see forage insurance improved across Canada.** The principles behind AgriStability are good but it has still proven **slow to respond to producers’ needs and difficult to predict.** At times it has lead to **market distortions because payments are received after market conditions have changed.**” (Canadian Cattlemen’s Association, 2011 April 1)

“Livestock producers **can also apply for financial assistance to help with the costs of feeding their breeding herd and transporting feed or livestock.** Specific program details will be provided by each province.” (Canadian Cattlemen’s Association, 2011 August 4)

## GOVERNMENT AUDIENCES

“WSGA president Bill Hanson recently stated, ‘With the increase in wildlife numbers ranchers also experience an increase in problems.’ For example, ranchers in the Peace River area, hit hard by drought last summer, are now experiencing **significant losses of expensive forage to both deer and elk.** [...] Any forage that has not been protected by hauling into a wildlife proof central area is now being eaten by local wildlife. Even a low-cost livestock operation can experience **as much as \$.70 per animal per day in extra costs** by having to haul feed every day to livestock.” (Western Stock Growers Association, 2011 January 31)

Table 14 Excerpts about hardships related to feedstock, animals, and the environment, supporting section 3.2.1 Producer hardships on page 14.

## NATIONAL

“Flooded lots also experienced a significant increase in the conversion rate caused by **heightened animal stress and the work required to move to feed and water.**” (Canadian Cattlemen’s Association, 2011)

“‘After a cold, wet spring with late seeding, many **farmers face drowned pastures and hayfields that are too muddy to harvest,**’ said NFU Board member, Beverly Stow of Carmen, MB. ‘Without timely help, this situation may lead cow-calf producers to sell off, **further reducing regional cattle herds.**’” (National Farmers Union, 2014 July 3)

“[...] we urge you to consider the following points as you begin to look at options to provide disaster relief to Ontario farmers: [...] **pastures have been dried up** since early July in much of the province; beef, sheep, dairy, goat and other livestock farmers have been feeding their **limited winter supply of hay** since early July [...]” (National Farmers Union, 2012 August 3)

## PROVINCIAL

“Unseeded crops as well as **increased mud conditions in feed yards, and in some cases pastures,** have created and will continue to create incredible challenges for some producers in the short term.” (Alberta Beef Producers, 2010)

“Farm and livestock groups from Alberta and Saskatchewan will be working in partnership with [...] organizers of the 2002 Hay West assistance campaign, and countless local farmers to **move much-needed hay to Ontario and parts of Quebec.** [...] ‘In 2002, eastern farmers shipped us thousands of bales of hay **to help save our herds from starvation,**’ Hall said. ‘It’s 10 years later and the time has come for us to give back to the people who helped us when we needed it. [...]’ HayEast 2012 organizers will look for assistance from those involved in Hay West’s successful efforts. [...] ‘The online forums are already filled with farmers and their urban cousins lining up to help with second cuts or stored hay – or even cash,’ he [Lynn Jacobson, president of Wild Rose Agricultural Producers (now AFA)] said. ‘We have long memories here in Alberta and **we’re proud to be able to help.**’” (Alberta Federation of Agriculture, 2012)

## LIVESTOCK PRODUCERS

“Many [producers in Manitoba flood zones] were forced to evacuate and the conditions **prevented them from seeding and harvesting crops needed to feed their animals** through the fall and winter.” (Alberta Beef Producers, 2011)

“After dealing with the BSE case in the winter, the spring brought drought conditions to wide areas of the province. Dry conditions greatly affected pastures and **forced many producers to continue feeding cows that normally would have been on grass.**” (Alberta Beef Producers, 2015)

## FORAGE PRODUCERS

“At Fort Vermilion producers have had to sell animals, or find salvage grain crops to **make up for feed shortfalls over the last two years.**” (Alberta Forage Industry Network, 2012)

“Rains in June and July impacted hay quality in much of the province as **producers struggled with moisture while cutting and baling,** or delayed haying to avoid these rains and harvested hay at a more mature stage.” (Canadian Forage and Grassland Association, 2013 October)

## PUBLIC AUDIENCES

“Norm Hall, president of the Agricultural Producers Association of Saskatchewan [...] remembers what it was like for Saskatchewan producers to be on the receiving end of hay assistance. ‘In 2002, **eastern farmers shipped us thousands of bales of hay to help save our herds from starvation,**’ Hall said. ‘It’s 10 years later and the time has come for us to **give back to the people who helped us when we needed it.**’” (Alberta Federation of Agriculture, 2012)

“The Canada-Manitoba Feed and Transportation Assistance Initiative will help **livestock producers who are facing**



**feed shortages this winter** as a result of the extremely wet conditions in the province this year.” (Canadian Cattlemen’s Association, 2010 December 17)

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#### ORGANIZATIONS’ MEMBERS

“The dry conditions are also affecting feed for deer. There is **no mechanism in place on a forage crop to collect on damages done by wildlife**. Fires and dry conditions are sending herds of deer into producer crops. This problem will only be amplified during the upcoming winter. This is an **anomaly brought on by extreme weather** and this may be something that we need to figure out how to document.” (Alberta Beef Producers, 2015 July 22)

“The **abnormal weather on the prairies leaving many areas saturated with water** will no doubt be one of the major stories of 2010. **Unseeded crops as well as increased mud conditions in feed yards and in some cases pastures** created incredible challenges for some producers.” (Canadian Cattlemen’s Association, 2010)

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Table 15 Excerpts with general and specific criticisms of government programs, supporting section 3.2.2 Challenges of the production environment on page 15.

## NATIONAL

“The trigger point for AgriStability has been lowered so the program does not kick in until margins drop below 70 per cent of historical margins. The coverage level of payouts has also been changed to 70 per cent regardless of the level of payout. These **changes will mean AgriStability is activated less often and will see lower payouts** in those events [successful claims to AgriStability].” (Canadian Cattlemen’s Association, 2012)

“The 2014 flooding and excess moisture conditions led to some **challenges with the new forage programs** being identified. These relate to **coverage levels and costs for producers** in areas affected by repeated events, such as for coarse hay [...]” (Canadian Cattlemen’s Association, 2014)

“The dollars available to mitigate drought or flood impacts **could be much larger through insurance programs** compared to disaster relief **provided by government on an ad hoc basis.**” (Canadian Forage and Grassland Association, 2012)

“Growing Forward 2 (GF2) is a powerful policy instrument that will increase the market power of global agribusiness corporations, help the few largest-scale farms expand, and **increasingly marginalize the majority small and medium-sized family farms**. GF2 **conflates the interests of Canada with the interests of global capital** and instead of providing counter-balance to the concentrated economic power of large corporations, it augments it. [...] In spite of the move towards centralized decision-making, neither climate change impacts nor mitigation is specifically mentioned as an environmental concern in the available GF2 documents, yet it is certainly **an increasingly serious problem for agriculture** that needs to be addressed through effective policy measures.” (National Farmers Union, 2013 February)

“Farmers are flooded out, and the province turns to Ottawa to assist with an **inadequate \$30 per acre** [...]” (National Farmers Union, 2010 October 26)

## PROVINCIAL

“The program [Business Risk Management] does provide insurance coverage to large beef producers but **not to smaller producers because of economies of scale.**” (Alberta Beef Producers, 2011)

“**Work remains to improve** the business risk management portion of GF2 **to be able to manage future disaster events.**” (Alberta Beef Producers, 2013)

“The **lack of livestock production insurance** has led [producers] to focus primarily on forage and pasture insurance possibilities to **protect cow/calf production risks.**” (Alberta Beef Producers, 2014)

“The situation with the drought is **complicated by the weaknesses in the current forage and pasture insurance programs.**” (Alberta Beef Producers, 2015 June 8)

## UMBRELLA AGRICULTURE

“The three major farm organizations representing farmers in Manitoba, Saskatchewan, and Alberta have **identified three priority areas for agriculture in the upcoming federal election** and are reaching out to political candidates of all parties to remind them that the rural vote can make a difference. The **key issues affecting Prairie producers include the Growing Forward Agricultural Policy Framework (Business Risk Management programs, environmental sustainability and research and innovation)**, rail transportation and Canadian Grain Commission services.” (Alberta Federation of Agriculture, 2011, April 11)

“Our [NFU’s] study shows that **Growing Forward 2’s five-year ‘Strategic Initiatives’ policy framework will intensify globalization and increase corporate control of agriculture while leaving the interests of farmers and consumers – and health of the land itself – on the sidelines,**’ said Colleen Ross, NFU Vice President (Policy). ‘It takes Canada further down the same road we’ve travelled for decades, and further away from achieving food sovereignty.’” (National Farmers Union, 2013 February 25)

“With a wild swing of its budgetary axe, the federal government is about to hack down the 111 year-old Prairie Shelterbelt Program. This shortsighted [*sic*] destructive move will have **negative consequences for prairie farmers,**

**their crops and livestock, soils, wildlife and the climate.** ‘Talk about a **scorched earth policy!** To end the Prairie Shelterbelt Program makes no sense at all when we are dealing with increasing climate volatility and erratic weather patterns. The Shelterbelt Program has not only provided trees to buffer the effects of wind, heat and snowfall, but has created unique knowledge and expertise about how to plan, maintain and nurture trees on the prairies for the benefit of farmers and the broader public. To end this program now to save a bit of money is **worse than short-sighted,**’ said Ed Sagan, NFU Saskatchewan Regional Coordinator.” (National Farmers Union, 2012 April 16)

### LIVESTOCK PRODUCERS

“The Council was concerned about the **lack of weather stations** in the south that left some producers experiencing a killing frost on their corn **before the temperature decreased to the level that triggered payment.**” (Alberta Beef Producers, 2011)

“The [Safety-net] sub-committee believes the **grain sector has had greater benefit** from the insurance of the actual product produced than the less pronounced value of forage that is needed to feed the herd.” (Alberta Beef Producers, 2014)

“[...] 85 percent of beef producers do not have AgriStability because of **limited sector adaptability.**” (Alberta Beef Producers, 2015)

### PUBLIC AUDIENCES

“How does your party plan on **reversing the increasing trend of individual provincial business risk management programs that pit producers from different provinces against each other based on provincial budgets?**” (Canadian Cattlemen’s Association, 2011b)

“The CCA has been working to make sure the GF2 suite of programs works for cattle producers and provides a level playing field between sectors and across the country.” (Canadian Cattlemen’s Association, 2012 September 14)

“‘Mr. Ritz says everything is on the table,’ explains Chiasson [former NFU New Brunswick president]. ‘This is good. It gives us an opportunity to help shape the programs, because so far **Growing Forward has not worked for Atlantic Canada.** We lost our hog industry and much of our beef. It **doesn’t work for the small farmers and in Atlantic Canada we are largely small farmers.**’” (National Farmers Union, 2012 September 10)

### ORGANIZATIONS’ MEMBERS

“[...] the recent experience with that program [AgriRecovery] is a **varied implementation depending on the year, province and election cycle.**” (Canadian Cattlemen’s Association, 2011 April 1)

“[Critique of government’s choice to invest in BRM over research and development] The majority of BRM payments are capitalized, which **in turn increases land values.**” (Alberta Beef Producers, 2011)

“There are also problems with AgriStability enrolment **affecting cash advances** and any account reviews.” (Alberta Beef Producers, 2015 January 22)

Table 16 Excerpts about challenges to the research and technological development capacity, current market conditions, and legislation, supporting section 3.2.2 Challenges of the production environment on page 15.

## NATIONAL

“**Canadian consumers have become much more dependent on imported food** that may rapidly become more expensive, or even unavailable, due to erratic weather events, transportation problems or political upheaval elsewhere.” (National Farmers Union, 2014 April 30)

“While **promoting increased dependence on fossil fuels and thus exacerbating climate change**, the proposed EPA would actually **promote food insecurity** because the economic model of specialization, industrialization and selling large volumes at low prices into the world market makes for a brittle food system that is highly vulnerable to the previously mentioned volatility, and could **easily collapse or spiral into crisis** as a result of small changes in prices or from increasingly frequent catastrophic weather events.” (National Farmers Union, 2012 May 17)

## PROVINCIAL

“Countries that invest in research and development have **increased their market share** while those that invest in business risk management programs lose market share.” (Alberta Beef Producers, 2011)

“Last winter, a combination of an unusually high basis, high feed costs caused by the U.S. drought, and lack of strong packer competition for cattle created **some of the worst cattle feeding margins in memory**.” (Alberta Beef Producers, 2013)

“The **economy and the Canadian dollar are also wild cards**, says Pearson. ‘We live in an insecure world. We don’t know what lies ahead.’” (Alberta Federation of Agriculture, 2011 April 4)

## UMBRELLA AGRICULTURE

“The **Federal Government’s policies for deregulation, free trade, corporate mergers, and agriculture**, have had drastic results for farmers. Farmers have been watching the prices they receive slide downward, while watching the prices they pay for fuel and many other inputs rise. **Farmers have been left with no market power, disruptive global markets, and inadequate government support programs**.” (National Farmers Union, 2010 May 6)

“As a society that makes 'science-based' decisions, we **should have access to a variety of scientific studies when we make regulatory decisions**. These studies **should come from and receive funding from different sources** -- not just from the private sector which can afford to fund research.” (National Farmers Union, 2014 January 28)

“The CFIA and Health Canada should deny the application by Monsanto Canada Inc. and Forage Genetics International LLC for approval of alfalfa genetically modified for reduced lignin because: [...] reduced lignin alfalfa **has not been properly assessed by independent experts**; [...] there are many **unknown potential issues** with RNAi [RNA interference] process [...].” (National Farmers Union, 2013 July 17)

## PUBLIC AUDIENCES

“[Agriculture groups] are asking the federal government to work with farm organizations in developing business risk management programs which would **give farmers the time and financial stability necessary to adjust their operations to increased market volatility**.” (Alberta Federation of Agriculture, 2011 April 15)

“The **tight supplies and high prices are driven by a number of factors** – a growing world economy, growth in Asia, and a U.S. ethanol policy that now accounts for 40 per cent of American corn production. ‘That **pushes up prices on feed barley and other grains**,’ explains Pearson. He adds **world inventories of high quality wheat are low** due to flooding in Australia and Canada, and drought in Russia and Ukraine.” (Alberta Federation of Agriculture, 2011 April 4)

““**\$50 per animal from the government is welcome** but what we really need from the government isn’t money, it is courage and action. **We need the government to rebalance market power** so that family farms and ranches can be viable and profitable. Rather than \$50 per animal from taxpayers, we need our \$500 from the markets [...].” (National Farmers Union, 2010 June 3)

## GOVERNMENT AUDIENCES

“The ‘farmers’ privilege’ provisions in Section 5.3 (2) of Bill C-18 appear to guarantee farmers the ability to save, clean and reuse seed on their own holdings. **However, Bill C-18 does not extend farmers’ privilege to stocking (storing, binning, bagging) seed.** ‘Farmer’s holdings’ is **not defined in the Act or elsewhere.** We have been unable to obtain a clear answer from the Plant Breeders Rights Office as to how this term would be interpreted in practice [...]. Similarly, the term ‘stocking’ is not clearly defined.” (National Farmers Union, 2014 October 9)

“We **entertain carbon cap and trade scenarios;** we license industrial water use but **give no consideration to payment for the capture and storage of water;** we recognize the value of endangered species to society but then **regulate their protection through penal systems rather than incentives.**” (Western Stock Growers Association, 2010 March)

“[Discussing Budget 2015] While any investment in collaborative agricultural research is welcomed, it **remains unknown to what extent this money will be allocated to agricultural projects.**” (Canadian Federation of Agriculture, n.d.b)

Table 17 Excerpts about proposals for programs, supporting section 3.2.3 Proposals for programs on page 16.

## NATIONAL

“We would encourage you [Ontario Minister of Agriculture, Honourable Ted McMeekin] to **expand the program to cover additional extraordinary costs** incurred by farmers, as a result of the drought conditions in 2012 ...” (National Farmers Union, 2013 January 28)

“[...] it is also important to **make improvements to the [Hail Endorsement] program**. One improvement would be to modify the crop cost equation in order to allow for fair compensation to farmers for sudden and unexpected escalation of input costs. [...] In this way, the insurance payment would **reflect a more accurate picture** of the real shortfalls experienced by producers during any given crop year on any particular crop.” (National Farmers Union, 2010 January 26)

“Our position has been to **lobby for a program that would be available on a case-by-case basis**. This means no matter where a producer is located in the province, should hardship be experienced due to excess moisture, they would have the opportunity to apply, demonstrate need and therefore be eligible for assistance.” (Canadian Cattlemen’s Association, 2012)

## PROVINCIAL

“There is a need to **develop better insurance programs and well defined triggers** that would set a program into effect. **Some issues for a program are** a) should not have to pay another premium, b) need to meet with AFSC to consider various options c) could add on to pasture program, d) could have something similar to hail insurance, e) producers should be in charge of program and f) trigger for any program could be AgriRecovery, and g) should be transparent.” (Alberta Beef Producers, 2010)

“**Tax deferral for temporary herd reductions, help in repairing damages through AgriRecovery and major infrastructure investment in water management** are all needed soon to keep the Manitoba beef cattle industry moving positively toward the opportunities provided by new market access agreements and the current price outlook.” (Alberta Beef Producers, 2014)

## LIVESTOCK PRODUCERS

“Canadian Cattlemen’s Association (CCA) was working on a proposal to explore improving forage insurance offerings through **improved satellite imagery applications**. Improving forage insurance is something the CCA has pursued for some time.” (Canadian Cattlemen’s Association, 2013)

“The Safety-net Sub-committee and the council had reviewed and recommended the approval of the resolutions to the board. The direction was to continue to support AgriStability with **modifications to the reference margin level**, and continuing AgriInvest using the calculation ‘Allowable Sales’ instead of ‘Allowable Net Sales’.” (Alberta Beef Producers, 2013)

## PUBLIC AUDIENCES

“The National Farmers Union-Ontario recently sent a letter to Agriculture Minister, Hon. Ted McMeekin and Agricorp **outlining a number of changes it would like to see made** to the Hay and Pasture Insurance Program.” (National Farmers Union, 2013 February 5)

“The CCA continues to call for an **improved disaster response program** and [CCA Vice-President Martin] Unrau said **this assistance [AgriRecovery in response to flooding] is a good start**. ‘This initiative will bring **some relief to producers who are dealing with a range of issues as a result of the flooding and wet conditions**,’ Unrau said. The CCA urges governments to **continue working together toward a solution** for other regions where extreme flooding is causing challenges to future feeding capacity.” (Canadian Cattlemen’s Association, 2011 August 4)

## ORGANIZATIONS’ MEMBERS

“Better communication of AgriRecovery triggers and better response times would go a long way to addressing the frustration with the program. The BCCA [BC Cattlemen’s Association] has been vocal about the **shortcomings of this program and the need to improve** the ways AgriRecovery applications are assessed.” (Canadian Cattlemen’s

Association, 2011)

“AgriRecovery **needs clearer science based triggers and defined responses** when those triggers are met. An **improved forage insurance program** would also take pressure off AgriRecovery following weather events that affect hay and forage production.” (Canadian Cattlemen’s Association, 2011 April 1)

“The [Cattle Feeder C]ouncil was interested in the AFSC [Alberta Financial Services Corporation] summer meetings on forage insurance and ABP is **continuing to press for improvements in forage and pasture insurance programs.**” (Alberta Beef Producers, 2015 August 20)

“Direction: for the Cow Calf Council to explore the possibility to **have AgriStability delinked from the Advanced Payment Program** for participation with Feeders Association of Alberta.” (Alberta Beef Producers, 2015 June 10)

Table 18 Excerpts about proposals, research and technological innovations, supporting section 3.2.3 Proposals for programs on page 16.

## NATIONAL

“**Improvements in feed efficiency and shortening the required number of days** needed to finish fed cattle **reduces the amount of methane and manure produced** and resources used per pound of beef.” (Canadian Cattlemen’s Association, 2012)

“[Expressing intent to lobby regarding the] Federal Budget, in respect to **increased public research funding** for climate change adaptation & crop varietal development [...]” (Canadian Federation of Agriculture, 2015)

“[CFA suggests that Budget 2015] **[e]ncourage producer-led varietal innovations and adaptation to climate change**. [...] Canada faces considerable opportunities to improve access and encourage development of novel crop varieties. **UPOV 91 [legislation related to the international plant breeding standard] also provides opportunities** for Canadian producers and public institutions to develop crop varietals with traits that meet the specific needs of Canadian producers by providing a more robust means of getting a return on investment.” (Canadian Federation of Agriculture, 2014)

“CFA’s pre-budget submission touched on the following research priorities: **increased funding and priority given to research** in climate change adaptation and risk management, and ecological goods and services. As these areas were not specifically outlined in the Budget, the **CFA encourages the Government to consider the importance** of these items and allocate the appropriate resources.” (Canadian Federation of Agriculture, 2015 April 21)

## LIVESTOCK PRODUCERS

“**Research, innovation and market development are fundamental areas** that help to deliver long-term benefits to Canada’s beef cattle industry. ‘We thank Agriculture Minister Gerry Ritz and all the Ministers for the strong emphasis on research and innovation and market development in Growing Forward 2; **areas that build the competitiveness of our beef cattle industry**, and Canada’s competitiveness, as a whole,’ said CCA President Martin Unrau.” (Canadian Cattlemen’s Association, 2012 September 14)

“[R]esearch and innovation is one of the CCA’s key priorities at the Growing Forward consultations. **Significant investment is needed to renew and reinvigorate agriculture research** to a more meaningful level with investments **focusing on research outcomes that address industry’s priorities** and also on developing critical research capacity.” (Alberta Beef Producers, 2011)

## FORAGE PRODUCERS

“CFGAs recognize a need for more support for the **development of annual and perennial forage varieties with improved establishment, increased yield, improved adaptation to stressors such as drought, flooding and saline soils, improved ensilability and higher nutritional value**, which will all have a positive effect on gross margins.” (Canadian Forage and Grasslands Association, 2014 October)

“Those discussing forage and grassland issues identified a clear need for research that will: [...] **Improve the productivity of native range by developing breeding, grazing and rejuvenation strategies that improve forage productivity** on sensitive marginal land without degrading it.” (Canadian Forage and Grassland Association, 2012 June)

## PUBLIC AUDIENCES

“Modern efficiencies allow us to **produce more beef from fewer cattle and less feed**. Improvements in crop and livestock genetics, feed production, processing and utilization technologies enable industry to produce as much beef today as it did 60 years ago, but on 45 million fewer acres. **Research will continue to play a strong role** in driving further improvements in these areas, with a focus on reducing impacts through improving feed quality and improving herd health and reproduction, **methods identified by our science and the FAO as the best ways to lower GHG**.” (Canadian Cattlemen’s Association, 2013 September 27)

“[...] CCA has three main suggestions to help the Government of Canada with its climate change commitments: First, **invest in Canadian agriculture research**. Canada is one of the largest producers and exporters of food



worldwide and our products have some of the lowest GHG footprints. **Agriculture research plays a key role in this.** (Canadian Cattlemen’s Association, 2015 December 14)

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#### ORGANIZATIONS’ MEMBERS

“For example, for **R&D the return to investment can be 30:1 or greater.**” (Alberta Beef Producers, 2012)

“**Improvements in forage and grassland productivity** lead to several environmental benefits, including **increased carbon sequestration, improved wildlife habitat, contributes to biodiversity, helps maintain watersheds, and reduces soil erosion.**” (Canadian Cattlemen’s Association, 2012)

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Table 19 Excerpts about suggestions to adopt farm-level practices, supporting section 3.2.3 Proposals for programs on page 16.

### PROVINCIAL

**“Maintaining a feed inventory** was considered to be one of the best ways to address feed risk management.” (Alberta Beef Producers, 2014)

“Many ranchers, in an effort to be low cost producers as well as reduce their carbon footprint, now **incorporate swath grazing, bale grazing and stockpiled grass.**” (Western Stock Growers Association, 2011 February 1)

### UMBRELLA AGRICULTURE

**“Producers just need to sit down and carefully plan how to manage the risks** in front of them – both their price risk and their weather risk,” he [provincial crop market analyst Charlie Pearson] says [...].” (Alberta Federation of Agriculture, 2011 April 4)

“Pollinator Protection and Responsible Use of Treated Seed [...]. Best Management Practices[:] **Avoid planting treated seed** in windy and/or very dry conditions.

**Consider wind direction and avoid planting treated seed if bees are foraging downwind or nearby. Control flowering weeds** in the field before planting so that foraging bees are not attracted to the planting site.” (National Farmers Union, 2013 December 10)

### FORAGE PRODUCERS

**“Pastures that were managed rotationally were very good to excellent.** Pastures that were not managed vary from good to fair depending on time of livestock turn out. [...]. The dry conditions through August have stopped growth on pastures not managed by controlled grazing. ‘It is **very notable by fall forage growth which pastures were or were not using managed grazing,**’ said Carla Amonson, manager of the West Central Forage Association in Evansburg. That is true elsewhere also.” (Alberta Forage Industry Network, 2013)

### ORGANIZATIONS’ MEMBERS

**“Many producers have mitigated this risk [lack of livestock insurance] with carryover or stockpiled forage** as a form of self-insurance and this has allowed herds to be fed during droughts.” (Alberta Beef Producers, 2014)

“The primary goal of the environment Committee is to advocate **best management practices in the areas of land, air, and water use.**” (Alberta Beef Producers, 2010)

“The Waldron places high value on rangeland health, such as grasses, sedges and trees for erosion control and preservation of native species. **Pasture rotation and timing also play a very important role** to encourage an increase in desirable grass species. **Proper rotation allows for increased efficiency** in grass utilization, even during times of drought.” (Canadian Cattlemen’s Association, 2010)

Table 20 Excerpts demonstrating presentation of farmer knowledge, supporting section 3.3.1. on page 17.

### PROVINCIAL

“AFSC [Alberta Financial Services Corporation] holds 12 to 15 meetings every year throughout the province to get **producer feedback on programs** that are about to be released.” (Alberta Beef Producers, 2010)

“AFSC [Alberta Financial Services Corporation] **hosted four producer consultation meetings** early in August. They are developing a ‘feed need’ program that would cover a producer’s feed requirement, and the pilot should be available in 2016.” (Alberta Beef Producers, 2015)

### UMBRELLA AGRICULTURE

“‘We’re making Straight Hail insurance available online this spring so farmers have more immediate access to hail protection around the clock. [...] **[O]nline access is something producers have been asking us for,**’ says Lorelei Hulston, Provincial Insurance Manager with Agriculture Financial Services Corporation (AFSC).” (AFSC via Alberta Federation of Agriculture, 2010 May 31)

“Our policy is the result of **of democratic debate at annual national conventions on resolutions put forward by grassroots delegates**. As a result, the NFU policy on Crop Insurance **reflects the wishes of a majority of family farmers** in this province and nationally.” (National Farmers Union, 2010 January 26)

### PUBLIC AUDIENCES

“The targeted priority areas [in forage research] have **been established based on producer input of gaps** and areas determined as having the greatest benefit on profitability and contribution to growth and sustainability of the industry.” (Alberta Beef Producers, 2015 May 25)

“[B]y not recognizing the full extent of farmers’ losses, AAFC is damaging efforts to craft effective business risk management programs. **Every farmer here knows that our support programs are failing.**” (National Farmers Union, 2010 May 26)

### GOVERNMENT AUDIENCES

“**Producers across Canada are already exploring the opportunities** this legislation will provide to develop sustainable, producer-led seed development entities.” (Canadian Federation of Agriculture, 2014)

“Of particular note among these endeavours is the Global Alliance for Climate-Smart Agriculture (GACSA), a **voluntary, farmer-led, multi-stakeholder, action-oriented coalition** committed to the incorporation of climate-smart approaches within food and agriculture systems that launched September 23, 2014 at the UN Climate Change Summit.” (Canadian Federation of Agriculture, n.d.)

### ORGANIZATIONS’ MEMBERS

“Some **feed producers want to have better quality insurance; others want to have more quantity-based insurance.**” (Alberta Beef Producers, 2015 June 10)

“**Grass farmers have a story to tell.** A lot of the land we have forages on are best suited for forages and don’t work for canola, wheat, or other crops. Forage/cattle are a green business.” (Alberta Forage Industry Network, 2012)

Table 21 Excerpts presenting conventional (typically science) research evidence, supporting section 3.3.2 Science on page 18.

### NATIONAL

“BMPs [beneficial management practices] utilized on the Farm [sic] will be developed through **research being conducted across Canada at public institutions such as universities and AAFC** [Agriculture and Agrifood Canada] research centres, as well as private facilities. MBP is currently finalizing a business plan for the Farm that will **include government, academic institutions and private partners.**” (Canadian Cattlemen’s Association, 2013)

“On a daily basis our **federal government touts the need to make ‘sciencebased’ [sic] decisions**, while at the same time, it is quickly dismantling Canada's public research infrastructure and undermining the ability of our globally respected public scientists to do their research.” (National Farmers Union, 2014 January 28)

### LIVESTOCK PRODUCERS

“These unfortunate events have reinforced the importance of working proactively with governments to, whenever possible, **use a scientific approach to determine when real disaster assistance is required.**” (Alberta Beef Producers, 2011)

“The Government of Manitoba has unveiled Tomorrow Now – Manitoba’s Green Plan, an environmental blueprint with more than 100 initiatives to be rolled out over eight years. MBP anticipates several new pieces of legislation or other regulatory changes will arise from it and will **seek to ensure that policies are based on sound science.**” (Canadian Cattlemen’s Association, 2012)

“The information this body of work encompasses is important; **sound science helps to provide factual information to inform government policy, regulation decisions and consumer choices.**” (Canadian Cattlemen’s Association, 2015 December 14)

### FORAGE PRODUCERS

“**Science proves that forage and grasslands promote biodiversity, reduce soil erosion, and assist in carbon sequestration.** As well, grasslands provide habitat for wildlife and insects that pollinate crops, and enhance water quality and quantity.” (Alberta Forage Industry Network, 2012)

“The committee **will be working very closely with the scientific community**, firstly to identify information currently available that can be communicated to the different target audiences. The second task will be to **identify gaps in the information and work on ways to have the required research and/or demonstrations take place.**” (Canadian Forage and Grassland Association, 2013 May)

### PUBLIC AUDIENCES

“**We support science-based projects** that demonstrate innovative solutions to complex problems and generate benefits to a broad segment of society,” Jacobson says. “This project is a perfect example of that.” (Alberta Federation of Agriculture, 2015 March 19)

“A **peer-reviewed scientific publication** detailing how many **fewer resources** are used and **fewer GHGs emitted per kilogram of Canadian beef produced** in 2011 compared to 1981 is expected early in January 2016.” (Canadian Cattlemen’s Association, 2015 December 14)

Table 22 Illustrative excerpts demonstrating discussion around research endeavours, by organization scales, producer groups, and document classes, supporting section 3.3.3. on page 18.

### NATIONAL

“Throughout 2014, representatives from BFO [Beef Farmers of Ontario], fellow commodity organizations, and senior OMAFRA [Ontario Ministry of Agriculture, Food and Rural Affairs] staff **reviewed the RMP** [Risk Management Insurance Plan] and other program models in depth **to determine the most effective option** to utilize the \$100 million funding envelope provided by the provincial government. [...] **BFO helped fund seven beef research projects in 2014 in collaboration with a number of organizations** including: the National Science and Engineering Research Council (NSERC); the Canadian Agricultural Adaptation Program (CAAP); the Beef Cattle Research Council (BCRC); and the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) partnership program with the University of Guelph.” (Canadian Cattlemen’s Association, 2014)

“Historical context will be provided by a **Beef Science Cluster [industry] project led by Dr. Tim McAllister with Agriculture and Agri-food Canada**. That study is measuring how Canada’s beef industry’s feed, land, and water use, GHG production, carbon sequestration and biodiversity have **changed over the past 30 years**.” (Canadian Cattlemen’s Association, 2015 December 14)

“The program [grass varietal research] started at the University of Saskatchewan, switched to Agriculture and Agri-Food Canada and, for the last 10 years, has been a **collaborative program between the two institutions**.” (Canadian Forage and Grassland Association, 2014 October)

### PROVINCIAL

“The Government of Canada is proud to support this **industry-government partnership creating a hub for beef and forage research**. The Centre’s commitment to collaborative science will provide Canada’s beef and forage sectors with the tools they need to remain competitive on the global stage.” (Alberta Beef Producers, 2015 December 9)

### LIVESTOCK PRODUCERS

“The Beef Cattle Research Council is fortunate to have **world-class research scientists and facilities to conduct industry funded research**.” (Canadian Cattlemen’s Association, 2011 November 10)

“**Research funded by the Beef Cattle Research Council** has led to **improvements in productivity and efficiency**, which have clear implications for environmental sustainability.” (Canadian Cattlemen’s Association, 2012)

### FORAGE PRODUCERS

“The capacity for this type of research [crop varietal development] **resides predominantly in the public sector** within Agriculture and Agri-Food Canada (AAFC).” (Canadian Forage and Grassland Association, 2014 October)

### GOVERNMENT AUDIENCES

“Therefore, CFA recommends that sustained funding be directed towards producer-driven, public-private seed development partnerships. By contributing essential seed capital, **Canada’s agriculture industry and public research institutions can continue to build on their long history of innovative crop variety development** and position itself as innovators and world leaders.” (Canadian Federation of Agriculture, 2014)

“It is important that a **central body such as AAFC [Agriculture and Agri-Food Canada] play an integral role in funding and coordinating this research** through its existing programs or new ones in order to reduce duplication and **provide a central location for the agriculture industry to access the results**.” (Canadian Federation of Agriculture, 2015b)

“[...] the **closure of climate-change-oriented research institutions** and [other government actions] are all at cross purposes to the AgriRecovery program.” (National Farmers Union, 2012)

### ORGANIZATIONS’ MEMBERS

“Dr. Schellenberg’s team [at the **Semi-arid Prairie Agricultural Research Centre of Agriculture and Agri-Food**

**Canada** is taking a new look at native plant species and the role they can play in an environment predicted to be drier. Many of these native prairie species are known for their ability to produce under drought-like conditions. They also contain unexplored characteristics that may prove useful in today's agricultural operations." (Canadian Forage and Grasslands Association, 2014 March)

"[A project of the Beef Cattle Industry Science Cluster is to] **define how the environmental footprint** of the Canadian beef industry has changed over the years, **assess whether cattle production impacts ecosystem health**, how pasturelands store carbon." (Canadian Cattlemen's Association, 2014)

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Table 23 Excerpts about stakeholder engagement, supporting section 3.3.4. Stakeholder engagement on page 19.

#### NATIONAL

“[Reporting CCA lobbying activities in reference to the Growing Forward program:] **participated in the development of the framework agreement** on Agri-Food product policy.” (Canadian Cattlemen’s Association, 2010 November 19)

#### PROVINCIAL

“**Premier Notley has established a Climate Change Advisory Panel to meet with Albertans and industry stakeholders** on key climate change issues. The panel will provide advice to the government on the **development of new climate change policy** for the province and for the Climate Change 2015 conference in Paris this fall.” (Alberta Beef Producers, 2015 September 10)

“It is **important that producers play a role in shaping what these programs will look like,**’ stated Lynn Jacobson, the newly-elected President of WRAP. ‘**Ongoing producer consultations in the months ahead** in conjunction with the timely implementation of GF2 will provide some much needed stability to the industry.’” (Alberta Federation of Agriculture, 2012 January 16)

“APAS [Agricultural Producers Association of Saskatchewan], KAP [Keystone Agricultural Producers, of Manitoba] and WRAP [Wild Rose Agricultural Producers (now Alberta Federation of Agriculture)] are **asking the federal government to work with farm organizations** in developing business risk management programs which would give farmers the time and financial stability necessary to adjust their operations to increased market volatility.” (Alberta Federation of Agriculture, 2011 April 15)

#### LIVESTOCK PRODUCERS

“In addition to the valuable work done in and around Board meetings, the CSF participates in three CFA Working Groups (Risk Management, Strategic Investments and Market Development) and the Internal Trade Committee. These extra Working Groups and Committees require a significant amount of our time, but are truly worth the effort. They allow the CSF to provide some pretty **direct input into the future of federal programs and policy,** and ensure that the interests of Canadian sheep producers are covered.” (Canadian Sheep Federation, 2015)

#### ORGANIZATIONS’ MEMBERS

“**MBP [Manitoba Beef Producers] continues to provide input on many different initiatives** being undertaken by the Manitoba government that affect the province’s beef cattle industry.” (Canadian Cattlemen’s Association, 2012)

“ABP must move quickly to talk with AFSC [provincial crown corporation, Alberta Financial Services Corporation] about strategies to help producers deal with the dry conditions. **DIRECTION: for ABP to speak to AFSC about allowing producers to use insured crops** for grazing and feed and to replant insured crops for forage.” (Alberta Beef producers, 2015 June 8)

“**AFA remains actively engaged in agricultural policy discussions at the federal and provincial levels.** We were among a limited number of **groups in Alberta given an opportunity to provide feedback** into the most recent five-year policy framework for Canada’s agricultural sector, known as Growing Forward 2.” (Alberta Federation of Agriculture, n.d.)

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