ALL ABOUT FOOD

Exploring Canada's Food System

What jobs exist in agri-food?

What is produced in Canada?

What is plant biotechnology?

5th Edition

Agriculture in the Classroom Canada
www.aitc.ca

ACKNOWLEDGEMENTS

Lead Writers: Jennifer Baldwin, OCT
Becky Parker, OCT
Ontario Agri-Food Education Inc.

Editor: Adrienne Brown, adriennebrown.ca

Advisory Committee:
Karen Hill,
Agriculture in the Classroom-Manitoba Inc.
Jan Robertson,
Ontario Agri-Food Education Inc.
Johanne Ross,
Agriculture in the Classroom-Manitoba Inc.
Colleen Smith,
Ontario Agri-Food Education Inc.

Graphic Design: Lynn Chudleigh

Agriculture in the Classroom (AITC) Canada, representing provincial/territorial Agriculture in the Classroom organizations, would like to thank

CropLife CANADA

for funding the 2014 edition of All About Food: Exploring Canada's Food System.

For more information about Agriculture in the Classroom Canada, please see the inside back cover of this resource.

Egalement disponible en français.

Connecting Classrooms with Agri-Food Perspectives

Ontario Agri-Food Education Inc.

8560 Tremaine Road, Box 460,
Milton, ON L9T 4Z1
(905) 878-1510
website - www.oafe.org e-mail - info@oafe.org
or visit the national AITC website: www.aitc.ca

ALL ABOUT FOOD

Exploring Canada's Food System

Let us introduce you to your world through the food you eat. If you ate today, thank a farmer and many other people...mechanics, scientists, truck drivers, food processors, retailers and advertisers...to mention just a few. The production of food involves much more than farming. It is a complex system that is connected with many other sectors of the economy. **All About Food: Exploring Canada's Food System** captures many of the interesting, surprising and useful facts about this important system that touches everyone's life on a daily basis.

How to use this exploration guide:

Each page in this guide introduces you to a different topic and provides an in-depth lesson about the agri-food system. All About Food is useful for any food consumer and will spark discussion for teachers and secondary students. There is even the opportunity to engage on a deeper level and continue the conversation at **allaboutfood.aitc.ca**.

The Census of Agriculture

Every five years a Population Census is conducted in Canada. All Canadians answer a questionnaire about the characteristics of their households. This provides us with data and statistics about the Canadian population.

Agriculture plays such an important role in Canada that there is a separate Census of Agriculture, which began in 1896. The Census of Agriculture is conducted at the same time as the Population Census, but is a separate questionnaire only filled out by those who operate, or run, a farm or agricultural operation.[5]

Information from both the Population Census and the Census of Agriculture are used in this Fact Book.

What's Inside

1 in 8 jobs in Canada is in the agri-food sector

11.6 million hectares of biotech crops were grown in Canada in 2012

98% of Canadian farms are family owned and operated

50,000 fewer gallons of water are needed to grow an acre of corn today, compared to 20 years ago

Note: Every effort has been made to quote measurements in metric, however to retain the integrity of a reported statistic, there are a few exceptions that quote imperial measurements.

The Agri-Food Sector

How big is the agri-food sector?

$100 BILLION

The agri-food system is very important to the Canadian economy. As a whole sector, it accounts for eight per cent of the total Gross Domestic Product (GDP). That means that 8 per cent of the value of all Canadian-produced goods comes from the agriculture and agri-food system. That is a $100 billion contribution every year! Primary agriculture accounts for 1.7 per cent of the national GDP.[4]

What is the agri-food sector?

Every day, people across Canada and around the world rely on the agri-food sector for food, fibre and fuel. Agri-food is a term that combines the words agriculture and food to represent a holistic view of the activities involved in food production.

The agri-food sector includes four major segments:

1. **Crop producers** [including production of crops for fuel (e.g. ethanol) and fibre (e.g. hemp)]
2. **Fishers and animal producers** [including livestock raised for fibre (e.g. sheep for wool)]
3. **Food manufacturers** (e.g. companies that process and package food products)
4. **Food and beverage retailers** (e.g. grocery stores, meat markets, fruit and vegetable markets)[1]

Farm inputs: Resources that farmers use to produce their products (e.g. seed, feed, equipment)

Primary agriculture: Activities that occur within farm, nursery or greenhouse boundaries producing products for market (e.g. flowers, livestock, honey).[3]

Horticulture: Production of fruit, vegetables and non-food plants (e.g. flowers and ornamental plants).

Aquaculture: The farming of aquatic species (e.g. salmon, trout, mussels).

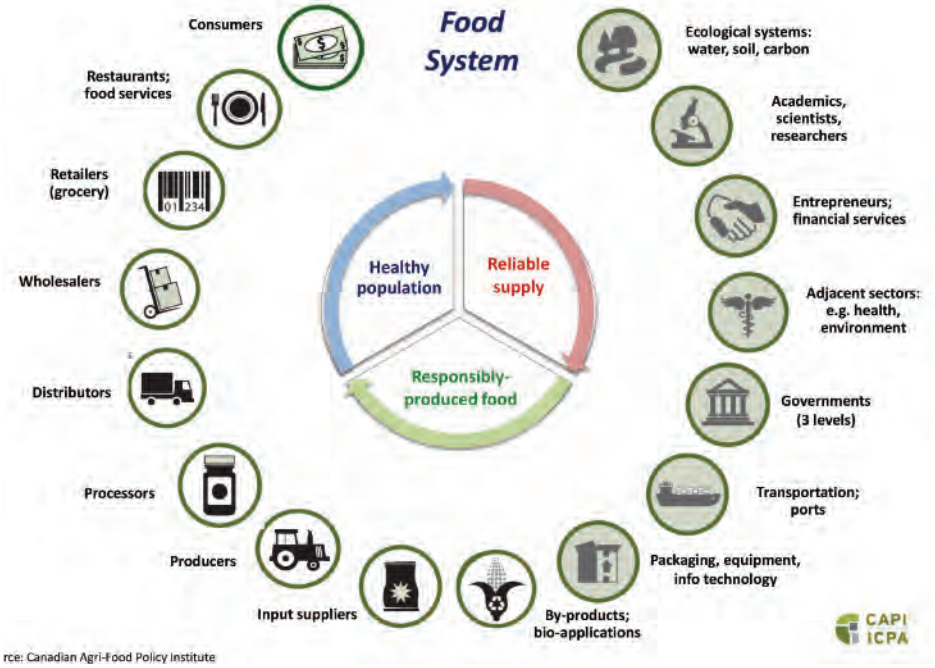
Is the agri-food sector only farming?

When people hear 'agriculture' or 'agri-food,' they may think of farming only, or the two producer segments. However, the agri-food sector is comprised of the whole journey from the farm to the plate (including manufacturing and retail).

According to Agriculture and Agri-Food Canada, the "agri-food system encompasses several industries including the farm input and service supplier industries, primary agriculture, food and beverage processing, food distribution, retail, wholesale and foodservice industries."[2]

The food system

The agri-food sector includes many different areas working together to produce and sell the food products Canadians consume every day. It is useful to think of the agri-food sector as a system. The Canadian Agri-Food Policy Institute has developed a Food Systems diagram to illustrate the connections involved in maintaining a reliable food supply. This diagram also acknowledges that the food system contributes to the health and well-being of people and that the sector requires sustainable practices for economic success.



rce: Canadian Agri-Food Policy Institute

Agricultural Career Trends

What are the trends?

As the previous page shows, the agri-food sector is very large. Throughout the food system there is an abundance of careers in a variety of fields, ranging from a marketing manager to a food science technician. People who are looking for careers that are exciting and well-paying should consider a career within the agri-food system. These jobs are also secure – after all, everyone has to eat! Employment opportunities within the sector are growing due to the emergence of new technology and consumer consciousness of issues such as nutrition, environment and globalization.[6]

How many people work in the agri-food sector?[7]

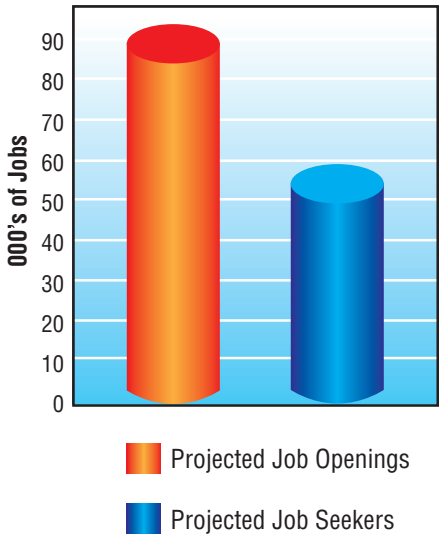
1/8 JOBS

In Canada, the agriculture and agri-food sector is booming! This sector makes up 12 per cent of total Canadian employment.

Over 2.1 million Canadians are employed in the sector, directly providing one in eight Canadian jobs. Of that 2.1 million, there were 305,000 people employed in primary agriculture (working within farm, nursery or greenhouse boundaries[8]). This means that for every one job in primary agriculture, there are five to six jobs in supporting areas of the sector.

Job openings

According to Human Resources and Skills Development Canada, there are several areas within the agri-food sector experiencing a great need for workers. For example, projected job openings for contractors, operators and supervisors in agriculture, horticulture and aquaculture drastically outnumber the projected job seekers over the period 2011-2020 (89,886 openings; 55,808 job seekers). Projections are similar for farm supervisors and specialized livestock workers (e.g. workers in a horse facility or a swine barn).[9]



What kind of agri-food jobs exist?

Some jobs in the agri-food sector outside of primary agriculture include:

- Research and development
- Plant and animal genetics
- Plant and animal health
- Food science and agriculture engineering
- Microbiology and biotechnology
- Environment, conservation, ecology, stewardship
- Financial services and computer programming
- Marketing, advertising and communications
- Government policy and regulations
- Food processing, distribution and retail

The agricultural online job board **AgCareers.com** released its 2012 agribusiness job outlook report and found that 66 per cent of jobs posted to the site required a bachelor's degree.[10]

Career Connection

Throughout this Fact Book, watch for **Career Connection** which describes some career opportunities related to the information on the page.

What Canadians Eat

Trends in food purchasing

Trends in food purchasing indicate that Canadians are changing the food they are buying and consuming. Busy lifestyles mean Canadians want food that can be prepared quickly, but they are also concerned about food quality and affordability. As a result, many consumers prefer fresh and healthy convenient food from a store over restaurant dining.[11]

Another trend in food purchasing is the increase in consumer spending on organic products. According to the Canadian Organic Trade Association, sales of certified organic food increased from $1 billion in 2006 to $3 billion in 2012.[12] Total spending by Canadians on food, beverages and tobacco of all kinds from stores and restaurants was $181 billion in 2011.[13] Therefore, while purchases of organic products are increasing, $3 billion is still a small portion of the market.

Eating Canadian Products:

Many Canadians prefer to purchase Canadian food when possible. How do you identify Canadian products?[14]

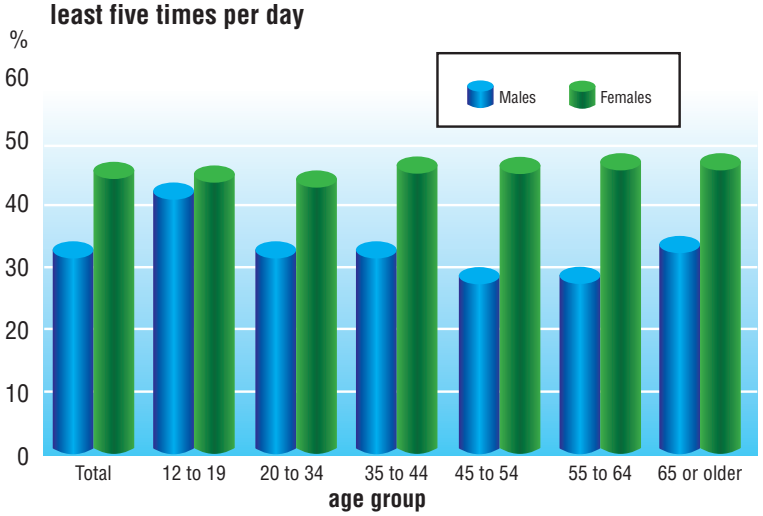
- "Product of Canada" means that all or nearly all of the major ingredients, processing and labour used to make the product are Canadian.
- "Made in Canada from domestic and imported ingredients" and "Made in Canada from imported ingredients" mean just what they say.
- "Processed in Canada," "Prepared in Canada" or similar statements tell you the product was made in Canada by skilled Canadian workers to meet Canada's stringent regulations. It may contain imported ingredients or a blend of Canadian and imported ingredients.

What's on Canadians' plates?

Fruit and vegetable consumption:

In 2012, only 40.6 per cent of Canadians reported that they consume fruits or vegetables more than five times per day.[15] It is recommended that adults over 19 years old consume 7-10 servings of fruit and vegetables daily. According to Health Canada, "A healthy diet rich in a variety of vegetables and fruit may help reduce the risk of some types of cancer. Eating lots of vegetables and fruit regularly may also lower your risk for heart disease."[16]

Percentage of Canadians consuming fruits and vegetables at least five times per day



Source: Canadian Community Health Survey, 2012.

Meat consumption:

Between 2010 and 2020, consumption of meat is expected to change. The average Canadian will eat less beef, but increase his or her consumption of other meats such as pork and poultry. Predicted changes are as follows: [17]

- **Beef:** slight decrease from 12.96 kg to 11.84 kg (per person per year)
- **Poultry:** significant increase from 15.76 kg to 18.74 kg (per person per year)
- **Pork** consumption will also increase slightly during this time period.

Career Connection

Research and development: The increased demand for healthy, convenient foods requires significant research and development. Jobs exist in researching how to make foods more nutritious, either through biotechnology or through animal nutrition (e.g. feeding chickens flax seed to produce eggs with higher Omega 3 content).

Design, marketing and retail: Many food products have some type of packaging, which has to be designed by a person who can market the characteristics of the product. Once that product is ready for sale, there are numerous careers within the processing, transportation, wholesale and retail areas of the agri-food sector, too.

Food Expenditures

Food costs coast to coast: In terms of average weekly household spending on food, Prince Edward Island was the lowest at $138.10 while Alberta had the highest at $163.69 in 2011.[21]

How expensive is our food?

Canadians enjoy a relatively inexpensive food supply. In 2006, Canadian households spent an average of $135.50 per week on food. The 2011 census showed a modest increase to $149.90 per week per household.[18]

Food prices can be affected by several factors:[20]

- **Weather/Temperature:** All crops are affected by weather during the growing season. If the growing season is too wet, too dry, too cold or too hot, crops cannot thrive. A scarcity or shortage of a crop may mean it will cost more. When a good growing season results in a surplus, food prices may go down.
- **Pests/Disease:** Like weather, factors such as pest damage and disease can destroy a crop or affect livestock production.
- **Transportation Costs:** When the price of oil and gas is higher, it costs more to transport food through the steps from farm to plate (e.g. to processing facility, to the store). This can impact the price of food.
- **Labour Costs:** The agri-food system requires a lot of people to make it work (farmers, packers, processors, retailers, etc). Many job opportunities exist in this system. If the cost of labour goes up (e.g. minimum wage is increased) food prices may increase.
- **Other:** Political and economic situations can influence the price of food, either up or down.

In 1900, 50 cents of every dollar earned was spent on food. Today the amount is just 10.6 cents on average.[19]

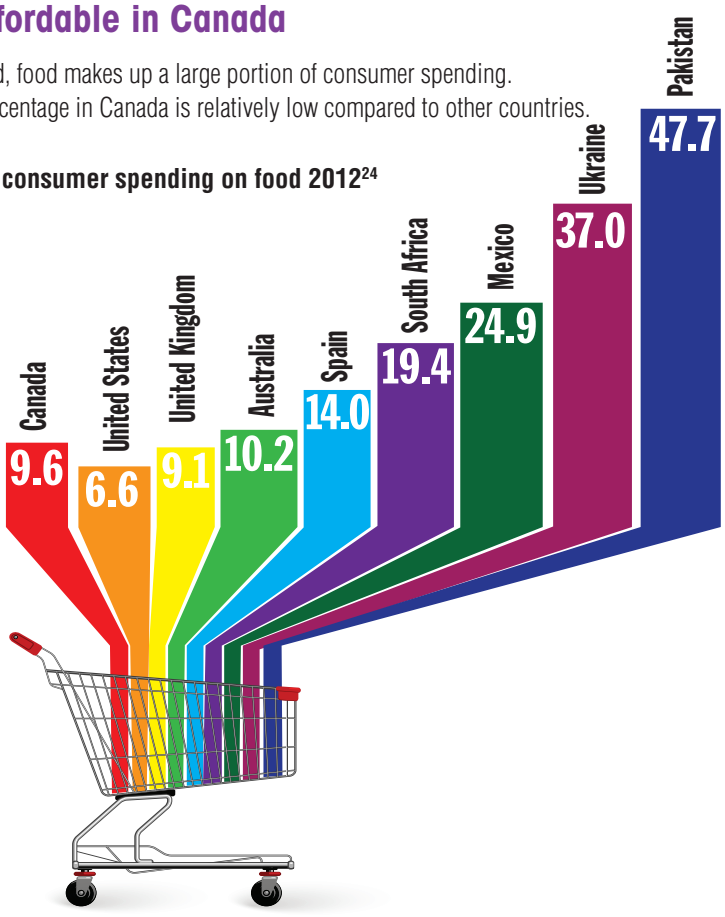
Although food prices have increased slightly since the last census, efficiencies across the agri-food system have helped keep costs low. For example, crop protection products help farmers minimize damage from pests and disease; biotechnologists and traditional plant breeders are developing crops that are drought resistant; and manufacturing companies are using lighter or less packaging to reduce production and transportation costs.

Organic food and beverage products tend to cost more than conventional products. Consumers generally pay a premium of about 10-20 per cent for organic food.[22] This increased cost can be a result of the need for more labour in production (e.g. hand weeding of vegetables) and distribution (e.g. the need to keep organic products separate from conventional in a store or restaurant). Lower yields may also affect price. On average, organic crops produce 25 per cent less per acre than conventional crops.[23] Additionally, certified organic foods require auditing by a third-party organization. This costs money and the added expense may be reflected in the cost of the food.

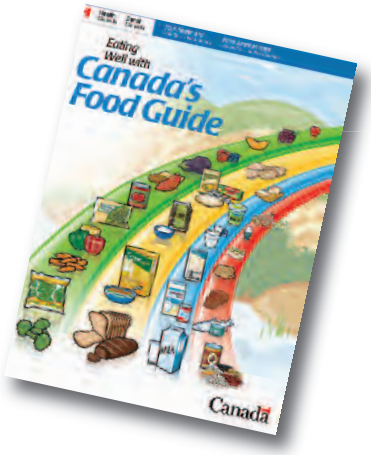
Food is affordable in Canada

Around the world, food makes up a large portion of consumer spending. However, the percentage in Canada is relatively low compared to other countries.

Percentage of consumer spending on food 2012[24]



Eating Well with Canada's Food Guide

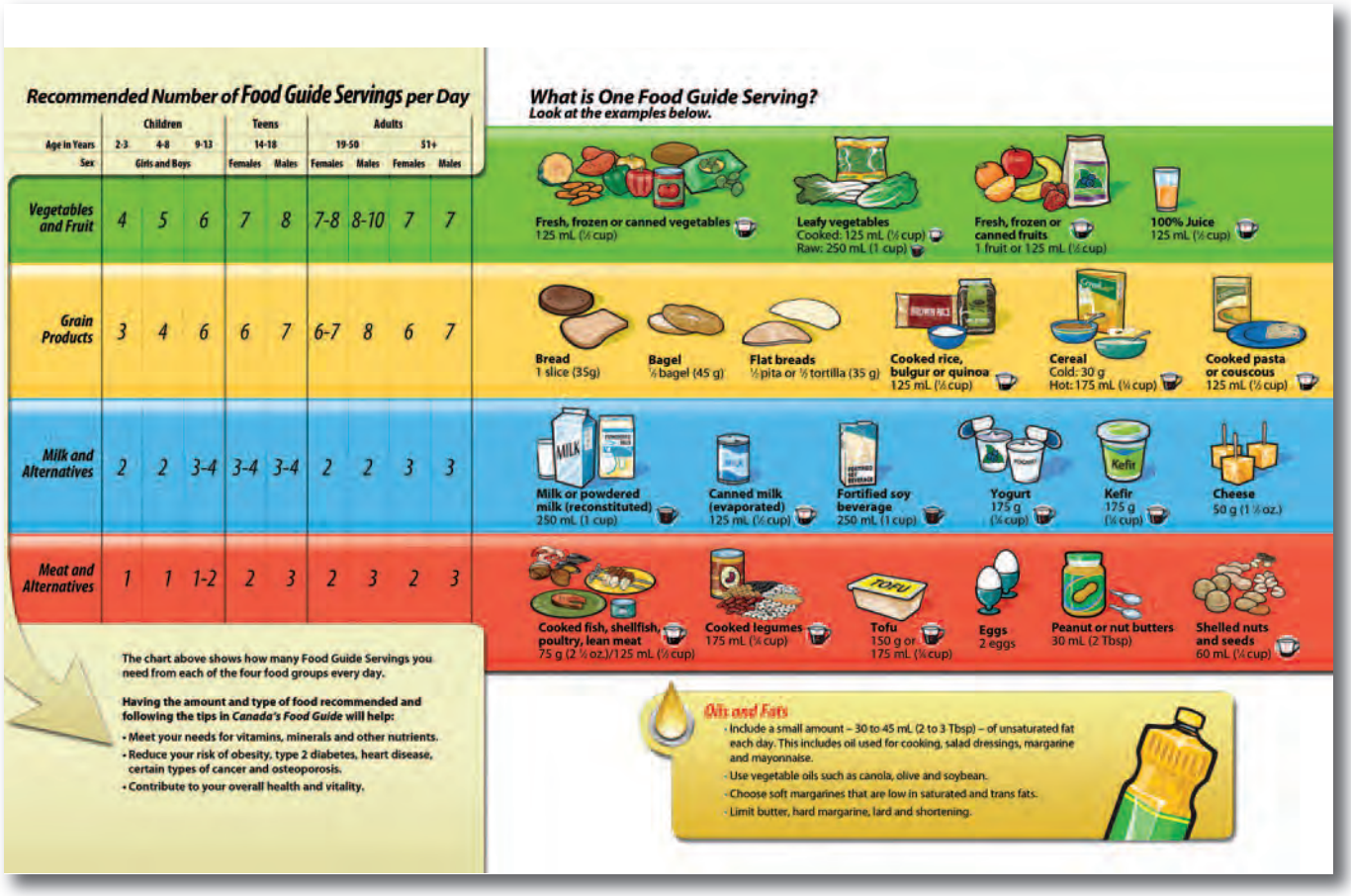


Eating Well with Canada's Food Guide is designed to help all Canadians look, feel and perform their best. It does this by recommending a way of selecting foods to meet the body's needs for energy and nutrients.

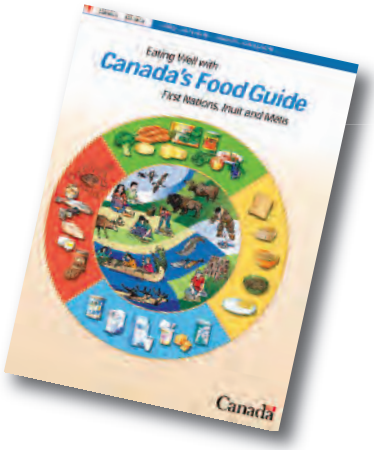
The amount of food each person needs depends on his or her age, body size, gender, and activity level. For women, energy and nutrient requirements change if they are pregnant or breast feeding. This variation in individual characteristics explains why the Food Guide gives a lower and higher number of servings for each food group.

Eating Well with Canada's Food Guide was updated by Health Canada in 2011 and contains some new features. The biggest change was to place vegetables and fruits as the food group with the highest recommended daily servings. This replaced the grain products food group. Health Canada has also incorporated a wider variety of suggested foods that are more representative of our diverse Canadian population (e.g. bulgur, couscous and kefir). The guide has been translated into 10 additional languages.

Health Canada has also updated its website (www.hc-sc.gc.ca) to include additional information about the food guide and access to tips and tools that help Canadians understand how to make healthy choices.



Eating Well with Canada's Food Guide: First Nations, Inuit and Métis

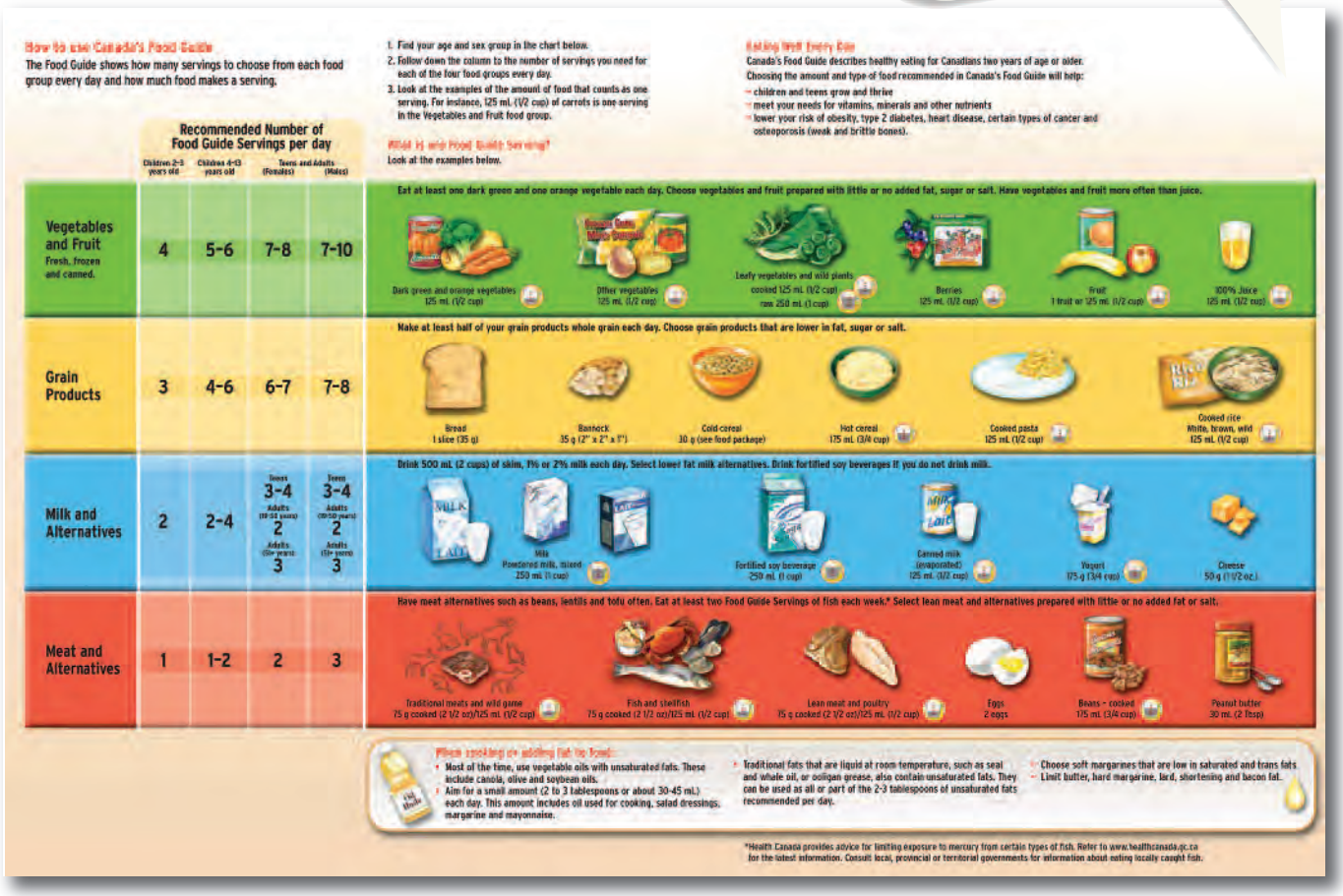


The Aboriginal Peoples population has deeply rooted traditions around its food choices. Often these practices involve hunting, trapping, fishing and harvesting wild foods. It is important that the Aboriginal Peoples population has a food guide which reflects its values and traditions, while offering suggestions for how to eat a healthy balanced meal.[26]

Health Canada produces a document called Eating Well with Canada's Food Guide: First Nations, Inuit and Métis.

The guide includes examples of traditional foods of Canada's Aboriginal Peoples, such as bannock, game meats, fiddleheads and wild rice. Each food group also includes alternative choices, as well as store-bought foods that are available in remote and rural communities.[27] For example, some First Nations, Inuit and Métis people do not consume milk products; therefore the guide includes suggestions on how to get the nutrients offered in the milk and alternatives food group through food choices such as fortified soy beverages or bannock (made with baking powder). Like the conventional food guide, recommendations are made for various age groups and gender.

Between 2006 and 2011, the entire Aboriginal Peoples population (First Nations, Inuit and Métis) in Canada increased by 20.1%.[25]



Health Concerns

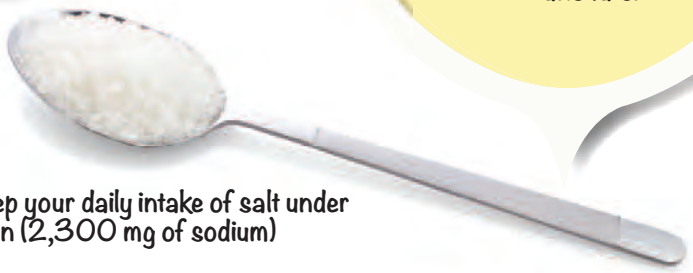
Is all fat unhealthy?

Fat is an important part of any diet, provided that the right fats are consumed. Healthy fats are unsaturated fats like polyunsaturates and monounsaturates, which help to lower blood cholesterol levels. They are found in foods such as fish, nuts, seeds and oils that are made from plants like corn, soybean, canola and sunflower.[28] Saturated fats should be consumed in limited quantities. They are found in fats from meat and dairy sources and in refined oils.

Another type of fat is trans fat. Small amounts of trans fats are found naturally in some animal-based foods (e.g. meat).[29] However, most trans fats are made during food processing through partial hydrogenation of unsaturated fats; these are called industrial or synthetic trans fats.[30] Research shows that synthetic trans fat can increase unhealthy low-density lipoprotein (LDL) cholesterol and lower healthy high-density lipoprotein (HDL) cholesterol.[31] Therefore, Health Canada recommends choosing healthier foods that contain little or no trans fat.[32]

In Canada's Food Guide, Health Canada suggests including a small amount of unsaturated fat in your diet every day. Vegetable oils, like canola or soybean, are unsaturated and great for heart-healthy living because they lower bad cholesterol.[34] They also help in the absorption of fat soluble vitamins A, D, E and K. Canola oil contains vitamin E, which has valuable antioxidant properties to fight cancer and heart disease, as well as vitamin K, which is vital for blood clotting.[35]

Canada was the first country to introduce mandatory labelling of trans fats.



Try to keep your daily intake of salt under 1 teaspoon (2,300 mg of sodium)

Just a dash of salt

Sodium is an important part of the human diet; however, Canadians tend to consume more than double the recommended intake.[36] In October 2013, Hypertension Canada modified the suggested sodium intake for the 14 to 50 age group to 2,000 mg per day.[37]

When consumed in large quantities, sodium can lead to high blood pressure, stroke, heart and kidney diseases. Reading nutritional values tables on food products can help us monitor our sodium intake. Reducing consumption of many processed foods, packaged and ready-to-eat foods, restaurant foods and bakery products can moderate or lower sodium intake. These foods are usually higher in sodium content than those prepared from scratch.[38]

Recommended daily intake of sodium[39]

Healthy…	should aim for the Adequate Intake (AI) of	without going over the Upper Limit (UL) of
Infants 0-6 months	120 mg/day	No data
Infants 7-12 months	370 mg/day	No data
Children 1-3 years	1,000 mg/day	1,500 mg/day
Children 4-8 years	1,200 mg/day	1,900 mg/day
Teens 9-13 years	1,500 mg/day	2,200 mg/day
Adults 14-50 years	1,500 mg/day *2,000 mg/day (Hypertension Canada)	2,300 mg/day
Older adults 51-70 years	1,300 mg/day	
Older adults over 70 years	1,200 mg/day	
Pregnant women	1,500 mg/day	

Food Safety Across the Agri-Food Sector

How safe is Canadian food?

Canada's food system is designed to ensure that consumers have access to food that is safe and nutritious to eat. This is monitored and regulated by the Canadian Food Inspection Agency (CFIA). At all stages of food production, from the primary source (e.g. farm, greenhouse, etc.) to the end-product, safety is of the highest importance in raising animals and crops for consumption in the marketplace.

Farms: Canadian farmers follow best practices and guidelines to help them produce some of the safest food in the world. The government approves and monitors the use of farm chemicals and livestock medications. There are also best practices and laws established by government to ensure that the welfare of animals and the natural environment are protected. For example, many commodity groups within the agri-food sector (e.g. turkey, egg, sheep, beef, dairy, grain, etc.) have on-farm safety programs that help to ensure food production is safe.

Imports: Food that comes into Canada must undergo government inspection, including ingredient labels. At the border entry points, the Canadian Border Services Agency follows CFIA policies and regulations to examine food and agricultural products. Shipments that require follow-up are referred to the CFIA.[40]

Processing Plant: The government works with processing plants to ensure that staff members are properly trained in health and safety issues and that the food processing environment is properly cleaned and sanitized. Quality and safety are paramount at this stage of food production.

Retail: Food stores and restaurants want to bring quality products to their customers. When food reaches the restaurant or grocery store, establishment owners must meet government standards of safe food storage and handling. Packaging, ingredient lists and sanitary conditions must all meet government regulations in order for any company to stay in business.

Food safety - Maximum residue limits:

All food products grown in and imported into Canada (both organic and conventional) are tested for pesticide residue. It is important to note that Health Canada states "to date, there is no evidence to indicate that there is a health risk from eating conventionally grown produce because of pesticide residues, or that organic foods are safer to consume than conventionally produced food."[41] They must both meet the same guidelines for Maximum Residue Limit (MRL). The maximum permitted residue is set by Health Canada and enforced by the Canadian Food Inspection Agency. Maximum Residue Limits are set well below the no-effect level for humans (often 100 to 1000 times below).[42] Each pesticide has its own MRL, but the default limit is 0.1 parts per million.[43]

HACCP: (Hazard Analysis Critical Control Points) is a systematic approach to food safety. This approach is used across the food system (e.g. production, processing) to identify and prevent food safety hazards.[45]

Career Connection

There are several career opportunities within the agriculture sector that help to keep our food supply safe:

- The government employs **inspectors** to assess food imports.
- Commodity groups such as the Dairy Farmers of Canada employ **validators** in their Canadian Quality Milk Program. Validators visit farms to ensure that food safety hazards are being prevented and reduced.[44]
- Processing plants employ people to test the cleanliness of equipment and quality of product.

Food Safety is in Your Hands

Throughout the agri-food system many steps are taken to keep food products safe for those who purchase and consume them. Food safety is also important once a product has left the retail environment and entered the home. Canadians can take steps to ensure that the food they purchase is stored and prepared in a way that keeps it safe and nutritious.

To prevent contracting food-borne illnesses, keep the following tips in mind about food preparation and storage at home:

Clean

- Disinfect hands, utensils and surfaces with hot soapy water before, during and after handling food.
- Sanitize cutting boards and countertops with a mild solution made from water and bleach.
- Ensure that all produce is thoroughly washed before cooking.
- Change cleaning cloths often to avoid spreading bacteria.

Separate

- Store meat and poultry away from other food when preparing and storing, as well as when bagging your groceries.
- Use separate cutting boards for meat and produce.
- When it's time to put food away, keep it covered to prevent any cross contamination or odours.
- Be sure to sanitize plates that held raw meat.
- If you would like to cook with the marinade used for raw meat, ensure that you boil it for one minute before placing on cooked meat.

Cook

- Bacteria grow at room temperature, so make every effort to cook as soon as food is taken from storage.
- Cook meat immediately and use an instant read thermometer to make sure that food reaches suggested temperatures. There are different suggested temperatures for poultry and types of meat (e.g. pork, beef, lamb).

Chill

- Be sure to refrigerate or freeze any perishable food items within two hours of cooking completion. This includes fresh produce and any food leftover from cooking.
- The recommended temperature setting for your refrigerator is 4°C while your recommended freezer setting is -18°C.
- Thaw food in the fridge, the microwave on defrost setting, or in cold water. If you are thawing foods in water, replace the water every 30 minutes.

Food Waste

Between 30 and 50% of food is wasted.[54]

What are the effects of food waste?

Food waste can have economic, social and environmental effects. When food is wasted, it is important to consider not only the loss of that product, but also the resources that went into producing it. The land, water, energy and air that were needed to grow a crop or feed an animal are also wasted when food products are not consumed.[46]

From an agri-food business perspective, the goal is to reduce inefficiencies wherever possible. Many businesses have started to complete evaluations of their natural resource and input use (fertilizer, chemical, feed, labour, energy, water, etc.).[47] These evaluations help businesses create plans to reduce waste and increase both efficiency and profit.

Research is also being done to identify practices and techniques which can help to reduce waste within the food system (e.g. during production, processing, retail, etc.).[48] The research findings can then be shared with Canadian agri-businesses to help them increase their financial and environmental sustainability. A toolkit has also been developed by the Food and Agriculture Organization of the United Nations to help players across the food system reduce their waste.[49]

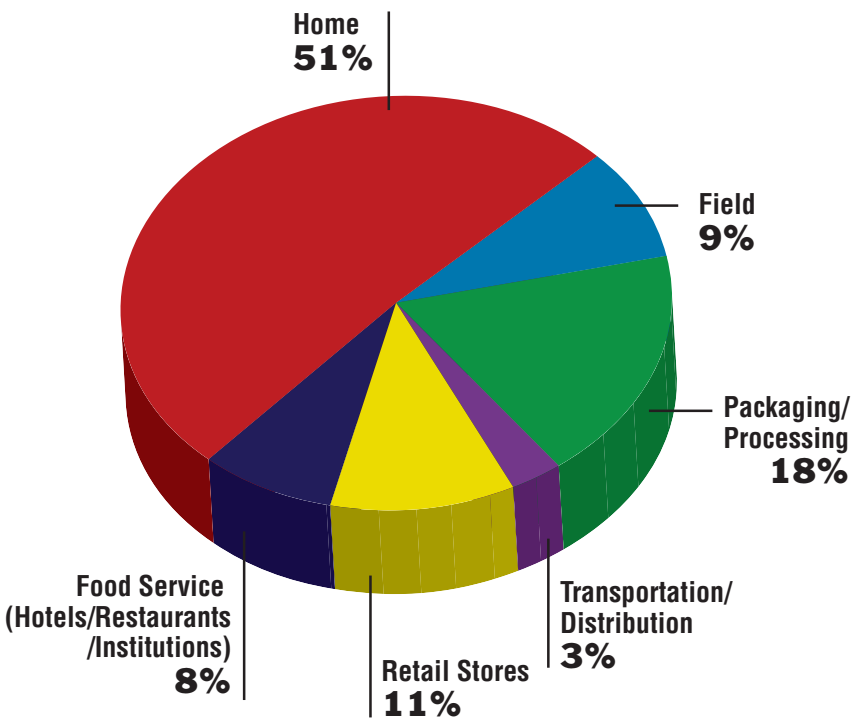
Food waste in the home

Sixty per cent of food waste in the home comes from perishable food not being used before it expires.[52] This may be because of confusion with labels and the meaning of a best-before date. This date refers to the point at which a product is at its peak of freshness. Some foods are still safe to eat after the best-before date, however freshness, flavour and texture may change.[53]

A few tips to reduce food waste at home:[55]

1. Write a list for when you shop and stick to it.
2. Use leftovers, or freeze them, instead of throwing them away.
3. Serve small amounts – you can always go back for seconds.
4. Start a compost bin to recycle food scraps.

Where food waste occurs along the value chain[50]



Today's Farms

Regardless of size, 98% of Canadian farms are family owned and operated.[59]

Topics affecting farms

Many of the same topics that matter to consumers are important for farmers as well. Food safety is a key concern for all farmers and they take care every day to make sure that their products are safe for people to eat. Food waste is another topic that touches farms, as well as consumers. Farmers work hard to produce their food products and waste represents lost resources of many kinds (e.g. money, natural or environmental, human or work).

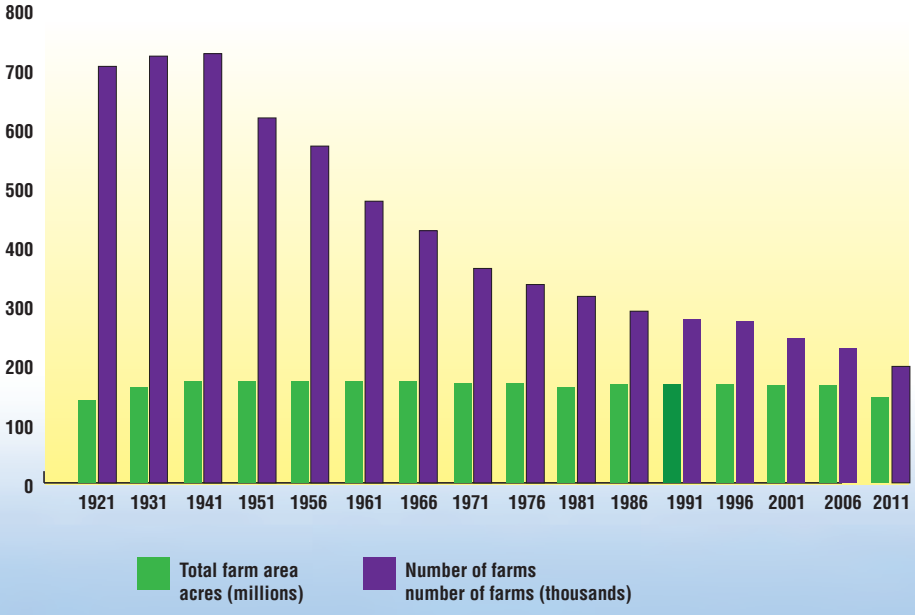
While many similarities exist between consumers and farmers, there are also unique challenges and changes present for people within the agri-food system. Changing climate, increasing production costs and an aging farming population are the biggest trends in the changing farm scene in Canada.

Fewer farms overall...

23,643 FEWER FARMS

One of the most notable changes in the agri-food sector is the decrease in the number of farms nationwide. According to the 2011 Census, there were 205,730 farms in Canada, which represents a decrease of 10.3 per cent or 23,643 fewer farms since the previous census.[56] The total land used for farming is 160,155,748 acres, which is down 4.1 per cent from 2006.[57]

Number of farms and farm area, Canada, 1921 to 2011[162]

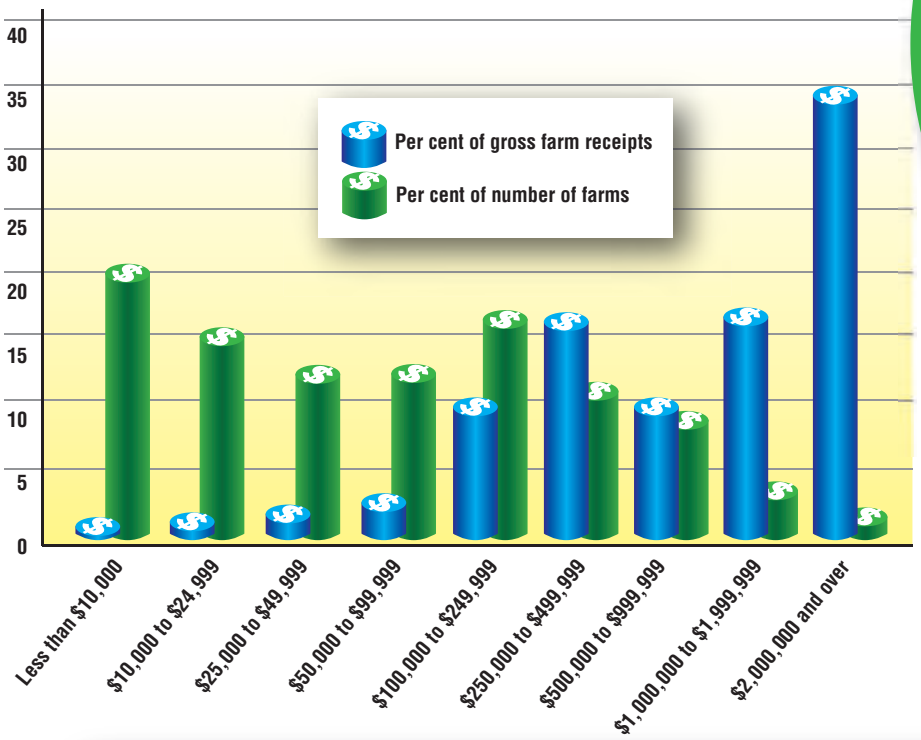


... but larger farms

778 ACRES

Although the number of farms and amount of farm land has decreased, many farms are becoming larger and more specialized. Between 2006 and 2011, the average size of a Canadian farm increased 6.9 per cent from 728 acres to 778 acres.[58]

Proportion of farm numbers and gross farm receipts by receipts class, Canada, 2011, per cent[63]



Organic farms

The number of certified organic farms increased 4.4 per cent between 2006 and 2012. Most of these organic farms are in the $50,000 to $99,999 and $100,000 to $249,000 gross farm receipt classes.[60] Certified organic farms currently represent 1.8 per cent of all farms in Canada, compared to 1.5 per cent in 2006, and 0.9 per cent in 2001.[61]

Career Connection

Farms may need employees or consultants for different aspects of their businesses:

Farm Managers + Workers: Some farms may be so large that they require additional employees to carry out daily activities and duties, as well as a manager to oversee business activities.

Animal Nutritionist: Special consultants in animal nutrition may be hired by farms to develop a diet for animals that ensures they are healthy and productive.

Custom Equipment Operator: With increasing farm size, some businesses make contracts with custom equipment operators to help plant, spray and harvest the large amount of land they own or rent. Some smaller farms may not be able to afford expensive equipment (many new combine harvesters cost well over $300,000, for example) and need to hire contract companies that own those machines for help.

Accountant: As farm income increases and more farms become incorporated, there are often more financial transactions to keep track of. There is a demand for accountants who understand farm business operations and can help farmers with their finances, especially with tax returns.

The Modern Farmer

Another term for farmer is "producer" or "farm operator."

Who are modern farmers?

According to the 2011 census, for the first time in the history of Canada, the largest percentage of farm operators is aged 55 and older (48.3 per cent). This is an increase from 2006 when this age group represented 40.7 per cent of farm operators.[64] Over the past 20 years, the demographics of farmers have changed and the number of farmers under the age of 35 has decreased substantially.

Multiple generations

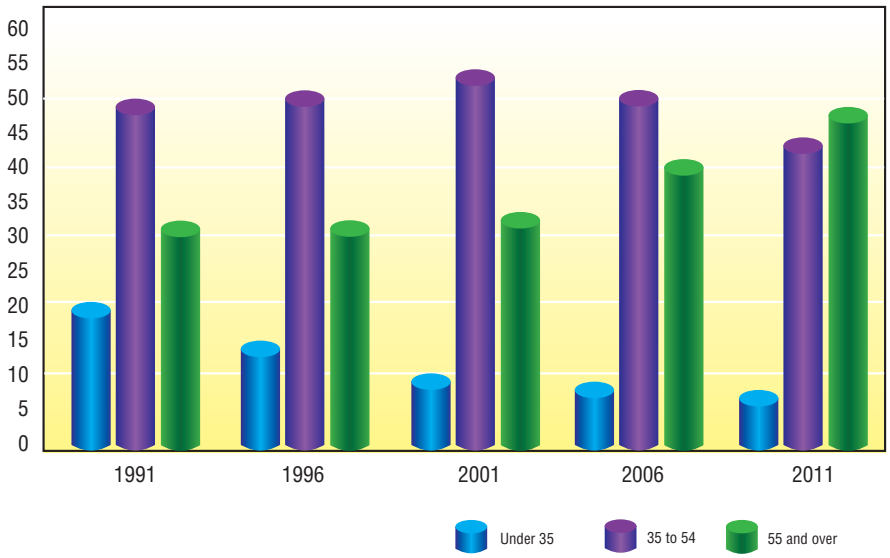
There are some farms where an individual under the age of 35 is working alongside an older farm operator. The 2011 census shows that farms with these multi-generation partnerships tend to have a higher gross farm income than those with farm operators only under 35 or only over 35.

Farm category	Average gross farm receipts ($)
Source: Statistics Canada, Census of Agriculture, 2011	
Farms with all operators under 35 years	204,558
Farms with operators under 35 alongside older operators	450,485
Farms with all operators over 35 years	240,027
All farms	248,199

Average gross farm receipts for younger operators, Canada, 2010

The average age of a farmer in Canada is 54 years old.

Total operators by age category, Canada, 1991 to 2011, per cent of operators [65]



A farmer's education

Farmers need to make complex decisions that will ensure both economic and environmental sustainability for their farms and the industry as a whole. More farmers are obtaining post-secondary degrees and diplomas, which help to give them a foundation of knowledge about the agri-food system.

There are also special courses, conferences and webinars run by commodity groups and agriculture organizations. Farmers often take advantage of these learning opportunities so they can gain new knowledge and techniques for their businesses.

Technology on the Farm

The use of the internet by Canadian farms increased from 34.9% to 55.6% between 2006 and 2011.

Going digital

The percentage of farms that use the internet for farm business increased significantly between 2006 and 2011. In the previous census year, 34.9 per cent of farms used the internet, but in 2011, 55.6 per cent took advantage of this technology.[66] Farmers may use the internet for activities such as reading news, checking market prices or connecting with a consultant (e.g. livestock nutritionist).

Smartphones have also proven to be useful tools to manage different aspects of the farm. For example, farmers use their phones to pinpoint GPS points on their fields that could indicate soil nutrient or pest problems. Video cameras linked to phones allow farmers to check on calving pens and the barn yard. Producers can even use their smartphones to operate robotic dairy milking machines or wind machines that are used to churn up air to combat extreme weather in vineyards.[67]

Advances in technology mean farmers can manage various aspects of their businesses more efficiently, which helps keep costs low for consumers. Additionally, animal welfare is enhanced because farmers can use technology to monitor animal well-being and treat sick livestock more effectively.[68]

Do farmers use social media?

Farmers are connecting directly with Canadians to bring more information from farm to table. They are responding to Canadians' desires for more information about where their food comes from and the people who produce it. Some farmers use social media such as Facebook and Twitter to provide information to consumers about how they farm. On the business end, tools like Twitter can be used to follow market production, commodity prices and crop information as well as to stay connected with other farmers. Farmers are better able to provide a political voice and communicate on issues affecting them without having to be physically present in a group forum.[69]

Technology on the farm

Below are some examples of technologies that help farmers improve productivity and animal welfare while benefiting the environment.

Robotic Milking Machine: Robotic machines track milk production of cows and identify any illness or issues at early stages through individual tracking and testing.

Global Positioning Systems/ Precision Agriculture: Fields are mapped and analysed for levels of nutrients, moisture, etc. through special software. Tools like auto-steer ensure there is no overlap when planting and/or spraying, which prevents wasted resources.

Soil Probes: Vineyard and orchard managers can know exactly how much moisture is in their soil so they can irrigate more efficiently.

Career Connection

Application development: The use of smartphones is increasing and along with it is the need for applications. Some companies are hiring people to design applications for their products. For example, someone working for a seed company may develop an application that lets farmers plug in their personal information to receive recommendations on which seeds to purchase for their farms.

Robotic, GPS and soil probe companies each employ many different people for their work. Jobs exist to **design** the technology, **sell and market** to farmers, **install** the machines and **maintain and service** them.

Farming and the Environment

Do farms impact the environment?

Farmers generally consider themselves to be stewards of the earth. Many farm practices are aimed at protecting the environment while at the same time allowing the farm to be profitable.

Environmental Farm Plans (EFP)

One tool that is effective at making significant environmental improvements in the agri-food sector is Environmental Farm Plans (EFPs). EFPs originated in Ontario but are now used across all provinces.

An EFP is a self-assessment process carried out by farm businesses to increase environmental awareness and improve sustainability in up to 23 aspects of farms. The assessment measures strengths and weaknesses in the farm's operations and then an action plan is developed to improve conditions and reduce risk to soil, water and air.[70]

EFPs across Canada

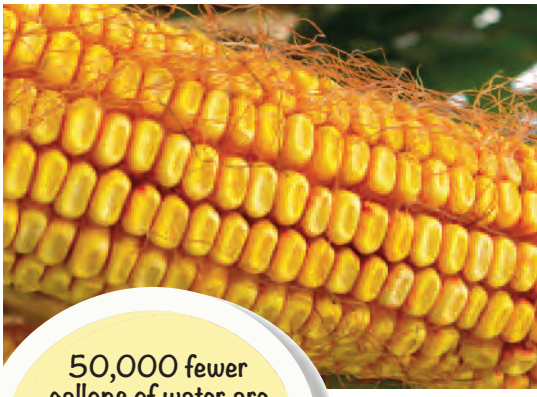
In a 2011 survey by the Ontario Soil and Crop Improvement Association, farmers said the following about EFPs:

- 95 per cent impacted farm operations
- 74 per cent improved soil quality
- 71 per cent improved water quality
- 63 per cent improved family health and safety
- 48 per cent improved fish and wildlife habitat[72]

In 2011, 35% of Canadian farms had a formal Environmental Farm Plan (EFP).

Doing more with less

New varieties of crops, enhanced livestock nutrition, better equipment and improved techniques are allowing farmers to produce more with fewer resources. For example 50,000 fewer gallons of water are needed to grow an acre of corn today, compared to 20 years ago.[78]



50,000 fewer gallons of water are needed to grow an acre of corn today, compared to 20 years ago.

CleanFARMS

Organizations like CleanFarms provide environmental stewardship in the realm of agriculture. This particular organization is funded by industry membership and aims to manage agricultural waste through the recycling of agricultural plastics and packaging.[76] For example, CleanFARMS has worked with municipalities and agriculture retailers to collect empty fertilizer and pesticide containers and keep them out of landfills. The program began in 1989 and since then has collected more than 96 million empty containers.[77]

Types of tillage:

Conventional tillage: Some farmers use machines like a plow or disc to turn over and loosen the soil after harvest (a process called tillage). This can leave the soil exposed to rain and wind, which can sometimes lead to erosion (wearing away) of the topsoil that is needed to grow a crop.

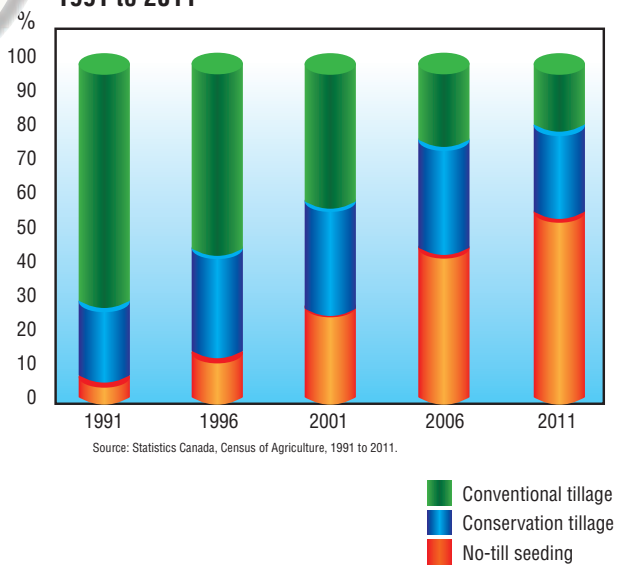
Improved science and technology (e.g. equipment and crops) allow for other types of tillage:

Conservation tillage: This is a technique for planting seed that minimizes the disruption of soil and therefore helps prevent soil erosion. Farmers use special equipment to plant seeds, leaving most of the residues (e.g. stalks) of the previous crop intact. Planting in this way allows the crop residue to break down, which adds organic matter (like composting) while protecting the soil from erosion.

No-till: No-till works in the same way as conservation tillage, but there is less disruption of soil (e.g. the planter does not go as deep into the soil to plant the seeds, and no crop residue is turned over).[73]

No-till practices are used in 56.4% of all area prepared for seed in Canada.[74]

Seeding according to tillage practice, Canada, 1991 to 2011



Source: Statistics Canada, Census of Agriculture, 1991 to 2011.

Conventional tillage

No-till

Facts on Conservation/No-till agriculture[75]

No-till farming can reduce soil erosion by 90 to 95 per cent or more compared to conventional tillage practices and continuous no-till can make the soil more resistant to erosion over time.

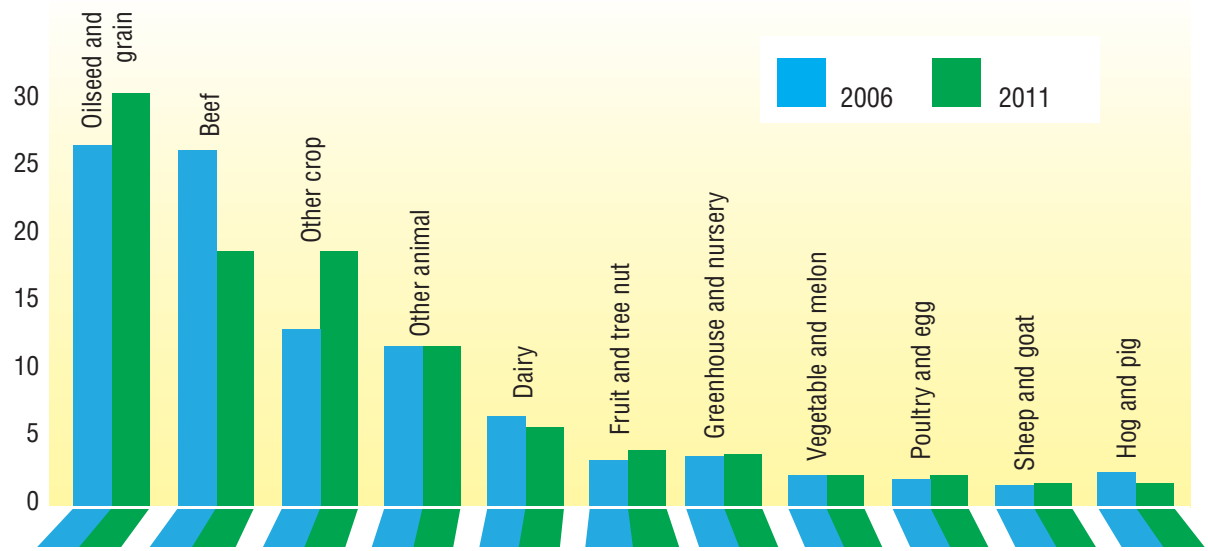
Studies have shown that soil under no-till agriculture sequestered on average 29 per cent more carbon than soil under conventional tillage.

Agriculture Production in Canada

What is produced in Canada?

Agriculture in Canada is very diverse. From coast to coast to coast, hundreds of different commodities are produced. A commodity is a product of primary agriculture that can be bought or sold (e.g. wheat, lamb, cherries, farmed salmon, etc.).

Proportion of all farms by farm type, Canada, 2006 and 2011, per cent of farms [79]



Where in Canada?

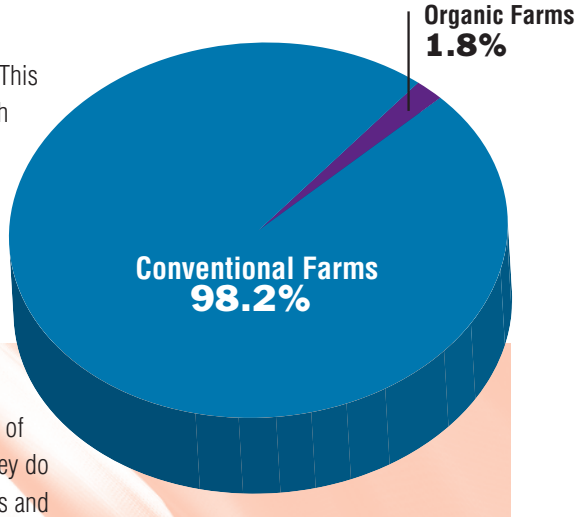
The following map shows the top commodities and agri-food exports in each province.[80]

Different production methods

All farmers in Canada make choices about how they will produce the food they are growing. All food produced in Canada meets high standards for safety and health set by the Canadian Food Inspection Agency and Health Canada. Both conventional and organic farmers look for ways to produce food in an environmentally sustainable way.

Conventional Agriculture: Over 98 per cent of farms in Canada farm conventionally. This means they may choose to use tools and technology such as synthetic fertilizers and pesticides, antibiotics or biotechnology. As with organic agriculture, producers look for ways to reduce environmental impact, ensure their animals are healthy and improve soil quality.

Organic Agriculture: 1.8 per cent of farms in Canada are certified organic. To be certified as organic, farmers must meet specific regulations and be verified by an accredited organization.[81] Those who farm organically have a list of permitted substances they may use in production but they do not use tools and technology such as synthetic fertilizers and pesticides, antibiotics or biotechnology.



Provincial Overview

	BC	AB	SK	MB	ON	QC	NB	NS	PEI	NF	CANADA
Number of Census Farms	19,759	43,234	36,952	15,877	51,950	29,437	2,611	3,905	1,495	510	205,730
Average Farm Size (acres)	327	1168	1668	1135	244	280	359	261	398	152	778
Total Area of Farms (acres)	6,452,867	50,498,834	61,628,148	18,023,472	12,668,236	8,256,614	937,829	1,018,075	594,324	77,349	160,155,748
Total Farm Operators per Province	29,925	62,050	49,475	22,315	74,840	43,920	3,470	5,225	2,045	665	293,930
Farm Receipts ($)	2.9 billion	11.4 billion	9.4 billion	5.3 billion	11.9 billion	8.4 billion	552.8 million	594.9 million	447.4 million	137.6 million	51.1 billion

Source: Statistics Canada, 2011 Census

Crop Production: Plant Biotechnology

For centuries people have been modifying plants to express desired characteristics (e.g. sweetness, colour, disease resistance, etc.) through selective breeding. This often took long periods of time and a trial and error approach to match different "parents" and track the characteristics in "offspring." Selective breeding is still used today but technology now offers a better understanding of genetics. With this knowledge and access to specialized tools, plant modification can be much more precise than it is with selective breeding. This modern technique is known as plant biotechnology.[82]

What is plant biotechnology?

Plant biotechnology is a term that refers to a number of lab-based techniques developed to introduce desirable traits (or characteristics) into crops. The techniques include Genetic Modification (GM), Genetic Engineering (GE) and Mutagenesis.[83]

11.6 MILLION

11.6 million hectares of biotech crops were grown in Canada in 2012, an increase of 12 per cent from 2011. The four main biotech crops grown in Canada are: corn, soybean, sugarbeet and canola. Biotech canola accounts for 97.5 per cent of canola planted in Canada.[85]

How does it work?

Chromosomes are made up of genes containing DNA (deoxyribonucleic acid). These genes may work individually or as a group to determine how an organism responds to specific conditions, like resistance to a disease. Understanding DNA makeup allows researchers to study an organism's cell composition and modify genes (e.g. add, remove, or alter) to make them express the desired trait. Some examples of traits are resistance to pests, drought resistance, and tolerance of herbicides.

In 2012, 17 million farmers in 28 countries planted 170 million hectares of biotech crops[86]

Why plant biotechnology?

One of the key points of biotechnology is that the modification is done to produce something that is useful for society or has an important purpose, such as increasing yield or reducing impact on the environment. For example, through biotechnology, insect-resistant corn plants have been developed. There is a natural insecticidal protein which is found in soil bacteria called Bacillus thuringiensis (Bt). The Bt gene that expresses the Bt protein has been inserted into the genes of the corn and becomes part of the tissue of the plant. Insects that consume parts of the Bt corn plant will die because that protein is toxic to them (Bt is not toxic to humans, animals or beneficial insects).[84] Because the plant resists the insects, fewer pesticides may be necessary. Should a farmer need to spray fewer pesticides (and less volume), this means he or she would also be spending less time on a running tractor, therefore reducing fossil fuel use and saving the soil from compaction.

Who uses plant biotechnology?

The decision of whether or not to use products of plant biotechnology is a choice individual farmers make for their businesses. Farmers who are certified organic do not use any products of plant biotechnology.

Who monitors the safety of plant biotechnology products?

Government organizations such as Health Canada and the Canadian Food Inspection Agency are dedicated to assessing products of biotechnology to ensure the health and safety of Canadians.[87] Research requirements are strictly regulated and studies are conducted in specific testing environments. In almost 20 years of assessment, Health Canada has never found any health risks associated with the consumption of biotechnology products. A list of all assessed products is available on the Health Canada website.[88]

Members of the agriculture community and biotechnology companies also evaluate aspects of biotechnology. The first genetically engineered crops underwent over 10 years of laboratory and field testing before they were made available to the public in 1996.[89] Any new biotech plant product still takes up to 10 years and $150 million for research, development and registration.[90]

What other factors are assessed?

International organizations such as the World Health Organization (WHO) state that all GM products currently on the market have met the safety assessment policies of the countries they have been approved in and are "not likely to present risks for human health."[91] As well as research on safety, the WHO also advocates for a holistic assessment of biotechnology, including the social and economic impacts on people and environments in both developed and developing countries.[92] In Canada, regulating agencies evaluate biotechnology products for:

- the potential effect of the product on human health;
- the potential effect of the product on livestock animal health; and
- the potential environmental impact of the product.[93]

Companies that create biotechnology products can also take a holistic approach. "Corporate Social Responsibility (CSR) is defined as the voluntary activities undertaken by a company to operate in an economic, social and environmentally sustainable manner."[94]

Many biotechnology companies have corporate social responsibility practices outlined for their organizations. These plans identify company commitments to activities such as conserving natural resources, improving crop efficiency and addressing global challenges. One of the biggest future challenges will be feeding the global population, which is expected to reach 9.6 billion by 2050.[95]

Career Connection

Many career opportunities exist in the biotechnology field: **laboratory research**, **field trial monitoring**, **marketing**, **developing policy** related to biotechnology and more.

Crop Production: Pest Control

Why do pests have to be controlled?

One of the keys to maximizing crop production is minimizing the impact of pests. Pests may include insects, animals (e.g. rodents), fungus, weeds or disease. Some of these pests can affect the growth of the crop in the field, and others may cause damage after harvest (i.e. during storage).

Farmers will make individual decisions on which products or methods are best for their farms and specific pest situations. Often the pest pressures vary from season to season and farmers must be able to adapt to these changes.

Integrated Pest Management

Many farmers participate in Integrated Pest Management (IPM) programs to monitor and control pests.

The presence of pests is monitored through a provincial or regional program, a local pest management specialist, private scout, or the farmer him or herself. Using traps, observing the condition of the crop and gathering information from weather recorders, the experts can determine what the issue is and where it is occurring. This results in choosing the correct method of pest management and the ability to target specific locations for treatment. With chemical applications in the field, this can reduce the amount of pesticide application that is used overall because a farmer can spray only where it is needed.[96] The idea behind IPM is to "integrate" or combine multiple strategies to reduce pest pressure.

Pest Control Options

Farmers may choose any one or a combination of these methods for dealing with threats to their crops:

Non-chemical:

- Crop rotation (changing the crops grown every year). This helps to prevent pests that may target one particular crop.
- Cover crops: Planting between a crop to suppress weeds or offer an environment that is not desirable to insects or diseases (e.g. planting clover between rows of fruit trees).
- Pest-resistant seeds (e.g. biotechnology products).
- Beneficial insects that attack pests.

Mechanical:

- Field vacuums, screens or barriers, sticky boards, tilling weeds.[97]

Chemical:

- Insecticides (target insects), herbicides (target weeds), fungicides (targets diseases), and rodenticides (target rodents).
- There are both natural chemicals and synthetic chemicals available for use. A farmer will choose the option that meets the needs of his or her farm and production choice (e.g. organic or conventional).

Most pesticides undergo 10 years of research and development before they are ready for sale.

Pesticides and pollinator insects

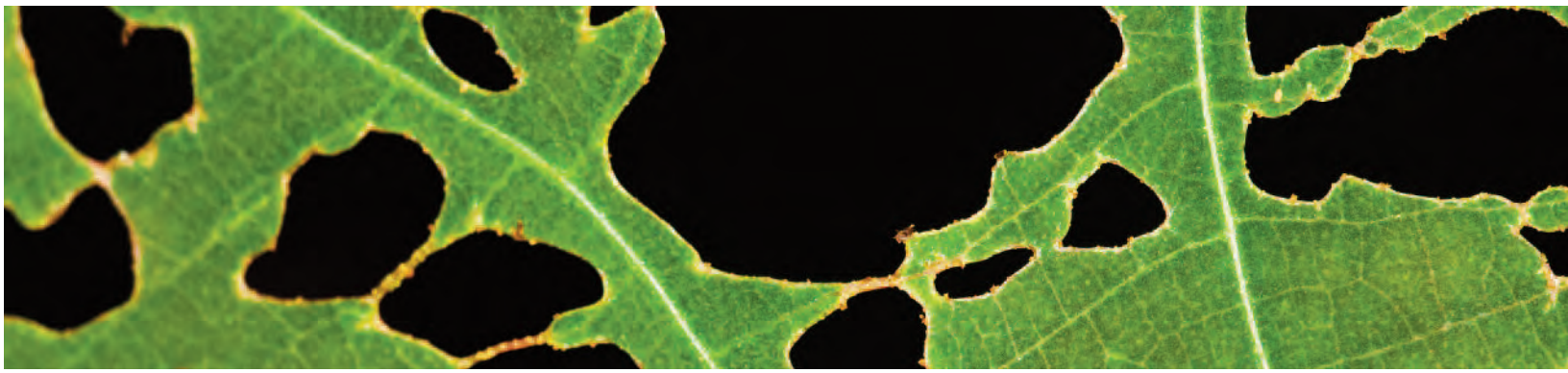
One common pest control option (particularly with corn) is the use of seeds treated with neonicotinoid insecticides. This practice involves treating for pests before they are present (eradicant or preventative use), as opposed to reacting with a series of options after pests have become present. The idea is that because the seed is treated, fewer chemicals need to be sprayed on the growing crop.

In recent years there have been questions about the link between neonicotinoid treated seeds and honey bee mortalities, particularly in Ontario and Quebec, and increasingly in Manitoba. Research by Health Canada determined that corn seed treated with neonicotinoids caused a proportion of honey bee deaths in 2012 and 2013 in those regions of Canada.[100] The death of bees is an issue because bees (including honey bees and many native bee species) are needed for the production of many food crops, including alfalfa which is used for livestock feed.

In response, the pesticide industry, international regulatory agencies, growers, beekeepers and equipment manufacturers worked together to develop Best Management Practices (options that can be used to reduce risk to pollinating insects). These Best Management Practices are being shared widely to raise awareness and address this issue.[101] It is also important that research into the health of pollinator insects considers a variety of potential threats, such as weather, diseases and pests (varroa mites and diseases), in addition to neonicotinoids.[102] This will ensure that appropriate solutions are found to address this important matter.

Pesticides: Research and regulation

Pesticides are highly regulated in Canada. It takes significant time, money and research to bring a pesticide to market. Most pesticides undergo 10 years of research and development and cost approximately $250 million before they are ready for sale.[98] Chemicals permitted for use in organic agriculture are also regulated and are included in an organic Permitted Substances List.[99]



Livestock Production

Livestock farms

While the number of crop based farms increased between 2006 and 2011, the number of farms raising livestock decreased. Even so, livestock production is a very important segment of the agri-food sector. A large variety of animals are raised for meat ranging from widely consumed (e.g. beef, poultry, pork, lamb) to specialty products (e.g. elk, bison, rabbit). It is also important to remember that livestock is raised to produce other products, such as dairy, eggs, fur and fibre. Aquaculture is another area of livestock production.

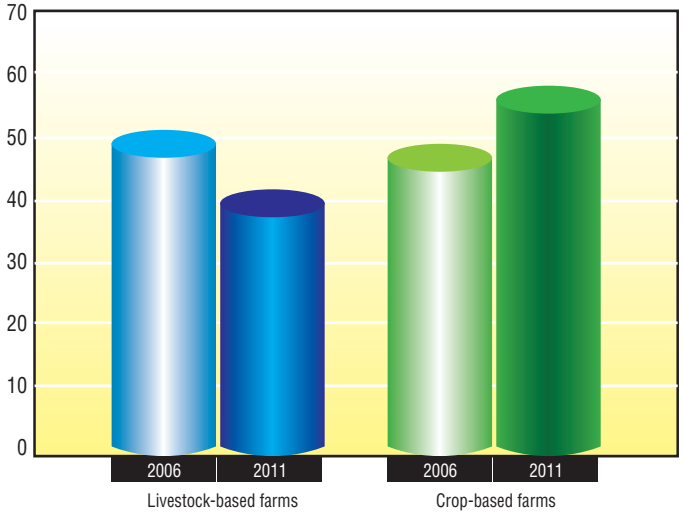
Figure - Number of dairy cows and total milk production, Canada, 1981 to 2011 [115]

	Number of Dairy Cows (thousands)	Total Milk Production (millions of kilolitres)
1981	1772.4	7.3
1986	1456.5	7.3
1991	1315.2	7.3
1996	1227.7	7.2
2001	1061.0	7.6
2006	996.0	7.4
2011	961.7	7.8

Research and technology

Research and technology are important factors in livestock production. Improved animal care, housing, nutrition and breeding can all contribute to healthier, more productive animals and are even helping the environment. Consider the example of dairy cows: compared to 40 years ago, 50 per cent fewer cows are needed to produce enough milk for the Canadian population. That means there is less methane gas produced and less manure, which reduces greenhouse gas emissions from dairy farms.[114]

Per cent of crop and livestock farms in Canada



Source: Statistics Canada, Census of Agriculture, 2006 and 2011

Livestock Production

Many of the Codes of Practice have been revised in recent years. Beef, equine, fox, mink, pigs and sheep were all updated in 2013.[117]

Codes of Practice

Animal welfare is extremely important in the agri-food sector. Farmers work hard to ensure that their animals are healthy and comfortable. Different livestock groups each have their own Codes of Practice. These are guidelines developed to provide requirements and recommendations on how animals in Canada should be cared for. Some of the topics include housing, feed and water, transportation and husbandry (day to day animal care).

The Codes of Practice are developed by the National Farm Animal Care Council. Scientific researchers work together with people from the industry (e.g. producers, veterinarians, processors, animal welfare organizations, etc.) to develop guidelines based on both science and consensus among stakeholders.[116]

Hormone use

All mammals produce hormones naturally, so all animal products will contain some hormones. Beef cattle are the only animals in Canada that can be given additional hormonal substances. Producers who raise beef cattle may choose to use hormones to help the animals use their feed more efficiently and produce leaner meat.[122] Hormonal substances have been approved and widely used in the production of healthy beef cattle since the 1960s.[123]

Hormones our bodies produce daily

	Estrogen (nanograms)	Progesterone (nanograms)
Prepubescent girls	54,000	250,000
Prepubescent boys	41,600	150,000
Non-pregnant women	192,000-1,192,000	420,000-19,600,000
Men	136,000	410,000

Source: Canada Beef Inc., 2013

Hormones we may consume in food

	Estrogen (nanograms)	Progesterone (nanograms)
Beef from cattle not given hormonal growth promotants, 100g	1.5	27
Beef from cattle given hormonal growth promotants, 100g	2.2	44
Soybean oil, 15 mL	28,773*	Not applicable
Cabbage, 100 g	2,381*	Not applicable
Milk, 250 mL	35.9	Not applicable

* Estrogen equivalent activity (i.e. in the form of phytoestrogens)
Source: Canada Beef Inc., 2013

Who monitors the safety of hormone use?

Hormone use in food animals is regulated by Health Canada under Canada's Food and Drugs Act and Regulations. There are three natural hormones and three synthetic hormones that have been approved for use by Health Canada. Hormones are approved for use only if they are "effective at their purpose, safe for the animals, and result in food products that are safe for humans to eat. The Canadian Food Inspection Agency tests to ensure that there are zero residues of synthetic hormones in beef."[124]

There is little difference in the amount of natural hormones in the meat of beef cattle that receive added hormones and those that do not:[125]

No added hormones are used in the production of milk,[118] poultry,[119] eggs,[120] or pork[121] in Canada.

Changing Food Production

Diversifying food production

Crop diversification has been influenced by the changing face of the Canadian population. A diverse ethnic population is changing the Canadian palate and increasing the demand for non-traditional food items. For example, Canada's growing Asian population has led to an increase in consumption of seafood, fruits, seeds and nuts.[103]

The changing population has also affected the types of crops grown in Canada. Thirty years ago, Saskatchewan did not produce pulses, but it is now the world's largest green lentil exporter.[104] Pulses are a good low-fat and high-fibre source of energy and protein, and include legumes such as chickpeas, dried peas, lentils and edible beans.[105]

Research is also being carried out to identify crops from other areas of the world that may be suitable to grow here in Canada. Scientists at the Vineland Research and Innovation Centre are currently exploring options with the World Crops project. To date they have tested 800 varieties of vegetables in the program, including eggplant, okra, Indian red carrot and yard long bean.[106] Consumers prefer to have fresh, local options of these vegetables instead of imported varieties that may have been picked weeks before reaching store shelves.[107] This desire for local "world crops" represents tremendous potential for growers across Canada.

In 2012, the Canadian market demand for okra was 25 million pounds (approximately $50 million).[108]

O Canola

A crop that has become mainstream in Canada in recent years is canola. Increasing canola production in Canada is being hailed as a success story. The canola we use today was developed in Canada in the 1970s using plant breeding techniques.[109] Today, Canada is a global leader in canola production.

Between 2000 and 2009, canola yields increased by 20 per cent.[110] In 2011, canola surpassed spring wheat as Canada's number one field crop. Canola is grown on 19.4 million hectares of farmland in Canada. This is an increase of 55.9 per cent since 2006.[111] The Canadian canola industry consists of 13 processing plants in five provinces employing over 2,800 people. It contributes $6 billion annually to the Canadian economy.[112]

Career Connection

Finding new crops that can be grown in Canada requires many people in different jobs such as:

Market researchers: people who assess the market demand for certain products.

Field researchers: people who grow the new varieties of vegetables.

Business plan developers: people who work with growers to develop plans to get the new crops to consumers.

The field of renewable energy is growing as the world looks for reliable alternatives to oil. Canola biodiesel is one type of renewable energy. Jobs in this field may include **engineers** who design equipment, **technicians** who install or fix equipment, **lab workers** and more.

Food Processing and Manufacturing

What is processed food?

When the average Canadian hears the term "processed food" they may think of products like spreads, syrups and sweets that are meant to be eaten occasionally. However, processed food includes any food product that has been changed from its original state. Some foods have been processed in a minimal way (e.g. cleaning a fish to produce fillets), while others go through many stages or have a variety of ingredients added (e.g. turning milk into cheese). Many of the products Canadians eat have been processed in some way.

Food processing across Canada

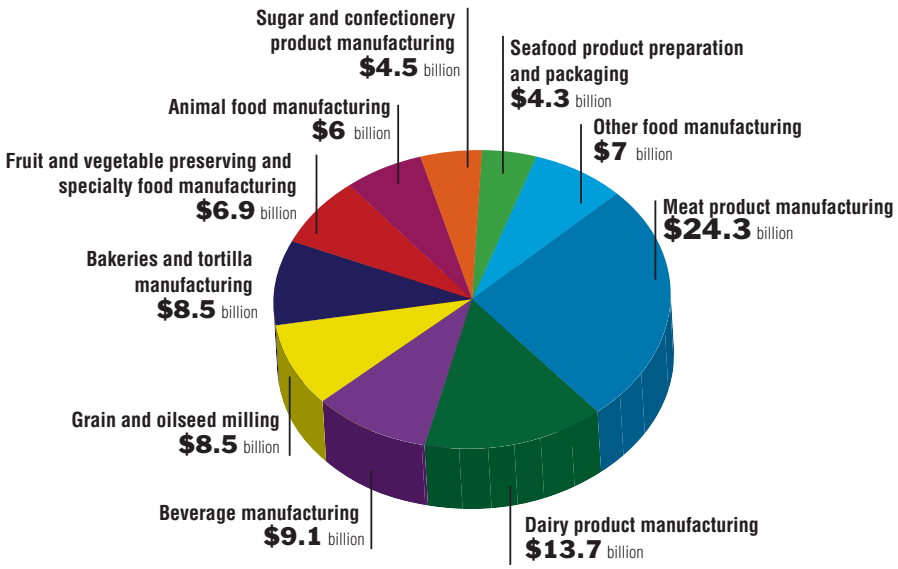
Across Canada, the food processing industry is an important part of the economy. The provinces of Ontario and Quebec make up the majority of production with approximately 63 per cent of sales, while western provinces account for 29 per cent and Atlantic provinces about 7 per cent. Canadian processed food and beverage supplies 75 per cent of all processed food and beverage in Canada and exports to about 190 countries.[128]

Certain types of food processing are more prominent in different areas of Canada. In Ontario, Manitoba, Alberta, British Columbia and Quebec, meat is the most significant type of food manufacturing. However in Saskatchewan, grain and oilseed milling is the most prominent and in New Brunswick, Nova Scotia and Newfoundland, the preparation and packaging of seafood is the biggest sector.[129]

How large is the industry?

The food and beverage processing industry is the largest manufacturing industry in Canada in terms of value of production. It accounts for 16 per cent of total manufacturing shipments and two per cent of Canada's Gross Domestic Product. In total, the value is $92.9 billion![126]

Values of the areas within the food processing industry[127]



Career Connection

The food processing sector is the largest manufacturing employer and provides employment to 290,000 Canadians.[130] There are a wide variety of jobs available within food processing:

Production workers: Skilled workers are needed to complete tasks within the production facilities.

Machinists and Maintenance workers: The increased use of technology requires skilled people to run the machines in processing plants. Workers such as electricians are also in high demand to keep machines in good working order.

Packaging Technicians: After food is processed it needs to be properly packaged to avoid spoilage. These technicians ensure food is labelled and packaged correctly.

Sales and Marketing specialists: Employees in this area work to sell products and build brand awareness.

Research and Product Development specialists: Qualified food scientists develop and test new products.[131]

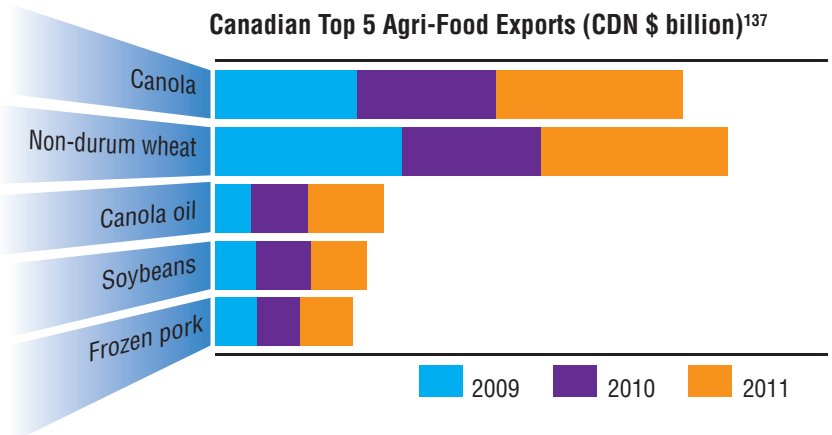
Canadian Agri-Food: Imports & Exports

Top agri-food trading partners

Canada enjoys agricultural trading relationships with partners whose markets have well-established business structures and strong ties to Canada, such as the United States. In addition, Canada is establishing relationships with economies with high potential for growth, such as Brazil and China.[132] These priority markets provide excellent access opportunities to expand Canada's agri-food sector.[133]

Canadian agri-food trading partners[134]

Country	Export totals ($)	Top agri-food exports
Established Markets		
United States	19.5 billion	Cattle, fresh beef, baking-related goods, canola oil, frozen potatoes
Japan	3.7 billion	Canola seed, pork, wheat, soybeans
European Union	2.7 billion	Soybeans,wheat, canola seed and oil, corn, lentils
Mexico	1.72 billion	Canola seed, non-durum wheat, fresh beef, canola seed and oil, canary seed
South Korea	1 billion	Non-durum wheat, fresh and frozen pork, canola oil, mink fur skins
Taiwan	204 million	Frozen pork, beef hides, canola oil, prepared foods, frozen chicken
Emerging Markets		
China	2.7 billion	Canola seed, oil and meal, peas, mink fur
India	640 million	Pulses, whey, mustard seed
Russia	448 million	Pork, beef, pet food, cattle, swine
Indonesia	356 million	Non-durum wheat, meat flours and meals, peas, malt extract, frozen fries



Exports

Canada is primarily a bulk exporter. In other words, businesses traditionally make money by exporting large quantities of a product. The push has been to increase the export of value-added or processed goods, which can make Canada's agri-food products more valuable to foreign markets and strengthen the Canadian economy. Value-added agri-food products are innovations made to existing products in order to diversify their usage, or to create new products, such as ready-made meals or specialty crops. [135] As Canada develops its agri-food sector, it is expected there will be an increase in value-added product exports to both established and emerging market partners.[136]

Imports

Consumers in Canada have come to expect access to fresh fruits and vegetables year-round. However, the availability of local produce is limited by the growing seasons in the different regions of the country. While Canada produces a wide variety of food products and greenhouse production provides some vegetables throughout the year, large quantities of fruit and vegetables still have to be imported. Modern lifestyle also results in consumers expecting access to foods that cannot be produced in Canada (e.g. raw cane sugar and coffee).

Do you want to learn more about Canada's food system?

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allaboutfood.aitc.ca

More information about the topics in All About Food:

- **Links to videos**
- **Links to articles and websites**

PLUS **Questions to challenge your thinking and help you explore Canada's food system.**

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Agriculture in the Classroom Canada

Building agriculture awareness through education

Agriculture in the Classroom (AITC) Canada is a consortium of provincial and territorial Agriculture in the Classroom organizations. AITC Canada provides a national network for member organizations and partners to work together in order to enhance the knowledge, understanding, and appreciation of agriculture through national initiatives, sharing of information and educational resources, development of educational programs aimed at enhancing agricultural classroom literacy, and coordination of professional development opportunities. AITC Canada also plays a role in providing a national voice and identity for the combined provinces and partner organizations.

Our Vision

Building agriculture awareness through education.

Our Mission

Working together to enhance the knowledge, understanding, and appreciation of agriculture in everyday life.

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Further information on our educational initiatives and each of our provincial member organizations can be found on the national website.

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