Environment and Climate Change Canada
Environnement et Changement climatique Canada

HOUSEHOLD USE OF CHEMICAL PESTICIDES AND FERTILIZERS

CANADIAN ENVIRONMENTAL SUSTAINABILITY INDICATORS

Canada

Suggested citation for this document: Environment and Climate Change Canada (2021) Canadian Environmental Sustainability Indicators: Household use of chemical pesticides and fertilizers. Consulted on *Month day, year*.
Available at: www.canada.ca/en/environment-climate-change/services/environmental-indicators/household-use-chemical-pesticides-fertilizers.html.

Cat. No.: En4-144/6-2021E-PDF
ISBN: 978-0-660-40579-7
Project code: EC21032

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CANADIAN ENVIRONMENTAL SUSTAINABILITY INDICATORS

HOUSEHOLD USE OF CHEMICAL PESTICIDES AND FERTILIZERS

October 2021

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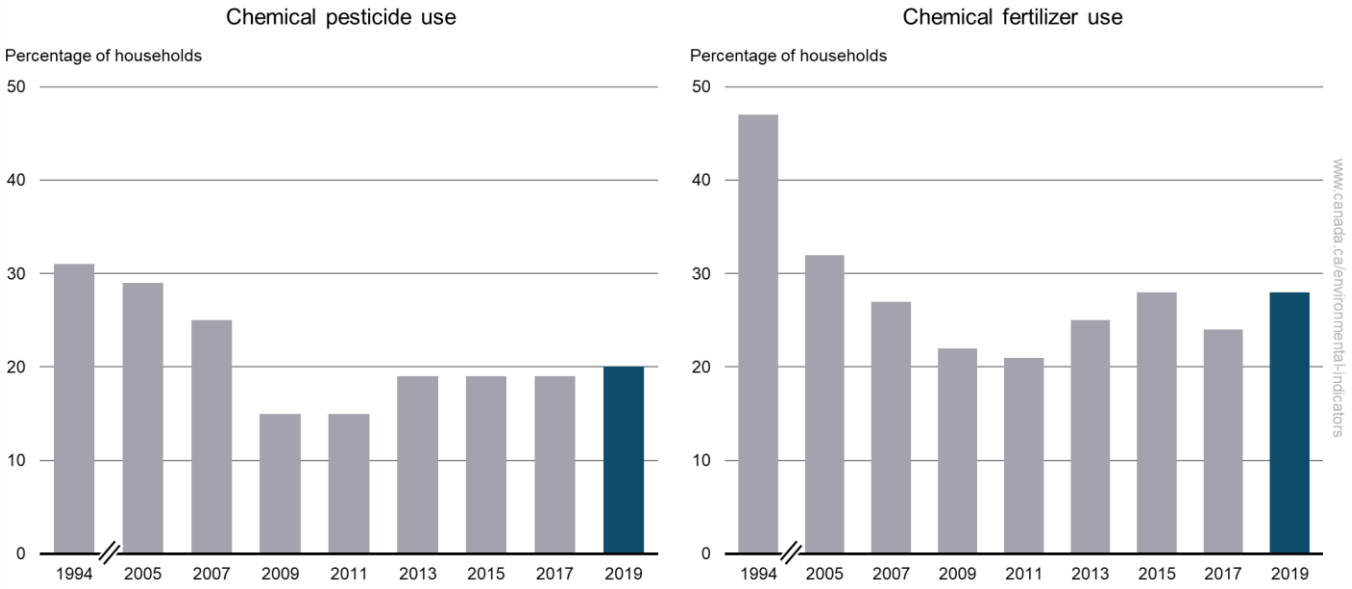
Household use of chemical pesticides and fertilizers

Households use chemical pesticides and fertilizers to improve the look of their lawns and gardens. These chemicals can pollute lakes and rivers that may be sources of drinking water for some communities. Chemical pesticides are also toxic to many forms of life and can threaten beneficial species, such as bees that are important pollinators. The indicators report the percentage of households using chemical pesticides or fertilizers, among households with a lawn or garden only.

Key results

- Between 1994 and 2019 there has been an overall decrease in the percentage of households in Canada using chemical[1] pesticides and fertilizers on their lawns and gardens
- Nonetheless, since 2013, the percentage of households using pesticides has remained stable at 19% and increased slightly to 20% in 2019
- Further, despite the decrease in the percentage of households using chemical fertilizers from 1994 to 2011, their use has increased since 2011 to reach 28% in 2019

Figure 1. Percentage of households in Canada using chemical pesticides and fertilizers, selected years



Data for Figure 1

Note: The percentage of households refer to the percentage of households with a lawn or garden only. In 1994 and 2005, the Households and the Environment Survey did not make the distinction between natural and chemical fertilizers and pesticides. However, there were not many natural remedies available at that time. The impact on the trend is therefore expected to be minimal.
Source: Statistics Canada (2021) Table 38-10-0052-01 - Use of fertilizer and pesticides. Statistics Canada (2008) Pesticides and fertilizers.

The percentage of households using chemical pesticides and fertilizers decreased from 31% and 47% in 1994 to 15% and 21% in 2011 respectively. For pesticides, this percentage increased to 19% in 2013 and has remained relatively stable since. For fertilizers, it fluctuated slightly to reach 28% in 2019.

Cosmetic pesticide bans implemented in many provinces and municipalities have likely influenced the reduction of pesticide use since the mid-1990's.

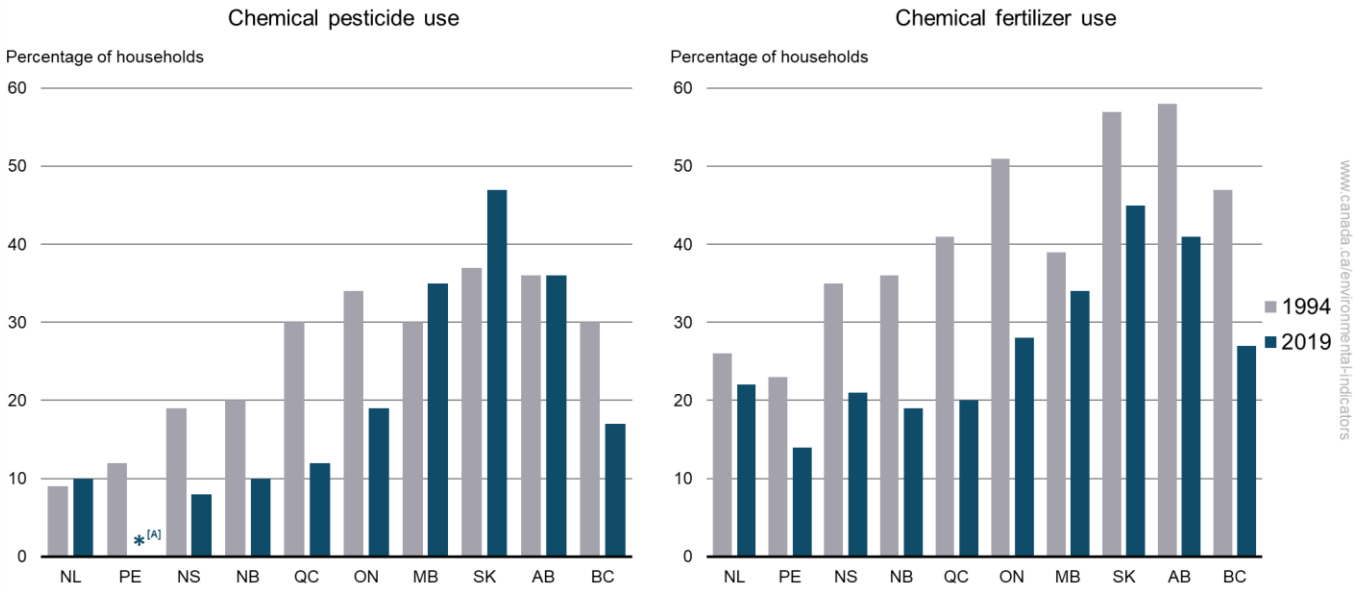
[1] Chemical pesticides and fertilizers are manufactured. Natural products include the use of nematodes and ladybugs to control pests, and manure and compost to fertilize lawns and gardens.

Household use of chemical pesticides and fertilizers by province

Key results

- In 2019, the Prairie provinces had the highest percentage of households using chemical pesticides and fertilizers
- The percentage of households using chemical pesticides has decreased since 1994 in most provinces, except in Newfoundland and Labrador, Manitoba, Saskatchewan and Alberta
- The percentage of households using chemical fertilizers has decreased since 1994 in every province

Figure 2. Percentage of households using chemical pesticides and fertilizers by province, Canada, 1994 and 2019



Data for Figure 2

Note: [A] Data on chemical pesticide use in Prince Edward Island for 2019 were not considered reliable enough to be published in the survey, thus were not available. The percentage of households refer to the percentage of households with a lawn or garden only. In 1994, the Households and the Environment Survey did not make the distinction between natural and chemical fertilizers and pesticides. However, there were not many natural remedies available at that time. The impact on the trend is therefore expected to be minimal.
Source: Statistics Canada (2021) Table 38-10-0052-01 - Use of fertilizer and pesticides. Statistics Canada (2008) Pesticides and fertilizers.

In 2019, the highest users of chemical pesticides were Saskatchewan (47% of households), Alberta (36% of households) and Manitoba (35% of households).

Between 1994 and 2019, the largest drop in the percentage of households using chemical pesticides occurred in Quebec, where it decreased from 30% to 12%.

In general, households in provinces that introduced bans on cosmetic use of pesticides[2] had lower rates of use of the products on their lawns and gardens than the national average of 22% in 2019:

- 19% in Ontario
- 12% in Quebec
- 10% in Newfoundland and Labrador
- 10% in New Brunswick
- 8% in Nova Scotia

[2] As of 2019, 7 provinces have introduced legislation to ban the use of some or all chemical pesticides for cosmetic or non-essential use (Newfoundland and Labrador in 2011, Prince Edward Island in 2010, Nova Scotia in 2011, New Brunswick in 2009, Quebec in 2003, Ontario in 2008 and Manitoba in 2014).

In Prince Edward Island and Ontario, the percentage of households using chemical pesticides significantly decreased following the enforcement of the bans (2010 and 2008 respectively). In Prince Edward Island, the rate of use dropped from 17% in 2009 to 7% in 2011, while a decrease from 30% in 2007 to 10% in 2009 was observed in Ontario.

Between 1994 and 2019, the largest drop in the percentage of households using chemical fertilizers occurred in Ontario (from 51% to 28%) and Quebec (from 41% to 20%). In 2019, the proportion of households using chemical fertilizers in the provinces of Prince Edward Island, New Brunswick, Nova Scotia, Quebec and Newfoundland and Labrador was lower than the national average of 27%. The share of households using fertilizers was the highest in the Prairie provinces, led by Saskatchewan.

About the indicators

What the indicators measure

The indicators report the percentage of households with a lawn or garden that use chemical pesticides and chemical fertilizers in Canada and by province.

Why these indicators are important

Households use chemical pesticides, which include herbicides, insecticides and fungicides, to kill pests and to help improve the look of lawns and gardens. These products can contaminate the air, water, soil and food sources and have negative effects on human and environmental health. For example, insecticides can harm or kill other non-target insects, soil microbes and insect-eating birds, disrupting the natural balance of the lawn or the garden's ecosystem.

Chemical fertilizers contain nitrogen, phosphorus and potassium and are added to lawns and gardens to help them grow greener and thicker. However, if fertilizer is applied improperly or in excess, these nutrients can pollute drainage and storm waters and can eventually reach lakes and rivers. Urban environments often make it easier for these nutrients to run off the land into water bodies because of the many hard surfaces. In addition, water in storm sewers is often not treated before it reaches lakes or rivers and can cause excessive growth of aquatic plants and algae.

Related indicators

The Water quality in Canadian rivers indicators provide a measure of the ability of river water across Canada to support plants and animals.

The Phosphorus levels in the offshore waters of the Canadian Great Lakes, Nutrients in the St. Lawrence River, and Nutrients in Lake Winnipeg indicators report the status of total phosphorus and total nitrogen levels in these 3 ecosystems.

The Phosphorus loading to Lake Erie indicators report on the total phosphorus loadings flowing directly into Lake Erie or from its tributary rivers.

The Risk to soil and water quality from agriculture indicator is comprised of Agriculture and Agri-Food Canada's Soil and water quality agri-environmental performance indices which aggregate multiple indicators related to soil and water quality. They are derived from models and formulae that integrate data for soil, climate and landscape with data about crops, land use and land management.

Data sources and methods

Data sources

Data for the indicators are from Statistics Canada's Households and the Environment Survey. Data are available for 1994 and every second year from 2005 to 2019.

More information

Canadian households are the target population of the Households and the Environment Survey.

The 1994 survey was conducted as a supplement to the May 1994 Labour Force Survey. It surveyed 38 080 households and yielded a response rate of 83.1%.

The 2005-2006 survey was conducted as a supplement to the Labour Force Survey from February 15 to April 15, 2006. It surveyed 36 431 households and yielded a response rate of 77.8%.

The surveys for 2007, 2009, 2011, 2013, 2015, 2017 and 2019 were conducted from October to December of their respective years. Survey samples were selected from respondents (January to June) to Statistics Canada's Canadian Community Health Survey, conducted as follow-up surveys.

The sample size and response rate for the biennial surveys were:

- 29 980 households and 72.3% response rate in 2007
- 20 000 households and 73.8% response rate in 2009
- 20 000 households and 74.3% response rate in 2011
- 31 962 households and 71.8% response rate in 2013
- 21 348 households and 69.9% response rate in 2015
- 22 983 households and 67.2% response rate in 2017
- 22 000 households and 69.9% response rate in 2019

Household estimates are produced using weights associated with each sampled household. The weight indicates the number of households represented by the sampled unit.[3]

Methods

Data from Statistics Canada's Households and the Environment Survey are used in these indicators. No changes or additional calculations are performed on the data.

More information

Statistics Canada designed the questionnaire for the Households and the Environment Survey in consultation with stakeholders involved in the Canadian Environment Sustainability Indicators program. The questionnaire for each survey year was designed to follow standard practices and wording.

For the 1994 survey, households were asked to respond to the following question:

- In the last 12 months, did anyone, including commercial operators, apply the following chemicals to the yard, lawn or garden: pesticides or fertilizers? (Yes, No, Don't know)

For the 2005-2006 survey, households were asked to respond to the following questions:

- In 2005, were any chemical fertilizers applied to your lawn/garden? (Yes, No, Don't know/Refused)
- In 2005, were any weed killers, pesticides, or fungicides applied to your lawn/garden? Include fertilizer and pesticide mixes like "Weed and Feed." (Yes, No, Don't know/Refused)

For both the 2007 and 2009 surveys, households were asked to respond to the following questions:

- In the last 12 months, were any chemical fertilizers applied to your lawn/garden/lawn or garden? (Yes, No, Don't know/Refused)
- In the last 12 months, were any chemical pesticides such as weed killers (herbicides), bug killers (insecticides), or fungicides applied to your lawn/garden/lawn or garden? Please include fertilizer and herbicide mixes such as "Weed and Feed". (Yes, No, Don't know/Refused)

For the 2011, 2013, 2015 and 2017 surveys, households were asked to respond to the following questions:

[3] Statistics Canada (2021) 2019 Households and the Environment Survey. Retrieved on June 10, 2021.

- In the past 12 months, were any chemical fertilizers applied to your lawn/garden/lawn or garden? (Yes, No, Don't know/Refused)
- In the past 12 months, were any chemical pesticides such as weed killers (herbicides), bug killers (insecticides), or fungicides applied to your lawn/garden/lawn or garden? (Yes, No, Don't know/Refused)

For the 2019 survey, the questions were slightly modified, with the "Refused" response option being removed and the extension of the use of chemical pesticides to flowerbeds:

- In the past 12 months, were any chemical fertilizers applied to your lawn/garden or flowerbed/lawn, garden or flowerbed? (Yes, No, Don't know)
- In the past 12 months, were any chemical pesticides such as weed killers (herbicides), bug killers (insecticides), or fungicides applied to your lawn/garden or flowerbed/lawn, garden or flowerbed? (Yes, No, Don't know)

Recent changes

Statistics Canada has modified the survey frame for the Households and the Environment Survey. The 2017 and 2019 survey frames included households that responded to the Canadian Community Health Survey for the first 2 quarters (January 2017 to June 2017), which corresponds to the methodology used for the 2007, 2009, 2011 and 2013 surveys. In 2015, households that responded to the first 3 quarters were included. The Households and the Environment Survey is issued as a follow-up survey to the Canadian Community Health Survey.

In 2019, Statistics Canada changed the Households and the Environment Survey collection modes from a pure telephone interview to a combination of self-administered electronic questionnaire with a follow-up telephone interview for non-response. This change meant that some questions underwent some small modifications, but these modifications should not affect the comparability over time.

Caveats and limitations

The coverage error for Statistics Canada's Households and the Environment Survey is based on the survey of which it is a sub-sample (the Labour Force Survey in 2006 and the Canadian Community Health Survey from 2007). In all cases, the coverage error is estimated at less than 2%.

In 1994 and 2005-2006, the survey did not make the distinction between natural and chemical fertilizers and pesticides. However, as there were not many natural remedies available at that time, the impact on the trend is expected to be minimal.

The survey also does not distinguish between more or less harmful products. Some cosmetic pesticide regulations, for example, specify permitted use of safe or least-toxic pesticides.

The survey does not include households:

- located in the Yukon, the Northwest Territories and Nunavut
- located on reserves and other Indigenous settlements
- consisting entirely of full-time members of the Canadian Armed Forces

Institutions and households in certain remote regions are also excluded.

Estimates not meeting an acceptable level of quality were either flagged for caution or suppressed.[4]

For the 2019 survey, data on chemical pesticide use in Prince Edward Island for 2019 were not considered reliable enough to be published.

[4] Statistics Canada (2021) 2019 Households and the Environment Survey. Retrieved on June 10, 2021.

Resources

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Statistics Canada (2019) 2017 Households and the Environment Survey. Retrieved on June 10, 2021.

Statistics Canada (2021) 2019 Households and the Environment Survey. Retrieved on June 10, 2021.

Statistics Canada (2021) Table 38-10-0052-01 - Use of fertilizer and pesticides. Retrieved on June 10, 2021.

Related information

How to have a healthy lawn

Using pesticides

Annex

Annex A. Data tables for the figures presented in this document

Table A.1. Data for Figure 1. Percentage of households in Canada using chemical pesticides and fertilizers, selected years

Year	Households using chemical pesticides (percentage)	Households using chemical fertilizers (percentage)
1994	31	47
2005	29	32
2007	25	27
2009	15	22
2011	15	21
2013	19	25
2015	19	28
2017	19	24
2019	20	28

Note: The percentage of households refer to the percentage of households with a lawn or garden only. In 1994 and 2005, the Households and the Environment Survey did not make the distinction between natural and chemical fertilizers and pesticides. However, there were not many natural remedies available at that time. The impact on the trend is therefore expected to be minimal.
Source: Statistics Canada (2021) Table 38-10-0052-01 - Use of fertilizer and pesticides. Statistics Canada (2008) Pesticides and fertilizers.

Table A.2. Data for Figure 2. Percentage of households using chemical pesticides and fertilizers by province, Canada, 1994 and 2019

Province	Households using chemical pesticides in 1994 (percentage)	Households using chemical pesticides in 2019 (percentage)	Households using chemical fertilizers in 1994 (percentage)	Households using chemical fertilizers in 2019 (percentage)
Newfoundland and Labrador	9	10	26	22
Prince Edward Island	12	n/a	23	14
Nova Scotia	19	8	35	21
New Brunswick	20	10	36	19
Quebec	30	12	41	20
Ontario	34	19	51	28
Manitoba	30	35	39	34
Saskatchewan	37	47	57	45
Alberta	36	36	58	41
British Columbia	30	17	47	27

Note: n/a = not available. Data on chemical pesticide use in Prince Edward Island for 2019 were not considered reliable enough to be published in the survey, thus were not available. The percentage of households refer to the percentage of households with a lawn or garden only. In 1994, the Households and the Environment Survey did not make the distinction between natural and chemical fertilizers and pesticides. However, there were not many natural remedies available at that time. The impact on the trend is therefore expected to be minimal.
Source: Statistics Canada (2021) Table 38-10-0052-01 - Use of fertilizer and pesticides. Statistics Canada (2008) Pesticides and fertilizers.

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