



Canadian Grain Commission
Commission canadienne
des grains

**Evaluation of the Harvest Sample
Program**
Audit and Evaluation Services
Final report
Canadian Grain Commission

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Executive summary

Overview of the evaluation

The Canadian Grain Commission was established by the Canada Grain Act in 1912 as the federal government agency mandated to, “in the interests of producers, establish and maintain standards of quality for Canadian grain and regulate grain handling in Canada to, ensure a dependable commodity for domestic and export markets.”

The Harvest Sample Program (HSP) has been administered by the Canadian Grain Commission since 1927. This program provides the Canadian Grain Commission with information on the processing and end-use quality of Canadian grains harvested each year. The Harvest Sample Program runs from March to November each year. Samples from the crop of western and eastern grains are solicited, collected, and analyzed. The Canadian Grain Commission uses these samples to develop visual grading standards, monitor and support the quality assurance system, and support grain research activities. Participating producers receive unofficial grades and quality information for each sample they submit. This information assists producers with marketing their grain. Producers can also compare this information to the grade potential buyers may offer for their grain. Harvest quality reports resulting from analysis of samples are provided free of charge to interested stakeholders such as grain companies, buyers and processors to support the marketing and use of Canadian grains.

The Canadian Grain Commission’s Audit and Evaluation Services unit included the evaluation of the Harvest Sample Program in its approved Evaluation Plan for 2015-2016. The evaluation objectives and methodology were developed in accordance with the Treasury Board Policy, Directives and Standards on Evaluation (2009). The evaluation results inform future program planning.

Audit and Evaluation Services hired the consulting firm Ference & Company of Vancouver, B.C. to conduct the evaluation.

Evaluation methodology

The evaluation examined the relevance, performance, efficiency and economy of the Harvest Sample Program for the period from April 1, 2010 to November 30, 2015. The evaluation was based on:

- a review of federal government, Canadian Grain Commission and program documents and data
- a literature review and comparison of similar programs in other jurisdictions
- interviews with 28 Canadian Grain Commission representatives, 19 industry and producer associations, 21 domestic grain companies and buyers, and 17 international buyers of Canadian grain
- surveys of 1,207 producers who have participated in the program by sending harvest samples
- surveys of 125 producers who registered but have never submitted samples to the program

Findings and conclusions

Relevance

The Harvest Sample Program is aligned with federal roles and responsibilities, federal priorities and Canadian Grain Commission strategic outcomes. The Canada Grain Act does not mandate the program, but it supports key legislated responsibilities of the Canadian Grain Commission. These include developing visual grading standards, monitoring and verification of grading factors, research on environmental conditions, and other special research projects.

The Harvest Sample Program is aligned with federal priorities to ensure the growth, competitiveness and sustainability of the agriculture sector. It supports the Canadian Grain Commission's strategic outcome to ensure that **“Canada's grain is safe, reliable, and marketable and Canadian grain producers are properly compensated for grain deliveries to licensed grain companies.”** The program also supports the Canadian Grain Commission's organizational priority, “investing in stakeholder relations”, as identified in its 2015-16 Report on Plans and Priorities.

There is a significant need for the Harvest Sample Program to continue. The samples are essential to the Grain Quality Research Program and Quality Assurance Program. The Harvest Sample Program is the primary or only source of materials for many grain quality research projects. The program samples are ideal for research because they are pure, non-blended samples with a known geographic location obtained directly from producers at the beginning of the supply chain. Other sources of materials such as cargo shipment samples, plant breeder samples, and composite samples obtained from elevators, producer associations or other stakeholders would not suit the Canadian Grain Commission's needs.

The database of registered producers has decreased, mainly due to the retirement, relocation and death of producers. This has resulted in a 24% decline in the number of producers registered for the program in 2015. The survey has found that producers in the program tend to be older than the average overall Canadian farming community. Attracting new producers to the program has been a priority but the program must put more effort into recruiting younger producers.

Changes in grain marketing and the introduction of an open market for western wheat and barley have led to increased demand for the Harvest Sample Program results from organizations that use this data. Use of the free annual harvest quality reports is significant and increasing. The Harvest Sample Program complements harvest surveys conducted by other organizations in Canada. Some of the information in the Canadian Grain Commission's annual harvest quality reports and the Canadian International Grains Institute's harvest assessment report overlaps. However, the evaluation found that these reports are used differently by the same stakeholders and benefit different stakeholders in the value chain.

The differences in the harvest sampling methods used by the Canadian Grain Commission and the Canadian International Grains Institute are complementary. The Canadian International Grains Institute partners with 9 major grain companies to obtain samples and provides them with grading information to support their marketing. The Harvest Sample Program obtains samples directly from producers and provides them with unofficial grades to inform their marketing strategies in alignment with the Canadian Grain Commission's producer protection objectives. The Canadian International Grains Institute's annual assessment and report includes only Canada Western Red Spring, Canada Western Amber Durum, Canada Western Red Winter and Canada Prairie Spring Red wheat from the Prairie region. In addition to these 4

classes, the Canadian Grain Commission publishes harvest quality reports for other western Canadian wheat classes, canola, flaxseed, lentils, malting barley and peas, Ontario wheat, and Canadian non-food grade soybeans and food-grade soybeans.

The Grain Farmers of Ontario's Ontario Wheat Harvest Quality Scoop is also complementary to the Harvest Sample Program. It is carried out in collaboration with the Canadian Grain Commission as an extension of the Harvest Sample Program. However, obtaining enough samples from producers in Ontario and Quebec has been a challenge. The Canadian Grain Commission may need to enhance its relationship with Grain Farmers of Ontario and build new relationships to improve the Harvest Sample Program for eastern grains. Other sources of grading and assessment, such as grain companies and analytical labs, do not duplicate or overlap with the Harvest Sample Program. These sources have a different purpose and do not publish harvest quality information. Almost all recipients use the information the Canadian Grain Commission provides to complement other sources of harvest quality information.

Achievement of intended outcomes

The Harvest Sample Program has been successful in achieving its immediate outcomes to:

- increase producers' knowledge of their grain quality
- increase awareness among domestic and international buyers and processors of the quality of Canadian grain crops
- support the activities and objectives of the quality assurance and grain quality research programs

The Harvest Sample Program provides the quality assurance and grain quality research programs with an annual source of unblended producer samples. This maximizes the range of varieties, environmental factors, and quality characteristics of the samples. The annual harvest quality reports and information generated using the Harvest Sample Program samples also support the Canadian Grain Commission's obligation to implement a grading system that supports the efficient marketing of grain within and outside of Canada.

External program beneficiaries are very satisfied with the Harvest Sample Program overall. Almost all producers find the unofficial grade and quality information useful or very useful in providing information to better market their grain. The annual harvest quality reports provide very useful information on the Canadian grain crop to external recipients.

The Harvest Sample Program has also been successful in achieving its intermediate outcomes:

- improve producers' ability to negotiate a price and grade for their grain
- increase stakeholders' confidence in the quality, grading factors and specifications of the Canadian grain crop
- provide information that assists the domestic grain industry in marketing Canadian grains

The free, unofficial grade and quality information participating producers receive helps them make an informed assessment of buyers' offers and negotiate grade and price more effectively. The program produces historical data that demonstrates the consistency of Canadian grains year over year. This data increases confidence in the quality, grading factors and specifications of the Canadian grain crop among current and potential buyers and processors. The fact that the Canadian Grain Commission is a government agency, independent of industry and

producers, builds confidence in the Canadian grading system and the annual harvest reports. The detailed information on quality and consistency produced by the Harvest Sample Program also effectively assists the domestic grain industry in marketing Canadian grains.

The Harvest Sample Program supports the legislated responsibilities of the Canadian Grain Commission and contributes to the achievement of the Canadian Grain Commission's strategic outcome. The materials obtained through the program are essential to the Canadian Grain Commission's ability to recommend and establish grain grades and standards; implement a system of grading and inspection for Canadian grain; and conduct, sponsor and promote research about grain and grain products. The unofficial grades help participating producers with their marketing strategies. The annual harvest quality reports are widely used by grain companies, buyers, and processors to support the marketing of Canadian grains.

Program design and delivery

The current program design is efficient, cost-effective, and the best option based on the program's purposes and beneficiaries. Other sampling methods would not meet the Canadian Grain Commission's need for unique, individual producer-level samples, would not help producers market their grains and negotiate grade and price, or would be too expensive.

The design and delivery of the Harvest Sample Program is meeting the needs of the Canadian Grain Commission by providing an adequate supply of diverse sample materials for quality assurance and grain quality research. Other sources of sample materials do not meet the needs of the Canadian Grain Commission. Increasing the number of producers registered in the program and developing a way to target sample submissions to ensure growing regions and commodities are well represented would improve the delivery of the program.

The design and delivery of the Harvest Sample Program is very effective in addressing producers' needs. Producers are for the most part very satisfied with the delivery of the program. Producers also suggest it is very important that the program remains free. If the Harvest Sample Program became a fee-for-service program, very few producers would participate and the program would not supply adequate sample materials for quality assurance and grain quality research. The producers surveyed suggested the Harvest Sample Program could be enhanced by:

- revising the program's online interface and emailing results to producers
- providing the unofficial grade of a harvest sample to producers in a more professional looking printable format
- allowing producers who own large farms to submit more than eight samples
- including additional information in the unofficial grade and quality assessment given to producers

External recipients are very satisfied with the design and delivery of the Canadian Grain Commission's annual harvest quality reports and information. These organizations and individuals reported that the content, format and delivery meet their needs well. International buyers value the ability to communicate directly with Canadian Grain Commission representatives to better understand the harvest quality reports and ask questions. Some industry associations and domestic grain companies and buyers suggested the program could be enhanced by obtaining more samples, targeting specific crops and regions, and publishing the reports earlier in the harvest season. Some international stakeholders indicated that combining the information produced by the Canadian International Grains Institute and the

Canadian Grain Commission into one report and including more information on varietal end-use functionality would be useful.

Recommendations

The evaluation found that the Harvest Sample Program has been successful in achieving its objectives and is delivered in an efficient and cost-effective way. Possible opportunities to enhance the program were identified during the evaluation.

Recruit new program participants

As participating producers age, marketing and promotion efforts must ensure younger producers and those farming larger acreage are recruited to replace retiring producers. Current strategies such as tradeshow, communications through producer and industry associations, and social media should be continued. The Canadian Grain Commission should also look for new ways to promote and market the program to target the crops and growing regions that currently have lower participation. Possible strategies include using radio and print advertisements, direct contact with producers, local community events and enhanced partnerships with producer and industry associations.

Improve harvest quality information for producers

Improvements to the type and format of harvest quality information available to producers in order to increase their participation in the program should be considered. One possible improvement would be to include more technical factors in the unofficial grade and quality information provided to producers. The producers surveyed indicate that a more detailed explanation of the grading factors including falling number, dockage, moisture, hard vitreous kernels (HVK), bushel weight, fusarium and vomitoxin would enhance the program.

More sample envelopes could be provided to producers who own large farms and producers growing multiple varieties of the same crop. Providing registered producers with the ability to update which grains they intend to submit each harvest should also be considered.

Redevelop the online interface for producers

The online interface for producers could be improved. This could include a web page where participating producers can login to update their sample preferences or notify the Canadian Grain Commission that they have retired, relocated or ceased operations. It could also allow producers to access their own results, compare their results year-over-year and to those of the regional and national composites. Producing a more professional, printable format of the unofficial grade and quality assessment should be considered to make the information even more useful for producers. To encourage participation, producers could be sent emails to remind them to submit samples, inform them that their results are ready, or to electronically deliver their results.

Improve tracking of producer participation

The number of producers removed from and added to the producer database each year could be included in the annual harvest survey internal reports issued to Canadian Grain Commission management in order to better track producer registration and participation in the program. If possible, the report could include the number of producers who submit samples. Current reporting only tracks the number of producers who receive sample kits and the total number of samples received.

Improve communication with stakeholders

The Canadian Grain Commission updates the wheat harvest information on a weekly basis, but these updates could be better communicated with the people who use this information. The Canadian Grain Commission could also increase communication with domestic stakeholders and international buyers to promote the Harvest Sample Program and to share the annual harvest quality reports.

Build partnerships to increase participation in eastern Canada

Continue to build partnerships with organizations in eastern Canada to improve the response rate among producers from Ontario and Quebec.

Work with the Canadian International Grains Institute to produce a comprehensive report

The possibility of producing a single comprehensive annual harvest quality report that combines the information produced by the Canadian Grain Commission and the Canadian International Grains Institute should be investigated. The US Wheat Associates' harvest assessment report provides a model of a comprehensive national report that uses harvest quality data from multiple sources, using different collection methods.

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1.0 Introduction

This report presents the findings of the evaluation of the Harvest Sample Program. The evaluation was undertaken by the management consulting firm Ference & Company to provide the Canadian Grain Commission with comprehensive and reliable evidence to support decisions regarding continued implementation of the program activities. The evaluation assessed the relevance, performance, efficiency and economy of the program, as outlined in the Treasury Board Policy on Evaluation (2009).¹

The report is divided into 6 sections:

- section 1 introduces the evaluation
- section 2 outlines the evaluation scope
- section 3 describes the methodology used to conduct the evaluation
- section 4 provides a brief profile of the Harvest Sample Program including its purpose, design, delivery, resources and expected outcomes
- section 5 describes the key findings of the evaluation
- section 6 outlines the evaluation conclusions and recommendations

2.0 Evaluation scope

This evaluation covered the period from April 1, 2010 to November 30, 2015. Where applicable, program documents, reports and historical data prior to 2010 have been used to identify historical trends and key changes that have impacted the program's design, effectiveness, efficiency and economy.

The evaluation addressed the following issues.

Relevance

- Extent to which the program continues to address a demonstrable need and is responsive to the needs of the various beneficiaries
- Linkages between the objectives of the program, federal government priorities and Canadian Grain Commission strategic outcomes
- Linkages of the objectives of the program with federal roles and responsibilities
- Extent to which the program complements, duplicates or overlaps with other similar or related programs or initiatives in Canada

Performance

- Extent of achievement of expected outcomes, with reference to program reach and design, including the linkage and contribution of the program outputs to intended immediate and intermediate program outcomes and the strategic outcome of the Canadian Grain Commission
- Economy of resource utilization in relation to the production of outputs and progress toward expected outcomes of the program
- Possible alternative program design and delivery options

¹ Treasury Board of Canada Secretariat, Policy on Evaluation (2009). Retrieved from: <http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=15024>

3.0 Methodology

3.1 Evaluation approach

The evaluation relied on multiple lines of evidence including a document review, review of program data, interviews with key informants, surveys of producers and a literature review. By using multiple lines of evidence and triangulating the findings, the research methodology supported a comprehensive evaluation of the Harvest Sample Program.

Document review

The document review addressed evaluation issues related to the relevance and performance of the Harvest Sample Program. A total of 47 documents were reviewed as part of the evaluation (Appendix 5), including:

- legislation including the Canada Grain Act
- the Program Logic Model
- annual harvest quality reports
- speeches from the Throne
- Departmental Performance Reports
- Reports on Plans and Priorities
- program expenditure reports
- past reviews and evaluations of the Harvest Sample Program

Review of program data

Program data was reviewed to obtain information related to the relevance and performance of the Harvest Sample Program. Data analyzed as part of the evaluation included the number of registered producers in the producer database, previous customer satisfaction survey data, annual program summary reports which include producer participation rates, and performance data on visits to the program webpage and Canadian Grain Commission annual harvest quality report web pages.

Key informant interviews

A total of 83 interviews were conducted with key informants between October 2015 and February 2016 to address evaluation issues dealing with the relevance and performance of the program. Respondents were identified in consultation with the Project Steering Committee and sent an email explaining the purpose and timing of the interviews, a letter of introduction from the Canadian Grain Commission, and a copy of the interview questionnaire. Interviews were conducted by telephone and the responses were compiled and analyzed using Excel. Due to constraints scheduling telephone interviews with time differences and language barriers, some international buyers were provided the opportunity to submit their feedback via a written questionnaire. The number of respondents interviewed and the response rate for each stakeholder group is provided in Table 3.1.

Table 3.1: key informant interview metrics by cohort

Group	Initial sample	Valid sample	Target	Actual	% of Target	Response rate	Est. sample error ²
Canadian Grain Commission representatives	28	28	20	26	130%	92.8%	5.2%
Associations	49	47	15	19	127%	40.4%	17.5%
Domestic grain companies and buyers	44	40	15	21	140%	52.5%	14.9%
International buyers and processors	69	63	20	17	85%	26.9%	20.5%
Total	190	178	70	83	119%	46.6%	7.9%

Surveys of producers

Between November and December 2015, surveys were conducted with 1,207 producers who participated in the Harvest Sample Program, and 125 producers who registered for but have not participated in the program. The survey of participating producers was designed to obtain information from producers who have submitted samples regarding the use and benefit of the unofficial grade and quality assessment, their motivation for participating, and their degree of satisfaction with the services received. The survey of producers who registered but did not participate was designed to obtain information regarding their motivation for registering and the reasons why they have never submitted samples.

Survey respondents were sourced from the Harvest Sample Program producer database of 6,727 active producers. The database included 2,449 producers without an email address and 4,278 with an email address, 193 of whom had multiple registries and were excluded. The remaining 4,085 producers with emails were sent invitations to participate in the survey. In addition, 200 randomly selected producers with no email address were mailed a hard copy of the survey. Participants were sent pre-survey communication which included a letter of introduction and a copy of the questionnaire. A total of 3 email reminders were sent to producers with an email address and all participants received at least one telephone reminder. Updated email addresses were obtained for producers whose initial invitation had bounced and new invitations were reissued. Survey responses were coded and cleaned using Excel and summarized according to evaluation issue.

Table 3.2 outlines the number of survey completions and response rate for each cohort.

Table 3.2: key survey metrics by cohort

Group	Initial sample	Invalid or bounced	Valid sample	Target	Completed	% of target	Response rate	Margin of error ¹
Participating producers	4,285	413	3,872	1,000	1,207	121%	31.2%	2.3%
Non-participating producers	N/A	N/A	N/A	150	125	83%	N/A	N/A

¹ At the 95% confidence interval

² This percentage represents how often the true percentage of the population who would pick an answer lies within the margin of error at the 95% confidence interval.

Literature review and comparative analysis of similar programs

The literature review and comparative analysis were conducted to obtain information related to the need for the Harvest Sample Program and to compare the effectiveness and efficiency of the program with similar programs in Canada and in other jurisdictions. Other programs were identified in consultation with the Evaluation Steering Committee, and included:

- the Canadian International Grains Institute
- Grain Farmers of Ontario
- the US Wheat Association
- the Australian Grain Growers Association / Australian Export Grains Innovation Centre
- FranceAgrimer/Arvalis
- the United Kingdom's Agriculture and Horticulture Development Board's Cereals and Oilseeds Division

A total of 50 websites, journal articles and grey literature sources were reviewed (Appendix 6).

3.2 Methodological considerations

Some of the limitations of the evaluation and the strategies employed to mitigate these limitations are as follows.

There is a potential response bias in the findings of the key informant interviews. This limitation was mitigated by:

- clearly communicating the purpose of the evaluation, its design and methodology, and strict confidentiality of responses with respondents
- cross-checking the responses with those of other stakeholder groups
- using multiple lines of evidence
- triangulating the evaluation findings

A relatively small number of completed interviews with international buyers and processors of Canadian grains makes it more difficult to ensure the results are significant, and to generalize the findings to the population of international stakeholders who use the annual harvest quality reports and other information.

4.0 Program profile

4.1 Context

The Harvest Survey Program was first implemented in 1927 to accumulate data on the differences in protein content of milling grade Canada Western Red Spring wheat. Over time, the scope of the survey was expanded to include the collection and assessment of both western and eastern wheat varieties*, oilseeds (including canola, flax, mustard, solin* and soybeans), and pulses (including peas, lentils, chickpeas and beans) from western Canada, Ontario, Quebec and the Maritimes.

* Varieties of wheat include Canada Eastern Soft Red Winter, Canada Eastern Hard Red Winter, Canada Eastern Hard Red Spring, Canada Eastern White Winter, Canada Western Red Spring, Canada Western Amber Durum, and Canada Western Hard White Spring.

* Solin was removed effective August 1, 2013.

Historically, the harvest survey has used different sampling methodologies for western and eastern Canada.

Western Canada

From 1927 to 1994, samples were obtained from western grain elevators, with supplemental samples obtained from Winnipeg grain company offices and Canadian Grain Commission western Canada inspection offices. In response to a declining number of primary elevators, the methodology was changed in 1994.³ Between 1995 and 2003, samples of wheat, canola, flax and barley were sourced directly from western producers with the assistance of the Canadian Wheat Board, which supplied producer information and seeding intentions. Producers were selected from the Canadian Wheat Board database based on 3 year crop production averages for each region. The 2003 adoption of the Privacy Act prevented the Canadian Wheat Board from supplying the Canadian Grain Commission with producer contact information. Consent cards were sent to all producers who participated in the Harvest Sample Program during 2002 and 2003 to request their voluntary participation. Since 2004, producers have remained the primary source of samples with supplemental samples obtained from crushing plants (canola and flax), processors (pulses and mustard), producer associations and elevators.

Eastern Canada

During the 1980s, the Harvest Sample Program was expanded to include eastern Canadian grains. The survey was split between eastern and western Harvest Sample Program by a boundary that runs through Thunder Bay, Ontario.⁴ During the late 1980s and 1990s, samples from eastern Canada were collected and graded by the staff at the Chatham office of the Canadian Grain Commission. Individual samples or composites were sent to the Canadian Grain Commission headquarters in Winnipeg for further analysis. From 2007 to 2009, Weather Innovations was contracted by the Ontario Wheat Board to collect samples for analysis by the Canadian Grain Commission Grain Research Laboratory. In 2010, responsibility for sample collection was transferred to Grain Farmers of Ontario, which sourced samples from eastern Canadian elevators. Since 2009, samples have also been solicited directly from eastern Canadian grain producers, and supplemental samples continue to be sourced from Grain Farmers of Ontario, provincial grain commissions, processors and associations.

4.2 Program overview

4.2.1 Program purpose and beneficiaries

The primary purpose of the Harvest Sample Program is to provide the Canadian Grain Commission with information on the intrinsic processing and end-use quality of Canadian grains harvested in a given year. The information is used to optimize management of the quality assurance system by measuring the effectiveness of the grain grading system and the year to year variability in the processing and end-use qualities within the grain grades. As shown in the following table, increasing use of the sample materials within the Canadian Grain Commission and the resulting annual harvest quality reports and information among external stakeholders has resulted in a growing number of objectives and beneficiaries of the program.

³ Canadian Grain Commission, The Harvest Survey: An 88 Year Tradition of Quality, PowerPoint Presentation. Updated September, 2015.

⁴ Canadian Grain Commission, Harvest Survey Review 2005/06, pg. 2.

Table 4.1: Harvest Sample Program objectives and beneficiaries

Objective	Beneficiaries
1. Provide a snapshot of the intrinsic processing and end-use quality of grains harvested each crop year	Quality Assurance Program (Industry Services Division)
2. Source diverse and non-blended samples of Canadian grain to prepare the visual grading standards	Quality Assurance Program (Industry Services Division)
3. Source diverse and non-blended samples of Canadian grain to research and monitor the geographical occurrence of grain grading factors, evaluate experimental classes and support other special research projects	Grain Quality Research Program (Grain Research Laboratory)
4. Provide unbiased, unofficial grade and quality information to aid in producer protection and the effective marketing of Canadian grains	Producers
5. Provide an unbiased third party indicator of the predominant grading factors and anticipated grade distributions to support the marketing of Canadian grains	Producers, marketers, traders, domestic and international buyers, producer and industry associations, processors and handlers

4.2.2 Program governance

The Harvest Sample Program is currently one of several programs and activities included in Sub-Program 1.4.3 Producer Support Programs, under Program 1.4 Producer Protection Program.⁵ The Canadian Grain Commission is undergoing revisions to its program activity architecture that will result in a merging of the 4 distinct program streams into 2, at which time the Harvest Sample Program will be categorized as a sub-program of the Quality Assurance Program. As the Harvest Sample Program has no permanent staff or fixed budget, it is not material enough to be considered an independent program.

The Harvest Sample Program is managed by the Grain Research Laboratory of the Grain Quality Research Program. The Director of the Grain Research Laboratory is directly responsible for the Harvest Sample Program and the Lead Chemist, Analytical Services serves as Program Manager. For approximately 2 months each year, Grain Research Laboratory technicians carry out the core collection activities including management of the producer database, the solicitation and collection of grain samples, preparation of composites and communication of results to producers. Additional term staff is hired for a 2- to 3-week period to assist in the preparation and mailing of the harvest sample packages to participating producers.

Other divisions of the Canadian Grain Commission are also involved in the Harvest Sample Program. The Industry Services Division, which manages the Quality Assurance Program and Quantity Assurance Program, provides inspectors to grade and analyze samples. Staff responsible for Internal Services, which include Management and Oversight, Communications Services, Financial Management Services and Information Technology Services, provides communications expertise and services including:

- artwork for grain envelopes and kit material
- advertising, press releases and webpage updates
- information technology services required to maintain and update the program systems
- financial support for the forecasting, budgeting and tracking of program expenditures

⁵ Canadian Grain Commission, 2015-16 Report on Plans and Priorities. pg. 31.

4.2.3 Program activities

The core activities of the Harvest Sample Program involve the annual collection and analysis of grain samples and composition by class and/or grade. The program typically begins with planning in March and ends with the publication of final results in November. The results are shared with prospective buyers and processors by Canadian Grain Commission representatives at domestic and international new crop missions in November and December.

Collection of grain samples

Samples are obtained from producers who have voluntarily registered to participate. For some grains, supplemental samples are obtained from grain handling companies, producer organizations and the Industry Services Division to ensure sufficient volumes for the preparation of composite samples. To solicit the samples, Canadian Grain Commission staff develops and maintain a database of consenting producers. Each year prior to harvest, Grain Research Laboratory and temporary staff mail approximately 8,000 harvest packages, which include pre-paid envelopes up to a maximum of 8 per registered producer. Preparation of the sample kits occurs from May to July, with packages mailed to producers in August. Producers (and alternative sources) fill the pre-paid envelopes and return the samples to the Canadian Grain Commission Grain Research Laboratory in Winnipeg before the November 1 deadline. The representativeness of the samples by crop region is tracked and additional samples are solicited as required.

Analysis of samples and preparation of composites

Between late August and November 1, samples are received, sorted by grain and class, cleaned and sent to the Grading Standards Sub-Program of the Quality Assurance Program for analysis of grading factors and grading. Near infrared transmittance technology (Infratec Tecator) is used to conduct whole grain analysis. The grade and quality information produced includes:

- protein content for cereal grains and pulses
- oil, protein and chlorophyll content for canola
- oil and protein content and iodine value for flaxseed;
- oil and protein for mustard seed and soybeans⁶

The unofficial grade for each sample is shared with participating producers via a personal account on the Canadian Grain Commission website or over the telephone. Composite samples are then prepared by crop region for the same grade and class, based on protein content. Portions are taken from each of the protein bands to make the protein segregates (usually 13.5 and 14.5) which are sent for full wheat, milling, baking and noodle analysis to determine their intrinsic processing and end-use qualities.⁷

Additional research and preparation of harvest quality reports

Individual samples are provided to Grain Quality Research Program divisions for further analysis and special research projects. The results of the composite analyses are prepared by scientists and program managers and shared with interested stakeholders free of charge via the Canadian Grain Commission website, communication materials, and domestic and international crop missions and presentations conducted by Canadian Grain Commission staff and other

⁶ Canadian Grain Commission, Harvest Sample Program. Accessed: <https://www.grainscanada.gc.ca/quality-qualite/hsp-per/hspm-mper-eng.htm>

⁷ 2007 Harvest Survey, Part 2, Slide 7.

stakeholders. A list of the quality parameters included in the 2015 harvest quality reports is provided in Appendix 2.

4.3 Program resources

The program has no fixed human or financial resources. With the exception of the term staff hired to prepare the sample mail outs, human resources are shared with the Grain Research Laboratory, Industry Services Division and Internal Services program. A total of \$750,000 is annually allocated to the completion of the program; however, program expenditures fluctuate depending on the number of samples received, the number and areas of special focus and the cost of postage. A more detailed analysis of program expenditures is provided in section 5.6.

4.4 Program logic model

The purpose of a logic model is to illustrate a program's design as a logical sequence, outlining the intended causal relationships between the program activities, outputs and expected outcomes. The following provides a description of the Harvest Sample Program's intended sequence of outputs and outcomes. The Harvest Sample Program logic model is provided in Appendix 1.

Outputs of the program include the:

- unofficial grade and quality assessments provided to participating producers*
- grain samples and data provided to the Grain Quality Research Program and Quality Assurance Program
- annual harvest quality reports made available to interested stakeholders free of charge

In the immediate term, these outputs are expected to result in the following outcomes:

- producers' increased knowledge of their grain quality
- increased awareness among domestic and international buyers and processors of the quality of Canadian grain crops
- material support for the activities and objectives of the Quality Assurance Program and Grain Quality Research Program

In the intermediate term, the Harvest Sample Program is expected to contribute to the following outcomes:

- improvements in producers' ability to negotiate a fair price and grade for their grain
- increased confidence among stakeholders (including potential buyers and processors) in the quality, grading factors and specifications of the Canadian grain crop
- information that assists the domestic grain industry in marketing Canadian grains

In the long term, the Harvest Sample Program is expected to contribute towards the achievement of the Canadian Grain Commission's ultimate strategic outcome to ensure that "Canada's grain is safe, reliable, and marketable and Canadian grain producers are properly compensated for grain deliveries to licensed grain companies."

* The CGC grade is considered unofficial because it does not meet some of the regulations. For example, in order to be official, the sample has to weigh at least 1,000 grams, be collected by the grain inspector and the dockage be retained.

5.0 Evaluation findings

Relevance

5.1 Alignment with federal roles, responsibilities and priorities and Canadian Grain Commission strategic outcomes

Although the Harvest Sample Program is not mandated by the Canada Grain Act, the program's activities and outputs support key legislated responsibilities of the Canadian Grain Commission. The program is aligned with federal priorities to ensure the growth, competitiveness and sustainability of the agriculture sector and the Canadian Grain Commission's strategic outcome to ensure that "Canada's grain is safe, reliable and marketable and Canadian grain producers are protected." The program also supports the Canadian Grain Commission's new organizational priority, "investing in stakeholder relations", as identified in its 2015-16 Report on Plans and Priorities.

5.1.1 Alignment with federal roles and responsibilities

The roles and responsibilities of the Canadian Grain Commission are enacted in federal legislation through the Canada Grain Act. The Canadian Grain Commission's mandate, as outlined in the act, is to "in the interests of grain producers, establish and maintain standards of quality for Canadian grain and regulate grain handling in Canada, to ensure a dependable commodity for domestic and export markets". The Canadian Grain Commission has the authority and responsibility to maintain standards for and regulate the handling of 20 grains grown in Canada to ensure Canada's grain is safe, reliable, and marketable and Canadian grain producers are properly compensated for grain deliveries to licensed grain companies.⁸

While the Harvest Sample Program is not a mandated responsibility of the Canada Grain Act, the core harvest survey and related research activities undertaken using the collected samples directly support the Canadian Grain Commission's federal responsibilities to:

- recommend and establish grain grades and standards for those grades, and implement a system of grading and inspection for Canadian grain to reflect adequately the quality of that grain and meet the need for efficient marketing in and outside Canada
- undertake, sponsor and promote research in relation to grain and grain products⁹

5.1.2 Alignment with federal priorities and the Canadian Grain Commission strategic outcome

The objectives of the Harvest Sample Program align with federal priorities to ensure the growth, competitiveness and sustainability of Canada's agricultural sector. The program's objective to assist the grain industry in marketing Canadian grains aligns with the priorities outlined in Budget 2015 to promote trade opportunities for the agriculture and agri-food sector and market Canadian agricultural and agri-food products around the world.¹⁰ The program's objectives are to increase stakeholders' confidence in the quality, grading factors and specifications of the Canadian grain crop, and to provide producers with increased knowledge in order to better market their grain. These objectives are aligned with federal priorities to support freedom of

⁸ Canadian Grain Commission, 2015-16 Report on Plans and Priorities. pg. 6.

⁹ Justice Canada, Canada Grains Act. Part II, 16 (1). pg. 10. <http://laws-lois.justice.gc.ca/PDF/G-10.pdf>

¹⁰ Government of Canada, Budget 2015. Chapter 3.5 Growing Trade and Expanding Markets. http://www.budget.gc.ca/2015/docs/plan/ch1-eng.html#_Toc417204075

marketing for western grain and barley producers, following the transition of the Canadian Wheat Board as identified in Budget 2013¹¹ and the 2011 Speech from the Throne.¹²

The objectives of the Harvest Sample Program are also closely aligned with the Canadian Grain Commission's single strategic outcome: "Canada's grain is safe, reliable and marketable and Canadian grain producers are protected."¹³ As described above, through its support for the activities of the grain quality research and quality assurance programs, the Harvest Sample Program contributes to the establishment and maintenance of quality standards and the regulation of grain handling in Canada. The program's outputs (i.e. the annual harvest quality reports and the unofficial grade and quality assessments provided to producers) help market Canadian grains to domestic and international end-users, and ensure producers possess the knowledge of their grains' quality in order to make informed marketing decisions. The unofficial grade and assessment provided to participating producers aids in producer protection by providing a benchmark for comparison by which producers can assess buyers' offers.

Lastly, the Harvest Sample Program supports the Canadian Grain Commission's new organizational priority, "investing in stakeholder relations", identified in its 2015-16 Report on Plans and Priorities.¹⁴ The Canadian Grain Commission aims to promote awareness of its activities and services with the intention of increasing stakeholder understanding of the organization's role in the grain sector. Communicating the value of Canadian Grain Commission activities, including the grading system, Harvest Sample Program, research activities, statistical reports and efforts to maintain and increase access to international markets are necessary in order to ensure its services are recognized as relevant and valuable by industry and producers, who contribute a significant portion of the Canadian Grain Commission's funding.

5.2 Continued need for the program

There is a significant continued need for the Harvest Sample Program. The samples obtained are essential for supporting the objectives and activities of the grain quality research and quality assurance programs. The Harvest Sample Program is the primary or only source of materials for numerous Grain Quality Research Program staff. The program samples are ideal for research because the program sources pure, non-blended samples with an identified geographic location directly from producers at the beginning of the supply chain. While internal demand has remained largely consistent, changes in the marketing of grains and oilseeds, and the introduction of an open market for western wheat and barley have led to increased demand for the Harvest Sample Program outputs among many external beneficiaries. Use of the Canadian Grain Commission's free annual harvest quality reports by external beneficiaries is significant and is increasing.

5.2.1 Internal demand for the Harvest Sample Program

Program documents and interviews with 26 Canadian Grain Commission staff and managers show that the Harvest Sample Program is an essential source of sample materials for the Canadian Grain Commission's grain quality research and quality assurance programs. Almost all Canadian Grain Commission staff and managers interviewed (92%) rated the need for the program as 5 on a scale of 1 to 5, signifying a major internal need. Canadian Grain Commission representatives explained that the samples obtained through the program enable the Canadian

¹¹ Government of Canada, Budget 2013. Chapter 3.2. <http://www.budget.gc.ca/2013/doc/plan/chap3-2-eng.html#a42-Supporting-Farmers>

¹² Government of Canada, Speech from the Throne. June 3, 2011
<http://www.lop.parl.gc.ca/ParlInfo/Documents/ThroneSpeech/41-1-e.html>

¹³ Canadian Grain Commission, 2011-14 Departmental Performance Report. pg.7.

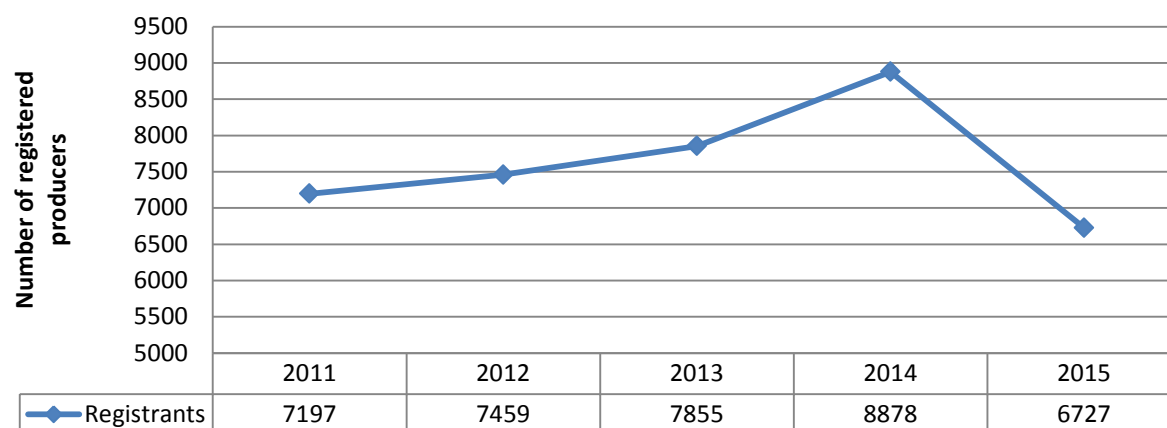
¹⁴ Canadian Grain Commission, 2015-16 Report on Plans and Priorities.

Grain Commission to perform its federally mandated responsibilities, including the Industry Services Division's development of visual grading standards and monitoring and verification of grading factors, and the Grain Quality Research Program's research on environmental conditions and other special research projects. A number of Grain Quality Research Program staff and managers explained that the Harvest Sample Program is the primary or only source of materials for their research, due to the fact that the program sources pure, non-blended samples with an identified geographic location directly from producers at the beginning of the supply chain. Alternative sources of materials including cargo shipment samples, plant breeder samples and composite samples obtained from elevators, producer associations or other stakeholders would be inappropriate based on the Canadian Grain Commission's research needs.

5.2.2 Participation of producers in the Harvest Sample Program

The following figure depicts the number of registered producers in the Harvest Sample Program producer database between 2011 and 2015. In 2011, 7,197 producers were mailed sample kits¹⁵, representing 14% of the 52,410 grain and oilseed farms in Canada with gross farm revenues of \$25,000 or more.^{16*} Internal harvest survey summary reports indicate that between 2011 and 2014, an average of 320 new producers was added and 80 inactive producers were culled from the producer database each year. A significant cleaning of the producer database in 2015 led to the removal of 2,572 producers who had not submitted samples during the past 3 years. The major reasons why these producers had not submitted samples are retirement, relocation and death.

Figure 5.1: number of Harvest Sample Program registrants, 2011 to 2015



Source: Harvest Survey Annual Reports, 2011 to 2015

The survey of participating producers found program registrants to be disproportionately older than the overall Canadian farming community (Appendix 3). Almost 73% of the survey respondents were aged 51 and older, and 53% were 64 and older. Producers aged 36 to 50 were the most under-represented age cohort, representing 19% of all program participants as

¹⁵ Canadian Grain Commission, 2011 HSP Summary Report

¹⁶ Statistics Canada. Table 002-0072 - Farm financial survey, financial structure by farm type, average per farm (gross farm revenue equal to or greater than \$25,000). <http://www5.statcan.gc.ca/cansim/a26?lang=eng&retrLang=eng&id=0020072&&pattern=&stByVal=1&p1=1&p2=-1&tabMode=dataTable&csid=#F2>

* 2011 is the most recent data available as the next Census of Agriculture is being undertaken in 2016.

compared to 44% of all farmers in Canada.¹⁷ Given the older than average characteristics of program registrants, there is a significant need for continued promotion of the program and recruitment of younger producers in order to maintain a sufficiently large number of producer registrants. Since 2012, it has been a priority of the program to seek new registrants through increased representation at trade shows, use of social media, and leveraged promotion with industry stakeholders such as the Western Grain Elevator Association, Inland Terminal Association of Canada, Grain Farmers of Ontario and the Alberta Wheat Commission.¹⁸ Program data provides evidence that some progress has been made, but additional efforts are needed.

Interviews with Canadian Grain Commission representatives found that approximately three-quarters of all Canadian Grain Commission staff and management believe current uptake is based on a somewhat adequate or inadequate awareness of the Canadian Grain Commission and the Harvest Sample Program. These individuals explain that, despite efforts to increase awareness among producers, registration has been challenging. The majority believe that continued engagement with producer groups through farm shows, producer meetings, grading seminars and other events is needed. Some argue that, given ongoing difficulties obtaining sufficient registration, additional funding for radio and/or print advertisements in farm publications or newspapers or targeted direct marketing is required. The survey findings show that tradeshow, word of mouth, the Canadian Grain Commission website and advertisements in newsletters or trade magazines have been more successful to date at recruiting producers than social media and efforts to disseminate information via producer and other industry associations.

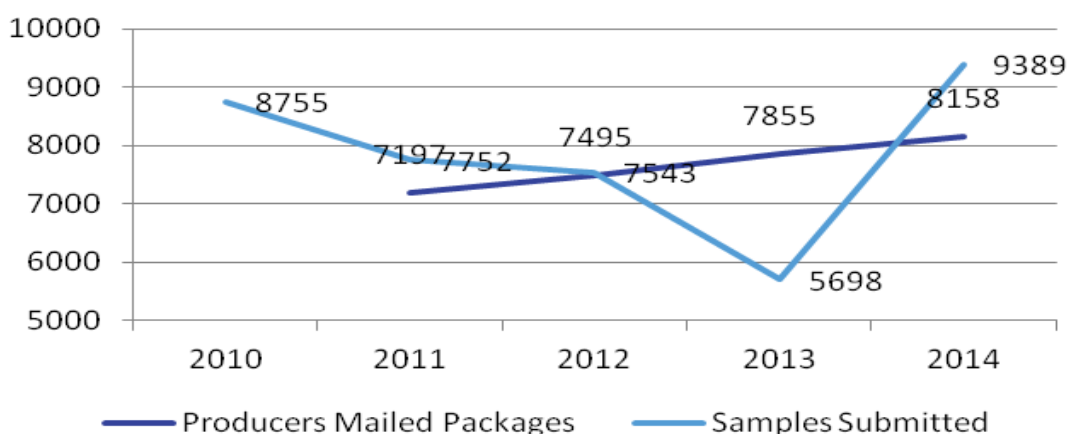
The number of samples submitted by producers varies from year to year, with more significant uptake occurring during poor quality harvests. Between 2010 and 2015, approximately 7,827 samples were submitted annually to the Harvest Sample Program. Submissions declined 24.4% between 2012 and 2013, likely due to the transition to the open market following the end of the Canadian Wheat Board monopoly and the high quality of the 2013 harvest. It should be noted that the 2013 Canadian Grain Commission internal summary report was produced in October before collection was complete, and consequently under-represents the number of samples collected. Even excluding 2013's low participation, submissions among participating registrants have increased; 24% more samples were submitted in 2014 than in 2012. Harvest Sample Program webpage page views also increased 77% from 6,139 in 2012 to 10,846 in 2013 and then declined to 8,081 in 2015.¹⁹

¹⁷ Statistics Canada, 2011 Census of Agriculture.

¹⁸ Canadian Grain Commission, HSP Summary Report, 2012, 2013 and 2014

¹⁹ Program Data, Website Wheat Statistics 2009 to 2015 as of October 2015.

Figure 5.2: total samples submitted to the Harvest Sample Program, 2010 to 2014



Sample submissions also vary significantly by region and commodity. Western Canada accounted for 93% of all materials sourced between 2011 and 2014.²⁰ As shown in the following table, eastern producers most frequently submit samples of soybeans, canola and Canada Eastern Soft Red Winter wheat. Western producers most frequently submit samples of Canada Western Red Spring wheat, canola, amber durum, peas and lentils. Submissions of less frequently grown commodities such as beans, chickpeas, peabeans and Canada Western Extra Strong wheat are variable and unpredictable. These usually provide the Canadian Grain Commission with materials to use for instrument calibration and pure varieties to support research activities.

Table 5.3: total samples submitted to the Harvest Sample Program by commodity, 2011 to 2014

Western	2011	2012	2013	2014
Beans	5	18	7	6
Canola	2062	2640	1679	2295
Peabeans	36	49	0	2
Soybeans	65	126	74	126
Chickpeas	9	18	18	11
Canada Prairie Spring Red (CPSR)	51	61	86	229
Canada Prairie Spring White (CPSW)	2	2	3	2
Canada Western Amber Durum (CWAD)	869	1089	950	1374
Canada Western Extra Strong (CWES)	2	2	1	0
Canada Western General Purpose (CWGP)	3	8	17	46
Canada Western Hard White Spring (CWHWS)	22	23	10	21
Canada Western Red Spring (CWRS)	3354	4156	3267	4941
Canada Western Red Winter (CWRW)	80	175	125	174
Canada Western Soft White Spring (CWSWS)	36	57	79	48
Flax	181	214	86	272
Lentils	331	347	212	384
Mustard	178	148	100	294
Peas	307	359	346	476
Eastern	2011	2012	2013	2014
Beans	1	1	0	0
Canola	5	161	2	51

²⁰ HS Collection Summary Reports 2011, 2012, 2013, 2014

Peabeans	3	3	0	3
Soybeans	41	393	254	428
Canada Eastern Red Spring (CERS)	30	46	40	31
Canada Eastern Hard Red Winter (CEHRW)	22	66	44	34
Canada Eastern Soft Red Winter (CESRW)	46	243	356	349
Canada Eastern Soft Red Winter (CEWW)	11	45	47	43

Source: Canadian Grain Commission internal annual harvest survey summary reports, 2011 to 2014

The survey of registered producers found that the majority reside in Saskatchewan (48%), Alberta (30%) and Manitoba (15%). Eighty-three percent farm 4,000 acres or less, with the majority of participants (60%) farming fewer than 2,000 planted acres. Participants' most frequently grown commodities include Canada Western Red Spring wheat (71%), canola (69%), peas (31%), Canada Western Amber Durum wheat (23%) and flaxseed (19%). Participants most frequently have gross farm revenues between \$100,000 and \$500,000 (48%) or between \$500,000 and \$999,000 (21%), which is slightly over-representative of larger producers. For comparative purposes, the average gross farm revenue of a Canadian grain and oilseed producer in 2014 was \$358,000.²¹ This corroborates the findings of Anh Phan in the 2009 Harvest Survey Review, which demonstrated that larger producers in Manitoba were more likely to participate in the Harvest Sample Program.²²

An analysis of the 125 surveyed producers who registered for the program but never submitted samples indicates they are far more likely than producers who participate to:

- be located in Quebec or Ontario
- be aged 50 or younger
- farm 1,000 planted acres or fewer
- grow corn, barley, soybeans and oats

For a full breakdown of the characteristics of the participating producers and non-participating producers surveyed, see Appendix 3.

5.2.3 Perceived usefulness of the Harvest Sample Program among participating producers

Survey findings show that the primary reason why the vast majority of producers (91%) participate is to obtain a free unofficial grade and quality assessment. However, the ability to support the marketing and end use of Canadian grains and the Canadian Grain Commission's monitoring and assessment of the grain quality assurance system are also important considerations for many participants (70% and 61%, respectively).

The majority (68%) of participants find the program and the harvest quality reports and information useful or very useful. Twenty-two percent find them somewhat useful and less than 5% believe the program is of little or no use to them. The perceived usefulness of the program was shown to gradually diminish when producers' annual gross farm revenues exceed \$1 million, or when producers' planted acreage of grains and oilseeds exceeds 6,000 acres. This is likely because very large producers have more negotiating power with buyers. They also more commonly have their own labs or pay for alternative testing from private labs or third-party

²¹ Statistics Canada, Farm Financial Statistics, Farms, Average Operating Revenues and Expenses, by Farm Type (Oilseed and Grain Farming). CANSIM, tables [002-0044](#) and [002-0053](#) and Catalogue no. [21-208-X](#).

²² Lyman, G. J. Examination of Methods of Harvest Survey Sample Preparation and Cargo Composite Sample Preparation with Brief Notes on Compliance with ISO 17025. March 2009. pg. 11

providers. For these reasons, they rely less on the Harvest Sample Program unofficial grade than producers with lower revenues.

The Harvest Sample Program was found to be somewhat useful to producers in Ontario and Quebec (average ratings of 3.4 out of 5), as compared to all other provinces, which find the program useful or very useful (average ratings ranging from 4.1 to 5 out of 5). This is attributable to the high proportion of soybean producers in Ontario and Quebec. According to key informants, differences in the value chain for food grade soybeans (e.g. increased use of contract sales, the prevalence of niche markets and buyers' reliance on their own lab analysis to determine desired end-use characteristics rather than Canadian Grain Commission grades) make the information provided by the Harvest Sample Program less valuable for marketing. This issue is discussed further in section 5.5.

Overall, the perceived usefulness of the Harvest Sample Program was found to be higher for western wheat producers than eastern wheat producers, and lower for producers of corn, beans and soybeans, as shown in Table 5.4. This is likely attributed to reasons previously identified for soybeans and the relatively limited amount of information provided to producers of beans and corn.

Table 5.4: producer's average rating of usefulness by commodity group (scale of 1 to 5)

Commodity	Non specified	Eastern region	Western region
Wheat		3.6	4.2
Barley		3.6	4.2
Flaxseed		4.6	4.1
Canola	4.2		
Oats	4.2		
Corn	3.3		
Chickpeas	4.3		
Lentils	4.2		
Beans	3.7		
Soybeans	3.8		
Peabeans	4.3		
Mustard	4.2		
Peas	4.2		

Producers most commonly use the unofficial grade and information as an unbiased second opinion to compare against potential buyers' assessments (66%). The Harvest Sample Program information is also used by a third (34%) of producers to develop or support their marketing strategy. These producers may use the program information to determine which buyers would likely be most interested in their crop, how to target their marketing to maximize value, and as a promotional tool to advertise their grain to potential buyers. A small minority of producers also use the grade and assessment to gauge the influence of on-farm practices and weather conditions on grain quality (5%) or to compare against the regional or national averages provided in the Canadian Grain Commission annual quality reports (3%).

The 5% of producers who find the Harvest Sample Program to be of little or no use most frequently indicated that:

- the grade carries no weight with buyers because it is unofficial (23%)

- they do not understand how to access their results (23%)
- they have not needed to use their unofficial grade to dispute a buyer's grade (23%)
- they require more detailed information than what is provided by the program (23%)

Participating producers explained that if they were unable to obtain the free unofficial grade and quality assessment from the program, they would feel less confident making an educated assessment of the offers they receive from buyers and be more reliant on buyers' grades and assessments to determine the quality and of their grain (32%). Some producers (24%) indicated they would incur additional expenses associated with obtaining an official grade and quality information from another source, and 10% would face an increased marketing burden due to the need to submit samples to many more buyers. About 23% indicated that they would be minimally affected, as they would continue to obtain grades from multiple buyers.

5.2.4 Demand for the Canadian Grain Commission annual harvest quality reports

Demand for the free annual harvest quality reports published on the Canadian Grain Commission website is significant, and has increased during the past 5 years. The following table depicts the total number of page views (English and French) each harvest quality report received during its publication year.²³ As shown, the total number of views for all Canadian Grain Commission reports combined within a given crop year increased 231% from 5,329 in 2009 to 17,662 in 2014. This suggests an increase in the perceived usefulness of the resources among external beneficiaries.

Table 5.5: page views for wheat and canola quality reports during the year of publication, 2010 to 2015

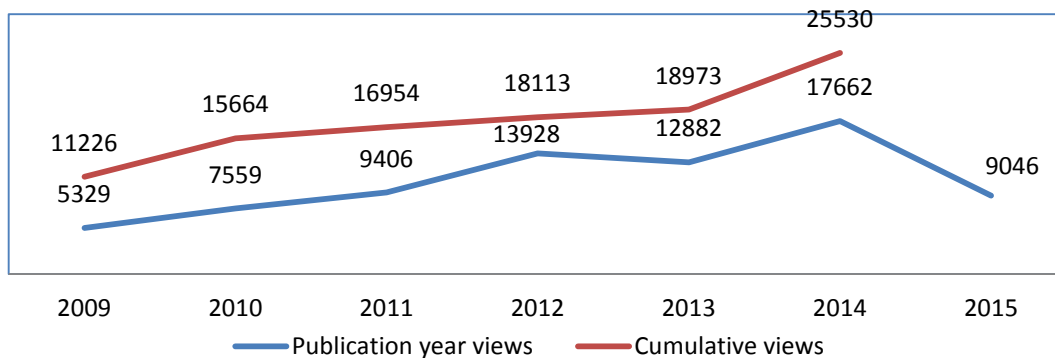
Report	2009	2010	2011	2012	2013	2014	2015*
Quality of Western Canadian Wheat	1242	2440	3212	6607	6208	8256	3371
Quality of Western Canadian Canola	1040	2447	2622	3783	2890	2819	1751
Quality of Ontario Wheat						1598	1135
Quality of Western Canadian Flaxseed	716	713	639	1145	850	987	774
Quality of Barley Selected for Malting	580	600	683	453	775	1311	698
Export Quality, Western Canadian Wheat	835	656	824	263	688	578	952
Quality of Canadian Food-Type Soybeans	-	-	447	826	464	534	-
Quality of Western Canadian Mustard	444	320	442	442	517	951	-
Quality of Canadian Non-Food Grade Soybeans	472	383	537	409	490	628	365
Total	5329	7559	9406	13928	12882	17662	9046

* As of December 2015.

External beneficiaries' use of harvest quality reports to compare results across years has also increased. The following figure depicts the cumulative number of webpage views the annual harvest quality reports received, from the date of publication up to December 2015. At the time of writing, cumulative data for 2015 was not available.

²³ Program Data, Website Wheat Statistics 2009 to 2015 as of October 2015.

Figure 5.6: page views for Canadian Grain Commission annual harvest quality reports, 2009 to 2015



Interviews were conducted with Canadian Grain Commission staff and management, producer and industry associations, domestic grain companies and buyers, and international buyers and processors of Canadian grains and oilseeds. These interviews indicated that all external beneficiary groups use the reports and information, but that international end users have a more significant demand for the information than domestic stakeholders. Domestic stakeholders primarily rely on their own sampling and analysis to inform their marketing strategies. All international buyers and processors interviewed are familiar or somewhat familiar with the reports and information and 94% use them; 94% of domestic producer and industry associations are very familiar with the reports and information and 63% use them; and 71% of domestic grain companies interviewed are somewhat familiar or familiar with the reports and information and 62% use them.

Producer associations and grain companies that do not use the reports commonly explained that they were unaware the reports were available to them or they rely on another source of quality information. A few representatives of associations stated that the contents were not relevant to their specific role, or their informational needs.

5.2.5 Perceived usefulness of the Canadian Grain Commission annual harvest quality reports

All of the 16 international buyers and processors interviewed that use the Canadian Grain Commission's annual harvest quality reports reported that they find them useful or very useful (an average rating of 4.7 out of 5) and that the reports contain information on grading and quality that is relevant and beneficial in supporting their decision-making. International buyers and processors use the information to support their purchasing decisions, such as by identifying which growing regions have their desired quality and providing necessary information on protein strength to support their end use functionality. Some also use the information to inform their processing decisions, such as when planning for corrections in their flour recipes in order to mitigate the impact of changes in key quality parameters.

The 11 producer and industry associations interviewed that use the reports find them useful (an average rating of 4.2 out of 5). Associations most frequently use the reports to obtain a good understanding of the national supply and the quality attributes of the crop year, and to compare data across years and regions. Similarly, most domestic grain companies find the reports and information useful (an average rating of 4.2 out of 5). Mills, grain buyers and traders perceive the information to be slightly more useful than terminals and processors. The grain companies reported that they use the region-specific data on grain quality and grading to compare the Canadian Grain Commission's results to the harvest quality results within their region and other

regions, and to the results of their own quality surveys and testing or those of mills they purchase flour from.

Canadian Grain Commission staff and management reported that there is a stronger awareness and understanding of the Canadian Grain Commission and the harvest quality reports and information among international buyers than domestic beneficiaries. Staff and management indicated that greater communication with domestic producer associations is needed to educate domestic beneficiaries on the benefits of the Harvest Sample Program. The most frequent suggestion for improving domestic beneficiaries' awareness is greater communication with associations, including distribution of the harvest quality reports via email.

5.2.6 Increased need for Harvest Sample Program outputs following the dismantling of the Canadian Wheat Board

As previously demonstrated, there has been increasing demand for the Harvest Sample Program outputs among external beneficiaries in recent years. The findings of the evaluation indicate this is the result of changes in the marketing of grains and oilseeds, and the transition from a single sales desk with the Canadian Wheat Board to an open market for western wheat and barley in 2012.

While the majority of participating producers (55%) reported that the usefulness of the Canadian Grain Commission's unofficial grade and quality assessment has remained consistent, 29% explained that the unofficial grade has become more important or useful to them. These individuals most frequently explained (45%) that the open market has resulted in more complicated and subjective grading, making it more challenging for them to assess buyers' offers and negotiate grade and price for their grain. As a consequence, they are more reliant on the use of an independent third-party assessment as a basis for comparison. Approximately 41% stated they now have a greater need for quality information to support their marketing efforts.

Similarly, a large majority (88%) of Canadian Grain Commission staff and management and more than half of associations and grain companies and buyers that use the reports (56% and 58%) claimed that the usefulness of the reports and information has increased. According to these stakeholders, changes in the marketing of wheat and other grains, and the introduction of an open market for western wheat and barley have contributed to an increased need for technical information on quality and end-use functionality among producers, associations, marketers and traders. Stakeholders responsible for marketing Canadian grains stated that they have a greater need for detailed information on quality and end-use functionality in order to identify markets, market effectively, and respond to buyers' requests for information.

Some producer and industry associations reported having received increasingly complex and technical demands for information from buyers. This was said to be the result of an increased focus on specific characteristics affecting processing and end use functionality, such as falling number for wheat, and gluten strength and protein strength among specific varieties. As one association representative explained, "the grading factors and characteristics sought by buyers are evolving and vary according to commodity and intended end-use." The introduction of new food safety legislation with maximum residue levels (MRLs) of mycotoxins, herbicides and pesticides was also identified as being a contributing factor to buyers' increased need for information. These findings were supported by the comments of the international buyers and processors.

A review of industry news articles published since 2012 supports these findings. For example, a 2012 article by Alberta Agriculture and Forestry explains that producers are experiencing increased variability in the price spreads across wheat grades and protein levels.²⁴ A 2015 AgCanada article reports that inconsistent grading from elevator companies has increased the importance of harvest quality information prior to delivery.²⁵ Articles published by The Western Producer²⁶ in 2013 and the Globe and Mail²⁷ in 2014 suggest smaller producers experience greater difficulty handling their own marketing and financing, and producers face increased competition between farms, as consolidation within the industry has resulted in fewer grain buyers and less competition. The Western Producer article argues that domination of the prairie grain industry by 3 major elevator companies has driven down price competition and reduced producers' ability to negotiate price and grade.

5.3 Complementarity and overlap with similar programs and initiatives

Overall, the Harvest Sample Program complements harvest surveys undertaken by other organizations in Canada. While there does exist some overlap in the information provided by the Canadian Grain Commission's annual harvest quality reports and Canadian International Grains Institute's (Cigi) Harvest Assessment Report, differences in the sampling methodologies are complementary in that they benefit different stakeholders in the value chain. Differences in the scope of the surveys make both reports useful to end users for different reasons. The Grain Farmers of Ontario's Ontario Wheat Harvest Quality Scoop, conducted in partnership with the Canadian Grain Commission as an extension of the Harvest Sample Program, is complementary. However, beginning in 2016, Grain Farmers of Ontario's harvest survey will be conducted by the Ontario Grains Laboratory operated by SGS, possibly resulting in duplication or overlap with the Harvest Sample Program. Other sources of grading and assessment, such as grain companies and analytical labs, do not duplicate or overlap with the Harvest Sample Program, as they have a different purpose and do not publish harvest quality information. Almost all external beneficiaries use the Canadian Grain Commission's outputs in addition to other sources of harvest quality information.

5.3.1 Complementarity and overlap with the Canadian International Grains Institute

Canadian International Grains Institute (Cigi) is a non-profit organization whose purpose is to:

- promote Canadian grain to global processors
- provide Canadian and international participants with training in Canadian grain and field crop production, marketing, distribution and processing
- provide Canadian industry participants with training to build knowledge of market characteristics and requirements
- identify unique end uses for Canadian grain and field crops through applied research
- operate facilities used to provide practical, commercially oriented knowledge to support a competitive Canadian grain and field crop value chain

²⁴ Alberta Agriculture and Forestry. (2012, October). Wheat Quality and Protein – Why does it matter? Retrieved from [http://www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/all/sis14235](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/sis14235)

²⁵ Guenther, L. (2015, January). Farmers say some low-quality grain grades inconsistent. AGCanada. Retrieved from <http://www.agcanada.com/2015/01/farmers-say-some-low-quality-grain-grades-inconsistent>

²⁶ White, E. (2013, August). Small grain trader says open market has less competition than expected. The Western Producer. Retrieved from <http://www.producer.com/2013/08/small-grain-trader-says-open-market-has-less-competition-than-expected/>

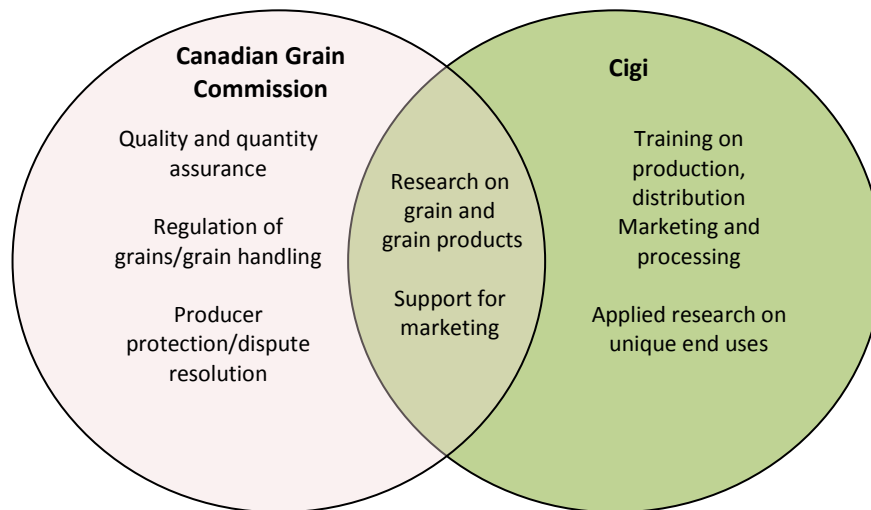
²⁷ MacDonald, J. (2014, November). Why so many farmers miss the wheat board. The Globe and Mail Inc., Retrieved from <http://www.theglobeandmail.com/report-on-business/rob-magazine/why-so-many-farmers-miss-the-wheat-board/article21810531/>

The Canadian Grain Commission's and Cigi's missions, objectives and activities are largely complementary. The Canadian Grain Commission is mandated to establish and maintain standards of quality for Canadian grain and regulate grain handling in Canada to ensure a dependable commodity for domestic and export markets. It has the authority and responsibility to maintain standards for and regulate the handling of 20 grains grown in Canada to ensure Canada's grain is safe, reliable and marketable, and Canadian grain producers are properly compensated for grain deliveries to licensed grain companies. Cigi is client-serving and is focused on marketing, innovation and adaptation. Cigi receives funding from Agriculture and Agri-Food Canada's Agricultural Innovation and Marketing Program and Canadian Agricultural Adaptation Program to provide research services to domestic stakeholders. For example, Pulse Canada is currently undertaking a pulse milling project with Cigi using cost-matching from AAFC's Canadian Cultural Adaptation Program. Beginning in fiscal year 2013 to 2014, Cigi has also conducted early generation testing on behalf of public wheat and durum breeders, and evaluated breeding lines for some private grain companies for varietal selection by the Prairie Grain Development Committee.²⁸

Cigi also provides technical expertise, experience and knowledge about the quality and end-use application of Canadian field crops to the Canadian value chain and international and domestic customers. Canadian Grain Commission and Cigi staff collaborate on joint research projects, inward trade missions for international buyers, outward Team Canada new crop missions and educational presentations to producers. Cigi has also supported the Canadian Grain Commission through use of their pasta drying equipment. Cigi's Combine to Customer training and direct interaction with producers is useful in promoting the Harvest Sample Program and increasing awareness among producers. The purpose, objectives and activities of the Canadian Grain Commission and Cigi overlap in that both organizations provide support for the marketing of Canadian grains and oilseeds, and both conduct research on the end use application of grain and grain products (see Figure 5.7).

²⁸ Canadian International Grains Institute, 2014-15 Annual Report. https://cigi.ca/wp-content/uploads/2015/06/Cigi-Annual-Report-2014-2015_15041001.pdf

Figure 5.7: Canadian Grain Commission and Canadian International Grains Institute responsibilities



As part of its efforts to promote Canadian grain to global processors, Cigi conducts an annual Harvest Assessment Program in partnership with 9 major grain companies in Canada.* The survey and report include representative samples of Canada Western Red Spring, Canada Western Amber Durum, Canada Western Red Winter and Canada Prairie Spring Red. Samples of commercial shipments by wheat class, grade (and region for Canada Western Red Spring) are obtained from inland elevators across Western Canada. Regional composites (western and eastern) are only available for Canada Western Red Spring; the other classes are prairie composites because they are not grown across all regions of the prairies. Cigi shares results with each individual grain company, and publishes the composite harvest quality results free of charge in an annual Quality of Wheat Classes report made available on Cigi’s website. The results are also shared at Team Canada new crop missions in November and December with domestic and international buyers of Canadian grain.

The comparative analysis and interviews with Canadian Grain Commission representatives provide evidence that Cigi’s program and report both overlap and complement the Harvest Sample Program and Canadian Grain Commission’s annual harvest quality reports. Both programs are designed to take representative samples of each harvest year’s crop and produce quality data on composite samples to share with industry and grain customers around the world to support the marketing of Canadian grain. Both reports are published online free of charge, and are shared with customers at domestic and international new crop missions that include Cereals Canada, Cigi and the Canadian Grain Commission. The end users of the reports overlap, as domestic grain companies and buyers, associations and international buyers and processors use both Cigi and Canadian Grain Commission reports and data.

Differences in the sampling methodologies are complementary in that they benefit different stakeholders in the value chain. Whereas Cigi partners with 9 major grain companies to obtain samples and provides them with grading information to support their marketing strategy, the Harvest Sample Program sources directly from producers and provides them with unofficial

* Cargill, G3 Canada (formerly CWB), Louis Dreyfus Canada, Parrish & Heimbecker, Paterson GlobalFoods, Providence Grain, Richardson International, South West Terminal, and Viterra.

grades that are used to inform their marketing strategies and assist them when negotiating a grade and price for their grain.

Differences in scope of the surveys and reports are also complementary. Cigi's annual assessment and report includes only Canada Western Red Spring, Canada Western Amber Durum, Canada Western Red Winter and Canada Prairie Spring Red from the Prairie region. In addition to these 4 classes, the Canadian Grain Commission publishes harvest quality reports on other western Canadian wheat classes, wheat exports, flaxseed, lentils, malting barley and peas, Ontario wheat, and Canadian non-food grade soybeans and food-grade soybeans.²⁹

Because Canada Western Amber Durum, Canada Western Red Spring, Canada Prairie Red Spring and Canada Western Red Winter are included in both reports, there is overlap in some of the quality data reported. Cigi and the Canadian Grain Commission conduct most of the same quality testing for these 4 wheat classes, but use different sampling methodologies. These distinct sampling methodologies can result in differences, which can lead to confusion or concern among external beneficiaries, particularly international buyers. As an illustration, the following table compares the quality parameters of No. 1 Canada Western Amber Durum reported by Cigi and the Canadian Grain Commission in their 2015 annual harvest quality reports.

Table 5.8: Cigi and Canadian Grain Commission quality parameters for 2015 No. 1 Canada Western Amber Durum

Quality parameter	Cigi	Canadian Grain Commission	Quality parameter	Cigi	Canadian Grain Commission
Wheat			Alveogram		
Test Weight, kg/hL	82.2	81.9	P, mm	71	74
1000 kernel weight	40.6	42.4	L, mm	75	96
Hard vitreous kernels, % (HVK)	95	95	P/L	0.95	0.77
Protein, %	13.8	13.8	W, x 10 ⁻⁴ joules	169	204
Protein (dry matter basis), %	16.0	N/A	Granulation		
Falling number, s	435	420	Over 30 US (590 mic) %	0.0	N/A
Ash, %	1.48	1.52	Over 40 US (420 mic) %	2.3	N/A
Particle size index, %	29.7	N/A	Over 60 US (250 mic) %	51.4	N/A
Milling yield			Over 80 US (177 mic) %	25.3	N/A
Yield, %	69.9	74.7	Over 100 US (149 mic) %	8.2	N/A
Semolina yield, %	N/A	66.5	Thrus 100 US %	12.8	N/A
Semolina			Spaghetti colour dried at 85°C		
Protein, %	12.7	12.9	Colour - L (brightness)	71.0	72.8
Protein loss on milling, %	1.1	N/A	Colour - a (redness)	5.97	5.1
Wet gluten, %	34.9	34.5	Colour - b (yellowness)	59.5	63.7
Gluten index, %	50	N/A	Spaghetti texture		
Ash, %	0.71	0.66	Firmness (9 min cooking time), g	716	N/A
Colour - L (brightness)	84.8	N/A	Cooking loss, %	5.0	N/A
Colour - a (redness)	- 3.06	N/A	Cooked weight/initial weight	3.2	N/A
Colour - b (yellowness)	28.8	32.5	Peak cutting force, g	N/A	632

²⁹ Canadian Grain Commission, 2015 Harvest Quality Data. Accessed: <https://www.grainscanada.gc.ca/index-eng.htm>

Quality parameter	Cigi	Canadian Grain Commission	Quality parameter	Cigi	Canadian Grain Commission
Yellow pigment content, ppm	9.6	9.8	Dry strand diameter, mm	N/A	1.69
Speck count			Cooked strand diameter, mm		2.50
Total per 50 cm ²	28	19			
Dark specks	N/A	2			
Large specks (0.6mm ²)	N/A	9			

There are differences in both organizations' reporting of the 4 wheat classes, which make both reports useful to end users of the information. The Canadian Grain Commission reports provide a more nuanced breakdown of the quality parameters by crop region, and facilitate a year to year historical comparison. For example, Cigi reports quality parameters for overall No. 1, No. 2 and No. 3 composites only with the exception of Canada Western Red Spring, which is separated into western and eastern Prairie composites. In comparison, the Canadian Grain Commission reports quality parameters for No. 1, No. 2 and No. 3 composites by growing region and reports protein content by grade and province and grade and region.³⁰ For Canada Western Red Spring, the Canadian Grain Commission also develops composite samples according to the following protein segregates, which is beneficial to buyers.

- Wheat, No. 1 Canada Western Red Spring - 14.5% protein segregate
- Wheat, No. 1 Canada Western Red Spring - 13.5% protein segregate
- Wheat, No. 2 Canada Western Red Spring - 14.5% protein segregate
- Wheat, No. 2 Canada Western Red Spring - 13.5% protein segregate
- Wheat, No. 3 Canada Western Red Spring - no protein segregate

Almost all Canadian Grain Commission staff and management (95%) perceive Cigi's Harvest Assessment Program as conducting similar activities and having similar objectives to the Harvest Sample Program. A large majority (89%) stated that there is duplication or overlap between the Canadian Grain Commission and Cigi in supporting the marketing of Canadian grains and oilseeds. Canadian Grain Commission representatives suggested the roles of the 2 organizations need to be better defined, and the harvest results need to be shared with international end users in a way that is complementary. One quarter of representatives (26%) suggested that Cigi and the Canadian Grain Commission should establish a means of sharing sample materials in order to ensure harmonious data and consistent approach. Some Canadian Grain Commission representatives (18%) explained that better branding and differentiation of the 2 organizations is needed to ensure industry recognizes that Cigi is the expert in international marketing and the Canadian Grain Commission is the expert in quality and quantity assurance.

In general, external beneficiaries are more likely to perceive the 2 organizations' activities as complementary, and to find both sources of information useful. Only one of the producer and industry associations and 40% of domestic grain companies and buyers identified the 2 organizations as conducting similar activities and having similar objectives. The domestic grain companies generally perceive the 2 to be complementary, citing Cigi's different sampling methodology and use of different milling equipment. Similarly, almost three-quarters of the international buyers and processors interviewed (73%) suggest they rely on both the Canadian

³⁰ Canadian Grain Commission, Protein Content of Wheat, Canada Western Amber Durum, 2015. <https://www.grainscanada.gc.ca/wheat-ble/harvest-recolte/prelim/cwadpro-procwad-eng.asp>

Grain Commission and Cigi's reports and find both sources of information useful, citing their different sampling methodologies and focus. Of the other 4 respondents, 3 relied exclusively on Canadian Grain Commission annual harvest quality reports and 1 relied on Cigi reports exclusively.

One producer association and 4 international buyers and processors stated that the publication of 2 Canadian harvest quality reports is confusing or unnecessary. These individuals suggested that Cigi and the Canadian Grain Commission could do a better job of coordinating the report to produce one final comprehensive report. Among the 4 international buyers, 2 had no expressed preference for which sampling methodology be used to prepare the report and 1 suggested Canada should integrate the 2 sampling methodologies. The fourth international buyer believed it is very important that the samples be obtained at the producer level to allow for greater identification of strengths and weaknesses in growing regions.

5.3.2 Complementarity with Grain Farmers of Ontario Quality Scoop Report

To date, Grain Farmers of Ontario's harvest survey activities have been complementary to the Harvest Sample Program. A few (4%) Canadian Grain Commission staff and management explained that Grain Farmers of Ontario conducts their own harvest survey on samples grown in plots, and that the small scope and different sampling methodology do not overlap with the Harvest Sample Program.³¹ Program documents and the comparative analysis also indicate that Grain Farmers of Ontario has partnered with the Canadian Grain Commission since 2010 to collect samples of Canada Eastern Soft Red Winter, Canada Eastern Soft White Winter and Canada Eastern Hard Red Winter wheat directly from grain companies across Ontario as part of the Harvest Sample Program.³² The harvest quality report is published on the Canadian Grain Commission website, as well as in Grain Farmers of Ontario's annual Ontario Quality Scoop Report, which is available free of charge on their website. This partnership is complementary; Grain Farmers of Ontario facilitates the collection of Eastern Region samples for the Harvest Sample Program and the publication of the results on the Grain Farmers of Ontario website encourages more widespread use of the information.

Even with Grain Farmers of Ontario's collection of Eastern Region samples, the Canadian Grain Commission has been challenged obtaining sufficient harvest samples from producers of the more prevalent eastern grain crops in order to provide meaningful results on a timely basis. It may be necessary for the Canadian Grain Commission to enhance its relationship with Grain Farmers of Ontario and other eastern region organizations to enhance the Harvest Sample Program for those grains.

5.3.3 Complementarity with grain companies, analytical labs and third-party testers

Key informant interviews and surveys of participating producers show that most grain companies do their own harvest survey and sampling, but there is no risk of duplication or overlap. Their methodology and focus differs from the Canadian Grain Commission and their results are not shared publicly. In addition to the Canadian Grain Commission's harvest quality data and information, almost all producer associations and domestic grain companies use analyses conducted by grain companies, and some use analyses conducted by independent analytical labs. According to these representatives, they use the Canadian Grain Commission reports to complete their understanding of the crop year quality and as a comparison, but

³¹ Grain Farmers of Ontario, 2013 Annual Report. <http://gfo.ca/Portals/0/About%20Us/Annual%20Report%20and%20Strategic%20Plan/GFO-Annual%20Report%202015.pdf?ver=2015-09-24-142613-177>

³² Grain Farmers of Ontario, 2013 Ontario Quality Scoop Report. <http://gfo.ca/Production/Ontario-Wheat-Quality>

ultimately rely on grain companies' testing of the exact factors they require for their intended end use/functionality.

Similarly, almost all producers who obtain Harvest Sample Program unofficial grades (93%) also obtain grades from grain companies, and 15% obtain official grades from private labs or third party sources. Producers use the Canadian Grain Commission unofficial grades to compare against buyers' grades and assessments, and typically only use analytical labs or third-party providers to obtain a more detailed analysis and technical factors which are not included in the Harvest Sample Program unofficial grade.

Performance

5.4 Effectiveness in achieving intended outcomes

The following section assesses the performance of the Harvest Sample Program in terms of the extent to which the program achieves its intended outcomes, demonstrates efficiency and economy, and the relevance of its design and delivery.

5.4.1 Immediate outcomes

The program is very successful in achieving its immediate outcomes, which are to:

- support the activities of the Quality Assurance Program and Grain Quality Research Program through the provision of sample materials
- increase producers' knowledge of their grain quality
- increase awareness among domestic and international buyers and processors of the quality of Canadian grain crops

Program beneficiaries are very satisfied with the program overall.

Effectiveness of the Harvest Sample Program in supporting the activities of the Quality Assurance Program and Grain Quality Research Program

All Canadian Grain Commission representatives reported that the Harvest Sample Program has a major impact in terms of supporting the activities of the Quality Assurance Program and Grain Quality Research Program (an average rating of 4.6, out of 5). According to staff and managers, the Harvest Sample Program is the only source of suitable sample materials (60%). Staff and managers also reported that the materials are useful in developing grading standards (40%), provide a good representation of grains and access to unadulterated producer samples (32%), and allow for long-term monitoring of grades and assessment of grading factors (32%).

Program documents provide evidence that the Harvest Sample Program helps the Canadian Grain Commission fulfill its federally mandated responsibilities by providing an annual source of unblended producer samples which maximizes the range of varieties, environmental factors, and quality characteristics. The analyses of the processing and end-use qualities of the sample materials is used to inform the definitions and tolerances within Canada's grain grading system, such as the development and monitoring of operational near infrared (NIR) calibrations and moisture charts, and the ongoing development of laboratory-based methods for assessing grain quality. The samples are also used to identify and source materials containing specific grading factors required for standard sample preparation. These standard samples are subsequently used across Canada to support consistent visual grading and inspection. Lastly, the Harvest Sample Program is the primary or most comprehensive source of materials for much of the research conducted by the Grain Quality Research Program. The collection of pure, farm-level

samples that have not been blended, and for which the geographical sources are known and diverse, makes the resulting materials different, and in some instances, preferable to cargo shipment samples, varietal breeder samples, or composite samples obtained from elevators, associations or other stakeholders.

The annual harvest quality reports and information generated using the program samples also support the Canadian Grain Commission's obligation to implement a system of grading that meets the need for efficient marketing in and outside of Canada. The free, unofficial grade and assessment provided to participating producers gives them quality information that can inform their marketing strategy. Additionally, the free distribution of the unbiased, third-party harvest quality results, generated using samples from all growing regions in Canada, helps ensure the resulting harvest quality information is considered by producers, handlers, marketers and end-users to be an accurate overall assessment of the quality of grain grown in a given year, taking into account varietal and environmental variability. The use of the harvest quality reports as an early indicator of the predominant grading factors and quality issues for a given crop year enables the Canadian Grain Commission and the grain industry to develop and implement pre-emptive strategies to mitigate the impact of these factors, and to communicate these strategies with buyers and end-users. Analysis of the program samples includes quality characteristics which are important to buyers but not reflected in the numerical grade, such as milling yield and farinograph absorption. This is becoming more vital to the effective marketing of Canadian grains, as purchase decisions are increasingly influenced by subtle differences that have implications on processing quality.

To better support the activities and objectives of the Quality Assurance Program and the Grain Quality Research Program, Canadian Grain Commission representatives suggested the Harvest Sample Program needs greater control over the type and quantity of material sent by producers in order to ensure the Canadian Grain Commission receives an adequate number of samples which are representative/statistically sound (65%). Suggestions include changing the sample envelopes to allow for reporting of acreage/tonnage, increasing promotion of the program and including additional testing and quality information for producers such as dockage, grading factors and starch testing for pulses.

Producers' increased knowledge of their grain quality to better market their grain

Almost all surveyed participating producers (90%) reported that the free unofficial grades and quality information they receive as part of the Harvest Sample Program are useful or very useful in providing them with increased knowledge to better market their grain (an average rating of 4 out of 5). Producers explained that the Canadian Grain Commission's unofficial grade helps them to gain a better understanding of the quality of their grain before submitting samples to potential buyers, which assists them in making educated assessments of the offers they receive from prospective buyers (62%).

Approximately 18% of producers use the knowledge they receive from the unofficial grade to identify the most suitable markets for their grain and develop an appropriate marketing strategy. For example, producers use the information to better understand who their buyer is (e.g. feed mills versus an elevator) and their best strategy for marketing (e.g. futures contracts for high grade flour, on-farm blending or targeting buyers interested in blending). Some producers suggested this is most valuable to them when their commodity is significantly downgraded and they are forced to seek out alternative markets.

The small minority (8%) of producers who do not find the Harvest Sample Program results useful in marketing their grain most frequently indicated that their buyers set the grade and price

based on their own testing (17%), the results are not timely enough (17%), the Canadian Grain Commission grades are unofficial (12%) or they have not needed the results (12%). A number of producers (13%) noted they did not receive the results, which may indicate a lack of understanding of the program results reporting process (i.e. producers mistakenly believe the results will be emailed or mailed to them or were unable to login to retrieve their results).

On average, the usefulness of the unofficial grade and information to producers is less understood by domestic stakeholders. Producer and industry associations that use the reports expect the Harvest Sample Program's unofficial grade to be somewhat helpful to helpful to producers (an average rating of 3.5 out of 5) and associations that do not use the Canadian Grain Commission's reports expect the unofficial grade to be only somewhat useful (an average rating of 2.8 out of 5). While domestic stakeholders believe the free, unbiased grade must be at least somewhat useful in providing producers with increased knowledge of their grain quality, some producer and industry associations note that the utility depends on producer participation and the soundness of the producers' sampling methodology. A few associations stated that the unofficial grade and results are missing key characteristics such as fusarium and falling number for wheat and specific end-use processing characteristics for lentils and food-grade soybeans, and that the grade is not timely enough to meet the producers' marketing needs, particularly for commodities which are marketed immediately after harvest such as pulses, beans and peas.

Effectiveness in providing stakeholders with better information on the Canadian grain crop

All international buyers and processors of Canadian grain stated that the information produced by the Harvest Sample Program is useful or very useful in helping them make informed business decisions (an average rating of 4.6 out of 5). Almost all respondents (92%) explained that they rely on the protein information and details on quality distribution and growing regions included in the Canadian Grain Commission's annual harvest quality reports to make purchasing decisions. A third (33%) suggested they rely on the information to inform their processing, such as by adjusting their own blending and milling recipes based on the reports. They may also rely on the reports when informing their customers of changes in quality that may impact processing or end-use functionality.

Producer and industry associations that use the Canadian Grain Commission harvest quality reports also find them very useful in making informed business decisions (average ratings of 4.5 out of 5). Most perceive the reports and information to be very important to buyers, particularly international customers. They suggest that evidence of Canada's higher protein, lower insect problems, higher oil content and overall quality and consistency is crucial to Canada's ability to compete with other major grain-exporting countries. Domestic grain companies and buyers also stated that the harvest quality reports and information are useful (an average rating of 4.1 out of 5). Most of the grain companies and buyers (60%) indicated that the reports provide a good indicator of the overall quality. Most use it as a benchmark for comparison and rely primarily on other sources of harvest quality information, but believe it is important to international buyers and a useful tool for building trust.

Some key informants reported that the harvest quality information is far more useful for wheat, canola and amber durum than for food-grade soybeans. According to these key informants, the comparatively small number of soybean buyers purchase specific food-grade soybean varieties by shipping container. Purchase arrangements are often arranged as futures, wherein producers are contracted to grow specific acres of a particular soybean variety for a buyer. Key informants suggested that Canadian Grain Commission grades for soybeans are not relevant to buyers, because they are grade specific not varietal specific, and because they do not contain

information on specific functional characteristics desired for processing and end-uses such as tofu, soymilk and unprocessed adult beans. Examples of functional characteristics sought by buyers include the ability of the soybean proteins to thicken (viscosity), emulsify, form gels, foam, produce films and sulphur, absorb water and/or fat and create meat-like texturized structures.³³ Other key informants stated that the non-GMO soybean market relies on their own testing and analysis. For the Canadian Grain Commission's grading and harvest quality information to be more useful to soybean buyers, key informants suggested there would need to be a sufficient number of samples to support analyses by intended end use, rather than the current differentiation between food-grade and crushed beans. It was noted this may not be feasible or desirable, since soybean buyers have their own labs and conduct their own required analysis.

Almost all of the Canadian Grain Commission representatives interviewed (92%) stated that Harvest Sample Program is useful or very useful in providing external stakeholders with better information on the Canadian grain crop to make informed business decisions. The majority of representatives (72%) stated the information is very important for supporting international buyers in their purchasing and processing decisions. Examples provided include customers' use of Canadian Grain Commission quality reports to compare with North Dakota and the use of Canadian Grain Commission historical data to compare against weather patterns to formulate earlier crop quality predictions.

If the harvest quality reports and information were not publicly available to interested stakeholders, Canadian Grain Commission representatives indicated that there would be many more unknowns with regards to Canadian crop quality (33%) and buyers would face increased risk and costs as they would have to invest more in their own testing and analysis (33%). Some representatives (20%) suggested the increased risk could lead to lower commodity prices.

5.4.2 Intermediate outcomes

The Harvest Sample Program has been successful in achieving its intermediate outcomes, which are to:

- improve producers' ability to negotiate a price and grade for their grain
- increase stakeholders' confidence in the quality, grading factors and specifications of the Canadian grain crop
- provide information that assists the domestic grain industry in marketing Canadian grains

Effectiveness of the Harvest Sample Program in helping producers negotiate grade and price for their grain

Half of participating producers (50%) find the unofficial grade useful or very useful in assisting them negotiate grade and price for their grain and 31% find it somewhat useful (an average rating of 3.6 out of 5). The majority of producers (52%) suggested that, although grain buyers may not recognize and accept the Canadian Grain Commission's unofficial grade, they are able to use the unofficial grade as a benchmark for comparison and solicit offers from multiple buyers in the instance of a discrepancy. Nearly a quarter of producers (22%) do use the unofficial grade as leverage when negotiating with buyers and explained that the results give them the confidence to appeal when the offer presented to them is lower than the grade provided by the Harvest Sample Program. Among these producers, a quarter reported that buyers usually defer

³³ Food and Agriculture Organization of the United Nations, Technology of Production of Edible Flours and Protein Products from Soybeans, Chapter 1. The Soybean. <http://www.fao.org/docrep/t0532e/t0532e02.htm>

to the Canadian Grain Commission grade in the case of a discrepancy. For example, one producer received a protein assessment of 13.9% from the Canadian Grain Commission and 12.3% from the buyer, resulting in a price difference of \$0.45 per bushel. After seeing the Canadian Grain Commission results, the buyer retested the grain and paid for the grain based on the higher protein level.

Lastly, some producers (10%) indicated that, by helping them identify how best to market their grain and target buyers that would be the most interested, the unofficial grade and information helps them obtain the best price for their grain.

Producers who stated that the Harvest Sample Program results are not useful in helping negotiate grade and price reported that buyers set the grade and price following their own testing and analysis (43%), and the usefulness of the program results is limited by the fact that they are unofficial (15%). Some producers have not needed to use the results, as they have not experienced any discrepancies with their buyers' assessments (21%). When asked if there are other reasons why the program is not useful, about a third of producers (33%) noted that they need more detailed grade and analysis information (e.g. grading factors, dockage, vomitoxin, diseases, protein, hard vitreous kernels (HVK), moisture, falling #, genetically modified organisms for flax, bushel weight, bleached percentage for peas, and green seed versus parts per million chlorophyll for canola).

Effectiveness of the Harvest Sample Program in increasing information recipients' confidence in the quality, grading factors and specification of the Canadian grain crop

Almost all international buyers and processors of Canadian grains stated that the information produced by the Canadian Grain Commission has had an impact or a significant impact in increasing their confidence in the quality, grading factors and specifications of Canadian grain (average rating of 4.5). According to these individuals, high levels of confidence in the quality and consistency of Canadian grain is one of the primary reasons they purchase from Canada, and the modernization of Canada's wheat classification system will result in further improvements in quality. A couple of international buyers suggested that genetics and varietal specific information are becoming increasingly important relative to some of the current grading factors.

Canadian Grain Commission representatives indicated that the Harvest Sample Program has had a major impact in terms of increasing confidence among external stakeholders in the quality, grading factors, and specifications of the Canadian grain crop (an average rating of 4.9 out of 5). Similarly, representatives from the producer and industry associations, domestic grain companies and buyers reported that the information produced by the program has been useful or very useful in terms of increasing confidence among stakeholders (average ratings of 4.4 and 4.3 out of 5, respectively). Canadian Grain Commission representatives stated that the harvest quality reports increase stakeholders' confidence by providing historical data that shows the consistency of Canadian grain year over year. The fact that the Canadian Grain Commission is an independent government agency was also said to help instill confidence in the autonomy and validity of the Canadian grading system and the annual harvest reports. Representatives of domestic associations and grain companies indicated that the information is very valuable for their interactions with international buyers, as international stakeholders value the Canadian Grain Commission as an independent, reliable, third-party source of information on harvest quality, particularly following the termination of the Canadian Wheat Board monopoly.

The findings of a 2010 Ipsos Reid survey of Canadian grain and oilseed producers conducted on behalf of the Canadian Grain Commission indicate that 95% of producers believe that having

the Canadian Grain Commission set grain grades and standards helps to uphold Canada's reputation for consistent and reliable grain quality.³⁴

Effectiveness of the Harvest Sample Program in assisting the domestic grain industry in marketing Canadian grain

All of the international buyers and processors who commented perceive the information produced by the Harvest Sample Program as useful or very useful in assisting the marketing Canadian grains (an average of 4.9 out of 5). Respondents explained that Canada's greatest selling factor and competitive advantage as compared to other grain exporting countries is its high quality and consistency. Some international buyers commented that the information produced by the Canadian Grain Commission is comparable to the information produced by the United States, and that if Canada did not produce similar reports and attend new crop missions, Canada would be at a distinct disadvantage.

All of the Canadian Grain Commission representatives stated that the program has had a very significant impact (60%) or some impact (20%) in assisting the domestic grain industry in marketing Canadian grain (an average rating of 4.2 out of 5). Representatives reported that grain companies are becoming more aware of the importance of the data (36%), and that domestic stakeholders such as canola crushers and producer associations are making requests for additional quality data to help inform their marketing strategies (21%). For example, in recent years, the Canadian Grain Commission has received:

- requests from Grain Farmers of Ontario and Bean Farmers' of Ontario for detailed information on wheat, beans and soybeans
- a request from canola crushers for information on oil content by variety
- a request from Pulse Canada for research on the functional properties and nutritional value of pulses to support new marketing strategies

Some representatives commented that additional efforts are required by the Canadian Grain Commission to work with domestic stakeholders to educate them on the informational needs of buyers and processors.

Canadian producer and industry associations, grain companies and buyers generally found the information produced by the Harvest Sample Program useful in assisting the domestic grain industry to market Canadian grain (average ratings of 4.4 and 4.1 out of 5, respectively). Respondents explained that the Canadian Grain Commission's reputation as an unbiased source of information, and its national collection of grain samples, make the information very useful. All key informants agreed that the information is very valuable in assisting the grain industry in marketing Canadian grain in international markets, highlighting the Canadian Grain Commission's dissemination of the harvest quality reports and information to buyers during inward and outward trade missions.

5.4.3 End outcomes

The Harvest Sample Program is effective in supporting the achievement of the Canadian Grain Commission's strategic outcome: "Canada's grain is safe, reliable and marketable and Canadian grain producers are properly compensated for grain deliveries to licensed grain companies." As described previously, the program is successful in supporting the legislated responsibilities of the Canadian Grain Commission to recommend and establish grain grades and standards, implement a system of grading and inspection for Canadian grain that meets the

³⁴ Ipsos Reid, 2010 Canadian Grain Commission Satisfaction Survey: Final Report. December 2010. pg 7

need for efficient marketing in and outside Canada, and undertake, sponsor and promote research in relation to grain and grain products. The unofficial grades are used by participating producers to inform their marketing strategies and to negotiate a price for their grain. The Canadian Grain Commission's annual harvest quality reports are widely used by interested stakeholders to support the marketing of Canadian grains and oilseeds.

5.5 Efficiency and economy

The Harvest Sample Program makes efficient use of staff and other resources. The cost of mailing sample kits to non-participating registered producers, many of whom have retired, relocated or are deceased, is negatively affecting the program's efficiency. Further measures to identify and remove inactive registrants and increase producer registration and participation would improve the program's efficiency and economy.

5.5.1 Program expenditures

The design of the program is efficient and cost-effective. With the exception of the term staff hired to prepare the sample mail outs, the program shares its human resources with the Grain Research Laboratory, the Industry Services Division and the Internal Services program. While a total of \$750,000 is annually allocated to the completion of the program, it has no fixed budget. Program expenditures fluctuate based on the number of samples received and the extent and types of analysis conducted each harvest, which may vary based on the presence and severity of grading factors and the occurrence of flooding. Each harvest year also has one or more designated areas of focus where additional, more detailed analysis is conducted for a particular crop, milling technique, or other factor. As shown in Table 5.9, program expenditures averaged approximately \$660,000 over the last 5 years but ranged from a low of \$512,364 in the 2011 to 2012 fiscal year to a high of \$835,481 in the 2012 to 2013 fiscal year. Most variances in program expenditures are the result of differences in salary expenditures resulting from the:

- level of effort required to process, grade and analyze fluctuating numbers of sample submissions
- level of effort associated with varying crop quality
- number of special research projects undertaken

Table 5.9: Harvest Sample Program expenditures, fiscal years 2010 to 2011 through 2014 to 2015

Expenses	2010 to 2011	2011 to 2012	2012 to 2013	2013 to 2014	2014 to 2015
Total operating expenses	\$98,758	\$106,141	\$78,111	\$82,935	\$66,758
As a % of total	13%	21%	9%	15%	10%
Total salary expenses	\$670,324	\$406,223	\$757,369	\$458,488	\$581,559
As a % of total	87%	79%	91%	85%	90%
Total expenses	\$769,083	\$512,364	\$835,481	\$541,424	\$648,317

Source: Harvest Sample Program Year To Date expense reports, 2010/11 to 2014/15

The following table depicts the average cost per sample submitted, based on the total program expenses for years 2010 to 2014.

Table 5.10: Harvest Sample Program expenditures, fiscal years 2010 to 2011 through 2014 to 2015

Expenses	2010 to 2011	2011 to 2012	2012 to 2013	2013 to 2014	2014 to 2015
Total expenses	\$769,083	\$512,364	\$835,481	\$541,424	\$648,317

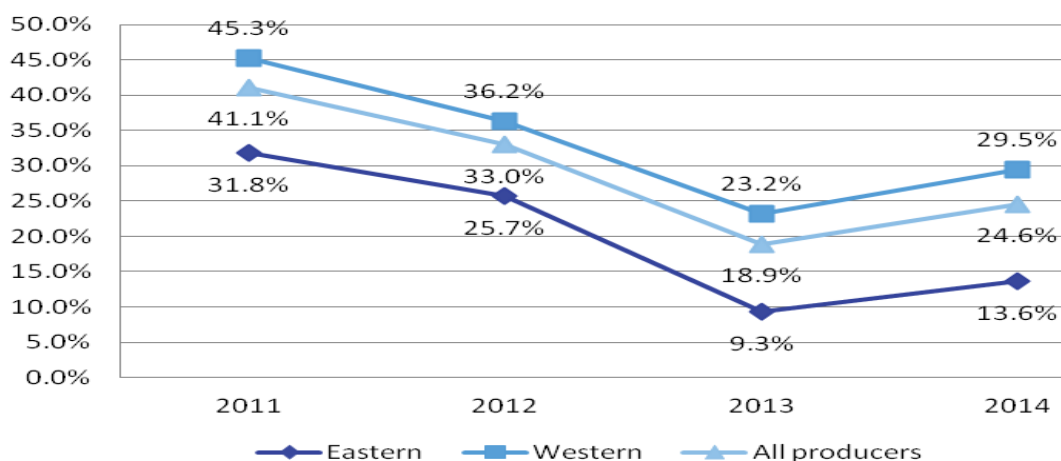
Samples submitted	8,755	7,197	7,495	5,698	9,389
Cost per sample	\$87.85	\$71.19	\$111.47	\$95.02	\$69.05

Canadian Grain Commission staff and management perceived the program to be cost-efficient in achieving its expected outputs and outcomes (an average rating of 4.1 out of 5). Representatives commented that the Harvest Sample Program achieves a lot in a very limited timeframe with limited staff resources (25%) and the program does a good job of utilizing casual staff to keep labour costs down (15%). Almost three-quarters (72%) of staff and managers stated that the current design is the most efficient and cost-effective option, and 56% noted that the current process of collecting samples directly from producers is the most efficient and cost-effective method used by the Canadian Grain Commission thus far.

5.5.2 Inefficiencies resulting from inactive registered producers

As producers registered for the Harvest Sample Program are disproportionately older than the farming community, the cost of mailing sample kits to non-participating registered producers who have retired, relocated or are deceased negatively impacts the efficiency of the program. As shown in the following figure, the average overall response rate of all registered producers has declined from 45.3% in 2011 to 29.5% in 2014.

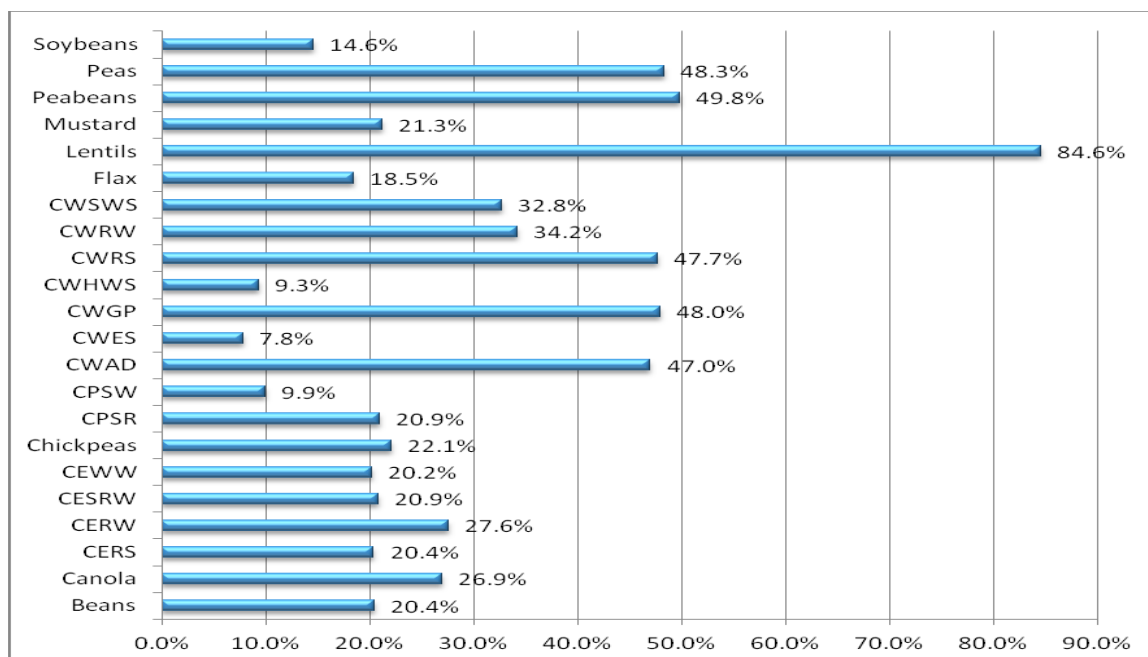
Figure 5.11: Overall response rate by region, 2011 to 2014



The Canadian Grain Commission has taken steps to address the declining response rate. In 2015, 2,572 producers that had not submitted a sample during the past 3 years were removed from the database, resulting in a net savings of over \$10,000. Given that almost 73% of surveyed participants were aged 51 and older, and 53% were 64 and older, continued efforts to identify and reduce inactive registrants and recruit younger producers will be needed going forward.

There are also significant differences in the average response rate by commodity, as shown in the following figure. A full breakdown of the response rate by commodity and by year is provided in Appendix 4. Further efforts to enable producers to select which commodities they receive sample envelopes for may help to reduce the number of unused sample envelopes mailed to participating producers.

Figure 5.12: average response rate by commodity, 2011 to 2014



5.6 Program design and delivery

The current program design is the most suitable based on the needs of the program's beneficiaries. Identified alternative sampling methodologies would not meet the Canadian Grain Commission's internal program needs for unadulterated producer level samples, would not assist producers in marketing their grains and negotiating grade and price, or would be cost-prohibitive. Transitioning the Harvest Sample Program to a fee-for-service program would result in very significant declines in producer participation, resulting in an inability to meet the internal needs of the Canadian Grain Commission and the needs of external program beneficiaries. While beneficiaries are satisfied overall with the design and delivery of the program, the evaluation identified opportunities to further enhance the program.

5.6.1 Program designs utilized by other jurisdictions

The comparative analysis of harvest surveys and annual harvest quality reports produced by competitor countries (i.e. the US, Australia, France and the United Kingdom) did not identify viable alternative designs for the Harvest Sample Program. The sampling methodologies employed for the US Wheat Associates' Annual Harvest Quality Survey and Reports and France's Agrimer and Arvalis' Annual Harvest Survey and Quality of French Wheat Report involve collecting composite samples from inland elevators. This methodology would not meet Canadian Grain Commission program managers and scientists' needs for unadulterated producer level samples, would not assist producers in marketing their grains and negotiating grade and price, and would duplicate Cigi's sampling methodology, leading to competition for samples between the 2 organizations in the Prairie region.

Two of the programs examined in the comparative analysis included designs that sample directly from producers and could provide producers the same information they receive under the Harvest Sample Program. The first, the Australian Export Grains Innovation Centre's (AEGIC) Australian Wheat Quality Report, is modelled after the Harvest Sample Program. The Australian Export Grains Innovation Centre partners with the producer association Grain Growers to obtain samples directly from producers using mail-in sample bags. Unlike the

Harvest Sample Program, producers are required to pay the return postage for their harvest samples. To date, this program has been unsuccessful in obtaining a comparable number of samples to the Harvest Sample Program (in 2015 they received only 1,000 samples). Their requirement that producers pay the return postage on their sample submissions would lead to significant declines in Harvest Sample Program participation. The second program is operated by the Great Plains Analytical Laboratory in the US. Participants are charged a subscription fee and are visited by travelling field representatives who collect the samples directly. In exchange, participants receive access to the private results of the analysis. As few surveyed Harvest Sample Program participants are currently willing to pay for analytical testing, and most participants reported that they would no longer participate if the program were a fee-based service, the paid subscription model does not present a viable alternative program design.

A comparative program that obtains samples exclusively from analytical laboratories is operated by the Cereals and Oilseeds Division of the Agriculture and Horticulture Development Board in the United Kingdom. The Cereals and Oilseeds Division produces a regular Cereal Quality Survey Results Report based on the samples collected from analytical laboratories. As most major grain companies in Canada conduct their own lab analysis, and very few producers submit paid samples to analytical laboratories (only 69 of 1,168 surveyed Harvest Sample Program participants surveyed submit samples to analytical laboratories and 104 submit samples to third-party service providers), this would not result in a sufficient number of samples to support the internal needs of the Canadian Grain Commission or the needs of external beneficiaries.

While none of the similar programs identified in competitor jurisdictions provided viable alternative program designs, some best practices or lessons learned were identified.

The US Wheat Associates' practice of updating the online harvest quality data every Friday as samples are received and analyzed during harvest season (May to October) enables buyers and interested stakeholders to know exactly when to visit the webpage to obtain the most up-to-date harvest information. The US Wheat Associates' and the UK's Agriculture and Horticulture Development Board's Cereals and Oilseeds Division's partnerships with analytical laboratories to collect sample materials suggests another possible supplemental source of sample materials for the Harvest Sample Program.

The Australian Export Grains Innovation Centre's practice of linking producers' sample submissions to the represented tonnage allows for a more accurate assessment of the representativeness of the samples collected. In this example, producers submit 3 kilograms of wheat per 1,000 tonnes for each of the main varieties they produce. The Australian Export Grains Innovation Centre's online results system provides producers with a direct year-to-year comparison (for producers who participate on an annual basis) and a comparison of their results against those of the regional and the national composites. In the Harvest Sample Program's current design, producers are able to achieve this, but would be required to track their own results year over year and would need to seek out the crop quality reports on the Canadian Grain Commission's website. The results of the producer survey indicate that a very small minority of participating producers are aware of this option and actually compare against regional and national results.

5.6.2 Effectiveness of the program's designs and delivery for the needs of the Canadian Grain Commission

Interviews with Canadian Grain Commission representatives and program documents show that the design and delivery of the Harvest Sample Program is effective in meeting the needs of the

Canadian Grain Commission. The current methodology provides the Quality Assurance Program and Grain Quality Research Program with an adequate supply of sample materials to support their activities and objectives. The delivery of the program could be enhanced by increasing producer registration and developing a means of more strategically targeting sample submissions to ensure statistically sound representation of growing regions and commodities. To enhance the design and delivery of the program, representatives suggested developing a system to send automated emails and notifications to producers. For example, producers could be sent a notification to remind them to submit their samples or to indicate their results are ready, or could receive their results via email. The program could also be enhanced by targeting specific under represented regions.

Current processes for tracking and reporting the performance of the program are largely sufficient to support internal decision-making, but could be enhanced by monitoring the acreage and tonnage of the samples submitted, and by tracking the number of producers culled from, and added to, the program producer database each year.

5.6.3 Effectiveness of the program's design and delivery for the needs of producers

Surveys with participating producers demonstrate that the Harvest Sample Program is very effective overall in addressing their needs. A large majority of producers are satisfied or very satisfied with the services and information they receive (87%) and find the information provided relevant and useful (85%). This is significantly higher than the findings of the 2010 Ipsos Reid satisfaction survey, which indicated that 59% of producers who used Canadian Grain Commission grain grading services during the past 3 years were satisfied or very satisfied.³⁵ Almost all agree or strongly agree the envelopes arrive in a timely manner and the November 1 deadline affords them sufficient time to submit their samples (94%), and that it is easy for them to submit their grain samples (96%). While most (84%) find it easy to access their results, some producers reported difficulties logging into the Harvest Sample Program system or obtaining their results over the phone. Producers who lost their program kit number expressed frustration at not being able to log in via email, or speak with a representative to recover their information. Some producers also appeared to not understand how the results are distributed, as they expected their results to be sent via email or mail.

For most producers (80%) it is important or very important that the unofficial grade, dockage and quality assessment provided by the program remain free. Almost half (45%) of participating producers would likely not participate if the program were a fee-based service, and 28% suggested it would be somewhat likely they would continue. Only 13% of surveyed producers pay for an alternative grade and quality assessment, and these individuals most commonly do so because they require more technical factors that are not included in the Harvest Sample Program unofficial grade and assessment.

When asked how the delivery of the Harvest Sample Program could be enhanced, the most frequently noted recommendations of the producers surveyed are as follows.

Increase the responsiveness of the online interface and telephone system

Approximately 21% of producers surveyed requested that the Canadian Grain Commission email the results or a notification that the results are ready, or mail the results to those who request it. A few producers requested that the Canadian Grain Commission resolve issues with the online system or automated voicemail system, citing difficulties retrieving the pin/login number and updating their sample preferences. Some producers also indicated that a more

³⁵ Ipsos Reid, 2010 Canadian Grain Commission Satisfaction Survey: Final Report. December 2010. pg 7

professional, printable format of the unofficial grade and quality assessment could further enhance its utility as a marketing tool.

Include additional quality factors in the unofficial grade and assessment

Almost one third (29%) of producers surveyed suggested the program would be enhanced by the inclusion of a more detailed explanation of the downgrading factors and the inclusion of falling number, dockage, moisture, hard vitreous kernels, bushel weight, fusarium and vomitoxin. A few producers noted that it would be beneficial if the program included the same grading factors as elevators or buyers in the United States, explaining that differences in the grading systems make it very difficult for them to use the Harvest Sample Program unofficial grade as a benchmark for comparison.

Provide additional sample envelopes

Another recommendation was to allow larger producers and producers who grow multiple varieties of a single commodity to submit more than 8 sample envelopes and provide producers with greater flexibility to determine which samples they choose to submit (9%).

Other suggestions included making Harvest Sample Program grades official (6%) and reducing the turnaround time so the results are more beneficial in assisting producers with marketing (6%).

Producers who registered for the program but never submitted samples most frequently suggested:

- extending the deadline to the end of November to accommodate a late harvest (27%)
- allowing producers to submit more than 8 envelopes (18%)
- expanding the scope of testing (e.g. testing for oats, winter spelt, germination, and disease) (18%)
- improving accessibility of the results (18%)

5.6.4 Effectiveness of the program's design and delivery for the needs of external beneficiaries

A large majority of external beneficiaries are satisfied with the services and information they receive from the Harvest Sample Program (100% of producer and industry associations, 100% of international buyers and 77% of domestic grain companies and buyers). All associations and international buyers, and 77% of the grain companies reported that the content of the harvest quality reports is relevant to their needs.

The format and delivery of the harvest quality reports and information is suited to the needs of producer and industry associations and grain buyers (75% of associations and 69% of grain companies). International buyers most frequently access the Canadian Grain Commission's annual quality reports during Team Canada new crop missions (87%) or from the Canadian Grain Commission's website (67%). A few international buyers noted that they are provided the information by grain sellers or brokers or other intermediaries. Most international buyers prefer to obtain the information in-person, suggesting they find it to be more educational, the presentations typically include more detailed information, and the ability to ask questions of the scientists enables them to understand the technical data. Some international buyers reported that the website is convenient and they appreciate the updates, but would benefit from a more standardized regular updating of the material or distribution of the updates via email to ensure they do not miss the information.

The timing of the Canadian Grain Commission's annual quality reports is better suited to the needs of international buyers and processors than domestic stakeholders. Three-quarters of international buyers and processors (75%) stated that the reports are released in a timely manner based on their needs, as compared to almost half (46%) of the domestic grain companies and buyers. Approximately 40% of domestic grain companies and buyers and 38% of producer and industry associations report that they would prefer to see the reports published earlier. Producer and industry associations suggested that, to ensure the reports are accurate and reflect all of the harvest, the Canadian Grain Commission could release a preliminary report first and then follow-up with updates and the release of a second and final report. Due to the nature of the sampling methodology, it may not be possible to publish the reports early enough to inform domestic stakeholders' marketing strategies. As domestic stakeholders primarily rely on their own sampling and analysis to inform their marketing strategies, and use the Canadian Grain Commission's reports to obtain a good understanding of the national supply and the quality attributes of the crop year and to compare data across years and regions, this does not pose a significant problem for industry.

Expanding and diversifying the sample collection for the Harvest Sample Program (e.g. through partnerships with producer associations such as Western Wheat Growers, Pulse Canada, and the Canadian Canola Growers Association) or modifying the program methodology and scope (e.g. by releasing information on feed barley for export purposes, having more targeted and specific sampling, etc.) would also help the program to be more relevant to the needs of producer and industry associations and grain companies and buyers. To achieve this, producer and industry associations (38%) and grain companies (30%) suggested there should be greater awareness and promotion of the Canadian Grain Commission reports and information to encourage producer uptake and distribution of the reports. Grain companies noted increased awareness and promotion is needed among domestic stakeholders such as producers. Representatives from the producer and industry associations and grain buyers also believe more efforts should be made to ensure the Harvest Sample Program results are more accessible to their members and other stakeholders. Representatives suggested offering hard copies of the harvest quality reports, or emailing results and copies of the reports directly to producers, producer and industry associations, and grain companies.

International buyers suggested the Harvest Sample Program and the Canadian Grain Commission's annual harvest quality reports and information could be enhanced through:

- better collaboration between Cigi and the Canadian Grain Commission
- the introduction of a notification system for when new information is posted or grading standards are revised
- the inclusion of a whole wheat loaf bake test
- more information on varietal specific performance and end use functionality

6.0 Conclusions and recommendations

6.1 Conclusions

The following conclusions address the relevance, achievement of intended outcomes, and program design and delivery of the Harvest Sample Program.

6.1.1 Relevance

The Harvest Sample Program is aligned with federal roles and responsibilities, federal priorities and Canadian Grain Commission strategic outcomes. Although the program is not mandated by

the Canada Grain Act, Harvest Sample Program activities and outputs support key legislated responsibilities of the Canadian Grain Commission including the Industry Services Division's development of visual grading standards and monitoring and verification of grading factors, and the Grain Quality Research Program's research on environmental conditions and other special research projects. The Harvest Sample Program is aligned with federal priorities to ensure the growth, competitiveness and sustainability of the agriculture sector and the Canadian Grain Commission's strategic outcome to ensure that "Canada's grain is safe, reliable, and marketable and Canadian grain producers are protected." The program also supports the Canadian Grain Commission's new organizational priority: "investing in stakeholder relations", as identified in its 2015 to 2016 Report on Plans and Priorities.

There is a significant continued need for the Harvest Sample Program. The samples are essential for supporting the objectives and activities of the Grain Quality Research Program and the Quality Assurance Program. The Harvest Sample Program is the primary or only source of materials for numerous Grain Quality Research Program staff, due to the fact that the program sources pure, non-blended samples with an identified geographic location directly from producers at the beginning of the supply chain. Alternative sources of materials including cargo shipment samples, plant breeder samples and composite samples obtained from elevators, producer associations or other stakeholders would be inappropriate based on the Canadian Grain Commission's needs. Changes in the marketing of grains and oilseeds, and the introduction of an open market for Western wheat and barley have led to increased demand for the Harvest Sample Program outputs among many external beneficiaries. Use of the free annual harvest quality reports by external beneficiaries is significant and increasing. A culling of the producer registrant database due primarily to retirement, relocation and death of producers has resulted in a 24% decline in the total number of program registrants in 2015. The survey of program registrants has found that they are disproportionately older than the overall Canadian farming community. While it has been a priority of the Canadian Grain Commission to seek new registrants, further efforts are needed to support the recruitment of younger producers.

Overall, the Harvest Sample Program complements harvest surveys undertaken by other organizations in Canada. While there are some overlaps in the information provided by the Canadian Grain Commission's Annual Harvest Quality report and the Canadian International Grains Institute's (Cigi) Harvest Assessment Report, the evaluation found that the information provided by these 2 reports is used differently by the same stakeholders in addition to benefiting different stakeholders in the value chain. The differences in the harvest sampling methodologies used by the Canadian Grain Commission and Cigi are complementary. Whereas Cigi partners with 9 major grain companies to obtain samples and provides them with grading information to support their marketing strategy, the Harvest Sample Program sources directly from producers and provides them with unofficial grades to inform their marketing strategies in alignment with the Canadian Grain Commission's Producer Protection Program. Cigi's annual assessment and report includes only Canada Western Red Spring, Canada Western Amber Durum, Canada Western Red Winter and Canada Prairie Red Spring from the Prairie region. In addition to these 4 wheat classes, the Canadian Grain Commission publishes harvest quality reports on other western Canadian wheat classes, wheat exports, flaxseed, lentils, malting barley and peas, Ontario wheat, and Canadian non-food grade soybeans and food-grade soybeans.

The Grain Farmers of Ontario's Ontario Wheat Harvest Quality Scoop, conducted in partnership with the Canadian Grain Commission as an extension of the Harvest Sample Program, is complementary. Nevertheless, the Canadian Grain Commission has been challenged obtaining sufficient samples from Eastern Region producers. The Canadian Grain Commission may need to further enhance its relationship with Grain Farmers of Ontario and establish additional

relationships to enhance the Harvest Sample Program for eastern grains. Other sources of grading and assessment, such as grain companies and analytical labs, do not duplicate or overlap with the Harvest Sample Program as they have a different purpose and focus and do not publish harvest quality information. Almost all external beneficiaries use the Canadian Grain Commission's outputs to complement other sources of harvest quality information.

6.1.2 Achievement of intended outcomes

The Harvest Sample Program has been successful in achieving its immediate outcomes, which are to:

- increase producers' knowledge of their grain quality
- increase awareness among domestic and international buyers and processors of the quality of Canadian grain crops
- support the activities and objectives of the Quality Assurance and Grain Quality Research Programs

The program supports the activities of the Quality Assurance Program and the Grain Quality Research Program by providing an annual source of unblended producer samples which maximizes the range of varieties, environmental factors, and quality characteristics. The annual harvest quality reports and information generated using the Harvest Sample Program samples also support the Canadian Grain Commission's obligation to implement a system of grading that meets the need for efficient marketing of grain in and outside of Canada. External program beneficiaries are very satisfied with the program overall. The unofficial grade and quality information provided to participants is perceived by almost all recipients to be useful or very useful in providing them with increased knowledge to better market their grain. The Canadian Grain Commission's annual harvest quality reports are very useful in providing external stakeholders with better information on the Canadian grain crop.

The program has also been successful in achieving its intermediate outcomes, which are to:

- improve producers' ability to negotiate a fair price and grade for their grain
- increase stakeholders' confidence in the quality, grading factors and specifications of the Canadian grain crop
- provide information that assists the domestic grain industry in marketing Canadian grains

The free, unofficial grade and quality information provided to participating producers enables them to make an informed assessment of buyers' offers and more effectively negotiate grade and price. Historical data that demonstrates the consistency of Canadian grains year over year produced as a result of the Harvest Sample Program increases external stakeholders' (including potential buyers and processors) confidence in the quality, grading factors and specifications of the Canadian grain crop. The fact that the Canadian Grain Commission is an independent government agency also helps to instill confidence in autonomy and validity of the Canadian grading system and the annual harvest reports. Lastly, the detailed information on quality and consistency produced as a result of the program effectively assists the domestic grain industry in marketing Canadian grains.

By supporting the legislated responsibilities of the Canadian Grain Commission, the program positively contributes to the achievement of the Canadian Grain Commission's strategic outcome to ensure that "Canada's grain is safe, reliable, and marketable and Canadian grain

producers are properly compensated for grain deliveries to licensed grain companies.” The materials sourced through the program are essential to the Canadian Grain Commission’s ability to recommend and establish grain grades and standards for those grades, implement a system of grading and inspection for Canadian grain, and undertake, sponsor and promote research in relation to grain and grain products. The unofficial grades assist participating producers with their marketing strategies and the annual harvest quality reports are widely used by interested stakeholders to support the marketing of Canadian grains and oilseeds.

6.1.3 Program design and delivery

The current program design is efficient, cost-effective and the most suitable option based on the program’s intended purposes and beneficiaries. Identified alternative sampling methodologies would not meet the needs of Canadian Grain Commission program managers and scientists for unadulterated producer level samples, would not assist producers in marketing their grains and negotiating grade and price, or would be cost-prohibitive.

The design and delivery of the program is meeting the needs of the Canadian Grain Commission by providing the Quality Assurance Program and the Grain Quality Research Program with an adequate supply of diverse sample materials to support their activities and objectives. Identified alternative sources of sample materials are inappropriate based on the Canadian Grain Commission’s needs. The delivery could be enhanced by increasing producer registration and developing a means of more strategically targeting sample submissions to ensure the statistically sound representation of growing regions and commodities.

The design and delivery of the Harvest Sample Program is very effective overall in addressing producers’ needs. Producers are for the most part very satisfied with the delivery of the program and suggest it is very important that the program remain free. If the program were to transition to a fee-for-service program, very few producers would participate and the program would no longer meet the needs of the Quality Assurance Program and the Grain Quality Research Program for sample materials. The producers surveyed indicated that the program could be enhanced by revising the online interface and emailing results to producers, providing the unofficial grade of a harvest sample to producers in a more professional looking printable format, allowing larger producers to submit more than 8 samples, and including additional information in the unofficial grade and quality assessment given to producers.

External beneficiaries are very satisfied with the design and delivery of the Canadian Grain Commission’s annual harvest quality reports and information, and reported that the content, format and delivery are well-suited to their needs. International stakeholders value the ability to communicate directly with Canadian Grain Commission representatives to better understand the harvest quality reports and ask follow up questions specific to their processing needs. Some industry associations and domestic grain companies and buyers suggested the program could be enhanced by increasing the number of samples obtained, more strategically targeting specific commodities and regions, and publishing the reports earlier in the harvest season. Some international stakeholders indicated the utility of the information could be enhanced by integrating the information produced by Cigi and Canadian Grain Commission into one consolidated report and including more information on varietal specific end-use functionality.

6.2 Recommendations

While the evaluation found that the Harvest Sample Program has been successful in achieving its objectives and is delivered in an efficient and cost-effective manner, some possible opportunities to enhance the program were identified.

Recruit new program participants

Given the demographics of Harvest Sample Program registrants, marketing and promotion efforts are needed to ensure new producers are recruited to replace the older producers as they retire. While the strategies utilized to date (e.g. tradeshow, leveraging communications through producer and industry associations, social media) should be continued, additional promotional and marketing strategies that strategically target under-represented commodities and growing regions should be explored. Possible strategies include the use of radio and print advertisements, direct contact with producers, local community engagements and enhanced partnerships with producer and industry associations.

Improve harvest quality information for producers

Possible enhancements to the type and format of quality information available to producers should be examined in order to increase producer participation in the program. One possible enhancement that should be considered is to include additional technical factors in the unofficial grade and quality information provided to producers. The producers surveyed indicate that a more detailed explanation of the grading factors and the inclusion of falling number, dockage, moisture, hard vitreous kernels, bushel weight, fusarium and vomitoxin would enhance the program.

Additional sample envelopes could be provided to large producers and producers growing multiple varieties of the same commodity. The feasibility of providing registered producers with the ability to update their preferences for which grains they intend to submit each harvest should also be investigated.

Redevelop the online interface for producers

The online interface for producers could be improved. This could include a Harvest Sample Program webpage where participating producers can login via email to update their sample preferences or notify the Canadian Grain Commission that they have retired, relocated or ceased operations. This could also allow producers to access their own results, compare their results year-over-year, and compare their results to those of the regional and national composites.

The possibility of producing a more professional, printable format of the unofficial grade and quality assessment should be examined to further enhance its utility for producers. To encourage participation, producers could be provided with email reminders to submit samples or an email notification informing them that their results are ready. Results could be emailed directly to producers.

Improve tracking of producer participation

To better track producer registration and participation in the program, the number of producers culled from and added to the producer database each year could be consistently tracked and included in the annual harvest survey internal reports issued to Canadian Grain Commission management. If possible, the report could also include the number of producers who submit samples. The current reporting only includes the number of producers issued sample kits and the total number of envelopes received.

Improve communication with stakeholders

The Canadian Grain Commission could assess the feasibility of enhancing communication with stakeholders to inform them of when updates to wheat harvest information are available. While the Canadian Grain Commission currently updates the wheat harvest information on a weekly

basis, this update cycle could be better communicated with end-users of the information. There also is an opportunity to increase the extent to which the Canadian Grain Commission communicates with domestic stakeholders and international buyers to promote the Harvest Sample Program and to share the annual harvest quality reports.

Build partnerships to increase participation in eastern Canada

The Canadian Grain Commission could examine potential partnerships with organizations in eastern Canada to obtain alternative sources of harvest samples. This would address the low response rate among eastern producers, and the fact that beginning in 2016 Grain Farmers of Ontario may no longer be partnering with the Canadian Grain Commission to collect samples to support the Harvest Sample Program.

Work with the Canadian International Grains Institute to produce a comprehensive report

The feasibility of a single comprehensive annual harvest quality report that combines the information produced by the Canadian Grain Commission and the Canadian International Grains Institute (Cigi) should be investigated. The US Wheat Associates' Harvest Assessment Report provides one possible model of a comprehensive national report that draws harvest quality data from multiple sources, using different collection methodologies.

7.0 Summary of recommendations and management action plans

The following is a summary of recommendations contained in the report with management's action plans to address the topics identified.

#	Recommendation	Management action plan
	While the evaluation found that the Harvest Sample Program has been successful in achieving its objectives and is delivered in an efficient and cost-effective manner, some possible opportunities to enhance the program are as follows.	
1)	<p>Continue promotion and marketing of the program in order to recruit new producers to submit harvest samples. Given the demographics of program registrants, marketing and promotion efforts are needed to ensure new producers are recruited.</p> <p>While the strategies utilized to date (e.g. tradeshow, leveraging communications through producer and industry associations, social media) should be continued, additional promotional and marketing strategies that strategically target under-represented commodities and growing regions should be explored. Possible strategies include the use of radio and print advertisements, direct contact with producers, local community engagements and enhanced partnerships with producer and industry associations.</p>	<p>A focused communication plan will be developed by the Canadian Grain Commission Communications Unit to recruit new program participants. This plan will be initiated prior to the 2017 program and will concentrate on younger producers and those with large acreage.</p> <p>Younger producers have been identified as being technologically savvy and wanting to receive information on a variety of platforms. However, the program database does not currently support certain functions, such as texting results, and there are security access concerns. Information Management and Technology Services would require a significant shift in existing identified priorities to fully address communication through technological means.</p>
2)	<p>Examine the feasibility of possible enhancements to the type and format of quality information available to producers in order to increase their participation in the program.</p> <p>Some possible enhancements that should be investigated are as follows.</p> <p>A. Include additional technical factors in the unofficial grade and quality information provided to producers. The producers surveyed indicate that a more detailed explanation of the grading factors and the inclusion of falling number, dockage, moisture, hard vitreous kernels (HVK), bushel weight,</p>	<p>A. Improved harvest quality information for producers has been created. The top technical factors responsible for the grade will be included on both the online and printed version for the 2017 harvest.</p> <p>Technical factors that will not be included at this point are:</p> <ul style="list-style-type: none"> • falling number and vomitoxin, as they are not grading factors and therefore out of program scope • hard vitreous kernels (HVK), as it is only applicable to Canada Western Amber Durum (CWAD) and No. 1 Canada Western Red Spring (CWRS)

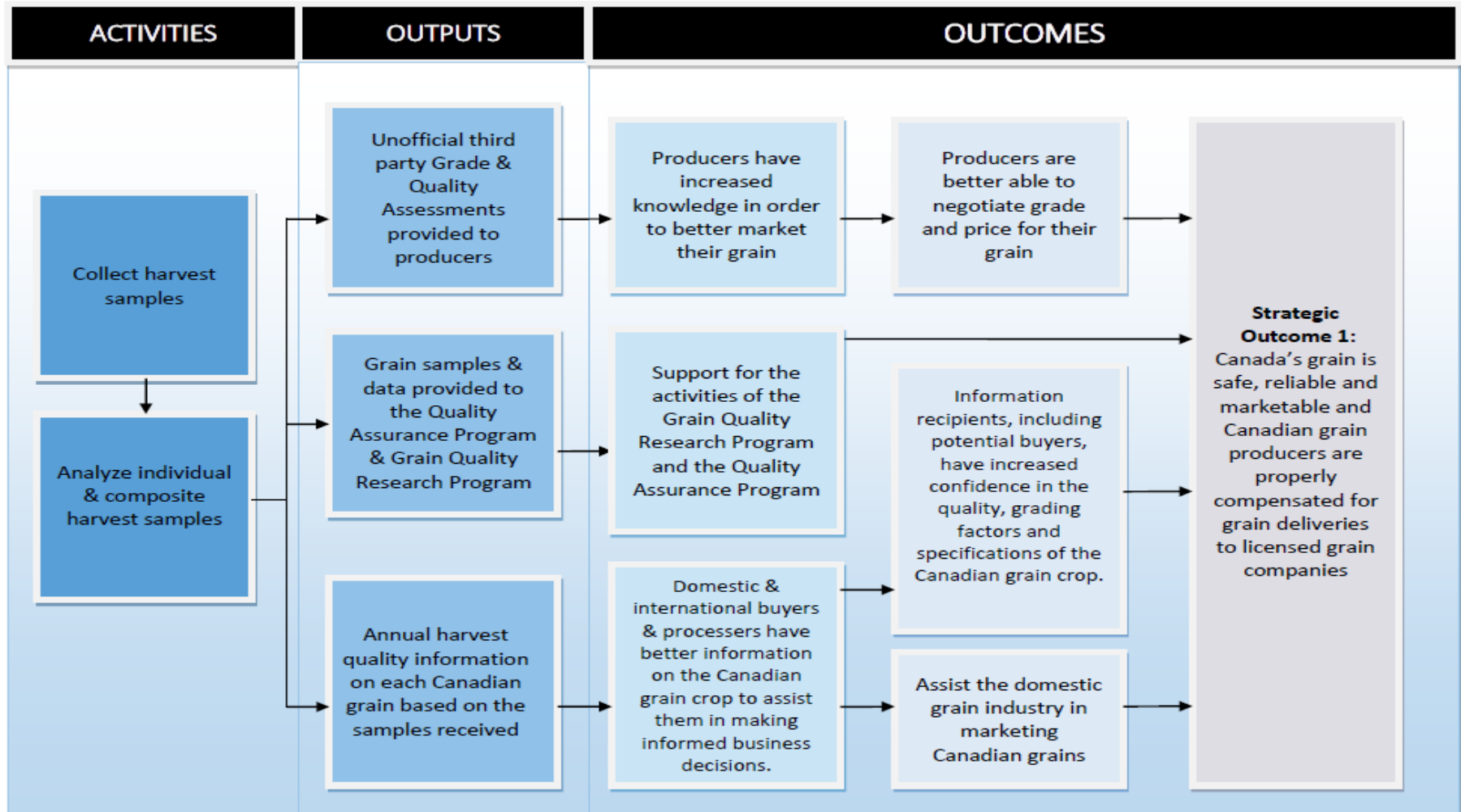
#	Recommendation	Management action plan
	<p>fusarium and vomitoxin would enhance the program.</p> <p>B. Provide additional sample envelopes to large producers and producers growing multiple varieties of the same commodity. In addition, the feasibility of providing registered producers with the ability to update their preferences for which grains they intend to submit each harvest should be investigated.</p> <p>C. Redevelop the online interface for producers with a Harvest Sample Program webpage where participating producers can login via email to update their sample preferences or notify the Canadian Grain Commission that they have retired, relocated or ceased operations. This could also include:</p> <ol style="list-style-type: none"> 1. the capability for producers to access their own results, compare their results year-over-year and compare their results to those of the regional and national composites 2. the possibility of producing a more professional, printable format of the unofficial grade and quality assessment should be examined to further enhance its utility for producers 3. email reminders to submit samples, an email notification informing them that their results are ready, or the results could be emailed directly to producers to encourage participation <p>D. To better track producer registration and participation in the program, the number of producers culled from and added to the producer database each year could be consistently tracked and included in the annual harvest survey internal reports issued to Canadian Grain Commission management. If possible, the report could also include the number of producers who submit samples (the current reporting</p>	<p>B. An electronic update has been developed and implemented so producers can request more envelopes from the Canadian Grain Commission as required.</p> <p>C. The program is currently not planning to develop an online interface for the 2017 to 2018 fiscal year. The Grain Research Laboratory will reassess the priority of developing an online interface with Information Management and Technology Services for the 2018 to 2019 fiscal year.</p> <ol style="list-style-type: none"> 1. The program is unable to allow comparison to previous results. Comparing previous results would require a new application and this is not currently in the Information Management and Technology Services development work plan for the foreseeable future. 2. A formal and printable form has been developed for both HTML (web) and PDF results to be accessed by the producer. 3. Information Management and Technology Services has developed the ability to email producers their results as soon as they are available. This has been implemented for the 2017 program and ensures producers timely delivery of their data. <p>D. Improved tracking of producer participation has been implemented by the Grain Research Laboratory for the 2017 harvest.</p>

#	Recommendation	Management action plan
	includes the number of producers issued sample kits and the total number of envelopes received).	
3)	Assess the feasibility of enhancing communication with stakeholders to inform them of when updates to the wheat harvest information are available. While the Canadian Grain Commission currently updates the wheat harvest information on a weekly basis, this update cycle could be better communicated with end-users of the information. There also is an opportunity to increase the extent to which the Canadian Grain Commission communicates with domestic stakeholders and international buyers to promote the program and to share the annual harvest quality reports.	<p>The current practice of weekly updates of data is recognized as being meaningful by Canadian Grain Commission management.</p> <p>Additionally, the existing normal news releases and articles on the Canadian Grain Commission website are deemed to be adequate by Canadian Grain Commission management.</p>
4)	Examine potential partnerships with organizations in eastern Canada to obtain alternative sources of harvest samples to address the low response rate among eastern producers, and the fact that beginning in 2016, Grain Farmers of Ontario may no longer be partnering with the Canadian Grain Commission to collect samples to support the Harvest Sample Program.	As steps were successfully undertaken to work closely with Soy Canada in 2016, discussion with eastern Stakeholders will be pursued during the annual Canadian Grain Commission/stakeholder meetings in spring 2017.
5)	Investigate the feasibility of a single comprehensive annual harvest quality report that combines the information produced by the Canadian Grain Commission and Canadian International Grains Institute (Cigi). The US Wheat Associates' Harvest Assessment Report provides one possible model of a comprehensive national report that draws harvest quality data from multiple sources, using different collection methodologies.	The feasibility of working together with Cigi and sharing our larger sample set and resources will be pursued again by the executive of the Canadian Grain Commission prior to the upcoming 2017 harvest.

8.0 Appendices

Appendix 1 – Harvest Sample Program Logic Model

HARVEST SAMPLE PROGRAM LOGIC MODEL, SEPTEMBER 2015



Appendix 2 – Harvest quality data parameters

2015 Canadian Grain Commission harvest quality reports quality parameters by commodity

Commodity	Quality data parameters	Commodity	Quality data parameters
Wheat	<ul style="list-style-type: none"> • Wheat: <ul style="list-style-type: none"> - Test Weight (kg/hL) - 1000 kernel weight (g) - Protein content % - Ash content % - Falling number, sec - Particle size index, % • Milling Flour Yield: <ul style="list-style-type: none"> - Clean wheat basis, % - 0.50% Ash basis, % • Flour (74% extraction) <ul style="list-style-type: none"> - Protein content, % - Wet gluten content, % - Gluten index, % - Ash Content, % - Starch Damage, % - Amylograph Peak Viscosity, BU • Farinogram <ul style="list-style-type: none"> - Absorption, % - Dough Development Time, min - Stability, min - Mixing Tolerance Index, BU • Extensogram (135 minutes) <ul style="list-style-type: none"> - Maximum Resistance, BU - Extensibility - Length, cm - Area, cm² • Alveogram <ul style="list-style-type: none"> - P (height X 1.1), mm - Extensibility - Length, cm - Area, cm² • Baking <ul style="list-style-type: none"> - Absorption, % - Mixing time, min - Mixing energy, W-h/kg of dough - Loaf volume, cm³/100 g flour 	Canola	<ul style="list-style-type: none"> • Chlorophyll content • Iodine value • Oil content • Protein content • Total glucosinolates content
		Flaxseed	<ul style="list-style-type: none"> • Iodine value • Oil content • Protein content
		Lentils	<ul style="list-style-type: none"> • Protein content
		Malting barley	<ul style="list-style-type: none"> • Test Weight (kg/hL) • 1000 kernel weight (g) • Plump % • Protein • Germination energy 4ml % • Germination energy 8ml %
		Peas	<ul style="list-style-type: none"> • Protein content

Source: Canadian Grain Commission, 2015 Harvest and Export Quality Reports

Appendix 3 – Demographics of registered producers surveyed

Characteristics of registered participating and non-participating producers, compared to the overall population of farmers in Canada

Characteristic	Non-participating producers (n=125)		Participating producers (n=1,207)		Characteristic	Total population of producers	
	%	#	%	#		%	#
Province or territory	%	#	%	#	Province or territory (grains and oilseeds)	%	#
British Columbia	0.8%	1	0.4%	5	British Columbia	1.0%	2187
Alberta	26.4%	32	30.3%	344	Alberta	20.7%	47407
Saskatchewan	41.3%	50	48.7%	553	Saskatchewan	30.4%	69665
Manitoba	7.4%	9	14.9%	169	Manitoba	10.0%	22882
Ontario	10.7%	13	3.2%	36	Ontario	26.4%	60495
Quebec	12.4%	15	2.3%	26	Quebec	10.2%	23375
New Brunswick	0.8%	1	0.1%	1	New Brunswick	0.4%	971
Nova Scotia	0.0%	0	0.0%	0	Nova Scotia	0.3%	796
Prince Edward Island	0.0%	0	0.1%	1	Prince Edward Island	0.5%	1259
Newfoundland and Labrador	0.0%	0	0.0%	0	Newfoundland and Labrador	0.0%	29
Yukon	0.0%	0	0.0%	0	Yukon	0.0%	28
Age	%	#	%	#	Age (all commodities)	%	#
18 to 35	14.8%	17	7.8%	86	35 and under	8.2%	48265
36 to 50	24.3%	28	19.1%	211	35 to 54	43.5%	255870
51 to 64	50.4%	58	20.1%	222	55 and above	48.3%	283980
64 and above	10.4%	12	53.0%	585			
Acreage	%	#	%	#	Acreage (all commodities)	%	#
Under 1,000 acres	43.0%	48	30.4%	332	Under 1,119 acres	81.9%	168,701
1,000 to 1,999 acres	23.0%	26	30.3%	331	1,120 to 2,239 acres	9.7%	20056
2,000 acres to 3,999 acres	17.0%	19	23.8%	260	2,240 to 2,879 acres	2.5%	5231
4,000 acres to 5,999 acres	8.0%	9	9.9%	108	2,880 to 3,519 acres	1.7%	3482
6,000 acres and over	9.0%	10	5.5%	60	3,520 acres and over	4.1%	8419

Characteristic	Non-participating producers (n=125)		Participating producers (n=1,207)		Characteristic	Total population of producers	
	%	#	%	#		%	#
Gross farm revenue					Gross farm revenue (all commodities)		
Less than \$100,000	13.3%	14	10.0%	101	Less than \$100,000	62.3%	128171
\$100,000 to \$249,000	21.0%	22	22.7%	229	\$100,000 to \$249,000	15.4%	31679
\$250,000 to \$499,999	29.5%	31	25.4%	257	\$250,000 to \$499,999	10.9%	22458
\$500,000 to \$999,999	16.2%	17	20.9%	211	\$500,000 to \$999,999	6.8%	13978
\$1,000,000 to \$2,499,999	14.3%	15	17.4%	176	\$1,000,000 to \$1,999,999	3.1%	6304
\$2,500,000 to \$5,000,000	5.7%	6	2.0%	20	Over \$2,000,000	1.6%	3299
Over \$5,000,000	0.0%	0	1.6%	16			
Grains produced					Grains produced		
Canada Eastern Red Spring	5.9%	7	2.7%	32	Spring wheat (excluding durum)	15.5%	35541
Canada Western Red Spring Wheat	42.4%	50	71.1%	848			
Canada Prairie Spring Red Wheat	13.6%	16	12.4%	148			
Canada Prairie Spring White Wheat	5.1%	6	1.5%	18			
Canada Western Hard White Spring Wheat	5.9%	7	4.4%	53			
Canada Western Soft White Spring Wheat	5.1%	6	2.2%	26			
Canada Eastern Red Winter	1.7%	2	0.8%	10			
Canada Eastern Soft Red Winter	7.6%	9	1.8%	22			
Canada Eastern White Winter	3.4%	4	0.2%	2			
Canada Western Red Winter Wheat	5.9%	7	6.7%	80			
Canada Eastern General Purpose Barley	7.6%	9	1.0%	12	Barley	13.1%	29945
Canada Western General Purpose Barley	22.9%	27	13.9%	166			
Canada Western Amber Durum Wheat	15.3%	18	23.9%	285	Durum wheat	3.2%	7277
Canada Western Extra Strong Wheat	1.7%	2	0.3%	3	Mixed grains	3.1%	7062
Canada Western General Purpose Wheat	4.2%	5	1.7%	20			

Characteristic	Non-participating producers (n=125)		Participating producers (n=1,207)		Characteristic	Total population of producers	
	%	#	%	#		%	#
Flaxseed	18.6%	22	19.4%	232	Flaxseed	2.0%	4571
Canola	65.3%	77	69.7%	831	Canola	15.3%	35073
Chickpeas	1.7%	2	1.3%	15	Chickpeas	0.1%	293
Corn	22.0%	26	1.1%	13	Corn	10.2%	23472
Beans	5.9%	7	3.3%	39	Dry white beans and other dry beans	0.7%	1706
Pea Beans	0.8%	1	0.3%	4			
Lentils	0.0%	0	15.8%	188	Lentils	2.1%	4854
Mustard	5.9%	7	4.9%	59	Mustard	0.4%	1012
Oats	38.1%	45	11.6%	138	Oats	12.7%	29018
Peas	27.1%	32	31.1%	371	Dry field peas	3.3%	7460
Soybeans	28.0%	33	9.3%	111	Soybeans	11.9%	27215
Other	13.6%	16	4.4%	53			
Education	%	#	%	#	Education	%	#
High school/secondary school certificate or equivalent	32.8%	39	28.5%	320		N/A	N/A
College or university certificate or diploma (less than Bachelors)	24.4%	29	23.2%	261		N/A	N/A
Trades certificate or diploma	19.3%	23	16.2%	182		N/A	N/A
Bachelor's degree	12.6%	15	20.9%	235		N/A	N/A
Did not complete high school/secondary school	9.2%	11	6.6%	74		N/A	N/A
Other	0.8%	1	0.9%	10		N/A	N/A
Post-graduate degree	0.8%	1	3.7%	42		N/A	N/A

Appendix 4 – Harvest Sample Program response rate by region and commodity

Response rate by region and commodity, fiscal years 2010 to 2011 through 2014 to 2015

Commodity	2011			2012			2013			2014		
	Sent	Returned	%	Sent	Returned	%	Sent	Returned	%	Sent	Returned	%
Eastern												
Beans	2	1	50.00%	2	1	50.00%	31	0	0.00%	31	0	0.00%
Canola	57	5	8.77%	57	161	282.46%	35	2	5.71%	40	51	127.50%
CERS	119	30	25.21%	138	46	33.33%	154	40	25.97%	179	31	17.32%
CERW	45	22	48.89%	62	66	106.45%	77	44	57.14%	79	34	43.04%
CESRW	152	46	30.26%	187	243	129.95%	207	356	171.98%	239	349	146.03%
CEWW	30	11	36.67%	40	45	112.50%	44	47	106.82%	51	43	84.31%
Peabeans	7	3	42.86%	7	3	42.86%	9	0	0.00%	9	3	33.33%
Soybeans	342	41	11.99%	342	393	114.91%	444	254	57.21%	520	428	82.31%
Western												
Beans	25	5	20.00%	35	18	51.43%	45	7	15.56%	45	6	13.33%
Canola	2981	2062	69.17%	3889	2640	67.88%	4285	1679	39.18%	5161	2295	44.47%
Chickpeas	45	9	20.00%	54	18	33.33%	56	18	32.14%	56	11	19.64%
CPSR	297	51	17.17%	338	61	18.05%	378	86	22.75%	559	229	40.97%
CPSW	21	2	9.52%	19	2	10.53%	24	3	12.50%	28	2	7.14%
CWAD	1629	869	53.35%	1963	1089	55.48%	2066	950	45.98%	2736	1374	50.22%
CWES	12	2	16.67%	12	2	16.67%	16	1	6.25%	7	0	0.00%
CWGP	11	3	27.27%	18	8	44.44%	25	17	68.00%	80	46	57.50%
CWHWS	169	22	13.02%	186	23	12.37%	210	10	4.76%	171	21	12.28%
CWRS	5734	3354	58.49%	6988	4156	59.47%	7722	3267	42.31%	9088	4941	54.37%
CWRW	191	80	41.88%	257	175	68.09%	384	125	32.55%	458	174	37.99%
CWSWS	100	36	36.00%	111	57	51.35%	171	79	46.20%	218	48	22.02%
Flax	834	181	21.70%	893	214	23.96%	967	86	8.89%	1178	272	23.09%
Lentils	266	331	124.44%	378	347	91.80%	462	212	45.89%	462	384	83.12%
Mustard	370	178	48.11%	401	148	36.91%	414	100	24.15%	497	294	59.15%
Peabeans	25	36	144.00%	28	49	175.00%	29	0	0.00%	29	2	6.90%
Peas	544	307	56.43%	719	359	49.93%	828	346	41.79%	828	476	57.49%
Soybeans	171	65	38.01%	204	126	61.76%	217	74	34.10%	352	126	35.80%
Total	14179	7752	54.67%	17328	10450	60.31%	19300	7803	40.43%	23101	11640	50.39%

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