

Real The Dirt on Farming



THE PEOPLE IN CANADIAN AGRICULTURE
ANSWER YOUR QUESTIONS





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Dear Reader,

We hope you've had the opportunity to visit a local fair, farmers' markets, roadside stand, or pick-your-own farm recently. These are among the too-few opportunities we have to meet face to face.

Usually there's a crowd of people between us— food processors, distributors, supermarket managers and restaurateurs, to name a few. It's not easy to get acquainted.

It seems incredible that a century ago, over half of Canada's population were farmers. Today it's down to two percent. Just as remarkable is the leap in our productivity: where our grandparents or great grandparents could produce enough food for 10 people, today's farmer can feed 120. Productivity has jumped by 300 per cent since the 1950's.

Continual innovation, specialization and persistence have brought us light years ahead in the production of top quality, abundant, safe and well-priced products of which we're proud. But this demographic shift has put no small distance between us, the entrepreneurs who grow our food and the people who eat it.

As our most important customers, your needs, concerns and preferences are very important to us. In these pages, we hope to answer some of the common questions we hear in the news, clear up misconceptions, and generally give you some insight into what's up, down on the 21st century farm in Canada today.

We'd like you to know more about us and our way of life. Despite all the technology in the world, it's still hard work and no one knows better than us that Mother Nature can be a tough boss. For, no matter what we do to care for our animals and our crops, she's ultimately responsible for the weather and for the health of the livestock and products that we raise.

But, at the end of the day, even if we are combining our fields in the middle of the night to get our crops in or missing a family dinner because we're helping a cow give birth, we farm because we choose to. We're committed to this way of life and most of us wouldn't trade it for anything.

If we haven't answered your questions or you'd like more information, please contact the groups listed at the end of the book.

Thank you for taking the time to find out about us and how your food is produced, and thank you for buying our products. We truly appreciate it.

Canada's farmers from coast to coast

Farming - The Big Picture

All told, Canadian agriculture is big business: \$34.2 billion in annual sales from crops and livestock production.

But the reality is that we're mostly independent operators, each of us running a small business. It's tough to describe, because no two farms are the same. As farmers, we ride out the same underlying economic and societal trends as other Canadian enterprises, or ignore them at our peril.

When the only constant is change, we must be nimble, creative and adaptable - whether it's what we produce, how we produce it, or how it gets to market.

Before we delve into specific questions about food production, let's look at key trends in the Canadian farm setting. We hope this provides some context for understanding some of the changes you're seeing in agriculture.

NO FARM IS AN ISLAND!

Between 2001 and 2006, Newfoundland and Labrador had the largest relative decline in farm numbers of all the provinces. In that same period, Newfoundland and Labrador's average farm size increased from 155 to 160 acres.



IT TAKES MONEY TO MAKE MONEY

For every dollar earned in gross sales, Canadian farmers paid out from 83 cents to 91 cents in operating expenses. (2001 Census) As the price of fuel and other essentials outpace income earned, farmers must become ever-more productive to stay in business.

THE ECONOMICS OF FARM SIZE

Farming's unique — a way of life and a business. Like most businesses in recent years, many farms have become larger and more specialized, to stay competitive.

What's Going Up?

- Productivity, productivity, productivity — we're using fewer resources to produce more food on less land.
- Farm size is expanding — while it varies from province to province, Canadian farms grew in acreage by 8% between 2001 and 2006.
- Productive land is increasing in the prairies, due to better land use practices.
- Our age: the average age of a farmer is 52.
- Education levels: more and more of us — currently 38% of men and 48% of women — have post-secondary degrees compared to non-farmer rates of 49% of men and 53% of women.



What's Going Down?

- The overall number of farms has been falling steadily for 55 years. Statistics Canada counted 229,373 farms in its 2006 census — down almost 8% since 2001.
- The number of small and medium farms is decreasing — 39% of Canadian farms have gross sales of \$25,000 or less, and 27% of farms with gross sales of \$25,000–\$100,000. (2001-2006)
- The number of young people in farming is slipping: only 9.2% of us are under the age 35 which leaves many of us wondering about the future of this industry.

Have big corporations taken over farm ownership?

No. About 98% of farms are family-owned and operated, and are often handed down from generation to generation. It's difficult to describe a "typical" farm or ranch in Canada because every one of them is unique.

Family farms come in several forms. Some are managed by families with one or more members having a job outside the farm to ensure adequate family income. Some are "retirement" farms or acreages. And some are farms that often have several family members involved and possibly additional paid employees. These larger farms are still family-owned and operated. One key difference is that the family may not need off-farm income to have a good standard of living.

Can we return to smaller, more traditional farms?

No, not unless many Canadians are prepared to leave cities to go back to the farm, work long hours and pay much more for food. With only two per cent feeding the rest of us, it's impossible to go back to many small farms.

People may feel nostalgic for the farms of yesteryear — but those people who lived and worked on them are rarely nostalgic for that very challenging way of life. The farms' low productivity supported much smaller populations, and food quality and quantity were highly unpredictable.

The challenge today is to feed a growing world population without damaging or depleting soil and other resources. For this, the past can't provide all the answers.



NOVA SCOTIA DEPARTMENT OF AGRICULTURE



ALL THANKS TO CONTINUAL IMPROVEMENTS IN FARMING METHODS

There'd be no need for this booklet 100 years ago, when over half of Canada's population farmed. Today, less than 2% are farmers.

But look again: the 1900 farmer produced enough food for only 10 people and 50 cents of every dollar earned was spent on food.

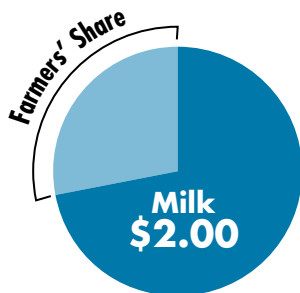
Today's farmer can feed 120, and your food costs have plummeted to a meagre 12.5 cents of every dollar earned. North Americans have the lowest grocery bills in the world.



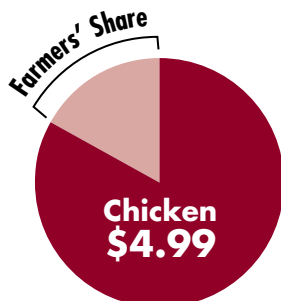
Farmers Take a Thin Slice of the Food Dollar Pie

According to Statistics Canada, between 1997 and 2003 the price Canadian consumers paid for food increased by 13.8%. Now consider the share that the farmers make: the average price received by farmers for their produce increased by only 2.1%. This means that the prices paid by consumers for food increased over six times more than the prices received as a return to farmers.

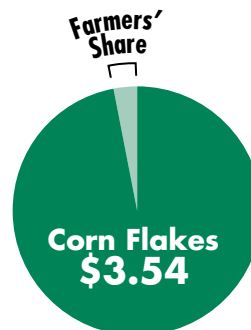
Source: Compare the Share — Centre for Rural Studies and Enrichment, Saskatchewan, 2004



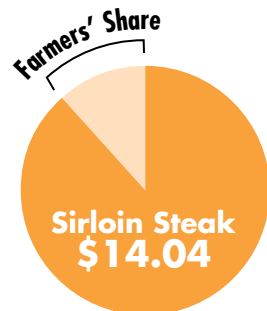
In 2006, the average retail cost of a glass of milk in a restaurant was \$2.00, but the farmer received only \$0.18 a glass.



Chicken costs consumers \$4.99/kg, while the farmer got barely \$1.20 per kilo.



The box of corn flakes that cost you almost \$3.54 in the grocery store paid only \$0.11 to the farmer who grew the corn.



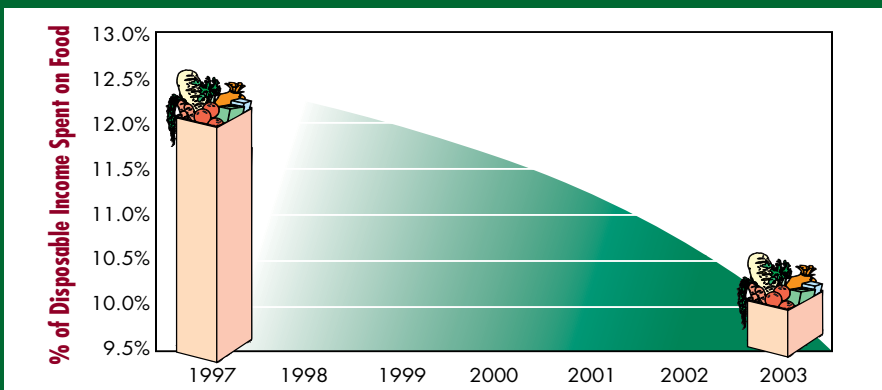
And the beef rancher received \$1.83 for the prime sirloin steak that cost you \$14.04 in the store.



ONTARIO AGRIFOOD EDUCATION INC.

Food Freedom Day

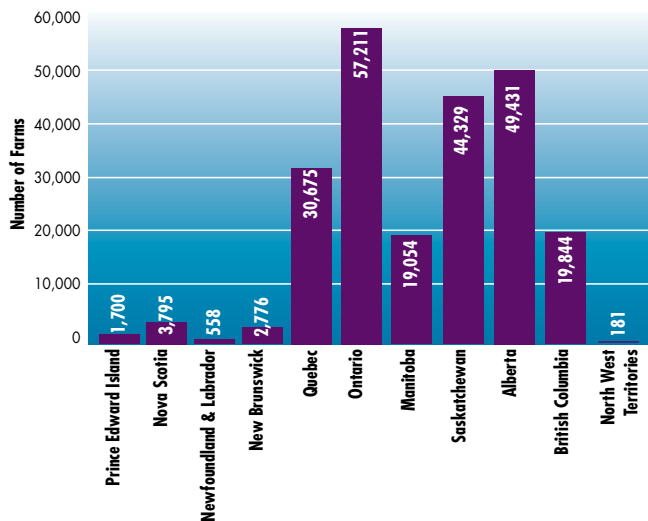
Did you know that in 2006, Food Freedom Day was February 8? This is the calendar date representing when the average Canadian has earned enough income to pay his or her individual grocery bill for the entire year. Canadians enjoy one of the lowest-cost “food baskets” in the world. As a comparison, Food Freedom Day in Iceland is February 27 while in Mexico, it doesn’t come until March 4.



REBECCA OF SUNNYBROOK FARM WOULD ENVY US

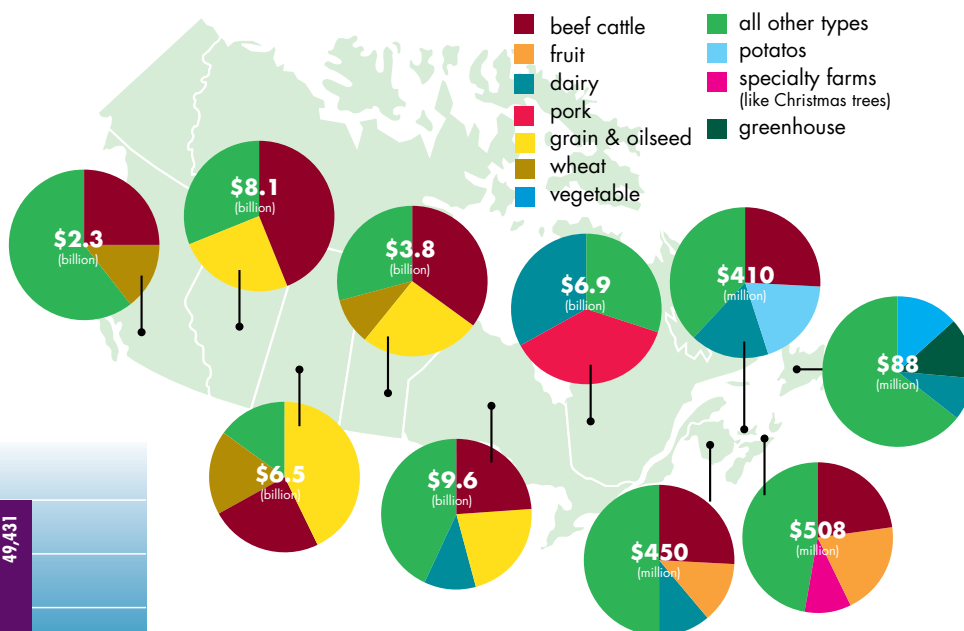
While the images of farming life are often quaint and nostalgic, the truth is that thanks to research and innovation, we now know a lot more about all aspects of farming than ever before. Technology and equipment make life on the farm a lot easier.

Knowledge has meant continual progress in how we care for soil and water, control pests and diseases, promote animal welfare, ensure we produce safe food and much more.



REGIONAL ROUNDUP

Canada has one of the most diverse agricultural bases in the world. This graph shows the number of farms in each province as well as their dominant farm types and gross sales.



Based on 2006 Census of Agriculture. For comprehensive statistics, please see Statistics Canada at www.statcan.ca.

POP QUIZ

Which Province...

1 has the largest farms in terms of amount of acres farmed?

- a) Alberta
- b) Manitoba
- c) Saskatchewan

2 has the smallest number of farms?

- a) Ontario
- b) New Brunswick
- c) Newfoundland



3 does not have cattle as its most common farm type?

- a) Newfoundland & Labrador
- b) British Columbia
- c) Quebec

4 produces the most blueberries in Canada?

- a) Ontario
- b) Nova Scotia
- c) British Columbia



5 has the most dairy cows?

- a) Quebec
- b) Ontario
- c) New Brunswick



6 grows the most Christmas trees?

- a) Nova Scotia
- b) New Brunswick
- c) British Columbia

7 raises the largest number of pigs?

- a) Ontario
- b) Quebec
- c) Manitoba



8 grows the most soybeans?

- a) Ontario
- b) Alberta
- c) Saskatchewan

9 has the highest number of farms producing tree fruits (e.g., peaches & cherries), berries

- a) Ontario
- b) British Columbia
- c) Nova Scotia



10 has the largest percentage of certified organic farms in Canada?

- a) British Columbia
- b) Prince Edward Island
- c) Saskatchewan



Answers: 1.C, 2.C, 3.A, 4.C, 5.A, 6.A, 7.B, 8.A, 9.B, 10.C



Ensuring Safe Food on the Farm

WHAT CHEMICAL PESTICIDES AND ANIMAL HEALTH PRODUCTS DO – AND DON'T DO!

99%? WE'RE DOING OUR HOMEWORK:



In 2003-2004, the Canadian Food Inspection Agency tested approximately 40,000 food samples. Their findings were consistent with annual results for the past two decades. Almost all foods achieved 99% compliance with the safety and quality requirements set out in the Food and Drug Regulations.

Dairy99.4%
Eggs.....99.9%
Fresh Fruit & Vegetables ...98.9%
Meat & Poultry99.6%



Chemicals used in agriculture get a rough ride in the media—so rough, you might wonder why many of us might use them at all. Here are a few of the reasons.



1. The Canadian system puts safety first, with one of the most stringent product approval, residue monitoring and control systems in the world. We know and trust that, used as directed, any approved chemicals or medicines do not harm people, animals or plants, or affect food safety or quality—in fact, they are largely used to improve these attributes.
2. Second, they work. Pesticides—in tandem with other methods of crop protection—have helped raise the yields and quality of our fruits, vegetables and field crops, as well as the reliability of supply, to consistently great heights. They've also helped keep retail prices low, low, low. The same is true with the judicious use of animal medications, which have helped improve individual animal and herd health, efficiency, and overall productivity.
3. The chemical and medicinal products coming on the market are getting better and better—narrowly targeted, fast-acting, breaking down benignly (in the case of pesticides) and with precise withdrawal* timing (in the case of animal medicines) to minimize the possibility of residues.

* meaning how long it takes the product to leave the animal's body

More behind-the-scenes in chemical safety

Testing, testing – and more testing!

- Before getting anywhere near our food production system, both chemical and animal health products undergo years of testing and trials to prove their safety and effectiveness. They must meet stringent government requirements before being approved.
- An entire agency of the federal government's Health Canada, called the Pest Management Regulatory Agency (PMRA), regulates and monitors pesticides in cooperation with provincial authorities. The PMRA employs hundreds of independent scientists to test all pesticides to ensure they can be used safely before they can be approved for use in Canada. (See www.pmra-arla.gc.ca) A similar process is in place for animal health products like vaccines and medications.
- Getting approval does not mean they're home-free. Foods are continually monitored for residues and other possible safety hazards.

► **Did you know...**
That every single food animal must be inspected by a government inspector at federal meat processing plants in Canada?



Down to the finer points – let's get microscopic

- Lab equipment and testing methods are ever more sophisticated and refined — able to detect the most minute amounts of residues in parts per billion or even smaller. There's no such thing as "zero" anymore.
- Very wide safety margins are built into the "safe tolerance levels," as an additional precaution and to take into account more sensitive people (e.g. babies and pregnant women) and environmental conditions.

More non-chemical approaches

- The advent of Integrated Pest Management (see page 8) has expanded the range of crop protection tools growers can use to reduce losses to pests — and reduce pesticide use.
- Biosecurity programs on farms, together with vaccinations and good nutrition, help us focus on keeping animals healthy instead of treating them. This cuts down the need for medication, which is good for the animals, and saves us time and money.

Common sense

- Chemicals represent an expensive cost of doing business, so we only use them when absolutely necessary.
- As farmers trying to minimize our costs, we have no incentive to over-apply expensive chemicals or overmedicate our animals. Products used as directed by their labels are at their most effective and efficient.
- If our products were found to have residues, they would be condemned — representing a significant loss in income for the value of the product and possible fines.

Farmers rely on our regulatory system to ensure that the pesticides we use are safe. We need to know that if we use pesticides on our farms, we will not harm the health of our families or of our livestock. We live right on the farm, we breathe the air and drink the water from our own wells — we rely on healthy soils to keep us in business. We also eat the food we produce and take pride in providing it to consumers. If we thought chemicals were dangerous, we definitely wouldn't use them.



Farmer education

- At farmers' urging, provinces offer grower safety courses to anyone storing, handling and applying pesticides — in most provinces, this training is mandatory.
- For example, farmers in Ontario must take a course and pass an exam in order to become certified to purchase and use pesticides. They learn about integrated pest management, stewardship measures to prevent pest resistance, how to avoid health risks and protect the environment, proper storage, maintenance of application equipment, and the importance of record-keeping. To keep up to speed, they must be re-certified every five years. (See www.pesticidesafety.ca for more info.)
- Educational courses and on-farm food safety programs for livestock farmers teach the importance of proper use of veterinary medicines, such as respect for adequate withdrawal time before treated animals go to market.



Getting personal

The human body is designed to eliminate low levels of chemicals. Microbial contamination — a.k.a. "food poisoning" — is a much greater and more common threat to human health than minute chemical residues.

The possibility of chemical residues in my food worries me. Are they permitted, and if so, why?



It's a bit of a catch-22 for those on the food-producing side of the fence. The more sophisticated our testing methods, the more likely they are to detect the most minute traces of residues, which could be a part per million or even billion. So it may never be possible to reach "absolute zero".

That said, residues in food are regulated to remain well below the "no effect" level — normally 100–1000 times below that level.

Even then, random testing of our food by the Canadian government shows compliance of above 99.0%.

HOW MUCH IS THAT AGAIN?

1 part per billion equals 1 second in 32 years, or \$1 compared to \$1,000,000,000.



INTEGRATED PEST MANAGEMENT — THE WAY TO GO FOR PEST CONTROL

In 1983, Ontario's farmers and the provincial government set a goal to cut agricultural pesticide use in half within 20 years. We exceeded our goal! By 2003, Ontario's farmers reduced their use of agricultural pesticides by 52%. It continues to decline by about three percent annually. Other provinces have seen similar declines.

HOW DID WE DO IT?

Integrated Pest Management (IPM) is a sophisticated way of controlling disease and pest levels. The system works in concert with nature: growers monitor fields and orchards closely to determine when, or if, pest levels reach a threshold where chemical controls are warranted. That, and a combination of cultivation techniques (such as planting different crops each year), physical barriers, and use of other "beneficial" insects and fungi are making for dramatic reductions in chemical pesticide use. Advancements in the science of pest management and today's fewer, safer, more targeted pesticides are also helping us continually reduce our environmental footprint.



Why are antibiotics used on some farms?

Keeping animals and birds disease-free is a top priority for farmers, who work together with their veterinarians. A serious health issue can wipe out a farm's, or even a whole industry's, production, in addition to causing suffering to the animals. Prevention is always preferred over treatment.

Antibiotics—or more appropriately “antimicrobials” in farming – are used for one of three reasons:

1. to treat diseases as needed, such as pneumonia in individual animals, herds and flocks.
2. to prevent and control disease, in particular during stressful times of an animal's life, such as when piglets are weaned from the sow and put together with other piglets in a pen.
3. to enhance production by preventing disease, which leads to improved growth.

Not all farmers choose all options. Many farmers are trying to minimize the use of antimicrobials wherever possible and much research is being conducted into alternative options.

Both uses of number two and three above, if chosen, are in small doses that can be incorporated directly into the animals' feed. The amounts are not large, often just a few grams of product per tonne of feed.

It is number three that can be most controversial. A main concern is the potential for development of antibiotic resistance by certain bacteria as a result of using antimicrobials. This is why any product for farm animals must meet Health Canada's strict standards for human and animal safety. A major component of studies to support new animal health products must address the potential for resistance development. Also, the Public Health Agency of Canada's "Canadian Integrated Program for Antimicrobial Resistance Surveillance" (or CIPARS) monitors for resistance on the farm, during processing, and at the retail level.

Housing, hygiene, nutrition and vaccines are still the main strategies farmers use to maintain and improve herd and flock health.



A DRESS CODE FOR THE BARN?

Did you say shower before you go into a barn? Some farmers might ask you to take a shower or wear plastic boots over your shoes before entering. Other farms don't allow any visitors at all—people or animals. Any guesses why? This is called "biosecurity" and it's one part of an animal health program that helps to keep our herds or flocks healthy. Not allowing visitors into the barn helps to keep germs or sickness out. Farmers can give their livestock medicine when they're sick, but they always prefer prevention over treatment.



Why are hormones sometimes used in beef cattle?

Animals and plants and people have naturally occurring hormones. Growth hormones for beef cattle have been approved and used safely for more than 30 years; they are not used in pigs, poultry or dairy cows in Canada.

In beef cattle, hormones can be used to boost animals' normal hormone production. The goal is to improve how efficiently they convert the food they eat to muscle. By improving "feed conversion efficiency," fewer resources are used—ultimately less feed and water are used, and less manure is produced. This is good for the environment and the marketplace.

However, it's important to note that the level of hormones in beef from cattle given hormonal growth promotants is virtually no different than the level found in beef from cattle not given hormonal promotants. There is more variation in hormone levels of animals of different sexes than between treated and untreated animals.

The European Union banned hormones in beef production. Scientific evidence uncovered no food safety issues associated with the proper use of hormones. The ban would appear to be more about limiting competition from North American beef than any food safety risk. This is a complicated topic. To learn more about it, visit <http://www.cattle.ca/factsheets/hormonal.pdf>

More importantly, farmers and ranchers take their jobs of producing safe food very seriously. We continue to invest in research into this area and keep a close watch on any new studies to be sure we're using the safest options available.

ESTROGEN EVERYWHERE!

The level of estrogen in a serving of beef is very low compared to the amount of hormones that we produce naturally in our bodies. A prepubescent girl produces 54,000 nanograms* of estrogen daily, and a prepubescent boy produces 41,600. Adult men and women produce considerably more.

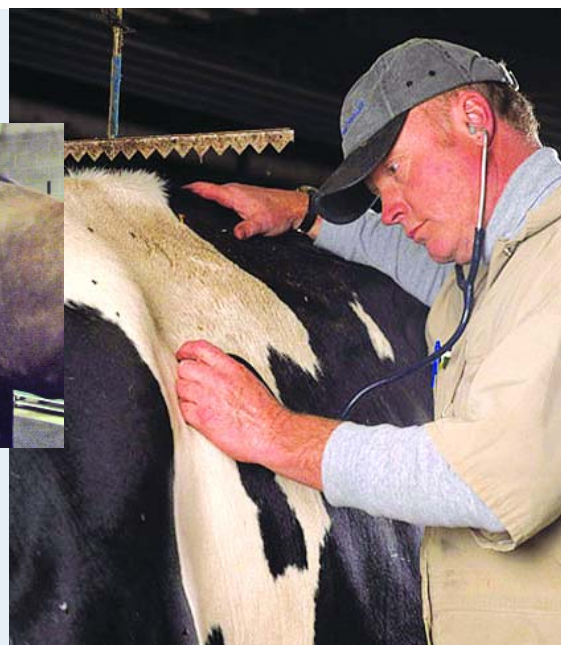
- A single oral contraceptive pill contains 20,000–50,000 nanograms of estrogen.
- A tablespoon (15 mL) of soybean oil contains 28,773 nanograms of estrogen-equivalent activity in the form of "phytoestrogens."
- A 250 mL glass of milk contains 36 nanograms of estrogen naturally.

By comparison, a 100 gram serving of beef from cattle not given growth promotants normally contains about 1.5 nanograms of estrogen. Beef from cattle treated with growth promotants contain only about 2.2 nanograms of estrogen. There are no growth hormones approved for use in dairy cows in Canada.

* one nanogram is one / billionth of a gram

BACK TO SCHOOL FOR THE LIVESTOCK MEDICINE COURSE

Where available, livestock farmers—even beekeepers—are signing up for additional education in the use of veterinary medicines. The courses help farmers keep up to date on proper dosing, keeping risks to animals and humans to a minimum, improving animal health, and ensuring proper storage. Using medicines correctly is an important facet of new on-farm food safety programs. See www.ontariolivestockmed.com





WHAT YOU NEED TO KNOW ABOUT THE THINGS THAT CONCERN US THE MOST

Here are four examples of animal and human health issues that we take very seriously. The agri-food industry has invested millions of dollars into research, prevention and emergency preparedness for issues like these.

1. Avian Influenza:

Could I catch bird flu from eating eggs or chicken or turkey?

No. As always, follow safe food handling practices and cook poultry meats thoroughly. And it is worthwhile knowing that there are no known cases anywhere of someone getting bird flu from eating eggs, turkey or chicken.

About bird flu: First, the bird flu that you hear and read so much is one specific and especially virulent strain of Avian Influenza known as H5N1. For this strain to infect a person, he/she would have to be in close contact with a great number of infected birds. In Asia, where humans first contracted this strain of bird flu, it's common for humans to live in the same house with their chickens. It's also part of the culture to purchase chickens at "live markets." Even under these circumstances, it is extremely rare to contract bird flu.

While the risk of a large-scale disease outbreak is very low, it's important that we — as poultry farmers—continue to work with food safety and public health experts to do everything possible to prevent such an occurrence. That's why Canada's egg industry is a partner in the production of eggs used to create vaccines as part of Canada's preparedness plan.

For more information on avian flu, see www.farmissues.com

2. Bovine Spongiform Encephalopathy:

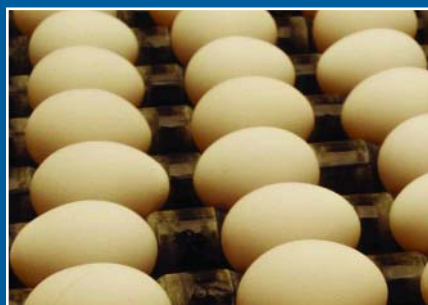
Can I catch mad cow disease from eating Canadian beef?

Mad Cow Disease, a.k.a. Bovine Spongiform Encephalopathy a.k.a. BSE is a fatal disease of the central nervous system of cattle. It's a rare brain disease caused by abnormal protein accumulating in the brain. One of the causes is believed to have been an increase in the use of meat and bone meal in cattle feed, a practice which has been banned in Canada since the 1990s.

Variant Creutzfeldt-Jakob Disease (vCJD), a rare human disease that affects the central nervous system, was first diagnosed in the United Kingdom in 1996. There has been one case of vCJD in Canada. The victim had lived for several years in the U.K. and is believed to have contracted the disease there. The risk of contracting vCJD in Canada is extremely low. It's most likely due to eating specified risk materials, such as parts of the spinal column or the brain. These parts are banned in Canada. The Government of Canada has continued to increase its safeguards to test for and to stop the potential spread of BSE to other animals and to the human food chain and animal feed system.

THE SUPERPOWERS OF... EGG WHITES?

Scientists have found that the proteins in egg whites have antimicrobial properties. They can limit or eliminate bacteria in a few ways: by making nutrients unavailable that the bacteria need, and by destroying parts of bacteria.



The safeguards include:

- Protection of public health through removal of potential at-risk tissues from all cattle at processing plants,
- Import controls on cattle, beef and beef products to restrict exposure to BSE,
- Surveillance of cattle for BSE to determine the prevalence of the disease in Canadian cattle,
- Feed ban of meat and bone meal, to stop the spread of BSE,
- Cattle identification program — every new animal has an identification tag.

There have been a few cases of BSE in Canadian cattle since 2003, compared to over 180,000 diagnosed in the United Kingdom between 1987 and 2005. It's believed the disease entered North America during the 1980s, when a number of cattle were imported from the U.K.

For more information on BSE, see www.bseinfo.ca or www.inspection.gc.ca

3. Foot and Mouth Disease:



How contagious is it?

Foot and Mouth Disease (FMD) made headlines when it devastated the United Kingdom's livestock sector in 2001. FMD is an extremely serious and highly infectious disease that affects cloven-footed animals like cattle, hogs, sheep, goats and deer.

FMD is not a food safety issue. Meat and meat products from infected animals will not harm humans. Humans do not contract FMD from animals, except in extreme cases involving direct exposure to infected animals and large amounts of the virus. Canada has been free of this disease since 1952 and would like to keep it that way.

4. E.coli:

The good, the bad and the ugly

The digestive systems of all animals, including humans, are home to billions of essential bacteria. *Escherichia coli* (or *E. coli*) are one group of naturally-occurring bacteria in our intestine.

Most types of *E. coli* do not cause illness in healthy humans and some actually assist in the production of vitamins. Some kinds, however, can cause cramps and diarrhea in humans and one dangerous type, called *E. coli* 0157:H7, produces a toxin that can cause severe illness or death. *E. coli* 0157:H7 can naturally be found in some cattle, other farm animals and wildlife. This type became infamous in Canada when a water contamination outbreak in Walkerton, Ontario, claimed the lives of several people.

Everyone needs to guard against these bacteria. Your best forms of protection come from washing your hands regularly with soap and water after using the washroom, petting animals and before handling food. You should also always wash your hands after handling raw meat and ensure that meats, especially ground beef, are cooked to their proper temperatures. Drink only milk and cider that have been pasteurized and water from sources that are known to be safe.



What's Canada doing to keep us and our food supply safe and healthy?

Farmers follow industry-recognized biosecurity protocols on their farms to minimize the risk of disease entering their herds or flocks. They care for the welfare of their animals daily, and do not want to see their animals suffer from disease.

Animal identification programs, like radio frequency and bar-coded ear tags, and farm premises identification programs are well underway. As we've learned from other countries, the key to stopping any disease from spreading is to identify the problem early and contain it to a certain area.

Government and agricultural industry leaders actively work together in 'disease simulation' exercises across the country to test our levels of preparedness and figure out where we can focus our efforts to improve. Effective teamwork between human and animal health professionals is critical.

The federal government continually responds to the risk of disease outbreaks as they occur in other parts of the world. For example, travelers from countries infected by Foot and Mouth disease are required to follow simple but effective procedures at Canadian international airports which can include the use of disinfectant mats.

Everyone can help take an active role in preventing disease and help us keep our animals and crops healthy. Obey all prohibitions against bringing agricultural products like plants, soil or meats into Canada.



DISAPPEAR WITHOUT A TRACE? NOT A CHANCE IN CANADA

As part of full-out food safety efforts, cattle producers are identifying each and every one of their animals with individualized tags. With the Canadian Cattle Identification Program, the origins of any serious disease could be traced, contained and eliminated in very short order. For more info, go to www.canadaid.ca or for information on a similar sheep program visit www.cansheep.ca/english/id_faq.htm

MAKING FOOD SAFETY A ROUTINE FARM CHORE

Food safety is in the spotlight. A food scare—well-founded or not—can be devastating to Canadian farmers. We know how important producing safe, high quality food is. One bad product can ruin an industry, or at least do serious damage. Consumers can switch products but we cannot switch livelihoods.

Walking the Talk

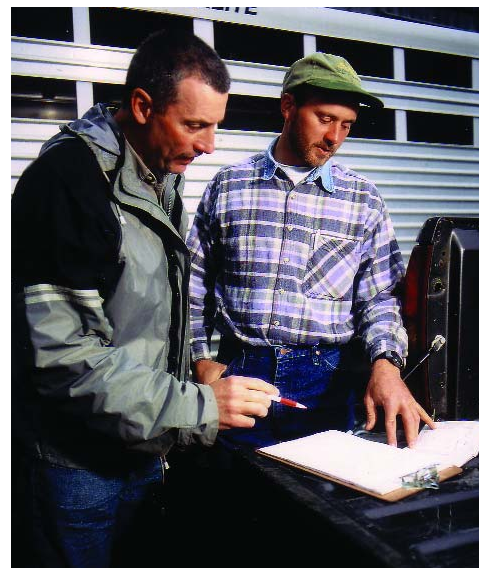
That's why farm groups, the food industry and government partners have gotten ahead of the food safety issue with extensive protocols that help to prevent a problem from happening at or leaving the farm.

It's called HACCP, which stands for Hazard Analysis Critical Control Points. In plain English, it involves identifying critical points or stages where food safety could be at risk, e.g. when a new animal is brought to a farm or animal feeds are being prepared.

These same principles are also applied throughout the food chain, such as in animal feed mills and food processing.

So the points are identified, safety measures taken, records kept, and independent auditors monitor farmers' progress. And it all begins with good everyday farm practices.

We could go on, but we don't want to bog you down with the finer details. For more details on food safety programs on farms and in the food industry, see www.foodsafety.ksu.edu and other websites listed at the end of this book.



Testing, Testing, Testing....

Did you know that milk is identified and sampled from every farm before it's put in the milk truck? These samples are sent to a lab to ensure that each tank of milk meets strict government quality standards. In addition to farm samples, every milk truckload is tested at the processing plant. If there's a problem with the milk, the entire load is rejected and the farm that caused the problem could be charged a hefty fine.

Is your food in good hands?

We can do absolutely everything to grow safe fruit, veggies, meat, milk and eggs. But we can't control how people will treat it once it leaves our farms. Unwashed hands and inadequate washing or cooking can promote bacteria and lead to food poisoning. And then everybody around the dinner table suffers!



LET'S TALK ORGANIC

What are “natural” or “organic” foods?

All unprocessed food is natural. The question is how it's produced.

Generally speaking, the organic food movement is supported by farmers and consumers who want to conserve soil and water, enhance beneficial biological interactions, and promote biodiversity, without the use of synthetic fertilizers, pesticides, medicines or genetically engineered materials.

Many “conventional” farmers share these goals: sometimes we are talking about a question of approach.

Organic farming isn't easy and has its own unique challenges. Farmers need to have a lot of information, available skilled labour, and time. Organic food is produced under a variety of standards which vary depending on the certifying organization. For example, protocols may dictate which pesticides and fertilizers they can and cannot use. Yields tend to be lower or less reliable and more labour-intensive than with non-organic techniques. Third-party auditing may also be required. These extra costs are recovered through premium prices on organic products.

While still small, organic production is Canadian agriculture's fastest growing sector — by almost 60% between 2001 and 2006. For more information, visit the Canadian Organic Growers website, www.cog.ca



Has the Time Come for Slow Food?

A movement celebrating food and wine began in Italy in 1986, and has spread worldwide. Put simply, it seeks to protect food and its preparation as an expression of local culture. It defends historic cultivation, production and processing techniques and celebrates diversity in animal and vegetable species. It “opposes the standardization of taste.” There are currently 83,000 members around the globe, and counting. For more information, see www.slowfood.com

IN THE 21ST CENTURY, CONTAMINATION BY OLD-FASHIONED BACTERIA (LIKE SALMONELLA AND E. COLI) AND MOULDS ARE STILL THE MOST COMMON FOOD SAFETY HAZARD.

- Did you know...
The highest percentage of food recalls in the last few years has been related to allergens, mostly in nuts and candies. For the latest on food safety issues visit the “barf blog” at www.foodsafety.ksu.edu





Are organically produced foods healthier or safer?

There is no evidence that organic food is healthier or safer than non-organic. All food must meet the same inspection and food safety standards. However, it appeals to consumers who may have concerns about pesticide use or the companies that produce pesticides and may wish to pay more for organic foods. Organics serve a niche market and some farmers are benefiting from this niche through the premiums they are paid.

Organic food production is a different philosophy. It is not intended to become the only way to produce food. Most of the world's population could not afford organic food, nor would there be sufficient production to feed it.

How does “natural” meat measure up to regular meat?

There is no strict definition of “natural” at this time, so it's up to you to find out what lies behind the definition on a specific product you might like to buy.

Grazing animals destined for the natural meat market may graze on grasslands that are free of synthetic chemicals, and livestock and poultry may be fed natural grains, or raised without antibiotics. Housing may be less confined than on conventional farms.

“Natural meat” is sometimes marketed for a premium price. As a savvy consumer, you have the option of supporting what approach you choose to raising animals. Remember there are no strict definitions required, so be sure to ask lots of questions about the methods used and how the product might differ from “regular” meat.

Again, the beauty of our Canadian food system is the amazing variety of food options we have to choose from. .

► Canada is among the world's top producers of organic grains. About five percent of the country's grain farmers identify their operations as organic.

The Irish Potato Famine: A Cautionary Tale

In 1845, a strange disease struck the potatoes growing in the fields of Ireland. Almost one-half of the crop was destroyed. What later became known as potato blight was caused by a fungus. At that time all farming was “organic,” and there was nothing to be done to save the essential food crop. Today, potato blight can be prevented by modern fungicides which greatly decrease the crop's vulnerability to massive losses. This is a clear case where modern agricultural practices increase the reliability and security of our food supply.



SAFE FOOD COMMITMENT

All inspected meat, milk and eggs that you buy should be safe and wholesome. By law, raw meat has no added nutrients, dyes, flavouring agents, and has not been processed.



Organic farms comprise less than 1.5% of total farms across Canada today. They're also the fastest-growing segment of Canadian agriculture.

Raising Farm Animals

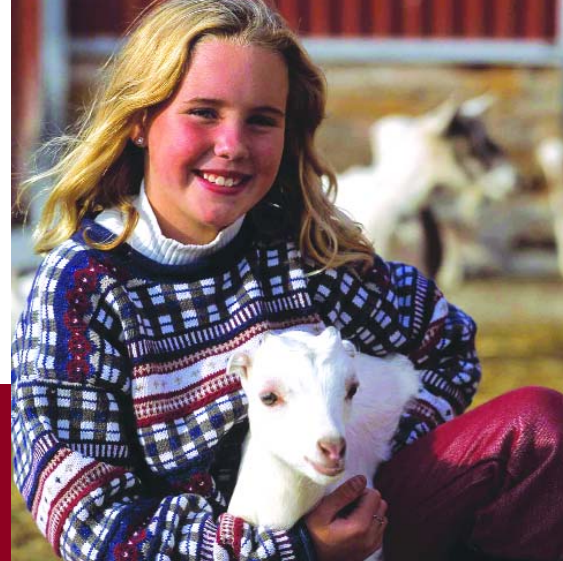
Livestock depend on us for everything, 24/7, and it's something we don't take lightly.

All animals have basic needs, like food and water, health, and quality of life. British researchers originally identified the “five freedoms” back in 1965. They've undergone some revision since then, but still form the basis for responsible animal care:

The five freedoms now read:

- 1** Freedom from thirst, hunger and malnutrition – by ready access to fresh water and a diet to maintain full health and vigour.
- 2** Freedom from discomfort – by providing a suitable environment including shelter and a comfortable resting area.
- 3** Freedom from pain, injury and disease – by prevention or rapid diagnosis and treatment.
- 4** Freedom to express normal behaviour – by providing sufficient space, proper facilities and company of the animals' own kind.
- 5** Freedom from fear and distress – by ensuring conditions that avoid mental suffering.

We know these as the building blocks of good animal care and strive for continual improvement based on new and proven science.



TAKING GOOD CARE OF ANIMALS IS TAKING CARE OF BUSINESS

Farmers and ranchers choose to work with animals because we enjoy it. Caring for animals properly is simply a matter of doing the right thing. There are also many solid business arguments for treating animals well. Contented animals are more productive animals and lead to higher quality food products. Research continues into farm animal behaviour and housing, and will lead to continuous improvements.

► Did you know...

- Mature sheep will drink between four and nine litres of water per day.
- An average dairy cow will drink 80-160 litres of water, and produces about 27 litres of milk per day.
- An African elephant drinks 156 litres of water in a day.



EVER-BETTER SOLUTIONS FOR AGE-OLD PROBLEMS

Dehorning of beef and dairy calves is done for safety reasons, for humans and animals. Research has shown it can be done with less pain and distress when calves are young and horns have not yet developed. There are also many breeds of cattle now that are 'polled', which means born without horns. (fyi...both females and males can have horns!)

Scanning a cow? Branding as a means to identify cattle is being replaced in parts of Canada by ear tags with bar codes and radio frequency id.

Beak trimming is done to prevent laying hens from harming one another. Some people call it "debeaking" which might make you think that the whole beak is removed when that's not the case at all. The proper procedure is to remove just the tip of the beak. (Picture the hook on the end of an eagle's beak). Research into behaviour, nutrition and genetics continues to investigate if there are ways of eliminating the need for this procedure.

Sheep tail docking is done to prevent fecal material from collecting on the tail and hindquarters of sheep, which can lead to flystrike. Flystrike is a condition where flies lay eggs that hatch into maggots and attack sheeps' flesh. Tail docking also makes it easier to shear the sheep.



What guidelines are in place for raising farm animals?

Farmers like any animal owners, must follow laws for humane treatment. Laws set minimum standards and are meant for prosecuting problems after they occur. Farmers have helped to develop voluntary "Recommended Codes of Practice for the Care and Handling of Farm Animals," in cooperation with animal scientists, government and many partners. The Codes spell out what's appropriate in the daily care and handling of livestock and poultry. They outline acceptable standards for:

- shelter and housing
- feed and water
- healthcare
- breeding
- animal identification
- handling and supervision
- transportation
- sales yard and processing facilities, and
- emergency procedures.



The Codes of Practice are internationally-recognized as models of responsible animal care and will continue to evolve. For more on the Codes, see www.livestockwelfare.com



Blueprints for humane handling?

Did you know there are many people with full-time careers in farm animal care? Specialists dedicate their lives to improve humane handling for farm animals, on the farm, on the truck and all the way through to the food chain. Education programs on topics such as animal health and management, animal handling facilities and humane animal handling for farmers and others such as livestock truckers continue to develop.

▲ Dr. Temple Grandin is a world-renowned animal handling specialist who has designed facilities and audits to improve farm animal welfare. Visit www.grandin.com

Are controls in place to deal with farm animal abuse?

Yes, there are controls in place and they work on many fronts. Animal neglect and abuse are against the law. Farmers and ranchers, like all animal owners, are responsible for caring for their animals and meet many regulations including the Criminal Code and provincial animal care legislation.

It's important to note that most farmers and ranchers are doing a great job caring for animals. But sometimes, the level of care or management of farm animals isn't what it should be. Farm groups in a few provinces have recognized this issue, and have developed their own peer service to help improve farm animal care. For example Alberta Farm Animal Care has a confidential Action Line and Resource Team (ALERT) service. Anyone can call the ALERT 1-800 line to report animal care concerns. A response team member (former veterinarian) checks the animal in question and provides help and advice to the owner.

The ALERT service works closely with the Alberta SPCA, contacting them immediately should the animals be in distress. In Alberta the Alberta SPCA enforces the Animal Protection Act.

If and when there's a problem with farm animal care, Canada's farmers want to be part of the solution.

A QUICK TOUR OF FARM ANIMAL REAL ESTATE

The two most common questions we get asked about farm animal care are about animal housing. Let's take a look at them in more detail.

Why are most farm animals raised indoors in Canada?

Ask us this question in Winnipeg in January! Kidding aside, some grazing animals like sheep, horses and beef cattle do live outside with shelter, and access to food and water. However, many animals, like pigs and poultry, live in barns in Canada. Why, you ask? Barns are designed to provide the animals with the right environment, protected from extreme weather and temperatures, and of course the age-old problem of predators like wolves and coyotes.

Barns keep livestock cool in the summer and warm in the winter. Most have fans to help circulate the air. Did you know that some barns have water sprinklers to help keep their animals and birds cool and comfortable in hot weather?

Another reason for indoor housing is for animal monitoring and care. It's much easier to ensure each animal gets the right food, clean water, and general care in a barn than when they are outside on pasture.

WHAT'S GOING ON BEHIND THE BARN DOOR?

We want to make sure we're doing the best for our animals. That's why several farm groups are developing on-farm animal care assessment programs. These will involve keeping records of our farm animal care practices. Our records will then be assessed by a third-party expert, such as veterinarian. The idea is for us, as farmers, to document our animal care practices and as always, continue to look for ways to improve.





THE GOOD OLE DAYS WEREN'T ALWAYS SUNNY

Storybook images of farm animals frolicking in the meadows block out the realities of extreme temperatures, wind and rain, unreliable food and water sources, and no protection from diseases and predators. Many farm animals are kept inside for the same reasons that many of us keep our pets inside: health, comfort, safety, food and water.



Why can't they have more space?

This is a very common question when people walk into a barn for the first time. The first thing we need to do is separate human needs from animal needs. This is tough. As people it's our nature to put our values onto other creatures to form opinions. However, every creature has different needs. A bat chooses upside down in a dark cave and a Husky dog might actually prefer to live outdoors in a snowy climate. Each type of farm animal is different too. It's not always a matter of more space, but what's available to them in that space and how they can use it. For example, if you put a group of calves in a very large open barn, research shows they would choose to sleep very close to each other and against the walls or gates for a sense of 'protection' and sometimes warmth.

The other reality is that it's a farmer's responsibility to care for animals that sometimes don't know what the best choice is. There are many accounts of turkeys drowning in rainstorms because they didn't know enough to go into the barn.

As farmers, our priority is to provide the best environment that we can for the animals in our care. It is always a balancing act between animal needs, safe food, environmental and economic realities. We invest in animal welfare research to help us learn what's best. Today's farm practices are definitely a combination of good science, practical experience and common sense.



► WHY DID THE PIG CROSS THE ROAD? DON'T GUESS, ASK IT YOURSELF.

Understanding animal behaviour and needs is a very complicated science. Unfortunately, only animals in the movies talk, so we have to 'ask the animals' what's best for them through scientific animal welfare research. Just like many complicated topics, almost every housing or management practice we use on our farm has pros and cons. There's a reason the systems we have were developed, but always with tradeoffs and room to improve.

There are rarely easy answers to farm animal care questions. For example, in pig

housing, we often trade off free pen space for individual pens. Why? Sows (female pigs) can be aggressive animals. Many pig farms choose to house sows in individual stalls so they don't fight or have to compete with each other for food or water. Research into new feeding systems and genetics that will help us eliminate animal competition is underway. For example, one study on sow housing at the Prairie Swine Centre which has taken over five years and cost over \$500,000 to date, has indicated more work is needed. Stay tuned!



ALL IN AND ALL OUT?

Most chicken farmers put all their chicks or pullets into the barn at the same time. The entire flock will be shipped to market on one day. Then the barns are completely cleaned out to get ready for the next flock. This helps prevent disease in our flocks.

Chickens & turkeys—the ones raised for meat—are not raised in cages. While the birds can move around the barn, small groupings tend to stake out a territory, generally a few square metres.

The vast majority are housed in modern chicken and turkey barns where temperature, humidity, light and ventilation are carefully monitored. Water and pelleted feeds (like hamster food), made of grains like wheat, corn and soybeans are always available. The barn floor is covered with a soft bedding material of straw or wood shavings.

Laying hens—the ones who lay the eggs we eat—are mostly raised in cages in Canada. Each cage houses the number of birds that mimics natural groups. The term “pecking order” came from chickens, and in a small group, fighting is reduced as the birds determine the pecking order in the first few days. With mesh floors, their wastes fall away, keeping the birds and eggs clean.

It’s a practical and clean housing system that offers benefits to the birds and farmers, and affordable eggs to consumers. Farm groups continue to invest money in hen housing research to evaluate what best suits the birds and to continually upgrade hens’ accommodation.

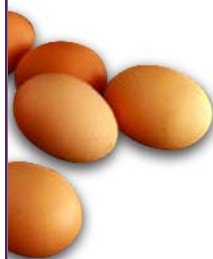
EAT LIKE A BIRD?

Did you know that an average chicken weighing 2.2 kg when fully grown will have eaten four kg of feed during its life? Are they “force fed?” It’s a common expression without much thought behind it. Chickens and turkeys are usually fed “free choice,” which means they can help themselves to the food or water anytime, buffet style.

IF THE SKY IS FALLING, CALL THE FARMER!

Some farmers have an alarm system built into their barn control panel. If there’s a problem, such as the power going off or the temperatures getting too hot, the alarm can “call the house” or page them wherever they might be to let them know they need to get to the barn right away. Many farms have invested in generators to provide power to their barns in case of emergencies.

► Did you know that half a billion dozen eggs are sold in Canada each year? That’s 6,000,000,000 eggs.



WHAT ARE “FREE-RANGE” EGGS?

Typically, free range eggs are defined as being from hens raised in large, open henhouses with access to outdoor runs. “Free-run eggs” are from hens raised in an open barn or layer house without access to the outdoors.

Of course it’s never simple or perfect. In some parts of Europe, where public pressure for egg production without the use of cages has led to legislation on different kinds of hen housing systems, old problems in the hen house, which the cage system addressed, are starting to reappear: elevated levels of dust and ammonia in the hens’ lungs, cannibalism among the birds, feather-picking and predators (including foxes!) in or near the hen house.

It’s a delicate system that continues to be studied for the right balance; for the birds, the eggs and the farmers.

The Real Veal

Veal calves are generally dairy bull calves. Veal calves live in one of three housing types: hutches, group pens, and individual stalls. Each method is well lit, insulated, and ventilated. They allow calves to move around and interact with one another, while protecting them from predators, parasites, and weather. Farmers raise veal calves two ways: by feeding a grain-based or milk-based diet. Milk-fed veal calves are raised on a diet that contains all of the essential nutrients for animal health and grow to be 205–227 kg.

Grain-fed calves are fed a milk-based diet for the first six to eight weeks, after which they're gradually introduced to a diet of corn and protein. Grain-fed veal calves grow to be between 296–318 kg.



Ever heard of bullying?

Traditionally, milk-fed veal calves have been raised in individual stalls to provide them with individual care and allow them to drink their milk without the fear of “bullying” from other calves. However, with today's technology, more veal farmers are raising milk-fed calves in group pens, like the one shown above, where the calves drink from an automated milk dispenser (almost like a giant milkshake machine). This allows calves to drink whenever they want and with less competition. See a real veal farm on www.farmissues.com.



Beef cows and calves—typically live on pasture in spring, summer and fall, with a diet of mostly grasses. Some beef cattle live outdoors year-round and are quite healthy with a thick coat of hair as long as they have a good supply of food, water and adequate shelter.

Market cattle (finished cattle)—are usually moved to feedlots (a penned yard) from the open range and pastures for the final months before marketing. They're fed a high-energy diet of grains, corn or hay silage or hay. The consistent, high quality feed brings them to market weight faster than on grass alone.

Dairy cattle—live in barns that use one of three systems. The traditional **tie-stall** barn gives each cow its own stall with bedding and free access to food and water in a manger in front. Cows are milked in their stalls into a pipeline that goes directly into a big milk tank. Another design for dairy cow housing is called **free-stall**. These barns have large areas where cows move freely and go to a central milking parlour area two or three times a day. A few free stall barns have a **robotic** milker instead of a parlour. With a robotic milking system, cows can go to the robot to be milked any time they want to – 24 hours a day.

Many dairy farmers still allow cows to go to pasture in nice weather. However, when it rains or is too warm, cows prefer the comfort of a well-ventilated barn.

Pigs—many live in barns specially designed for pigs, with fans or ‘curtain sided barns’ that

can open if needed to help control humidity and temperatures. To keep the animals disease free, most barns have strict sanitation standards and animal health protocols. For example, some farms require anyone entering the barn to shower first or wear plastic boots provided by the farm.

Sows—usually birth 8–12 piglets in a litter, and give birth twice a year. Sows are put in special areas called “farrowing pens,” just before giving birth and while they nurse their piglets. Some people have criticized small farrowing pens because it restricts the sow's movement. The reason for the pen design is to provide the best environment for both the large sow and the small piglets. The bars on the pen give the sow something to lean against when she lies down, and the piglets have a safe area to stay out of harm's way. The area where the piglets sleep can be kept warm with a heat lamp or heating pad. (For more on sow housing, see pg 18)



COW IGLOOS?

Have you ever driven past a farm and noticed calves living in what looks like an igloo? These are called calf hutches and are designed to keep calves healthy and comfortable. Hutches allow calves to be fed individually and reduce contact with other animals and ‘bugs’ that could be in the barn. Farmers give calves extra milk and/or feed and bedding in cold weather too.

Sheep — can be raised indoors and out. Some are kept out on pasture all year, with the help of supplied hay and grain during winter. Some shepherds prefer to keep their flocks in the barn year-round, to keep a close eye on lambs and keep predators at bay. Most farms use a mix of both systems.

Goats — dairy goats are housed and cared for like dairy cows, indoors for the twice-daily milking routine. Other breeds of goats are raised for meat and may be out on pasture, but need protection from temperature extremes and predators too.



Beyond cows and chickens...

The search for more diverse products and new markets continued to boost the number of less traditional livestock, a trend that started in 1991. For example, farmers reported 177,698 goats, down 3% since 2001. Goats are a versatile animal, and are raised for the healthy qualities of their meat and milk, and in some breeds such as the Angora, the luxurious quality of the wool. In addition, the demand for goat's cheese, once a rarity on restaurant menus and in supermarkets, is particularly strong.

Bison and llamas, the alternative animals favoured in the West, almost tripled in number from 2001 to 2006. For llamas, the appeal is in their wool, which many consider comparable to cashmere in softness. Half of these animals are in Alberta.

Deer and elk were more likely to be found in Alberta, which had 42,748 head, and Saskatchewan, which had 34,189. Alberta's herd more than tripled between census years. Elk are now more popular than deer. The antler velvet from both animals is also an ingredient in holistic medicines, which are produced in North America for export to Pacific Rim countries.

(Statistics Canada)

CARS OR COWS?

Dairy farmers provide more than twice as many jobs on farms (50,800) than there are employees at General Motors of Canada (22,000) (Source: Dairy Farmers of Canada)

A STOMACH FOR DRIED GRASS?

Horses are not ruminants, like a cow or deer. However, they do have a special stomach that allows them to thrive on a diet of grasses, hay, oats, corn or barley. If the need arises, they can also exist on dry grass and scrub brush and trees.



SWEAT LIKE A PIG? NOT LIKELY!

Forget what you've heard. Pigs like to keep clean and they can't sweat to cool off (which is why they've been known to lie in mud). Barns provide a clean environment and some even have sprinklers to keep pigs cool in the summer.



WHAT'S A RUMINANT?

A ruminant is any hooved animal that digests its food in two steps: first by eating the raw material and regurgitating a semi-digested form known as cud, then eating the cud, a process called ruminating. Ruminants have four stomachs, and include cows, goats, sheep, llamas, bison, buffalo, elk and deer. You can chew on this answer and then regurgitate it as required!

Cow tipping myth – Busted!

A researcher at the University of British Columbia has recently concluded it would take five people to push a cow over, and that's if the cow was willing to be tipped. Most cows do not sleep standing up and are startled easily by noise and strangers. Now you know!

COWS OF MANY COLOURS...



It's a surprise to many people, but cows come in different shapes and sizes or breeds. A Poodle is very different than a Husky dog, just like a Holstein is different than an Angus!

Dairy breeds tend to have thinner coats of hair and have less muscling than beef breeds, as they put all their energy into making milk. There are six common dairy breeds, including Holstein, Jersey, Ayrshire, Brown Swiss, Guernsey and Milking Shorthorn. Holsteins are the most popular and are black and white in colour.

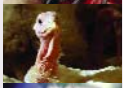
Beef breeds are more muscular and only produce enough milk for one calf each year (or occasionally twins!) Major breeds of beef cattle in Canada include: Angus, Charolais, Hereford, Simmental, Limousin, Maine-Anjou, Salers, Gelbvieh, and Shorthorn. Some beef farmers raise purebreds, but most have herds consisting of crossbred animals (combinations of more than one breed) to combine the best qualities of each breed.

JUST HOW BIG ARE THEY?

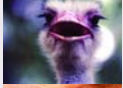
We get asked a lot of questions like: How big is a horse? How much do veal calves or pigs weigh when they go to market? Here's a chart of an approximate weight of average males (females weigh a bit less), and a few fun comparisons.



Chickens – 2 kg



Turkeys – 6 kg - 10 kg



Emu – 45 to 50 kg



Pig – 100 kg



Sheep – 70 -125 kg



Veal calf – 320 kg



Quarter Horse – 544 kg



Elk – 420 to 600 kg



Beef cattle – 680 kg



African Elephant –7, 425 kg

Big Bill – biggest pig on record – 1,158 kg

Animal Welfare or Animal Rights?

Most people believe in animal welfare principles: humans have a right to use animals but also have a responsibility to treat them humanely. Farmers and ranchers live by these principles. By contrast, animal rights supporters don't believe humans have a right to use animals — whether it's for food, clothing, entertainment or medical research. It can be confusing for the average person to sort out the many positions and groups involved with animal care or use issues. Activists of any kind are not usually interested in finding solutions, but prefer to focus on problems and dramatic examples to generate funds and support.

As farmers, we're not interested in fighting with activists. We are interested in advancing responsible farm animal care. We're the ones that are out there 365 days a year caring for the animals. We support animal welfare research that generates real information, continue to improve our practices and hope that public education efforts help shine a light on what we really do—and do not do! If you want to know more about how we care for farm animals, please ask us!



Working farm dogs play an important role on farms today, protecting animals from predators and helping farmers with herding.

ANIMAL AGRICULTURE AND OUR ENVIRONMENT

Is it wasteful to use grain to feed animals?

The notion that farm animals in Canada use food needed in developing countries is simply false. Livestock don't compete with people for food grains.

In countries without excess grain supplies, animal feed tends to consist mostly of grasses and forages or other suitable feeds. Farm animals also generally receive feed corn or barley, while humans eat mainly wheat and rice. Animals can consume grass, pest or weather-damaged grains, crop residues like corn stalks, leaves and straw, and byproducts from food processing such as unusable grains (or parts of grains) left over from the production of things like breakfast cereal. And of course, Mother Nature can be tough so even some grains intended for humans are sometimes insect or weather damaged and can only be eaten by animals.

Hunger today is generally the result of political, economic, and distribution problems, not the lack of productive capacity. Globally, more food per person is available than ever before.

Does manure contaminate water?

If manure isn't managed properly, it could contaminate water, but farmers are tackling the topic head-on.

Nutrient management planning—which includes manure, commercial fertilizers, and all other nutrient sources for farm land—is a means of maximizing the benefits of nutrients while ensuring environmental protection. How are we doing it:



- **Soil and manure testing** — by knowing exactly what nutrients we have, what are needed and when, we apply only what the soil or plants can absorb and use.
- **Calibrating manure and fertilizer spreaders** — so that we know exactly how much we're applying.
- **Managing stored manure** — ensuring we have the best system(s) for storing and handling manure.
- **Locating new farm facilities** — so that they are sufficiently far from natural resources and neighbours (determined by number and type of livestock and other factors).
- **Contingency planning**— so that we're ready to respond swiftly and effectively in case of emergency.

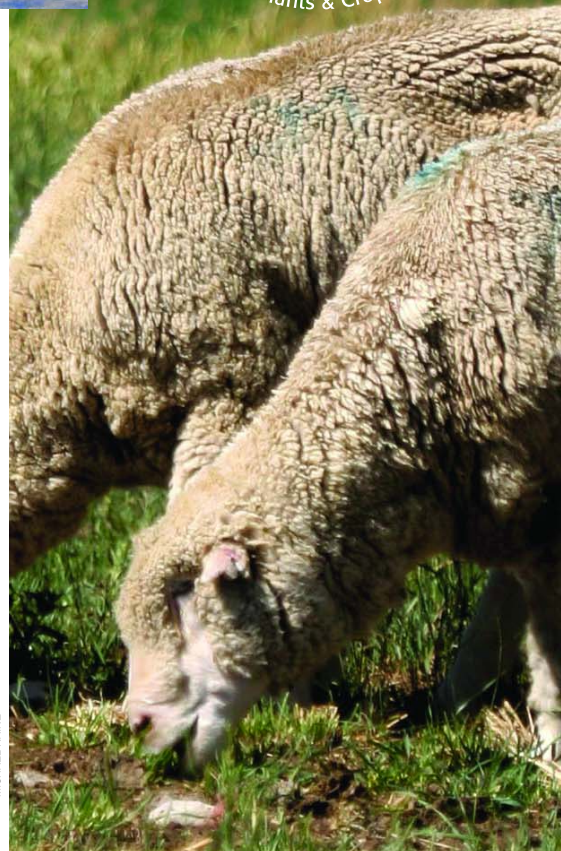
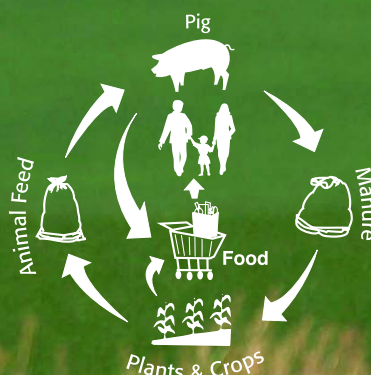


LIVESTOCK: THE ORIGINAL RECYCLERS

About 30% of Canada's agricultural land is too hilly, rocky, cold or wet to grow crops. But it can support grazing livestock.

Livestock don't compete with people for food grains. In all, about 80% of the feed consumed by cattle, sheep, goats and horses could not be eaten or digested by humans.

Animals convert low-energy and otherwise indigestible plant matter into nutrient-dense, protein rich food, while returning organic matter (manure) to the soil. It's the original recycling program.





Good For Water, Good for Wildlife, Good for Society

An obvious way of keeping manure out of water is restricting livestock access to waterways. In P.E.I., this is the law. To protect streambanks and water quality, farmers' groups actively promote the creation and maintenance of "buffer" zones around water bodies on private property.



What's a buffer zone?

A buffer zone is an undeveloped grassy area directly adjacent to a body of water like a stream. These buffers (aka "riparian") areas have a multitude of benefits:

- reduced soil erosion from livestock's hooves
- cooler water temperatures (afforded by increased shade) that attract desirable fish species
- increased biodiversity through rich and varied streamside habitats
- and much more!

Cattle, sheep and goat producers are also providing alternative water sources and rotating grazing areas.

We are stewards who know the value of protecting soil and water quality. And we continue to invest time and money to do so.

CORN ON THE COB: WEIGHING ITS WORTH

Did you know that a typical bushel of corn weighs about 25.4 kilograms and contains 72,800 kernels? Most of the weight is in the starch, oil, protein and fibre, with some natural moisture.

What can be extracted from a bushel of corn?

- 14.53 kg of starch
(32 regular 500 gram boxes)
- or 14.97 kg of sweetener
- or 11.37 l of fuel ethanol
- and 5.17 kg of gluten feed
- and 1.36 kg of gluten meal
- and a 700 ml bottle of corn oil.








WHERE'S AGRICULTURE? EVERYWHERE!

Most people think of farming for food.

The byproducts of food animals are used far and wide. There are the obvious ones, such as leather, fertilizers and glue.

But what about fire extinguisher foam (from horn & hoof protein), detergents, paints, computers, photocopies and fax machines, glossy papers, sutures, cleaners, film, instrument strings, deodorants, surgical gloves, tires, vitamins, vaccines and medicines. We could go on...and on... For more info, see www.wheresagriculture.ca

Some of the many products that come from Canadian farms...

CORN <ul style="list-style-type: none"> bicycle tires toothpaste degradable plastic disposable diapers road de-icer wallpaper ethanol fuel 	 	CATTLE <ul style="list-style-type: none"> makeup film crayons candles car polish medicines leather sports equipment 	 
SOYBEANS <ul style="list-style-type: none"> solvents paint wood glue cattle feed printer's ink diesel fuel 		HOGS <ul style="list-style-type: none"> fabric dyes footballs makeup brushes 	
SHEEP <ul style="list-style-type: none"> wool clothing soap baseballs shaving cream sutures (stitches) 	 	CANOLA <ul style="list-style-type: none"> suntan oil oiled fabrics makeup 	

All About Food: Agri-Food Facts, 2005 (Ontario Agri-Food Education Inc.)

CORNY OR SOYSPICIOUS? GOOD IDEAS HAVE ROOTS

Ethanol is a renewable fuel made from plants. Ethanol made an early debut as a renewable fuel back when Henry Ford designed the Model T. But gasoline outpaced it because it was easier to use in engines and the supply was cheap and plentiful. Today, ethanol is fast gaining on its old rival, as consumers want cleaner fuels for the environment and human health.

Ethanol is being added to gasoline. In Ontario alone, implementing a 5% blend of ethanol in gas will create a market for 50 million bushels of corn annually and reduce greenhouse gas emissions by the equivalent of 200,000 cars.

Biodiesel is a similar clean-burning alternative fuel produced from domestic, renewable resources. It involves mixing methanol with sodium hydroxide, then something like soybean oil, and letting the glycerin settle.

Current biodiesel markets are in mass transit, marine, and other sensitive areas such as mines. Quick facts: One bushel of soybeans produces about 1.5 gallons of biodiesel. France is currently the world's largest producer of biodiesel, using it as heating oil and in 50% blends with petrodiesel.

For more info, see www.greenfuels.org



FAT HELPS FUEL THE FUTURE

Animal fat may someday come to your local gas station. Biodiesel made from animal fat or tallow has a positive energy balance (meaning it contains more energy than it takes to make), emits almost no sulphur, and unlike petroleum, is a renewable fuel. Look to your farmers for this and other innovative, green energy sources in the future.

FORD AND THE MAGIC BEAN

Even before biodiesel, soybeans had an important role in the automotive industry. In 1935, Henry Ford used 75,000 acres of soybeans in manufacturing and as a binder in his foundries.

From this evolved the notion of using the protein from soybeans as a basis for one of the new miracle plastics just being developed. Protein from soybean meal, plus phenol and formaldehyde produced a plastic compound that found its way into gear shifts, knobs, horn buttons, electrical switch assemblies, and distributor cases for the Ford cars in the late 1930s.



MANURE—AND THEN THE LIGHTBULB CAME ON!

A rural community in southwestern Ontario is looking at becoming a green-powered community. The Lynn family of Lucan, with the help of federal and provincial governments, have committed to building an aerobic digester (AD) on their farm that will help turn cattle manure into electricity. Besides producing surplus electricity to sell on the market, the AD will reduce greenhouse gas emissions, reduce odours by 80%, and the output will be natural fertilizer that will, help reduce chemical fertilizer requirements.



Saskatchewan is home to Canada's first and only integrated beef cattle feedlot and fuel ethanol facility. The Pound-Maker facility was first constructed in 1970 with a 10 million-litre ethanol plant added in 1991. The ethanol plant was integrated with the feedlot facility in an effort to consume more locally grown grain and to create employment opportunities. The ethanol plant uses approximately 100 metric tonnes of grain per day, produces about 35,000 litres of ethanol per day and employs 13 people. The cattle feedlot fully uses the plant's two co-products — wet distillers grain and thin stillage (the residue left after fermentation that contains solids but no alcohol. (www.pound-maker.ca))



What are you doing about the smell?

There's nothing like the smell of manure to come between farmers and our non-farming neighbours. It's a long-time reality of farming.

The odour can waft out of barns and storages, but is most pungent a few times a year when manure is being applied to cropland as a natural fertilizer.

It's a fact of life in raising animals and is not going to go away altogether anytime soon. In many parts of Canada, it's recognized in law as part of normal farming practice. But we value good relations with our neighbours, so we're anything but complacent about this issue.

We've learned a lot about odour reduction in the past few years:

- new odour control equipment that involves sophisticated in-barn ventilation and storage structures and covers,
- where best to locate new buildings to minimize odours,
- when to apply it to minimize odours: the sooner it can be worked into the soil, the better. Applying it in the early morning, on cool days, when prevailing winds are away from neighbours all help,
- other helpful measures, such as planting rows of trees.

One of the best tools we have is very low tech. It's called common courtesy, and it goes both ways. Some farmers are notifying neighbours in advance of manure spreading to ensure we're not going to affect their plans, and avoiding weekends whenever possible. We ask — through discussions and visits — that they understand a bit about our farm and our goals, and appreciate that some reasonable level of odour is inevitable. We also want to make them comfortable with discussing any concerns one-on-one so we can resolve them together.

► THE NOSE KNOWS WHAT IT KNOWS



How do you objectively measure odour? Alberta researchers are getting a grasp on the airy issue with the help of special odour panelists in an olfactometry lab. They're called Nasal Rangers - and are trained to evaluate odours under all kinds of outdoor conditions, and even an electronic nose that mimics our sense of smell.

Beyond odour intensity, they're also looking at frequency of occurrence, duration, and degree of offensiveness. The work is the first step in establishing objective standards.

I've heard livestock contribute to greenhouse gas. What are farmers doing about that?

Yes, agriculture is part of the problem. But we are also part of the national solution.

Scientists estimate agriculture produces 10% of Canada's greenhouse gas emissions. Methane accounts for one-third of agriculture's emissions, and comes largely from livestock. Nitrous oxide, which accounts for most of the rest, comes from farm soils, especially those that have received manures and fertilizers.

A third (and societally most significant) greenhouse gas, carbon dioxide, is something that agriculture doesn't produce much of, but which agriculture can help limit. Carbon dioxide can be stored by soils and crops. For example, 100 bushels of corn takes six to seven tons of carbon dioxide from the atmosphere and returns nearly five tons of oxygen. Canada's corn crop alone generates enough oxygen for all Canadians year in and year out.

The good news is that many of the same farm practices that favour efficiency and conservation will also help reduce emissions. Higher yielding crops and livestock, careful soil management, and reduced fuel consumption are just some examples.

In fact, agriculture appears well-positioned to make a difference. Properly managed, healthy soils may act as a "sink" to remove greenhouse gases from the atmosphere. Natural areas found on many farm properties, such as wetlands, woodlots, pastures and buffers, can also trap gases. As seen elsewhere in these pages, opportunities for on-farm green energy generation look promising.

Stay tuned. Studies are continuing to identify and quantify on-farm emission reduction measures.

GRAZING LIVESTOCK: STEWARDS OF THE SOIL?

Grazing animals like cattle and sheep do important work for soil conservation. By putting otherwise unproductive land to good use, they protect it from erosion and nutrient depletion, and promote greater diversity in wildlife habitat.

Still not convinced? Livestock complete the nutrient cycle, returning valuable nutrients to the soil with their manure. Like in your garden, manure is an important source of organic matter and conditions the soil.



METHANE, CATTLE AND YOUR ODOMETER

A study from Texas A&M University has calculated that the entire North American beef industry contributes about 0.5% to global methane levels.

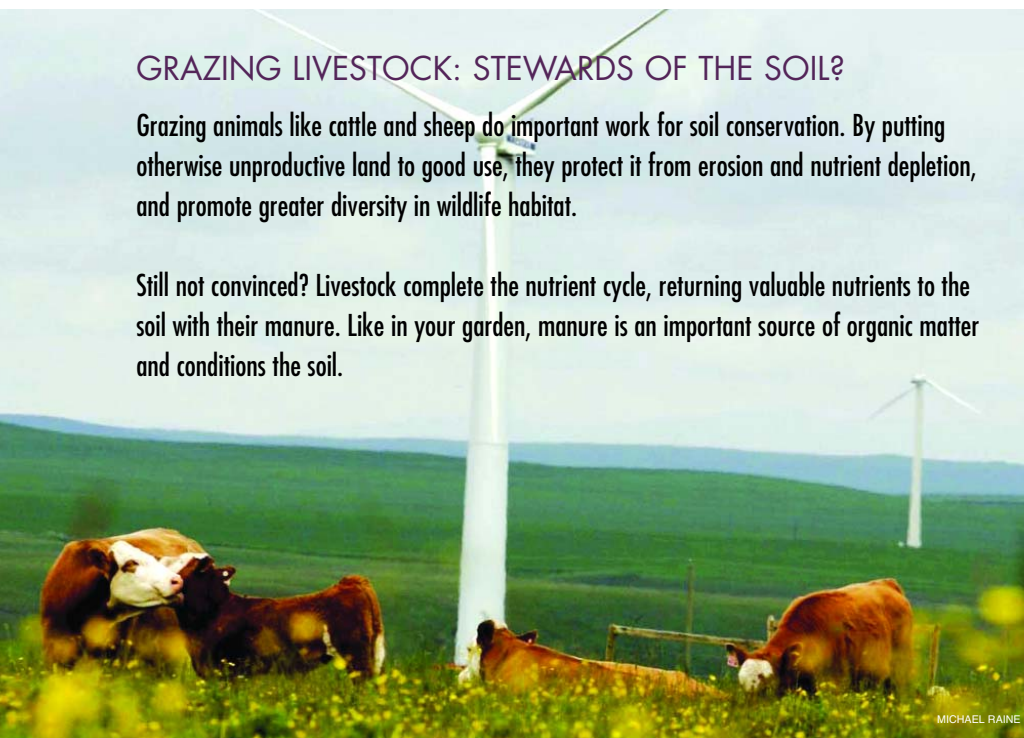
Did you know that the daily production of greenhouse gas by a cow is equal to that of a car driven 3.2 kilometres? In fact, driving to the store to buy groceries produces 800 times more greenhouse gas than the production of a hamburger.

Agriculture plays a big role in reducing greenhouse gases. Plants absorb carbon dioxide from the air and store it in the soil through a process called "sequestering".

(Source, the Canadian Fertilizer Institute)

THERE'S SOMETHING IN THE AIR – OR IS THERE?

A five-month air sampling study released by researchers at the Veterinary Infectious Disease Organization in Saskatoon in 2002 showed air 600 metres downwind of swine barns is as 'fresh' as air 2.4 kilometres upwind of a swine barn. This study's findings were important for both hog farmers and their neighbours concerned about potential environmental impacts, health or safety issues near pig barns.



WILDLIFE HABITAT – NOT JUST IN PARKS

More than 30% of Canada's 68 million hectares classified as agricultural land isn't suitable for planting crops (i.e. too rocky, hilly, wet or dry). Often these areas are put to use as pasture for grazing livestock but many do double-duty as excellent wildlife habitat. Many farmers choose practices such as native grass seeding, rotational grazing, and buffer zones around water bodies that sustain wildlife populations and promote biodiversity.

GRAZING CATTLE ARE SHRIKES' BEST FRIENDS

The Canadian Cattlemen's Association is working with Wildlife Preservation Canada and government to support recovery efforts for the endangered Eastern Loggerhead Shrike. Farmers with property in the birds' habitat area are being encouraged to maintain and expand existing pastureland so that the shrikes can hunt. Farmers are also planting trees and shrubs at the edges of pastures and fields to serve as perches and nesting places for many birds, including the Shrike. And they're being thanked for letting their cattle graze, which helps keep the grass short enough for shrikes to spot their prey.



Farmers: The Active Environmentalists



As farmers with families whose livelihood and way of life are very close to the land, we understand more than most the importance of healthy soil, water and air. We live on our farms with our families and depend on the environment to create a healthy place to live as well as the right conditions to grow crops and raise livestock.

Through farm groups, we invest in environmental research and help develop programs to disseminate the latest findings to our members. In fact, Canada is a world leader in on-farm environmental programs.



In all provinces across Canada, a voluntary program called the Environmental Farm Plan is helping farmers audit their operations for environmental concerns and set goals and timetables for improvements. So far over 32,000 farmers in Ontario alone have participated and together invested over \$100 million in on-farm environmental improvements.

It's a program that's being actively copied and adapted in other provinces and around the world, truly making a positive difference for the environment and for the families who live on the farm.

For details on the Ontario program, see www.omafr.gov.on.ca/english/environment/efp/efp.htm or www.caringfortheland.com

A common misconception is that early agriculture functioned in harmony with nature, and that environmental degradation is a phenomenon of "modern" farming.

Historical records reveal a different story.

For example, the farming systems adopted by early settlers prior to 1850 was wheat monoculture coupled with biennial summer fallow — meaning the production of one crop

every second year, with the soil being intensively cultivated but not cropped during alternate years. This system was wasteful of land and ruined soil health and organic matter levels.

Many of the early methods of crop protection involved either excessive tillage or inorganic chemicals, such as sulphur, mercury, and arsenic compounds. Many of these older chemicals are no longer used because of their

toxicity or persistence in the environment.

Between the 1960s and '80s, monoculture corn was common, leading to pest problems and soil degradation in many areas.

Today, we're learning from our past shortcomings. Crop rotation is the norm, we're looking after our soil's health much better, and crop protection products are safer and highly regulated.

PESTICIDE USE CAN HELP PROTECT WILDLIFE

True. Sounds crazy? Think again.

The biggest threat to wildlife is loss of habitat.

Pesticides help farmers produce more food without increasing the area of cultivated land. The products are precise, safe, and stringently controlled. Scientific surveys show that pesticide residues in foods are 100 to 1,000 times lower in Canada than levels considered safe by the world health organization. (www.Pestfacts.org)



SHINING A LIGHT DOWN WATER WELLS

Water wells aren't used to the spotlight. But in the past decade, many rural dwellers have been giving their water source some extra thought.

Because water wells start at the surface and move deep down into the earth, they can inadvertently invite contaminants to reach groundwater.

And so great efforts are being made to encourage people to keep their wells properly maintained.

Farmers go to great lengths, to ensure barn washwaters, nutrients and eroded soils do not reach water sources.

EARTH-SHATTERING? AU CONTRAIRE....

On the frontline of weather conditions, farmers are the first to experience and adapt to changing conditions. Persistent dry conditions in the Prairies, for example, have inspired significant shifts in preferred tillage methods.

Tillage is an age-old practice and refers to plowing or working up the soil, something that's done mostly to control weeds. Many farmers in Canada have adopted "conservation tillage" or "no-till" practices. By reducing tillage, crop residue is left on top of the soil

rather than being incorporated underneath. This makes for better moisture retention, lower vulnerability to erosion, and overall better soil structure and health. It also reduces fossil fuel use and allows soils to sequester carbon, which reduces our greenhouse gas emissions.

Between 1991 and 2001, use of these environmental practices jumped from 27% to 63%. Currently approximately 30% of Canada's productive farmland is under no-till management — a figure that will continue to rise.

GOODBYE MONOTONOUS MONOCULTURE



Variety is the spice. Farmers grow a variety of crops every year, and avoid planting the same crop on the same field year after year. Crop rotation discourages pest populations from building up, and is great for soil health. On Prince Edward Island, it is now mandatory to have a three-year crop rotation on all farms. The common rotation is potatoes, grains (like wheat or barley) and forages.

GREENHOUSES BLOOM YEAR-ROUND

More and more of the fresh veggies and flowers that we enjoy in all four seasons are grown in greenhouses. Between 2001 and 2006, total greenhouse produce sales in Canada grew to \$2.2 billion!

Most Canadian greenhouse products are grown in Ontario, where total sales have more than doubled in recent years. Ontario grows more hothouse tomatoes and cucumbers than any other province, but British Columbia dominates the pepper market.



WATER, WATER EVERYWHERE — NOT!

Some high-value and sensitive crops — usually fruits and vegetables — require irrigation. Today's irrigation systems come in a variety of forms, and are made to maximize every drop of water. Water availability and quality will continue to be an important issue for all of us. Some land used to grow crops is drained using underground tile to remove surplus water from fields. This improves crop quality and yield and reduces water runoff and erosion.

WHAT IS BIOTECHNOLOGY?

Biotechnology involves bringing desirable traits from organisms and biological substances to another. Bread, beer and wine, which are produced with the help of yeast, are early versions of this science. More recently vaccines, antibiotics, and other medicines have been produced using biological agents.

When biotechnology is applied to food, the goal is to influence biological processes in ways that increase the supply, consistency, durability and quality of the plant and animal products we use.

Brave New World - or a Better One?

THE ROLE OF SCIENCE IN PRODUCING OUR FOOD

Most of the spectacular gains in productivity in the past century had their origins in a laboratory. Plant and animal genetics, soil management, pest and disease strategies, feeds and animal housing, even weather forecasting—every aspect of farming has benefited.

Society has been the winner too, as more nutritious, more abundant, more reliable and less expensive food is produced using less farmland.

Many of these technologies, such as commercial fertilizers, are reaching their limits. More and different advances will be needed to keep moving forward.

For some people, scientific progress is a mixed blessing. Words like biotechnology and genetic engineering can strike fear. Let's take a closer look.

One thing is certain: if we are to feed growing human populations while preventing damage to ecosystems and natural processes upon which all life depends, agriculture must continue to make advances.

WHAT IS GENETIC ENGINEERING?

Genetic engineering or GE is a form of biotechnology. It refers to the precise alteration of an organism's genetic makeup by adding or removing specific genes. The result is a "genetically modified organism" or GMO.

For some farmers, GMO crops provide another option to pesticides for managing infestations. They can reduce pesticide use—good for the environment and the bottom line. Herbicide-tolerant canola has taken the market by storm: over 70% of all canola planted in Canada is from GMO varieties. Herbicide-tolerant plants are not killed by certain types of

herbicides, and therefore the farmer can apply the herbicide to the crop to control weeds, without killing the crop.

Plant biotechnology will mean that crops will be grown for their value as "functional" foods or nutraceuticals—appearing in vaccines and nutritional compounds to prevent or treat disease. Croplands could be the new pharmacies.

For consumers, benefits like "herbicide resistance" may be hard for anyone other than farmers to appreciate, but upping the wellness quotient is another matter. Here's a sampling of possibilities:

- tomatoes that contain more lycopene, an antioxidant that reduces the risk of prostate cancer
- nuts without sometimes deadly (to some) allergenic proteins
- tobacco plants (yes!) to produce therapies to fight Crohn's disease
- crops that grow in saline soils or that grow better in drought conditions—think cold-tolerant grape stock to extend the range of grape-growing areas.



How does Canada's government safeguard me?

Testing and more testing. Any proposed product of biotechnology is carefully assessed and regulated by Agriculture and Agri-Food Canada, the Canadian Food Inspection Agency, and Health Canada. Additional departments may also be consulted. It has to be safe — for people, animals and the environment.

Livestock and poultry still use traditional breeding methods for improvement. Research continues into improving animals with biotechnology, but isn't on the market just yet. For example, work is underway on an Enviropig™, which has transferred a gene from a mouse into a pig's salivary gland to allow the pig to digest more phosphorous and eliminate the need for supplements. This results in a more environmentally friendly manure that's lower in phosphates. Who knew? For more info see <http://www.uoguelph.ca/enviropig/>



Soybeans are grown primarily in Ontario and Quebec. These two provinces represent 97% of the soybean acreage in Canada. Temperature is a main factor limiting the production area as soybeans like it to be warm. In 2005, genetically modified (GM) soybeans made up 43% of the total Ontario acreage. Compare that to 2000, when only 18% of the acreage was given to GM soybeans.



Ontario's GM corn acreage also continues to expand. Statistics Canada says it accounted for at least 50% of the province's corn acreage in 2006. That's up from 27% in 2000.

In 2006, 10.3 million farmers planted biotechnology-based crops in 22 countries around the world.

(Source: Dr. Clive James, Chair, International Service for the Acquisition of Agri-Biotech applications www.isaaa.org)



ALL ROADS LEAD TO THE KITCHEN TABLE

Ultimately we all want the same thing: a food supply that is reliable, affordable, safe, nutritious and responsibly produced. We live in a country that is blessed with more food choices than most. It's a matter of choice — choice by you as a consumer in what you want to buy, and for the individual farmer as to what to grow and how.



Genetically modified canola was first introduced in 1995 and is now grown on about 80% of the canola acres in western Canada.

PLASTIC GETS A NUDGE

Unlike many synthetics, natural and animal and plant-based products biodegrade quickly. Adding food byproducts to things like plastic can speed up the break-down process.

MUCH MORE THAN IT'S CRACKED UP TO BE

Fertile chicken eggs play a key role in the manufacture of many vaccines for people and animals. To give you an idea, here's but a small sampling of the vaccine types with egg properties.

- Eastern Equine
- Rabies
- Influenza
- Mumps
- Canine Distemper
- Yellow Fever

A Berry Long Season!

Did you know that you can get fresh strawberries and raspberries outside the traditional picking season? Berry farms are now growing Day Neutral (ever bearing) strawberries and fall bearing raspberries that provide locally grown fruit from August until the end of October.





In closing...

MICHAEL RAINE

In agriculture, we can all look back with some fondness at the days when we bought our farm animals based on their looks or reputation. Our crops were planted with a hope and a prayer on the weather and the seed quality, with best guesstimates from the neighbours on how much fertilizer or manure we needed to apply.

Fast-forward to today. New technology continues to accelerate change from farm to field to table. We are going further and faster than most ever thought possible. We can use global positioning systems (GPS) to beam precise information on the state of our land in each one of our fields. This level of detail helps us to apply fertilizers and other inputs only if needed, and only where they're needed—good for the environment, and good for the bottom line. From outer space to our fields, the farm office and ultimately all of our dinner tables—what's next?

Some of the most important things haven't changed a bit. The ultimate success of Canadian agriculture rests on the commitment of farm families to their land, to their animals, and to this special way of life.

Thank you from all of us for buying products from Canadian farmers. We realize, this support is a two-way street. As farmers, we feed people who live in cities but we, in turn, also need the support of those cities to survive. By buying local, you invest in us. We, in turn, invest in improving our environment, raising standards for animal care and providing safe, high quality food.

*We appreciate you taking the time
to learn more about what we do.*



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The Ontario Farm Animal Council is the voice for animal agriculture, representing over 40,000 livestock and poultry farmers, associations and businesses on issues in animal agriculture such as animal care, food safety, biotechnology and the environment.

