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**Case Study: Farm Programs and  
Methods of Agricultural Support in Canada**

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Case Study:  
Farm Programs and Methods of Agricultural Support  
in Canada

by

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## 1. INTRODUCTION

Canadian agricultural policy cannot be discussed without reference to the Constitutional assignment of powers among levels of government. Canada's Constitution requires that the federal government acts in conjunction with the provinces in planning agricultural policies and programs, with the eventual mix of policies and programs an outcome of bargaining between provinces and the federal government. Included in this policy-setting framework is the issue of equalization payments, which amount to a transfer of monies from the 'have' provinces to the 'have-not' provinces so that 'fiscal capacity' is somewhat equal across provinces. While fiscal capacity refers to the ability of provinces to raise taxes, equalization payments are simply a mechanism to transfer wealth from one province to another. Agricultural payments are one means to make such transfers.

In Canada, provinces have power over certain areas of economic and social activity, with other powers the sole responsibility of the federal government and yet others shared between the provinces and the supra authority. Canada's provinces own their natural resources. Coal, oil and gas resources are mostly owned by provincial governments, with exceptions including federal lands, such as National Parks, private lands granted to the Canadian Pacific Railway in the late 1800s to incentivize construction of a trans-Canada railway (subsequently sold to private entities), and lands allocated to indigenous peoples. Agriculture falls under provincial jurisdiction, but with qualifications. The federal government exercises varying degrees of power in the resource sectors through its power over interprovincial and international trade, navigation and fisheries, and through other constitutional provisions – its spending and taxing powers, emergency power, and the declaratory power over works stated to be of general advantage to the nation (van Kooten and Scott 1995). How the federal government uses its powers determines the extent to which transaction costs are minimized, and the extent to which income is redistributed, and at what cost.

Agriculture is a 'shared jurisdiction' where the federal government's power originates with

its constitutional responsibility over trade and through its spending power (viz., equalization payments). As a result, Canada's agricultural policies differ greatly from those in the United States; nor does Canada have the fiscal and political wherewithal to keep pace with farm support levels in the U.S. and the EU, despite attempts to the contrary during the 1980s and early 1990s (as shown in the next section). Further, because provinces are also responsible for agriculture, with the rural constituency carrying significant clout in provincial legislatures, agricultural policies differ among provinces – a farmer in one province might receive more support than a similarly situated farmer in another province. This occurs because agricultural programs are shared as follows:

1. The provincial and federal governments plus producers (referred to as 'tripartite programs'), with costs usually but not always shared equally;
2. The provincial and federal governments (generally but not always shared equally);
3. More rarely between one level of government and producers; and
4. One level of government only (e.g., the federal government solely funded the now defunct feed freight assistance program, discussed below, while provinces have funded their own livestock programs).

That is, provinces can create their own support programs, and they individually bargain with the federal government in an effort to have more funds allocated their way, always keeping in mind the context of equalization.<sup>1</sup> In Canada, therefore, provinces and the federal government have to cooperate on agriculture. Of course, the provinces look to the feds for money to pay for agricultural programs, while they are reluctant to relinquish too much of their own power over agriculture.

## 2. AGRICULTURAL SUPPORT IN CANADA: BACKGROUND

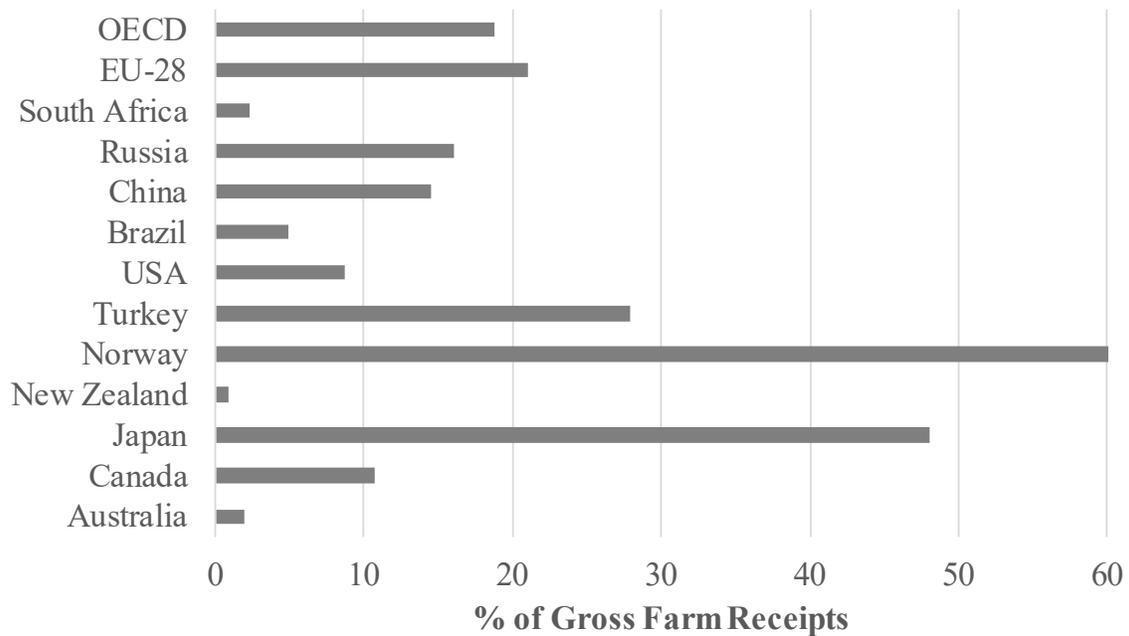
To provide some indication of the degree to which Canada supports its agricultural sector, we first

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<sup>1</sup> The size and makeup of an agricultural sector varies greatly across provinces. For example, the grain producing provinces of Alberta, Saskatchewan and Manitoba face similar risks so all three provinces will bargain for similar programs, and such programs generally include British Columbia's small grain growing region in the northeast; these programs are not usually extended to grain farmers elsewhere in Canada. Nonetheless, a rich province such as Alberta may choose to support premium subsidies at a higher level.

compare support for agriculture across sectors and countries using the OECD’s producer support estimate (PSE) (Greenville 2017) and Anderson and Nelgen’s (2013) Nominal Rate of Assistance (NRA). The PSE measures “policy transfers to agricultural producers, measured at the farm gate” and is generally “expressed as a share of gross farm receipts” (OECD 2018). The NRA is the percentage by which the domestic producer price is above (or below if negative) the border price of a similar product, net of transportation costs and trade margins – it is an estimate of direct government policy intervention.

As indicated in Figure 1, Canada’s recent (2016) rate of assistance to agricultural producers (policy transfers as a share of gross farm receipts) is much lower than the OECD average (10.7% versus 18.9%). The rate of assistance has fallen with some hiccups from approximately 40 percent in the late 1980s to the present; it has fallen faster than that of the EU and is now comparable to the rate provided by the U.S. (Figure 2).



*Figure 1: Rates of Assistance to Agriculture based on Producer Support Estimates, Selected Countries/Regions, 2016 (Source: OECD 2018)*

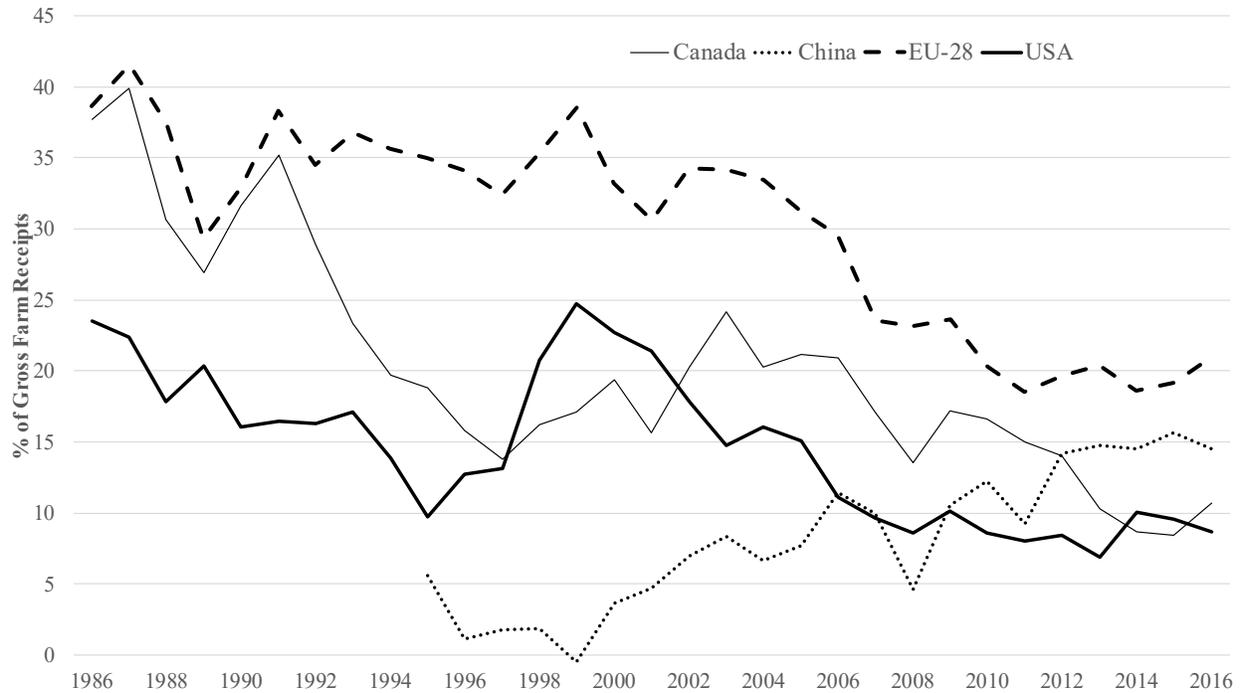
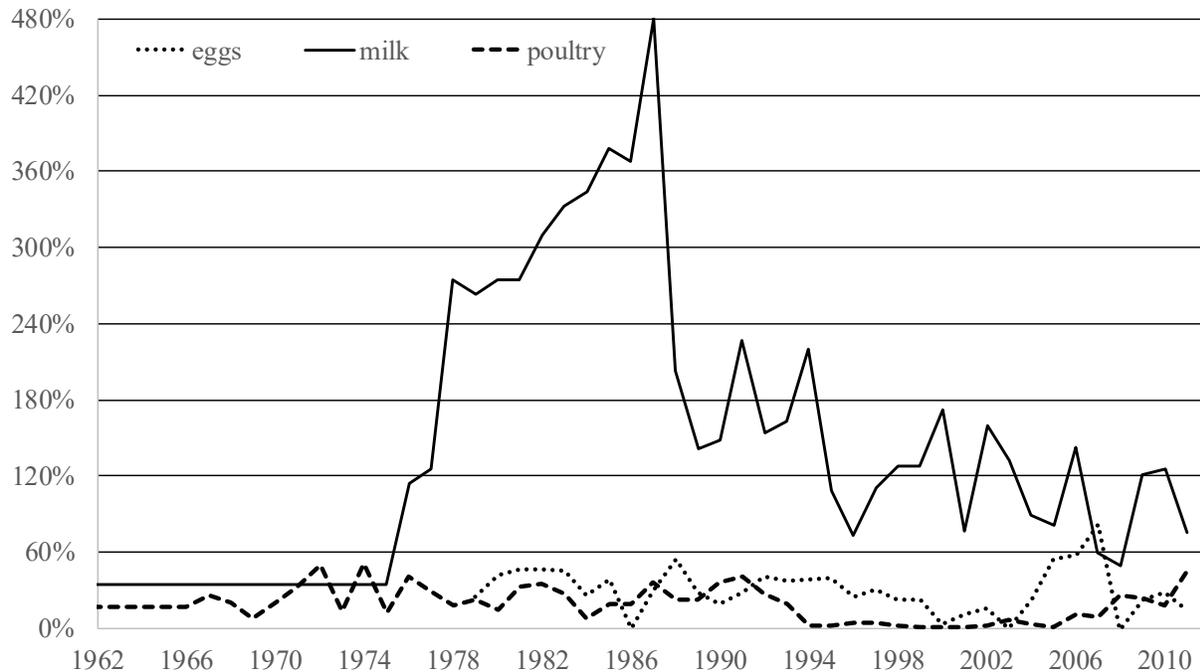


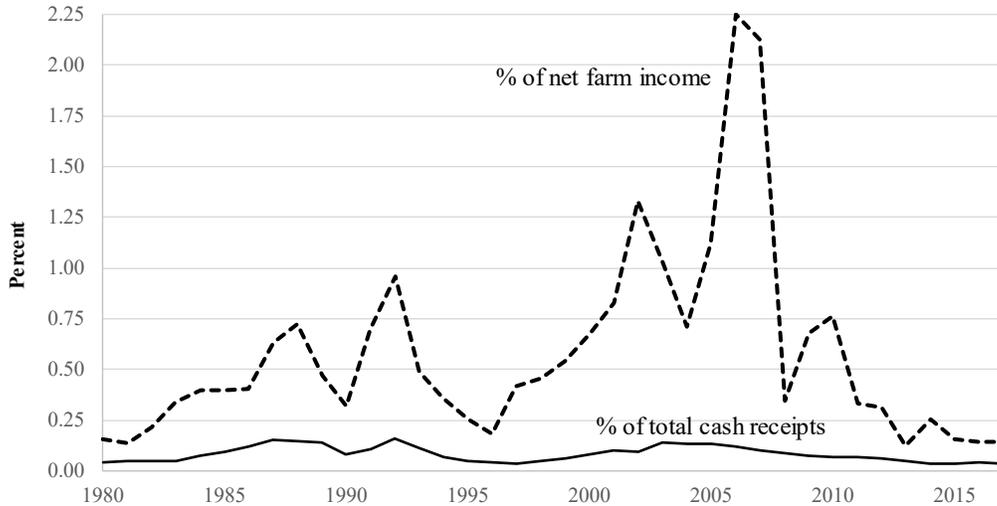
Figure 2: Rates of Assistance to Agriculture based on Producer Support Estimates, Canada, China, EU-28 and United States, 1986-2016 (Source: OECD 2018)

Canada’s NRA has tracked higher than that of the U.S. and comparable countries in the last few years because of the role of the supply-managed sectors, especially dairy. Supply management began in Canada with passage of the Farm Products Agency Act in 1972, with effective quota regimes established in 1974 (see van Kooten 2018; van Kooten et al. 2019). As indicated in Figure 3, nominal rates of assistance since the early 1970s have ranged from near zero to more than 80 percent for egg, and zero to 50 percent for poultry (notice the scale on the vertical axis). However, after implementation of supply management in dairy, NRAs increased from about 35% to as much as 480%, averaging nearly 200% thereafter. Meanwhile, NRAs and PSEs in the grains and livestock sectors are currently well below five percent (except poultry as it is a supply managed commodity) and maize (which is a minor crop subsidized to stimulate ethanol production but does not ripen in the grain belt).



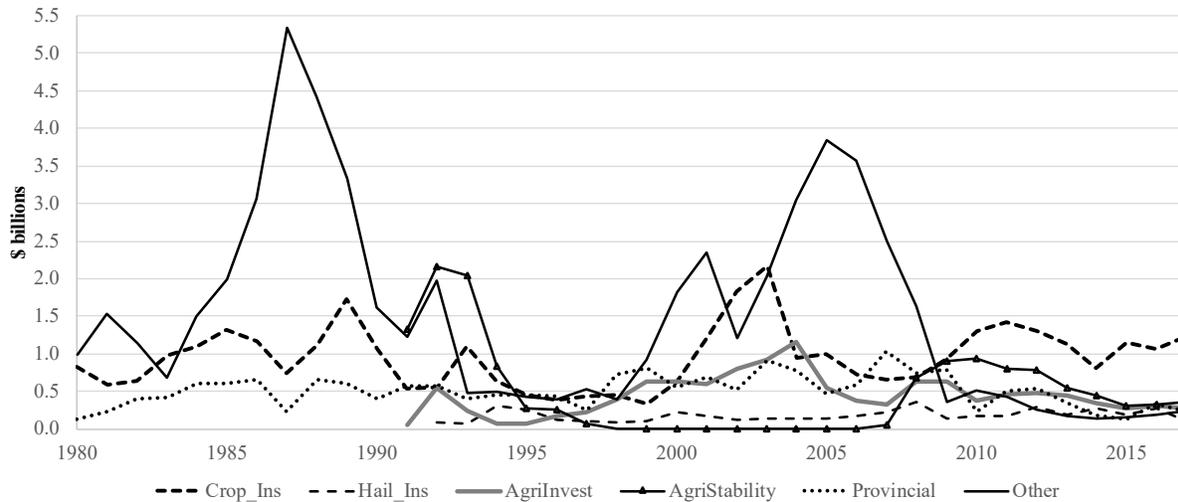
*Figure 3: Nominal Rates of Assistance to Agriculture, Canada's Supply Managed Sectors plus Sugar, 1962-2011 (Source: Anderson and Nelgen 2013)*

In Figure 4, we examine annual direct agricultural program payments as a proportion of annual total farm cash receipts and of net farm income for the period 1980 to 2017. Except for 2004, real program payments exceeded net farm income between 2001 and 2007. When prices rebounded after 2007, the share of direct program payments declined dramatically, while net farm income also grew. However, the ratio of direct payments to net farm income averaged 0.17 over the past five years (2013-2017), while averaging some 0.75 for the first 17 years of the new millennium. Meanwhile, the ratio of direct payments to real total cash receipts remained relatively more constant over the entire period 1980-2017.



*Figure 4: Ratio of Government Direct Agricultural Program Payments to Net Farm Income and to Total Cash Receipts, Canada, 1980-2017 (\$2017 billion)*

As a last summary measure, direct payments are allocated by type of program in Figure 5. Crop insurance benefits and those provided by hail insurance are considered separately, as are payments provided by various provincial government programs. Payments related to AgriInvest are combined with those of a predecessor program, the Net Income Stabilization Account (NISA); similarly, AgriStability payments are combined with those of its Gross Revenue Insurance Program (GRIP) predecessor. (AgriInvest and AgriStability are discussed in section 4 on business risk management.) Finally, Western Grain Stabilization payments, pre-supply management dairy payments, and a plethora of other government transfer payments are summed together under ‘Other.’ Notice that annual total program payments rose during much of the 1980s and flattened out during the 1990s, when payments averaged \$3.0 billion (\$2017); however, payments averaged \$4.1 billion during the period 2000-2017.



*Figure 5: Government Direct Program Payments by Type of Program, Canada, 1980-2017 (\$2017 billions)*

Direct payments from a variety of provincial and ‘other’ programs have historically been an important source of revenue for farmers. For example, in the mid-1980s, major funding for grain farmers came via the Western Grain Stabilization Act and the Special Canadian Grains program, while in 2007 provincial programs provided farmers with nearly \$1 billion (\$2017) with ‘other’ federal government programs providing more than \$3.5 billion. Vercammen (2013) compiled a list of 204 direct-payment programs in Canada for the period 1981-2010 (Figure 6).<sup>2</sup> Canadian programs had an average weighted lifetime of 8.7 years and provided an annual average payment of \$48.7 million (\$2002), with 27 programs providing an average of some \$282 million (\$2002) per year (see Appendix Table A1). Approximately 60 percent of all payments to agricultural producers over the period 1981-2010 came through some type of business risk management program; remaining transfers were pure income support and included the Special Canadian Grains Program, feed freight assistance, input rebates, direct payments from provincial

<sup>2</sup> The author thanks Dr. James Vercammen for sharing his data. Figure 6 is a slightly modified version of Figure 1 in Vercammen (2013), while numbers in the text are based on the same data set.

programs, and so on.

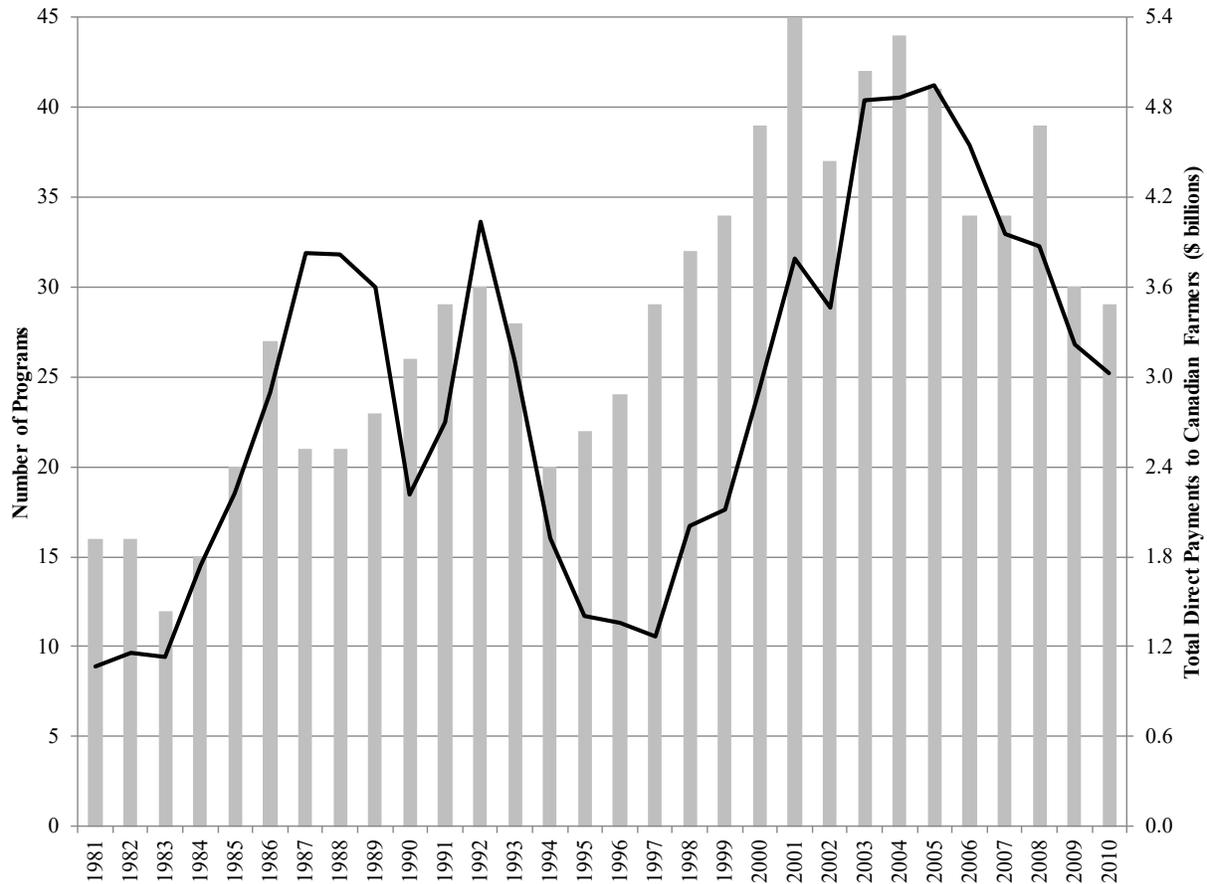


Figure 6: Number of Programs and Total Direct Payments to Canadian Farmers, 1981-2010  
(Source: Vercaemmen 2013)

### 3. CANADIAN AGRICULTURAL SUPPORT PROGRAMS: HISTORY

The first agricultural stabilization legislation in Canada was the 1958 *Agricultural Stabilization Act* (ASA). It was fully funded by the federal government, guaranteed farmers 90% of a three-year moving average price for all commodities (later changed to a five-year moving average), and covered grain and livestock commodities in all provinces. Payouts under this legislation remained low until 1975 when they rose rapidly; the largest payout of \$450 million occurred in 1988, but this amount could have been much greater except that the *Western Grain Stabilization Act* of 1976 had removed grains produced on the prairies (northern Great Plains) from the ASA. Further, dairy,

eggs and poultry had also been removed in the early 1970s due to the establishment of supply management in these sectors.

Other institutions that played a role in Canada's approach to agricultural stabilization were crop insurance, which began in 1959, state trading and pooling of revenues in the form of the Canadian Wheat Board, and transportation programs, especially the Crow's Nest Pass statutory freight rate on grains. While these programs have now been eliminated or changed beyond recognition, they did inform subsequent programs and, therefore, are briefly discussed below. One aspect of the programs that stands out is their focus on risk reduction. Today Canada relies primarily on business risk management programs rather than agricultural support programs (see section 4 below).

### **3.1 State Trading: The Canadian Wheat Board (1935-2012)**

The Canadian Wheat Board (CWB) was created in July 1935 by an Act of Parliament to be a single-desk seller of Western Canadian grains. However, the CWB was also a monopsony as farmers were required to sell wheat and barley, the two crops under the Board's control, to the CWB. At the time of planting, the CWB would announce an initial per acre (= 0.405 ha) quota for eligible acres, which were based on the amount of cultivated land on a farm. The eligibility condition had a perverse impact on the environment as it provided an incentive for farmers to eliminate wetlands and cultivate area in permanent grasslands or forest, thereby increasing the area eligible for quota.

Suppose the farmer had 100 acres of eligible land and that the starting quota was 20 bushels per acre (bu/ac) and the price was \$2.20/bu. While the price received by the farmer would not go below this, the final price would depend on the CWB's success at marketing the grain. The farmer would eventually receive a pooled price that depended on final sales minus delivery and marketing

costs. Leaving aside the question of final price for now, suppose the farmer knew from past experience that the final quota would be 25% higher, or 25 bu/ac, but that the expected yield was 40 bu/ac. Thus, the farmer would expect to deliver 2500 bu at the end of the season, but he could grow this amount on 62.5 ac, leaving 37.5 ac to plant to other crops such as oats, peas, lentils, et cetera. In some cases, farmers would leave land fallow to conserve moisture that would aid crop growth in the following year (although it led to soil erosion). Clearly, agricultural producers in the U.S. Palouse region of western Idaho and eastern Washington were keen on knowing something about CWB decisions. The Palouse is also a major pea and lentil producing region so prices would depend on how much land Canada's farmers might potentially plant to these crops.

Another problem with the CWB system was related to its marketing approach, specifically grading of grains. The prices received for wheat and barley in international markets depends on the quality or grade of wheat/barley, with the grade of a grain determined from its protein and moisture content. Grades range from feed grain to grains with high protein content, and contracts specify protein and moisture contents. While U.S. grain traders such as Cargill would blend various grades of wheat, say, to achieve the precise percentage of protein called for in a contract, no more and no less, the CWB had a reputation for selling higher quality grain for the lower standard price. That is, as a marketing strategy to maintain or increase market share perhaps, the CWB often appeared to have sold wheat with a higher protein content than called for in a contract.

With the new millennium, some farmers wished to sell wheat and barley outside the CWB system despite some of the obvious benefits of pooling and marketing provided by the Board. A variety of questions were raised: Could the CWB really obtain higher prices in export markets? Did it have monopoly power? Did it operate to the benefit of Canadian farmers? Were farm gate prices higher? Was the CWB operating as a monopsony buyer, with prices at the farm gate actually

lower than otherwise? Did the CWB sell higher grades of wheat at lower grade prices? Were grade distinctions too coarse and was insufficient effort made to blend various grades of wheat to meet contract obligations? In the end, given their experience marketing non-CWB grains, many farmers felt it was time to end the CWB monopsony over western grains. Thus, the federal government ended the CWB system with the *Marketing Freedom for Grain Farmers Act* (2011), and the Wheat Board ceased to be the sole marketer of western wheat and barley in 2012. It was subsequently privatized in April, 2015, when a joint venture between a Bermuda company headquartered in the U.S. and a Saudi agricultural firm, known as the Global Grain Group, purchased a 50.1% stake and changed the name of the CWB to G3 Canada Limited.

### **3.2 Crop Insurance**

Crop insurance was introduced in Canada via the *Crop Insurance Act* of 1959. It allowed provinces to establish provincial crop insurance schemes with financial support from the federal government; thus, crop insurance was a joint federal-provincial program. Crop insurance was based on individual farm yields and covered grains, pulses, oilseeds and forages. Because crop insurance only protects against yield loss and payments depend on output prices, this type of program cannot support farm incomes when prices are depressed. It is discussed further in section 4.

### **3.3 Western Grain Stabilization Act (1976)**

The Western Grain Stabilization Program (WGSP) was created in 1976 to help prairie farmers stabilize crop income, because CWB quotas on wheat and barley were considered too constraining to do this. The WGSP was established as a result of a 1969 Federal Task Force on Agriculture that recommended replacing the ad hoc programs that had come into existence in western Canada with a single stabilization program. The ad hoc programs included acreage payments, domestic price targets and a Temporary Wheat Reserve (1955-1970), which was a major program compensating

farmers for on-farm storage of grain resulting from overproduction due to price supports.

The WGSP focused only on farmers' incomes. It was fully funded by equal contributions from producer participants and the federal government, and was viewed as complementary to existing Prairie crop insurance programs. The idea was that WGSP would stabilize the net cash flow for specific grains while crop insurance would smooth crop yields. Together these two programs were expected to stabilize the incomes of agricultural producers. Two problems arose: First, increasing yields offset lower prices, with the result that payouts were also reduced. Second, the calendar year was used rather than the crop year, which meant that farmers might not receive payouts when they most needed them. Amendments in June 1984 dealt with both these issues. One problem remained, however: the WGSP incentivized an increase in grain output – an outward shift in western Canada's grain supply function.

WGSP payouts were not large until the agricultural trade wars between the U.S. and EU began in 1985. The WGSP payout in 1987 amounted to \$800 million (recall that the largest payout under ASA occurred in 1988). As a result, the program faced a huge deficit in the late 1980s so that the WGSP was no longer actuarially sound; yet, the program provided little support to farmers. Consequently, as a result of the trade wars and subsequent low prices in 1986, an extra \$1 billion was paid to grain producers beginning in 1987 under the ad hoc Special Canadian Grains Program created in 1986 as a result of lobbying by Saskatchewan. After several years, Canada was forced to abandon these high levels of income support as it constituted too large a drain on the Treasury, while program benefits simply ended up being capitalized in land values.

The WGSP was rolled into the *Farm Income Protection Act* (FIPA) of 1991, which eventually led to a suite of business risk management programs in the new millennium under the rubric of Growing Forward. That is, Canadian agricultural programs were directed towards risk

management rather than income support per se, although by subsidizing premiums farmers were indirectly subsidized.

### **3.5 Supply Management**

A major feature of Canada's agricultural programs is supply management (SM). Supply management in Canada's dairy sector began with the establishment of the Canadian Dairy Commission in 1966. This was followed in 1970 by a National Milk Marketing Plan to control supply, with Quebec and Ontario along with the federal government as the original participants. The enabling legislation for SM in agriculture was not passed until two years later when the *Farm Products Agency Act* (1972) became the enabling legislation; in addition to SM in dairy, it also led to the establishment of SM boards in eggs (1973), turkey (1974), chicken (1978), and chicken hatching eggs (1986) – the 'feather industries'. Although SM remains the identifying characteristic of these sectors, the focus is usually on dairy because it receives the largest support of any agricultural commodity in Canada (see Figure 3 above). Dairy SM is a major impediment to Canada's on-going trade negotiations, particularly NAFTA (see van Kooten 2018).

### **3.4 Transportation Programs and Subsidies**

Canada's population is concentrated along the coasts and U.S. border, its rural population is sparsely distributed, and agricultural commodities must be transported over long distances to reach export position. In some cases, the lowest cost of transporting grains is through U.S. ports. It is little wonder that transportation policies are important to the agricultural sector. Two programs had a particular impact on the location of processing facilities, especially livestock production: Feed Freight Assistance and the Crow's Nest Pass Freight Rate or 'Crow Rate'.

Feed Freight Assistance. The Feed Freight Assistance program began in 1941 and was eventually terminated in 1995. It was fully funded by the federal government and provided a

subsidy for feed grains shipped from the prairies to livestock producers in British Columbia and Central and Eastern Canada. The program distorted the location of livestock producing and processing sectors by increasing the price of feed grains at the farm gate while reducing them near the population centers. Thus, for example, hog production located near Vancouver rather than in rural Alberta or Saskatchewan. Manure disposal became an environmental problem in BC's Fraser Valley, which would not have been the case in Alberta where hog manure might have provided a positive benefit to farmland. Despite the fact that the program has been terminated, livestock processing facilities remain in the locations incentivized by the original feed freight subsidies.

Crow Rate. In the late 1800s, prairie farmers were unhappy with the monopoly power exercised by the railroads. At the same time, the federal government sought to build a transcontinental railway to facilitate BC joining Confederation. The *Crow's Nest Pass Agreement* of 1897 constituted a compromise that provided lower freight rates in exchange for a \$3.4 million subsidy to the Canadian Pacific Railway for building a rail link from Lethbridge, Alberta to Nelson, BC to prevent movement of minerals from south-eastern BC through the U.S. Further, the freight rate on grain sold through Lake Superior ports was also lowered by 20%. Then, the *Railway Act* (1925) made the freight rate statutory in perpetuity and extended the Crow Rate to the Canadian National Railway. In 1927, legislation extended the statutory Crow Rate to cover exports of grain and flour through Vancouver, Prince Rupert and Churchill, Manitoba. Over time, the statutory rate was extended to other commodities, including oilseeds, dehydrated alfalfa and pulses.

The Crow Rate remained unchanged from 1897 to the early 1980s. However, inflation during the 1970s caused the costs of transporting grain to increase. As a result, the railways no longer invested in transportation infrastructure because returns from moving grain were too low. Estimates suggested that more than \$1 billion in grain export sales were lost or deferred as a result

of inadequate transportation capacity. In response, the federal government provided large operating subsidies to the railways and supplied them with new hopper cars to encourage increased movement of grain. As well, the western provinces and farmers (through the CWB and provincial grain marketing pools) purchased new hopper cars and gave them to the railways. Yet, these measures were only a stop gap.

Attempts to change the Crow Rate system were opposed by prairie grain producers, as well as the livestock producers in other parts of Canada. The reason was simple: Like feed freight assistance, the Crow rate subsidy increased the farm gate price, while inhibiting the growth of livestock production on the prairies and shifting it to central and eastern Canada and southwestern BC. Livestock producers argued that their investments, made as a result of the distortionary freight rates, were now locked in.

Nonetheless, 'forever' ended with the 1983 *Western Grain Transportation Act*. It institutionalized a subsidy – the Crow Benefit – that was paid annually to the railways to ensure they would make capital improvements and not allow the grain component of the railway system to deteriorate. Freight rates were allowed to increase, but not by more than 10% of the world grain price. Meanwhile, Alberta introduced a Crow offset program in 1985 to help livestock producers, which Manitoba and Saskatchewan were forced to follow in 1989.

The Crow Benefit was initially calculated at \$658 million (Canadian dollars). For 1989-1990, the Crow Benefit was set at \$720 million, with farmers covering the remaining 30% of the total freight costs. Arbitrary reductions were made to the Crow Benefit during the 1990s because of the federal government's fiscal problems. The payment finally fell to \$565 million with farmers covering half of the transportation costs. Then in 1995 the Crow freight rate subsidy was eliminated, with a one-time payment of \$1.6 billion to compensate farmers for lost land values,

and \$300 million to offset some adjustment costs, although some agricultural economists had argued that the payment should have been \$8.5 billion. In the end, the Crow Rate was the longest running agricultural subsidy program in the world.

#### 4. CANADIAN AGRICULTURAL BUSINESS RISK MANAGEMENT PROGRAMS

In the new millennium, Canada made significant changes to its agricultural programs, especially those pertaining to the grain sector. By the year 2000, Canada had abandoned major subsidy programs (e.g., Western Grain Stabilization, transportation subsidies, various ad hoc payments) and privatized the Canadian Wheat Board. A five-year federal/provincial/territorial agricultural agreement, known as Growing Forward (GF), came into effect in 2008. It focused on the following areas: (1) competitiveness, (2) innovation, (3) environment, and (4) business risk management (BRM). Pre-existing agricultural BRM programs were overhauled and subsumed under Growing Forward, which provided agricultural risk protection for farmers through four programs:

1. *AgriInvest* is a government-matched savings account that is intended to address ‘shallow’ reductions in net farm income – to help producers protect their margin from small declines. Each year, a producer could deposit up to 1.5% of their Allowable Net Sales (ANS) into the *AgriInvest* account, and this was matched by a government contribution. ANS was limited to \$1.5 million annually, with the largest matching annual government contribution equal to \$22,500. Further, the account balance was limited to 25% of a producer’s average ANS.
2. *AgriStability* is a margin-based, whole-farm program that protects against larger income losses than under *AgriInvest* – that is, ‘deep’ protection. Indemnities under *AgriStability* are based on the difference between the realized gross margin in any year and a reference historical margin, with payments triggered when a producer’s realized gross margin falls 85% or more below the reference margin. The reference margin is determined as an Olympic average

(lowest and highest margins removed) of realized gross margins over the last five years, where the gross margin equals revenue minus specified variable costs. Under GF, funds from AgriInvest are meant to cover the first 15% by which the realized margin falls below the reference margin. After that, the coinsurance (what the farmer pays) is 30% when the realized margin is between 70% and 85% of the reference margin, but is only 20% when it is less than 70%. Producers pay no premiums and incur only transaction costs and an initiation fee to participate.

3. *AgriRecovery* provides relief in the case of disasters, permitting governments to fill risk gaps not covered by other government programs. This disaster-relief program is offered by the federal, provincial and territorial (FPT) governments to assist producers with extraordinary costs of recovering from natural disasters.
4. *AgriInsurance* provides protection to producers from production (i.e., yield) losses for specified perils, including economic losses arising from natural hazards, such as drought, flood, wind, frost, excessive rain or heat, snow, losses from uncontrollable disease, insect infestations and wildlife – it is production insurance. AgriInsurance is an extension of subsidized multi-peril crop insurance that has been available to Canadian farmers since 1959, although the range of products covered increased over time. AgriInsurance does not cover livestock producers although they can insure their on-farm feed production.

AgriStability and AgriInsurance are both offered at the farm level; AgriStability is whole-farm and margin-based, whereas AgriInsurance is commodity-specific and yield-based.

Although somewhat modified, this suite of business risk management programs remains in place and constitutes, along with supply management, the primary form of support for Canada's agricultural sector. GF was in effect during the period April 1, 2008 through March 31, 2013, after

which it was replaced by Growing Forward 2 (GF2), which, in turn, ended March 31, 2018. The Growing Forward suite of programs was continued beginning April 1, 2018 under the rubric of the Canadian Agricultural Partnership (CAP).

#### **4.1 Shift from Growing Forward (GF) to Growing Forward 2 (GF2)**

The Canadian Agricultural Income Stabilization (CAIS) program was one of the programs replaced by GF, which, in turn, was designed to be more responsive, predictable and bankable. Yet, a survey conducted by the Canadian Federation of Independent Business between November 2009 and January 2010 found that 65% of respondents categorized the predictability of financial support under AgriStability to be poor, while 56% replied that the paperwork and required calculations were too complicated (Labbie 2010). The agricultural BRM programs were subsequently revised under Growing Forward 2 (GF2), which runs from April 1, 2013 through March 31, 2018 (see AAFC 2017). In particular, GF2 made changes to two programs – AgriInvest and AgriStability – while leaving the other programs unchanged from GF.

In going from GF to GF2, the producer contribution limit under AgriInvest was increased from 1.5% of allowable net sales to 100% of ANS, but only 1% (down from 1.5%) was matched by the government.<sup>3</sup> Further, the government’s annual matching contribution was now limited to \$15,000, down from a maximum of \$22,500 under GF. However, the balance limit that could be held in a farmer’s AgriInvest account was increased from 25% of historical average ANS to 400%.

The changes to AgriInvest were required partly because of the changes made to the AgriStability program. Compared to GF, GF2 simplified the AgriStability payment calculation by harmonizing multi-tier compensation rates that existed under GF to a single level (70%), but the level of program margin necessary to trigger a payout was reduced from 85% of the reference

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<sup>3</sup> A provincial government could act to increase the matching contribution to 1.5% or even more.

margin to 70%, with a 30% gap rather than 15% now to be covered by AgriInvest. Under GF2, the coinsurance component is 30% (payouts are based on 70% of the coverage of the eligible decline) regardless of the degree to which income falls (as was the case with GF). Again producers can employ AgriInvest to cover losses. Finally, under GF2 a reference margin limit (RML) was imposed for calculating indemnities under AgriStability – the reference margin was set at the lesser of the historic average program margin (as previously determined) and the historical average of allowable expenses (determined for the same three years used to calculate the reference margin).

For livestock producers who grow feed grains and participate in crop insurance, there is a Western Livestock Price Insurance Program (WLPPI) that cattle and hog producers can use to manage the risk of falling prices in Canada’s four western provinces. WLPPI protects producers against an unexpected drop in cattle and hog prices over a period of time.<sup>4</sup> In essence, it protects against market volatility by providing a floor for cattle and hog prices. Program premiums are determined much like option prices, with the premium depending on the strike price, current price, period and amount of coverage desired. It does not appear that a similar program exists outside the four western provinces.

#### **4.2 From Growing Forward to the Canadian Agricultural Partnership (CAP)**

According to Agriculture and Agri-Food Canada’s (AAFC) website, “the *Canadian Agricultural Partnership* is a five-year, \$3 billion investment by federal, provincial and territorial governments to strengthen the agriculture and agri-food sector.”<sup>5</sup> The main changes from GF2 were meant to simplify and streamline BRM programs and make them easier to access. In particular,

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<sup>4</sup> See <https://www.wlpip.ca/>. Poultry producers are not covered because poultry is a supply managed sector.

<sup>5</sup> See <http://www.agr.gc.ca/eng/about-us/key-departmental-initiatives/canadian-agricultural-partnership/?id=1461767369849> [accessed August 21, 2018].

AgriStability employs the federal income tax system to determine eligibility and payments to producers.<sup>6</sup> Unfortunately, reliance on tax forms and the tax system leads to a great deal of uncertainty for participating producers regarding indemnities and delays in receiving payments because the calendar (tax) year often differs from a producer's fiscal year (see Ference & Company Consulting Ltd. 2016). Therefore, AgriStability was modified so that participants with non-calendar fiscal year ends can now apply for AgriStability when their fiscal year ends, thereby providing earlier access to program benefits.

Two additional changes were made to the AgriStability program. First, the RML was modified to ensure that producers from all sectors would have improved access to support, regardless of their cost structure. The reference margin limit could not reduce the reference margin by more than 30%. Thus, if a farmer's historical average of allowable expenses fell below 70% of the reference margin, the RML would equal 70% of the reference margin rather than the lower value determined from the historical average expenses. Second, a late participation mechanism was introduced to ensure that all producers could access AgriStability support should a significant decrease in revenue threatened the viability of their farm. The late participation mechanism would be triggered at the provincial/territorial level in response to "significant events," with program benefits subsequently reduced by 20 percent.

In going from GF2 to CAP, the maximum Allowable Net Sales eligible under AgriInvest was reduced from \$1.5 million to \$1.0 million, while the annual matching contribution from government was lowered to \$10,000 from \$15,000. producer contribution limit under AgriInvest was increased from 1.5% of allowable net sales to 100% of ANS, but only 1% (down from 1.5%)

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<sup>6</sup> See <http://www.agr.gc.ca/eng/?id=1291990433266> [accessed August 20, 2018] for details. The important point is that the income tax system is required to determine the cost side of the gross margin (which equals farm revenue minus specified variable costs).

was matched by the government. Further, the government's annual matching contribution was now limited to \$10,000, down from \$15,000 under GF2.

In addition to the four main programs of Canada's BRM suite, there are an additional 12 programs that constitute the CAP: AgriRisk (3 separate initiatives), AgriScience (2 programs), AgriMarketing (2), AgriAssurance (2), AgriCompetitiveness, AgriDiversity and AgriInnovate.<sup>7</sup> Except for farmers and farm co-operatives, for-profit organizations are only eligible to participate in three programs – one AgriScience program, one AgriMarketing initiative and AgriInnovate; the remaining programs are directed at academic and not-for-profit entities. If the above programs are included, there are now 41 different programs that are designed to provide aid to Canada's agricultural sector.<sup>8</sup> Some programs are designed to fund research into clean technologies, innovations throughout the food chain, marketing and product diversity, et cetera. Two new research initiatives under AgriRisk provide small grants (\$25,000/year for upwards of three years) to fund academic research addressing issues relevant to BRM in Canada's agriculture sector, and much larger grants to facilitate development and adoption of private risk management tools that would then be paid for by the agricultural producers.

Fifty-three agricultural programs have been terminated, although 13 of these continue via some successor program.<sup>9</sup> For example, the federal government has an Advance Payments Program (APP) that complements but is not a part of the suite of BRM programs described above. The APP helps crop, livestock and other agricultural producers with cash flow (including

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<sup>7</sup> See <http://www.agr.gc.ca/eng/programs-and-services/?id=1362151577626> [accessed August 21, 2018]. Notice that AgriRecovery is not listed as a CAP program, primarily because farmers cannot register to participate; it is typically administered at the provincial/territorial level, but with federal funding.

<sup>8</sup> See same source as previous footnote.

<sup>9</sup> See <http://www.agr.gc.ca/eng/programs-and-services/expired-programs-and-services/?id=1251744184867> [accessed August 28, 2018]. APP costs are thus not included in the GF2 funding envelope.

producers whose principal activity may not be farming), which provides flexibility for marketing of commodities (e.g., a farmer can decide to sell product based on market conditions and not just on a need for cash flow). The APP provides a loan to producers of up to \$400,000, of which \$100,000 is interest free, depending however on the size of their enterprise. Producers can take out the loan at any time but must repay it within 18 months (24 months for cattle and bison producers).

#### **4.3 Impact of BRM Programs and Changes to Programs on Farmers**

What has been the impact of the federal BRM suite of programs on farmers' incomes? There have been few studies that have examined this aspect, although Ker et al. (2017) have examined the overall impact of programs. One study by Trautman et al. (2013) calculated the expected net present values (NPV) of a representative Alberta farm enterprise under no BRM programs, and then under GF and GF2. Without BRM, the net annual earnings were estimated to be \$71.97 per hectare (net farm worth equal to \$931,960/ha) with coefficient of variation (CV) equal to 0.40. Under GF, expected annual earnings increased to \$110.07/ha (net worth of \$1,425,386/ha) with a CV of 0.27, falling to \$106.69/ha (\$1,381,693/ha) with slightly higher CV of 0.29 under GF2. Upon examining representative farms in six regions of Alberta and only the changes in AgriStability in going from GF to GF2, Liu et al. (2018a) found that gross margins fell between 0.6% and 1.1% depending on the region, thereby confirming the results of Trautman et al. (2013).

Liu et al. (2018b) examined the impact of introducing a reference margin limit in the AgriStability program. This had a negative effect which was greater for farmers with the lowest costs, as expected. Further, the choice of late participation does offer farmers some flexibility in enrolment, but the researchers found that all farmers would be better off in terms of expected gross margins if they participate in AgriStability every year.

#### 4.4 Program Funding and the Role of Provinces and Territories

When it comes to funding, the two levels of government (federal and provincial/territorial) budgeted \$2 billion for the BRM component of GF2 (an increase of 50% from Growing Forward); since the agricultural BRM programs are cost-shared 60:40 with the provinces and territories, they contributed \$0.8 billion (AAFC 2017). In addition, under GF2 the federal government was the sole funder, to the tune of \$1 billion (Canadian dollars), of programs (AgriInnovation, AgriCompetiveness and AgriMarketing) that aim to facilitate economic growth in the agricultural sector. Overall, therefore, the federal government spent \$1.2 billion on BRM programs, plus another \$1 billion on marketing, competitiveness and innovation, over the five-year period ending March 31, 2018. As noted above, governments expect to spend \$3 billion on CAP (an increase of 50% from GF2) over the period April 1, 2018 to March 31, 2023, again split 60:40 between the two levels of government. Annual expenditures are thus expected to run at \$600 million, not including expenditures on non-CAP programs.

The amount paid by farmers is difficult to determine as it depends on uptake or enrolment in various BRM programs. To participate in AgriStability, farmers must pay \$4.50 annually for every \$1,000 of reference margin protected (where reference margin in this case is 70% of the contribution reference margin); in addition, there is an annual administrative fee of \$55.<sup>10</sup> The introduction of a fee might explain why the participation rate for AgriStability fell from 57% under GF to 42% under GF2 – producers did not pay a premium under GF. However, as noted above, Liu et al. (2018b) find that farmers who participate in AgriStability can expect to be better off.

In British Columbia, Alberta, Saskatchewan, Ontario, Quebec and Prince Edward Island,

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<sup>10</sup> Suppose the farmer's contribution reference margin to be covered is \$70,000. The fee would then be \$220.50 ( $=\$4.50/\$1000 \times 0.7 \times \$70,000$ ), plus \$55. See <http://www.agr.gc.ca/eng/?id=1296675557986> [accessed August 20, 2018] for details.

AgriStability is delivered by the respective provincial government, while the federal government delivers these programs elsewhere in Canada. Agriculture and Agri-Food Canada provides seven examples to illustrate how AgriStability works in conjunction with AgriInvest and AgriInsurance to protect a farmer against price and yield risk. The examples are of two cattle producers (one facing increased feed costs, the other slumping sales), two potato farmers (one affected by a plant disease, the other reduced demand), an apple producer affected by insects, and two grain producers (one affected by low output prices, the other by flooding).<sup>11</sup> Only the farmer experiencing yield loss due to flooding receives a benefit from AgriInsurance. Of course, the indemnities are based on participation in all three programs and depend on the amount of funds the agricultural producer has in their AgriInvest account.

Production insurance (AgriInsurance) is a tripartite program because it is funded by both levels of government and the producers. The allocation of funding for premiums and administration is provided in Table 1. In addition, the federal government provides a reinsurance pool for provinces; a province can insure against an insurance claim that could bankrupt its crop insurance agency. Such a ‘too big’ crop insurance claim can be the result of an adverse weather event, for example, that affects a large proportion of the farmers in a province. The provincial crop insurance bodies are responsible for the design and administration of AgriInsurance, absorbing all underwriting gains and losses (which is why they often employ reinsurance).<sup>12</sup>

AgriRecovery is best considered to be complementary to AgriInsurance, since it protects producers against catastrophic losses due to massive floods, animal diseases, et cetera.

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<sup>11</sup> See <http://www.agr.gc.ca/eng/programs-and-services/agricultural-business-management/business-risk-management-programs/?id=1490812852619> [accessed August 10, 2018].

<sup>12</sup> See <http://www.agr.gc.ca/eng/?id=1284665357886> [accessed August 20, 2018] for details and links to provincial insurance programs. Note, however, that CAP relies on bilateral agreements between individual provinces and the federal government – there is no widespread, sweeping legislation covering all levels of government simultaneously.

Expenditures under AgriRecovery are paid by the federal government and farmers are not required to enrol (as noted earlier). Since most major commercial crops in Canada are currently insured against deep losses under AgriInsurance, AgriRecovery is called upon only in unusual circumstances of extremely deep losses. Meanwhile, the great majority of farmers are also covered for shallow losses via AgriInvest, whereby the federal government contributes 1% of whatever a farmer deposits into a saving account, up to a total annual subsidy of \$10,000.

**Table 1: Tripartite Sharing of Responsibility under AgriInsurance**

Level of government	Premium <sup>a</sup>	Administration
Federal	36%	60%
Provincial/Territorial	24%	40%
Producer	40%	

<sup>a</sup> There are some special program options that are cost-shared at different rates but the vast majority of premium costs are shared at this level.

Source: See, e.g., <https://www.afsc.ca/Default.aspx?cid=3698-3701-3852> [accessed August 21, 2018].

Under the CAP agreement, the provinces are responsible for administering AgriInsurance, AgriInvest and AgriRecovery. These BRM programs are delivered at the provincial/territorial level through provincial crown corporations or directly by the government’s ministry of agriculture. A provincial crown corporation is a publicly-owned enterprise created by an Act of the legislature that shields it from government intervention; these corporations are supposed to operate at a profit, just as a private-sector company, unless otherwise directed by the legislature that created them. Agricultural risk management crown corporations operate in Alberta, Saskatchewan, Manitoba, Ontario, Quebec and Prince Edward Island (PEI), with remaining provinces vesting this function within their ministries of agriculture. In Saskatchewan, delivery occurs through the Saskatchewan Crop Insurance Corporation (SCIC) – a provincial crown corporation; in Manitoba, it is known as the Manitoba Agricultural Services Corporation (MASC); in Alberta, the Agriculture Financial Services Corporation (AFSC); in Ontario, AgriCorp; and, in

Quebec, le Programme d'Assurance Stabilisation des Revenus Agricoles.

Many provincial governments created crown corporations to operate agricultural financial services as a cost-cutting budgetary measure. A study by Ker et al. (2017) indicates that the crown corporations act too much like private insurance companies as opposed to public delivery agents. These authors argue that these crown corporations rely too much on private reinsurance, while holding too many reserves. Alberta, Saskatchewan, Manitoba, Ontario and PEI paid \$108 million in premiums to private reinsurance companies in 2014, while holding \$3.65 billion in reserve. Reserves as a percentage of liabilities averaged more than 23% in 2014 for the six provinces with crown corporation, from a high of 46% in Alberta to a low of 8% in Manitoba. Using Monte Carlo simulation, the authors estimated that it would take more than 8,000 years to deplete the reserves held by crown corporations in Alberta and Ontario (Ker et al. 2017). Given that the agricultural sector is small relative to the rest of the economy, there is no reason whatsoever for provinces to rely on private reinsurance, especially given that the federal government already provides a reinsurance program for pooling risks.

#### **4.5 Private Market Agriculture Insurance Alternatives**

While governments promote a greater role for private sector involvement in the provision of BRM tools (see below), this is very difficult because, in Canada, the crown corporations have a monopoly, and they provide subsidized products. As a result of subsidies, therefore, any private sector offering cannot compete. However, research summarized by Smith (2017) indicates that there would be little uptake of private sector crop insurance in the absence of government subsidies because few farmers would be willing to pay the full premium of the insurance product plus

administration and operations costs.<sup>13</sup> This creates a situation where there really are no private sector tools that are commercially viable. One exception is hail insurance, which is currently the only payment listed in Statistics Canada farm accounts as a separate BRM payment to agricultural producers; here the private sector has succeeded because hail insurance does not suffer from moral hazard (producer decisions cannot influence outcomes) or adverse selection (premiums are unaffected by participation rates), and costs of providing this product are lower than with other forms of crop insurance.

Another possible success is a product called Global Agricultural Risk Solutions. Global Agriculture Risk Solutions (GARS) is a relatively new production cost insurance product offered to grain producers in Western Canada. It is delivered by the private sector and premiums are not subsidized. The product provides basic insurance coverage for three major input costs, including fertilizer, seed and chemicals, plus enhanced coverage for qualifying producers for a specific amount of revenue per acre.

GARS is a whole-farm revenue insurance product that provides coverage when net production income is less than insured net crop production. It pays indemnities based on farm specific production income, and not an index. While GARS provides coverage for input costs, as well as for a specific amount of revenue per acre for qualifying producers, GARS has a number of unique features:

- Premiums are based on a producer's specific circumstances and financial records. Therefore, at least five years of accrual financial statements are needed, which farmers must provide. Producers using cash financials must convert to accruals.
- 'Enhanced' coverage levels of \$25, \$50, \$75, \$100 or \$125 per acre are available only to qualifying producers based on an analysis of financial records. Consequently, insurance is

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<sup>13</sup> Smith (2017, p.6) reports that farmers' willingness to pay for crop insurance was less than the actuarially sound premium plus a loading factor for administrative and operating costs of no more than 9%. This is well below the 20% to 25% that insurance companies often require to cover these costs.

only offered to a limited number of producers who are financially sound – adverse selection in reverse.

- GARS does not insure individual crops.
- Claim payments can be delayed, however, since 60% of the indemnity is paid after an interim harvest report from an accountant is provided. The remaining 40% of the indemnity is withheld until after May 1, the inventory cut-off date.
- GARS coverage levels are determined based on an average of the producer's production history. Therefore, farm performance (i.e., profitability) from previous years impacts the insurance coverage in the current year.

GARS is successful because it is able to select only the top agricultural producers and penalize them in subsequent periods if they 'shirk' – perform below expectation. Unfortunately, little is known about uptake of GARS, although, based on its staffing level, it is clear that the company serves a small clientele. Besides the fact that GARS only appeals to top producers, some crop producers might shy away from this product because participation requires farmers to make their financial transactions available to the insurer. It is unlikely that this product could operate in anything but a small niche market.

In addition to GARS, some private companies provide over-the-counter, index-based insurance products. Under the AgriRisk initiative, the Canadian government is looking to fund projects that will bring about new and innovative BRM products such as index-based insurance as it is considered a good alternative to crop insurance because individual loss characteristics of the producer cannot influence the underlying index – adverse selection and moral hazard no longer apply. However, uptake of such products has not proven very good so far, partly because private insurance companies are unable to compete with highly-subsidized public corporations that protect farmers' incomes and subsidize high premiums. It is unlikely that index-based insurance will be attractive to farmers without some form of subsidy (Smith 2017).

In summary, the Canadian Agricultural Partnership program does not deviate from the Growing Forward program in the sense of privatizing the current approach to BRM. The

government provides money to producer groups and others to conduct research or provide seed money for creating new risk mitigation products (Stephen 2017). The government does encourage the creation of new BRM tools that might be provided by the private sector, but these are unlikely to be successful without some government support. If the government was not involved in crop insurance, either through the subsidisation and/or delivery of insurance, it is unlikely that crop yield or crop revenue insurance would be provided privately.<sup>14</sup> Of course, the private sector is involved in reinsurance, management of farmers' AgriInvest accounts, provision of farm management services that help farmers reduce risk, et cetera. But any shift toward much greater private sector involvement in the foreseeable future is unlikely; beyond hail insurance, which has historically been privately provided, the private sector role will be limited.

## 5. DISCUSSION AND RECOMMENDATIONS

Although American and European agricultural policies have had an impact on Canadian decision making, much as it has on decisions in other jurisdictions, Canadian agricultural programs have evolved quite differently. The main difference relates to the degree to which Canada supports its agricultural sector. With the exception of the supply-managed industries, Canadian farmers have been less successful rent seekers compared to their American and European counterparts; therefore, the agricultural sector has historically received less subsidies than in the U.S. and EU, although this has changed dramatically over the decades following the Agreement on Agriculture that ended the Uruguay Round of GATT negotiations and initiated the WTO. This is evident from Figures 2 and 3.

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<sup>14</sup> It is important to distinguish between private provision and private delivery of insurance products. For example, the U.S. mandated private sector delivery in the 1980 Crop Insurance Act, but this required government subsidisation of both premiums and administrative and operating costs without which farmers would not participate (Smith 2017).

Canada has no intention to dismantle its supply managed dairy, eggs and poultry sectors, despite significant pressure to do so in bilateral trade negotiations (especially NAFTA renegotiation). Nor will Canada make changes to its suite of agricultural business risk management programs in the foreseeable future. The government encourages greater participation by the private sector in BRM through the creation of new products or tools (e.g., weather-indexed insurance based on growing degree days or precipitation over a specified period), but private sector programs are simply unable to compete with government programs. Canada is also unlikely to switch from crop yield to crop revenue insurance, as was done in the U.S.

When it comes to protecting agricultural producers from adverse circumstances beyond their control, mainly as a result of adverse weather but also due to disease and pests, Canada distinguishes two levels of protection. Crop insurance is used to protect against ‘deep’ losses in income, while a variety of hedging mechanisms are used to protect farmers against ‘shallow’ losses. One can think of the former as protecting agricultural producers against the loss of variable costs that have been invested at the time of planting and throughout the growing season; these are costs related primarily to the buying and planting of seed, the purchase and application of fertilizers, herbicides and pesticides, and the costs of operating machinery. The second category of protection enables farmers to recover some of the capital and entrepreneurial costs associated with operating a farm enterprise – hedging of shallow losses.

Canada provides protection against **deep losses** through the AgriStability and AgriInsurance programs. AgriStability provides protection of farm-level gross margins (revenue minus certain allowable variable costs): If a farmer’s gross margin falls by 30% or more from the benchmark expected revenue, she receives an indemnity equal to 70% of any loss below 0.7 times the benchmark. For example, if the expected gross margin is \$1 million, a payment is triggered if

realized income falls below \$700,000. Suppose that the realized income is \$600,000. Then, the payment would equal:  $0.7 \times (\$700,000 - \$600,000) = \$70,000$ , with the farmer having to cover the remaining \$30,000. However, the farmer would have paid \$3.15 per \$1,000 of reference margin protection and a \$55 fee to participate; this implies a cost to the farmer of \$3,205 ( $= \$3.15/1000 \times \$1 \text{ million} + \$55$ ). If the farmer also has a crop insurance policy under AgriInsurance, she might be eligible for additional payments depending on the level of coverage she had chosen. For crop insurance, the farmer would only have paid 40% of the actuarially sound premium and none of the administration and operating costs.

In addition to this, the Canadian government provides deep coverage through AgriRecovery. This program is paid for solely by the federal government, with farmers paying no premiums. AgriRecovery is simply a form of disaster protection – protection against major drought or flood, pest outbreaks (e.g., BSE in livestock), and other catastrophes.

Canada protects farmers against shallow losses through AgriInvest. The federal government allows farmers each year to invest 1.5% of their annual net sales into a tax-free savings account (no income tax is levied on interest), matching producer contributions up to 1% with a maximum annual subsidy of \$15,000. Further, producers are permitted to invest up to four times their annual net sales as a safety net to protect against shallow reductions in income (there are conditions under which funds can be withdrawn). This limits the government's exposure to risk.

Finally, the federal-provincial/territorial bilateral business risk management agreements are meant to protect agricultural producers outside of the supply management sectors against price and yield risk. The costs of supply management are borne by consumers (with administrative costs borne by producers and government), while the costs of BRM programs are shared by government and producers. As to remaining programs, these tend to be minor in terms of funding requirements

and are focused on research and development. As a result, annual government expenditures on agriculture are limited to a much greater degree than elsewhere. Indeed, the PSE and NRA measures of support (see Figures 1, 2 and 3) exaggerate government outlays because consumer transfers in the supply managed sectors are included as a measure of support. Clearly, American and European taxpayers spend much more per capita on agricultural support programs than Canadian taxpayers.

### **5.1 Recommendations for EU Policymakers**

The choice to rely on agricultural business risk management programs is a political choice that needs to take into account two factors: (1) the extent to which the authority wishes to subsidise farmers, and (2) the efficiency (or perhaps the effectiveness) of the BRM suite is chosen. In the absence of government, crop yield or revenue insurance is unlikely to be provided by the private sector, at least not on the scale envisioned and required to ensure adequate participation rates, and this is likely true of index insurance as well. Once the administrative and operating costs of providing insurance are added to the actuarially sound premiums, farmers will not generally participate. Any risk management program will require government intervention, with the extent to which premiums are subsidised determining participation rates. Evidence from Canada (and the U.S.) suggests that, in order to get participation rates above about 80%, the subsidy rate on premiums must be 60% or more, and administrative and operating costs must be covered as well. Therefore, before deciding upon a course of action with regards to the choice of BRM programs, a decision needs to be made regarding the funds that the authority is willing to transfer from general taxpayers to the agricultural sector for this purpose.

The EU does not currently rely on risk management programs to a large degree. Upon comparing U.S. and Canada BRM programs, however, several recommendations follow.

- Revenue insurance is preferred to gross margin insurance, because farmers prefer an insurance product that is transparent and provides payments as quickly as possible. This militates against the use of individual tax returns to determine gross margins and favours the use of revenue – yield and price are easy to determine. A program similar to AgriStability should not be adopted.
- Farmers prefer crop revenue insurance to crop yield insurance. Although producers can hedge against low prices at harvest using futures markets, few farmers rely on futures markets but a significant number make use of forward contracts as an effective risk management tool. In particular, forward contracting is used to deliver livestock, grain and other crops to handlers and/or processors thereby shifting risk from farmers to speculators and downstream companies with greater ability to deal with price risk.
- Crop yield or production risk is best addressed using crop insurance. Along with methods of addressing price risk (previous point), this is perhaps the best and only way to deal with deep revenue protection. However, subsidies will be required.
- There are efficiency arguments for public provision of crop insurance. These include the ability of the authority to reduce adverse selection and moral hazard in ways that are unavailable to the private sector, but also in terms of the reduced costs related to reinsurance, administration and operation (e.g., see Ker et al. 2017).
- Coinsurance can be important. Under AgriStability, Canadian farmers are not paid the full extent of coverage. That is, if gross margin falls below a trigger margin, the producer only recovers a portion of the gross margin trigger amount, not the entire amount. This militates against moral hazard because it encourages a producer to take actions to reduce risk that would be undertaken in the absence of AgriStability.
- To cover shallow losses, a program similar to AgriInvest can be employed. The authority needs to choose a level of subsidy, if one is even desired.

In summary, much of Canada's suite of agricultural risk management programs should not be adopted. However, there are elements that are useful to consider, especially with regards to the judicious use of incentives and mechanisms used to keep expenditures in check. The AgriInvest component along with some form of revenue insurance, or some facsimile of these is commendable (see Jongeneel et al. 2018).

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## Appendix

**Table A1: Top Agricultural Programs Providing Direct Payments to Canadian Farmers, Average Annual Payments (Pmt/Yr) over the Period 1981-2010**

Program	Average Pmt/Yr <sup>a</sup>	Start Year	Finish Year	Duration (years)
Canadian Agricultural Income Stabilization (CAIS)	\$ 928,079	2004	2010	7
Crop Insurance	594,239	1981	2010	30
Agri-Stability	564,855	2007	2010	4
Special Canadian Grains	508,134	1987	1990	4
Farm Income Payment	482,759	2005	2006	2
Gross Revenue Insurance Plan (GRIP)	410,259	1991	2001	11
Provincial stabilization programs	382,884	1981	2010	30
AgriInvest	330,606	2008	2010	3
Net income stabilization account (NISA)	329,778	1991	2009	19
Transitional Industry Support Program (TISP)	271,095	2004	2006	3
Grains and Oilseeds Payment (GOPP)	251,665	2006	2008	3
Farm Support and Adjustment Measures II	248,823	1991	1993	3
Farm input rebates	237,837	1981	2010	30
Dairy subsidy	209,392	1981	2002	22
Special Drought Assistance	195,151	1989	1992	4
Western Grain Stabilization Act	190,303	1981	2001	21
2003 Transition Funding	178,004	2003	2005	3
Farm Income Assistance	172,687	1990	1992	3
CAIS Inventory Transition Initiative (CITI)	163,546	2006	2010	5
AgriRecovery	145,876	2008	2010	3
Beef Cattle and Sheep Support	141,611	1982	1982	1
Canadian Farm Income Program (CFIP)	120,589	2001	2005	5
Bovine Spongiform Encephalopathy Recovery	115,884	2003	2006	4
Agricultural Income Disaster Assistance (AIDA)	111,146	1999	2004	6
Tripartite payments	104,525	1986	1998	13
Freight Cost Pooling Assistance Program (FCPAP)	102,922	1997	1997	1
Canada-Saskatchewan Assistance Program (C-SAP II)	100,105	2001	2002	2

<sup>a</sup> Payment per year in '000s of 2002 Canadian dollars.

Source: Vercammen (2013)

**Table A1: Agriculture and Agri-Food Canada. All Programs and Services.**

Program/Service	What this service offers	Who is this for
1 Advance Payments Program	Provides producers with a cash advance on the value of their agricultural products	farmers and food producers; young farmers or new entrants
2 AgriAssurance Program: National Industry Association Component	Provides support, at the national level, to help industry develop and adopt systems, standards and tools to support quality attributes, health and safety claims about Canadian agricultural and agri-food products.	non-profit organizations
3 AgriAssurance: Small and Medium-sized Enterprise Component	Provides targeted support to companies to help implement third-party assurance certification projects that address international market requirements, thus helping expand export opportunities for Canadian agricultural and agri-food products.	for-profit organizations
4 AgriCompetitiveness Program	Provides matching contributions to help the agricultural sector to leverage, coordinate and build on existing capacity, share best practices, provide mentorship opportunities, as well as agriculture awareness, farm business management and farm safety information and tools. The program will provide funding to the sector to promote the benefits of a career in agriculture and to enhance the public's perception of agriculture and its role in the economy.	non-profit organizations

5 Agricultural Clean Technology Program	Funding for projects led by provincial and territorial governments for clean technology research, development, demonstration, commercialization and adoption projects in Canada's agriculture and agri-food sectors (\$25 million over three years).	provincial and territorial governments in Canada
6 Agricultural Greenhouse Gases Program	Funding for projects that address a need for either more research or better technology transfer with a goal of developing beneficial management practices that reduce greenhouse gas emissions in the areas of livestock systems, cropping systems, agricultural water use efficiency and agroforestry.	Aboriginal organizations; co-operatives; educational and research institutions; governments; industry associations and farming organizations; non-profit or community organizations
7 Agricultural Youth Green Jobs Initiative – Green Farms	Funds internships for post-secondary graduates working in the agriculture industry. These internships would include activities or projects that benefit the environment. Farm operators could receive up to a maximum of \$10,000 per youth intern, 30 years old or younger, including high school students to implement projects that are environmentally beneficial.	associations; boards, councils, farms (sole proprietorships, partnerships and corporations); for-profit organizations; non-profit organizations; provincial & municipal governments; universities

8	Agricultural Youth Green Jobs Initiative – Green Internships	Funds internships for post-secondary graduates working in the agriculture industry. These internships would include activities or projects that benefit the environment. Employers in the agricultural sector but not directly on farm could receive up to a maximum of \$16,000 per post-secondary graduate intern to undertake environmental activities, services or research that will benefit the agriculture sector.	associations; boards, councils, farms (sole proprietorships, partnerships and corporations); for-profit organizations; non-profit organizations; provincial & municipal governments; universities
9	AgriDiversity Program	Provides matching contributions to support activities that help Canada’s agriculture sector to be stronger by helping the sector to better leverage the potential offered by youth, women, Indigenous peoples and persons with disabilities. The program will provide funding to promote the benefits of a career in agriculture and increase education and awareness.	non-profit organizations
10	Agri-Food Trade Service for Exporters	Provides centralized access to market information, trade counselling and export support activities.	agri-businesses or food processors; co-operatives; farmers and food producers; fishing and aquaculture industries, industry associations and farming organizations
11	AgrilInnovate Program	This program provides repayable contributions for projects that aim to accelerate the demonstration, commercialization and/or adoption of innovative products, technologies, processes or services that increase agri-sector competitiveness and sustainability.	for-profit organizations including: businesses and/or coporations; co-operatives; corporations and co-operatives in Indigenous communities

12	AgriInsurance	Provides producers with cost-shared insurance for natural hazards in order to minimize the financial implications of production and/or asset losses.	co-operatives; farmers and food producers
13	AgriInvest	A national farm program that provides matching contributions to producers who make annual deposits to an AgriInvest account, to help manage income declines or make investments to mitigate risks or improve market income.	co-operatives; farmers and food producers
14	AgriMarketing Program: National Industry Association Component	Provides support to increase and diversify exports to international markets and seize domestic market opportunities through industry-led promotional activities that differentiate Canadian products and producers, and leverage Canada's reputation for high quality and safe food.	non-profit organizations
15	AgriMarketing Program: Small and Medium-sized enterprise Component	Provides support for small and medium-sized enterprises to undertake promotional and market development activities in markets other than Canada.	small and medium-sized enterprises

16	AgriRecovery	<p>AgriRecovery is a framework that guides how federal-provincial-territorial governments work together to assess the impacts of disasters on Canada's agricultural producers and respond with timely, targeted initiatives where there is need for assistance beyond ongoing programming. Initiatives developed under the AgriRecovery Framework are designed to help producers with the extraordinary costs necessary for recovery. Producers cannot apply directly to the AgriRecovery Framework, but to individual initiatives launched under the Framework. See the AgriRecovery website for a list and links to current initiatives. Initiatives are typically administered by the participating province(s)/territory(ies).</p>	<p>agricultural producers whose operations have been affected by a natural disaster event (for example, disease, pest, extreme weather)</p>
17	AgriRisk Initiatives - Administrative Capacity Building Stream	<p>Provides funding for building the administrative capacity for the delivery of new risk management tools.</p>	<p>non-profit and for-profit administrations delivering agricultural risk management tools; provincial and territorial governments</p>
18	AgriRisk Initiatives - Microgrants	<p>Provides funding for academic research proposals that address issues relevant to business risk management in the Canadian agriculture sector.</p>	<p>registered non-profit organizations; academic institutions</p>
19	AgriRisk Initiatives - Research and Development Contribution Funding Stream	<p>Provides financial and technical assistance to facilitate the development and adoption of private-sector or other producer-paid agricultural risk management tools.</p>	<p>academic institutions; agricultural service providers and suppliers; Indigenous organizations; industry associations and farming organizations</p>

20 AgriScience Program – Clusters	The program aims to accelerate the pace of innovation by providing funding and support for pre-commercial science activities and cutting-edge research that benefits the agriculture and agri-food sector and Canadians. Cluster proposals are intended to mobilize industry, government and academia through partnerships, and address priority themes and horizontal issues that are national in scope.	industry groups; non-profit organizations
21 AgriScience Program - Projects	The program aims to accelerate the pace of innovation by providing funding and support for pre-commercial science activities and cutting-edge research that benefits the agriculture and agri-food sector and Canadians. This component aims to support specific shorter-term research activities to help industry overcome challenges and address fiscal barriers experienced by small and emerging sectors. They also seek to mitigate high risk opportunities that have the potential to yield significant returns.	businesses and/or corporations; for-profit organizations including: co-operatives, indigenous groups, non-profit organizations (incl. associations, corporations, co-operatives)
22 AgriStability	A national whole farm program that provides income support to producers who experience a large margin decline.	co-operatives; farmers and food producers
22 Canada Brand	Canada Brand members have access to a suite of tools, free of charge, including specialized graphics in multiple formats and languages, professional Canadian photography, and market research reports.	agri-businesses or food processors; industry associations and farming organizations

23	Canadian Agricultural Adaptation Program (2014-2019)	Provides project-based funding to non-profit organizations in the agricultural sector responding to new and emerging issues and opportunities.	Aboriginal organizations; marketing boards; non-profit organizations and associations, including cooperatives
24	Canadian Agricultural Loans Act Program	Provides financial loan guarantees to farmers and agricultural co-operatives in order to establish, improve, and develop farms.	co-operatives; farmers and food producers; young farmers or new entrants
25	Canadian Animal Genetic Resources	Provides financial loan guarantees to farmers and agricultural co-operatives in order to establish, improve, and develop farms.	agri-business or food producers; co-operatives; farmers and food producers
26	Canadian Pari-Mutuel Agency Permits, Licences and Authorizations	Permits, licences and authorizations for Canadian racetrack and betting theatre operators to conduct pari-mutuel betting on horse races	Canadian racetrack and betting theatre operators
27	Canadian Soil Information Service	National Soil Database - the national archive for soil and land resource information in Canada. (i) Soil interpretations - land use management and planning tools developed to assist in land assessment and decision making. (ii) Soil survey reports and printed maps - soil survey reports and maps for Canada published at scales more detailed than 1:1 million. (iii) Reference publications and manuals - documents describing soil survey methodology, soil and landscape classification, laboratory analyses, and geographic information system (GIS) procedures.	educational or research institutions; farmers and food producers; governments

28	Career Focus Program	Provides funding to organizations for the creation of agricultural internships that provide career-related work experiences.	Aboriginal individuals and organizations; agri-businesses or food processors; co-operatives; educational or research institutions; farmers and food producers; governments; industry associations and farming organizations; non-profit or community organizations
29	Community Pasture Program	Conserves the land resource, protecting it from deterioration due to drought while utilizing the land primarily for the grazing and breeding of livestock.	co-operatives; farmers and food producers
30	Coordinated Agriculture Policy Research Initiatives	The program provides resources, including data and models as well as departmental experts to the academic community to enhance evidence-based policy development for the agriculture and agri-food sector in Canada.	university professors in Canada
31	Dairy Farm Investment Program	Dairy farmers can receive up to \$250,000 for targeted investments in farm technologies and upgrades to equipment that improve productivity.	Canadian licensed cow milk producers
32	Dairy Processing Investment Fund	Dairy processors can receive up to \$10 million to support investments in equipment and infrastructure and up to \$250,000 to access expertise	cheesemakers and other dairy processors; non-profit organizations involved in the dairy sector

33	Drought Watch	Provides timely information to the agricultural sector in order to identify the impacts of climatic variability on water supply and agriculture	Aboriginal individuals and organizations; agri-businesses or food processors; co-operatives; educational or research institutions; farmers and food producers; food service providers or food retailers; governments; industry associations and farming organizations; non-profit or community organizations; students and researchers
34	Farm Debt Mediation Service	Provides financial counselling and mediation services to farmers in financial difficulty.	farmers and food producers
35	Geospatial products	Provides online access to agriculture-related maps, geospatial data and tools to help you understand the geography of agriculture and make better decisions for environmentally responsible yet competitive agriculture.	Aboriginal individuals and organizations; agri-businesses or food processors; agricultural service providers and suppliers; educational or research institutions; farmers and food producers; fishing and aquaculture industries; general public; governments; governments; industry associations and farming organizations; non-profit or community organizations; students and researchers
36	Minor Use Pesticides Program	Works with producers, the provinces, Health Canada's Pest Management Regulatory Agency, pesticide manufacturers and the U.S. IR-4 Project to establish producer-selected pest problems on minor crops, match them with pesticides and prepare regulatory submissions for new minor uses of pesticides.	organizations; producers

37	Office of Intellectual Property and Commercialization	Supports the development and transfer of the results of research efforts by the Science and Technology Branch (STB) of Agriculture and Agri-Food Canada (AAFC).	agri-businesses or food processors; agricultural service providers and suppliers; educational or research institutions; industry associations and farming organizations
38	Pesticide Risk Reduction Program	Develops pesticide risk reduction strategies and associated tools, practices and technologies which reduce the risk to human health and the environment posed by pesticide use in agriculture.	academic institutions; grower organizations
39	Price Pooling Program	Provides marketing agencies and producers with a price guarantee for eligible products, as a form of security to assist and encourage cooperative marketing.	co-operatives; farmers and food producers; industry associations and farming organizations
40	Saint-Hyacinthe Research and Development Centre's Industrial Program	Provides direct access to sophisticated equipment and a versatile research and development environment to agri-food companies in order to assist with small-scale food processing and testing needs, and to foster innovation in the area of food research.	agri-businesses or food processors.
41	Technology Transfer and Licensing	A variety of technologies and intellectual property available for commercialization	for-profit organizations

Source: <http://www.agr.gc.ca/eng/programs-and-services/?id=1362151577626>

#### Other initiatives

##### Soil and Land

<http://www.agr.gc.ca/eng/science-and-innovation/agricultural-practices/soil-and-land/?id=1370345323701>

- The [Wildlife habitat capacity on farmland indicator](#) tracks the capacity of Canadian farmland to provide feeding and breeding habitat for wildlife. When combined with the Soil Cover Indicator, it provides a snapshot of biodiversity potential on farmland in Canada.

- The [Soil cover indicator](#) summarizes the effective number of days in a year that agricultural soils are covered by vegetation, crop residue or snow. When combined with the Wildlife Habitat Capacity Indicator, it provides a snapshot of biodiversity potential on farmland in Canada.