Agriculture Division, Statistics Canada

Agriculture Statistics Program Review

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Statistics Canada Statistique Canada

Canada

For the purposes of this report, the word “farm” represents all agricultural operations as per the Census of Agriculture:

Agricultural operation
A farm, ranch or other agricultural operation producing agricultural products for sale. Also includes feedlots, greenhouses, mushroom houses and nurseries; farms producing Christmas trees, fur, game, sod, maple syrup or fruit and berries; beekeeping and poultry hatchery operations; operations with alternative livestock (bison, deer, elk, llamas, alpacas, wild boars, etc.) or alternative poultry (ostriches, emus, etc.), when the animal or derived products are intended for sale; backyard gardens if agricultural products are intended for sale; operations involved in boarding horses, riding stables and stables for housing and/or training horses even if no agriculture products are sold. Sales in the past 12 months not required but there must be the intention to sell.
NOTE: For the Yukon, Nunavut and Northwest Territories only, the definition also includes operations involved in the following: herding wild animals (such as caribou and muskox), breeding sled dogs, horse outfitting and rigging, and harvesting indigenous plants and berries.

http://www.statcan.gc.ca/ca-ra2006/gloss-eng.htm

REVIEW OF THE AGRICULTURE STATISTICS PROGRAM
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Executive Summary

The Agriculture Division conducts an extensive statistical program with several highly integrated components comprised of the Census of Agriculture (CEAG), crop and livestock surveys, farm economic statistics, agri-environmental statistics, tax and other administrative data, research and analysis, and remote sensing.

The Agriculture Division reviews its program on a regular basis to maintain relevance. However, at this time, there are a number of additional factors that warrant a more extensive review of the entire agriculture statistics program.

Purpose of the Review

The present report responds to the following key questions:

1. Is a CEAG still the best way to meet the data requirements for policy and program purposes? If so, what should its frequency be? More specifically, is a CEAG required in 2016?
2. Given the data requirements for policy purposes, is the CEAG in its current form the most efficient way to gather the information, and are there efficiencies to be gained in the CEAG?
3. How can the agriculture statistics program as a whole be streamlined to reduce response burden[1] and costs, while continuing to meet priority data requirements?

Process Undertaken to Conduct the Review

To respond to these questions, the Agriculture Division undertook the following activities:

- consultations were conducted with key federal, provincial, municipal, producer organization and industry stakeholders[2]
- a comprehensive survey was conducted with users of the Division's statistics
- a legislative review was conducted
- consultations were held with Statistics Canada divisions, including the System of National Accounts (SNA), which provided a report on its requirements
- response burden was analyzed
- agriculture statistics programs in other countries were reviewed
- the most appealing features of these programs were evaluated within the Canadian context for the delivery of the Canadian agriculture statistics program.

1. Response burden reduction in this report also includes the need to reduce red tape as identified by the Government of Canada's (GoC) Red Tape Reduction Commission. http://www.reduceredtape.gc.ca/why-pourquoi/grow-croitre01-eng.asp#toc2 (accessed June 4, 2012).

2. The key federal users consulted were Agriculture and Agri-Food Canada (AAFC), Environment Canada, Health Canada and the following AAFC portfolio partners: the Canadian Food Inspection Agency (CFIA), the Canadian Grain Commission, the Canadian Dairy Commission, Farm Credit Canada and the Farm Products Council of Canada. The key provincial users consulted were the stakeholders from the provincial and territorial agriculture ministries and statistics agencies. The key industry stakeholders represented producer organizations and industry clients of the Agriculture Division.

Results of the Review

The review confirmed that Statistics Canada's agriculture statistics program, of which the CEAG is an integral component, continues to fulfill legislative requirements and to serve the needs of several long-standing and diverse clients. At the federal level, these clients include Agriculture and Agri-Food Canada (AAFC), Health Canada, Environment Canada, as well as the SNA and Prices Division of Statistics Canada.

At the provincial level, the statistical and policy areas of provincial agricultural departments are the key stakeholders in the agriculture statistics program. Local-level stakeholders largely include municipal and regional land-use planners. Industry stakeholders represent national producer organizations, agribusiness, academia, international agricultural institutions, agriculture producers and dietitians. The program also serves the general public.

The consultations and review regarding the agriculture statistics requirements for program administration and policy making indicate that

1. a traditional quinquennial CEAG is necessary in the short to medium term to obtain the required information[3]
2. some efficiency could be gained and response burden could be reduced with the adoption of a different CEAG model
3. alternative data collection strategies could streamline the current program to reduce burden and yield cost efficiencies.

Further Work

Alternative data sources have been identified that hold promise for incorporation into the agriculture statistics program. Further investigation and analysis of these sources is required. High levels of interdepartmental cooperation and support will be necessary to fully exploit these data sources. In addition, further work will be required to increase the incorporation of taxation data, so that detailed revenue and expenses questions could be removed from the CEAG and the Farm Financial Survey (FFS). This work is summarized in Section 6.0 Road Map towards a New Agriculture Statistics Program on page 50.

Further analysis of remote sensing technologies, administrative data sources (including further incorporation of taxation data) and survey sample populations is required.

3. For the purposes of CEAG planning, the short term is defined as the next five years; the medium term is defined as the next five to ten years; and the long term is any timeframe longer than ten years with further precision indicated where possible.

1.0 Introduction

1.1 Drivers of the Agriculture Statistics Program Review

The need for the information collected from the CEAG goes well beyond the requirements of the agriculture sector. It is used to respond to a broad spectrum of issues such as health, food security and safety, natural resource use, climate change and crisis management. These interconnections are an important distinguishing feature of the data generated by the agriculture statistics program.

The Food and Agriculture Organization (FAO) of the United Nations (UN) summarizes the dilemma that Canada and many countries around the world are currently facing with respect to agriculture data collection:

> *At the same time as governments face pressure to cut costs, they are also being confronted with increasing and more complex demands for data. There has been growing interest in topics such as food security, the environment, farm labour, and special agricultural practices like organic farming.*[4]

To meet these challenges, the Agriculture Division of Statistics Canada continually reviews its program to maintain relevance and efficiency. Through the processes of program performance (biennial and quadrennial review), the consultations with AAFC (as part of the interdepartmental letter of agreement) and the quinquennial CEAG user consultations, changing data requirements are regularly reviewed and reflected in the program.

Nevertheless, there are a number of additional factors that warrant a more extensive review of the entire agriculture statistics program at this time:

- Statistics Canada must review its census programs, including the CEAG, prior to the next cycle.
- Increasing concern regarding the burden placed on producers to provide not only statistical information, but also information for the administration of agricultural programs, warrants a review of the means by which data on the industry are collected. In keeping with the need to reduce response burden is the federal government's launching of the Red Tape Reduction Commission, whose mandate is (in part) "… to get rid of unnecessary intrusions."[5]
- Statistics Canada is rationalizing and centralizing the way that business surveys will be collected and processed. In preparation for these changes, the review (and subsequent transition) of the agriculture statistics program has been in progress since 2010-11.[6]
- Additionally, all federal government departments have been tasked with undertaking a strategic review of current programs and processes with a view to gaining efficiencies as part of the federal deficit reduction action plan.

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4. Food and Agriculture Organization (FAO) of the United Nations, 2007, *A System of Integrated Agricultural Censuses and Surveys, Volume 1, World Programme for the Census of Agriculture 2010*, Rome, p. 4. ftp://ftp.fao.org/docrep/fao/008/a0135e/a0135e00.pdf (accessed June 4, 2012).

5. *PM Announces Red Tape Reduction Commission.* http://pm.gc.ca/eng/media.asp?id=3894 (accessed June 4, 2012).

6. Specifically, the Corporate Business Architecture (CBA) initiative.

- The *Statistics Act* includes a provision for cancelling a quinquennial CEAG (in years ending in "6"). Therefore, it needs to be determined whether the 2016 CEAG is necessary, and if so, to establish the requirements for the 2016 CEAG.

As a result of these factors, the Agriculture Division endeavoured to answer the following key questions:

1. Is a CEAG still the best way to meet the data requirements for policy and program purposes? If so, what should its frequency be? More specifically, is a CEAG required in 2016?
2. Given the data requirements for policy purposes, is the CEAG in its current form the most efficient way to gather the information, and are there efficiencies to be gained in the CEAG?
3. How can the agriculture statistics program as a whole be streamlined to reduce response burden and costs, while continuing to meet priority data requirements?

To respond to these questions, the Agriculture Division undertook the following activities:

- A legislative review was conducted.
- Consultations were held with key stakeholders from federal, provincial and territorial governments, municipal and regional land-use planners, agriculture producer organizations and industry representatives, as well as the Advisory Committee on Agriculture Statistics. A detailed survey was conducted of the Agriculture Division's clients to illuminate data requirements and to narrow down which ones are critical. Workshops were held with the key stakeholders and with Agriculture Division staff.
- Respondent burden within the current program was analyzed. Discussions with the provinces were also held regarding burden placed on agriculture respondents through data collection at the provincial level.
- The current program and its integration with other programs within the Agency were reviewed in depth.
- An international review of other countries' agriculture statistics programs was conducted.

The information gathered from conducting these exercises resulted in the development of several alternative options for the delivery of the agriculture statistics program. The report analyzes the advantages and disadvantages of various options. Strategies are identified for reducing response burden and finding further efficiencies for the delivery of the entire agriculture statistics program while bearing in mind the requirements for agriculture data.

1.2 Structure of the Report

The report first presents an overview of the need for agriculture data, particularly in the current state of volatility in the food production industry. Next, a brief summary of the legislative review is presented, followed by an examination of the different applications of the quinquennial CEAG data.

The international review presents agriculture survey programs, CEAGs and agricultural remote-sensing applications in various countries throughout the world. The current Canadian program was examined in light of the information gleaned from the international review, which resulted in the development and evaluation of different options for delivery of the Canadian agriculture statistics program.

2.0 The Need for Agriculture Data

Agriculture's importance is highlighted by the impact that changes in the industry have on a number of sectors of the economy. As a result, the agriculture data collected by Statistics Canada extend well beyond the data requirements of the immediate agriculture sector. It is important to fully understand these interconnections, so that any changes to the current program can be made with confidence recognizing the full implications on government and industry requirements.

The key areas utilizing agriculture statistics are

- health policy
- food security
- food safety
- natural resource use
- renewable energy production
- environmental stewardship and climate change
- crisis management during disease outbreaks and natural disasters
- long-term viability and competitiveness of agri-business and the ag-value chain
- rural development
- international commitments and competitiveness in trade.

A summary of the uses of agriculture data is presented in this review to illustrate the integrated nature of the activities requiring agriculture data.

2.1 The Current Situation Facing the Agriculture Industry

The current situation facing the agriculture industry requires special mention since this is the environment in which decisions are being made regarding the future of the agriculture statistics program.

The agriculture industry is presently facing significant volatility. TD Economics recently produced a special report entitled, *"Unprecedented Volatility A Hallmark of Agriculture's New Age,"* which summarizes the issues facing agriculture: *"... the sector's biggest challenge – and one that has grown in recent years – is unpredictability."*[7]

For agriculture, unlike other industries, this rate of change is compounded by an increase in adverse climatic phenomena, and crop and livestock disease that impact production either through the destruction of crops and livestock or because agriculture producers have the ability (unlike in other industries) to react to these phenomena by changing production decisions relatively quickly.

Structural changes occurring in the industry, such as the changes recently announced to the Canadian Wheat Board (CWB), will also have an effect, not only on the industry, but also on the collection of data by Statistics Canada.

7. Derek Burleton and Dina Cover, 2011, *Unprecedented Volatility A Hallmark of Agriculture's New Age,* TD Economics, p. 4. http://www.td.com/document/PDF/economics/special/dc1111_agriculture.pdf (accessed June 4, 2012).

International trade policies and regulations, such as the US Country of Origin Labelling (COOL), continue to have an impact on Canadian trade and production. The Canadian agriculture industry is largely export-based and therefore very vulnerable to external factors.

International commitments recently made by Canada in an effort to stabilize agricultural commodity markets and record high food prices will have an impact on how Statistics Canada collects data. The G20 Agriculture Ministers met in June 2011 and stressed the importance of "*better market information that improves transmission of market signals, more open trade, comprehensive rural development and agricultural policies, and sustained investments [that] would enable agricultural producers to increase production, enhance their income and improve global supply of food and food security.*"[8]

To this end, a new Agriculture Market Information System (AMIS) has recently been created and is housed at the FAO. This initiative includes the use of remote sensing technologies to improve weather and crop production forecasts. Canada currently meets the requirements for this initiative; however, any changes to the program will have to ensure that these commitments are not jeopardized.[9]

In an attempt to reduce the effects of some of this volatility, the FAO global strategy for agriculture censuses recommends that a CEAG be conducted more frequently than every ten years. The reasoning is that in this volatile environment, countries *"may find that structural changes happen quickly, and structural data may be needed more frequently than every ten years."*[10]

Government support to the industry is significant. In 2009-10, the provincial and federal governments together spent approximately $8.4 billion supporting the agri-food industry. Producer support programs represented approximately 59%, on average, of total spending on the industry by both levels of government over the last decade.[11]

Tracking changes in a volatile industry will be a challenge requiring a quinquennial CEAG and a strong survey program. The strength of the survey program will depend on the quinquennial CEAG for realigning the survey estimates and for updating the survey frames.

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8. Ministerial Declaration: *"Action Plan on Food Price Volatility and Agriculture,"* Meeting of the G20 Agriculture Ministers, (Paris), June 22-23, 2011. p. 2.
http://un-foodsecurity.org/sites/default/files/110623_G20_AgMinisters_Action_Plan_Agriculture_Food_Price_Volatility.pdf
(accessed June 4, 2012).

9. Canada's response to Action Two of the *"Action Plan on Food Price Volatility and Agriculture"* states that the data on crops produced eight times per crop year meet the AMIS requirements. It also states that the data collected on the major classes of livestock are sufficient. It further cites Statistics Canada's remote sensing Crop Condition Assessment Program (CCAP) data meet the requirements to estimate yield models and production of some crops in Canada. *Accountability for G20 Food Security Commitments*, AAFC correspondence, September 2011.

10. FAO, op.cit., p. 60.

11. Agriculture and Agri-Food Canada, 2011, *An Overview of the Canadian Agriculture and Agri-food System,* Ottawa, Ontario. http://www4.agr.gc.ca/AAFC-AAC/display-afficher.do?id=1295963199087&lang=eng
(accessed June 4, 2012).

2.2 Agriculture Data in Legislation and Regulation

The legislative and regulatory requirements for agriculture statistics were reviewed. The agriculture statistics program addresses domestic legislative and regulatory requirements in two ways:

1. in fulfilling explicit mentions in legislation and regulation, such as the requirement to conduct a CEAG[12] and the requirement to collect data on the matter of agriculture, (which is listed second only to the matter of population in section 22 of the *Statistics Act*[13]), or
2. in providing the data to support in practice the fulfillment of the requirements or objectives contained in the legislation or regulation, or in the crafting of associated policies, without specifically being identified in the legislation or regulation.

In the case of agriculture data, the majority of legislative and regulatory uses fall into the second category. At the federal level there are many acts pertaining directly to agriculture. In addition to the agriculture acts, there are several federal environmental acts and health acts that use small area data produced by the CEAG to fulfill the legislation's requirements or to assist in crafting the associated policies. Other federal acts that rely on agriculture statistics relate to banking and the federal-provincial transfer of income. It is of particular importance to note the diverse nature of the activities that make use of agriculture data.

2.3 Why a Census of Agriculture Is Conducted

As set out in the *Statistics Act*, the CEAG has been conducted nationally in Canada every five years since 1951.[14] The CEAG collects data for livestock and crops, land management practices, farm revenues and expenses, capital values for land, buildings and equipment, as well as information on Canada's producers and how farms are operated. The CEAG is unique in its ability to provide a comprehensive snapshot of the industry and its people, as well as small area data, both of which are instrumental not only to the agriculture industry, but also for meeting the data requirements of environmental programs, health programs, trade and crisis management.

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12. *Statistics Act, section 20 : A census of agriculture of Canada shall be taken by Statistics Canada*
    (a) in the year 1971 and in every tenth year thereafter; and
    (b) in the year 1976 and in every tenth year thereafter, unless the Governor in Council otherwise directs in respect of any such year. 1970-71-72, c. 15, s. 19.
http://www.statcan.gc.ca/about-apercu/act-loi-eng.htm (accessed June 4, 2012).

13. *Statistics Act, section 22*: *Without limiting the duties of Statistics Canada under section 3 or affecting any of its powers or duties in respect of any specific statistics that may otherwise be authorized or required under this Act, the Chief Statistician shall, under the direction of the Minister, collect, compile, analyze, abstract and publish statistics in relation to all or any of the following matters in Canada:*
    (a) population;
    (b) agriculture;
    (c) health and welfare;
    (d) law enforcement, the administration of justice and corrections;
    …; and
    (u) any other matters prescribed by the Minister or by the Governor in Council. 1970-71-72, c. 15, s. 21; 1976-77, c. 54, s. 74.
http://www.statcan.gc.ca/about-apercu/act-loi-eng.htm (accessed June 4, 2012).

14. Early censuses included questions on population and agriculture together. Starting in 1896, a separate CEAG was conducted in Manitoba, and in Alberta and Saskatchewan beginning in 1906. The CEAG has been conducted every five years in the Prairie provinces since 1906.

Beyond the legal requirement, however, there are many reasons underlying the conduct of the CEAG. In the report, *Improving Information about America's Farms and Ranches: A Review of the Census of Agriculture*,[15] the US Council on Food, Agricultural and Resource Economics outlines the five fundamental reasons for conducting a CEAG and the fundamental drivers for its content, all of which also apply in Canada.

The following lists those reasons and provides concrete examples illustrating the importance of the data provided by the quinquennial CEAG to policies and programs. The stakeholders most reliant on the frequency, quality and relevance of the data from the quinquennial CEAG are AAFC, the provincial ministries of finance and agriculture, Health Canada, Environment Canada, and municipal and regional planners. The requirements of these stakeholders would need to be taken into account if any significant changes are made to the quinquennial CEAG.

1) Benchmarking

1a) Aligning crop and livestock survey estimates as well as the agriculture economic statistics and other key indicators

Statistics Canada and key stakeholders in the agriculture statistics program use the CEAG data to re-align the crop and livestock survey estimates and the economic statistics series. This quinquennial re-alignment assures the accuracy and coherence of the data used by the SNA and AAFC and provincial governments for policy and program development and evaluation. In addition, AAFC's ability to meet the reporting requirements of the *Federal Sustainable Development Act* is contingent upon the accuracy of the data.

Agriculture is a portfolio of shared responsibility between the federal and provincial governments and, therefore, budget and program costs for agriculture are also shared. These resource allocations are based on CEAG and survey data. The frequency of the CEAG (and hence the quality of the program data) will have a direct impact on the accuracy of the calculations used to allocate billions of dollars through the suite of agriculture programs.

This benchmarking function also provides an accurate measure for monitoring the industry at the national and international level. For example, the US Environmental Protection Agency's (EPA) Renewable Fuel Standard (2) regulations require that Canada demonstrate that land used to grow crops for the production of biofuels is not being converted from natural lands. Quinquennial CEAG data are a key component of an aggregate measure used to fulfill this requirement. To obtain permission from the EPA to use the aggregate measure approach (as opposed to the individual record-keeping approach), the EPA had to review the methodology and be satisfied with the reliability of the underlying data. The repercussions of being unable to comply with the aggregate measure approach could be severe. The individual record-keeping requirement for US biofuels processors is sufficiently exigent to effectively halt exports of biofuel-producing crops from Canada to the US. To put the importance of this crop trade into perspective: in 2010 Canada's exports of canola were $3.4 billion CAD, largely exported to the US.

As is the case with many trade issues, the quality of the Canadian agriculture data may come under close scrutiny. The data required in a trade dispute depend on the dispute itself, e.g., subject matter, scope and whether Canada is the complainant or the respondent. AAFC is often implicated in these trade disputes and

15. The Council on Food, Agricultural and Resource Economics (C-FARE), 2007, *Improving Information About America's Farms and Ranches: A Review of the Census of Agriculture,* Washington, D.C. http://www.cfare.org/publications/20070307cfare_census_review_Full_Report.pdf (accessed June 4, 2012).

relies on Statistics Canada data on trade, production, inventories, area harvested, etc. It is difficult to predict future trade disputes or the type of data that may be required, but in past cases both trade data and agriculture data were required.

1b) Provide information necessary for the non-surveyed portion of intercensal surveys

To reduce costs and response burden, smaller farms in the target population are excluded from agriculture surveys. Although these farms are not surveyed, they are nonetheless estimated for. The quinquennial CEAG provides the only source of updated information for identifying and estimating the non-surveyed population.

One of the most promising strategies for reducing response burden is increasing this non-surveyed portion of the target population. The quinquennial CEAG data provide a sound basis for modelling this non-surveyed population, so that they can still be represented in the published estimates. Without a CEAG, the data for this population would have to be collected from surveys or excluded from the estimates. The quinquennial CEAG data are critical to the successful implementation of this strategy.

2) Frame Information

The full enumeration of the CEAG provides information necessary to create and maintain the frame for agriculture surveys. This process presents some important challenges. The agriculture industry is unique in that it has a large proportion of unincorporated businesses. In addition, the current program measures the activity (commodities produced) of farm operations and not only economic indicators. Farm operators have the ability to change commodities produced relatively quickly compared with other industries, making the maintenance of the agriculture frame more complex. A poor quality frame increases response burden and costs and decreases the quality of the estimates.

The CEAG is used in frame maintenance in a number of ways:

2a) Identifying new farms, farms that are out of business, and updating structural and status information about existing operations

It is important to be able to identify new farms for completeness of coverage, so that the survey sample and resulting estimates are accurate. In addition, it is important to identify farms that are out of business, so that resources are not wasted during survey collection and response burden is not imposed on non-active agriculture operators. Changes in the structure of farms are important to document for similar reasons.

The quinquennial CEAG is a regular, reliable source of information for the target population from which agriculture survey samples are selected. Again, the frequency with which the CEAG is conducted has a direct impact on the quality of the frame since no other comprehensive source of frame information currently exists in Canada.

The Canadian agriculture frame will move to the Business Register in 2012, and tax data will provide some frame updates. However, experience in jurisdictions with tax-based frames, such as Australia, has demonstrated the continued importance of the CEAG as a major source of agriculture frame updates. Frame deterioration is a challenge in the current program, despite the fact that the CEAG is conducted quinquennially.

2b) Identifying what commodities are produced and the size of operations for efficient sampling

The CEAG is instrumental in obtaining updated information on the commodities produced, practices used and special characteristics of individual farms. This information is essential for efficient sampling for the intercensal surveys. It also provides sample information necessary to identify operations in scope for occasional surveys that target specific, or relatively rare, characteristics. (For example, the Agricultural Water Survey conducted by the Environment Accounts and Statistics Division [EASD] uses the CEAG data to identify farms reporting irrigation practices.) Without the quinquennial CEAG, the quality of the entire intercensal survey program data would be impacted, but the quality of the surveys of operations with relatively rare characteristics would be impacted even further. The impact would be most evident in the increase in response burden as larger samples would have to be selected to account for frame deterioration as the characteristics of farms change over time. In addition, comprehensive frame update surveys would have to be implemented to gather information to maintain frame quality.

For example, between the 2006 CEAG and the 2010 Farm Financial Survey (FFS), 50% of hog farms had either left the agriculture industry or changed production to other commodities. The FFS estimates were consequently re-weighted to adjust accordingly; however, only when the results of the 2011 CEAG become available will it be possible to determine whether this re-weighting strategy was accurate. These estimates are of particular importance to AAFC because of the payments made over recent years that were designed to re-balance the marketplace for hogs. Without a quinquennial CEAG, the difficulties estimating the hog industry's financial position would be exacerbated.

Maintaining up-to-date farm production information becomes increasingly important as AAFC attempts to determine how best to align policies and programs with the longer term competitiveness of the industry. The goal of targeting government support to ensure the sustainability of the industry would be hampered without the quinquennial CEAG data that AAFC relies upon to conduct these analyses.

3) Data for Small and Custom Geographic Areas

The key strength of a CEAG is its unique ability to provide comprehensive small area data based on complete enumeration of the target population. These data are not available from any other source. The frequency with which such detailed geographic data are available would directly affect the accuracy of several federal and provincial programs and the frequency that these programs could be conducted.

Several federal and provincial programs and policies rely on the availability of CEAG small area data. For example:

- Health Canada administers the *Pest Control Products Act* through the Pest Management Regulatory Agency (PMRA). PMRA analyzes the risks associated with pesticide registrations for 80 crops identified using the most recent CEAG to make recommendations for registration and use. Under the *Pest Control Products Act*, the PMRA's ability to accurately assess pesticide exposure and whether or not a pesticide product should be registered for use in Canada would be impacted by the frequency of the CEAG data.

- Small area data are used for managing crises and developing programs to mitigate the impacts of the event. The quality of this information is affected by the frequency of small area data availability. Some administrative data are available to assist in these cases; however, these data are not available for the entire country and for all commodities and variables. Some recent examples where CEAG data, along with remote sensing and survey data, were used are

    - the Manitoba floods in 2009 and 2011
    - the Golden nematode outbreak in Québec potatoes in 2006
    - the 2003 Bovine Spongiform Encephalopathy (BSE) outbreak.

- CEAG data are used to develop markets and trade. New Brunswick, for example, has a new agriculture and agri-food export marketing initiative that uses CEAG data extensively at the county or parish level to better market agri-food products within the province as well as to increase export revenues and farm incomes.

- The EASD (SNA) requires a large number of small area physical measures from the CEAG for the environmental accounting program. As well, a new inter-departmental Policy Research Data Group with which EASD has recently become involved requires small area CEAG data to calculate ecosystem indicators.

- The *Federal Sustainable Development Act* requires reporting by government departments at regular intervals and includes the Canadian Environmental Sustainability Indicators program as a means to measure progress. CEAG data are inputs into the reports of several departments including Health Canada, Environment Canada, Natural Resources Canada and AAFC. Many of the requirements are based on small area data that can be tabulated to reflect ecozones, watershed areas, etc. The Act forms the basis for the reporting requirements nationally and internationally.

- Several federal environmental reporting projects (at AAFC and Environment Canada) require small area data from the CEAG, including the National Agri-Environmental Health Analysis & Reporting Program (NAHARP), the National Carbon & Greenhouse Gas Accounting and Verification System (NCGAVS) and the National Agri-Environmental Standards Initiative (NAESI).

- The provinces' calculations feed into the estimates of Canada's greenhouse gas emissions (GHG) and also serve their own purposes. For example, Alberta recently used CEAG data at a custom area level to study GHG offsets in that province.

- CEAG data at small geographic areas (including custom areas) are used extensively by the provinces for development and analysis of provincial policies and programs. CEAG data provide important historical trends as well as data on a consistent and coherent basis that allow for more efficient and effective analytical results. For example:

    - In Alberta, a water policy for the province is under development. CEAG data, at small geographic levels, are relied upon to study trends and forecast agriculture development and water demands. These data are required if the policy is to adequately address current and future water needs. In addition, the province uses CEAG data to produce animal nutrient budgets and maps of manure applications to assess the risk of water contamination.
    - Alberta is establishing land-use framework legislation that will require custom area data on land use across the province on an on-going basis. Cumulative effects' management will be implemented that will require a series of farm management data from the CEAG. The province requires these data to develop and analyze the policy as well as to meet its reporting requirements.

- In Ontario, small area data from the CEAG are used to determine fair market price to analyze and evaluate claims under acts covering livestock, poultry and honey bee protection. Additionally, custom area data are used to assess and develop drainage policies under the Ontario Drainage Act.
- In Québec, small area and custom area data from the CEAG are used to create tools for the management of pesticides.
- Regional conservation authorities use CEAG data to assess watershed characteristics and risks.
- Several provinces, including Alberta, Saskatchewan, Ontario and New Brunswick, use CEAG data to meet the reporting requirements of AAFC's Growing Forward Agricultural Policy Framework. Small area and custom area data from the CEAG are essential for the provinces to design programs that respond to the needs of farmers under the Growing Forward policy framework.

- CEAG data at small geographic areas (especially custom areas) are used extensively by municipalities and regional authorities for land-use planning. One current example is the comprehensive review being conducted by Kings County, Nova Scotia. Kings County houses the Annapolis Valley, which is one of the most fertile areas of farmland in the country. In 1979, land-use pressures drove the County to establish a formal plan restricting land-use activities. The plan has been reviewed several times since then, relying heavily on the CEAG small area data. The current review is to be the most comprehensive one conducted thus far.

  With the expertise of the Land Integration Unit at AAFC, the review will look at what has occurred over the last 30 years: what has worked and what has not worked towards achieving the planning goals. The review will look to future issues anticipated until the year 2050. The periodic review of the plan is therefore necessary to ensure the plan continues to meet the varied needs of its residents and businesses. Without a quinquennial CEAG, Kings County will face significant data gaps in this review process.

4) Enumerating Rare and Emerging Commodities

Often, the CEAG is the only available source of information on rare and emerging commodities. The requirements for these data can often be unanticipated, but can nonetheless be important. They have been used for food safety, animal health, pesticide safety regulations and other uses. Quinquennial CEAG data are also used in the context of World Trade Organization (WTO) bilateral and multilateral trade agreements and for the settlement of trade disputes when the survey program does not provide data for the required commodities.

As one example, greenhouse vegetable production would have been considered an emerging commodity ten years ago. The Greenhouse, Sod and Nursery Survey shows that since 2007, the value of greenhouse vegetable production has surpassed that of field vegetable production, including potatoes. The complete picture of this industry, however, will not truly be known until the results of the 2011 CEAG are available. The greenhouse story is one that demonstrates the speed with which production changes can occur in this industry, and therefore the need to track what today is considered a rare commodity, but in less than ten years can become a leading sector.

An example of the unanticipated requirements for data on rare commodities was a requirement to inform wild boar producers of a proposed traceability system in 2007. This traceability system was required to meet animal health, human health and food safety issues. The CEAG was the only complete source of information about wild boar producers.

A third example is the Canadian Food Inspection Agency's (CFIA) need to address a disease in horses. CFIA used the CEAG data because, again, there is no other comprehensive source of data on horses.

The usefulness of the data in all of these examples would have been hindered by the reduced frequency of the CEAG data.

5) Data for Cross-Tabulations

CEAG data add a powerful dimension to whole farm analysis. Detailed CEAG data give the ability to perform cross-tabulations across a range of data for farms by type, region or sales class. These data are of particular importance to assessing the impacts of policies and programs on the performance of the sector. For example:

- Competitiveness: The successful farms project at AAFC uses cross sectional data with longitudinal data to provide insight into the link between farm decisions and financial performance to understand the key drivers that underpin farm success.
- Other factors used to assess competitiveness also require cross-sectional farm data, including environmental practices, investment decisions, business practices and business models, which contribute to profitability. These types of analysis are also compared internationally and provide benchmark information that the farm community can use.
- AAFC uses land and other capital asset value data from the CEAG to understand the performance of, and investment in, agriculture. Both income and asset value data are tracked over time to understand underlying trends, performance and health of the sector. AAFC uses the data on land values to evaluate
    - the impact (if any) of government programs on land prices
    - the financial well-being of farmers
    - the difficulties facing new farmers entering the agriculture industry.

    If these cross-sectional data were not available, AAFC would require special surveys to fill these data gaps.

- Municipalities and regional authorities rely not only on the custom small area CEAG data, but just as heavily on the ability to cross tabulate these data. By so doing, land-use planners are able to create comprehensive agriculture profiles to assist with land-use decision making. They are also able to quantify the contribution agricultural systems make to their municipalities. The environmental, social and economic contribution to the region and the challenges faced by producers in their area. This information enables municipalities and regional authorities to develop objective land-use plans.

Another important element of policy analysis is the ability to analyze socioeconomic data obtained from linking the CEAG and the Census of Population (CEPOP) / National Household Survey (NHS). For example, the aging of agriculture producers is an increasing concern in the industry. With the ability to cross-tabulate age of producers with farm characteristics and management practices, AAFC can assess business risk management programs. Currently, analyses such as these would be impossible without the CEAG data.

3.0 International Review of Agriculture Censuses and Survey Programs

An international review examined the programs in Australia, England, France, Mexico, the Netherlands, New Zealand, Norway, Portugal, Sweden and the United States. These countries were selected as they have an agriculture industry common to developed countries, yet with enough diversity in their programs to be of potential interest.

3.1 International Review of Agriculture Censuses

The international study revealed that developed countries place a great deal of importance on their agriculture statistics programs. Most developed (and many developing) countries conduct a CEAG once every five years, except for those countries belonging to the European Union (EU), which are required to conduct a CEAG every ten years, supplemented every three years with a comprehensive farm structure survey. Some EU countries, on the other hand, have developed such an extensive agriculture administrative program that they are able to conduct a CEAG annually using data from these programs.

Table 1 shows the frequency with which CEAGs are conducted in the G20 countries. Aside from the EU, the majority of G20 countries conduct a quinquennial CEAG.

Table 1 Frequency of censuses of agriculture in the G20

Country[1]	Frequency of CEAG (number of years)
Canada	5
USA	5
Mexico[2]	5
Australia	5
South Korea	5
Japan	5
India	5
Russia[2]	5
South Africa	5
Indonesia	10
China	10
EU: Germany **EU: Italy** **EU: UK** **EU: France**	10
Turkey[3]	10
Argentina	Irregular
Brazil	Irregular
Saudi Arabia	Irregular

1. The 20th member of the G20 is the EU itself
2. The decision was recently made to conduct a CEAG every five years
3. Following EU guidelines although not yet an EU member

Source: Website of each country's statistics agency.

CEAGs are mandatory in all countries studied. Response rates to the CEAG in most countries were above 95%, mostly achieved with significant follow-up. In England, the response rate was 73% and in the US, 85%. The response rate to the 2011 Canadian CEAG was 95.9% and has remained relatively stable over the years.

The majority of countries reviewed, including Canada, provide options to respondents in terms of the mode of data collection for the CEAG. The Netherlands has achieved a high response rate using the

Internet. This option was offered on the 2006 and 2011 CEAGs in Canada, but limited broadband availability in rural Canada restricted this mode of data collection as a viable alternative to paper questionnaires at the time.[16]

The availability of broadband internet connections in rural areas is likely to increase substantially by 2016. As such, the internet collection vehicle will be more actively promoted as a method of data collection for the 2016 CEAG.

3.2 International Review of Agriculture Survey Programs

In general, most developed countries have extensive agriculture statistics programs that require significant input from agricultural producers. Countries, such as those that are a part of the EU, have strong data provision requirements, which provide a source of administrative data. Major survey programs play a crucial role for policy impact assessment of the Common Agricultural Policy in the EU.[17]

International agriculture survey programs are extensive and rely heavily on respondent cooperation. In some countries, fewer surveys are conducted than in Canada, yet those surveys (especially the farm structure surveys in Europe) are much more comprehensive than the targeted, commodity-based approach Canada uses. Some countries, such as Norway and Sweden, have strong administrative programs, which translate into less survey response burden, but impose heavier administrative compliance requirements on producers.

The majority of the intercensal surveys are mandatory in England and France, whereas in other countries, such as the Netherlands, they are voluntary. The Canadian model falls closely in line with the survey programs in England and France in terms of the mandatory nature of the majority of the surveys.

With respect to financial data, the European countries have a long history of collecting data through the Farm Accountancy Data Network. Different agents are used to collect these data. In France and the Netherlands, accounting firms are hired whereas in England a consortium of researchers from universities and colleges are retained to conduct these surveys. Respondents are often provided business management information about their own farm in return for participating. This reciprocity is sufficient to generate good response rates.

Canada is at the forefront with respect to the use of tax data, along with Australia. The Canadian Agricultural Taxation Data Program has been publishing data for decades. The Agriculture Division has more recently been studying the feasibility of replacing the detailed revenue and expenses questions from both the FFS and CEAG with tax data.

With respect to the monitoring and controlling of response burden, the Australian Bureau of Statistics has a systematic approach. In 1997, a statistical clearing house was implemented that requires all business surveys in all federal departments to obtain approval prior to conducting a survey or adding questions to an existing survey. This procedure has been found to be effective in reducing response burden by keeping unnecessary questions from being added to surveys, by modifying other questions and by preventing yet

16. The *Survey of Household Spending* shows that in 2009 the broadband connection for internet use in rural Canada was 28% compared with 50% for population centres of 500,000 and over. Statistics Canada, 2010, *Survey of Household Spending* 2009, Ottawa, Ontario.

17. The *Regulations (EC) No 1166/2008* and *No 1200/2009* regulate the content and conduct of the European agricultural surveys and census.

other surveys from going to the field. Due to its success, the clearing house will be extended to cover social surveys in 2012.[18] Statistics Canada had a similar clearing house strategy until 1991 when it was eliminated due to budget cuts.

3.3 International Review of Remote Sensing in Agriculture Statistics

Remote sensing technology uses computer analysis of satellite images to estimate earth characteristics. Many countries use remote sensing for agriculture statistics applications. The most advanced leaders include the US, China, Brazil and Europe, covering very large agricultural areas similar to the Canadian context.

The main objective of using remote sensing data at the international level is to forecast and estimate crop yield, area and production, and to monitor crop and pasture conditions. No country has exclusively used satellite data to replace a census or a survey, but many have successfully used it to support their statistical programs. For example, in China remote sensing is used to monitor crop area change, crop yields, production and growth, drought and other agriculture-related information for five main crops. In Europe, it is used to monitor crop vegetation growth (seven crop types) and to provide annual crop production forecasts. In the US, remote sensing is used to construct area sample frames for statistical surveys, which helps improve their accuracy. Remote sensing data are also used to produce maps of crop areas by major crop type, which can be used as a source of crop information between surveys.

The Remote Sensing and Geospatial Analysis (RSGA) section at Statistics Canada has worked over the years on numerous cost-recovery projects. The nature of these projects has determined the direction and development of this program according to client needs. Some of the projects of the RSGA include the following:

- the Crop Condition Assessment Program (CCAP): a web application that displays cropland and pasture conditions. Crop conditions are established for the entire country based on satellite data. This application is updated on a weekly basis during the growing season and is used by the agriculture community, including governments, grain marketers, researchers and individual farmers, to detect and delineate areas under stress.
- the crop yield estimation model: an experimental crop yield model developed to produce a crop yield estimate for the current year for spring wheat, durum wheat, barley and canola in western Canada.
- support to the CEAG and survey programs: for example, CCAP satellite images and map products were used during the collection period of the CEAG to actively manage respondent burden by averting mail and telephone follow-up in areas of natural disasters, such as the flooding in Manitoba in 2011.

Further potential exists to more fully utilize satellite and agro-meteorological data to produce accurate crop area, yield and production estimates.

18. *Statistical Clearing House,* Australian Bureau of Statistics. http://www.nss.gov.au/nss/home.nsf/pages/About+SCH (accessed June 4, 2012).

3.4 Lessons Learned from the Review

The international review provided information about how different countries collect the agriculture data they require. Often, Canada falls in the median position in terms of response burden, investment in the collection of agriculture data, the mandatory nature of data collection, the frequency of the CEAG, and the depth and breadth of the intercensal survey program. However, Canada does stand out with respect to the use of taxation data to generate financial estimates. The Australian Bureau of Statistics is also pioneering work in this area and is working with Agriculture Division to share lessons learned.

The international review also demonstrated that there is room for Canada to increase its use of administrative data and remote sensing technologies (especially in producing crop area, yield and production estimates).

The information gathered from the international review, coupled with an understanding of each country's agricultural landscape and sociopolitical structure, enabled an assessment of some international features that could potentially be developed to transform the Canadian agriculture statistics program.

The features of interest include

- the modular, comprehensive intercensal survey program of England
- the use of administrative data of the Northern European countries
- Australia and Canada's goal of increasing the use of taxation data to replace financial questions on surveys and the CEAG
- the different approaches used to determine the target and survey population thresholds
- the various methods used to maintain the survey frame
- Australia's Statistical Clearing House strategy.

These features of interest were used to develop alternative options. One of the goals of evaluating the options was to determine whether any of these programs could be sufficient in the absence of a quinquennial CEAG. Therefore, although some of these countries do conduct a CEAG on a quinquennial basis, each of the options was examined with the assumption of a decennial CEAG. In the section that follows, the current Canadian program is presented as the Baseline Option, against which the alternative options were evaluated.

4.0 Options

The development and evaluation of alternative options involved several steps:

- A review team was developed consisting of a group of Agriculture Division managers, methodologists from Business Surveys Methods Division and a representative from AAFC.
- The key overarching considerations to be taken into account during the assessment of the alternative options were developed and agreed upon by the Review Team and Senior Management at Statistics Canada.
- Three alternative options were developed based on the priority data requirements for the Canadian program, coupled with the international review.
- Detailed criteria were developed to evaluate the alternative models. (These criteria are presented in Table 2 on the following page.)
- The three alternative options were subsequently evaluated against the current Canadian program. The essential conditions and investments required for implementation of the models were determined along with each option's strengths, weaknesses and risks.
- The most attractive attributes of the three alternative options within the Canadian context were combined to develop two hybrid options, which were subsequently evaluated.

4.1 Evaluation of the Options

The following table lists the criteria that were used to evaluate the options. A total of 32 evaluation criteria were identified and organized into 10 categories. They include Statistics Canada's six elements of quality (relevance, accuracy, timeliness, coherence, interpretability and accessibility) as well as a number of other categories that merit special consideration in the context of the agriculture statistics program (cost, response burden, operational feasibility and acceptability).

Table 2 Option evaluation criteria

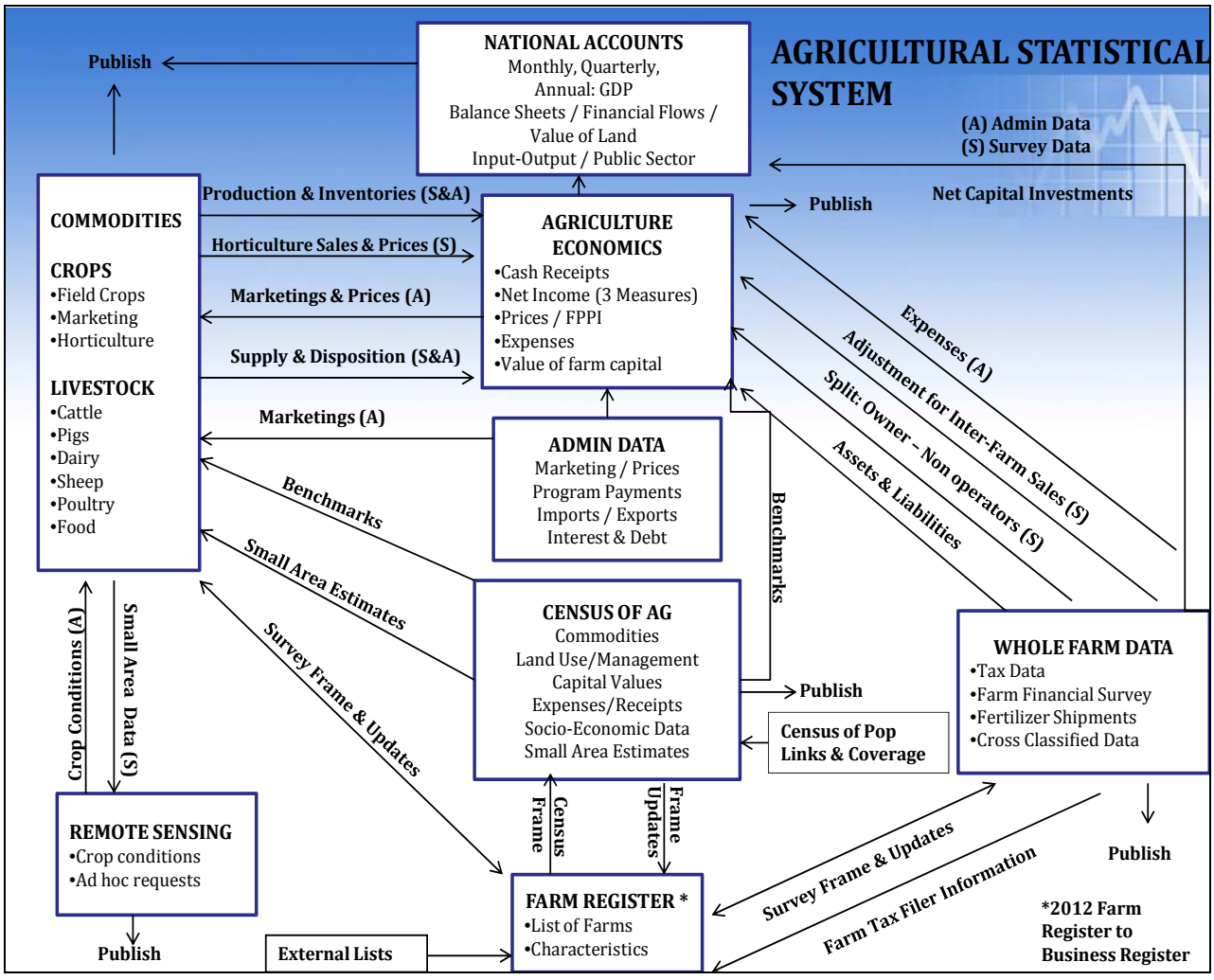
Quality	Evaluation criteria
Relevance:	Content
	Frequency
	Target population
	Small area data needs
Accuracy:	CVs of important survey variables
(Reliability)	Bias of important survey variables
	Available information to identify the target population and associate it with the data
	Quality of 'take-none' modelling (defining the survey population)
	Accuracy of the data sources
Coherence:	Coherence of important survey variable time series
(Comparability)	Coherence of data between sources
Timeliness:	Impact of the data source on the timeliness
Interpretability:	Details available on administrative files
Accessibility:	Data suppression
	Availability of supplementary information
Respondent Burden:	Number of contacts per unit
	Interviewing time per unit
	Sensitive content
	Burden on people other than survey respondents
	Burden placed on respondents by entities other than Statistics Canada
Cost:	Collection costs
	Post-collection costs
	Development costs
	Cost sustainability
	Costs to other organizations in the system
	Compliance costs to farmers
Operations:	Ability to react quickly to new needs
	Ability to conduct large occasional surveys
	Timing of and time necessary for implementation
	Statistics Canada Corporate Business Architecture compliance
Acceptability:	Acceptance in the data user community
	Acceptance in the respondent community

The key features, strengths, weaknesses, risks and investments of the current Canadian program are presented next, followed by the evaluation of the alternative models that were explored.

4.2 Baseline Option: The Current Canadian Program

The current Canadian program is a highly integrated system. The production data from both the crops and livestock sections combined with prices from both survey and administrative sources generate the farm cash receipts. Expenses, derived largely from administrative sources, serve to generate the net farm income estimates. As well, data from CEAG flow into the commodity programs, while data from the commodity, farm income and prices programs are used to validate the CEAG data. Survey frame updates flow from the survey programs into the Farm Register,[19] and, subsequently, into the CEAG, and vice versa. The integrated nature of the program requires that for any proposed change to part of the program, impacts on the other components of the program must be assessed.

Figure 1 The current agriculture statistics program



19. The Farm Register will be migrated to the Business Register in 2012.

4.2.1 Key Features

- A **CEAG** is conducted nationally every five years in years ending in "1" and "6." Response burden is minimized during the years that the CEAG is conducted. For the 2011 CEAG, follow-up calls were eliminated or co-ordinated for the FFS sample, some surveys were cancelled, the cap-on-calls for the majority of surveys was reduced and the sample size for the July livestock survey was reduced significantly.
- The CEAG is linked to the CEPOP/NHS in years ending in "1" and "6" to provide **socioeconomic data**.
- The **target population** for both the CEAG and surveys includes all farms with the intention to sell agricultural products. This definition provides comprehensive coverage to users.
- The **survey population** varies by survey; some survey samples exclude operations based on a minimum size threshold or for specific farm types. (For example, the FFS excludes operations with complex structures, farms on First Nations Reserves, community pastures and farms with less than $10,000 in gross sales.)
- A **frame maintenance** program includes information from both administrative sources and a short survey to update and maintain the Farm Register.
- The **survey program** is commodity specific and comprises field crop, horticulture, livestock and financial surveys.
- **Remote sensing** delivers the CCAP, which combines earth observation, geographic information systems (GIS) and the Internet to provide near-real time information on crop and pasture/rangeland conditions using a mapping application for agricultural land.
- **Administrative data** are an integral part of the program (approximately 140 different sources are incorporated) including tax data, marketings, prices, imports, exports, production, debt, inspections data, etc. These data are provided by Canada Revenue Agency, provincial administrations, national producer organizations, AAFC and Statistics Canada's International Trade Division.

4.2.2 Strengths

- The five-year interval between CEAGs maintains the relevance and usefulness of the data to users. The CEAG data used for policy development and evaluation, program monitoring, benchmarking, measuring industry structural changes, supporting legislative and regulatory instruments and for trade purposes are perceived to be sufficiently frequent.
- Although some data gaps exist, this model meets the majority of user requirements for small area data, benchmarking and critical survey frame information.
- This model has the advantage of reliability and predictability since the program has been running successfully for a long period of time.

4.2.3 Weaknesses

- Response burden is a concern in an environment where the Government of Canada is firmly committed to reducing red tape.
- The cost of the program is a concern in an environment of deficit reduction and increased efficiency.
- Despite some very rapidly produced statistics, there are some concerns with the timeliness of some of the statistics.

4.2.4 Essential Conditions

- The current program has developed over time with the funding, technology and infrastructure required, so the essential conditions for this option are in place. However, fiscal pressures and commitments to reduce response burden are raising uncertainty as to the sustainability of this model.
- The Corporate Business Architecture (CBA) is transforming the way that Statistics Canada collects and compiles data. The entire agriculture statistics program will complete the transition to the CBA in 2014-15. The CBA is expected to increase the overall efficiency of the agriculture program.
- The transition from the Farm Register to the Business Register in 2012 is also expected to reduce the cost of the frame and will allow the Division to measure and manage response burden in a more global manner.

4.2.5 Required Investments

- Regular maintenance costs and post-censal redesign for an existing survey system.
- Investments required for each CEAG cycle through Treasury Board submissions.

4.2.6 Risks

- Should the 2016 CEAG be cancelled by Order in Council, there would not be time to fully replace it. There would therefore be significant data gaps, particularly related to benchmark data, small area data and frame update information.

4.3 Option 1: The Modified British Model

4.3.1 Key Features

- A **CEAG** would be conducted every 10 years (in years ending in "1").
- The CEAG would be linked to the CEPOP/NHS in years ending in "1" to provide **socioeconomic data**.
- Two annual **modular surveys** would replace 12 of the current commodity-specific surveys conducted throughout the year. These surveys would be conducted in June and December. Different commodities would be collected together but subsequently processed and disseminated separately. Overlap between commodities would be controlled to reduce burden for diversified farms. (For example, a mixed livestock and crops farm may only receive the crops module for one survey occasion and the livestock module on another survey occasion. The operation would not automatically receive both modules on every selected survey occasion.) The number of survey occasions per year would be reduced for field crop, horticulture and livestock surveys.
- The **sample size and content** of the June Modular Survey would be **expanded** in the years ending in "5" and "8" to compensate for some of the data loss due to the absence of a CEAG in years ending in "6." In these two years, comprehensive survey modules would be integrated, so that analysis can be conducted at the whole farm level as is presently the case with the CEAG. (For example, a mixed livestock and crops farm will receive both the crops and the livestock modules in these years.)
- **Tax data** would be used to replace all comparable financial questions on the CEAG and on surveys.
- The **target population** for both the CEAG and surveys would exclude smaller farms under a specified production threshold, (for example, an amount of cultivated land, livestock, other criteria or combination thereof), for reasons of burden and cost.
- The **survey population** would be equivalent to the target population.
- A regular **frame maintenance** program would include a short survey to complete missing information from new farm tax filer records and those operations not recently surveyed to update and maintain the agriculture frame on the Business Register. (It should be noted that some of these activities are already carried out in the current program.)
- A small number of **commodity-specific surveys** (Greenhouse, Sod and Nursery Survey, Mushroom, Maple, etc.) would continue to exist because of their unique requirements.

4.3.2 Strengths

- This option mitigates some of the risk of data loss by providing a subset of data requirements should the CEAG in years ending in "6" be cancelled by Order in Council.
- Structural changes, new production and trends would be captured by the CEAG in years ending in "1" and partially captured with the two expanded occasions of the June Modular Survey in years ending in "5" and "8."
- The new annual modular surveys provide a flexible, regular vehicle to identify and address emerging issues.

4.3.3 Weaknesses

- This option's content and sample size increases in years ending in "5" and "8" do not meet user needs for small area and custom geographic data, for provincial benchmarking data or for the enumeration of rare or emerging commodities.
- This option provides a reduced level of survey frame information, even with an increase in sample size in years ending in "5" and "8." This would lead to frame deterioration and a related decrease in data accuracy from the survey program over the intercensal period.

- The ten year gap between CEAGs would reduce the relevance and usefulness of the data to users. The CEAG data used for policy development and evaluation, support of legislative and regulatory instruments and for trade purposes is likely to become out of date before the next CEAG is conducted.
- The generalized survey design for integrated surveys would not be ideal for some commodities.
- The timeliness of data releases would be affected.
- This option does not allow the entire population to be measured. The program will no longer cover 100% of agriculture activity in Canada. This loss of coherence and comparability of the data would require transition data (back-casting) and technical assistance to data users to make adjustments for changes to the coverage of the target population and the availability and frequency of data.

4.3.4 Essential Conditions

- An Order in Council would be required to cancel a CEAG in years ending in "6."
- Technology and procedures would have to exist to deliver the modular surveys in an intelligent manner, so that response burden and collection costs could be controlled. To minimize burden and collection costs, delivery and collection of the appropriate modules (crops, livestock, financial, other) would need to be established prior to collection. The appropriate module would be determined from CEAG information and frame and survey update information.
- Due to the lengthy gap between CEAGs, an enhanced coverage program would have to be implemented to maintain the data required to determine whether an operation should be included in the target population based on the predetermined threshold. This coverage program could include access to AAFC administrative program data such as crop insurance, AgriInvest and AgriStability, supplemented with a frame update survey. Both the access to and processing of the administrative data would require development.

4.3.5 Required Investments

- The new modular surveys would have to be designed, tested, developed and implemented.
- Historical data would have to be adjusted to match the new target population definition. This includes the development of user training material to avoid data misuse and misinterpretation and to clarify the impacts of the change to the target population.
- Alternative sources of commodity data would have to be developed at the micro level (for example, program data such as crop insurance, AgriInvest and AgriStability). This is necessary to establish and maintain threshold information on the agriculture frame on the Business Register between CEAGs and the large survey years.

4.3.6 Risks

- There could be negative reaction from data users regarding
  - changes to the target population
  - the loss of small area data
  - the loss of provincial benchmarking data
  - the increase in reaction time to capture new trends and industry structural changes
  - the timeliness of specific annual commodity data that would be included in the two integrated surveys.
- The two very large and comprehensive surveys in years ending in "5" and "8" may result in as much response burden as the CEAG in years ending in "6."

4.4 Option 2: The Modified Australian/American Model

4.4.1 Key Features

- A **CEAG** would be conducted every 10 years (in years ending in "1"). (It should be noted, however, that both Australia and the US conduct censuses of agriculture every five years.)
- The CEAG would be linked to the CEPOP/NHS in years ending in "1," to provide **socioeconomic data**.
- One **new large survey** would be conducted in years ending in "6" to compensate for some of the data loss due to the lack of a CEAG in those years.
- **Tax data** would be used to replace all comparable financial questions on the CEAG and surveys.
- The **target population** for both the CEAG and surveys would exclude farms under an estimated value of agricultural operation. (For example, US = $1,000 USD; Australia = $5,000 AUD.)
- The **survey population** would be equivalent to the target population.
- A regular **frame maintenance** program would include a short survey to complete missing information from new farm tax filer records and those operations not recently surveyed to update and maintain the agriculture frame on the Business Register.
- The **survey program** would remain commodity specific much like the current program. However, the number of survey occasions per year would be reduced for some crop, horticulture and livestock surveys.
- **Remote sensing** would play an increasingly important role. This technology would be integrated into the agriculture statistics program as it becomes mature. The initial focus would be on replacing the Potato Area Survey and the July and September Field Crop Reporting Surveys in the Prairie provinces.
- **Administrative data** would play an increasingly important role. These data would be integrated into the agriculture statistics program as they become available.
- This option expands on current **partnerships** and promotes new partnerships with federal, provincial and industry stakeholders. These partnerships would be necessary to share responsibility for the development, collection and compilation of administrative data (such as AAFC's AgriInvest and AgriStability programs and livestock traceability data).

4.4.2 Strengths

- This option would achieve cost savings and reduce response burden by conducting a new large survey in years ending in "6" instead of conducting a CEAG.
- This option mitigates some of the risk of data loss by providing a subset of data requirements should the CEAG in years ending in "6" be cancelled by Order in Council.
- Since the annual agriculture surveys remain relatively similar, this option would be expected to have little impact on data users in terms of timeliness and survey content.

4.4.3 Weaknesses

- Despite the content and sample size increases of the new large survey in years ending in "6," this option does not meet user needs for small area data, custom geographic data, provincial benchmarking data or for the enumeration of rare or emerging commodities.
- This option provides a reduced level of survey frame information, even with an increase in sample size in years ending in "6." This would lead to frame deterioration and a related decrease in data accuracy from the survey program over the intercensal period.
- The ten year gap between CEAGs would reduce the relevance and usefulness of the data to users. The CEAG data used for policy development and evaluation, support of legislative and regulatory instruments and for trade purposes is likely to become out of date before the next CEAG is conducted.

- This option does not allow the entire population to be measured. The program will no longer cover 100% of agriculture activity in Canada. This loss of coherence and comparability of the data would require transition data (back-casting) and technical assistance to data users to make adjustments for changes to the coverage of the target population and the availability and frequency of data.

4.4.4 Essential Conditions

- An Order in Council would be required to cancel a CEAG in years ending in "6."
- To increase the use of administrative data, it would be necessary to renegotiate existing partnerships or develop new ones with federal, provincial and industry stakeholders. These agreements would establish protocols for data sharing, confidentiality and protection. The collaboration of multiple players over several jurisdictions would have to be established and maintained. This commitment must begin at the highest levels in the participating organizations and extend to the working level.
- Federal, provincial and industry data holders would need to include a declaration to their data providers (farm operators) regarding the provision of data for statistical purposes. There may be a need to change legislation.
- Agriculture respondents would have to be aware of and support the increasing use of administrative data, being aware of the associated benefits and risks.
- A feasibility study would be required to fully evaluate the costs, benefits, risks and potential timeframes for incorporating administrative data sources and increased use of technology (such as remote sensing) into the program.
- A methodologically sound and realistic framework through which new sources of administrative data could be identified, evaluated, incorporated and operationalized in the program must be developed to reduce the risk of errors.

4.4.5 Required Investments

- Historical data would have to be adjusted to match the new target population definition. This includes the development of user training material to avoid data misuse and misinterpretation and to clarify the impacts of the change to the target population.
- Alternative sources of commodity data would have to be developed at the micro level (for example, program data such as crop insurance, AgriInvest and AgriStability) for statistical purposes and to establish and maintain threshold information on the agriculture frame on the Business Register between CEAGs and the new large survey years.
- Remote sensing would have to be developed to completely or partially replace traditional field crop surveys. A Land Area Survey would need to be developed. The data from this survey combined with administrative data (e.g., crop insurance data) would be used to calibrate remote sensing results.
- A new large survey to replace the CEAG in years ending in "6" would have to be developed and implemented.

4.4.6 Risks

- There could be negative reaction from data users regarding
  - changes to the target population
  - the loss of small area data
  - the loss of provincial benchmarking data
  - the increase in reaction time to capture new trends and industry structural changes.
- Increased reliance on administrative data sources may put the coherence, comparability and sustainability of the data at risk due to changes in programs, regulations or provider partners over time.

4.5 Option 3: The Modified Scandinavian Model

4.5.1 Key Features

- **Administrative data** form the basis of Option 3. There would be no traditional CEAG. (It should be noted, however, that all Scandinavian countries conduct a traditional CEAG every 10 years.) An administratively based CEAG could potentially be conducted on an annual basis if sufficient information existed.
- Linking of the CEAG to the CEPOP/NHS should be possible for the years that the CEPOP/NHS are conducted to provide **socioeconomic data.**
- Existing administrative data sources would be expanded to include new sources, as they become available. For example,
    - crop insurance
    - AgriInvest, AgriStability and Business Risk Management programs
    - CFIA data
    - national producer organizations (NPOs)
    - livestock traceability systems.

- A **farm structure survey** would be conducted every three years to address administrative data gaps, monitor changes, measure emerging trends and perform frame updates and maintenance.
- **Tax data** would be used to replace all comparable financial questions on the CEAG and surveys.
- The **target population** for both the CEAG and surveys would exclude farms under a specific sales threshold.
- The **survey population** would be equivalent to the target population.
- A regular **frame maintenance** program would include a short survey to complete missing information from farm tax filer or administrative data records to update and maintain the agriculture frame on the Business Register.
- A small program of other **surveys** would be run each year, if necessary, to cover data requirements not covered by administrative data or farm structure survey data (on specific commodities such as fur production). As more administrative sources become available, more survey data would be replaced by administrative data.
- This option depends on reliable, complete, timely, stable and accessible administrative information covering the target population.

4.5.2 Strengths

- This option achieves significant cost savings in the long term by cancelling the CEAG in years ending in "1" and "6."
- Because it uses data already collected for administrative purposes, the marginal costs of producing statistics are generally much less than for a traditional CEAG or commodity-specific survey (once the databases, systems, and data-sharing and protection protocols are in place).
- This option has the potential to reduce survey response burden by replacing the traditional CEAG and survey program with an administratively based CEAG and survey program that uses data already collected for other purposes.

- Like the traditional CEAG, the administratively based CEAG can meet the objectives of the FAO features of a CEAG, which are to provide data on the structure of agriculture (from small administrative units) that enable detailed cross-tabulations to use as benchmarks for current agriculture statistics and frames for agricultural sample surveys. [20]
- An administratively based CEAG may be able to produce data on a yearly basis, compared to every five or ten years for a traditional CEAG.
- The administratively based CEAG may be used to identify subgroups for surveys, if needed, depending on the variables available.

4.5.3 Weaknesses

- Few of the essential conditions currently exist for this option to be successfully implemented in the short or medium term. Development of an administratively based CEAG would be a longer term process, requiring several years or even decades.
- A significant front-end investment would be required to implement this option. In addition, negotiating agreements among many players and across multiple levels of government and non-governmental organizations would be necessary. Maintaining systems, definitions, concepts, as well as ongoing oversight would require additional resources and funding.
- The program content would initially be limited to the data variables already available in the administrative databases. Over time, the required variables could be added to the administrative requirements of the programs, so that they could be collected for statistical purposes. This would likely require additional legislation and funding. It may also require enforcement strategies to ensure compliance with the statistical requirements and data-sharing agreements.
- The concepts and definitions that apply to data in the administrative databases may not correspond to those desired for statistical purposes. Linkage of different administrative databases for the same unit may result in data inconsistencies that may be difficult to resolve without significant investments. Changes to and differences in concepts, definitions, target populations, etc., of administrative sources across jurisdictions and over time may limit the data availability, comparability and accuracy of the data for statistical purposes.
- Unlike the traditional CEAG, the administratively based model cannot provide a snapshot of the entire country at one point in time during a census year. Data from multiple administrative sources are unlikely to reference one date.
- There would likely be an increase in overall response burden due to the fact that every agriculture producer would be required to provide administrative data to fill statistical requirements whereas a survey approach requires only a sample of operators to provide such data.
- There would be increased burden placed on the providers of administrative data to meet the requirements of the national statistical agency.
- Developing and expanding partnerships with federal, provincial and industry stakeholders as well as with academia will require an investment of time and resources.

20. FAO, op.cit., p. 18.

4.5.4 Essential Conditions

- The *Statistics Act* may need to be revised to cancel the CEAG in years ending in "1" and "6." (An investigation would need to determine if an administratively based CEAG would meet the legal requirements for a CEAG.)
- Legislation to provide a stronger regulatory framework to develop, collect and acquire administrative data sources would be necessary. The legislation would also have to provide a detailed definition of data protection; for example, it should specify that the statistical data produced by the linkage process cannot be fed back to the administrative databases (known as the "one-way traffic" principle). In other words, the *Statistics Act* allows for Statistics Canada to procure data, but prevents Statistics Canada from feeding any data back to the source (for example, the Canada Revenue Agency) as stipulated in the *Statistics Act*.
- A strong infrastructure covering legislative, regulatory and operational requirements, along with inter-agency cooperation across jurisdictions would be necessary. This would require the adoption of a "clearing house" approach to ensure that the same data are not collected more than once by different organizations.
- To increase the use of administrative data, it would be necessary to renegotiate existing partnerships or develop new ones with federal, provincial and industry stakeholders. These agreements would establish protocols for data sharing, confidentiality and protection. The collaboration of multiple players over several jurisdictions would have to be established and maintained. This commitment must begin at the highest levels in the participating organizations and extend to the working level.
- Federal, provincial and industry data holders would need to include a declaration to their data providers (farm operators) regarding the provision of data for statistical purposes. There may be a need to change legislation.
- There would have to be a unique common identifier for all agricultural operations. This identifier should be used to conduct virtually all transactions with government (at all levels) thus enabling its use to link administrative data across all government sources.
- Agriculture respondents would have to be aware of and support the increasing use of administrative data, being aware of the associated benefits and risks.
- It would be necessary to develop a good set of register systems that fulfill administrative needs and that also contain data covering the most important subject areas for the statistical system. The coverage of these databases and the quality of the data contained within them would have to be sufficient to be useful for statistical purposes.
- There would have to be incentives, such as legal requirements, for the target farm population to register and to inform authorities of changes or events (for example, changes of address, operator or ownership, bankruptcies). This documentation would have to be reliably recorded and with minimal delay.
- It would be necessary to have a reliable method of assigning units to a detailed geographic level (geocoding) to produce small-area detail (for example, assigning owners, operators or establishments to specific geocodes).
- In the absence of a CEAG, the frame maintenance would depend entirely on administrative data rather than drawing from a CEAG (and other sources).
- Highly skilled, professional staff and training would be required to maintain this program due to the complexity that arises when data are procured from many different sources for many different programs. It would be necessary for analysts to be able to interpret the differences in concepts, definitions, scope and history of the administrative sources of data, particularly if attempting to conduct analysis in an integrated approach using data from different administrative sources. In addition, it would be necessary to educate users to accurately interpret the data due to the complexity of this option, both in terms of its operations and the resulting data.

4.5.5 Required Investments

- Historical data would have to be adjusted to match the new target population definition. This includes the development of user training material to avoid data misuse and misinterpretation and to clarify the impacts of the change to the target population.
- Alternative sources of commodity data would have to be developed at the micro level (for example, program data such as crop insurance, AgriInvest and AgriStability) for statistical purposes and to establish and maintain threshold information on the agriculture frame on the Business Register.
- Developmental costs may be substantial in the short and medium term. The cost of developing and maintaining these data and the systems required may be shifted from Statistics Canada to the providers of the administrative data. There would likely be costs related to the cleaning of the data and ensuring coherence among the sources. As such, Statistics Canada may be required to share these costs with the data holders.

4.5.6 Risks

- There could be negative reaction from data users regarding
  - changes to the target population
  - the increase in reaction time to capture new trends and industry structural changes
  - the timeliness of specific commodity statistics.
- The potential exists to increase response burden by requiring all producers to provide information currently collected by a sample of the population. For example, data currently collected from a comparatively small sample of survey respondents represents the larger target population; however, if these same data were required on an administrative form, all program participants would be required to provide this information thereby significantly increasing response burden. (An example of this would be adding a data variable, currently collected on a sample survey, to a tax form, which all farm tax filers would be required to provide.)
- Increased reliance on administrative data sources may put coherence, comparability and sustainability of the data at risk due to changes in programs, regulations or provider partners over time.
- The perception of intrusiveness and loss of privacy may lead to a loss of cooperation by the agriculture community.

4.6 Summary of the Alternative Options

To better assess the potential of these three options to revamp the current Canadian agriculture statistics program, the advantages and disadvantages of each need to be compared and contrasted against the others. The following presents a summary of that evaluation.

Summary of Options 1, 2 and 3

Options 1 and 2 (modified British and Australian/American Models) both feature a CEAG conducted every ten years. Their main difference is in how they go about filling the intercensal data gaps; each model takes a different approach.

Option 1 (Modified British Model) involves a CEAG conducted every 10 years. It incorporates two modular surveys that would be conducted in June and December each year. A range of commodities would be collected together but subsequently processed and disseminated separately to maintain relevance to data users. Overlap between commodities would be controlled to reduce response burden for diversified farms.

A small number of commodity specific surveys would continue to exist because of their unique requirements. The sample size and content of the June Modular Survey would be expanded in the years ending in "5" and "8" to compensate for the absence of a CEAG in years ending in "6." In these two years, comprehensive survey modules would be integrated so that analysis could be conducted at the whole farm level as is presently possible with the current CEAG. The target population for both the CEAG and the surveys would exclude smaller farms under a specified production threshold. The survey population would be equivalent to the target population.

Option 2 (Modified Australian/American Model) involves a CEAG conducted every 10 years (although both countries conduct a CEAG every five years). It would comprise a commodity specific intercensal survey program much like the current Canadian program. One new large survey would be conducted to compensate for the loss of some of the data due to the absence of the CEAG in years ending in "6." The target population for both the CEAG and the surveys excludes farms under an estimated value of agricultural operation. For example, US = $1,000 USD; Australia = $5,000 AUD.) The survey population would be equivalent to the target population as in Option 1. However Option 2 features increased incorporation of remote sensing technology and administrative data compared with Option 1.

Option 3 (the Modified Scandinavian Model) is largely based on administrative data and therefore no traditional CEAG would be required (although it should be noted that all Scandinavian countries conduct a traditional CEAG every ten years). A farm structure survey would be conducted every three years to address administrative data gaps, monitor changes, measure emerging trends and perform frame updates and maintenance. If necessary, a small number of special surveys (for example, on specific commodities such as fur production) would be run each year to meet data requirements not covered by administrative data or by the farm structure survey. The target population for both the administratively based CEAG and the special surveys would exclude farms under a specific sales threshold. The survey population would be equivalent to the target population. This option would largely eliminate the need to conduct many agriculture surveys presently necessary with the current Canadian model, but is only possible when comprehensive databases and administrative data sources are available.

Advantages of Options 1, 2 and 3

The examination of these options led to the identification of their key strengths and weaknesses as well as to the investments that would be required for implementation in Canada. The most promising features that emerged from this evaluation include the modular survey approach of Option 1, the similarities with the current Canadian program of Option 2 and the incorporation of administrative data of Option 3.

Both Options 1 and 2 mitigate some of the risk of data loss by providing a subset of data requirements should the CEAG in years ending in "6" be cancelled. In their own way, each of these options would realize cost efficiencies and reduce response burden in the years ending in "6." With both options, structural changes, new production and trends would be captured by the CEAG in years ending in "1" and partially captured intercensally.

In addition, Option 2 provides the benefit of being relatively similar to the current survey program and therefore would be expected to have less impact on data users in terms of timeliness and survey content.

Option 3 achieves cost savings by cancelling the CEAG in years ending in "1" and "6." For the data already collected for existing administrative purposes, the marginal costs of producing statistics would be generally much less than for a traditional CEAG or commodity-specific survey (once the databases, systems, and data-sharing and protection protocols are in place). This model has the potential to reduce survey response burden by replacing traditional surveys with administrative data.

Like the traditional CEAG, the administratively based CEAG can meet the objectives of the FAO features of a CEAG, which are to provide data on the structure of agriculture (from small administrative units) that enable detailed cross-tabulations to use as benchmarks for current agriculture statistics and frames for agricultural sample surveys.[21] An administratively based CEAG may be able to produce data on a yearly basis, compared to every five or ten years with a traditional CEAG.

Disadvantages of Options 1, 2 and 3

The weaknesses of these options were determined to be sufficiently significant that none of them could be adapted in their entirety to the Canadian context. These options are unable to adequately fill the data needs to replace the quinquennial CEAG, particularly when it comes to the need for benchmarking and small area data.

Option 1 would require significant restructuring of the current program including design, development, testing and implementation of the two new integrated modular surveys. As well, the integrated survey approach would adversely affect the timeliness for some crop and livestock estimates. In spite of this option's survey content and sample size increases in years ending in "5" and "8," this strategy would not meet user needs for small area and custom geographic data, for provincial benchmarking data and for the enumeration of rare or emerging commodities that only a CEAG based on complete enumeration can give.

21. Ibid.

The key disadvantages would be losses to coherence, data gaps and relevance related to

- changes to the target population
- the loss of small area data
- the loss of provincial benchmarking data
- the increased delay in capturing new trends and structural changes in the industry.

For Option 1, the two large and comprehensive surveys in years ending in "5" and "8" may result in as much response burden as the CEAG in years ending in "6" that they replace, without providing the benefits of complete enumeration at one point in time.

For both Options 1 and 2, the ten year gap between CEAGs would reduce the relevance and usefulness of the data to users. The CEAG data used for policy development and evaluation, support of legislative and regulatory instruments and for trade purposes would become out of date before the next CEAG is conducted. Like Option 1, Option 2 does not meet the user needs for small area data, provincial benchmarking data and for the enumeration of rare or emerging commodities.

In addition, these two options do not allow the entire population to be measured. The program will no longer cover 100% of agriculture activity in Canada. This would cause a loss of coherence and comparability of the data, which would require transition data (back-casting) and technical assistance to data users to adjust for changes to the target population and the availability and frequency of data. This work would also require the development of user training material to avoid data misuse and misinterpretation and to clarify the impacts of the change to the target population.

Option 3 would require an extensive administrative framework that does not currently exist in Canada and that would require significant time and investment to establish. As was discovered in the CEPOP review,[22] a common unique identifier permitting efficient linkages of multiple datasets would be required for such an administrative model to function. Such an identifier does not currently exist in Canada.

Additionally, response burden would likely be increased in such a model due to the fact that every agriculture producer would be required to provide administrative data to fill statistical requirements, whereas the present survey approach requires only a sample of operators to provide such data. Administrative concepts would have to be aligned with statistical concepts to ensure coherence. Privacy and confidentiality aspects of a program based on administrative data would have to be evaluated.

The evaluation determined that none of these options on their own would be an adequate replacement for the current agriculture statistics program. The investments required coupled with the data losses and compromises to the quality, timeliness, relevance and coherence of the data are not outweighed by the reduction in response burden and costs.

However, specific components of these alternative options were identified as being productive and efficient.

22. Don Royce, 2011, *Preliminary Report on Methodology Options for the 2016 Census*, Statistics Canada, Ottawa, Ontario. p. 38. http://www12.statcan.gc.ca/strat/Preliminary%20Report%20on%20Methodology%20Options%20for%20the%202016%20Census.pdf (accessed June 4, 2012).

4.7 Refining the Options for Further Consideration

The evaluation of the three options led to the identification of their most attractive features and their major weaknesses when considered in the Canadian context. Consequently, two hybrids of these options were constructed that incorporate these advantages while minimizing the disadvantages.

A description of these two hybrid options follows.

4.8 Option 4: Hybrid A

4.8.1 Key Features

Hybrid A features a **full decennial CEAG** with increases in content and sample sizes of commodity-specific surveys in years ending in "6," coupled with increased use of administrative data and remote sensing. More specifically:

- A **CEAG** would be conducted every 10 years (in years ending in "1"). The questionnaire content would be similar to the current Canadian option, with the following distinctions:
    - the detailed expense questions would be replaced with taxation data (i.e., the CEAG would exclude these questions)
    - any questions that could be replaced with comparable and available administrative data would be excluded.
- The CEAG would be linked to the CEPOP/NHS in years ending in "1" to provide **socioeconomic data**.
- There would be an **increase in content and sample size** in the existing commodity-specific **surveys** in years ending in "6" to compensate for some of the data loss due to the absence of a quinquennial CEAG.
- The **survey program** would remain commodity specific much like the current program. The number of survey occasions per year would be reduced for some crop, horticulture and livestock surveys.
- **Tax data** would be used to replace all comparable financial questions on the CEAG and in surveys.
- The **target population** would remain the same as for the current program (i.e., the target population includes all farms that produce agricultural products intended for sale).
- The **survey population** would continue to exclude smaller farms under a specified threshold for reasons of burden and cost. The option to raise the threshold for specific surveys needs to be investigated further. The non-surveyed population would continue to be estimated (using statistical models) and included in published estimates.
- An annual rolling **frame update** program would provide frame maintenance on a continuous basis for frame update and sampling efficiency purposes that would have been provided by a quinquennial CEAG. The program would include a short annual survey to a rotating percentage of the target population to complete missing information for new farm tax filers and operations not recently surveyed, so that the agriculture frame on the Business Register can be updated and maintained.
- **Remote sensing** would play an increasingly important role. This technology would be integrated into the agriculture statistics program as it becomes mature. The initial focus would be on replacing the Potato Area Survey and the July and September Field Crop Reporting Surveys in the Prairie provinces.

- **Administrative data** would play an increasingly important role. These data would be integrated into the agriculture statistics program, replacing content on surveys and censuses as they become available.
- This option expands on current **partnerships** and promotes new partnerships with federal, provincial and industry stakeholders. These partnerships would be necessary to share responsibility for the development, collection, and compilation of administrative data and for Statistics Canada to obtain access (such as to AAFC's AgriInvest and AgriStability programs and livestock traceability data).

4.8.2 Strengths

- This option provides an evolutionary approach to change within the agriculture statistics program, reducing risks to the relevance, coherence and accuracy of the program.
- This option would achieve cost savings and reduce response burden by replacing the CEAG in years ending in "6." These reductions would be partially offset with increases in sample size and content for the main annual surveys in years ending in "6" and an increased frame update survey.
- This option mitigates some of the risk of data loss by providing a subset of data requirements should the CEAG in years ending in "6" be cancelled by Order in Council.
- The current target population definition would remain unchanged and therefore the coherence of agriculture data would not be affected. No investment would be required to adjust historical data for a new target population definition. Similarly, there would be no investment required to develop training material for users to avoid data misuse and misinterpretation and to clarify impacts of changes to the target population.
- Since the annual agriculture surveys remain relatively similar to the current program, this option would be expected to have little impact on data users in terms of timeliness and survey content.

4.8.3 Weaknesses

- This option's survey content and sample size increases in years ending in "6" do not meet user needs for small area and custom geographic data, for provincial benchmarking data or for the enumeration of rare or emerging commodities.
- This option provides a reduced level of survey frame information, even with a rolling frame update, leading to frame deterioration and a related decrease in data accuracy from the survey program over the intercensal period.
- The ten year gap between CEAGs would reduce the relevance and usefulness of the data to users. The CEAG data used for policy development and evaluation, support of legislative and regulatory instruments and for trade purposes is likely to become out of date before the next CEAG is conducted.
- The loss of the quinquennial CEAG would impact the ability to model for the non-surveyed portion of the population in the survey program.

4.8.4 Essential Conditions

- An Order in Council would be required to cancel the CEAG in years ending in "6."
- To increase the use of administrative data, it would be necessary to renegotiate existing partnerships or develop new ones with federal, provincial and industry stakeholders. These agreements would establish protocols for data sharing, confidentiality and protection. The collaboration of multiple players over several jurisdictions would have to be established and maintained. This commitment must begin at the highest levels in the participating organizations and extend to the working level.
- Federal, provincial and industry data holders would need to include a declaration to their data providers (farm operators) regarding the provision of data for statistical purposes. There may be a need to change legislation.

- Agriculture respondents would have to be aware of and support the increasing use of administrative data, being aware of the associated benefits and risks.
- A feasibility study would be required to fully evaluate the costs, benefits, risks and potential timeframes for incorporating administrative data sources and increased use of technology (such as remote sensing) into the program.
- A methodologically sound and realistic framework through which new sources of administrative data could be identified, evaluated, incorporated and operationalized in the program would have to be developed to reduce the risk of error.

4.8.5 Required Investments

- Alternative sources of commodity data would have to be acquired, adapted and incorporated at the micro level (for example, program data such as crop insurance, AgriInvest and AgriStability).
- Remote sensing would have to be developed to completely or partially replace traditional field crop surveys. A Land Area Survey would need to be developed. The data from this survey combined with administrative data (e.g., crop insurance data) would be used to calibrate remote sensing results.

4.8.6 Risks

- There could be negative reaction from data users regarding
  - the loss of some small area data
  - the loss of some provincial benchmarking data
  - the increase in reaction time to capture new trends and industry structural changes.
- Increased reliance on administrative data sources may put the coherence, comparability and sustainability of the data at risk due to changes in programs, regulations or provider partners over time.

4.9 Option 5: Hybrid B

4.9.1 Key Features

Hybrid B features a **full decennial** CEAG with a **reduced quinquennial** CEAG, coupled with increased use of administrative data and remote sensing. More specifically:

- A **CEAG** would be conducted every five years:
  - In years ending in "1" the questionnaire content would be similar to the current Canadian program, with the following modifications to reduce response burden:
    - The detailed expense questions would be replaced with taxation data (i.e. the CEAG would exclude these questions). Although expense questions represent 7% of the content of the questionnaire, their impact on the level of burden is much greater, due to the need to access reference documents and the potential sensitivity of the questions.
    - Any other questions that could be replaced with comparable and available administrative data would also be excluded.
  - For the years ending in "6" a core CEAG would be defined by conducting user consultations and respondent testing. The content of the CEAG in years ending in "6" would be cut to a strict minimum (core) to provide
    - small area data
    - information on the structure of agriculture
    - data to use as benchmarks for required agriculture statistics
    - information required to maintain the frames necessary for the agricultural sample surveys.

    The core content needs to be determined in consultation with key stakeholders to identify priority data requirements; however there is potential to reduce current content by at least 50%. Over time, an increasing amount of content would be obtained through administrative sources rather than from a traditional CEAG.
  - Critical data requirements that do not fit the core CEAG criteria could be obtained using a modular approach targeting only a subset of the population, (such as specific farm types or farms located in specific regions), and linking to the fully enumerated results (as recommended by the FAO).
- The CEAG would continue to be linked to the CEPOP/NHS in years ending in "1" and "6" to provide **socioeconomic data**.
- The **survey program** would remain commodity specific much like the current program. The number of survey occasions per year would be reduced for some crop, horticulture and livestock surveys.
- **Tax data** would be used to replace all comparable financial questions on the CEAG and in surveys.
- The **target population** would remain the same as for the current program (i.e. the target population would consist of all farms that produce agricultural products intended for sale). The CEAG would collect data for the entire target population.
- The **survey population** would exclude, to a greater extent than currently, smaller farms under a specified threshold for reasons of burden and cost. To determine the optimal reduction in the survey population further investigation is required. The non-surveyed population would continue to be estimated (using statistical models largely based on CEAG data) and included in published estimates.
- A regular **frame maintenance** program would include a short survey to complete missing information from farm tax filer records and other administrative data sources to update and maintain the agriculture frame on the Business Register.

- **Remote sensing** would play an increasingly important role. This technology would be integrated into the agriculture statistics program as it becomes mature. The initial focus would be on replacing the national Potato Area Survey and the July and September Field Crop Reporting Surveys in the Prairie provinces.
- **Administrative data** would play an increasingly important role. These data would be integrated into the agriculture statistics program, replacing content on surveys and censuses as they become available.
- This option expands on current **partnerships** and promotes new partnerships with federal, provincial and industry stakeholders. These partnerships would be necessary to share responsibility for the development, collection, and compilation of administrative data and for Statistics Canada to obtain access (such as to AAFC's AgriInvest and AgriStability programs and livestock traceability data).

4.9.2 Strengths

- This option meets user needs for small area, provincial benchmarking and critical survey frame information. These were identified as a major weakness in the other options.
- This option allows for the survey population threshold for specific surveys to be raised because a quinquennial CEAG provides complete and regular data for modelling the non-surveyed population.
- This option provides the best coverage of data users' needs, albeit less than the current model. In particular, the requirements for provincial benchmark data, small area data, data on rare and emerging commodities and the ability to perform cross-tabulation analysis are best met with this alternative.
- The modular approach for non-core data in years ending in "6" (either concurrently or post-censally) has the flexibility to target only a subset of the population, (such as a specific farm type or farms located in specific regions), as recommended by the FAO.
- This option provides an evolutionary approach to change within the agriculture statistics program, reducing risks to the relevance, coherence and accuracy of the program. It could also be implemented in a reasonable timeframe.
- This option would achieve cost savings and response burden by replacing some of the content of the decennial CEAG in years ending in "1" and by reducing the content further to the core in CEAG years ending in "6." Research into administrative sources and consultation with users and stakeholders will provide the information required to quantify the savings and response burden reductions to be realized.
- The current target population definition remains unchanged and therefore the coherence of the agriculture data over time is not affected. No investment would be required to adjust historical data for a new target population definition. Similarly, there would be no investment required to develop training material for users to avoid data misuse and misinterpretation and to clarify impacts of the change to the target population.
- Since the annual agriculture surveys remain similar, this option is expected to have less impact on data users in terms of timeliness and content.

4.9.3 Weaknesses

- The potential exists to increase response burden if coordination, technology and procedures are not well defined with administrative data providers. For example, data currently collected from a comparatively small sample of survey respondents represents the larger target population; however, if these same data had to be added to an administrative form, all program participants would be required to provide this information, thereby significantly increasing response burden. (An example of this would be in adding a data variable, currently collected on a sample survey, to the tax form where all farm tax filers would be required to provide it.) The goal is to reduce overall burden, not to simply transfer it from one organization to another.

- Increased reliance on administrative data sources may put coherence, comparability and sustainability of the data at risk due to changes in programs, concepts, regulations or provider partners over time.

4.9.4 Essential Conditions

- To increase the use of administrative data, it would be necessary to renegotiate existing partnerships or develop new ones with federal, provincial and industry stakeholders. These agreements would establish protocols for data sharing, confidentiality and protection. The collaboration of multiple players over several jurisdictions will have to be established and maintained. This collaboration must begin at the highest level in the participating organizations and extend to the working level.
- Federal, provincial and industry data holders would need to include a declaration to their data providers (farm operators) regarding the provision of data for statistical purposes. There may be a need to change legislation.
- Agriculture respondents would have to be aware of and support the increasing use of administrative data, being aware of the associated benefits and risks.
- A feasibility study would be required to fully evaluate the costs, benefits, risks and potential timeframes for incorporating administrative data sources and increased use of technology (such as remote sensing) into the program.
- A methodologically sound, integrated and realistic framework through which new sources of administrative data could be identified, evaluated, incorporated and operationalized in the program must be developed to reduce the risk of error.

4.9.5 Required Investments

- Alternative sources of commodity data would have to be acquired, adapted and incorporated at the micro level (for example, program data such as crop insurance, AgriInvest and AgriStability).
- Remote sensing would have to be developed to completely or partially replace traditional field crop surveys. A Land-Use Area Frame Survey would need to be developed. The data from this survey combined with administrative data (e.g., crop insurance data) would be used to calibrate remote sensing results.

4.9.6 Risks

- There could be negative reaction from data users regarding
    - the loss of some small area data
    - the loss of some provincial benchmarking data.

- This option does not immediately mitigate the risk of data loss should the CEAG be cancelled in years ending in “6” by Order in Council. Over time, this risk would be mitigated with increasing incorporation of data from administrative sources (including taxation data).

4.10 Summary of the Hybrid Options

The hybrid options were developed to capitalize on the most attractive features of the first three options, while minimizing those aspects that scored the least in the evaluation.

The principal difference between the two hybrid options is the frequency with which the CEAG is conducted. With Hybrid A, there would be no CEAG in years ending in "6," but the current commodity-specific surveys would be increased in content and sample size in those years.

With Hybrid B, a CEAG in years ending in "6" would be conducted, but would be reduced in size to core requirements providing

- small area data
- information on the structure of agriculture
- data used as benchmarks (re-alignment) for current agriculture statistics
- information required to maintain the agriculture frames necessary for the agricultural sample surveys.

The two hybrids were evaluated against the current program using the same method as the evaluation of the first three options. This exercise was undertaken primarily to determine whether a blend of the most attractive features of the first three options could adequately compensate for the absence of a quinquennial CEAG. With alternatives in place, would it be possible to conduct a full CEAG every ten years and continue to meet priority data requirements?

The alternatives presented in the first three options were found to be lacking in terms of their ability to adequately compensate for the loss of quinquennial CEAG data. For Hybrid A, another option was evaluated: that of increasing the sample size and content on the entire survey program during the CEAG years ending in "6."

Hybrid A would compensate in part for this loss by increasing the content and sample size of the entire survey program during the years ending in "6." With this option, no new surveys would have to be developed and therefore development costs would be minimized. Limited benchmarking would be possible, and keeping the same target and survey population definitions would provide some continuity to the time series data. Data would be released in the same timeframe as the current program, providing sufficient resources were available to process the larger volume of data.

Hybrid B, on the other hand, would provide comprehensive coverage of the entire population every five years. Hybrid B provides all of the advantages of Hybrid A in addition to providing an answer to the principal problems with the other options, namely:

- it provides stability with regard to the target population definition, although the survey population definition should be studied with a view to reducing survey response burden
- it provides for small area data at a frequency that users require
- it provides provincial benchmarking data at a frequency that users require
- it minimizes the delay in capturing new trends and structural changes in the industry
- it builds on the already solid foundation of the current program thereby minimizing risks to the quality, relevance, coherence and accuracy of the program's data.

Table 3 summarizes the key features of the options explored and evaluated.

Based on these criteria, the option with the least response burden is Hybrid B. The most burdensome option is the Scandinavian Model because response burden is increased since the entire population of producers is required to provide data that are presently collected from a sample of producers. The burden on the organizations collecting the administrative data is also increased. Therefore, there is some shifting of costs and burden from Statistics Canada to other organizations.

Based on the cost criteria, the least costly option is the present Canadian program largely due to the fact that no additional costs are required to develop alternative collection vehicles. The most expensive option is the Scandinavian Model since aside from lowering Statistics Canada's collection costs this option scored higher for all of the remaining cost criteria.

Table 3 Summary of the agriculture statistical program options evaluated

	Baseline Option—Current Canadian	Option 1—Modified British	Option 2—Modified Australian/ American	Option 3—Modified Scandinavian	Option 4—Hybrid A	Option 5—Hybrid B
CEAG year "1"	Comprehensive	Comprehensive-excludes tax variables	Comprehensive-excludes tax variables	No traditional CEAG; potential for administratively sourced CEAG	Comprehensive-excludes tax & other administratively sourced variables	Comprehensive-excludes tax & other administratively sourced variables
CEAG year "6"	Comprehensive	None	None	No traditional CEAG; potential for administratively sourced CEAG	None	Meets minimum requirements for policy, small area data, benchmarks & frame
Replacement for CEAG year "6"	Not applicable	Larger sample for June Modular Survey in years "5" & "8"	One new large survey in years "6"	No traditional CEAG; potential for administratively sourced CEAG	Increased sample & content for annual surveys in years "6"	Not applicable
Risk mitigated if year "6" CEAG cancelled?	No	Somewhat	Somewhat	"No" in the short to medium term, "Yes" in the long term	Somewhat	"No" in the short term; increasingly in the longer term
Target population CEAG	Production of agricultural products with the intent to sell	Threshold based on production threshold	Threshold based on estimated value of agricultural operation	Threshold based on monetary sales	Production of agricultural products with the intent to sell	Production of agricultural products with the intent to sell
Survey population	Min. $10,000 (for majority of surveys)	Equal to target population	Equal to target population	Equal to target population	Less than target population (minimum to be determined)	Less than target population (minimum to be determined)
Annual survey program	Crop & livestock surveys conducted throughout year, as appropriate to crop growing cycle or livestock reproductive cycle	Two modular annual surveys in June & Dec. Larger sample for June survey in years "5" & "8"	Current program with fewer occasions as technology & administrative data replace surveys	Farm structure survey every 3 years; small surveys as required	Current program with fewer occasions as technology & administrative data replace surveys	Current program with fewer occasions as technology & administrative data replace surveys

Table 3 Summary of the agriculture statistical program options evaluated, continued

	Baseline Option—Current Canadian	Option 1—Modified British	Option 2—Modified Australian/American	Option 3—Modified Scandinavian	Option 4—Hybrid A	Option 5—Hybrid B
Frame maintenance	Admin sources and short survey	Admin sources and short survey	Admin sources and short survey	Admin sources and short survey	Rolling frame update	Tax filer (& other admin sources) and short survey
Investment in new technology	No	No	Yes	Yes	Yes	Yes
Investment in administrative data	No	No	Yes	Major investment	Yes	Yes
Investment in new surveys	No	Yes	Yes	Yes	No	No
Meets small area data needs	Most	Somewhat	Somewhat	Most (depending on coverage)	Somewhat	Most
Meets current user needs (content)	Most	Somewhat	Somewhat	Least	Somewhat	Most
Time to implement	Not applicable	Medium term (5-10 years)	Medium term (5-10 years)	Long term (> 15 years)	Medium term (5-10 years)	Medium term (5-10 years)
Ranking for response burden reduction[1]	2	2	3	4	3	1
Ranking by cost[1]	1	2	4	5	4	3

1. The ranking of these categories is as follows: 1 is best (i.e. the least burden or the least cost), while 5 is worst (i.e. the most burdensome or the most costly). Both the response burden and cost evaluations take into consideration total burden and cost, including those on other organizations besides Statistics Canada.

5.0 Answering the Key Questions

As a result of the research done, the Agriculture Division is able to respond to the three questions asked at the outset of this review.

1) Is a CEAG still the best way to meet the data requirements for policy and program purposes? If so, what should its frequency be? More specifically, is a CEAG required in 2016?

The review confirmed that a complete enumeration of the agriculture industry (CEAG) is needed to meet the policy and program requirements of federal and provincial governments, industry and other key stakeholders. The activities conducted by the federal and provincial governments that depend on this completeness are numerous, including health policy, land planning, crisis management, international trade, environmental accounting and reporting, and global commitments to the international community. Several of these inter-disciplinary activities are massive undertakings spanning more than one federal department as well as provincial governments. However, it is not solely the agriculture industry that relies on data from the CEAG. In the absence of another source of data that fully enumerates the industry, a CEAG is still the best way to meet these requirements.

The quinquennial CEAG data required to re-align survey estimates and survey frames are also critical to Statistics Canada, other federal departments (particularly AAFC) and provincial governments. At this time, no other source of information exists from which to extract this information. Intercensal frame deterioration is a current challenge despite the fact that a CEAG is conducted every five years. The magnitude of the intercensal revisions can sometimes be significant as a result. For policy and program evaluation and performance reporting to Treasury Board, re-alignment of the estimates decennially is insufficient, as it can lead to programs that are out of alignment for a long period of time. Accurate estimates are especially important given the volatility in the industry and the level of support that governments disburse to the agri-food industry.

Through consultations with key data users and through the assessment of the requirements for agriculture statistics thus far, it has become evident that a CEAG conducted less frequently than every five years will result in data gaps that could not be filled by any other means in the short and medium term. Preliminary discussions with the major stakeholders revealed that they are unprepared for these data gaps. In the absence of the 2016 CEAG, the work performed by several federal and provincial departments would be impacted due to the cross-sectional nature of many policies and programs. The volatility in the industry discussed earlier in the report further raises the need for a quinquennial enumeration of the industry. The most affected external departments would be AAFC, Health Canada, Environment Canada and the provincial governments. The absence of the 2016 CEAG data would also impact the entire agriculture statistics program, due to its integrated nature. These reasons support conducting a CEAG in 2016.

2) Given the data requirements for policy purposes, is the CEAG in its current form the most efficient way to gather the information, and are there efficiencies to be gained in the CEAG?

There are efficiencies that could be gained in the CEAG over time that could provide for the requirements of complete enumeration and survey re-alignment. Several features have been identified that could reduce some of the burden and cost associated with the current CEAG, while continuing to satisfy the requirements of complete enumeration and survey re-alignment that are so critical on a quinquennial basis.

The chosen option must take into consideration the requirements for policy and program development, monitoring and evaluation by collecting the required information from all agriculture producers, but limiting the CEAG content to these specific requirements.[23] Regardless of the chosen option, eliminating questions that can be replaced with taxation data or other administrative data could reduce the CEAG content considerably over time.

3) How can the agriculture statistics program as a whole be streamlined to reduce response burden and costs, while continuing to meet priority data requirements?

The current Canadian agriculture statistics program comprises a quinquennial CEAG, the commodity-specific surveys, administrative and taxation data, remote sensing, the agriculture economic statistics series as well as the research and analysis work. These components can be considered bricks that constitute the foundation of the program.

Taking a progressive approach to integrating new features into the current Canadian system reduces the risk of incurring significant investments in an entirely revised program and also reduces the risks of error and loss of coherence associated with more substantial changes. By maintaining the foundation of the current program, the basic structure could remain intact while being adapted over a period of several years. In this way, the strategies of replacing survey data with administrative data, taxation data and remote sensing technology will result in efficiencies, while minimizing the risks to the relevance, coherence and accuracy of the program.

Respondent burden could be reduced over time as new administrative data sources are identified, evaluated and incorporated into the agriculture statistics program. Remote sensing also has the potential to play a more important role in supporting the agriculture statistics program. Further work will be required to quantify the investments, savings and timelines associated with the adoption of administrative data and remote sensing technology.

Survey response burden could be alleviated by reducing either the target population or the survey population. Reducing the target population would affect the coherence and comparability of the data,

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23. The FAO recommendations for conducting a CEAG state that a CEAG should be conducted more frequently than every ten years. The recommendations suggest that a CEAG be conducted based on complete enumeration for the core content required by policy makers. Further data not considered essential for policy making are to be collected from a sample of the population either concurrently with the CEAG or post-censally. The FAO recommendations are based on the internationally recognized need to reduce collection and processing costs for agriculture censuses as well as to provide for the increasing amount of information sought from the CEAG.
Source: World Bank and FAO, 2010, *The Global Strategy to Improve Agricultural and Rural Statistics,* Report Number 56719-GLB, Washington D.C. http://www.fao.org/fileadmin/templates/ess/documents/meetings_and_workshops/seminar_on_global_strategy_22_06_2009/global_strategy_document_20090622.pdf (accessed June 4, 2012).

whereas maintaining the same target population and reducing the number of farms eligible to be surveyed could allow the currently published estimates to be maintained. The quinquennial CEAG provides regular data for the modelling of the non-surveyed population. This strategy requires no investment to adjust historical data to a new target population definition.

Further cost savings could also be introduced into the program by rationalizing and reducing the number of survey occasions per year for some crop, horticulture and livestock surveys where user data requirements can continue to be met. In addition, further response co-ordination in the CEAG years could reduce response burden over time as other sources of data become incorporated into the program.

It is possible to continue to develop a revised agriculture statistics program that respects the international agriculture statistics priorities and guidelines, namely:

- the recent commitments made by the Agriculture Ministers of the G20 regarding improvements to agriculture statistics and the Agriculture Market Information System (AMIS)
- alignment with the global initiative to improve agriculture statistics, as described by the FAO[24]
- alignment with the World Bank and FAO's *Global Strategy to Improve Agricultural and Rural Statistics.*[25]

Several of the features presented in the various options could result in further opportunities for reducing response burden and finding cost efficiencies. Increasing the utilization of remote sensing, increasing the incorporation of taxation data and administrative data will result in reduced response burden, realized cost efficiencies and a good quality program in the medium to longer term.

24. FAO, op.cit.

25. World Bank and FAO, op.cit.

6.0 Road Map towards a New Agriculture Statistics Program

Regardless of the option chosen, four activities have been identified that will render the Canadian agriculture statistics program more efficient:

1. increasing the incorporation of administrative data to replace survey questions where possible
2. replacing detailed revenue and expenses questions on the CEAG and the FFS with taxation data
3. determining the impact of revising the survey sample populations
4. increasing the utilization of remote sensing applications with a view to replacing survey questions or entire surveys over the longer term.

Timeline

A framework would need to be developed for the continual assessment, testing and incorporation of administrative data into the statistical program to realize ongoing reductions to burden and costs. The detailed expenses questions could be replaced with tax data beginning with the 2016 CEAG.

In the road map, there are four main phases for the integration of administrative data into the agriculture statistics program:

1. assess, conceptualize, develop, establish and access
2. test
3. implement and use
4. on-going operationalization.

The length of each phase will vary with the specific administrative data source in question, and sometimes a phase may have to be repeated. It is worth noting that the steps may have to be conducted separately for several jurisdictions (provinces), as often the holders of the agriculture administrative data are decentralized. This also means that the phases, including implementation and ongoing operationalization, may differ in time and duration for the same data variables by jurisdiction (e.g., administrative data for livestock variables could be implemented for one province before others).

Table 4 illustrates a possible timeline for the incorporation of tax data and other administrative data sources into the CEAG, while Table 5 presents possible timelines within the agriculture survey program. It is important to note that the elements of access, coverage, matching, timeliness and data concepts all need to be evaluated and tested as part of the process.

Table 4 Possible timeline for administrative data replacement in the Census of Agriculture

Years	2011 to 2013	2014 to 2018	2019 to 2023	2024 to 2028	2029 to 2031
Example: Tax data	Test for the Census	Implement and use in the Census	Ongoing		
Admin data source Example A	Assess, conceptualize, develop, establish access	Test for the Census	Implement and use in the Census	Ongoing	
Admin data source Example B	Assess, conceptualize, develop, establish access	Test for the Census	Refine and retest for the Census	Implement and use in the Census	Ongoing
Admin data source Example C	Assess, conceptualize, develop, establish access		Test for the Census	Implement and use in the Census	Ongoing
Admin data source Example D	Assess, conceptualize, develop, establish access			Test for the Census	Implement and use in the Census

Census years are 2011, 2016, 2021, 2026 and 2031.

For incorporation of administrative data into the survey program, the same four phases apply. A minimum of five years would be expected before implementation could be completed. The timing of each phase is highly dependent on the success and duration of preceding phases.

Table 5 Possible timeline for administrative data replacement in the agriculture survey program

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Assess, conceptualize, develop, establish access		Test for the program		Implement and use in the program		Ongoing

7.0 Conclusion

The objectives set out at the beginning of this review were to determine whether a quinquennial CEAG is necessary, and if so, how it could be made more efficient. The review also sought to determine what efficiencies could be gained in the delivery of the agriculture statistics program as a whole. The driving concerns behind these objectives are the need to reduce costs and response burden overall.

The research and consultations conducted by the Agriculture Division led to a clear enumeration and recognition of the requirements for agriculture statistics and for a quinquennial CEAG. The evaluation of various options, along with the current program, is presented in this report.

The Agriculture Division recognizes the importance of continuing to cultivate partnerships with potential administrative data providers. The Division also recognizes that continued communication, consultation and collaboration with major data users, key stakeholders and Agriculture Division staff are key elements to the successful implementation of any changes to the current program.

8.0 List of Acronyms

AAFC	Agriculture and Agri-Food Canada
AMIS	Agriculture Market Information System (G20 and FAO)
BSE	Bovine Spongiform Encephalopathy
CBA	Corporate Business Architecture, Statistics Canada
CCAP	Crop Condition Assessment Program, Agriculture Division, Statistics Canada
CEAG	Census of Agriculture
CFIA	Canadian Food Inspection Agency
COOL	Country of Origin Labelling (US)
EASD	Environment Accounts and Statistics Division, Statistics Canada
EPA	Environmental Protection Agency (US)
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FFS	Farm Financial Survey, Agriculture Division, Statistics Canada
GHG	Greenhouse Gases
GIS	Geographic Information Systems
NAESI	National Agri-Environmental Standards Initiative
NAHARP	National Agri-Environmental Health Analysis and Reporting Program
NCGAVS	National Carbon and Greenhouse Gas Accounting and Verification System
PMRA	Pesticide Management Regulatory Agency, Health Canada
RSGA	Remote Sensing and Geospatial Analysis section, Agriculture Division, Statistics Canada
SNA	System of National Accounts, Statistics Canada
UN	United Nations
WTO	World Trade Organization