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The Real **DIRT** on Farming

DIGEST EDITION



Canadian Farming Coast to Coast

Know your food and the people behind it

Straight answers on pesticides, hormones, GMOs, antibiotics and more

Helping you make informed food choices

Answers to your top ten questions about Canadian food & farming



Our food has a story - and it starts on **Canadian farms.**

One hundred years ago, over half of all Canadians worked on farms. Now that number is less than two per cent of the population. With so few connected to food production, it's understandable that questions about food and agriculture abound.

Canadian farming has an impressive story to tell. Advances in technology are helping us better manage the environment, while taking better care of our animals and our businesses. Tried-and-true farming practices, in conjunction with a willingness to embrace science, mean that there have never before been so many ways to farm – and eat – sustainably.

By introducing you to Canadian farmers – who we are, what we do and why we do it – *The Real Dirt on Farming Digest Edition* is designed to answer your questions, address concerns, and debunk myths around food and farming.

Farming in Canada is a commitment to the land, to animals, and to good food.

We hope you'll get to know us –
after all, to know us is to know your food.

Sincerely,
Canada's Farmers



1 Canadian farming - the big picture

Farming is like no other sector in Canada: it's both a business and a way of life. Here's a quick snapshot of what that means – and who is producing the food we eat:

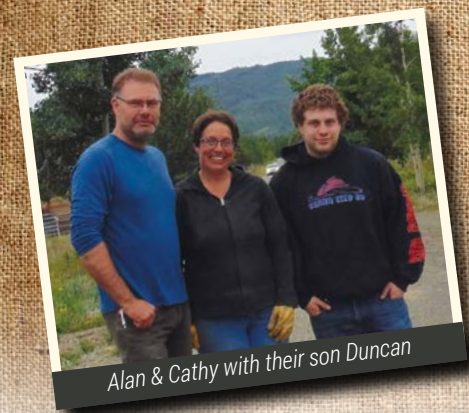
- **Farming means family in Canada – 97 per cent of Canada's farms are family owned**, sometimes with multiple generations working together.² Many farms are handed down from generation to generation.
- There's no "typical" Canadian farm. Farms come in all different types and sizes. According to the 2016 census, Canada has approximately 193,000 farms.³
- Only about 6.5 per cent of Canada's total land area – about 158.7 million acres – is being farmed,⁴ but we're the fifth largest exporter of agriculture and agri-food products in the world.⁵
- The average age of a Canadian farmer is 55, but for the first time since 1991,

the number of young farmers – those under 35 – has increased. And 28.7 per cent of Canadian farmers are female.¹²

- The biggest difference from previous generations is that today's farms are bigger and use more tools and technologies to help farmers do their job better. Smartphone apps can monitor animal health and comfort, robots milk and feed cows, and drones help find pests and diseases in crop fields.

Quick Fact

How big is an acre? It's about the size of one U.S. football field (minus the end zones).¹¹



Alan & Cathy Stannard

Egg farmers, Yukon Territory

What does sustainable farming mean to you?

A challenge for all of today's farmers is feeding Canadians sustainably – growing enough food in ways that are good for people, animals and the planet.

If a farmer decides to grow a new crop, consideration must be given to the food safety and quality of the crop, what impact its growth may have on the environment, who might buy the crop, and where the farmer can produce it profitably. It's all part of sustainable farming.



Andrew & Laurie Johnson

Beef ranchers and grain farmers, Saskatchewan

"The cattle and machinery can go, but the land stays. It's been at the heart of what we do for a long time as we continue to grow and develop it". (Andrew Johnson)





Beef cattle on pasture
Courtesy of FFC Saskatchewan

2 Farm animals 101

In Canada, there are thousands of farmers caring for a wide variety of livestock and poultry every day. Some of the most common Canadian farm animals include turkeys, chickens, laying hens, beef, sheep, goats, veal, dairy cows, and pigs – but Canadian farmers also raise bison, elk, mink, fish, shrimp, mussels, and even insects!

Here are some basics on why most Canadian farm animals live indoors, and the rules farmers follow to raise them.

- Some grazing animals like sheep, horses and beef cattle live outside all year with access to food, shelter, and water. Most farm animals in Canada, though, live in barns where they are protected from weather and temperature extremes, diseases like avian influenza, and predators such as wolves and coyotes.
- Indoor housing also means farmers can ensure each animal receives the right food, clean water, and general care. Many barns have side walls with curtains that can be rolled up when the weather is warmer to let in fresh air and sunlight. Some barns even have water sprinklers to help keep animals cool and comfortable in hot weather.
- Today's farm practices are a balancing act between animal needs, safe food, and environmental and economic realities – and there is ongoing animal welfare research in Canada and around the world to find what's best for animals, farmers and anyone purchasing the product.



Courtesy of FFC Saskatchewan

What are the rules for raising farm animals?

- Farmers, like all animal owners, must follow laws for humane treatment, including the federal Criminal Code and provincial animal care legislation. Most farmers are responsible in how they care for their animals, but unfortunately there are situations where that doesn't always happen. Farm animal abuse and neglect is not acceptable, and against the law.
- Canada currently has 14 Codes of Practice for raising different livestock and poultry species. Developed by veterinarians, animal welfare experts, farmers and humane society representatives, they detail how animals are to be raised and treated on Canadian farms. To learn more, visit www.nfacc.ca.
- Animal activist groups sometimes release undercover video footage of alleged farm animal abuse. This footage is disturbing for everyone who cares for animals, including farmers, but it's important to remember that just because something is on the internet doesn't mean that it's true. Although one extreme case is always one too many, it is far from the norm and does not reflect the care that millions of farm animals all across Canada receive every day.



Dr. Daniel Weary

Dairy researcher, University of British Columbia

"It's important to really get in the cow's head. You have to know what it finds important. We learn a lot from the farmers themselves too, and there's never just one way of doing things."

3 Looking at plants and crops

Anna Haupt

Soybeans

Canadian farms provide a diverse range of crops for domestic and international markets. There are literally hundreds of types of crops being grown in fields and greenhouses across the country – from grains and pulses to fruits and vegetables, as well as flowers and specialty crops.

- Canadian crops are in demand around the world:
 - We're the world's largest exporter of lentils and peas,⁹ and one of the world's top five exporters of dry edible beans.²²
 - A significant portion of our oats is exported to the United States.
 - Italy imports a lot of Canadian durum wheat (the kind used for pasta).
 - We're also a world leader in mustard production and exports.³
- Canola was developed by Canadian plant scientists and is used in cooking and baking, biodiesel and plastic manufacturing, and animal feed, pet food, and fertilizer production.
- Canadian farms grow more than 120 fruit and vegetable crops, including apples, pears, peaches, cherries, cranberries, blueberries, grapes, ginseng, garlic, onions, carrots, peppers, asparagus, lettuce, potatoes, cauliflower, cucumbers, cabbage, broccoli, herbs, and more.
- More and more fresh vegetables – especially tomatoes, peppers, cucumbers and lettuce – are grown in greenhouses. Ontario has the largest greenhouse production sector in all of North America.
- Farmers are now also growing crops that are popular with new Canadians, particularly from South East Asia, Africa, and the Caribbean. Okra and Asian eggplant, for example, are among Canada's newest locally grown vegetable crops.
- Fruit also makes excellent beverages. We enjoy over a billion glasses of Canadian wine each year. Craft beers and ciders are also popular.³⁰



Bryan & Kyle Maynard

Potato and grain growers, Prince Edward Island

Barley

Courtesy of FFC Saskatchewan





4 Safe food starts on the farm

Canada is respected around the world for food quality and safety, and Canadian farmers play a big role in ensuring that our food is safe.

- On-farm food safety programs identify critical points where food safety could be at risk, such as when a new animal is brought onto the farm or when fresh produce is packed. In following these programs, farmers keep precise records of what they do on their farms, and those records are verified by independent auditors.
- All Canadian farmers must be certified to use pesticides that have a label stating “only to be used by certified applicators,” though some differences in certification requirements do exist between the provinces and territories.
- Modern technology means we can trace products from the farm to the grocery store:
 - Milk is labelled and sampled from every farm before the milk truck picks it up, then again before processing. This ensures the product meets strict government quality standards.
 - Unique ID codes can trace fruits and vegetables to the farm of origin – or even to a specific part of the farm.
- Canada has a national traceability system for pigs, and Canadian beef and dairy cattle all have to wear ear tags that link electronically to a database of information about each animal.
- New Canadian DNA barcode technology can quickly and precisely identify what a product truly is, and whether it matches the marketing on the label.

5 Farmers - the active environmentalists



Brett Schuyler & Carrie Woolley
Apple, cherry, grain and sheep farmers, Ontario

“Managing the farm is tremendously rewarding. There is a huge opportunity to find ways to have a positive effect on the environment.” - Brett Schuyler

Farmers know the importance of healthy soil, water and air, and Canada is a world leader in on-farm environmental programs. Every farm faces different conditions and challenges, so farmers are always adapting to find what techniques work best for their environment and business.

- Farmers generally work the soil as little as possible through “conservation” or “no-till” methods to help stop topsoil erosion and build organic matter. Another method is to plant cover crops like rye after the main crop is harvested.
- They use crop rotation – or not planting the same crop in the same field every year – to help prevent the buildup of pests and depletion of nutrients in the soil.
- Many farms have an Environmental Farm Plan. This government program helps individual farm businesses in each province to identify and achieve on-farm environmental improvements.
- Farmers use nature to help control pests through Integrated Pest Management (IPM) plans. This can include using different cultivation techniques, beneficial insects and fungi, and more.
- Farmers use technologies like GPS to map which areas of their fields need fertilizer, and which do not. This helps them get the right amount of fertilizer to the right place, and prevent runoff into waterways.

6 What's up with GMOs?

Courtesy of FFC Saskatchewan

Canola

DID YOU KNOW?

GE technology isn't just for large corporations. Small companies, universities and other public institutions all over the world use it to develop their own unique products and overcome challenges.

When it comes to farming, the goal of science is to produce more and better food by improving the natural biological processes in plants and animals. Terms like biotechnology, genetically modified organisms and genetic engineering are widely used and can cause alarm. But what do they actually mean?

List of crops with GE varieties currently available in Canada



Courtesy of www.BestFoodFacts.org

- Genetic engineering (GE) means adding or removing specific genes from an organism – or turning genes already in the organism on or off – to change its genetic makeup. The result is a genetically modified organism (GMO). This science is called biotechnology.
- Nine different crops currently have GE varieties for sale in Canada (see chart on right), although not all can be grown here: Corn, soybean, canola, alfalfa, sugar beet, cotton, apple, potato and papaya.⁶⁶
- Less food waste, lower emissions, more sustainable food production and better human health – improving nutrition or fighting disease – are all benefits of biotechnology.

- The world's first GE animal approved for the human food chain is a salmon that grows twice as quickly and uses less feed.
- GMO foods are chemically identical to food grown from non-biotech crops.⁶⁹
- **There is no evidence that GMO foods cause cancer or any other health problems.** Over 2,000 reputable, peer-reviewed scientific studies have found GMOs are safe.⁷⁰

Young corn plants



Prof. Suresh Neethirajan

Bioengineering researcher and professor, University of Guelph

"I have always been interested in agriculture and biology. Food is a main reason for our existence on this planet, and technology can help us protect it."



7 What's the point of pesticides?

Don't believe everything you hear!

Every year, a U.S. environmental group publishes a “dirty dozen list” of fruits and vegetables it says should be avoided due to high pesticide residue levels. Scientists at the University of California–Davis and elsewhere, however, have found this report to be deceptive - even though residues can be present, they are at extremely low levels not harmful to human health.⁶⁷

With modern lab equipment and the latest testing methods, we can detect minuscule quantities, such as “parts per billion” – which is about the same as one second in 32 years.

Pests are called pests for a reason – they can damage and destroy crops, so farmers have to be able to control them in order to grow food. Pesticides, along with other crop protection methods and good crop management, reduce the risk of crop failures, improve the quality and quantity of food available and help keep food prices affordable.

- Health Canada’s Pest Management Regulatory Agency (PMRA) is responsible for regulating pesticide safety in Canada, and our standards are some of the strictest in the world.⁶² Canadian farmers can only buy and use pesticides that have been found safe and approved for use, and they have to be trained in how to use them properly.⁶³
- It can take approximately 11 years of research – and between \$310 and \$350 million – to determine if a new product is considered safe,⁶¹ including the review of over 200 scientific studies in areas like health and environment.
- When used as directed, pesticides approved in Canada do not harm people – and since farmers often live where they work, it makes sense to use these products responsibly.

The buzz about bee health

Honeybees, bumblebees and many other pollinators play a critical role in food production. The number of farmed bee hives is on the rise in Canada, though higher than normal bee deaths have been reported in Canada, Europe and the United States in recent years.

Experts from around the world are examining many factors that can impact bee health, including cold temperatures and long winters, inadequate nutrition, and a parasitic mite that has been devastating to Canadian bees. Attention is also focused on neonicotinoids – a class of insecticides used on crops, as well as in pet flea collars and home garden products – and farmers have now adopted better on-farm practices to protect bees from exposure to neonicotinoids.



Lee Townsend

Commercial beekeeper, Alberta

“We have always taken the attitude that you have to put back into the farm what you want to get out of it. That not only includes the work involved to be successful, but we’ve also invested a lot of money into our farm to make sure it is the best it can be.”



DID YOU KNOW?

There were 772,652 colonies of honeybees in Canada in 2016 – a 37.7 per cent increase from 2011.⁸⁴



Robyn McCallum

8 Antibiotics, resistance and our food?

A top priority for farmers and veterinarians is keeping animals healthy – through a good housing environment, nutrition, vaccines and medications like antibiotics to treat them when they do get sick. A serious health problem can cause animals to suffer, and in some cases, even wipe out all of the animals on a farm or group of farms.

- Antimicrobials are medications that fight bacterial infections, and antibiotics are just one type of antimicrobial.
- Farmers are actively reducing on-farm antibiotic use by using other tools like vaccinations, probiotics and other immune-system boosters.
- Most antimicrobials can only be used on Canadian farms with a veterinary prescription, similar to a prescription your own physician might provide, and Health Canada is bringing in strict new rules limiting how antimicrobials can be used in farm animals.
- Resistance vs. residues – Residues are traces of medication left in the meat or milk from an animal that has been treated with a medication. Farmers follow strict rules to ensure our food is residue-free. Resistance means an antimicrobial is becoming less effective at treating or preventing disease.



Cathy & Cal Penner with their children Nikki & Eric

Cal & Cathy Penner
Pig and grain farmers, Manitoba

"The health and well-being of the hogs is first and foremost to us. We have a passion for farming, the animals, and the challenges owning your own business can bring". - Cal Penner

9 What about hormones?

Many common foods have higher amounts of hormones than beef produced with the use of hormone implants^{3,4,5}

The amount of estrogen from 1 serving of cabbage is the same amount of estrogen from **OVER 1000 servings** of beef produced using hormone implants.

Food/supplement	Estrogen*	Servings of beef [~] (75 g)
75 g beef without hormone implants	1.1 ng	0.65
75 g beef with hormone implants	1.9 ng	1
75 g chicken	2.1 ng	1.1
75 g pork	2.5 ng	1.3
355 ml beer	15 ng	7.9
355 ml milk	51 ng	26.8
75 g cabbage	2025 ng	1,065.8
1 tbsp soybean oil	28,370 ng	14,931.6
Birth control pill	20,000-50,000 ng* depending on brand	18,421.1 – 26,315.8

* AMOUNT OF ESTROGEN (1 ng = 1 billionth of a gram)
~ EQUIVALENT # OF SERVINGS OF BEEF produced with the use of hormone implants

This is a **REALLY small number!**

Hormones occur naturally in humans, plants and animals. Here are some important facts and examples to consider.

- No chickens, turkeys, egg-laying hens or pigs are ever fed hormones in Canada or the United States, and Canadian dairy farmers don't use hormones in milk production. Today's animals grow more efficiently, and produce more milk, thanks to better genetics and nutrition.
- There's no such thing as hormone-free meat. Animals naturally produce hormones, which help convert the food they eat into muscle. Some beef farmers use Health Canada-approved hormone implants when raising their cattle so they will develop more lean meat instead of fat.
- All beef cattle, regardless of whether a hormone implant is used, produce meat with similar levels of hormones. There is actually more variation in the hormone levels of male versus female beef cattle than between treated and untreated animals.



10 Food labels and claims



Cordy Cox & Clint Ellis

Beef cattle ranchers from central British Columbia



This logo indicates a product meets Canada's organic standard.

DID YOU KNOW?

Organically and conventionally produced foods are virtually the same.⁴² All agricultural food products must meet the same food safety standards set by the Canadian government.⁴⁴

What does organic mean?

- Generally speaking, foods labelled as organic are grown or produced without the use of substances like synthetic (man-made) fertilizers or pesticides, genetically modified organisms, growth hormones, or medications like antibiotics.
- All Canadian products bearing the Canada Organic logo are certified by an independent auditor who verifies the farm meets the Canadian Organic standard, such as which crop protection products may be used and minimum space requirements for livestock. For imported products to be sold as organic, they must meet standards that are deemed as consistent with Canada's.³⁸

What is "natural" meat?

- All meat is natural since it comes from animals and is not manufactured. According to government definitions, the only meat that can legally be labelled "natural" is meat raised without ANY human intervention of any kind, like deer, moose, bear, and other game living in the wild. However, the term "natural" can be used to describe flavour.⁴⁵

What about hormone-free meat and "raised without antibiotics"?

- There is no such thing as hormone-free meat. All animals and plants produce hormones naturally, meaning all meat contains naturally-occurring hormone levels. The use of synthetic hormones is only allowed in some beef production (see page 9 for more).
- To be labelled "raised without the use of antibiotics", an animal or its mother must have not received any antibiotics at any time during its life.

What does gluten-free mean?

- Gluten is a protein found in products made with grains like wheat, barley, rye, and triticale and must be avoided by people who have celiac disease or gluten sensitivity. Products labelled "gluten-free" are not healthier; they are just made with ingredients that don't include gluten.⁴⁶



Towards a sustainable **food and farming future**



Hayley Mackay

Livestock transport driver, Ontario

"I get to work with animals, and see new places at the same time. It's always a rewarding thing to see the animals walk out of the trailer relaxed and healthy".

While much has changed when it comes to food and farming in Canada, the most important things are the same as they were a century ago: growing food still starts with the values and commitment of farm families to the land, to animals, and to this special way of life.

Technology has and will continue to change how Canadian farmers produce food, and how it gets from farm to table. Globally, the amount of arable land – land that can be used to grow food – is shrinking, and the world population is growing. We need science and cooperation so we can use natural resources responsibly, ensure food is safe and affordable, and continue seeking better tools, technologies and solutions to produce food as sustainably as we can for plants and animals, people and planet.

Thank you for supporting Canadian food and for being interested in how and what Canadian farmers do to produce it.



Caitlin MacLeod

Curious and want to learn more?

This booklet is only a quick snapshot of Canadian food and farming, and we'd love for you to learn more.



See farms and ask farmers for yourself: Tour real Canadian farms on computer or mobile device at FarmFood360.ca – or ask a Canadian farmer directly on Twitter or other social media sites. Search popular farming hashtags like **#OntAg** (for stories about Ontario agriculture) and **#WestCdnAg** (for stories about agriculture in Western Canada), or follow **@FarmFoodCareON** and **@FarmFoodCareSK**.

Citations, where noted, correspond to those of the same number in the 60 page version of *The Real Dirt on Farming*. All sources and the 60 page version are available at www.RealDirtonFarming.ca.

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ABOUT US

Farm & Food Care cultivates appreciation for food and farming by connecting farm gates to our dinner plates. Farm & Food Care brings farmers, agricultural professionals, related businesses and other groups together with a mandate to provide credible information on food and farming in Canada. If you have a question, we'd be pleased to answer it.

www.FarmFoodCare.org
www.RealDirtonFarming.ca

Enter to Win: Visit www.RealDirtonFarming.ca/Contests for your chance to win one of 10 Canadian food and farming prize packs valued at \$250



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