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Results from the 2015 Bioproducts Production and Development Survey

by Yannick Rancourt, Catherine Neumeyer and Ningning Zou

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.. not available for a specific reference period
... not applicable
0 true zero or a value rounded to zero
0^s value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded
^{p} preliminary
^{r} revised
x suppressed to meet the confidentiality requirements of the *Statistics Act*
^{E} use with caution
F too unreliable to be published
* significantly different from reference category ($p < 0.05$)

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Results from the 2015 Bioproducts Production and Development Survey

by **Yannick Rancourt** (Statistics Canada), **Catherine Neumeyer** and **Ningning Zou** (Agriculture and Agri-Food Canada)

Highlights

- In 2015, 190 establishments were engaged in the production or development of non-conventional industrial bioproducts in Canada. The majority of these establishments (60.0%) were engaged in bioproduct activities for 10 years or less.
- Bioproduct establishments in 2015 were involved in the production or development of bioproducts, including biofuels, bioenergy, organic chemicals, materials and composites, intermediary biochemicals and biomaterials, and other bioproducts.
- Bioproduct sales were estimated to be $4.3 billion in 2015. Domestic sales accounted for $2.9 billion (66.8%) with exports accounting for $1.4 billion (33.2%). In the international market, annual exports of Canadian bioproducts were primarily to the United States, the European Union, China and Japan.
- Bioproduct co-product sales accounted for $441.5 million in 2015.
- In 2015, 5,618 workers were engaged in bioproduct-related activities (including biomass improvements), with associated salary expenditures of $355 million.
- In 2015, biofuels exceeded other bioproduct categories in terms of both sales and number of establishments. Biofuel sales, totaling $2.7 billion, accounted for 63.6% of all bioproduct sales. Ethanol comprised 75.2% of biofuel sales (over $2 billion) while biodiesel made up 24.1% ($653 million).
- Nearly 60% of all establishments reported involvement (research, development or production) in biofuels. Of these, 30 were involved in ethanol, 29 in biodiesel and 24 in gaseous fuels.
- Biomass purchases totaling $2.3 billion in 2015 served as inputs for bioproduct activities. The two main sources of biomass inputs were forestry biomass, with 12.3 million metric tonnes, and agricultural biomass, with 8.8 million metric tonnes. Grains and oilseeds accounted for 99.0% of the volume of agricultural biomass.
- In-house research-and-development spending on bioproduct development decreased to $91.2 million in 2015, from $101.6 million in 2014.
- In 2015, approximately one-third of bioproduct establishments were involved in collaborative arrangements with other businesses or organizations. These collaborative arrangements, numbering about 218, were predominantly with businesses (both domestic and foreign) and academic institutions in Canada.

Introduction

The bioproducts sector has unexplored potential in Canada. In the last decade, however, efforts have been made to better measure this activity. One of the major reasons for interest in this activity is that the manufacturing of bioproducts offers processors additional markets for new products and commodities. Canada has more biomass resources per capita than any other country and access to a wealth of biomass feedstock.[1] This paper presents results from the 2015 Bioproducts Production and Development Survey, Statistics Canada's fourth survey on establishments engaged in this sector. The survey is conducted on a cost-recovery basis by the Centre for Special Business Projects (CSBP) on behalf of Agriculture and Agri-Food Canada (AAFC). Previous iterations of this survey were also conducted for 2003, 2006 and 2009. The objective of the survey is to measure activity in the bioproducts sector.

For the purpose of this survey, bioproducts are defined as "non-conventional" products produced from biomass with the goal of commercialization (see Box 1 definitions below). Thus, all bioproducts produced only for in-house use (e.g., electricity, heat) are ruled out. For example, this definition **includes** biofuels (e.g., ethanol, biodiesel), bio-gas and bioenergy, organic chemicals (e.g., biopolymers), bio-pesticides, plant-made biologics, non-conventional construction materials and composites, intermediary biochemicals, and biomaterials (if produced in a non-conventional manner), but **excludes** all food, nutraceuticals, feed (e.g., livestock and pet food), medicines and forestry-based bioproducts produced in a traditional way (e.g., lumber, paper).[2]

The main objective of this descriptive paper is to give to the reader a better idea of the size and scope of bio-economic activity in the Canadian economy and to provide statistical information on the Canadian bioproducts sector. A detailed profile of establishments engaged in the production and/or development of bioproducts in the country is presented.

1. The Canadian Trade Commissioner Service website (www.international.gc.ca/investors-investisseurs/sector-secteurs/bioproduct-bioproduit.aspx?lang=eng).
2. This survey focuses only on the primary production level of the non-conventional industrial bioproducts supply chain, which can be identified as using biomass to produce non-conventional bioproducts. At this point in time, industry players using these bioproducts to produce downstream products are not included in the survey.

Box 1 Definitions

Bioproducts

For the purpose of this survey, **bioproducts** are products produced from biomass and for commercial purposes.

Include: biofuels (e.g., ethanol, biodiesel), bio-gas and bioenergy, organic chemicals (e.g., biopolymers), bio-pesticides, plant-made biologics, non-conventional construction materials and composites, intermediary biochemicals, and biomaterials (if produced in a non-conventional manner).

Exclude: food, nutraceuticals, feed (e.g., livestock and pet food), medicines, forestry-based bioproducts produced in a traditional way (e.g., lumber, paper).

Biomass

For the purpose of this survey, **biomass** refers to the following renewable biological materials:

- biological materials from forestry, agriculture, marine and aquaculture sources
- by-products from processing (e.g., agricultural, forestry, pulp and paper, food or feed processing)
- salvaged wood and wood-based products from construction and demolition sites
- waste biological materials (e.g., solid waste such as yard waste, trees, wood waste, waste cooking oil)
- micro-biological materials (e.g., algae, bacteria, fungi).

Exclude: microbiological materials that are used only as a catalyst or converter in a production process or in research.

Establishment

An Establishment as a statistical indicator, is defined as the most homogeneous unit of production for which the business maintains accounting records and, from which it is possible to assemble all the data elements required to compile the full structure of the gross value of production (total sales or shipments, and inventories), the cost of materials and services, and labour and capital used in production.

Establishments sizes

For this survey, a small size establishment has less than 50 employees, a medium size establishments has 50 to 149 employees and a large size establishments has 150 or more employees.

Bioproduct-related activities

Bioproduct-related activities are any combination of activities related to research and development (R&D), production, and sales or distribution of bioproducts.

Bioproduct co-products

Bioproduct co-products are produced jointly with bioproducts from the same production stream. They are often produced for sale, but additional processing may be required. Distillers' dry grains and carbon dioxide (CO_2) are examples of co-products of ethanol production. Glycerine may be a co-product of biodiesel fuel production.

Biomass improvement activities (or biomass pre-processing)

Biomass improvement activities are activities such as collecting, aggregating, baling, cleaning, separating, drying, modifying, refining, grading or packaging of post-harvest biomass to prepare the biomass for efficient conversion into bioproducts.

Post-harvest improved biomass

Post-harvest improved biomass is a type of biomass that has been collected, aggregated, baled, cleaned, separated, dried modified, refined or packaged from its raw form at harvest so it can be directly fed into a conversion process for bioproduct production. It can also be referred to as conditioned or pre-processed biomass.

Survey population

The target population for the survey included all commercial establishments located in Canada that use renewable biomass to develop or produce bioproducts (see definition in Box 1), as well as those that collect, separate and/or refine the biomass inputs used in bioproducts.

The criteria used to define a bioproduct establishment for this survey resulted in a very small population. This is one of the main challenges of the survey. Bioproduct establishments are difficult to identify and find, because bioproducts are not an industry but, rather, activities carried out by establishments. To date, there is no complete database which identifies non-conventional bioproducts and those establishments involved in developing or producing these products. Therefore, a census approach was used to obtain a robust responding population who could self-identify their bioproducts activities, in order to produce reliable estimates. The frame was constructed from three sources:

i) lists of businesses obtained from federal partners, provincial and territorial bioproduct industry associations, and industry experts

ii) enterprises from the Business Register System that were in-scope during the Survey of Advanced Technology (2014), the Survey of Innovation and Business Strategy (2012), the Environmental Protection Expenditures Survey (2012), and the previous Bioproducts Production and Development Survey (2009)

iii) external sources including association websites.

Only establishments in the following North American Industry Classification System (NAICS) sectors were retained:

- manufacturing (31-33)
- wholesale trade (41)
- professional, scientific and technical services (54)
- agriculture, forestry, fishing and hunting (11)
- mining, quarrying, and oil and gas extraction (21)
- utilities (22).

These sources collectively yielded 1,123 potential in-scope establishments. After an initial contact by phone, the number of potential in-scope establishments was reduced to 599 establishments.[3] Subsequently, an in-depth analysis was required to remove all remaining out-of-scope establishments. Following the analysis, 190 bioproduct establishments were determined to be in-scope for this survey. Calculated for the final population, the overall survey response rate was established at 48.2%.

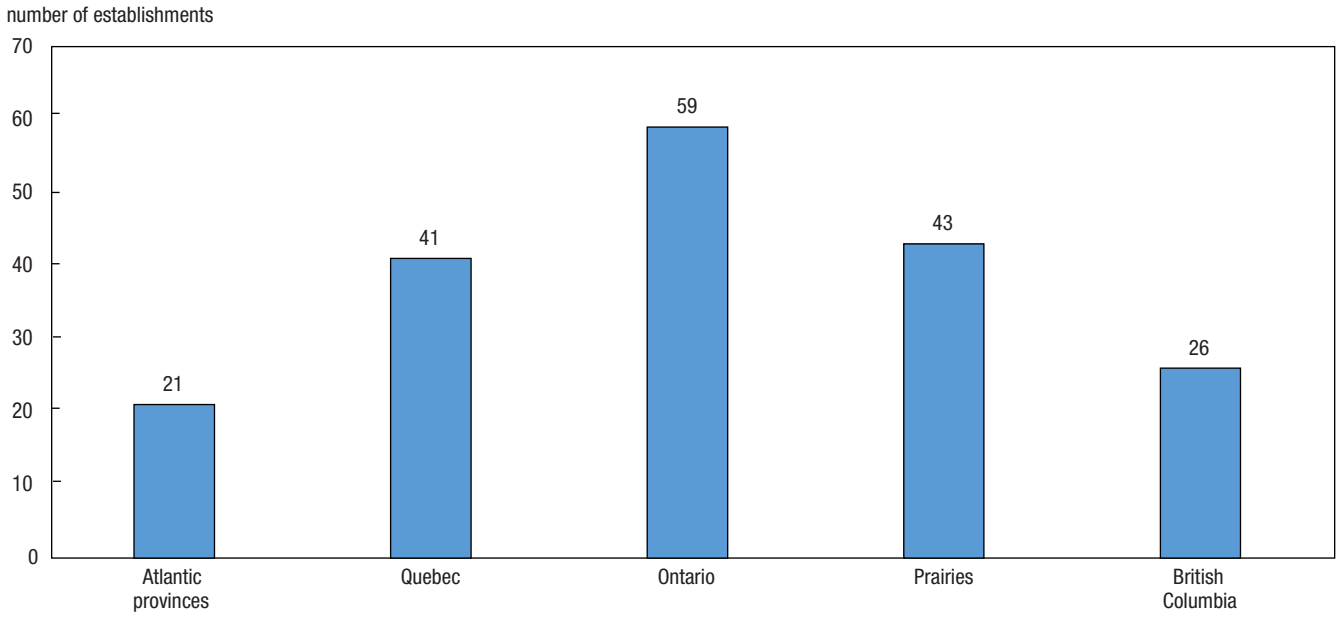
This paper presents the findings from the survey on the bioproducts sector in Canada. The annex includes all survey estimates by region (Atlantic provinces, Quebec, Ontario, the Prairies and British Columbia) and by establishment size based on the number of employees (less than 50, 50 to 149, and 150 or more).

3. If an establishment could not be reached prior to the survey to confirm whether it was in-scope, it was retained as being potentially in-scope for the survey.

Industry profile

In 2015, an estimated 190 Canadian establishments were involved in the production and/or development of non-conventional bioproducts.[4, 5] Chart 1 shows that, geographically, 52.6% were located in central Canada (59 in Ontario and 41 in Quebec). Small establishments (with less than 50 employees) made up the majority of the distribution (71.1%). Medium-sized establishments (with 50 to 149 employees) represented 13.7% of the distribution, and large establishments (with 150 or more employees) accounted for 15.3%.[6]

Chart 1
Regional distribution of bioproduct establishments



Source: Statistics Canada, 2015 Bioproducts Production and Development Survey, Table A.1.

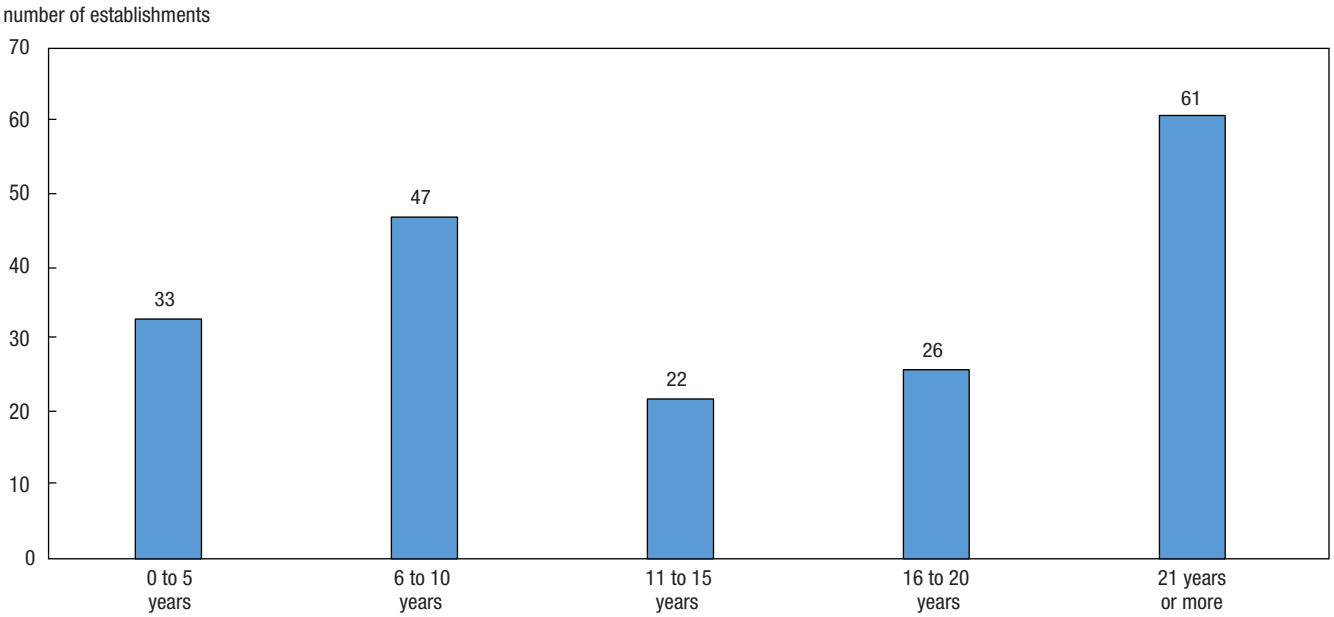
Bioproduct establishments were involved in the production and/or development of many types of bioproducts[7] encompassing a wide range of activities.[8] These activities involved the production and/or development of biofuels (58.4%),[9] bioenergy (21.1%), intermediary biochemicals or biomaterials (20.0%), materials and composites (17.4%), organic chemicals (14.2%), and other bioproducts (11.1%). From these estimates, 111 establishments were involved in biofuels, 30 in ethanol, 29 in biodiesel and 24 in gaseous fuels.

4. Statistics Canada, Bioproducts Production and Development Survey 2015, table A.1.
5. These establishments use biomass inputs for the production of bioproducts. They represent the first level of production within the industrial bioproducts supply chain.
6. Statistics Canada, Bioproducts Production and Development Survey 2015, table A.1.
7. The establishments also individually report being involved in the production of several different types of bioproducts (i.e., in several categories of products).
8. Bioproduct establishments are concentrated within the manufacturing sector, with some establishments involved in primary sectors such as forestry and agriculture. Industrial sectors are defined according to NAICS.
9. Statistics Canada, Bioproducts Production and Development Survey 2015, table A.3.1.

Bioproduct establishments profile

Chart 2 shows that, in 2015, there were 61 mature establishments (those in operation for more than 20 years). These accounted for 32.3% of bioproduct establishments. The results show that the majority of establishments (80) were young, having been in operation for 10 years or less. These young establishments made up 42.3% of all bioproduct establishments, while the mid-age groups (11 to 15 years, and 16 to 20 years) made up 25.4%.

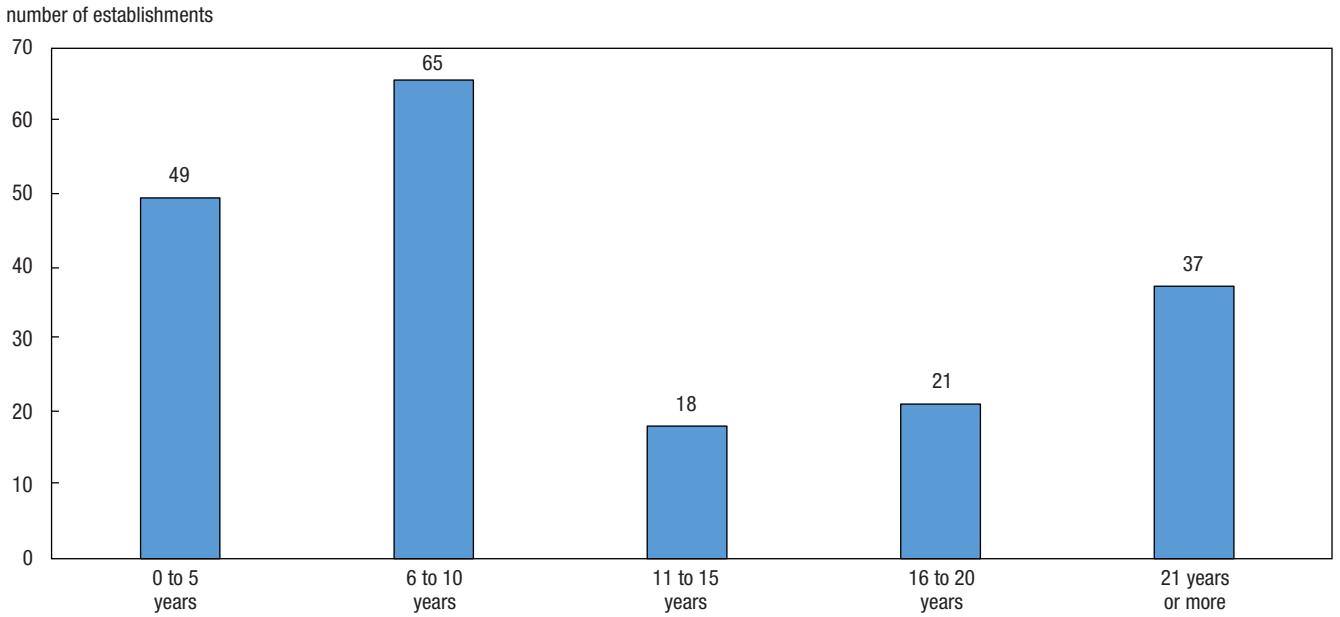
Chart 2
Number of years in operation, Canada, 2015



Source: Statistics Canada, 2015 Bioproducts Production and Development Survey, Table A.5.

Similarly (chart 3), a majority of bioproduct establishments (60%) had indicated that their business had been involved in bioproduct activities for 10 years or less. Less than 10% of the total had been involved in bioproduct activities for 11 to 15 years, 11.1% for 16 to 20 years, and 19.5% for more than 20 years. New businesses tend to engage in bioproduct-related activity from the beginning of operation.

Chart 3
Number of years involved in bioproducts, Canada, 2015



Source: Statistics Canada, 2015 Bioproducts Production and Development Survey, Table A.17.

There were various reasons why businesses were engaged in bioproduct activities (table 1). The three main reasons for initially becoming involved in bioproducts were opportunities through education or employment (42.0%), opportunities through business domestic activities (41.0%), and cooperation or collaboration with other establishments or organizations (25.2%).

Table 1
Reasons why establishments initially became involved in bioproducts activity, Canada, 2015

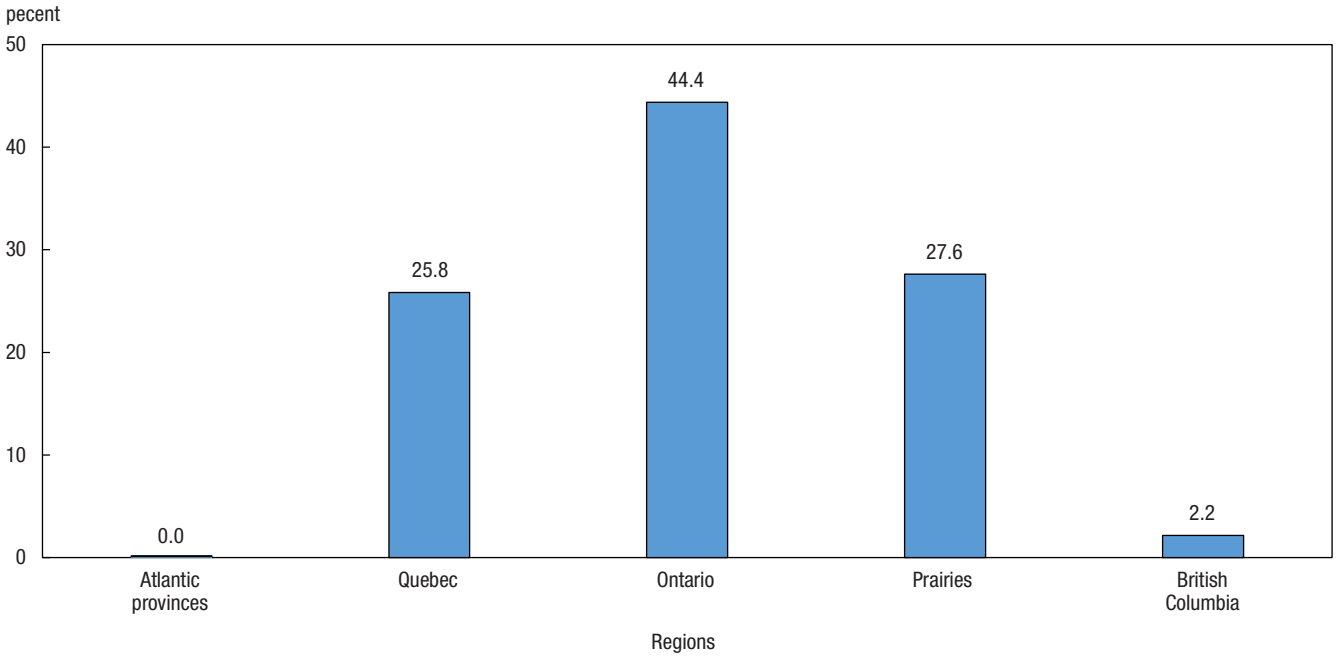
Reasons	2015
	percent
1. Exposed to bioproduct-related opportunities through education or employment	42.0
2. Exposed to bioproduct-related opportunities through its domestic activities	41.0
3. Cooperated or collaborated with other businesses or organizations on bioproduct activities	25.2
4. Acquired another business's bioproduct activities	13.0
5. Exposed to bioproduct-related opportunities through its international activities	10.6
6. Other	9.3
7. Acquired or licensed technology from a domestic business or laboratory	9.1
8. Acquired or licensed technology from a foreign business or laboratory	3.8
9. Merged with another business involved in bioproduct activities	0.0

Note: Total does not sum to 100: respondents could select multiple reasons.
Source: Statistics Canada, 2015 Bioproducts Production and Development Survey, Table A.18.1.

Business profile

In 2015, sales of bioproducts totaled an estimated $4.3 billion.[10] Of this total, 66.8% were domestic sales and 33.2% exports. Biofuels represented the most significant bioproduct activity, with sales of $2.7 billion (63.6%)[11]. Chart 4 shows that, geographically, 44.4% of all bioproduct sales were made by establishments located in Ontario, 27.6% by establishments located in the Prairies, 25.8% by establishments located in Quebec, and less than 2.2% by establishments located in British Columbia. Sales from other business lines (not bioproducts) accounted for 61.0% of establishments' total sales in 2015.[12]

Chart 4
Bioproduct sales distribution, by region, 2015

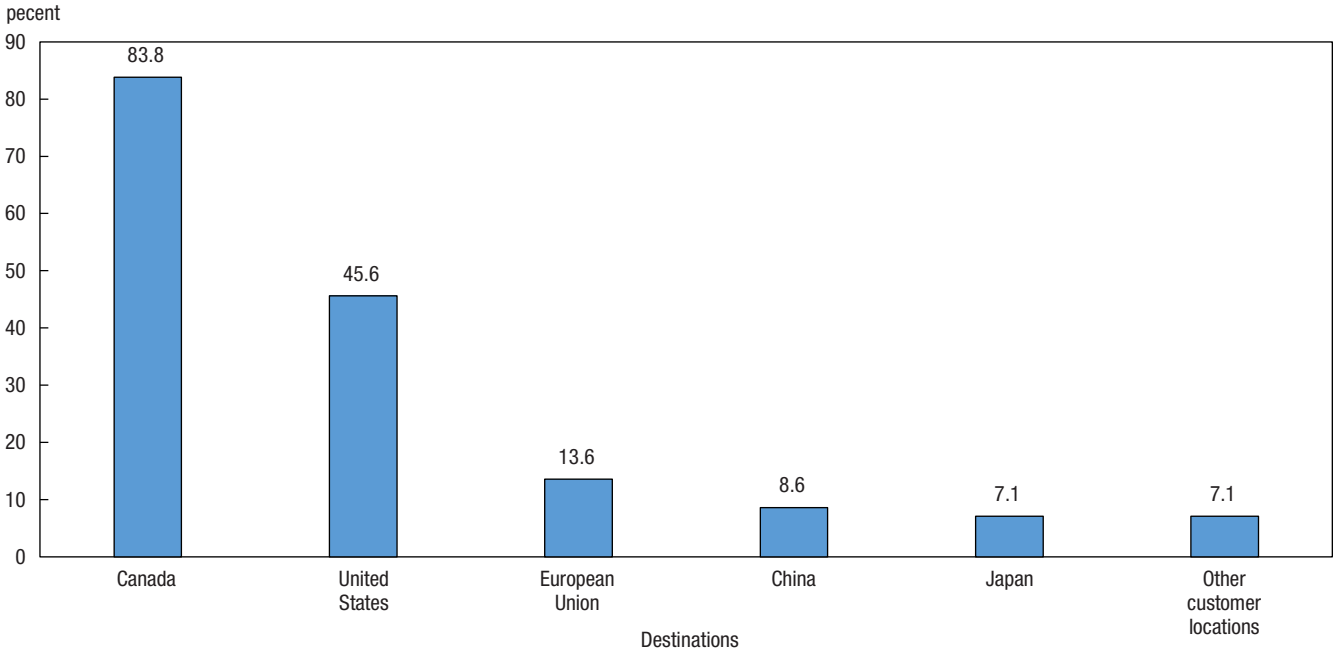


Note: Sales in the Atlantic provinces were less than 0.1% of total sales.
Source: Statistics Canada, 2015 Bioproducts Production and Development Survey, Table A.1.

In 2015, the majority of bioproduct establishments (83.8%) had clients in Canada. Additionally, 45.6% had clients in the United States, 13.6% had clients in the European Union, 8.6% had clients in China, 7.1% had clients in Japan, and 7.1% had clients in other countries (Chart 5).[13]

10. Statistics Canada, Bioproducts Production and Development Survey 2015, table A.1.
11. Statistics Canada, Bioproducts Production and Development Survey 2015, table A.11.1.
12. Statistics Canada, Bioproducts Production and Development Survey 2015, table A.10.1.
13. Statistics Canada, Bioproducts Production and Development Survey 2015, table A.22.

Chart 5
Canada's bioproduct markets, 2015



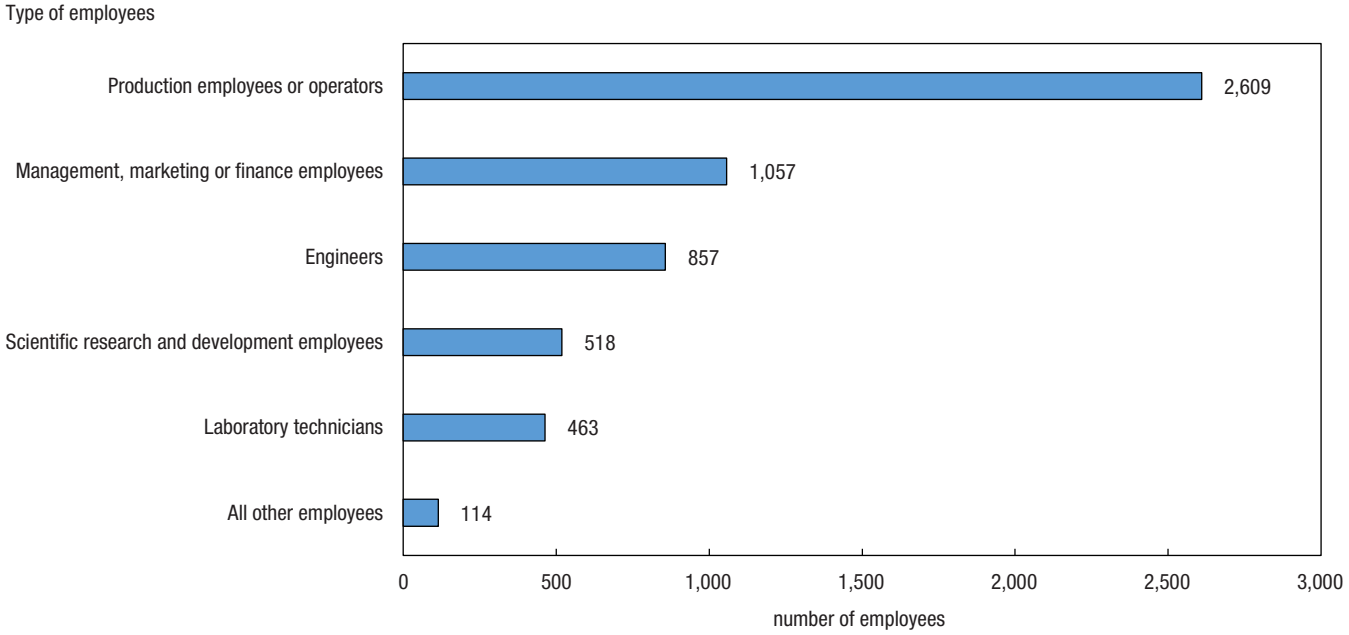
Source: Statistics Canada, 2015 Bioproducts Production and Development Survey, Table A.22.

Bioproduct establishments in Canada employed a total of 5,618 people[14] (where at least 50% of their work was devoted to bioproduct and/or biomass activities).[15] Of this total, 1,879 people were employed by small establishments, 1,661 people were employed by medium-sized establishments, and 2,078 people were employed by large establishments.[16] In total, these employees earned an estimated $355 million in wages and salaries in 2015.[17]

Of this workforce, 46.4% had occupations in production and operations, 18.8% in management, marketing or finance, 15.3% in engineering, 9.2% in R&D, and 8.2% in laboratories as laboratory technicians (Chart 6).

14. Of the 5,618 employees, 4,118 employees were involved in bioproduct-related activities, and 1,500 employees worked in biomass improvement activities.
15. Statistics Canada, Bioproducts Production and Development Survey 2015, table A.31.1.
16. Statistics Canada, Bioproducts Production and Development Survey 2015, table A.31.2.
17. Statistics Canada, Bioproducts Production and Development Survey 2015, tables A13.1.

Chart 6
Type of profession in bioproduct and biomass activities, Canada, 2015



Source: Statistics Canada, 2015 Bioproducts Production and Development Survey, Table A.31.1.

In 2015, 17.1% of all bioproduct establishments reported unfilled or vacant positions.[18] Establishments cited the main reasons for their unfilled employment positions as the inability to find highly qualified personnel (46.9%) and the unwillingness of qualified individuals to relocate (29.0%).[19]

Contracting or outsourcing services were reported by 34.3% of all bioproduct establishments in 2015.[20] The most common outsourced activities included engineering services (49.1%), R&D (24.6%), and production of goods (23.0%).[21] The top two reasons given for contracting out were to "access outside scientific expertise / knowledge" (52.3%) and for "cost-effectiveness" (48.3%).[22]

18. Statistics Canada, Bioproducts Production and Development Survey 2015, table A.32.
19. Statistics Canada, Bioproducts Production and Development Survey 2015, table A.33.1.
20. Statistics Canada, Bioproducts Production and Development Survey 2015, table A.36.
21. Statistics Canada, Bioproducts Production and Development Survey 2015, table A.37.1.
22. Statistics Canada, Bioproducts Production and Development Survey 2015, table A.38.1.

Biomass

Forestry biomass was the largest source of biomass produced, at 12.3 million metric tonnes (table 2), of which 8.5 million metric tonnes came from processing residue from pulp-and-paper mills. Agricultural biomass was the second largest source of biomass, with 8.8 million metric tonnes produced, the majority being derived from grains and oilseeds. In 2015, bioproduct establishments incurred biomass costs amounting to $2.3 billion.[23]

Table 2
Quantity of biomass used by bioproduct establishments, 2015

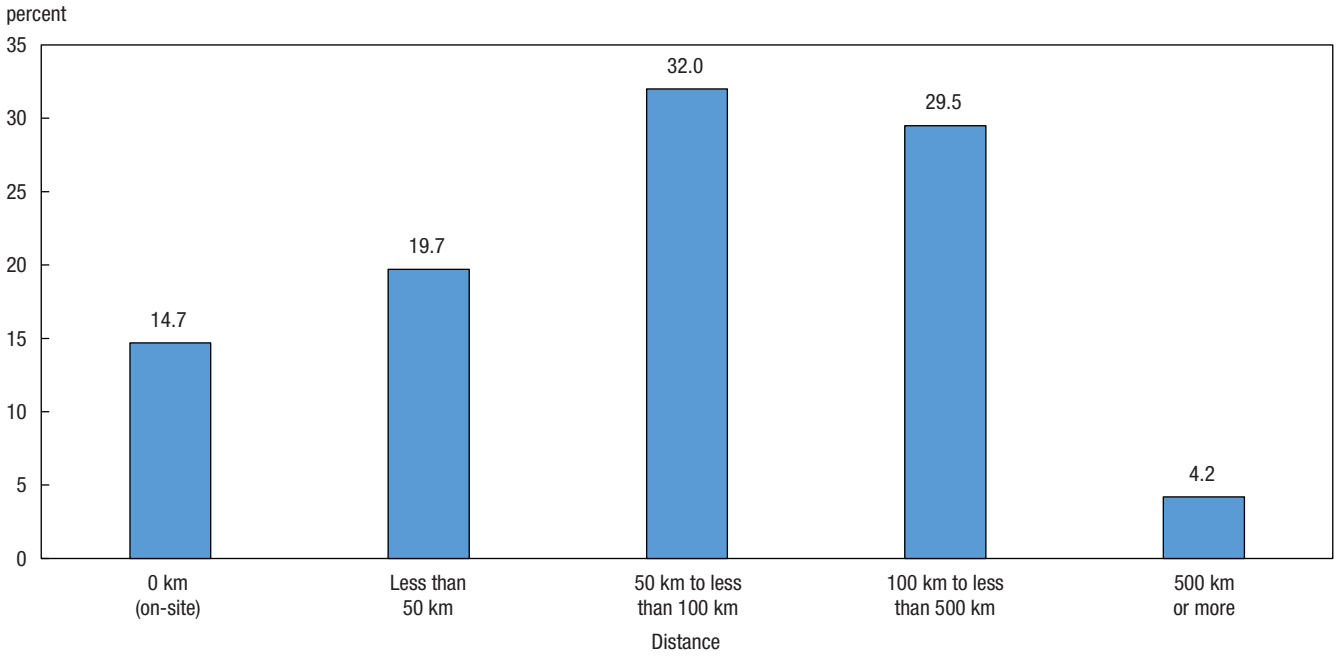
	Quantity of biomass used
	metric tonnes
Agricultural biomass	**8,768,015**
Grains and oilseeds	8,676,586
Forestry biomass	**12,314,424**
Mill processing residue	8,532,225
Other products and by-products	**x**
Food processing, slaughter and rendering by-products	623,774

x suppressed to meet the confidentiality requirements of the Statistics Act

Source: Statistics Canada, 2015 Bioproducts Production and Development Survey, Table A.2.1.

Overall, 42.1% of all establishments used agricultural biomass as their primary source of biomass.[24] About one-quarter (26.3%) of establishments identified forestry as their primary biomass in 2015. Primary biomass was sourced mainly from the region in which the establishment was located.[25] In terms of distance travelled to the source of the biomass (chart 7), 14.7% of establishments used on-site biomass; 19.7% obtained the primary biomass from a distance of less than 50 km; and 65.7% had more than 50 km to travel to their primary biomass source.

Chart 7
Transportation distance of primary biomass by bioproduct establishment in 2015



Source: Statistics Canada, 2015 Bioproducts Production and Development Survey, Table A.30.

23. Statistics Canada, Bioproducts Production and Development Survey 2015, table A.12.1.
24. Statistics Canada, Bioproducts Production and Development Survey 2015, table A.28.1.
25. Statistics Canada, Bioproducts Production and Development Survey 2015, table A.30.

In 2015, almost one-third of bioproduct establishments in Canada were also using some of their own bioproducts internally (e.g., bioenergy for drying products and heating buildings).[26] This ratio varies among regions. The Prairies had the lowest proportion of internal bioproduct consumption, with only 14.0% of establishments using their own bioproducts internally, whereas the Atlantic provinces had the highest ratio, at 61.9%.[27] This ratio can vary, depending on factors such as the type of bioproduct being produced and alternative costs. For example, ethanol might be more profitable to produce for external use, while a cheaper energy source is substituted for internal use.

About one-third (35.3%) of all bioproduct establishments also reported sales of co-products[28] (e.g., distiller dry grains and CO_2 as co-products of ethanol production).[29] The Prairies (46.5%) and British Columbia (46.2%) were the leading regions for co-products sales.

In 2015, total sales from co-products amounted to $441.5 million, which represented 10.3% of total bioproduct sales.[30] Medium-sized establishments accounted for 60.8% of all those sales, while small and large establishments accounted for 31.9% and 7.3% of co-products sales.

26. Statistics Canada, Bioproducts Production and Development Survey 2015, table A.19.
27. Statistics Canada, Bioproducts Production and Development Survey 2015, table A.1 and A.19.
28. Co-products are products which are produced jointly with bioproducts from the same production stream. They are often produced for sale although additional processing may be required. Distillers dry grains and CO2 are examples of co-products of ethanol production. Glycerine may be a co-product of biodiesel fuel production.
29. Statistics Canada, Bioproducts Production and Development Survey 2015, table A.20.1.
30. Statistics Canada, Bioproducts Production and Development Survey 2015, table A.1 and A.21.

Research and development (R&D) and innovation

In 2015, Canadian bioproduct establishments invested $112.1 million in in-house research and development (R&D).[31] Of this amount, $91.2 million (81.3%) was spent on bioproduct and biomass activities. Small establishments invested the most in R&D in 2015, accounting for 59.7% of all R&D expenditures. Medium-sized establishments made 31.2% of all R&D expenditures while large establishments accounted for the remaining 9.0% of such expenditures.[32]

Overall research intensity (measured as expenditures on R&D divided by bioproducts sales) in 2015 was found to be 2.1% when combining bioproduct and biomass activities.[33]

In addition to in-house R&D investments, establishments can expand their innovative capacity through other avenues. For example, they may cooperate or collaborate with other establishments or institutions to expand (or borrow) expertise, knowledge or technical knowhow. They may also outsource specific research activities or acquire (or lease) intellectual property from other sources to advance their innovative objectives. Establishments may also seek external funding from government programs or use incentives to either finance in-house R&D or access funds to outsource R&D.

In 2014 and 2015, the two main reasons why establishments were attempting to raise capital were to conduct R&D or to expand R&D capacity (about one-third of establishments), and to develop proof of concept or a pilot project (26.8% of establishments).[34] Furthermore, R&D programs were the most common type of government (federal, provincial and municipal) programs to which bioproduct establishments applied for (about one-third of establishments).[35] When bioproduct establishments were asked what programs or incentives would be beneficial to their businesses over the next five fiscal years, they identified commercialization programs as the most beneficial followed by R&D programs.[36]Over 60% of all bioproduct establishments received Scientific Research and Experimental Development (SR&ED) refunds and/or tax credits over the previous five years, for a total of $100.4 million.[37] Of those, 65.3% were small establishments. In addition, 58 establishments indicated that they had received Industrial Research Assistance Program (IRAP) funding, of those establishments, 81.0% were small establishments.[38]

31. Statistics Canada, Bioproducts Production and Development Survey 2015, table A.16.1.
32. Statistics Canada, Bioproducts Production and Development Survey 2015, table A.16.2.
33. In 2015, this group of establishments invested $91.2 million in R&D ($73.0 million in bioproduct and $18.2 million in biomass) and had bioproduct sales of $4.3 billion.
34. Statistics Canada, Bioproducts Production and Development Survey 2015, table A.54.1.
35. Statistics Canada, Bioproducts Production and Development Survey 2015, table A.60.1.
36. Statistics Canada, Bioproducts Production and Development Survey 2015, table A.61.1.
37. Statistics Canada, Bioproducts Production and Development Survey 2015, table A.57.
38. Statistics Canada, Bioproducts Production and Development Survey 2015, table A.58.

Intellectual property and collaborations

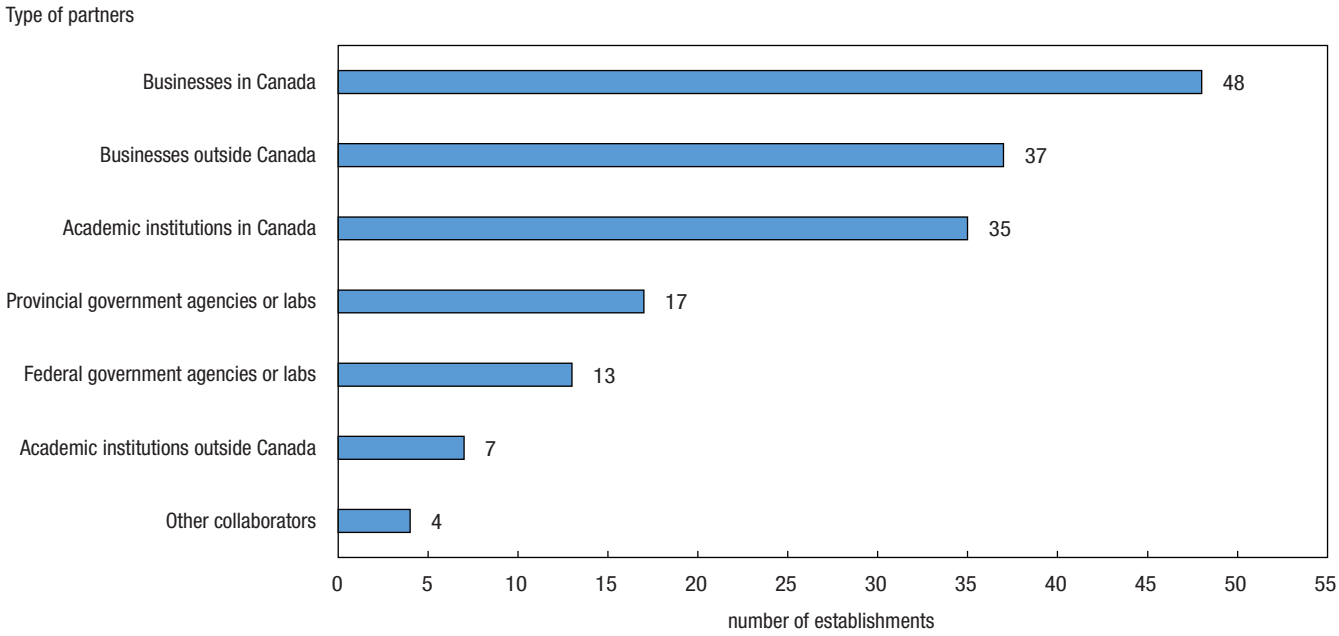
In 2015, 62 establishments had an existing patent or a pending patent, for a total of 1,822 registered patents. Of these patents, 17.0% were registered in Canada, 20.8% in the United States, 17.0% in Europe and 2.0% in Japan. The remaining 43.3% were registered in other counties.[39] Of the 167 pending patents awaiting approval, 32.3% were filed in Canada, 26.9% in the United States, 22.8% in Europe, 8.4% in Japan and 10.2% elsewhere.

In 2015, 10 bioproduct establishments assigned a bioproduct-related intellectual property licence to a third party and 11 bioproduct establishments acquired at least one intellectual property licence.[40]

Thirty-seven bioproduct establishments owned at least one bioproduct trademark in 2015.[41] A total of 102 bioproduct trademarks were registered in 2015, compared to 89 in 2014.

Roughly one-third of establishments (69) participated in collaborative (or cooperative) arrangements with other businesses in 2015.[42] In total, 218 such arrangements were reported, of which one-quarter were multi-partner arrangements. Small establishments accounted for 66.1% of all bioproduct collaborative arrangements. The most common collaborations were with other businesses. International businesses accounted for 37 of the arrangements, while 48 arrangements were with businesses in Canada[43] (Chart 8).

Chart 8
Number of bioproduct establishments with collaborations, by partner type, 2013 to 2015



Source: Statistics Canada, 2015 Bioproducts Production and Development Survey, Table A.40.1.

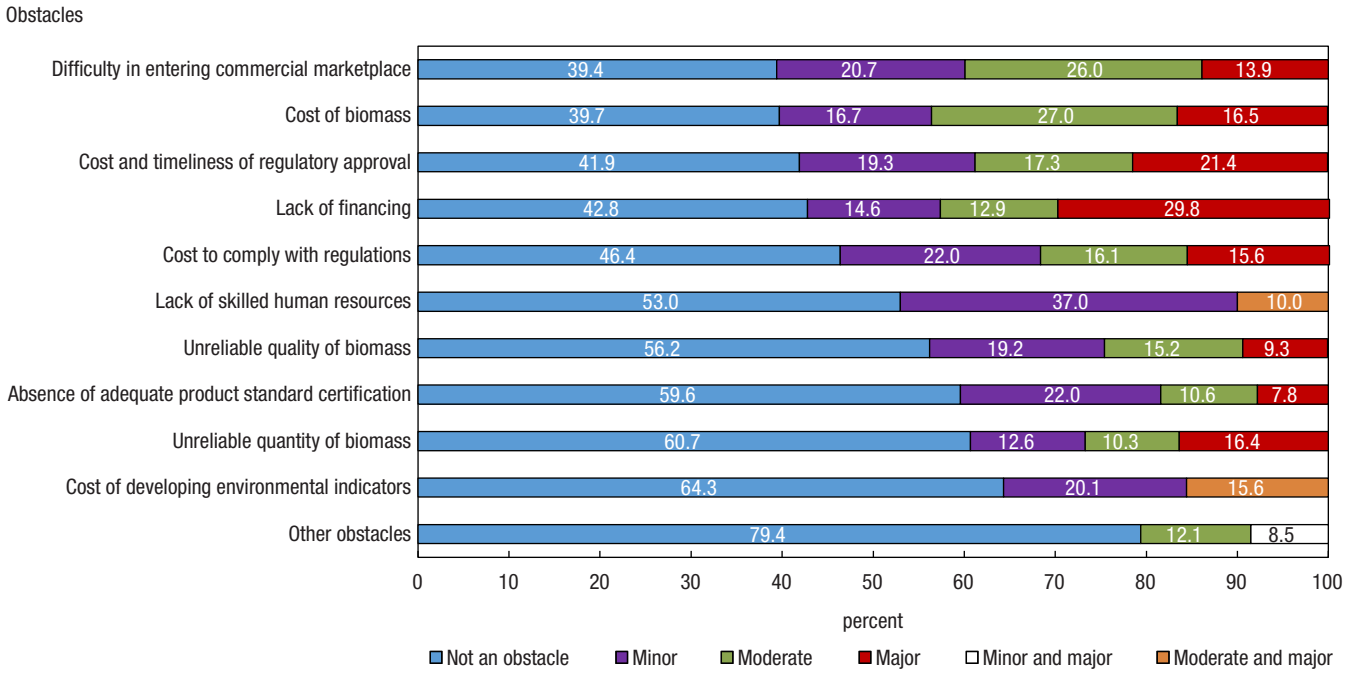
Nationally, the most important reasons given in deciding to collaborate with partners, were to access outside scientific expertise/knowledge (80.4%) and to perform R&D (66.5%).[44] All medium-sized establishments indicated that access to outside scientific expertise/knowledge, access to capital and cost-effectiveness were their main reasons for collaboration.

39. Statistics Canada, Bioproducts Production and Development Survey 2015, table A.50.1.
40. Statistics Canada, Bioproducts Production and Development Survey 2015, table A.53.
41. Statistics Canada, Bioproducts Production and Development Survey 2015, table A.52.1.
42. Statistics Canada, Bioproducts Production and Development Survey 2015, table A.39.
43. Statistics Canada, Bioproducts Production and Development Survey 2015, table A.40.1.
44. Statistics Canada, Bioproducts Production and Development Survey 2015, table A.41.1 and 41.2.

Challenges

In 2015, the five most cited obstacles (Chart 9) faced by all bioproduct establishments were the difficulty in entering the commercial marketplace, the cost of biomass, the cost and timeliness of regulatory approval, lack of financing and the cost to comply with regulations. However, lack of financing was identified as the "major" challenge faced by many establishments. About 30% of all establishments identified this as a major obstacle, followed by the cost and timeliness of regulatory approval (21.4%), the cost of biomass (16.5%) and the unreliable quantity of biomass (16.4%).[45]

Chart 9
Obstacles faced by bioproduct establishments, 2015



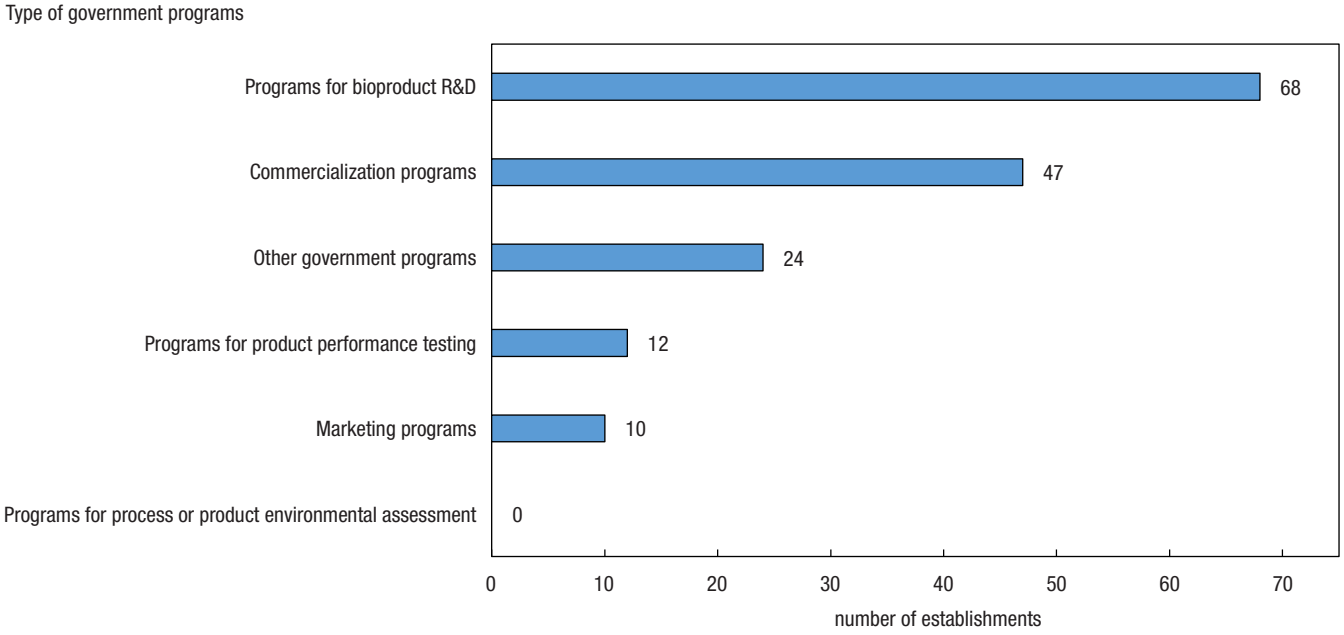
Source: Statistics Canada, 2015 Bioproducts Production and Development Survey, Table A.24.1.

However, over 50% of establishments indicated that the cost of developing environmental indicators (64.3%), the unreliable quantity of biomass (60.7%), the absence of adequate product standard certification (59.6%), the unreliable quality of biomass (56.2%) and the lack of skilled human resources (53.0%) were not challenges for them.[46]

Chart 10 shows the number of establishments that applied for federal, provincial and municipal government programs. The two most common programs applied for were bioproduct R&D programs (68 establishments applied) and commercialization programs (47 establishments applied).

45. Statistics Canada, Bioproducts Production and Development Survey 2015, table A.24.1.
46. In considering these responses, the reader may want to keep in mind that the survey population includes establishments at different stages in the development in their bioproducts, as well as the broad range of products establishments are producing or developing.

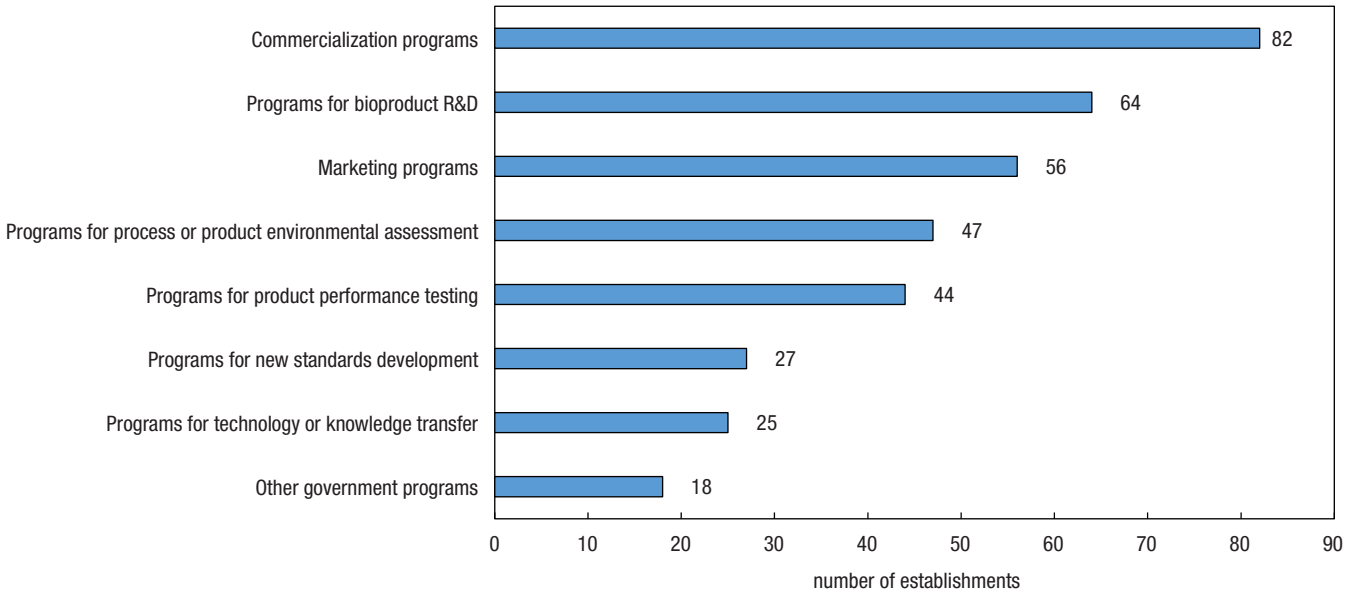
Chart 10
Types of government programs applied for by bioproduct establishments, in the past five fiscal years



Source: Statistics Canada, 2015 Bioproducts Production and Development Survey, Table A.60.

Chart 11 shows the types of programs or incentives that would be beneficial for bioproduct establishments. Commercialization programs were identified as being the most beneficial programs for bioproduct establishments over the next five years. This was followed by programs for bioproduct R&D and marketing programs. Considering that entering the commercial marketplace was reported to be the main challenge, it is no surprise that commercialization programs and incentives were identified as being the most helpful to bioproduct establishments.

Chart 11
Government programs or incentives that would be beneficial to bioproduct establishments for the next five fiscal years



Source: Statistics Canada, 2015 Bioproducts Production and Development Survey, Table A.61.1.

Conclusion

The 2015 Bioproducts Production and Development Survey focused on bioproduct establishments that produced and developed bioproducts from biomass in a non-conventional way with the aim of selling these bioproducts. This survey reflects results relating to those "specific" bioproducts only and omits a great range of conventional bioproducts.

One hundred ninety (190) bioproduct establishments were found to be in-scope for the survey. Such establishments were diversified and spread across Canada. A large spectrum of bioproduct activities were found, including biofuels, bioenergy, organic chemicals, materials and composites. Intermediary products (i.e., biochemicals and biomaterials) were also reported.

In 2015, bioproduct establishments included a sizable number of young (in operation for 10 years or less) establishments. Moreover, many new entrants into bioproduct production and development were of mature age (in operation for 21+ years). Although the primary source of bioproduct sales in 2015 was biofuels, sales also came from a wide range of bioproduct categories.

Canada's bioproducts were sold in the domestic market, the United States, Europe and Asia. A greater proportion of sales were in the domestic market; the United States was the main export market.

The research intensity (R&D divided by establishments' bioproducts sales) of in-house research into bioproducts (including biomass) by bioproduct establishments was 2.1%.

Establishments expanded their research and innovative capacity through external avenues, such as collaborative or cooperative arrangements with other partners, using research incentive programs (e.g., SE&RD and IRAP). In 2015, many establishments had collaborative arrangements. Most of them were with other establishments and with academic institutions, both in Canada and other countries. Those collaborations had the main goal of accessing outside scientific expertise and knowledge, along with undertaking R&D.

The major critical challenge identified in 2015 by bioproduct establishments was lack of financing and the main reason behind seeking additional financing was undertaking R&D and developing proof of concept (or for a pilot project).

Statistics Canada's 2015 Bioproducts Production and Development Survey attempted to survey all establishments in Canada that used biomass feedstock resources in innovative or novel ways for commercial purposes. The paper's main objective was to provide an overview of the Canadian bioproducts sector, including the size and scope of activities conducted by bioproduct establishments. The survey was designed to present data on the Canadian bioproducts sector by region and establishment size.

Comparing to previous surveys

A similar survey was also conducted by Statistics Canada for reference years 2003, 2006 and 2009. Given the different survey designs, each iteration needs to be considered separately and not be treated as part of a time-series. The main objective of these surveys is to measure the bioproducts sector in Canada for a specific reference period.

The extent of any attempt to compare survey iterations requires consideration of two aspects:

- changes related to the survey methodologies, including frame, sampling method, edits, imputation and weighting
- changes related to questionnaire content and concept definitions.

As bioproducts in Canada continue to be an evolving and emerging concern, identifying the target population undertaking bioproduct-related activities is challenging. Specific questions relating to the types of bioproducts and biomass used, in order for establishments to self-identify as belonging to the population, reduced the number of in-scope units. The identification of the target population and the list of establishments differed for each iteration of the bioproducts survey. The fact that the survey uses a census approach does not guarantee a census population.

Changes in questionnaire content included modifications to the questionnaire design and modifications to reflect the realities of the market. Furthermore, questions were removed, revised or incorporated according to lessons learned from previous survey iterations and their relevance at the time of the survey.

The development of bioproducts for novel uses of biomass continues to evolve, and such definitions are continually evolving. As these definitions are adjusted, the survey must also adapt to recent bioproduct developments. A strict definition format would make it challenging to keep each survey iteration relevant as well as comparable.

Annexes

Table A.1
Profile of bioproduct establishments, by region and establishments size, 2015

Region	Establishments in bioproduct	Employees working in bioproducts	Revenues from sales of bioproducts (2015)	Bioproduct-related R&D expenses (2015)
	number		$ thousands	
Canada	190[B]	4,118[D]	4,268,941[D]	72,978[D]
Atlantic provinces	21[D]	51[E]	35[E]	1,399[E]
Quebec	41[C]	1,370[E]	1,103,150[E]	17,761[E]
Ontario	59[B]	1,662[D]	1,894,151[E]	45,691[E]
Prairies	43[C]	587[D]	1,178,777[E]	3,502[E]
British Columbia	26[D]	447[D]	92,828[E]	4,625[D]
Size				
Small (less than 50 employees)	135[B]	1,572[C]	x	44,389[D]
Medium (50 to 149 employees)	26[D]	1,339[D]	2,024,223[E]	26,379[E]
Large (more than 149 employees)	29[D]	1,207[E]	x	2,209[E]

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

B : [0.050 < CV ≤ 0.100]
C : [0.100 < CV ≤ 0.150]
D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.2.1
Quantity of biomass used by bioproduct establishments, by biomass type and region, 2015

Region	Establishments using biomass, by type	Quantity of biomass used (metric tonnes), by type
	number	metric tonnes
Canada		
Agricultural Biomass	104 [B]	8,768,015 [D]
Grain and oilseeds	46 [C]	8,676,586 [D]
Wheat grain	14 [E]	x
Corn grain	31 [D]	5,579,442 [E]
Canola seed or rapeseed	11 [E]	x
Other grains and oilseeds	12 [E]	x
Other field crop materials	66 [C]	77,889 [E]
Wheat crop residue	11 [E]	x
Horticulture crops	12 [E]	x
Other (crop materials and residues, forages, etc.)	61 [C]	x
Primary livestock products and by-products	16 [E]	13,540 [E]
Milk and milk solids	x	x
Livestock manure	x	x
Other primary livestock products or by-products	x	x
Forestry biomass	74 [C]	12,314,424 [E]
Forest residue	40 [D]	x
Mill processing residue	63 [C]	8,532,225 [D]
Round wood	13 [E]	x
Other forestry biomass (excludes urban wood residue)	20 [D]	x
Other products and by-products	74 [C]	x
Marine and aquaculture materials or products where	15 [E]	1,864 [E]
Food processing, slaughter and rendering by-products	23 [D]	623,774 [E]
Food service by-products	26 [D]	63,647 [E]
Other biomass (includes municipal organic solid waste)	35 [D]	x
Atlantic provinces		
Agricultural Biomass	15 [E]	x
Grain and oilseeds	x	17 [E]
Wheat grain	0	..
Corn grain	x	17 [E]
Canola seed or rapeseed	0	..
Other grains and oilseeds	0	..
Other field crop materials	x	x
Wheat crop residue	0	..
Horticulture crops	0	..
Other (crop materials and residues, forages, etc.)	x	x
Primary livestock products and by-products	0	..
Milk and milk solids	0	..
Livestock manure	0	..
Other primary livestock products or by-products	0	..
Forestry biomass	x	0
Forest residue	0	..
Mill processing residue	x	0
Round wood	0	..
Other forestry biomass (excludes urban wood residue)	0	..
Other products and by-products	x	403,646 [E]
Marine and aquaculture materials or products where	x	67 [E]
Food processing, slaughter and rendering by-products	x	402,572 [E]
Food service by-products	0	..
Other biomass (includes municipal organic solid waste)	x	1,006 [E]

Table A.2.1
Quantity of biomass used by bioproduct establishments, by biomass type and region, 2015

Region	Establishments using biomass, by type	Quantity of biomass used (metric tonnes), by type
	number	metric tonnes
Quebec		
Agricultural Biomass	12 [E]	x
Grain and oilseeds	x	x
Wheat grain	0	..
Corn grain	x	x
Canola seed or rapeseed	x	x
Other grains and oilseeds	x	x
Other field crop materials	7 [E]	x
Wheat crop residue	0	..
Horticulture crops	x	0
Other (crop materials and residues, forages, etc.)	x	x
Primary livestock products and by-products	x	x
Milk and milk solids	x	x
Livestock manure	x	x
Other primary livestock products or by-products	x	x
Forestry biomass	17 [D]	x
Forest residue	x	x
Mill processing residue	13 [E]	x
Round wood	0	..
Other forestry biomass (excludes urban wood residue)	x	x
Other products and by-products	22 [D]	x
Marine and aquaculture materials or products where	7 [E]	x
Food processing, slaughter and rendering by-products	x	x
Food service by-products	9 [E]	x
Other biomass (includes municipal organic solid waste)	x	x
Ontario		
Agricultural Biomass	38 [C]	x
Grain and oilseeds	17 [E]	x
Wheat grain	x	x
Corn grain	x	x
Canola seed or rapeseed	0	..
Other grains and oilseeds	x	x
Other field crop materials	28 [D]	x
Wheat crop residue	x	x
Horticulture crops	x	x
Other (crop materials and residues, forages, etc.)	23 [D]	x
Primary livestock products and by-products	9 [E]	x
Milk and milk solids	x	x
Livestock manure	x	x
Other primary livestock products or by-products	0	..
Forestry biomass	19 [D]	x
Forest residue	x	x
Mill processing residue	17 [E]	x
Round wood	x	0
Other forestry biomass (excludes urban wood residue)	x	x
Other products and by-products	25 [D]	328,527 [E]
Marine and aquaculture materials or products where	x	0
Food processing, slaughter and rendering by-products	x	x
Food service by-products	10 [E]	x
Other biomass (includes municipal organic solid waste)	16 [E]	x

Table A.2.1
Quantity of biomass used by bioproduct establishments, by biomass type and region, 2015

Region	Establishments using biomass, by type	Quantity of biomass used (metric tonnes), by type
	number	metric tonnes
Prairies		
Agricultural Biomass	34 [C]	3,377,550 [E]
Grain and oilseeds	21 [D]	3,377,054 [E]
Wheat grain	x	x
Corn grain	9 [E]	x
Canola seed or rapeseed	x	x
Other grains and oilseeds	x	x
Other field crop materials	13 [E]	496 [E]
Wheat crop residue	x	x
Horticulture crops	0	..
Other (crop materials and residues, forages, etc.)	x	x
Primary livestock products and by-products	0	..
Milk and milk solids	0	..
Livestock manure	0	..
Other primary livestock products or by-products	0	..
Forestry biomass	x	x
Forest residue	13 [E]	x
Mill processing residue	x	x
Round wood	x	0
Other forestry biomass (excludes urban wood residue)	x	x
Other products and by-products	x	x
Marine and aquaculture materials or products where	x	0
Food processing, slaughter and rendering by-products	x	x
Food service by-products	x	0
Other biomass (includes municipal organic solid waste)	x	x
British Columbia		
Agricultural Biomass	5 [E]	x
Grain and oilseeds	0	..
Wheat grain	0	..
Corn grain	0	..
Canola seed or rapeseed	0	..
Other grains and oilseeds	0	..
Other field crop materials	x	x
Wheat crop residue	x	x
Horticulture crops	0	..
Other (crop materials and residues, forages, etc.)	x	x
Primary livestock products and by-products	x	x
Milk and milk solids	x	x
Livestock manure	0	..
Other primary livestock products or by-products	0	..
Forestry biomass	19 [D]	x
Forest residue	12 [D]	x
Mill processing residue	16 [D]	x
Round wood	x	x
Other forestry biomass (excludes urban wood residue)	x	0
Other products and by-products	9 [E]	x
Marine and aquaculture materials or products where	x	x
Food processing, slaughter and rendering by-products	x	0
Food service by-products	x	x
Other biomass (includes municipal organic solid waste)	x	x

.. not available for a specific reference period
x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

B : [0.050 < CV ≤ 0.100]
C : [0.100 < CV ≤ 0.150]
D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.2.2
Quantity of biomass used by bioproduct establishments, by biomass type and establishments size, 2015

Size	Establishments using Biomass, by type	Quantity of biomass used (metric tonnes), by type
	number	metric tonnes
Small (less than 50 employees)		
Agricultural Biomass	77[C]	4,028,561[E]
Grain and oilseeds	34[D]	x
Wheat grain	14[E]	x
Corn grain	x	x
Canola seed or rapeseed	x	x
Other grains and oilseeds	12[E]	x
Other field crop materials	x	x
Wheat crop residue	x	x
Horticulture crops	12[E]	x
Other (crop materials and residues, forages, etc.)	x	x
Primary livestock products and by-products	x	x
Milk and milk solids	x	x
Livestock manure	x	x
Other primary livestock products or by-products	x	x
Forestry biomass	44[D]	x
Forest residue	23[D]	x
Mill processing residue	34[D]	x
Round wood	x	0
Other forestry biomass (excludes urban wood residue)	x	x
Other products and by-products	65[C]	503,464[E]
Marine and aquaculture materials or products where	15[E]	1,864[E]
Food processing, slaughter and rendering by-products	x	221,202[E]
Food service by-products	26[D]	63,647[E]
Other biomass (includes municipal organic solid waste)	x	216,751[E]
Medium (50 to 149 employees)		
Agricultural Biomass	17[E]	x
Grain and oilseeds	13[E]	x
Wheat grain	0	..
Corn grain	x	x
Canola seed or rapeseed	x	x
Other grains and oilseeds	0	..
Other field crop materials	x	x
Wheat crop residue	x	x
Horticulture crops	0	..
Other (crop materials and residues, forages, etc.)	x	x
Primary livestock products and by-products	x	x
Milk and milk solids	x	x
Livestock manure	0	..
Other primary livestock products or by-products	0	..
Forestry biomass	11[E]	x
Forest residue	x	x
Mill processing residue	11[E]	x
Round wood	0	..
Other forestry biomass (excludes urban wood residue)	x	x
Other products and by-products	0	..
Marine and aquaculture materials or products where	0	..
Food processing, slaughter and rendering by-products	0	..
Food service by-products	0	..
Other biomass (includes municipal organic solid waste)	0	..

Table A.2.2
Quantity of biomass used by bioproduct establishments, by biomass type and establishments size, 2015

Size	Establishments using Biomass, by type	Quantity of biomass used (metric tonnes), by type
	number	metric tonnes
Large (more than 149 employees)		
Agricultural Biomass	10 [E]	x
Grain and oilseeds	0	..
Wheat grain	0	..
Corn grain	0	..
Canola seed or rapeseed	0	..
Other grains and oilseeds	0	..
Other field crop materials	10 [E]	x
Wheat crop residue	0	..
Horticulture crops	0	..
Other (crop materials and residues, forages, etc.)	10 [E]	x
Primary livestock products and by-products	0	..
Milk and milk solids	0	..
Livestock manure	0	..
Other primary livestock products or by-products	0	..
Forestry biomass	19 [D]	10,829,338 [E]
Forest residue	x	x
Mill processing residue	19 [D]	x
Round wood	x	x
Other forestry biomass (excludes urban wood residue)	x	x
Other products and by-products	9 [E]	x
Marine and aquaculture materials or products where	0	..
Food processing, slaughter and rendering by-products	x	402,572 [E]
Food service by-products	0	..
Other biomass (includes municipal organic solid waste)	x	x

.. not available for a specific reference period
x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

C : [0.100 < CV ≤ 0.150]
D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.3.1
Number of bioproduct establishments involved in bioproduct-related activities, by product type and region, 2015

Region	Establishments number
Canada	
Biofuel	111 [B]
Ethanol for fuel	30 [D]
Biodiesel for fuel	29 [D]
Gaseous fuels	24 [D]
Black pellets	7 [E]
Biochar	21 [D]
Other biofuel	33 [D]
Bioenergy	40 [D]
Organic chemicals	27 [D]
Materials and composites	33 [D]
Composites	15 [E]
Bioplastics	12 [E]
Agri-based or wood composites	9 [E]
Other materials and composites	14 [E]
Intermediary biochemical and biomaterials	38 [D]
Lignin	12 [E]
C5 and C6 sugars	8 [E]
Other Intermediary biochemical and biomaterials	24 [D]
Other bioproducts	21 [E]
Atlantic provinces	
Biofuel	x
Ethanol for fuel	x
Biodiesel for fuel	x
Gaseous fuels	x
Black pellets	0
Biochar	0
Other biofuel	x
Bioenergy	0
Organic chemicals	0
Materials and composites	0
Composites	0
Bioplastics	0
Agri-based or wood composites	0
Other materials and composites	0
Intermediary biochemical and biomaterials	x
Lignin	0
C5 and C6 sugars	0
Other Intermediary biochemical and biomaterials	x
Other bioproducts	x
Quebec	
Biofuel	x
Ethanol for fuel	x
Biodiesel for fuel	9 [E]
Gaseous fuels	x
Black pellets	x
Biochar	x
Other biofuel	x
Bioenergy	8 [E]
Organic chemicals	15 [D]
Materials and composites	9 [E]
Composites	x
Bioplastics	0
Agri-based or wood composites	x
Other materials and composites	x
Intermediary biochemical and biomaterials	x
Lignin	x
C5 and C6 sugars	0
Other Intermediary biochemical and biomaterials	9 [E]
Other bioproducts	x

Table A.3.1
Number of bioproduct establishments involved in bioproduct-related activities, by product type and region, 2015

Region	Establishments number
Ontario	
Biofuel	38 [C]
Ethanol for fuel	15 [E]
Biodiesel for fuel	7 [E]
Gaseous fuels	x
Black pellets	0
Biochar	x
Other biofuel	x
Bioenergy	x
Organic chemicals	x
Materials and composites	x
Composites	x
Bioplastics	x
Agri-based or wood composites	x
Other materials and composites	x
Intermediary biochemical and biomaterials	11 [E]
Lignin	x
C5 and C6 sugars	x
Other Intermediary biochemical and biomaterials	x
Other bioproducts	11 [E]
Prairies	
Biofuel	23 [D]
Ethanol for fuel	11 [E]
Biodiesel for fuel	6 [E]
Gaseous fuels	x
Black pellets	0
Biochar	x
Other biofuel	x
Bioenergy	11 [E]
Organic chemicals	0
Materials and composites	9 [E]
Composites	x
Bioplastics	x
Agri-based or wood composites	x
Other materials and composites	x
Intermediary biochemical and biomaterials	x
Lignin	0
C5 and C6 sugars	x
Other Intermediary biochemical and biomaterials	x
Other bioproducts	x

Table A.3.1
Number of bioproduct establishments involved in bioproduct-related activities, by product type and region, 2015

Region	Establishments number
British Columbia	
Biofuel	16 [D]
Ethanol for fuel	x
Biodiesel for fuel	x
Gaseous fuels	x
Black pellets	x
Biochar	5 [E]
Other biofuel	12 [E]
Bioenergy	x
Organic chemicals	x
Materials and composites	x
Composites	x
Bioplastics	x
Agri-based or wood composites	0
Other materials and composites	x
Intermediary biochemical and biomaterials	6 [E]
Lignin	x
C5 and C6 sugars	0
Other Intermediary biochemical and biomaterials	x
Other bioproducts	0

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution
B : [0.050 < CV ≤ 0.100]
C : [0.100 < CV ≤ 0.150]
D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.3.2
Number of bioproduct establishments involved in bioproduct-related activities, by product type and establishments size, 2015

Size	Establishments number
Small (less than 50 employees)	
Biofuel	80 [C]
Ethanol for fuel	18 [D]
Biodiesel for fuel	23 [D]
Gaseous fuels	17 [E]
Black pellets	x
Biochar	x
Other biofuel	24 [D]
Bioenergy	x
Organic chemicals	18 [D]
Materials and composites	24 [D]
Composites	x
Bioplastics	x
Agri-based or wood composites	9 [E]
Other materials and composites	x
Intermediary biochemical and biomaterials	28 [D]
Lignin	x
C5 and C6 sugars	x
Other Intermediary biochemical and biomaterials	x
Other bioproducts	x
Medium (50 to 149 employees)	
Biofuel	18 [E]
Ethanol for fuel	12 [E]
Biodiesel for fuel	x
Gaseous fuels	0
Black pellets	x
Biochar	x
Other biofuel	x
Bioenergy	x
Organic chemicals	x
Materials and composites	x
Composites	x
Bioplastics	x
Agri-based or wood composites	0
Other materials and composites	0
Intermediary biochemical and biomaterials	x
Lignin	x
C5 and C6 sugars	x
Other Intermediary biochemical and biomaterials	0
Other bioproducts	0

Table A.3.2
Number of bioproduct establishments involved in bioproduct-related activities, by product type and establishments size, 2015

	Establishments
Size	number
Large (more than 149 employees)	
Biofuel	14 [E]
Ethanol for fuel	0
Biodiesel for fuel	x
Gaseous fuels	8 [E]
Black pellets	x
Biochar	x
Other biofuel	x
Bioenergy	17 [D]
Organic chemicals	x
Materials and composites	x
Composites	x
Bioplastics	x
Agri-based or wood composites	0
Other materials and composites	x
Intermediary biochemical and biomaterials	x
Lignin	x
C5 and C6 sugars	0
Other Intermediary biochemical and biomaterials	x
Other bioproducts	x

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

C : [0.100 < CV ≤ 0.150]
D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.4
Number of bioproduct establishments involved in other bioproduct-related activities, by region and establishments size, 2015

Region	Establishments participating in other types of bioproduct-related activities
	number
Canada	
Production and development of bioproducts from other bioproducts	75 [C]
Providing services to developers or producers of bioproducts	38 [D]
Providing technology or equipment to developers or producers of bioproducts	19 [D]
Other involvement with bioproducts	11 [E]
None of the activities above	84 [C]
Atlantic provinces	
Production and development of bioproducts from other bioproducts	x
Providing services to developers or producers of bioproducts	x
Providing technology or equipment to developers or producers of bioproducts	0
Other involvement with bioproducts	0
None of the activities above	x
Quebec	
Production and development of bioproducts from other bioproducts	20 [D]
Providing services to developers or producers of bioproducts	8 [E]
Providing technology or equipment to developers or producers of bioproducts	x
Other involvement with bioproducts	x
None of the activities above	15 [D]
Ontario	
Production and development of bioproducts from other bioproducts	25 [D]
Providing services to developers or producers of bioproducts	17 [E]
Providing technology or equipment to developers or producers of bioproducts	x
Other involvement with bioproducts	x
None of the activities above	22 [D]
Prairies	
Production and development of bioproducts from other bioproducts	17 [D]
Providing services to developers or producers of bioproducts	x
Providing technology or equipment to developers or producers of bioproducts	x
Other involvement with bioproducts	x
None of the activities above	19 [D]
British Columbia	
Production and development of bioproducts from other bioproducts	x
Providing services to developers or producers of bioproducts	x
Providing technology or equipment to developers or producers of bioproducts	x
Other involvement with bioproducts	x
None of the activities above	x
Size	
Small (less than 50 employees)	
Production and development of bioproducts from other bioproducts	63 [C]
Providing services to developers or producers of bioproducts	28 [D]
Providing technology or equipment to developers or producers of bioproducts	13 [E]
Other involvement with bioproducts	7 [E]
None of the activities above	52 [C]
Medium (50 to 149 employees)	
Production and development of bioproducts from other bioproducts	x
Providing services to developers or producers of bioproducts	x
Providing technology or equipment to developers or producers of bioproducts	x
Other involvement with bioproducts	x
None of the activities above	14 [E]
Large (more than 149 employees)	
Production and development of bioproducts from other bioproducts	x
Providing services to developers or producers of bioproducts	x
Providing technology or equipment to developers or producers of bioproducts	x
Other involvement with bioproducts	x
None of the activities above	18 [E]

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

C : [0.100 < CV ≤ 0.150]
D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.5
Number of bioproduct establishments, by number of years in operation in Canada, region and establishments size, 2015

Region	0 to 5 years	6 to 10 years	11 to 15 years	16 to 20 years	21+ years
	number				
Canada	33 [D]	47 [C]	22 [D]	26 [D]	61 [C]
Atlantic provinces	x	x	x	0	x
Quebec	x	x	x	6 [E]	20 [D]
Ontario	12 [E]	16 [E]	7 [E]	11 [E]	12 [E]
Prairies	x	13 [E]	x	9 [E]	13 [E]
British Columbia	x	9 [E]	x	0	x
Size					
Small (less than 50 employees)	33 [D]	39 [D]	22 [D]	19 [D]	22 [D]
Medium (50 to 149 employees)	0	8 [E]	0	7 [E]	10 [E]
Large (more than 149 employees)	0	0	0	0	29 [D]

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

C : [0.100 < CV ≤ 0.150]
D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.6.1
Number of bioproduct establishments originating from a business spin-offs, by type of parent organization and region, 2015

Region	Establishments number
Canada	
Another business	12[E]
Academic institution	x
Government lab or agency	0
Other type of organization	x
Not a spin-off	169[B]
Atlantic provinces	
Another business	x
Academic institution	0
Government lab or agency	0
Other type of organization	0
Not a spin-off	x
Quebec	
Another business	x
Academic institution	x
Government lab or agency	0
Other type of organization	x
Not a spin-off	35[C]
Ontario	
Another business	0
Academic institution	x
Government lab or agency	0
Other type of organization	0
Not a spin-off	x
Prairies	
Another business	x
Academic institution	x
Government lab or agency	0
Other type of organization	0
Not a spin-off	36[C]
British Columbia	
Another business	x
Academic institution	0
Government lab or agency	0
Other type of organization	x
Not a spin-off	x

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

B : [0.050 < CV ≤ 0.100]
C : [0.100 < CV ≤ 0.150]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.6.2
Number of bioproduct establishments originating from a business spin-offs, by type of parent organization and establishments size, 2015

Size	Establishments
	number
Small (less than 50 employees)	
Another business	12 [E]
Academic institution	x
Government lab or agency	0
Other type of organization	x
Not a spin-off	x
Medium (50 to 149 employees)	
Another business	0
Academic institution	x
Government lab or agency	0
Other type of organization	x
Not a spin-off	x
Large (more than 149 employees)	
Another business	..
Academic institution	..
Government lab or agency	..
Other type of organization	..
Not a spin-off	29 [D]

.. not available for a specific reference period
x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.7.1
Number of bioproduct establishments by type of legal entity and region, 2015

Region	Private corporations	Publically traded corporations	Sole proprietorship	Others
	number			
Canada	133 [B]	38 [D]	x	x
Atlantic provinces	x	0	0	x
Quebec	29 [C]	x	x	x
Ontario	47 [C]	x	0	x
Prairies	28 [D]	15 [E]	0	0
British Columbia	x	9 [E]	0	x

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

B : [0.050 < CV ≤ 0.100]
C : [0.100 < CV ≤ 0.150]
D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.7.2
Number of bioproduct establishments by type of legal entity and establishments size, 2015

Size	Private corporations	Publically traded corporations	Sole proprietorship	Others
	number			
Small (less than 50 employees)	95 [B]	x	x	x
Medium (50 to 149 employees)	x	x	0	0
Large (more than 149 employees)	x	10 [E]	0	x

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

B : [0.050 < CV ≤ 0.100]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.8.1
Number of bioproduct establishments that are subsidiaries, by location of ultimate parent and region, 2015

Region	Ultimate parent located in Canada	Ultimate parent located in the United States	Ultimate parent located in other country	Not a subsidiary
	number			
Canada	35 [D]	14 [E]	10 [E]	131 [B]
Atlantic provinces	x	0	0	x
Quebec	x	x	x	29 [C]
Ontario	11 [E]	x	x	42 [C]
Prairies	9 [E]	9 [E]	x	x
British Columbia	x	0	0	x

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

B : [0.050 < CV ≤ 0.100]
C : [0.100 < CV ≤ 0.150]
D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.8.2
Number of bioproduct establishments that are subsidiaries, by location of ultimate parent and establishment size, 2015

Size	Ultimate parent located in Canada	Ultimate parent located in the United States	Ultimate parent located in other country	Not a subsidiary
	number			
Small (less than 50 employees)	21 [D]	x	x	105 [B]
Medium (50 to 149 employees)	x	x	x	16 [E]
Large (more than 149 employees)	x	x	x	10 [E]

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[E] use with caution

B : [0.050 < CV ≤ 0.100]
D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.9
Number of bioproduct establishments located in bio-based clusters, by region and establishment size, 2015

Region	Located in a bio-based cluster	Not located in a bio-based cluster
	number	
Canada	19 [D]	171 [B]
Atlantic provinces	x	x
Quebec	..	41 [C]
Ontario	x	x
Prairies	9 [E]	34 [C]
British Columbia	x	x
Size		
Small (less than 50 employees)	12 [E]	122 [B]
Medium (50 to 149 employees)	x	x
Large (more than 149 employees)	x	x

.. not available for a specific reference period
x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

B : [0.050 < CV ≤ 0.100]
C : [0.100 < CV ≤ 0.150]
D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.10.1
Revenue breakdown of bioproduct establishments, by region, 2015

Region	2014	2015
	$ thousands	
Canada		
Total sales of bioproducts	4,530,539 [D]	4,268,941 [D]
Revenues from bioproducts, domestic	3,246,069 [D]	2,850,886 [D]
Revenues from bioproducts, exported	1,284,470 [E]	1,418,055 [E]
Other revenue	6,400,991 [D]	6,663,725 [D]
Total revenues	10,931,530 [D]	10,932,666 [D]
Atlantic provinces		
Total sales of bioproducts	0	35 [E]
Revenues from bioproducts, domestic	0	35 [E]
Revenues from bioproducts, exported	0	0
Other revenue	1,395,485 [E]	1,544,746 [E]
Total revenues	1,395,485 [E]	1,544,781 [E]
Quebec		
Total sales of bioproducts	1,131,021 [E]	1,103,150 [E]
Revenues from bioproducts, domestic	x	x
Revenues from bioproducts, exported	x	x
Other revenue	474,124 [E]	397,974 [E]
Total revenues	1,605,144 [E]	1,501,124 [E]
Ontario		
Total sales of bioproducts	1,972,176 [E]	1,894,151 [E]
Revenues from bioproducts, domestic	1,559,642 [E]	1,404,049 [E]
Revenues from bioproducts, exported	412,534 [E]	490,102 [E]
Other revenue	227,235 [E]	266,912 [E]
Total revenues	2,199,411 [E]	2,161,063 [E]
Prairies		
Total sales of bioproducts	1,389,789 [E]	1,178,777 [E]
Revenues from bioproducts, domestic	x	x
Revenues from bioproducts, exported	x	x
Other revenue	2,902,642 [E]	3,056,620 [E]
Total revenues	4,292,431 [E]	4,235,397 [E]
British Columbia		
Total sales of bioproducts	37,553 [E]	92,828 [E]
Revenues from bioproducts, domestic	x	x
Revenues from bioproducts, exported	x	x
Other revenue	1,401,505 [E]	1,397,472 [E]
Total revenues	1,439,058 [E]	1,490,301 [E]

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.10.2
Revenue breakdown of bioproduct establishments, by establishment size, 2015

Size	2014	2015
	$ thousands	
Small (less than 50 employees)		
Total sales of bioproducts	1,775,971 [E]	x
Revenues from bioproducts, domestic	x	x
Revenues from bioproducts, exported	x	x
Other revenue	288,118 [E]	x
Total revenues	2,064,089 [E]	1,873,005 [D]
Medium (50 to 149 employees)		
Total sales of bioproducts	2,118,744 [E]	2,024,223 [E]
Revenues from bioproducts, domestic	1,699,094 [E]	1,516,537 [E]
Revenues from bioproducts, exported	419,651 [E]	507,686 [E]
Other revenue	275,639 [E]	267,784 [E]
Total revenues	2,394,383 [E]	2,292,007 [E]
Large (more than 149 employees)		
Total sales of bioproducts	635,823 [E]	x
Revenues from bioproducts, domestic	x	x
Revenues from bioproducts, exported	x	x
Other revenue	5,837,234 [D]	x
Total revenues	6,473,057 [D]	6,767,654 [D]

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[E] use with caution
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Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.11.1
Revenues of bioproduct establishments, by product type and region, 2015

Region	Bioproduct revenue $ thousands
Canada	
Biofuel	2,715,874 E
Ethanol for fuel	2,042,200 E
Biodiesel for fuel	653,450 E
Gaseous fuels	x
Black pellets	0
Biochar	x
Other biofuel	x
Bioenergy	140,027 E
Organic chemicals	x
Materials and composites	x
Composites	349,583 E
Bioplastics	20,966 E
Agri-based or wood composites	x
Other materials and composites	x
Intermediary biochemical and biomaterials	49,529 E
Lignin	x
C5 and C6 sugars	x
Other Intermediary biochemical and biomaterials	x
Other bioproducts	x
Atlantic provinces	
Biofuel	34 E
Ethanol for fuel	..
Biodiesel for fuel	..
Gaseous fuels	..
Black pellets	..
Biochar	..
Other biofuel	34 E
Bioenergy	..
Organic chemicals	..
Materials and composites	..
Composites	..
Bioplastics	..
Agri-based or wood composites	..
Other materials and composites	..
Intermediary biochemical and biomaterials	2 E
Lignin	..
C5 and C6 sugars	..
Other Intermediary biochemical and biomaterials	2 E
Other bioproducts	..
Quebec	
Biofuel	374,398 E
Ethanol for fuel	279,592 E
Biodiesel for fuel	94,592 E
Gaseous fuels	0
Black pellets	0
Biochar	214 E
Other biofuel	0
Bioenergy	38,799 E
Organic chemicals	45,608 E
Materials and composites	x
Composites	..
Bioplastics	..
Agri-based or wood composites	..
Other materials and composites	x
Intermediary biochemical and biomaterials	x
Lignin	41,734 E
C5 and C6 sugars	..
Other Intermediary biochemical and biomaterials	x
Other bioproducts	0

Table A.11.1
Revenues of bioproduct establishments, by product type and region, 2015

Region	Bioproduct revenue $ thousands
Ontario	
Biofuel	1,215,688 [E]
Ethanol for fuel	1,191,826 [E]
Biodiesel for fuel	17,145 [E]
Gaseous fuels	x
Black pellets	..
Biochar	..
Other biofuel	x
Bioenergy	3,831 [E]
Organic chemicals	x
Materials and composites	370,348 [E]
Composites	349,508 [E]
Bioplastics	20,841 [E]
Agri-based or wood composites	..
Other materials and composites	..
Intermediary biochemical and biomaterials	487 [E]
Lignin	x
C5 and C6 sugars	x
Other Intermediary biochemical and biomaterials	x
Other bioproducts	x
Prairies	
Biofuel	1,112,103 [E]
Ethanol for fuel	570,763 [E]
Biodiesel for fuel	541,318 [E]
Gaseous fuels	0
Black pellets	..
Biochar	21 [E]
Other biofuel	0
Bioenergy	43,775 [E]
Organic chemicals	..
Materials and composites	199 [E]
Composites	76 [E]
Bioplastics	0
Agri-based or wood composites	x
Other materials and composites	x
Intermediary biochemical and biomaterials	0
Lignin	..
C5 and C6 sugars	..
Other Intermediary biochemical and biomaterials	0
Other bioproducts	x

Table A.11.1
Revenues of bioproduct establishments, by product type and region, 2015

Region	Bioproduct revenue $ thousands
British Columbia	
Biofuel	13,652 [E]
Ethanol for fuel	18 [D]
Biodiesel for fuel	394 [D]
Gaseous fuels	0
Black pellets	0
Biochar	x
Other biofuel	x
Bioenergy	53,622 [E]
Organic chemicals	0
Materials and composites	125 [E]
Composites	0
Bioplastics	125 [E]
Agri-based or wood composites	..
Other materials and composites	0
Intermediary biochemical and biomaterials	x
Lignin	5 [D]
C5 and C6 sugars	..
Other Intermediary biochemical and biomaterials	x
Other bioproducts	..

.. not available for a specific reference period
x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution
D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.11.2
Revenues of bioproduct establishments, by product type and establishment size, 2015

Size	Bioproduct revenue $ thousands
Small (less than 50 employees)	
Biofuel	1,355,008 [E]
Ethanol for fuel	721,967 [E]
Biodiesel for fuel	x
Gaseous fuels	x
Black pellets	x
Biochar	x
Other biofuel	x
Bioenergy	x
Organic chemicals	x
Materials and composites	x
Composites	x
Bioplastics	x
Agri-based or wood composites	x
Other materials and composites	x
Intermediary biochemical and biomaterials	x
Lignin	x
C5 and C6 sugars	x
Other Intermediary biochemical and biomaterials	x
Other bioproducts	x
Medium (50 to 149 employees)	
Biofuel	x
Ethanol for fuel	x
Biodiesel for fuel	x
Gaseous fuels	..
Black pellets	..
Biochar	..
Other biofuel	..
Bioenergy	x
Organic chemicals	x
Materials and composites	x
Composites	x
Bioplastics	20,841 [E]
Agri-based or wood composites	..
Other materials and composites	..
Intermediary biochemical and biomaterials	0
Lignin	..
C5 and C6 sugars	0
Other Intermediary biochemical and biomaterials	..
Other bioproducts	..

Table A.11.2
Revenues of bioproduct establishments, by product type and establishment size, 2015

Size	Bioproduct revenue $ thousands
Large (more than 149 employees)	
Biofuel	x
Ethanol for fuel	..
Biodiesel for fuel	x
Gaseous fuels	x
Black pellets	x
Biochar	x
Other biofuel	x
Bioenergy	x
Organic chemicals	x
Materials and composites	x
Composites	x
Bioplastics	x
Agri-based or wood composites	..
Other materials and composites	x
Intermediary biochemical and biomaterials	x
Lignin	x
C5 and C6 sugars	..
Other Intermediary biochemical and biomaterials	0
Other bioproducts	0

.. not available for a specific reference period
x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.12.1
Expense breakdown of bioproduct establishments, by region, 2015

Region	2014	2015
	$ thousands	
Canada		
Total expenses (all sources)	9,072,034 [D]	8,765,695 [D]
Purchases of biomass for bioproduct-related activity/biomass improvements	2,391,831 [E]	2,313,746 [D]
Wages and salaries	1,049,548 [D]	1,040,415 [D]
Other expenses	5,630,656 [D]	5,411,534 [D]
Atlantic provinces		
Total expenses (all sources)	1,306,384 [E]	1,447,903 [E]
Purchases of biomass for bioproduct-related activity/biomass improvements	8 [E]	x
Wages and salaries	67,863 [E]	75,162 [E]
Other expenses	1,238,512 [E]	x
Quebec		
Total expenses (all sources)	1,225,848 [E]	1,211,572 [E]
Purchases of biomass for bioproduct-related activity/biomass improvements	x	x
Wages and salaries	165,531 [E]	170,705 [E]
Other expenses	x	x
Ontario		
Total expenses (all sources)	1,771,067 [E]	1,806,627 [E]
Purchases of biomass for bioproduct-related activity/biomass improvements	946,217 [E]	1,025,826 [E]
Wages and salaries	132,062 [D]	136,360 [D]
Other expenses	692,787 [E]	644,441 [E]
Prairies		
Total expenses (all sources)	3,538,964 [E]	3,038,687 [E]
Purchases of biomass for bioproduct-related activity/biomass improvements	1,043,533 [E]	904,254 [E]
Wages and salaries	396,743 [E]	360,814 [E]
Other expenses	2,098,688 [E]	1,773,619 [E]
British Columbia		
Total expenses (all sources)	1,229,773 [E]	1,260,906 [E]
Purchases of biomass for bioproduct-related activity/biomass improvements	x	x
Wages and salaries	287,349 [E]	297,374 [E]
Other expenses	x	x

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

D : [$0.150 < CV \leq 0.250$]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.12.2
Expense breakdown of bioproduct establishments, by establishment size, 2015

Size	2014	2015
	$ thousands	
Small (less than 50 employees)		
Total expenses (all sources)	1,881,227 [E]	1,747,412 [E]
Purchases of biomass for bioproduct-related activity/biomass improvements	1,339,166 [E]	1,181,273 [E]
Wages and salaries	112,633 [D]	118,646 [D]
Other expenses	429,428 [D]	447,493 [D]
Medium (50 to 149 employees)		
Total expenses (all sources)	1,734,525 [E]	1,799,417 [E]
Purchases of biomass for bioproduct-related activity/biomass improvements	762,292 [E]	840,817 [E]
Wages and salaries	148,668 [E]	155,909 [E]
Other expenses	823,566 [E]	802,691 [E]
Large (more than 149 employees)		
Total expenses (all sources)	5,456,283 [D]	5,218,865 [D]
Purchases of biomass for bioproduct-related activity/biomass improvements	290,373 [E]	291,656 [E]
Wages and salaries	788,248 [D]	765,859 [D]
Other expenses	4,377,662 [D]	4,161,350 [E]

[E] use with caution

D : [$0.150 < CV \leq 0.250$]

Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.13.1
Wages and salaries paid for main activities by bioproduct establishments, by region, 2015

Region	2014	2015
	$ thousands	
Canada		
Total wages and salaries	1,049,548 [D]	1,040,415 [D]
Bioproduct-related activities	259,823 [D]	268,026 [D]
Biomass improvement-related activities	85,444 [E]	87,005 [E]
Other activities	704,282 [D]	685,384 [D]
Atlantic provinces		
Total wages and salaries	67,863 [E]	75,162 [E]
Bioproduct-related activities	x	4,206 [E]
Biomass improvement-related activities	x	x
Other activities	x	x
Quebec		
Total wages and salaries	165,531 [E]	170,705 [E]
Bioproduct-related activities	x	78,842 [E]
Biomass improvement-related activities	x	3,582 [E]
Other activities	84,671 [E]	88,281 [E]
Ontario		
Total wages and salaries	132,062 [D]	136,360 [D]
Bioproduct-related activities	111,315 [E]	113,094 [E]
Biomass improvement-related activities	11,944 [E]	x
Other activities	8,802 [E]	x
Prairies		
Total wages and salaries	396,743 [E]	360,814 [E]
Bioproduct-related activities	43,366 [E]	42,330 [E]
Biomass improvement-related activities	x	x
Other activities	x	x
British Columbia		
Total wages and salaries	287,349 [E]	297,374 [E]
Bioproduct-related activities	24,437 [E]	29,554 [E]
Biomass improvement-related activities	x	1,939 [E]
Other activities	x	265,881 [E]

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

D : [$0.150 < CV \leq 0.250$]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.13.2
Wages and salaries paid for main activities by bioproduct establishments, by establishment size, 2015

Size	2014	2015
	$ thousands	
Small (less than 50 employees)		
Total wages and salaries	112,633 [D]	118,646 [D]
Bioproduct-related activities	x	x
Biomass improvement-related activities	5,185 [D]	5,294 [D]
Other activities	x	x
Medium (50 to 149 employees)		
Total wages and salaries	148,668 [E]	155,909 [E]
Bioproduct-related activities	96,684 [E]	99,952 [E]
Biomass improvement-related activities	x	x
Other activities	x	x
Large (more than 149 employees)		
Total wages and salaries	788,248 [D]	765,859 [D]
Bioproduct-related activities	x	x
Biomass improvement-related activities	x	x
Other activities	636,515 [D]	613,296 [D]

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

D : [$0.150 < CV \leq 0.250$]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.14
Percentage of bioproduct establishments with in-house research and experimental development (R&D) expenditures in Canada in 2015, by region and establishment size, 2015

Region	In-house research and experimental development (R&D)	No In-house research and experimental development (R&D)
	percent	
Canada	56.5 [B]	43.5 [B]
Atlantic provinces	52.6 [E]	47.4 [E]
Quebec	59.7 [C]	40.3 [C]
Ontario	51.9 [D]	48.1 [D]
Prairies	50.0 [D]	50.0 [D]
British Columbia	75.9 [C]	24.1 [C]
Size		
Small (less than 50 employees)	57.7 [B]	42.3 [B]
Medium (50 to 149 employees)	64.1 [E]	35.9 [E]
Large (more than 149 employees)	44.1 [D]	55.9 [D]

[E] use with caution

B : [0.025 < SE ≤ 0.050]
C : [0.050 < SE ≤ 0.075]
D : [0.075 < SE ≤ 0.100]
Note: Standard Error (SE) threshold.
Preliminary estimates. subject to change.
Due to rounding. components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada. Bioproducts production and development survey 2015.

Table A.15.1
Total in-house research and development (R&D) expenditures by bioproducts establishments in Canada, by region, 2014 and 2015

Region	2014	2015
	$ thousands	
Canada		
Total In-house R&D expenditures	121,611 [D]	112,132 [D]
Current in-house R&D expenditures	90,195 [D]	86,604 [D]
Capital in-house R&D expenditures	31,415 [E]	25,528 [E]
Atlantic provinces		
Total In-house R&D expenditures	2,883 [E]	1,460 [E]
Current in-house R&D expenditures	289 [E]	433 [E]
Capital in-house R&D expenditures	2,594 [E]	1,027 [E]
Quebec		
Total In-house R&D expenditures	26,401 [D]	29,648 [D]
Current in-house R&D expenditures	18,080 [D]	17,999 [D]
Capital in-house R&D expenditures	8,321 [E]	11,649 [E]
Ontario		
Total In-house R&D expenditures	61,293 [E]	60,113 [E]
Current in-house R&D expenditures	55,761 [E]	51,652 [E]
Capital in-house R&D expenditures	5,532 [E]	8,461 [E]
Prairies		
Total In-house R&D expenditures	3,910 [E]	5,557 [E]
Current in-house R&D expenditures	3,667 [E]	4,976 [E]
Capital in-house R&D expenditures	243 [E]	581 [E]
British Columbia		
Total In-house R&D expenditures	27,123 [E]	15,355 [E]
Current in-house R&D expenditures	12,398 [E]	11,546 [E]
Capital in-house R&D expenditures	14,725 [E]	3,810 [E]

[E] use with caution

D : [$0.150 < CV \leq 0.250$]

Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.15.2
Total in-house research and development (R&D) expenditures by bioproducts establishments in Canada, by establishment size, 2014 and 2015

Size	2014	2015
	$ thousands	
Small (less than 50 employees)		
Total In-house R&D expenditures	81,313 [D]	66,983 [D]
Current in-house R&D expenditures	53,738 [E]	46,327 [D]
Capital in-house R&D expenditures	27,575 [E]	20,656 [E]
Medium (50 to 149 employees)		
Total In-house R&D expenditures	30,806 [E]	35,040 [E]
Current in-house R&D expenditures	x	31,067 [E]
Capital in-house R&D expenditures	x	3,973 [E]
Large (more than 149 employees)		
Total In-house R&D expenditures	9,491 [E]	10,109 [E]
Current in-house R&D expenditures	x	9,210 [E]
Capital in-house R&D expenditures	x	899 [E]

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

D : [$0.150 < CV \leq 0.250$]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.16.1
In-house research and development (R&D) expenditures related to bioproducts in Canada, by region, 2014 and 2015

Region	2014	2015
	$ thousands	
Canada		
Total in-house R&D expenditures	121,611 [D]	112,132 [D]
In-house bioproduct-related R&D expenses	75,567 [D]	72,978 [D]
In-house biomass-related R&D expenses	26,050 [E]	18,209 [D]
Other in-house R&D expenses	19,993 [D]	20,945 [D]
Atlantic provinces		
Total in-house R&D expenditures	2,883 [E]	1,460 [E]
In-house bioproduct-related R&D expenses	2,810 [E]	1,399 [E]
In-house biomass-related R&D expenses	40 [E]	36 [E]
Other in-house R&D expenses	34 [E]	25 [E]
Quebec		
Total in-house R&D expenditures	26,401 [D]	29,648 [D]
In-house bioproduct-related R&D expenses	12,842 [E]	17,761 [E]
In-house biomass-related R&D expenses	6,607 [E]	5,257 [E]
Other in-house R&D expenses	6,952 [E]	6,630 [E]
Ontario		
Total in-house R&D expenditures	61,293 [E]	60,113 [E]
In-house bioproduct-related R&D expenses	48,635 [E]	45,691 [E]
In-house biomass-related R&D expenses	6,053 [E]	6,523 [E]
Other in-house R&D expenses	6,606 [E]	7,898 [E]
Prairies		
Total in-house R&D expenditures	3,910 [E]	5,557 [E]
In-house bioproduct-related R&D expenses	x	3,502 [E]
In-house biomass-related R&D expenses	1,014 [E]	1,429 [E]
Other in-house R&D expenses	x	626 [E]
British Columbia		
Total in-house R&D expenditures	27,123 [E]	15,355 [E]
In-house bioproduct-related R&D expenses	x	4,625 [D]
In-house biomass-related R&D expenses	12,337 [E]	4,964 [E]
Other in-house R&D expenses	x	5,766 [E]

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.16.2
In-house research and development (R&D) expenditures related to bioproducts in Canada, by establishment size, 2014 and 2015

Size	2014	2015
	$ thousands	
Small (less than 50 employees)		
Total in-house R&D expenditures	81,313 [D]	66,983 [D]
In-house bioproduct-related R&D expenses	51,471 [E]	44,389 [D]
In-house biomass-related R&D expenses	17,635 [E]	9,505 [E]
Other in-house R&D expenses	12,208 [E]	13,089 [E]
Medium (50 to 149 employees)		
Total in-house R&D expenditures	30,806 [E]	35,040 [E]
In-house bioproduct-related R&D expenses	22,491 [E]	26,379 [E]
In-house biomass-related R&D expenses	6,918 [E]	7,333 [E]
Other in-house R&D expenses	1,397 [E]	1,327 [E]
Large (more than 149 employees)		
Total in-house R&D expenditures	9,491 [E]	10,109 [E]
In-house bioproduct-related R&D expenses	1,605 [E]	2,209 [E]
In-house biomass-related R&D expenses	1,498 [E]	1,371 [E]
Other in-house R&D expenses	6,389 [E]	6,529 [E]

[E] use with caution

D : [$0.150 < CV \leq 0.250$]

Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.17
Number of bioproduct establishments, by years engaged in bioproduct-related activities in Canada, region and establishment size, 2015

Region	0 to 5 years	6 to 10 years	11 to 15 years	16 to 20 years	21+ years
	number				
Canada	49 [D]	65 [C]	18 [E]	21 [D]	37 [D]
Atlantic provinces	x	x	0	0	0
Quebec	10 [E]	10 [E]	x	x	10 [D]
Ontario	15 [E]	22 [D]	x	x	9 [E]
Prairies	x	13 [E]	x	9 [E]	13 [E]
British Columbia	11 [E]	x	x	0	5 [E]
Size					
Small (less than 50 employees)	42 [D]	51 [C]	18 [E]	12 [E]	13 [E]
Medium (50 to 149 employees)	x	7 [E]	0	x	6 [E]
Large (more than 149 employees)	x	7 [E]	0	x	18 [D]

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

C : [0.100 < CV ≤ 0.150]
D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.18.1
How establishments initially became involved in bioproducts, by region, 2015

Region	2015 percent
Canada	
Exposed to bioproduct-related opportunities through education or employment	42.0 [B]
Exposed to bioproduct-related opportunities through its domestic activities	41.0 [B]
Exposed to bioproduct-related opportunities through its international activities	10.6 [A]
Co-operated or collaborated with other businesses or organizations on bioproduct activities	25.2 [B]
Merged with another business involved in bioproduct activities	0.0 [A]
Acquired another business's bioproduct activities	13.0 [B]
Acquired or licensed technology from a domestic business or laboratory	9.1 [A]
Acquired or licensed technology from a foreign business or laboratory	3.8 [A]
Other means	9.3 [A]
Atlantic provinces	
Exposed to bioproduct-related opportunities through education or employment	84.2 [E]
Exposed to bioproduct-related opportunities through its domestic activities	x
Exposed to bioproduct-related opportunities through its international activities	0.0 [A]
Co-operated or collaborated with other businesses or organizations on bioproduct activities	x
Merged with another business involved in bioproduct activities	0.0 [A]
Acquired another business's bioproduct activities	x
Acquired or licensed technology from a domestic business or laboratory	0.0 [A]
Acquired or licensed technology from a foreign business or laboratory	0.0 [A]
Other means	x
Quebec	
Exposed to bioproduct-related opportunities through education or employment	27.6 [C]
Exposed to bioproduct-related opportunities through its domestic activities	61.9 [C]
Exposed to bioproduct-related opportunities through its international activities	x
Co-operated or collaborated with other businesses or organizations on bioproduct activities	26.9 [C]
Merged with another business involved in bioproduct activities	0.0 [A]
Acquired another business's bioproduct activities	x
Acquired or licensed technology from a domestic business or laboratory	0.0 [A]
Acquired or licensed technology from a foreign business or laboratory	x
Other means	x
Ontario	
Exposed to bioproduct-related opportunities through education or employment	39.2 [D]
Exposed to bioproduct-related opportunities through its domestic activities	35.0 [C]
Exposed to bioproduct-related opportunities through its international activities	x
Co-operated or collaborated with other businesses or organizations on bioproduct activities	31.3 [C]
Merged with another business involved in bioproduct activities	0.0 [A]
Acquired another business's bioproduct activities	12.6 [C]
Acquired or licensed technology from a domestic business or laboratory	16.8 [C]
Acquired or licensed technology from a foreign business or laboratory	x
Other means	x
Prairies	
Exposed to bioproduct-related opportunities through education or employment	40.0 [D]
Exposed to bioproduct-related opportunities through its domestic activities	40.0 [D]
Exposed to bioproduct-related opportunities through its international activities	25.0 [C]
Co-operated or collaborated with other businesses or organizations on bioproduct activities	x
Merged with another business involved in bioproduct activities	0.0 [A]
Acquired another business's bioproduct activities	15.0 [C]
Acquired or licensed technology from a domestic business or laboratory	x
Acquired or licensed technology from a foreign business or laboratory	0.0 [A]
Other means	15.0 [C]

Table A.18.1
How establishments initially became involved in bioproducts, by region, 2015

Region	2015
	percent
British Columbia	
Exposed to bioproduct-related opportunities through education or employment	40.0 [D]
Exposed to bioproduct-related opportunities through its domestic activities	x
Exposed to bioproduct-related opportunities through its international activities	0.0 [A]
Co-operated or collaborated with other businesses or organizations on bioproduct activities	x
Merged with another business involved in bioproduct activities	0.0 [A]
Acquired another business's bioproduct activities	x
Acquired or licensed technology from a domestic business or laboratory	x
Acquired or licensed technology from a foreign business or laboratory	0.0 [A]
Other means	x

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

A : [0.000 ≤ SE ≤ 0.025]
B : [0.025 < SE ≤ 0.050]
C : [0.050 < SE ≤ 0.075]
D : [0.075 < SE ≤ 0.100]
Note: Standard Error (SE) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.18.2
How establishments initially became involved in bioproducts, by establishment size, 2015

Size	2015 percent
Small (less than 50 employees)	
Exposed to bioproduct-related opportunities through education or employment	45.2 [B]
Exposed to bioproduct-related opportunities through its domestic activities	32.8 [B]
Exposed to bioproduct-related opportunities through its international activities	x
Co-operated or collaborated with other businesses or organizations on bioproduct activities	25.4 [B]
Merged with another business involved in bioproduct activities	0.0 [A]
Acquired another business's bioproduct activities	11.4 [B]
Acquired or licensed technology from a domestic business or laboratory	x
Acquired or licensed technology from a foreign business or laboratory	x
Other means	9.1 [B]
Medium (50 to 149 employees)	
Exposed to bioproduct-related opportunities through education or employment	22.4 [D]
Exposed to bioproduct-related opportunities through its domestic activities	68.0 [E]
Exposed to bioproduct-related opportunities through its international activities	x
Co-operated or collaborated with other businesses or organizations on bioproduct activities	27.9 [E]
Merged with another business involved in bioproduct activities	0.0 [A]
Acquired another business's bioproduct activities	x
Acquired or licensed technology from a domestic business or laboratory	x
Acquired or licensed technology from a foreign business or laboratory	x
Other means	x
Large (more than 149 employees)	
Exposed to bioproduct-related opportunities through education or employment	44.7 [E]
Exposed to bioproduct-related opportunities through its domestic activities	55.3 [E]
Exposed to bioproduct-related opportunities through its international activities	x
Co-operated or collaborated with other businesses or organizations on bioproduct activities	21.7 [D]
Merged with another business involved in bioproduct activities	0.0 [A]
Acquired another business's bioproduct activities	x
Acquired or licensed technology from a domestic business or laboratory	0.0 [A]
Acquired or licensed technology from a foreign business or laboratory	0.0 [A]
Other means	x

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

A : [0.000 ≤ SE ≤ 0.025]
B : [0.025 < SE ≤ 0.050]
D : [0.075 < SE ≤ 0.100]
Note: Standard Error (SE) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.19
Number of bioproduct establishments producing bioproducts for internal use, by region and establishment size, 2015

Region	Used internally	Not used internally
	number	
Canada	58 [C]	132 [B]
Atlantic provinces	13 [E]	8 [E]
Quebec	12 [E]	29 [C]
Ontario	14 [E]	46 [C]
Prairies	6 [E]	36 [C]
British Columbia	12 [D]	13 [D]
Size		
Small (less than 50 employees)	31 [D]	104 [B]
Medium (50 to 149 employees)	6 [E]	20 [D]
Large (more than 149 employees)	22 [D]	8 [E]

[E] use with caution

B : [0.050 < CV ≤ 0.100]
C : [0.100 < CV ≤ 0.150]
D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.20.1
Number of bioproduct establishments producing co-products for sale, by product type and region, 2015

Region	Establishments
	number
Canada	
Distillers grain (wet or dry)	21 [D]
Glycerine	17 [D]
Fertilizer	10 [E]
Compost	5 [E]
CO2	7 [E]
Other co-products	29 [D]
No co-products were produced for sale	123 [B]
Atlantic provinces	
Distillers grain (wet or dry)	0
Glycerine	0
Fertilizer	0
Compost	0
CO2	0
Other co-products	0
No co-products were produced for sale	21 [D]
Quebec	
Distillers grain (wet or dry)	x
Glycerine	7 [E]
Fertilizer	x
Compost	x
CO2	x
Other co-products	6 [E]
No co-products were produced for sale	28 [D]
Ontario	
Distillers grain (wet or dry)	x
Glycerine	x
Fertilizer	x
Compost	0
CO2	x
Other co-products	x
No co-products were produced for sale	37 [C]
Prairies	
Distillers grain (wet or dry)	11 [E]
Glycerine	x
Fertilizer	0
Compost	0
CO2	x
Other co-products	x
No co-products were produced for sale	23 [D]
British Columbia	
Distillers grain (wet or dry)	0
Glycerine	x
Fertilizer	x
Compost	x
CO2	0
Other co-products	x
No co-products were produced for sale	14 [D]

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

B : [0.050 < CV ≤ 0.100]
C : [0.100 < CV ≤ 0.150]
D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.20.2
Number of bioproduct establishments producing co-products for sale, by product type and establishment, 2015

Size	Establishments number
Small (less than 50 employees)	
Distillers grain (wet or dry)	14 [E]
Glycerine	17 [D]
Fertilizer	10 [E]
Compost	x
CO2	x
Other co-products	14 [E]
No co-products were produced for sale	87 [C]
Medium (50 to 149 employees)	
Distillers grain (wet or dry)	7 [E]
Glycerine	0
Fertilizer	0
Compost	0
CO2	x
Other co-products	x
No co-products were produced for sale	13 [E]
Large (more than 149 employees)	
Distillers grain (wet or dry)	0
Glycerine	0
Fertilizer	0
Compost	x
CO2	0
Other co-products	x
No co-products were produced for sale	24 [D]

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

C : [0.100 < CV ≤ 0.150]
D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.21
Total sales of co-products by bioproduct establishments, by region and establishments size, 2015

Region	Sales of co-products $ thousands
Canada	441,460 [E]
Atlantic provinces	..
Quebec	x
Ontario	x
Prairies	x
British Columbia	32,201 [E]
Size	
Small (less than 50 employees)	140,771 [E]
Medium (50 to 149 employees)	268,529 [E]
Large (more than 149 employees)	32,160 [E]

.. not available for a specific reference period
x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.22
Geographical location of Canadian buyers of bioproducts, by region and establishment size, 2015

Region	Percentage of establishments selling bioproducts in Canada	Percentage of establishments selling bioproducts in the United States	Percentage of establishments selling bioproducts in the European Union	Percentage of establishments selling bioproducts in Japan	Percentage of establishments selling bioproducts in China	Percentage of establishments selling bioproducts to other customer locations	Don't know
	percent						
Canada	83.8 [B]	45.6 [B]	13.6 [B]	7.1 [B]	8.6 [B]	7.1 [A]	16.2 [B]
Atlantic provinces	x	0.0 [A]	0.0 [A]	0.0 [A]	0.0 [A]	0.0 [A]	x
Quebec	91.6 [B]	53.7 [D]	x	0.0 [A]	0.0 [A]	x	x
Ontario	87.2 [C]	50.4 [D]	16.5 [C]	x	x	x	12.8 [C]
Prairies	76.5 [D]	47.1 [D]	x	x	x	0.0 [A]	23.5 [D]
British Columbia	x	38.2 [D]	x	0.0 [A]	x	x	x
Size							
Small (less than 50 employees)	92.7 [B]	50.3 [C]	x	x	x	x	x
Medium (50 to 149 employees)	79.3 [E]	x	x	x	x	x	x
Large (more than 149 employees)	51.5 [E]	x	x	0.0 [A]	0.0 [A]	0.0 [A]	48.5 [E]

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

A : [0.000 ≤ SE ≤ 0.025]
B : [0.025 < SE ≤ 0.050]
C : [0.050 < SE ≤ 0.075]
D : [0.075 < SE ≤ 0.100]
Note: Standard Error (SE) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.23.1
Factors motivating establishments to develop or produce bioproducts, by region, 2015

Region	Low importance	Medium importance	High importance	Not applicable
	percent			
Canada				
Profitability	x	x	83.9 [B]	9.8 [A]
Meeting customers' requirements	10.2 [B]	13.7 [B]	56.8 [B]	19.3 [B]
Reducing environmental impact	4.0 [A]	15.8 [B]	65.6 [B]	14.6 [B]
Marketing opportunity	8.0 [A]	29.7 [B]	46.4 [B]	15.9 [B]
Other factors	8.8 [A]	10.7 [B]	7.6 [A]	72.9 [B]
Atlantic provinces				
Profitability	0.0 [A]	0.0 [A]	100.0 [A]	0.0 [A]
Meeting customers' requirements	x	0.0 [A]	x	0.0 [A]
Reducing environmental impact	0.0 [A]	x	x	0.0 [A]
Marketing opportunity	0.0 [A]	x	x	0.0 [A]
Other factors	x	x	x	x
Quebec				
Profitability	0.0 [A]	0.0 [A]	85.8 [B]	14.2 [B]
Meeting customers' requirements	13.4 [C]	21.6 [C]	37.3 [C]	27.6 [C]
Reducing environmental impact	0.0 [A]	20.9 [C]	61.9 [C]	17.2 [B]
Marketing opportunity	x	40.3 [C]	35.1 [C]	x
Other factors	x	x	x	79.1 [C]
Ontario				
Profitability	0.0 [A]	x	81.3 [C]	x
Meeting customers' requirements	12.6 [C]	14.5 [C]	58.4 [D]	14.5 [C]
Reducing environmental impact	x	x	62.6 [C]	x
Marketing opportunity	x	22.9 [C]	43.9 [D]	x
Other factors	x	14.5 [C]	x	72.9 [C]
Prairies				
Profitability	x	x	x	x
Meeting customers' requirements	0.0 [A]	20.0 [C]	60.0 [D]	20.0 [C]
Reducing environmental impact	0.0 [A]	20.0 [C]	65.0 [D]	15.0 [C]
Marketing opportunity	0.0 [A]	30.0 [D]	55.0 [D]	15.0 [C]
Other factors	20.0 [C]	x	x	65.0 [D]
British Columbia				
Profitability	0.0 [A]	x	x	0.0 [A]
Meeting customers' requirements	x	0.0 [A]	x	31.8 [D]
Reducing environmental impact	x	x	x	x
Marketing opportunity	x	x	x	x
Other factors	0.0 [A]	x	0.0 [A]	x

x suppressed to meet the confidentiality requirements of the *Statistics Act*

A : [$0.000 \leq SE \leq 0.025$]
B : [$0.025 < SE \leq 0.050$]
C : [$0.050 < SE \leq 0.075$]
D : [$0.075 < SE \leq 0.100$]

Note: Standard Error (SE) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.23.2
Factors motivating establishments to develop or produce bioproducts, by establishment size, 2015

Size	Low importance	Medium importance	High importance	Not applicable
	percent			
Small (less than 50 employees)				
Profitability	x	6.5 [A]	84.0 [B]	x
Meeting customers' requirements	x	x	58.0 [B]	13.5 [B]
Reducing environmental impact	x	x	64.1 [B]	13.0 [B]
Marketing opportunity	x	32.1 [B]	45.9 [B]	x
Other factors	x	x	x	66.9 [B]
Medium (50 to 149 employees)				
Profitability	0.0 [A]	x	x	x
Meeting customers' requirements	x	x	59.8 [E]	x
Reducing environmental impact	x	x	64.1 [E]	x
Marketing opportunity	x	30.4 [D]	41.7 [E]	x
Other factors	x	x	x	73.5 [D]
Large (more than 149 employees)				
Profitability	0.0 [A]	0.0 [A]	x	x
Meeting customers' requirements	x	0.0 [A]	48.6 [E]	x
Reducing environmental impact	0.0 [A]	x	74.1 [D]	x
Marketing opportunity	0.0 [A]	18.2 [C]	52.3 [E]	29.4 [D]
Other factors	0.0 [A]	0.0 [A]	0.0 [A]	100.0 [A]

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

A : [0.000 ≤ SE ≤ 0.025]
B : [0.025 < SE ≤ 0.050]
C : [0.050 < SE ≤ 0.075]
D : [0.075 < SE ≤ 0.100]
Note: Standard Error (SE) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.24.1
Obstacles to bioproduct establishments' development or production of bioproducts, by region, 2015

Region	Not an obstacle	Minor obstacle	Moderate obstacle	Major obstacle
	percent			
Canada				
Unreliable quantity of biomass	60.7 [B]	12.6 [B]	10.3 [A]	16.4 [B]
Unreliable quality of biomass	56.2 [B]	19.2 [B]	15.2 [B]	9.3 [A]
Cost of biomass	39.7 [B]	16.7 [B]	27.0 [B]	16.5 [B]
Difficulty in entering commercial marketplace	39.4 [B]	20.7 [B]	26.0 [B]	13.9 [B]
Cost of developing environmental indicators	64.3 [B]	20.1 [B]	x	x
Lack of skilled human resources	53.0 [B]	37.0 [B]	x	x
Lack of financing	42.8 [B]	14.6 [B]	12.9 [B]	29.8 [B]
Cost and timeliness of regulatory approval	41.9 [B]	19.3 [B]	17.3 [B]	21.4 [B]
Cost to comply with regulations	46.4 [B]	22.0 [B]	16.1 [B]	15.6 [B]
Absence of adequate product standard certification	59.6 [B]	22.0 [B]	10.6 [B]	7.8 [A]
Other obstacles	79.4 [B]	x	12.1 [B]	x
Atlantic provinces				
Unreliable quantity of biomass	x	0.0 [A]	0.0 [A]	x
Unreliable quality of biomass	x	x	0.0 [A]	0.0 [A]
Cost of biomass	52.6 [E]	0.0 [A]	47.4 [E]	0.0 [A]
Difficulty in entering commercial marketplace	x	x	0.0 [A]	0.0 [A]
Cost of developing environmental indicators	100.0 [A]	0.0 [A]	0.0 [A]	0.0 [A]
Lack of skilled human resources	x	x	x	0.0 [A]
Lack of financing	x	x	0.0 [A]	36.7 [E]
Cost and timeliness of regulatory approval	x	x	x	0.0 [A]
Cost to comply with regulations	63.3 [E]	x	x	0.0 [A]
Absence of adequate product standard certification	x	x	0.0 [A]	0.0 [A]
Other obstacles	x	0.0 [A]	x	0.0 [A]
Quebec				
Unreliable quantity of biomass	49.3 [C]	x	x	29.1 [C]
Unreliable quality of biomass	38.8 [C]	21.6 [C]	23.9 [C]	15.7 [C]
Cost of biomass	35.8 [C]	x	39.6 [D]	x
Difficulty in entering commercial marketplace	33.6 [C]	x	26.1 [C]	x
Cost of developing environmental indicators	62.7 [C]	23.9 [C]	13.4 [C]	0.0 [A]
Lack of skilled human resources	62.7 [C]	18.7 [C]	x	x
Lack of financing	41.0 [C]	26.1 [C]	21.6 [C]	11.2 [B]
Cost and timeliness of regulatory approval	30.6 [C]	x	x	47.8 [C]
Cost to comply with regulations	33.6 [C]	18.7 [C]	23.9 [C]	23.9 [C]
Absence of adequate product standard certification	50.0 [C]	23.9 [C]	x	x
Other obstacles	x	x	0.0 [A]	x
Ontario				
Unreliable quantity of biomass	64.5 [C]	18.7 [C]	x	x
Unreliable quality of biomass	62.6 [C]	x	14.5 [C]	x
Cost of biomass	50.0 [D]	21.0 [C]	12.1 [B]	16.8 [C]
Difficulty in entering commercial marketplace	39.2 [D]	18.7 [C]	21.0 [C]	21.0 [C]
Cost of developing environmental indicators	64.5 [C]	22.9 [C]	12.6 [C]	0.0 [A]
Lack of skilled human resources	57.9 [D]	x	x	0.0 [A]
Lack of financing	47.7 [D]	x	x	33.7 [C]
Cost and timeliness of regulatory approval	39.2 [D]	18.7 [C]	16.8 [C]	25.2 [C]
Cost to comply with regulations	35.0 [C]	27.1 [C]	16.8 [C]	21.0 [C]
Absence of adequate product standard certification	58.4 [D]	29.0 [C]	12.6 [C]	0.0 [A]
Other obstacles	79.0 [C]	x	x	x
Prairies				
Unreliable quantity of biomass	60.0 [D]	x	15.0 [C]	x
Unreliable quality of biomass	55.0 [D]	x	15.0 [C]	x
Cost of biomass	25.0 [C]	25.0 [C]	25.0 [C]	25.0 [C]
Difficulty in entering commercial marketplace	30.0 [D]	20.0 [C]	35.0 [D]	15.0 [C]
Cost of developing environmental indicators	55.0 [D]	25.0 [C]	x	x
Lack of skilled human resources	x	55.0 [D]	x	0.0 [A]
Lack of financing	40.0 [D]	x	x	35.0 [D]
Cost and timeliness of regulatory approval	70.0 [D]	15.0 [C]	15.0 [C]	0.0 [A]
Cost to comply with regulations	65.0 [D]	20.0 [C]	x	x
Absence of adequate product standard certification	65.0 [D]	15.0 [C]	x	x
Other obstacles	75.0 [C]	0.0 [A]	x	x

Table A.24.1
Obstacles to bioproduct establishments' development or production of bioproducts, by region, 2015

Region	Not an obstacle	Minor obstacle	Moderate obstacle	Major obstacle
	percent			
British Columbia				
Unreliable quantity of biomass	x	x	x	x
Unreliable quality of biomass	x	x	16.2 [C]	x
Cost of biomass	35.9 [D]	x	27.9 [D]	x
Difficulty in entering commercial marketplace	x	x	43.8 [D]	x
Cost of developing environmental indicators	52.1 [D]	16.2 [C]	31.8 [D]	0.0 [A]
Lack of skilled human resources	52.1 [D]	47.9 [D]	0.0 [A]	0.0 [A]
Lack of financing	x	x	x	36.2 [D]
Cost and timeliness of regulatory approval	x	35.9 [D]	x	23.8 [D]
Cost to comply with regulations	48.2 [D]	x	x	x
Absence of adequate product standard certification	x	x	x	x
Other obstacles	x	x	23.8 [D]	x

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

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B : [0.025 < SE ≤ 0.050]
C : [0.050 < SE ≤ 0.075]
D : [0.075 < SE ≤ 0.100]
Note: Standard Error (SE) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.24.2
Obstacles to bioproduct establishments' development or production of bioproducts, by establishments size, 2015

Size	Not an obstacle	Minor obstacle	Moderate obstacle	Major obstacle
	percent			
Small (less than 50 employees)				
Unreliable quantity of biomass	59.0 [B]	x	x	x
Unreliable quality of biomass	52.7 [B]	21.8 [B]	18.9 [B]	6.6 [A]
Cost of biomass	41.8 [B]	17.4 [B]	24.8 [B]	15.9 [B]
Difficulty in entering commercial marketplace	32.1 [B]	x	31.1 [B]	x
Cost of developing environmental indicators	60.4 [B]	22.5 [B]	x	x
Lack of skilled human resources	53.8 [B]	38.7 [B]	x	x
Lack of financing	39.6 [B]	x	x	32.7 [B]
Cost and timeliness of regulatory approval	41.5 [B]	18.3 [B]	16.6 [B]	23.6 [B]
Cost to comply with regulations	42.0 [B]	26.0 [B]	14.8 [B]	17.2 [B]
Absence of adequate product standard certification	58.6 [B]	20.5 [B]	x	x
Other obstacles	78.1 [B]	x	12.4 [B]	x
Medium (50 to 149 employees)				
Unreliable quantity of biomass	58.1 [E]	x	x	x
Unreliable quality of biomass	58.1 [E]	x	x	x
Cost of biomass	27.9 [E]	x	22.4 [D]	x
Difficulty in entering commercial marketplace	41.9 [E]	x	x	x
Cost of developing environmental indicators	x	x	x	0.0 [A]
Lack of skilled human resources	54.1 [E]	45.9 [E]	0.0 [A]	0.0 [A]
Lack of financing	49.9 [E]	x	x	x
Cost and timeliness of regulatory approval	49.9 [E]	22.2 [D]	x	x
Cost to comply with regulations	54.1 [E]	x	x	x
Absence of adequate product standard certification	59.5 [E]	x	x	0.0 [A]
Other obstacles	x	x	0.0 [A]	0.0 [A]
Large (more than 149 employees)				
Unreliable quantity of biomass	70.8 [D]	x	x	x
Unreliable quality of biomass	70.8 [D]	x	x	x
Cost of biomass	40.2 [D]	x	41.3 [E]	x
Difficulty in entering commercial marketplace	71.3 [D]	x	x	x
Cost of developing environmental indicators	x	x	x	0.0 [A]
Lack of skilled human resources	48.3 [E]	21.3 [D]	30.4 [E]	0.0 [A]
Lack of financing	51.1 [E]	x	x	x
Cost and timeliness of regulatory approval	37.0 [D]	21.4 [D]	x	x
Cost to comply with regulations	60.1 [D]	x	x	x
Absence of adequate product standard certification	64.3 [D]	x	0.0 [A]	x
Other obstacles	x	0.0 [A]	21.6 [D]	x

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

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B : [0.025 < SE ≤ 0.050]
D : [0.075 < SE ≤ 0.100]
Note: Standard Error (SE) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.25.1
Biomass improvement activities performed by bioproduct establishments, by region, 2015

Region	Post-harvest biomass improvement activities
	number
Canada	
Collecting biomass	52 [C]
Aggregating	16 [E]
Baling	11 [E]
Cleaning	32 [D]
Separating biomass	77 [C]
Drying	74 [C]
Modifying	33 [D]
Refining biomass	38 [D]
Packaging	27 [D]
Other activities	51 [C]
Atlantic provinces	
Collecting biomass	x
Aggregating	0
Baling	0
Cleaning	x
Separating biomass	x
Drying	10 [E]
Modifying	x
Refining biomass	x
Packaging	x
Other activities	x
Quebec	
Collecting biomass	12 [E]
Aggregating	x
Baling	x
Cleaning	x
Separating biomass	14 [D]
Drying	16 [D]
Modifying	7 [E]
Refining biomass	8 [E]
Packaging	x
Other activities	13 [D]
Ontario	
Collecting biomass	19 [D]
Aggregating	x
Baling	x
Cleaning	16 [E]
Separating biomass	28 [D]
Drying	26 [D]
Modifying	11 [E]
Refining biomass	10 [E]
Packaging	x
Other activities	19 [D]
Prairies	
Collecting biomass	x
Aggregating	6 [E]
Baling	x
Cleaning	11 [E]
Separating biomass	x
Drying	13 [E]
Modifying	x
Refining biomass	13 [E]
Packaging	x
Other activities	11 [E]

Table A.25.1
Biomass improvement activities performed by bioproduct establishments, by region, 2015

Region	Post-harvest biomass improvement activities
	number
British Columbia	
Collecting biomass	9 [E]
Aggregating	x
Baling	x
Cleaning	x
Separating biomass	16 [D]
Drying	9 [E]
Modifying	x
Refining biomass	x
Packaging	x
Other activities	x

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

C : [0.100 < CV ≤ 0.150]
D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.25.2
Biomass improvement activities performed by bioproduct establishments, by establishment size, 2015

Size	Post-harvest biomass improvement activities
	number
Small (less than 50 employees)	
Collecting biomass	45 [D]
Aggregating	16 [E]
Baling	11 [E]
Cleaning	x
Separating biomass	69 [C]
Drying	45 [D]
Modifying	26 [D]
Refining biomass	25 [D]
Packaging	x
Other activities	35 [D]
Medium (50 to 149 employees)	
Collecting biomass	x
Aggregating	0
Baling	0
Cleaning	x
Separating biomass	x
Drying	14 [E]
Modifying	x
Refining biomass	x
Packaging	0
Other activities	x
Large (more than 149 employees)	
Collecting biomass	x
Aggregating	0
Baling	0
Cleaning	0
Separating biomass	x
Drying	15 [E]
Modifying	x
Refining biomass	x
Packaging	x
Other activities	x

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

C : [0.100 < CV ≤ 0.150]
D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.26
How bioproduct establishments source biomass, by region and establishment size, 2015

Region	Own harvesting rights	Own biomass ownership	External suppliers with no biomass procurement agreements	External suppliers with biomass procurement agreements	Other sources
	number				
Canada	25 [D]	20 [E]	121 [B]	85 [C]	19 [D]
Atlantic provinces	x	x	13 [E]	x	0
Quebec	x	x	26 [D]	x	x
Ontario	0	0	46 [C]	28 [D]	10 [E]
Prairies	9 [E]	6 [E]	30 [D]	23 [D]	0
British Columbia	10 [E]	x	6 [E]	14 [D]	x
Size					
Small (less than 50 employees)	10 [E]	x	93 [B]	60 [C]	x
Medium (50 to 149 employees)	x	0	16 [E]	10 [E]	x
Large (more than 149 employees)	x	x	12 [E]	15 [D]	x

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

B : [0.050 < CV ≤ 0.100]
C : [0.100 < CV ≤ 0.150]
D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.27.1
Types of biomass suppliers used by bioproduct establishments, by region, 2015

Region	Distribution of biomass suppliers number
Canada	
Farmers	67 [C]
Grain suppliers	34 [D]
Grain millers, oilseed crushers or other intermediary agri-based processors	13 [E]
Food or feed processors, food services	25 [D]
Municipalities	7 [E]
Forestry harvesters	17 [D]
Forestry mills	42 [C]
Pellet producers	5 [E]
Other biomass conditioners and aggregators	20 [D]
Other suppliers	38 [D]
Atlantic provinces	
Farmers	10 [E]
Grain suppliers	x
Grain millers, oilseed crushers or other intermediary agri-based processors	0
Food or feed processors, food services	x
Municipalities	0
Forestry harvesters	0
Forestry mills	0
Pellet producers	0
Other biomass conditioners and aggregators	0
Other suppliers	x
Quebec	
Farmers	8 [E]
Grain suppliers	0
Grain millers, oilseed crushers or other intermediary agri-based processors	x
Food or feed processors, food services	6 [E]
Municipalities	x
Forestry harvesters	x
Forestry mills	9 [E]
Pellet producers	0
Other biomass conditioners and aggregators	9 [E]
Other suppliers	15 [D]
Ontario	
Farmers	23 [D]
Grain suppliers	x
Grain millers, oilseed crushers or other intermediary agri-based processors	x
Food or feed processors, food services	x
Municipalities	x
Forestry harvesters	0
Forestry mills	14 [E]
Pellet producers	0
Other biomass conditioners and aggregators	x
Other suppliers	x
Prairies	
Farmers	26 [D]
Grain suppliers	17 [D]
Grain millers, oilseed crushers or other intermediary agri-based processors	x
Food or feed processors, food services	0
Municipalities	0
Forestry harvesters	6 [E]
Forestry mills	9 [E]
Pellet producers	x
Other biomass conditioners and aggregators	x
Other suppliers	x

Table A.27.1
Types of biomass suppliers used by bioproduct establishments, by region, 2015

Region	Distribution of biomass suppliers
	number
British Columbia	
Farmers	0
Grain suppliers	0
Grain millers, oilseed crushers or other intermediary agri-based processors	0
Food or feed processors, food services	x
Municipalities	x
Forestry harvesters	x
Forestry mills	11 [D]
Pellet producers	x
Other biomass conditioners and aggregators	x
Other suppliers	x

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution
C : [0.100 < CV ≤ 0.150]
D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.27.2
Types of biomass suppliers used by bioproduct establishments, by establishments size, 2015

Size	Distribution of biomass suppliers number
Small (less than 50 employees)	
Farmers	47 [D]
Grain suppliers	24 [D]
Grain millers, oilseed crushers or other intermediary agri-based processors	13 [E]
Food or feed processors, food services	x
Municipalities	7 [E]
Forestry harvesters	x
Forestry mills	19 [D]
Pellet producers	x
Other biomass conditioners and aggregators	20 [D]
Other suppliers	33 [D]
Medium (50 to 149 employees)	
Farmers	12 [E]
Grain suppliers	10 [E]
Grain millers, oilseed crushers or other intermediary agri-based processors	0
Food or feed processors, food services	0
Municipalities	0
Forestry harvesters	x
Forestry mills	9 [E]
Pellet producers	x
Other biomass conditioners and aggregators	0
Other suppliers	x
Large (more than 149 employees)	
Farmers	8 [E]
Grain suppliers	0
Grain millers, oilseed crushers or other intermediary agri-based processors	0
Food or feed processors, food services	x
Municipalities	0
Forestry harvesters	x
Forestry mills	15 [D]
Pellet producers	0
Other biomass conditioners and aggregators	0
Other suppliers	x

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

D : [$0.150 < CV \leq 0.250$]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.28.1
Types of biomass reported as primary biomass, by number of establishments, share of total biomass used and region, 2015

Region	Establishments	Weighted distribution of primary biomass based on quantity used
	number	percent
Canada	190 [B]	
Agricultural biomass	80 [C]	38.1 [D]
Forestry biomass	50 [C]	58.0 [D]
Marine and aquaculture materials or products	9 [E]	x
Food processing or slaughtered or rendered by-products	35 [D]	3.8 [A]
Food service by-products	9 [E]	0.1 [A]
Solid waste	6 [E]	x
Other primary biomass	0	0.0 [A]
Atlantic provinces	21 [D]	
Agricultural biomass	x	x
Forestry biomass	0	0.0 [A]
Marine and aquaculture materials or products	x	0.0 [A]
Food processing or slaughtered or rendered by-products	13 [E]	x
Food service by-products	0	0.0 [A]
Solid waste	0	0.0 [A]
Other primary biomass	0	0.0 [A]
Quebec	41 [C]	
Agricultural biomass	13 [E]	x
Forestry biomass	13 [E]	75.7 [E]
Marine and aquaculture materials or products	x	x
Food processing or slaughtered or rendered by-products	9 [E]	x
Food service by-products	0	0.0 [A]
Solid waste	x	x
Other primary biomass	0	0.0 [A]
Ontario	59 [B]	
Agricultural biomass	33 [D]	83.0 [D]
Forestry biomass	x	x
Marine and aquaculture materials or products	0	0.0 [A]
Food processing or slaughtered or rendered by-products	12 [E]	x
Food service by-products	x	x
Solid waste	0	0.0 [A]
Other primary biomass	0	0.0 [A]
Prairies	43 [C]	
Agricultural biomass	28 [D]	x
Forestry biomass	x	x
Marine and aquaculture materials or products	0	0.0 [A]
Food processing or slaughtered or rendered by-products	0	0.0 [A]
Food service by-products	0	0.0 [A]
Solid waste	x	x
Other primary biomass	0	0.0 [A]
British Columbia	26 [D]	
Agricultural biomass	x	x
Forestry biomass	16 [D]	99.9 [A]
Marine and aquaculture materials or products	x	x
Food processing or slaughtered or rendered by-products	0	0.0 [A]
Food service by-products	x	x
Solid waste	0	0.0 [A]
Other primary biomass	0	0.0 [A]

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

A : [0.000 ≤ CV ≤ 0.050]
B : [0.050 < CV ≤ 0.100]
C : [0.100 < CV ≤ 0.150]
D : [0.150 < CV ≤ 0.250]
A : [0.000 ≤ SE ≤ 0.025]
B : [0.025 < SE ≤ 0.050]
C : [0.050 < SE ≤ 0.075]
D : [0.075 < SE ≤ 0.100]
Note: Coefficient of variation (CV) threshold is used for numbers.
Standard Error (SE) threshold is used for percentages.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.28.2
Types of biomass reported as primary biomass, by number of establishments, share of total biomass used and establishments size, 2015

Size	Establishments	Weighted distribution of primary biomass based on quantity used
	number	percent
Small (less than 50 employees)	135 [B]	
Agricultural biomass	62 [C]	x
Forestry biomass	x	x
Marine and aquaculture materials or products	9 [E]	x
Food processing or slaughtered or rendered by-products	x	8.5 [B]
Food service by-products	9 [E]	0.3 [A]
Solid waste	6 [E]	x
Other primary biomass	0	0.0 [A]
Medium (50 to 149 employees)	26 [D]	
Agricultural biomass	x	x
Forestry biomass	x	x
Marine and aquaculture materials or products	0	0.0 [A]
Food processing or slaughtered or rendered by-products	0	0.0 [A]
Food service by-products	0	0.0 [A]
Solid waste	0	0.0 [A]
Other primary biomass	0	0.0 [A]
Large (more than 149 employees)	29 [D]	
Agricultural biomass	x	x
Forestry biomass	x	x
Marine and aquaculture materials or products	0	0.0 [A]
Food processing or slaughtered or rendered by-products	x	3.3 [A]
Food service by-products	0	0.0 [A]
Solid waste	0	0.0 [A]
Other primary biomass	0	0.0 [A]

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D : [0.075 < SE ≤ 0.100]
Note: Coefficient of variation (CV) threshold is used for numbers.
Standard Error (SE) threshold is used for percentages.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.29.1
Percentage of primary biomass sourced, by geographical location and region, 2015

Region	Distribution of primary biomass used, by origin percent
Canada	
Canadian sources	92.7 [B]
Newfoundland and Labrador	0.0 [A]
Prince Edward Island	1.8 [A]
Nova Scotia	x
New Brunswick	x
Quebec	14.6 [B]
Ontario	x
Manitoba	x
Saskatchewan	6.1 [A]
Alberta	9.8 [B]
British Columbia	x
Yukon, Northwest Territories, Nunavut	0.0 [A]
International sources	x
United States	x
Mexico	0.0 [A]
Other foreign	x
Don't know source of origin	x
Atlantic provinces	
Canadian sources	100.0 [A]
Newfoundland and Labrador	0.0 [A]
Prince Edward Island	99.7 [A]
Nova Scotia	0.3 [A]
New Brunswick	0.0 [A]
Quebec	0.0 [A]
Ontario	0.0 [A]
Manitoba	0.0 [A]
Saskatchewan	0.0 [A]
Alberta	0.0 [A]
British Columbia	0.0 [A]
Yukon, Northwest Territories, Nunavut	0.0 [A]
International sources	0.0 [A]
United States	0.0 [A]
Mexico	0.0 [A]
Other foreign	0.0 [A]
Don't know source of origin	0.0 [A]
Quebec	
Canadian sources	x
Newfoundland and Labrador	0.0 [A]
Prince Edward Island	0.0 [A]
Nova Scotia	x
New Brunswick	x
Quebec	x
Ontario	x
Manitoba	0.0 [A]
Saskatchewan	0.0 [A]
Alberta	x
British Columbia	0.0 [A]
Yukon, Northwest Territories, Nunavut	0.0 [A]
International sources	x
United States	x
Mexico	0.0 [A]
Other foreign	0.0 [A]
Don't know source of origin	x

Table A.29.1
Percentage of primary biomass sourced, by geographical location and region, 2015

Region	Distribution of primary biomass used, by origin percent
Ontario	
Canadian sources	x
Newfoundland and Labrador	0.0 [A]
Prince Edward Island	0.0 [A]
Nova Scotia	x
New Brunswick	0.0 [A]
Quebec	x
Ontario	x
Manitoba	0.0 [A]
Saskatchewan	0.0 [A]
Alberta	x
British Columbia	0.0 [A]
Yukon, Northwest Territories, Nunavut	0.0 [A]
International sources	x
United States	x
Mexico	0.0 [A]
Other foreign	x
Don't know source of origin	x
Prairies	
Canadian sources	x
Newfoundland and Labrador	0.0 [A]
Prince Edward Island	0.0 [A]
Nova Scotia	0.0 [A]
New Brunswick	0.0 [A]
Quebec	x
Ontario	0.0 [A]
Manitoba	x
Saskatchewan	28.4 [D]
Alberta	x
British Columbia	x
Yukon, Northwest Territories, Nunavut	0.0 [A]
International sources	x
United States	x
Mexico	0.0 [A]
Other foreign	x
Don't know source of origin	x
British Columbia	
Canadian sources	x
Newfoundland and Labrador	0.0 [A]
Prince Edward Island	0.0 [A]
Nova Scotia	0.0 [A]
New Brunswick	0.0 [A]
Quebec	0.0 [A]
Ontario	0.0 [A]
Manitoba	0.0 [A]
Saskatchewan	0.0 [A]
Alberta	0.0 [A]
British Columbia	x
Yukon, Northwest Territories, Nunavut	0.0 [A]
International sources	x
United States	x
Mexico	0.0 [A]
Other foreign	0.0 [A]
Don't know source of origin	0.0 [A]

x suppressed to meet the confidentiality requirements of the *Statistics Act*

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B : [0.025 < SE ≤ 0.050]
D : [0.075 < SE ≤ 0.100]
Note: Standard Error (SE) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.29.2
Percentage of primary biomass sourced, by geographical location and establishments size, 2015

Size	Distribution of primary biomass used, by origin percent
Small (less than 50 employees)	
Canadian sources	98.6 [A]
Newfoundland and Labrador	0.0 [A]
Prince Edward Island	x
Nova Scotia	x
New Brunswick	x
Quebec	x
Ontario	22.2 [D]
Manitoba	x
Saskatchewan	x
Alberta	x
British Columbia	11.1 [B]
Yukon, Northwest Territories, Nunavut	0.0 [A]
International sources	x
United States	x
Mexico	0.0 [A]
Other foreign	x
Don't know source of origin	x
Medium (50 to 149 employees)	
Canadian sources	x
Newfoundland and Labrador	0.0 [A]
Prince Edward Island	0.0 [A]
Nova Scotia	0.0 [A]
New Brunswick	0.0 [A]
Quebec	x
Ontario	x
Manitoba	x
Saskatchewan	x
Alberta	x
British Columbia	x
Yukon, Northwest Territories, Nunavut	0.0 [A]
International sources	x
United States	x
Mexico	0.0 [A]
Other foreign	x
Don't know source of origin	x
Large (more than 149 employees)	
Canadian sources	x
Newfoundland and Labrador	0.0 [A]
Prince Edward Island	x
Nova Scotia	0.0 [A]
New Brunswick	0.0 [A]
Quebec	x
Ontario	x
Manitoba	0.0 [A]
Saskatchewan	0.0 [A]
Alberta	x
British Columbia	64.1 [E]
Yukon, Northwest Territories, Nunavut	0.0 [A]
International sources	x
United States	x
Mexico	0.0 [A]
Other foreign	0.0 [A]
Don't know source of origin	x

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D : [0.075 < SE ≤ 0.100]
Note: Standard Error (SE) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.30
Distance primary biomass was transported, by region and establishment size, 2015

Region	0 km (on-site)	Less than 50 km	50 km to less than 100 km	100 km to less than 500 km	500 km or more
	percent				
Canada	14.7 [C]	19.7 [B]	32.0 [C]	29.5 [B]	4.2 [A]
Atlantic provinces	x	x	x	x	x
Quebec	x	x	x	57.1 [E]	x
Ontario	x	x	x	20.5 [E]	x
Prairies	x	x	x	x	x
British Columbia	x	29.6 [C]	x	x	x
Size					
Small (less than 50 employees)	x	x	x	x	x
Medium (50 to 149 employees)	0.0 [A]	x	x	x	x
Large (more than 149 employees)	x	23.9 [C]	20.6 [C]	33.5 [C]	x

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C : [0.050 < SE ≤ 0.075]
Note: Standard Error (SE) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.31.1
Number and types of employees who worked at least 50% of the time in bioproduct activities, by region, 2015

Region	Type of employees in bioproduct-related activities	Type of employees in biomass improvement-related activities	Total
	number		
Canada			
Total employees in bioproduct-related activities	4,118 [D]	1,500 [E]	5,618 [C]
Scientific research and development employees	392 [D]	126 [C]	518 [C]
Engineers	557 [E]	301 [D]	857 [D]
Lab technicians	393 [E]	70 [D]	463 [E]
Management, marketing or finance	839 [D]	218 [E]	1,057 [D]
Production employees or operators	1,863 [C]	747 [E]	2,609 [D]
All other employees	75 [E]	40 [E]	114 [E]
Atlantic provinces			
Total employees in bioproduct-related activities	51 [E]	x	x
Scientific research and development employees	x	x	x
Engineers	x	0	x
Lab technicians	0	0	0
Management, marketing or finance	x	3 [E]	x
Production employees or operators	x	x	x
All other employees	0	x	x
Quebec			
Total employees in bioproduct-related activities	1,370 [E]	258 [E]	1,628 [E]
Scientific research and development employees	136 [E]	27 [E]	163 [D]
Engineers	x	x	x
Lab technicians	x	17 [E]	x
Management, marketing or finance	x	14 [E]	x
Production employees or operators	442 [E]	x	x
All other employees	x	0	x
Ontario			
Total employees in bioproduct-related activities	1,662 [D]	258 [E]	1,920 [D]
Scientific research and development employees	x	x	194 [E]
Engineers	x	x	154 [E]
Lab technicians	137 [D]	38 [E]	174 [D]
Management, marketing or finance	394 [D]	35 [E]	429 [D]
Production employees or operators	829 [D]	x	x
All other employees	x	x	x
Prairies			
Total employees in bioproduct-related activities	587 [D]	x	x
Scientific research and development employees	x	x	x
Engineers	57 [E]	x	x
Lab technicians	x	x	34 [E]
Management, marketing or finance	111 [E]	130 [E]	240 [E]
Production employees or operators	323 [E]	x	x
All other employees	x	x	x
British Columbia			
Total employees in bioproduct-related activities	447 [D]	200 [E]	647 [D]
Scientific research and development employees	52 [D]	x	x
Engineers	64 [D]	44 [D]	108 [D]
Lab technicians	15 [E]	x	x
Management, marketing or finance	79 [D]	35 [D]	114 [D]
Production employees or operators	x	x	x
All other employees	x	0	x

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

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D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.31.2
Number and types of employees who worked at least 50% of the time in bioproduct activities, by establishment size, 2015

Size	Type of employees in bioproduct-related activities	Type of employees in biomass improvement-related activities	Total
	number		
Small (less than 50 employees)			
Total employees in bioproduct-related activities	1,572 [C]	308 [D]	1,879 [C]
Scientific research and development employees	183 [D]	57 [D]	239 [D]
Engineers	88 [D]	37 [D]	125 [D]
Lab technicians	x	x	122 [D]
Management, marketing or finance	310 [D]	43 [E]	353 [D]
Production employees or operators	833 [C]	134 [E]	967 [C]
All other employees	x	x	73 [E]
Medium (50 to 149 employees)			
Total employees in bioproduct-related activities	1,339 [D]	322 [E]	1,661 [D]
Scientific research and development employees	x	x	179 [D]
Engineers	x	x	207 [E]
Lab technicians	x	x	x
Management, marketing or finance	x	x	351 [E]
Production employees or operators	x	x	x
All other employees	x	x	x
Large (more than 149 employees)			
Total employees in bioproduct-related activities	1,207 [E]	871 [E]	2,078 [E]
Scientific research and development employees	x	x	99 [E]
Engineers	x	x	525 [E]
Lab technicians	x	x	x
Management, marketing or finance	x	x	353 [E]
Production employees or operators	x	x	x
All other employees	0	x	x

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D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.32
Proportion of bioproduct establishments with unfilled full- or part-time positions related to bioproducts, by region and establishment size, 2015

Region	Yes	No
	percent	
Canada	17.1 [B]	82.9 [B]
Atlantic provinces	0.0 [A]	100.0 [A]
Quebec	23.9 [C]	76.1 [C]
Ontario	x	x
Prairies	20.0 [C]	80.0 [C]
British Columbia	x	x
Size		
Small (less than 50 employees)	14.4 [B]	85.6 [B]
Medium (50 to 149 employees)	x	x
Large (more than 149 employees)	x	x

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Note: Standard Error (SE) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.33.1
Obstacles to bioproduct establishments filling bioproduct-related job vacancies, by region, 2015

Region	Not an obstacle	Minor obstacle	Moderate obstacle	Major obstacle
	percent			
Canada				
Lack of highly qualified candidates	x	x	32.6 [D]	46.9 [D]
Candidates unwilling to relocate	20.8 [D]	23.1 [C]	27.1 [D]	29.0 [D]
Capital/resources insufficient to attract candidates	33.4 [D]	23.1 [C]	19.4 [C]	24.1 [D]
Compensation requirements by candidates too high	33.4 [D]	x	33.6 [D]	x
Lack of bioproduct specific education available in colleges, universities, etc.	27.1 [D]	39.6 [D]	x	x
Sector instability/insecurity	x	32.3 [D]	26.4 [C]	x
Other	60.5 [D]	x	x	0.0 [A]
Atlantic provinces				
Lack of highly qualified candidates	..	..	..	..
Candidates unwilling to relocate	..	..	..	..
Capital/resources insufficient to attract candidates	..	..	..	..
Compensation requirements by candidates too high	..	..	..	..
Lack of bioproduct specific education available in colleges, universities, etc.	..	..	..	..
Sector instability/insecurity	..	..	..	..
Other	..	..	..	..
Quebec				
Lack of highly qualified candidates	0.0 [A]	x	x	x
Candidates unwilling to relocate	x	x	x	x
Capital/resources insufficient to attract candidates	x	x	0.0 [A]	x
Compensation requirements by candidates too high	x	x	x	x
Lack of bioproduct specific education available in colleges, universities, etc.	x	x	x	x
Sector instability/insecurity	x	x	x	x
Other	x	x	0.0 [A]	0.0 [A]
Ontario				
Lack of highly qualified candidates	x	0.0 [A]	0.0 [A]	x
Candidates unwilling to relocate	x	0.0 [A]	x	0.0 [A]
Capital/resources insufficient to attract candidates	x	0.0 [A]	0.0 [A]	x
Compensation requirements by candidates too high	x	0.0 [A]	x	0.0 [A]
Lack of bioproduct specific education available in colleges, universities, etc.	x	x	0.0 [A]	0.0 [A]
Sector instability/insecurity	x	0.0 [A]	0.0 [A]	x
Other	x	x	x	x
Prairies				
Lack of highly qualified candidates	0.0 [A]	0.0 [A]	x	x
Candidates unwilling to relocate	0.0 [A]	x	x	x
Capital/resources insufficient to attract candidates	0.0 [A]	x	x	0.0 [A]
Compensation requirements by candidates too high	0.0 [A]	x	x	0.0 [A]
Lack of bioproduct specific education available in colleges, universities, etc.	x	x	x	x
Sector instability/insecurity	x	x	x	0.0 [A]
Other	x	x	x	0.0 [A]
British Columbia				
Lack of highly qualified candidates	0.0 [A]	x	x	x
Candidates unwilling to relocate	0.0 [A]	x	x	x
Capital/resources insufficient to attract candidates	x	x	x	x
Compensation requirements by candidates too high	x	x	x	x
Lack of bioproduct specific education available in colleges, universities, etc.	x	x	0.0 [A]	x
Sector instability/insecurity	x	x	x	0.0 [A]
Other	x	x	x	0.0 [A]

.. not available for a specific reference period
x suppressed to meet the confidentiality requirements of the *Statistics Act*

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Note: Standard Error (SE) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.33.2
Obstacles to bioproduct establishments filling bioproduct-related job vacancies, by establishment size, 2015

Size	Not an obstacle	Minor obstacle	Moderate obstacle	Major obstacle
	percent			
Small (less than 50 employees)				
Lack of highly qualified candidates	x	x	x	x
Candidates unwilling to relocate	34.9 [E]	x	0.0 [A]	x
Capital/resources insufficient to attract candidates	x	x	x	x
Compensation requirements by candidates too high	x	32.5 [E]	x	x
Lack of bioproduct specific education available in colleges, universities, etc.	x	x	x	x
Sector instability/insecurity	34.4 [E]	x	x	x
Other	x	33.0 [E]	x	0.0 [A]
Medium (50 to 149 employees)				
Lack of highly qualified candidates	x	x	x	x
Candidates unwilling to relocate	0.0 [A]	0.0 [A]	x	x
Capital/resources insufficient to attract candidates	x	x	x	x
Compensation requirements by candidates too high	0.0 [A]	0.0 [A]	x	x
Lack of bioproduct specific education available in colleges, universities, etc.	0.0 [A]	x	0.0 [A]	x
Sector instability/insecurity	0.0 [A]	0.0 [A]	x	x
Other	x	x	0.0 [A]	0.0 [A]
Large (more than 149 employees)				
Lack of highly qualified candidates	0.0 [A]	0.0 [A]	x	x
Candidates unwilling to relocate	0.0 [A]	x	x	x
Capital/resources insufficient to attract candidates	x	x	x	0.0 [A]
Compensation requirements by candidates too high	x	x	x	0.0 [A]
Lack of bioproduct specific education available in colleges, universities, etc.	x	65.0 [E]	0.0 [A]	x
Sector instability/insecurity	x	x	x	0.0 [A]
Other	87.2 [C]	x	x	0.0 [A]

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Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.34.1
Locations where bioproduct establishments have considered relocating or opening a new bioproduct facility, by region, 2015

Region	Locations for relocating or for opening a new facility number
Canada	
Canada	38 [D]
Newfoundland and Labrador	0
Prince Edward Island	0
Nova Scotia	0
New Brunswick	x
Quebec	18 [D]
Ontario	x
Manitoba	0
Saskatchewan	x
Alberta	12 [E]
British Columbia	14 [E]
Yukon, Northwest Territories, Nunavut	0
International	12 [E]
United States	10 [E]
European Union	9 [E]
Other locations	7 [E]
Did not consider relocating or opening a new facility	152 [B]
Atlantic provinces	
Canada	0
Newfoundland and Labrador	0
Prince Edward Island	0
Nova Scotia	0
New Brunswick	0
Quebec	0
Ontario	0
Manitoba	0
Saskatchewan	0
Alberta	0
British Columbia	0
Yukon, Northwest Territories, Nunavut	0
International	0
United States	0
European Union	0
Other locations	0
Did not consider relocating or opening a new facility	21 [D]
Quebec	
Canada	x
Newfoundland and Labrador	0
Prince Edward Island	0
Nova Scotia	0
New Brunswick	0
Quebec	12 [E]
Ontario	x
Manitoba	0
Saskatchewan	0
Alberta	x
British Columbia	x
Yukon, Northwest Territories, Nunavut	0
International	x
United States	x
European Union	x
Other locations	x
Did not consider relocating or opening a new facility	28 [C]

Table A.34.1
Locations where bioproduct establishments have considered relocating or opening a new bioproduct facility, by region, 2015

Region	Locations for relocating or for opening a new facility number
Ontario	
Canada	x
Newfoundland and Labrador	0
Prince Edward Island	0
Nova Scotia	0
New Brunswick	x
Quebec	x
Ontario	x
Manitoba	0
Saskatchewan	0
Alberta	x
British Columbia	x
Yukon, Northwest Territories, Nunavut	0
International	x
United States	x
European Union	x
Other locations	x
Did not consider relocating or opening a new facility	x
Prairies	
Canada	11 [E]
Newfoundland and Labrador	0
Prince Edward Island	0
Nova Scotia	0
New Brunswick	0
Quebec	0
Ontario	0
Manitoba	0
Saskatchewan	x
Alberta	x
British Columbia	0
Yukon, Northwest Territories, Nunavut	0
International	0
United States	0
European Union	0
Other locations	0
Did not consider relocating or opening a new facility	32 [D]
British Columbia	
Canada	x
Newfoundland and Labrador	0
Prince Edward Island	0
Nova Scotia	0
New Brunswick	0
Quebec	x
Ontario	0
Manitoba	0
Saskatchewan	0
Alberta	0
British Columbia	x
Yukon, Northwest Territories, Nunavut	0
International	x
United States	x
European Union	x
Other locations	0
Did not consider relocating or opening a new facility	x

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

B : [0.050 < CV ≤ 0.100]
C : [0.100 < CV ≤ 0.150]
D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.34.2
Locations where bioproduct establishments have considered relocating or opening a new bioproduct facility, by establishment size, 2015

Size	Locations for relocating or for opening a new facility
	number
Small (less than 50 employees)	
Canada	x
Newfoundland and Labrador	0
Prince Edward Island	0
Nova Scotia	0
New Brunswick	x
Quebec	x
Ontario	x
Manitoba	0
Saskatchewan	x
Alberta	x
British Columbia	x
Yukon, Northwest Territories, Nunavut	0
International	x
United States	x
European Union	9 [E]
Other locations	x
Did not consider relocating or opening a new facility	108 [B]
Medium (50 to 149 employees)	
Canada	x
Newfoundland and Labrador	0
Prince Edward Island	0
Nova Scotia	0
New Brunswick	0
Quebec	x
Ontario	0
Manitoba	0
Saskatchewan	0
Alberta	0
British Columbia	x
Yukon, Northwest Territories, Nunavut	0
International	x
United States	x
European Union	0
Other locations	x
Did not consider relocating or opening a new facility	x
Large (more than 149 employees)	
Canada	x
Newfoundland and Labrador	0
Prince Edward Island	0
Nova Scotia	0
New Brunswick	0
Quebec	0
Ontario	0
Manitoba	0
Saskatchewan	0
Alberta	x
British Columbia	x
Yukon, Northwest Territories, Nunavut	0
International	0
United States	0
European Union	0
Other locations	0
Did not consider relocating or opening a new facility	x

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

B : [0.050 < CV ≤ 0.100]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.35.1
Important factors to bioproduct establishments when considering where to relocate or open a new bioproduct facility, by region, 2015

Region	Low importance	Medium importance	High importance	Not applicable
	percent			
Canada				
Proximity to biomass	x	x	77.5 [C]	0.0 [A]
Access to low cost biomass	x	24.3 [D]	59.1 [D]	x
Proximity to head office or other existing firm facilities	39.2 [D]	x	37.3 [D]	x
Locating in a cluster (a geographic concentration of interconnected businesses, suppliers and associated institutions)	37.6 [D]	14.0 [C]	19.6 [C]	28.8 [D]
Proximity to end user market	45.6 [D]	29.6 [D]	x	x
Availability of local infrastructure	x	48.2 [D]	x	x
Enabling regulations	x	40.1 [D]	28.6 [D]	x
Tax-related incentives	x	43.9 [D]	25.0 [C]	x
Other factors	20.1 [C]	x	x	48.2 [D]
Atlantic provinces				
Proximity to biomass	..	..	..	..
Access to low cost biomass	..	..	..	..
Proximity to head office or other existing firm facilities	..	..	..	..
Locating in a cluster (a geographic concentration of interconnected businesses, suppliers and associated institutions)	..	..	..	..
Proximity to end user market	..	..	..	..
Availability of local infrastructure	..	..	..	..
Enabling regulations	..	..	..	..
Tax-related incentives	..	..	..	..
Other factors	..	..	..	..
Quebec				
Proximity to biomass	x	x	x	0.0 [A]
Access to low cost biomass	x	x	x	0.0 [A]
Proximity to head office or other existing firm facilities	41.9 [E]	x	x	x
Locating in a cluster (a geographic concentration of interconnected businesses, suppliers and associated institutions)	x	x	x	x
Proximity to end user market	x	34.9 [E]	x	x
Availability of local infrastructure	0.0 [A]	x	41.9 [E]	x
Enabling regulations	x	x	x	x
Tax-related incentives	9.3 [B]	41.9 [E]	32.6 [E]	16.3 [E]
Other factors	41.9 [E]	0.0 [A]	0.0 [A]	58.1 [E]
Ontario				
Proximity to biomass	x	x	x	x
Access to low cost biomass	x	x	x	x
Proximity to head office or other existing firm facilities	0.0 [A]	0.0 [A]	x	x
Locating in a cluster (a geographic concentration of interconnected businesses, suppliers and associated institutions)	x	0.0 [A]	0.0 [A]	x
Proximity to end user market	x	x	0.0 [A]	0.0 [A]
Availability of local infrastructure	0.0 [A]	x	x	0.0 [A]
Enabling regulations	0.0 [A]	x	x	0.0 [A]
Tax-related incentives	0.0 [A]	100.0 [A]	0.0 [A]	0.0 [A]
Other factors	0.0 [A]	0.0 [A]	50.0 [E]	50.0 [E]
Prairies				
Proximity to biomass	x	0.0 [A]	x	0.0 [A]
Access to low cost biomass	x	x	x	0.0 [A]
Proximity to head office or other existing firm facilities	x	0.0 [A]	x	0.0 [A]
Locating in a cluster (a geographic concentration of interconnected businesses, suppliers and associated institutions)	x	0.0 [A]	x	x
Proximity to end user market	80.0 [E]	x	0.0 [A]	x
Availability of local infrastructure	x	x	x	0.0 [A]
Enabling regulations	x	x	0.0 [A]	0.0 [A]
Tax-related incentives	x	x	x	0.0 [A]
Other factors	20.0 [E]	x	x	0.0 [A]

Table A.35.1
Important factors to bioproduct establishments when considering where to relocate or open a new bioproduct facility, by region, 2015

Region	Low importance	Medium importance	High importance	Not applicable
	percent			
British Columbia				
Proximity to biomass	0.0 [A]	0.0 [A]	100.0 [A]	0.0 [A]
Access to low cost biomass	0.0 [A]	0.0 [A]	x	x
Proximity to head office or other existing firm facilities	x	0.0 [A]	x	0.0 [A]
Locating in a cluster (a geographic concentration of interconnected businesses, suppliers and associated institutions)	x	x	x	x
Proximity to end user market	x	x	x	0.0 [A]
Availability of local infrastructure	0.0 [A]	55.7 [E]	x	x
Enabling regulations	0.0 [A]	x	x	0.0 [A]
Tax-related incentives	0.0 [A]	x	x	x
Other factors	0.0 [A]	11.4 [B]	0.0 [A]	88.6 [B]

.. not available for a specific reference period
x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

A : [0.000 ≤ SE ≤ 0.025]
B : [0.025 < SE ≤ 0.050]
C : [0.050 < SE ≤ 0.075]
D : [0.075 < SE ≤ 0.100]
Note: Standard Error (SE) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.35.2
Important factors to bioproduct establishments when considering where to relocate or open a new bioproduct facility, by establishment size, 2015

Size	Low importance	Medium importance	High importance	Not applicable
	percent			
Small (less than 50 employees)				
Proximity to biomass	x	x	68.4 [D]	0.0 [A]
Access to low cost biomass	x	x	x	x
Proximity to head office or other existing firm facilities	x	x	x	x
Locating in a cluster (a geographic concentration of interconnected businesses, suppliers and associated institutions)	x	x	x	40.5 [E]
Proximity to end user market	39.5 [D]	x	23.1 [D]	x
Availability of local infrastructure	x	48.7 [E]	x	x
Enabling regulations	x	x	x	x
Tax-related incentives	x	x	x	x
Other factors	23.7 [D]	x	x	52.6 [E]
Medium (50 to 149 employees)				
Proximity to biomass	x	x	x	x
Access to low cost biomass	0.0 [A]	x	x	0.0 [A]
Proximity to head office or other existing firm facilities	x	0.0 [A]	x	0.0 [A]
Locating in a cluster (a geographic concentration of interconnected businesses, suppliers and associated institutions)	x	x	0.0 [A]	0.0 [A]
Proximity to end user market	x	0.0 [A]	x	0.0 [A]
Availability of local infrastructure	0.0 [A]	x	x	0.0 [A]
Enabling regulations	0.0 [A]	x	x	0.0 [A]
Tax-related incentives	0.0 [A]	70.2 [E]	29.8 [E]	0.0 [A]
Other factors	0.0 [A]	29.8 [E]	70.2 [E]	0.0 [A]
Large (more than 149 employees)				
Proximity to biomass	x	x	x	x
Access to low cost biomass	x	x	x	x
Proximity to head office or other existing firm facilities	x	x	x	x
Locating in a cluster (a geographic concentration of interconnected businesses, suppliers and associated institutions)	x	0.0 [A]	x	0.0 [A]
Proximity to end user market	x	x	0.0 [A]	0.0 [A]
Availability of local infrastructure	0.0 [A]	x	x	0.0 [A]
Enabling regulations	x	x	x	x
Tax-related incentives	x	x	x	0.0 [A]
Other factors	16.4 [D]	0.0 [A]	28.6 [E]	54.9 [E]

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

A : [0.000 ≤ SE ≤ 0.025]
D : [0.075 < SE ≤ 0.100]
Note: Standard Error (SE) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.36
Proportion of bioproduct establishments that contracted out bioproduct-related activities, by region and establishment size, 2015

Region	Yes	No
	percent	
Canada	34.3 [B]	65.7 [B]
Atlantic provinces	20.9 [E]	79.1 [E]
Quebec	26.9 [C]	73.1 [C]
Ontario	29.0 [C]	71.0 [C]
Prairies	40.0 [D]	60.0 [D]
British Columbia	59.7 [D]	40.3 [D]
Size		
Small (less than 50 employees)	30.0 [B]	70.0 [B]
Medium (50 to 149 employees)	49.9 [E]	50.1 [E]
Large (more than 149 employees)	40.2 [D]	59.8 [D]

[E] use with caution

B : [0.025 < SE ≤ 0.050]
C : [0.050 < SE ≤ 0.075]
D : [0.075 < SE ≤ 0.100]
Note: Standard Error (SE) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.37.1
Number of bioproduct-related activities contracted out by bioproduct establishments, by region, 2015

Region	Bioproduct-related activities contracted out number
Canada	
Production of goods	15 [E]
Management and business administration	x
Engineering services	32 [D]
Regulatory services	x
Research and development	16 [D]
Sales and marketing	9 [E]
Other	13 [E]
Atlantic provinces	
Production of goods	0
Management and business administration	0
Engineering services	0
Regulatory services	0
Research and development	x
Sales and marketing	0
Other	x
Quebec	
Production of goods	x
Management and business administration	0
Engineering services	8 [E]
Regulatory services	0
Research and development	x
Sales and marketing	0
Other	x
Ontario	
Production of goods	x
Management and business administration	0
Engineering services	9 [E]
Regulatory services	x
Research and development	x
Sales and marketing	x
Other	x
Prairies	
Production of goods	x
Management and business administration	x
Engineering services	9 [E]
Regulatory services	x
Research and development	x
Sales and marketing	x
Other	x
British Columbia	
Production of goods	x
Management and business administration	0
Engineering services	7 [E]
Regulatory services	x
Research and development	x
Sales and marketing	0
Other	x

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution
D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.37.2
Number of bioproduct-related activities contracted out by bioproduct establishments, by establishment size, 2015

Size	Bioproduct-related activities contracted out number
Small (less than 50 employees)	
Production of goods	x
Management and business administration	x
Engineering services	15 [D]
Regulatory services	x
Research and development	9 [E]
Sales and marketing	9 [E]
Other	x
Medium (50 to 149 employees)	
Production of goods	x
Management and business administration	0
Engineering services	x
Regulatory services	x
Research and development	x
Sales and marketing	0
Other	x
Large (more than 149 employees)	
Production of goods	x
Management and business administration	0
Engineering services	x
Regulatory services	x
Research and development	x
Sales and marketing	0
Other	x

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.38.1
Reasons bioproduct establishments contracted out bioproduct-related activities, by level of importance and region, 2015

Region	Low importance	Medium importance	High importance	Not applicable
	percent			
Canada				
Access outside scientific expertise/knowledge	11.5 [B]	15.2 [B]	52.3 [C]	21.0 [C]
Activity area outside core competence of firm	24.1 [C]	16.6 [B]	41.6 [C]	17.8 [C]
Faster completion of the work	19.7 [B]	43.6 [C]	27.1 [C]	9.6 [B]
Lower risks to the firm	18.4 [B]	29.0 [C]	41.2 [C]	11.5 [B]
Increase physical capacity (infrastructure, equipment, etc.)	40.1 [C]	21.7 [C]	28.4 [C]	9.7 [B]
Access external R&D expertise	26.2 [C]	9.7 [B]	36.5 [C]	27.6 [C]
Access regulatory affairs expertise	28.1 [C]	24.4 [C]	13.5 [B]	34.0 [C]
Access production facilities	33.9 [C]	19.8 [C]	17.9 [B]	28.3 [C]
Cost-effectiveness	15.0 [B]	18.3 [B]	48.3 [C]	18.4 [C]
Other	x	14.1 [B]	x	59.1 [C]
Atlantic provinces				
Access outside scientific expertise/knowledge	0.0 [A]	0.0 [A]	x	x
Activity area outside core competence of firm	x	0.0 [A]	0.0 [A]	x
Faster completion of the work	x	0.0 [A]	x	0.0 [A]
Lower risks to the firm	x	0.0 [A]	0.0 [A]	x
Increase physical capacity (infrastructure, equipment, etc.)	x	0.0 [A]	x	0.0 [A]
Access external R&D expertise	0.0 [A]	0.0 [A]	x	x
Access regulatory affairs expertise	x	0.0 [A]	0.0 [A]	x
Access production facilities	x	0.0 [A]	0.0 [A]	x
Cost-effectiveness	0.0 [A]	x	x	0.0 [A]
Other	x	0.0 [A]	0.0 [A]	x
Quebec				
Access outside scientific expertise/knowledge	0.0 [A]	x	50.0 [E]	x
Activity area outside core competence of firm	41.7 [E]	x	x	0.0 [A]
Faster completion of the work	x	x	x	0.0 [A]
Lower risks to the firm	x	50.0 [E]	x	0.0 [A]
Increase physical capacity (infrastructure, equipment, etc.)	x	x	0.0 [A]	x
Access external R&D expertise	x	0.0 [A]	50.0 [E]	x
Access regulatory affairs expertise	x	x	x	x
Access production facilities	x	x	0.0 [A]	x
Cost-effectiveness	x	0.0 [A]	x	x
Other	x	x	0.0 [A]	69.4 [E]
Ontario				
Access outside scientific expertise/knowledge	x	x	50.0 [E]	x
Activity area outside core competence of firm	x	x	x	x
Faster completion of the work	0.0 [A]	72.6 [E]	27.4 [E]	0.0 [A]
Lower risks to the firm	x	x	64.5 [E]	0.0 [A]
Increase physical capacity (infrastructure, equipment, etc.)	64.5 [E]	x	x	0.0 [A]
Access external R&D expertise	43.6 [E]	x	x	x
Access regulatory affairs expertise	x	43.6 [E]	x	x
Access production facilities	x	43.6 [E]	x	x
Cost-effectiveness	0.0 [A]	x	58.1 [E]	x
Other	x	x	0.0 [A]	56.4 [E]
Prairies				
Access outside scientific expertise/knowledge	x	0.0 [A]	x	0.0 [A]
Activity area outside core competence of firm	x	0.0 [A]	50.0 [E]	x
Faster completion of the work	x	x	37.5 [E]	x
Lower risks to the firm	x	x	x	0.0 [A]
Increase physical capacity (infrastructure, equipment, etc.)	x	x	37.5 [E]	x
Access external R&D expertise	x	0.0 [A]	50.0 [E]	x
Access regulatory affairs expertise	50.0 [E]	x	x	x
Access production facilities	37.5 [E]	0.0 [A]	x	x
Cost-effectiveness	x	0.0 [A]	x	0.0 [A]
Other	x	x	x	x

Table A.38.1
Reasons bioproduct establishments contracted out bioproduct-related activities, by level of importance and region, 2015

Region	Low importance	Medium importance	High importance	Not applicable
	percent			
British Columbia				
Access outside scientific expertise/knowledge	0.0 [A]	x	53.2 [E]	x
Activity area outside core competence of firm	0.0 [A]	x	x	0.0 [A]
Faster completion of the work	x	39.9 [E]	x	x
Lower risks to the firm	0.0 [A]	x	46.8 [E]	x
Increase physical capacity (infrastructure, equipment, etc.)	x	x	33.5 [E]	x
Access external R&D expertise	x	x	x	x
Access regulatory affairs expertise	x	x	x	39.9 [E]
Access production facilities	x	x	x	39.9 [E]
Cost-effectiveness	0.0 [A]	46.8 [E]	x	x
Other	x	x	x	60.1 [E]

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

A : [0.000 ≤ SE ≤ 0.025]
B : [0.025 < SE ≤ 0.050]
C : [0.050 < SE ≤ 0.075]
Note: Standard Error (SE) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.38.2
Reasons bioproduct establishments contracted out bioproduct-related activities, by level of importance and establishment size, 2015

Size	Low importance	Medium importance	High importance	Not applicable
	percent			
Small (less than 50 employees)				
Access outside scientific expertise/knowledge	18.5 [C]	x	51.4 [D]	x
Activity area outside core competence of firm	x	x	33.5 [D]	x
Faster completion of the work	x	37.0 [D]	29.4 [D]	x
Lower risks to the firm	18.5 [C]	x	48.5 [D]	x
Increase physical capacity (infrastructure, equipment, etc.)	30.8 [D]	x	x	15.6 [C]
Access external R&D expertise	25.4 [C]	x	34.1 [D]	x
Access regulatory affairs expertise	29.0 [C]	x	x	38.0 [D]
Access production facilities	43.7 [D]	x	x	28.9 [D]
Cost-effectiveness	x	13.0 [B]	55.6 [D]	x
Other reasons	x	22.6 [C]	x	48.6 [D]
Medium (50 to 149 employees)				
Access outside scientific expertise/knowledge	0.0 [A]	x	x	x
Activity area outside core competence of firm	0.0 [A]	x	x	x
Faster completion of the work	0.0 [A]	55.8 [E]	x	x
Lower risks to the firm	x	x	x	x
Increase physical capacity (infrastructure, equipment, etc.)	x	x	x	0.0 [A]
Access external R&D expertise	x	x	x	x
Access regulatory affairs expertise	x	x	x	52.3 [E]
Access production facilities	x	x	0.0 [A]	52.3 [E]
Cost-effectiveness	0.0 [A]	x	x	x
Other	x	0.0 [A]	x	x
Large (more than 149 employees)				
Access outside scientific expertise/knowledge	0.0 [A]	x	x	0.0 [A]
Activity area outside core competence of firm	x	x	x	0.0 [A]
Faster completion of the work	x	53.2 [E]	x	x
Lower risks to the firm	x	53.2 [E]	x	0.0 [A]
Increase physical capacity (infrastructure, equipment, etc.)	x	x	x	0.0 [A]
Access external R&D expertise	x	0.0 [A]	x	0.0 [A]
Access regulatory affairs expertise	x	x	0.0 [A]	0.0 [A]
Access production facilities	x	x	x	0.0 [A]
Cost-effectiveness	x	x	x	0.0 [A]
Other	x	0.0 [A]	0.0 [A]	x

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

A : [0.000 ≤ SE ≤ 0.025]
B : [0.025 < SE ≤ 0.050]
C : [0.050 < SE ≤ 0.075]
D : [0.075 < SE ≤ 0.100]
Note: Standard Error (SE) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.39
Number of bioproduct establishments that participated in bioproduct-related co-operative or collaborative arrangements, by region and establishment size, 2015

Region	Establishments participating in co-operative / collaborative arrangements	Co-operative / collaborative arrangements with other businesses	Co-operative / collaborative arrangements that involved more than one partner
	number		
Canada	69 [C]	218 [D]	57 [D]
Atlantic provinces	10 [E]	17 [E]	0
Quebec	13 [E]	76 [E]	x
Ontario	16 [E]	31 [E]	12 [E]
Prairies	19 [D]	66 [D]	28 [E]
British Columbia	10 [E]	29 [E]	x
Size			
Small (less than 50 employees)	40 [D]	144 [E]	33 [E]
Medium (50 to 149 employees)	6 [E]	24 [E]	x
Large (more than 149 employees)	23 [D]	50 [E]	x

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

C : [0.100 < CV ≤ 0.150]
D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.40.1
Number of bioproduct establishments collaborated with during the previous three years, by partnership type and region, 2013 to 2015

Region	Establishments number
Canada	
Businesses in Canada	48 [C]
Businesses outside Canada	37 [D]
Academic Institutions in Canada	35 [D]
Academic Institutions outside Canada	7 [E]
Federal Government Agencies or Labs	13 [E]
Provincial Government Agencies or Labs	17 [D]
Other collaborators	4 [E]
Atlantic provinces	
Businesses in Canada	0
Businesses outside Canada	x
Academic Institutions in Canada	x
Academic Institutions outside Canada	0
Federal Government Agencies or Labs	0
Provincial Government Agencies or Labs	0
Other collaborators	0
Quebec	
Businesses in Canada	10 [E]
Businesses outside Canada	0
Academic Institutions in Canada	13 [E]
Academic Institutions outside Canada	0
Federal Government Agencies or Labs	x
Provincial Government Agencies or Labs	x
Other collaborators	x
Ontario	
Businesses in Canada	12 [E]
Businesses outside Canada	11 [E]
Academic Institutions in Canada	0
Academic Institutions outside Canada	0
Federal Government Agencies or Labs	x
Provincial Government Agencies or Labs	0
Other collaborators	0
Prairies	
Businesses in Canada	17 [D]
Businesses outside Canada	x
Academic Institutions in Canada	13 [E]
Academic Institutions outside Canada	x
Federal Government Agencies or Labs	x
Provincial Government Agencies or Labs	x
Other collaborators	0
British Columbia	
Businesses in Canada	9 [E]
Businesses outside Canadauimo0	8 [E]
Academic Institutions in Canada	x
Academic Institutions outside Canada	x
Federal Government Agencies or Labs	0
Provincial Government Agencies or Labs	0
Other collaborators	x

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

C : [0.100 < CV ≤ 0.150]
D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.40.2
Number of bioproduct establishments collaborated with during the previous three years, by partnership type and establishment size, 2013-2015

Size	Establishments number
Small (less than 50 employees)	
Businesses in Canada	31[D]
Businesses outside Canada	14[E]
Academic Institutions in Canada	25[D]
Academic Institutions outside Canada	x
Federal Government Agencies or Labs	x
Provincial Government Agencies or Labs	11[E]
Other collaborators	0
Medium (50 to 149 employees)	
Businesses in Canada	x
Businesses outside Canada	6[E]
Academic Institutions in Canada	x
Academic Institutions outside Canada	0
Federal Government Agencies or Labs	x
Provincial Government Agencies or Labs	0
Other collaborators	x
Large (more than 149 employees)	
Businesses in Canada	x
Businesses outside Canada	17[E]
Academic Institutions in Canada	x
Academic Institutions outside Canada	x
Federal Government Agencies or Labs	0
Provincial Government Agencies or Labs	6[E]
Other collaborators	x

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.41.1
Reasons bioproduct establishments decided to co-operate or collaborate with partners, by level of importance and region, 2015

Region	Low importance	Medium importance	High importance	Not applicable
	percent			
Canada				
Access outside scientific expertise/knowledge	x	8.3 [B]	80.4 [C]	x
Perform research and development	x	20.2 [C]	66.5 [C]	x
Access to biomass	29.4 [C]	9.4 [B]	36.8 [C]	24.4 [C]
Access production/manufacturing facilities	41.5 [C]	12.6 [B]	x	x
Access marketing/distribution channels	28.4 [C]	16.3 [B]	24.8 [C]	30.5 [C]
Access partners intellectual property	21.2 [C]	22.0 [C]	19.5 [C]	37.3 [C]
Access capital	15.8 [B]	15.4 [B]	31.1 [C]	37.7 [C]
Access regulatory affairs expertise	41.3 [C]	x	x	31.0 [C]
Faster copmletion of the work	17.6 [B]	18.9 [C]	22.2 [C]	41.4 [C]
Cost-effectiveness	16.0 [B]	9.2 [B]	36.4 [C]	38.4 [C]
Other reasons	15.0 [B]	x	x	69.1 [C]
Atlantic provinces				
Access outside scientific expertise/knowledge	0.0 [A]	0.0 [A]	100.0 [A]	0.0 [A]
Perform research and development	0.0 [A]	0.0 [A]	100.0 [A]	0.0 [A]
Access to biomass	0.0 [A]	0.0 [A]	0.0 [A]	100.0 [A]
Access production/manufacturing facilities	0.0 [A]	0.0 [A]	0.0 [A]	100.0 [A]
Access marketing/distribution channels	0.0 [A]	0.0 [A]	0.0 [A]	100.0 [A]
Access partners intellectual property	0.0 [A]	0.0 [A]	0.0 [A]	100.0 [A]
Access capital	0.0 [A]	0.0 [A]	0.0 [A]	100.0 [A]
Access regulatory affairs expertise	0.0 [A]	0.0 [A]	0.0 [A]	100.0 [A]
Faster copmletion of the work	0.0 [A]	0.0 [A]	0.0 [A]	100.0 [A]
Cost-effectiveness	0.0 [A]	0.0 [A]	0.0 [A]	100.0 [A]
Other reasons	0.0 [A]	0.0 [A]	0.0 [A]	100.0 [A]
Quebec				
Access outside scientific expertise/knowledge	0.0 [A]	0.0 [A]	100.0 [A]	0.0 [A]
Perform research and development	0.0 [A]	x	x	0.0 [A]
Access to biomass	x	x	x	x
Access production/manufacturing facilities	x	x	x	0.0 [A]
Access marketing/distribution channels	x	0.0 [A]	x	x
Access partners intellectual property	x	0.0 [A]	x	x
Access capital	0.0 [A]	x	65.1 [E]	x
Access regulatory affairs expertise	x	0.0 [A]	48.8 [E]	x
Faster copmletion of the work	x	0.0 [A]	x	51.2 [E]
Cost-effectiveness	0.0 [A]	0.0 [A]	48.8 [E]	51.2 [E]
Other reasons	0.0 [A]	0.0 [A]	0.0 [A]	100.0 [A]
Ontario				
Access outside scientific expertise/knowledge	x	x	x	0.0 [A]
Perform research and development	x	x	x	0.0 [A]
Access to biomass	x	x	x	0.0 [A]
Access production/manufacturing facilities	x	0.0 [A]	x	x
Access marketing/distribution channels	x	x	x	0.0 [A]
Access partners intellectual property	37.9 [E]	x	x	x
Access capital	x	0.0 [A]	x	x
Access regulatory affairs expertise	37.9 [E]	0.0 [A]	x	x
Faster copmletion of the work	x	x	x	x
Cost-effectiveness	x	x	x	x
Other reasons	x	x	0.0 [A]	53.4 [E]
Prairies				
Access outside scientific expertise/knowledge	0.0 [A]	x	x	x
Perform research and development	0.0 [A]	x	x	x
Access to biomass	x	0.0 [A]	44.4 [E]	x
Access production/manufacturing facilities	x	x	44.4 [E]	0.0 [A]
Access marketing/distribution channels	x	x	33.3 [E]	x
Access partners intellectual property	x	44.4 [E]	x	x
Access capital	x	x	x	x
Access regulatory affairs expertise	x	0.0 [A]	0.0 [A]	x
Faster copmletion of the work	33.3 [E]	33.3 [E]	x	x
Cost-effectiveness	x	x	33.3 [E]	x
Other reasons	x	x	x	x

Table A.41.1
Reasons bioproduct establishments decided to co-operate or collaborate with partners, by level of importance and region, 2015

Region	Low importance	Medium importance	High importance	Not applicable
	percent			
British Columbia				
Access outside scientific expertise/knowledge	0.0 [A]	x	x	x
Perform research and development	0.0 [A]	x	x	x
Access to biomass	x	x	x	0.0 [A]
Access production/manufacturing facilities	x	x	50.0 [E]	x
Access marketing/distribution channels	x	x	x	x
Access partners intellectual property	x	x	x	x
Access capital	x	x	x	x
Access regulatory affairs expertise	x	x	x	x
Faster copmletion of the work	x	x	x	x
Cost-effectiveness	0.0 [A]	x	x	0.0 [A]
Other reasons	x	x	0.0 [A]	x

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

A : [0.000 ≤ SE ≤ 0.025]
B : [0.025 < SE ≤ 0.050]
C : [0.050 < SE ≤ 0.075]
Note: Standard Error (SE) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.41.2
Reasons bioproduct establishments decided to co-operate or collaborate with partners, by level of importance and establishment size, 2015

Size	Low importance	Medium importance	High importance	Not applicable
	percent			
Small (less than 50 employees)				
Access outside scientific expertise/knowledge	x	14.2 C	x	x
Perform research and development	x	x	54.0 D	x
Access to biomass	16.9 C	16.1 C	45.0 D	22.0 D
Access production/manufacturing facilities	39.9 D	21.7 C	18.7 C	19.7 D
Access marketing/distribution channels	x	x	x	32.5 D
Access partners intellectual property	22.2 C	x	x	44.1 D
Access capital	11.6 B	x	x	39.6 D
Access regulatory affairs expertise	38.2 D	0.0 A	28.4 D	33.4 D
Faster copmletion of the work	x	x	24.1 C	45.8 D
Cost-effectiveness	x	x	x	40.7 D
Other reasons	x	x	x	x
Medium (50 to 149 employees)				
Access outside scientific expertise/knowledge	0.0 A	0.0 A	100.0 A	0.0 A
Perform research and development	0.0 A	x	x	0.0 A
Access to biomass	x	0.0 A	x	0.0 A
Access production/manufacturing facilities	x	0.0 A	x	0.0 A
Access marketing/distribution channels	x	0.0 A	x	0.0 A
Access partners intellectual property	x	x	0.0 A	0.0 A
Access capital	0.0 A	0.0 A	100.0 A	0.0 A
Access regulatory affairs expertise	x	0.0 A	x	0.0 A
Faster copmletion of the work	0.0 A	x	x	0.0 A
Cost-effectiveness	0.0 A	0.0 A	100.0 A	0.0 A
Other reasons	x	0.0 A	0.0 A	x
Large (more than 149 employees)				
Access outside scientific expertise/knowledge	0.0 A	0.0 A	x	x
Perform research and development	0.0 A	0.0 A	x	x
Access to biomass	x	0.0 A	x	35.1 E
Access production/manufacturing facilities	x	0.0 A	x	x
Access marketing/distribution channels	x	x	28.3 E	35.1 E
Access partners intellectual property	x	x	x	35.1 E
Access capital	27.5 E	x	x	44.6 E
Access regulatory affairs expertise	x	x	0.0 A	35.1 E
Faster copmletion of the work	x	x	x	44.6 E
Cost-effectiveness	x	x	x	44.6 E
Other reasons	x	0.0 A	0.0 A	x

x suppressed to meet the confidentiality requirements of the *Statistics Act*
E use with caution

A : [0.000 ≤ SE ≤ 0.025]
B : [0.025 < SE ≤ 0.050]
C : [0.050 < SE ≤ 0.075]
D : [0.075 < SE ≤ 0.100]
Note: Standard Error (SE) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.42
Number of bioproduct establishments that indicated their customers required sustainably sourced biomass inputs, by region and establishment size, 2015

Region	Yes, some customers	Yes, all customers	No	Don't know
	number			
Canada	35 [D]	12 [E]	96 [B]	47 [D]
Atlantic provinces	0	0	11 [E]	10 [E]
Quebec	10 [E]	0	17 [D]	15 [D]
Ontario	x	x	32 [D]	14 [E]
Prairies	x	0	26 [D]	x
British Columbia	x	x	10 [E]	x
Size				
Small (less than 50 employees)	x	x	78 [C]	31 [D]
Medium (50 to 149 employees)	x	6 [E]	x	9 [E]
Large (more than 149 employees)	x	x	x	7 [E]

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

B : [0.050 < CV ≤ 0.100]
C : [0.100 < CV ≤ 0.150]
D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.43
Number of bioproduct establishments that took steps to verify whether their biomass inputs were sustainably produced, by region and establishment size, 2015

Region	Yes, some inputs	Yes, all inputs	No	Don't know
	number			
Canada	35 [D]	39 [D]	5 [E]	110 [B]
Atlantic provinces	x	x	0	11 [E]
Quebec	11 [E]	x	x	23 [D]
Ontario	9 [E]	12 [E]	0	38 [C]
Prairies	6 [E]	11 [E]	0	26 [D]
British Columbia	x	6 [E]	x	12 [D]
Size				
Small (less than 50 employees)	x	21 [D]	x	90 [C]
Medium (50 to 149 employees)	9 [E]	6 [E]	0	11 [E]
Large (more than 149 employees)	x	12 [E]	x	9 [E]

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

B : [0.050 < CV ≤ 0.100]
C : [0.100 < CV ≤ 0.150]
D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.44
Number and types of methods used by bioproducts establishments to verify whether their biomass inputs were sustainably produced, by region and establishment size, 2015

Region	Certification scheme	Formal contract	Traceability systems	Other means
	number			
Canada	32 [D]	8 [E]	26 [D]	16 [E]
Atlantic provinces	0	0	0	x
Quebec	0	x	12 [E]	x
Ontario	10 [E]	x	x	x
Prairies	13 [E]	0	x	x
British Columbia	9 [E]	x	0	x
Size				
Small (less than 50 employees)	16 [E]	x	19 [D]	x
Medium (50 to 149 employees)	x	x	7 [E]	x
Large (more than 149 employees)	x	0	0	0

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.45
Number of bioproduct establishments that completed a Life Cycle Analysis (LCA) or an Environmental Product Declaration (EPD®) for their bioproducts, by region and establishment size, 2010-2015

Region	Yes	No	Don't know
	number		
Canada	44 [C]	90 [C]	57 [C]
Atlantic provinces	x	13 [E]	x
Quebec	13 [E]	11 [E]	17 [D]
Ontario	14 [E]	28 [D]	17 [E]
Prairies	11 [E]	19 [D]	13 [E]
British Columbia	x	17 [D]	x
Size			
Small (less than 50 employees)	29 [D]	70 [C]	36 [D]
Medium (50 to 149 employees)	x	x	11 [E]
Large (more than 149 employees)	x	x	10 [E]

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

C : [0.100 < CV ≤ 0.150]
D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.46.1
Factors preventing bioproduct establishments from completing a Life Cycle Analysis (LCA) or an Environmental Product Declaration (EPD®) for their bioproducts, by region, 2015

Region	Life Cycle Analysis (LCA)	Environmental Product Declaration (EPD®)	Both	Not applicable
		percent		
Canada				
Missing information	x	0.0 [A]	x	61.2 [C]
Cost was high	x	0.0 [A]	x	62.3 [C]
No customer requirement	x	0.0 [A]	59.6 [C]	x
Did not see any benefit	x	0.0 [A]	x	51.8 [C]
Lack of expertise	x	0.0 [A]	x	74.0 [C]
Lack of collective effort from industry	0.0 [A]	0.0 [A]	19.7 [B]	80.3 [B]
Other reasons	x	0.0 [A]	x	57.4 [C]
Atlantic provinces				
Missing information	0.0 [A]	0.0 [A]	x	x
Cost was high	0.0 [A]	0.0 [A]	x	x
No customer requirement	0.0 [A]	0.0 [A]	x	x
Did not see any benefit	0.0 [A]	0.0 [A]	x	x
Lack of expertise	0.0 [A]	0.0 [A]	0.0 [A]	100.0 [A]
Lack of collective effort from industry	0.0 [A]	0.0 [A]	0.0 [A]	100.0 [A]
Other reasons	0.0 [A]	0.0 [A]	x	x
Quebec				
Missing information	0.0 [A]	0.0 [A]	x	x
Cost was high	0.0 [A]	0.0 [A]	58.3 [E]	41.7 [E]
No customer requirement	0.0 [A]	0.0 [A]	x	x
Did not see any benefit	0.0 [A]	0.0 [A]	50.0 [E]	50.0 [E]
Lack of expertise	0.0 [A]	0.0 [A]	x	x
Lack of collective effort from industry	0.0 [A]	0.0 [A]	x	x
Other reasons	0.0 [A]	0.0 [A]	x	x
Ontario				
Missing information	x	0.0 [A]	x	56.3 [E]
Cost was high	0.0 [A]	0.0 [A]	43.7 [E]	56.3 [E]
No customer requirement	0.0 [A]	0.0 [A]	56.3 [E]	43.7 [E]
Did not see any benefit	x	0.0 [A]	x	56.3 [E]
Lack of expertise	x	0.0 [A]	x	x
Lack of collective effort from industry	0.0 [A]	0.0 [A]	x	x
Other reasons	x	0.0 [A]	52.4 [E]	x
Prairies				
Missing information	0.0 [A]	0.0 [A]	33.3 [E]	66.7 [E]
Cost was high	x	0.0 [A]	x	x
No customer requirement	0.0 [A]	0.0 [A]	x	x
Did not see any benefit	0.0 [A]	0.0 [A]	44.4 [E]	55.6 [E]
Lack of expertise	0.0 [A]	0.0 [A]	44.4 [E]	55.6 [E]
Lack of collective effort from industry	0.0 [A]	0.0 [A]	x	x
Other reasons	0.0 [A]	0.0 [A]	x	x
British Columbia				
Missing information	0.0 [A]	0.0 [A]	35.1 [E]	64.9 [E]
Cost was high	0.0 [A]	0.0 [A]	29.4 [E]	70.6 [E]
No customer requirement	x	0.0 [A]	70.6 [E]	x
Did not see any benefit	x	0.0 [A]	64.5 [E]	x
Lack of expertise	0.0 [A]	0.0 [A]	29.4 [E]	70.6 [E]
Lack of collective effort from industry	0.0 [A]	0.0 [A]	x	x
Other reasons	0.0 [A]	0.0 [A]	29.4 [E]	70.6 [E]

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

A : [0.000 ≤ SE ≤ 0.025]
B : [0.025 < SE ≤ 0.050]
C : [0.050 < SE ≤ 0.075
Note: Standard Error (SE) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.46.2
Factors preventing bioproduct establishments from completing a Life Cycle Analysis (LCA) or an Environmental Product Declaration (EPD®) for their bioproducts, by establishment size, 2015

Size	Life Cycle Analysis (LCA)	Environmental Product Declaration (EPD®)	Both	Not applicable
		percent		
Small (less than 50 employees)				
Missing information	x	0.0 [A]	x	59.2 [C]
Cost was high	x	0.0 [A]	x	x
No customer requirement	x	0.0 [A]	60.9 [C]	x
Did not see any benefit	x	0.0 [A]	x	50.8 [C]
Lack of expertise	x	0.0 [A]	x	75.6 [C]
Lack of collective effort from industry	0.0 [A]	0.0 [A]	16.3 [C]	83.7 [C]
Other reasons	x	0.0 [A]	x	58.0 [C]
Medium (50 to 149 employees)				
Missing information	x	x	x	x
Cost was high	x	x	x	x
No customer requirement	x	x	x	x
Did not see any benefit	x	x	x	x
Lack of expertise	0.0 [A]	0.0 [A]	x	x
Lack of collective effort from industry	0.0 [A]	0.0 [A]	x	x
Other reasons	x	x	x	x
Large (more than 149 employees)				
Missing information	x	x	41.3 [E]	x
Cost was high	0.0 [A]	0.0 [A]	x	86.4 [D]
No customer requirement	0.0 [A]	0.0 [A]	x	58.7 [E]
Did not see any benefit	0.0 [A]	0.0 [A]	x	72.2 [E]
Lack of expertise	0.0 [A]	0.0 [A]	x	x
Lack of collective effort from industry	0.0 [A]	0.0 [A]	x	x
Other reasons	0.0 [A]	0.0 [A]	58.1 [E]	x

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

A : [0.000 ≤ SE ≤ 0.025]
C : [0.050 < SE ≤ 0.075]
D : [0.075 < SE ≤ 0.100]
Note: Standard Error (SE) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.47
Number of certified bioproducts, by type of certification, region and establishment size, 2015

Region	Products with Life Cycle Analysis (LCA)	Products with Environmental Product Declaration (EPD®)	Total types of bioproducts with certifications
	number		
Canada	56 [E]	24 [E]	80 [E]
Atlantic provinces	x	0	x
Quebec	5 [E]	15 [E]	20 [E]
Ontario	41 [E]	0	41 [E]
Prairies	x	x	11 [E]
British Columbia	x	x	x
Size			
Small (less than 50 employees)	50 [E]	x	x
Medium (50 to 149 employees)	6 [E]	5 [E]	11 [E]
Large (more than 149 employees)	0	x	x

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.48
Proportion of bioproduct establishments planning to use Life Cycle Analysis (LCA) results to market and/or promote their bioproducts, by region and establishment size, 2015

Region	Yes	No	Don't know
	percent		
Canada	x	43.6 [D]	x
Atlantic provinces	x	x	x
Quebec	x	58.1 [E]	x
Ontario	x	x	0.0 [A]
Prairies	x	x	x
British Columbia	x	x	0.0 [A]
Size			
Small (less than 50 employees)	57.6 [D]	42.4 [D]	0.0 [A]
Medium (50 to 149 employees)	x	x	x
Large (more than 149 employees)	x	x	x

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

A : [0.000 ≤ SE ≤ 0.025]
D : [0.075 < SE ≤ 0.100]
Note: Standard Error (SE) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.49.1
Proportion of bioproduct establishments planning to complete a Life Cycle Analysis (LCA) or an Environmental Product Declaration (EPD®) for any of their bioproducts in fiscal years 2016, 2017 or 2018, by region, 2015

Region	Plan to complete	No plan to complete	Don't know
	percent		
Canada			
Life Cycle Analysis (LCA)	17.4 [B]	34.9 [B]	47.8 [B]
Environmental Product Declaration (EPD®)	13.2 [B]	36.0 [B]	50.8 [B]
Atlantic provinces			
Life Cycle Analysis (LCA)	x	63.3 [E]	x
Environmental Product Declaration (EPD®)	0.0 [A]	63.3 [E]	36.7 [E]
Quebec			
Life Cycle Analysis (LCA)	15.7 [C]	24.6 [C]	59.7 [C]
Environmental Product Declaration (EPD®)	15.7 [C]	24.6 [C]	59.7 [C]
Ontario			
Life Cycle Analysis (LCA)	14.5 [C]	43.9 [D]	41.6 [D]
Environmental Product Declaration (EPD®)	x	x	47.7 [D]
Prairies			
Life Cycle Analysis (LCA)	25.0 [C]	15.0 [C]	60.0 [D]
Environmental Product Declaration (EPD®)	20.0 [C]	20.0 [C]	60.0 [D]
British Columbia			
Life Cycle Analysis (LCA)	x	39.7 [D]	x
Environmental Product Declaration (EPD®)	x	x	40.3 [D]

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

A : [0.000 ≤ SE ≤ 0.025]
B : [0.025 < SE ≤ 0.050]
C : [0.050 < SE ≤ 0.075]
D : [0.075 < SE ≤ 0.100]
Note: Standard Error (SE) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.49.2
Proportion of bioproduct establishments planning to complete a Life Cycle Analysis (LCA) or an Environmental Product Declaration (EPD®) for any of their bioproducts in fiscal years 2016, 2017 or 2018, by establishment size, 2015

Size	Plan to complete	No plan to complete	Don't know
	percent		
Small (less than 50 employees)			
Life Cycle Analysis (LCA)	17.1 [B]	35.6 [B]	47.3 [B]
Environmental Product Declaration (EPD®)	11.3 [B]	37.2 [B]	51.5 [B]
Medium (50 to 149 employees)			
Life Cycle Analysis (LCA)	x	x	50.3 [E]
Environmental Product Declaration (EPD®)	x	x	50.3 [E]
Large (more than 149 employees)			
Life Cycle Analysis (LCA)	x	x	48.0 [E]
Environmental Product Declaration (EPD®)	x	x	48.0 [E]

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

B : [0.025 < SE ≤ 0.050]
Note: Standard Error (SE) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.50.1
Number of bioproduct-related patents and pending patents, by geographical area and region, 2015

Region	Establishments that hold a patent or have a pending patent	Existing patents	Pending patents
	number		
Canada	62 [C]	1,822 [E]	167 [D]
Canada (Canadian Intellectual Property Office)	61 [C]	309 [E]	54 [D]
United States (U.S. Patent & Trademark Office)	57 [C]	379 [E]	45 [D]
Europe (European Patent Office)	41 [D]	309 [E]	38 [D]
Japan (Japan Patent Office)	21 [D]	36 [E]	14 [E]
Other geographical areas	26 [D]	789 [E]	17 [E]
Atlantic provinces	x	11 [E]	x
Canada (Canadian Intellectual Property Office)	x	3 [E]	3 [E]
United States (U.S. Patent & Trademark Office)	x	4 [E]	x
Europe (European Patent Office)	0	0	0
Japan (Japan Patent Office)	0	0	0
Other geographical areas	x	3 [E]	x
Quebec	11 [E]	26 [E]	32 [E]
Canada (Canadian Intellectual Property Office)	11 [E]	x	9 [E]
United States (U.S. Patent & Trademark Office)	11 [E]	11 [E]	11 [E]
Europe (European Patent Office)	x	x	x
Japan (Japan Patent Office)	x	0	x
Other geographical areas	x	x	x
Ontario	30 [D]	x	67 [E]
Canada (Canadian Intellectual Property Office)	30 [D]	x	21 [E]
United States (U.S. Patent & Trademark Office)	27 [D]	x	13 [E]
Europe (European Patent Office)	22 [D]	x	15 [E]
Japan (Japan Patent Office)	12 [E]	x	x
Other geographical areas	16 [E]	x	x
Prairies	x	x	x
Canada (Canadian Intellectual Property Office)	x	x	0
United States (U.S. Patent & Trademark Office)	x	x	x
Europe (European Patent Office)	x	x	x
Japan (Japan Patent Office)	x	x	x
Other geographical areas	x	x	0
British Columbia	13 [D]	48 [D]	49 [E]
Canada (Canadian Intellectual Property Office)	13 [D]	x	21 [E]
United States (U.S. Patent & Trademark Office)	10 [E]	21 [D]	x
Europe (European Patent Office)	6 [E]	x	10 [E]
Japan (Japan Patent Office)	x	0	x
Other geographical areas	x	x	x

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

C : [0.100 < CV ≤ 0.150]
D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.50.2
Number of bioproduct-related patents and pending patents, by geographical area and establishment size, 2015

Size	Establishments that hold a patent or have a pending patent	Existing patents	Pending patents
	number		
Small (less than 50 employees)	49[C]	x	152[D]
Canada (Canadian Intellectual Property Office)	48[D]	83[D]	x
United States (U.S. Patent & Trademark Office)	46[D]	74[D]	x
Europe (European Patent Office)	34[D]	x	x
Japan (Japan Patent Office)	x	x	14[E]
Other geographical areas	x	58[E]	x
Medium (50 to 149 employees)	x	x	14[E]
Canada (Canadian Intellectual Property Office)	x	x	x
United States (U.S. Patent & Trademark Office)	x	x	x
Europe (European Patent Office)	7[E]	x	x
Japan (Japan Patent Office)	x	x	0
Other geographical areas	x	730[E]	x
Large (more than 149 employees)	x	x	0
Canada (Canadian Intellectual Property Office)	x	x	0
United States (U.S. Patent & Trademark Office)	x	x	0
Europe (European Patent Office)	0	0	0
Japan (Japan Patent Office)	0	0	0
Other geographical areas	0	0	0

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

C : [0.100 < CV ≤ 0.150]
D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.51.1
Number of unique bioproduct patent applications submitted and number of such applications granted, by year and region, 2014 and 2015

Region	Patents submitted	Patents granted
	number	
Canada		
2014	172 [E]	99 [E]
2015	131 [E]	143 [E]
Atlantic provinces		
2014	x	3 [E]
2015	4 [E]	x
Quebec		
2014	x	0
2015	11 [E]	0
Ontario		
2014	147 [E]	83 [E]
2015	x	123 [E]
Prairies		
2014	0	0
2015	x	x
British Columbia		
2014	20 [E]	12 [E]
2015	17 [E]	13 [E]

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.51.2
Number of unique bioproduct patent applications submitted and number of such applications granted, by year and establishment size, 2014 and 2015

Size	Patents submitted	Patents granted
	number	
Small (less than 50 employees)		
2014	72 [E]	35 [E]
2015	68 [E]	34 [D]
Medium (50 to 149 employees)		
2014	x	x
2015	x	x
Large (more than 149 employees)		
2014	x	x
2015	x	x

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution
D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.52.1
Number of bioproduct-related trademarks, by year and region, 2014 and 2015

Region	Establishments with bioproduct-related trademarks	Registered trademarks	Unregistered trademarks
	number		
Canada			
2014	..	89 [E]	8 [E]
2015	37 [D]	102 [D]	34 [D]
Atlantic provinces			
2014	..	3 [E]	x
2015	x	3 [E]	3 [E]
Quebec			
2014	..	x	0
2015	9 [E]	38 [E]	7 [E]
Ontario			
2014	..	35 [E]	x
2015	12 [E]	35 [E]	x
Prairies			
2014	..	x	0
2015	x	15 [E]	13 [E]
British Columbia			
2014	..	11 [E]	0
2015	6 [E]	11 [E]	x

.. not available for a specific reference period
x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution
D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.52.2
Number of bioproduct-related trademarks, by year and establishment size, 2014 and 2015

Size	Establishments with bioproduct-related trademarks	Registered trademarks	Unregistered trademarks
	number		
Small (less than 50 employees)			
2014	..	x	x
2015	x	x	x
Medium (50 to 149 employees)			
2014	..	x	x
2015	x	x	x
Large (more than 149 employees)			
2014	..	0	0
2015	x	x	x

.. not available for a specific reference period
x suppressed to meet the confidentiality requirements of the *Statistics Act*

Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.53
Number of bioproduct establishments that assigned or licensed bioproduct-related intellectual property (IP) rights to another business or that acquired bioproduct-related IP rights from another business, by region and establishment size, 2015

Region	Number assigned or licensed	Number received
	number	
Canada	10 [E]	11 [E]
Atlantic provinces	0	0
Quebec	x	x
Ontario	x	x
Prairies	0	x
British Columbia	0	0
Size		
Small (less than 50 employees)	x	x
Medium (50 to 149 employees)	x	x
Large (more than 149 employees)	0	x

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.54.1
Reasons for attempting to raise capital in 2014 and/or 2015, by region, 2014 and 2015

Region	Establishments seeking financing
	number
Canada	
R&D or expand R&D capacity	69 [C]
Proof of concept or pilot project	51 [C]
Acquire new plant or facility	28 [D]
Expanding current facility	31 [D]
Retrofit of existing facility	17 [E]
Market or commercialize bioproducts	35 [D]
Operating funds	39 [D]
Repay current investors	9 [E]
Other reasons	8 [E]
Atlantic provinces	
R&D or expand R&D capacity	8 [E]
Proof of concept or pilot project	8 [E]
Acquire new plant or facility	x
Expanding current facility	x
Retrofit of existing facility	0
Market or commercialize bioproducts	x
Operating funds	x
Repay current investors	0
Other reasons	x
Quebec	
R&D or expand R&D capacity	21 [D]
Proof of concept or pilot project	14 [D]
Acquire new plant or facility	8 [E]
Expanding current facility	11 [E]
Retrofit of existing facility	10 [E]
Market or commercialize bioproducts	10 [E]
Operating funds	x
Repay current investors	x
Other reasons	x
Ontario	
R&D or expand R&D capacity	20 [D]
Proof of concept or pilot project	12 [E]
Acquire new plant or facility	7 [E]
Expanding current facility	x
Retrofit of existing facility	x
Market or commercialize bioproducts	x
Operating funds	x
Repay current investors	x
Other reasons	0
Prairies	
R&D or expand R&D capacity	11 [E]
Proof of concept or pilot project	11 [E]
Acquire new plant or facility	6 [E]
Expanding current facility	x
Retrofit of existing facility	x
Market or commercialize bioproducts	9 [E]
Operating funds	11 [E]
Repay current investors	x
Other reasons	0

Table A.54.1
Reasons for attempting to raise capital in 2014 and/or 2015, by region, 2014 and 2015

Region	Establishments seeking financing number
British Columbia	
R&D or expand R&D capacity	10 [E]
Proof of concept or pilot project	6 [E]
Acquire new plant or facility	x
Expanding current facility	x
Retrofit of existing facility	0
Market or commercialize bioproducts	6 [E]
Operating funds	x
Repay current investors	0
Other reasons	x

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution
C : [0.100 < CV ≤ 0.150]
D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.54.2
Reasons for attempting to raise capital in 2014 and/or 2015, by establishment size, 2014 and 2015

Size	Establishments seeking financing number
Small (less than 50 employees)	
R&D or expand R&D capacity	53 [C]
Proof of concept or pilot project	40 [D]
Acquire new plant or facility	22 [D]
Expanding current facility	23 [D]
Retrofit of existing facility	9 [E]
Market or commercialize bioproducts	29 [D]
Operating funds	x
Repay current investors	x
Other reasons	x
Medium (50 to 149 employees)	
R&D or expand R&D capacity	x
Proof of concept or pilot project	6 [E]
Acquire new plant or facility	x
Expanding current facility	x
Retrofit of existing facility	x
Market or commercialize bioproducts	x
Operating funds	x
Repay current investors	x
Other reasons	x
Large (more than 149 employees)	
R&D or expand R&D capacity	x
Proof of concept or pilot project	5 [E]
Acquire new plant or facility	x
Expanding current facility	x
Retrofit of existing facility	x
Market or commercialize bioproducts	x
Operating funds	0
Repay current investors	0
Other reasons	x

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

C : [0.100 < CV ≤ 0.150]
D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.55.1
Funds requested and received for bioproduct-related activities, by year and region, 2014 and 2015

Region	Establishments successful at raising funds	Target amount	Amount raised
	number	$ thousands	
Canada	72 [C]	989,770 [E]	938,489 [E]
2014	57 [C]	888,380 [E]	860,970 [E]
2015	70 [C]	101,389 [D]	77,519 [E]
Atlantic provinces	10 [E]	x	4,371 [E]
2014	x	x	1,476 [E]
2015	x	13,084 [E]	2,895 [E]
Quebec	22 [D]	x	x
2014	19 [D]	x	x
2015	22 [D]	10,893 [E]	x
Ontario	20 [D]	155,874 [E]	141,440 [E]
2014	16 [E]	90,845 [E]	x
2015	20 [D]	65,029 [E]	x
Prairies	13 [E]	x	x
2014	11 [E]	x	x
2015	13 [E]	x	x
British Columbia	7 [E]	x	x
2014	x	x	x
2015	x	x	x

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

C : [0.100 < CV ≤ 0.150]
D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.55.2
Funds requested and received for bioproduct-related activities, by year and establishment size, 2014 and 2015

Size	Establishments successful at raising funds	Target amount	Amount raised
	number	$ thousands	
Small (less than 50 employees)	56 [C]	864,131 [E]	811,924 [E]
2014	42 [D]	807,850 [E]	x
2015	54 [C]	56,281 [E]	x
Medium (50 to 149 employees)	x	x	x
2014	x	x	x
2015	x	x	x
Large (more than 149 employees)	x	x	x
2014	x	x	x
2015	x	x	x

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution
C : [0.100 < CV ≤ 0.150]
D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.56.1
Total funds raised for bioproduct-related activities, by source and region, 2015

Region	Funds raised $ thousands
Canada	
Canadian based private venture capital	777 [E]
American based private venture capital	0
Other private venture capital	x
Financial Institutions (e.g., Chartered Banks, etc), cooperatives, credit unions	x
IPO (Initial Public Offering) or SPO (Secondary Public Offering)	0
Personal finance used towards this business	x
Partner(s) from strategic alliance(s)	x
Credit from suppliers	x
Angel investors, family or friends	x
Government sources	18,669 [D]
Other sources	x
Atlantic provinces	
Canadian based private venture capital	314 [E]
American based private venture capital	0
Other private venture capital	0
Financial Institutions (e.g., Chartered Banks, etc), cooperatives, credit unions	0
IPO (Initial Public Offering) or SPO (Secondary Public Offering)	0
Personal finance used towards this business	0
Partner(s) from strategic alliance(s)	0
Credit from suppliers	0
Angel investors, family or friends	594 [E]
Government sources	55 [E]
Other sources	1,932 [E]
Quebec	
Canadian based private venture capital	x
American based private venture capital	0
Other private venture capital	0
Financial Institutions (e.g., Chartered Banks, etc), cooperatives, credit unions	321 [E]
IPO (Initial Public Offering) or SPO (Secondary Public Offering)	0
Personal finance used towards this business	x
Partner(s) from strategic alliance(s)	x
Credit from suppliers	0
Angel investors, family or friends	0
Government sources	x
Other sources	0
Ontario	
Canadian based private venture capital	x
American based private venture capital	0
Other private venture capital	x
Financial Institutions (e.g., Chartered Banks, etc), cooperatives, credit unions	x
IPO (Initial Public Offering) or SPO (Secondary Public Offering)	0
Personal finance used towards this business	0
Partner(s) from strategic alliance(s)	x
Credit from suppliers	0
Angel investors, family or friends	x
Government sources	x
Other sources	x
Prairies	
Canadian based private venture capital	0
American based private venture capital	0
Other private venture capital	0
Financial Institutions (e.g., Chartered Banks, etc), cooperatives, credit unions	x
IPO (Initial Public Offering) or SPO (Secondary Public Offering)	0
Personal finance used towards this business	x
Partner(s) from strategic alliance(s)	0
Credit from suppliers	x
Angel investors, family or friends	x
Government sources	1,040 [E]
Other sources	x

Table A.56.1
Total funds raised for bioproduct-related activities, by source and region, 2015

Region	Funds raised $ thousands
British Columbia	
Canadian based private venture capital	0
American based private venture capital	0
Other private venture capital	0
Financial Institutions (e.g., Chartered Banks, etc), cooperatives, credit unions	x
IPO (Initial Public Offering) or SPO (Secondary Public Offering)	0
Personal finance used towards this business	x
Partner(s) from strategic alliance(s)	0
Credit from suppliers	0
Angel investors, family or friends	0
Government sources	240 [E]
Other sources	0

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

D : [$0.150 < CV \leq 0.250$]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.56.2
Total funds raised for bioproduct-related activities, by source and establishment size, 2015

Size	Funds raised $ thousands
Small (less than 50 employees)	
Canadian based private venture capital	777 [E]
American based private venture capital	0
Other private venture capital	x
Financial Institutions (e.g., Chartered Banks, etc), cooperatives, credit unions	x
IPO (Initial Public Offering) or SPO (Secondary Public Offering)	0
Personal finance used towards this business	1,568 [E]
Partner(s) from strategic alliance(s)	x
Credit from suppliers	0
Angel investors, family or friends	x
Government sources	4,271 [E]
Other sources	2,098 [E]
Medium (50 to 149 employees)	
Canadian based private venture capital	0
American based private venture capital	0
Other private venture capital	0
Financial Institutions (e.g., Chartered Banks, etc), cooperatives, credit unions	x
IPO (Initial Public Offering) or SPO (Secondary Public Offering)	0
Personal finance used towards this business	0
Partner(s) from strategic alliance(s)	x
Credit from suppliers	x
Angel investors, family or friends	0
Government sources	x
Other sources	x
Large (more than 149 employees)	
Canadian based private venture capital	0
American based private venture capital	0
Other private venture capital	0
Financial Institutions (e.g., Chartered Banks, etc), cooperatives, credit unions	0
IPO (Initial Public Offering) or SPO (Secondary Public Offering)	0
Personal finance used towards this business	x
Partner(s) from strategic alliance(s)	x
Credit from suppliers	0
Angel investors, family or friends	0
Government sources	x
Other sources	0

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.57
Number of bioproduct establishments that applied for refunds or tax credits for their bioproduct-related research and development (R&D) expenditures under the Scientific Research and Experimental Development (SR&ED) Tax Incentive Program, in any of the past five fiscal years, by region and establishment size, 2010-2015

Region	Establishments that applied for refunds or tax credits	Establishments that received refunds or tax credits	Amount received
	number		$ thousands
Canada	123 [B]	118 [B]	100,425 [D]
Atlantic provinces	11 [E]	10 [E]	731 [E]
Quebec	30 [C]	29 [C]	31,021 [E]
Ontario	40 [C]	37 [C]	43,116 [E]
Prairies	21 [D]	21 [D]	16,327 [E]
British Columbia	21 [D]	21 [D]	9,230 [D]
Size			
Small (less than 50 employees)	82 [C]	77 [C]	49,385 [D]
Medium (50 to 149 employees)	19 [D]	19 [D]	31,633 [E]
Large (more than 149 employees)	21 [D]	21 [D]	19,407 [E]

[E] use with caution

B : [0.050 < CV ≤ 0.100]
C : [0.100 < CV ≤ 0.150]
D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.58
Number of bioproduct establishments that received funding from the Industrial Research Assistance Program (IRAP) during the past five years, by region and establishment size, 2010 to 2015

Region	Establishments number
Canada	58 [C]
Atlantic provinces	8 [E]
Quebec	10 [E]
Ontario	11 [E]
Prairies	17 [D]
British Columbia	12 [D]
Size	
Small (less than 50 employees)	47 [D]
Medium (50 to 149 employees)	6 [E]
Large (more than 149 employees)	5 [E]

[E] use with caution

C : [0.100 < CV ≤ 0.150]
D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.59
Number of establishments that applied, in the past five fiscal years, for any other government (federal, provincial or municipal) programs related or applicable to bioproducts, by region and establishment size, 2010 to 2015

Region	Establishments
	number
Canada	98 [B]
Atlantic provinces	x
Quebec	22 [D]
Ontario	x
Prairies	36 [C]
British Columbia	21 [D]
Size	
Small (less than 50 employees)	70 [C]
Medium (50 to 149 employees)	12 [E]
Large (more than 149 employees)	16 [D]

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

B : [0.050 < CV ≤ 0.100]
C : [0.100 < CV ≤ 0.150]
D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.60.1
Types of government programs (federal, provincial or municipal) for which bioproduct establishments have applied, by region, 2015

Region	Types of government programs number
Canada	
Programs for bioproduct R&D	68 [C]
Programs for technology or knowledge transfer	x
Programs for product performance testing	12 [E]
Programs for new standards development	x
Programs for process or product environmental assessment	0
Commercialization programs	47 [C]
Marketing programs	10 [E]
Other government programs	24 [D]
Atlantic provinces	
Programs for bioproduct R&D	x
Programs for technology or knowledge transfer	0
Programs for product performance testing	0
Programs for new standards development	0
Programs for process or product environmental assessment	0
Commercialization programs	x
Marketing programs	0
Other government programs	x
Quebec	
Programs for bioproduct R&D	18 [D]
Programs for technology or knowledge transfer	x
Programs for product performance testing	x
Programs for new standards development	x
Programs for process or product environmental assessment	0
Commercialization programs	x
Marketing programs	x
Other government programs	x
Ontario	
Programs for bioproduct R&D	x
Programs for technology or knowledge transfer	0
Programs for product performance testing	x
Programs for new standards development	0
Programs for process or product environmental assessment	0
Commercialization programs	10 [E]
Marketing programs	0
Other government programs	x
Prairies	
Programs for bioproduct R&D	26 [D]
Programs for technology or knowledge transfer	6 [E]
Programs for product performance testing	x
Programs for new standards development	0
Programs for process or product environmental assessment	0
Commercialization programs	23 [D]
Marketing programs	x
Other government programs	9 [E]
British Columbia	
Programs for bioproduct R&D	14 [D]
Programs for technology or knowledge transfer	x
Programs for product performance testing	x
Programs for new standards development	0
Programs for process or product environmental assessment	0
Commercialization programs	8 [E]
Marketing programs	0
Other government programs	x

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

C : [0.100 < CV ≤ 0.150]
D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.60.2
Types of government programs (federal, provincial or municipal) for which bioproduct establishments have applied, by establishment size, 2015

Size	Types of government programs number
Small (less than 50 employees)	
Programs for bioproduct R&D	46 [C]
Programs for technology or knowledge transfer	x
Programs for product performance testing	x
Programs for new standards development	x
Programs for process or product environmental assessment	0
Commercialization programs	30 [D]
Marketing programs	10 [E]
Other government programs	x
Medium (50 to 149 employees)	
Programs for bioproduct R&D	8 [E]
Programs for technology or knowledge transfer	0
Programs for product performance testing	0
Programs for new standards development	0
Programs for process or product environmental assessment	0
Commercialization programs	x
Marketing programs	0
Other government programs	x
Large (more than 149 employees)	
Programs for bioproduct R&D	14 [E]
Programs for technology or knowledge transfer	6 [E]
Programs for product performance testing	x
Programs for new standards development	0
Programs for process or product environmental assessment	0
Commercialization programs	x
Marketing programs	0
Other government programs	x

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution
C : [$0.100 < CV \leq 0.150$]
D : [$0.150 < CV \leq 0.250$]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.61.1
Types of programs or incentives that would be beneficial to the bioproduct-related activities of bioproduct establishments, by region, 2015

Region	Types of government programs number
Canada	
Programs for bioproduct R&D	64 [C]
Programs for technology or knowledge transfer	25 [D]
Programs for product performance testing	44 [C]
Programs for new standards development	27 [D]
Programs for process or product environmental assessment	47 [C]
Commercialization programs	82 [C]
Marketing programs	56 [C]
Other government programs	18 [E]
Atlantic provinces	
Programs for bioproduct R&D	x
Programs for technology or knowledge transfer	x
Programs for product performance testing	0
Programs for new standards development	0
Programs for process or product environmental assessment	0
Commercialization programs	x
Marketing programs	x
Other government programs	x
Quebec	
Programs for bioproduct R&D	x
Programs for technology or knowledge transfer	x
Programs for product performance testing	13 [E]
Programs for new standards development	9 [E]
Programs for process or product environmental assessment	14 [D]
Commercialization programs	18 [D]
Marketing programs	17 [D]
Other government programs	0
Ontario	
Programs for bioproduct R&D	10 [E]
Programs for technology or knowledge transfer	x
Programs for product performance testing	6 [E]
Programs for new standards development	0
Programs for process or product environmental assessment	x
Commercialization programs	x
Marketing programs	x
Other government programs	x
Prairies	
Programs for bioproduct R&D	21 [D]
Programs for technology or knowledge transfer	x
Programs for product performance testing	15 [E]
Programs for new standards development	9 [E]
Programs for process or product environmental assessment	19 [D]
Commercialization programs	28 [D]
Marketing programs	19 [D]
Other government programs	11 [E]
British Columbia	
Programs for bioproduct R&D	18 [D]
Programs for technology or knowledge transfer	10 [E]
Programs for product performance testing	10 [E]
Programs for new standards development	10 [E]
Programs for process or product environmental assessment	x
Commercialization programs	17 [D]
Marketing programs	11 [E]
Other government programs	x

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution

C : [0.100 < CV ≤ 0.150]
D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Table A.61.2
Types of programs or incentives that would be beneficial to the bioproduct-related activities of bioproduct establishments, by establishment size, 2015

Size	Types of government programs number
Small (less than 50 employees)	
Programs for bioproduct R&D	46 [C]
Programs for technology or knowledge transfer	16 [D]
Programs for product performance testing	32 [D]
Programs for new standards development	19 [D]
Programs for process or product environmental assessment	34 [D]
Commercialization programs	59 [C]
Marketing programs	43 [D]
Other government programs	11 [E]
Medium (50 to 149 employees)	
Programs for bioproduct R&D	8 [E]
Programs for technology or knowledge transfer	x
Programs for product performance testing	x
Programs for new standards development	0
Programs for process or product environmental assessment	x
Commercialization programs	10 [E]
Marketing programs	x
Other government programs	x
Large (more than 149 employees)	
Programs for bioproduct R&D	9 [E]
Programs for technology or knowledge transfer	x
Programs for product performance testing	x
Programs for new standards development	8 [E]
Programs for process or product environmental assessment	x
Commercialization programs	14 [E]
Marketing programs	x
Other government programs	x

x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution
C : [0.100 < CV ≤ 0.150]
D : [0.150 < CV ≤ 0.250]
Note: Coefficient of variation (CV) threshold.
Preliminary estimates, subject to change.
Due to rounding, components may not add to totals.
Coefficient of variation (CV) and standard error (SE) are used as quality indicators.
Source: Statistics Canada, Bioproducts production and development survey 2015.

Reference

The Canadian Trade Commissioner Service website. www.international.gc.ca/investors-investisseurs/sector-secteurs/bioproduct-bioproduit.aspx?lang=eng.