



## Environment and Society

### How we eat—a social choice

We now attribute the decline of the great civilisations of Mesopotamia and the Maya to ecological causes. A constant increase in population is thought to have incited the cultivation of numerous fragile forested regions, the overuse and exhaustion of the soil, famine, the breakdown in social ties and the exodus of populations. Today, more than six billion people live on our planet. Between now and 2050, three billion more will be added to that number, presenting humanity with an unprecedented challenge: feeding the world!

That challenge will have to take account of the fundamental laws that govern natural cycles. The human activities that are superimposed on those cycles can render them more fragile. This has become increasingly more apparent since the Industrial Revolution, which resulted in an unprecedented increase in global population along with urbanisation, first in industrialised countries, then in the rest of the world. With it came mechanisation, fuelled by coal and, later, petroleum, the growth of transportation industries, advances in chemistry and biology, and progress in a multitude of other areas which were put to the service of agriculture. It was literally a revolution, since, in its wake, the very nature of humans' links with nature, their relationship with work, as well as the bonds between the city and

the country were shattered. In order to feed the cities and respond to the new demands of consumers, agriculture was forced to adapt. It had to deal with two constraints: increased production and less manpower. Agriculture met the challenge. It modernised and substantially increased yields through advances in science and technology. Farming became specialised and the size of farms increased significantly. In Québec, as in most industrialised countries, the intensification of agriculture was the response of farming to the needs and expectations of society.

With that, however, the agricultural systems of the industrialised world had, despite themselves, contributed to the artificialisation of the natural environment in order to master it. They practised intensive monocultures and forced yields through massive applications of water, fertilisers and pesticides. With the help of globalisation and liberalisation of trade, these practices spread to the developing world. Today, in both North and South, we are coming to recognise that these practices were not without consequences for the environment, farm workers' standard of living, and the health of the population.

Despite the gigantic increase in world agricultural production, a huge portion of the earth's population suffers from a serious dearth of food. In the Northern Hemisphere, where the number of soup kitchens mounts along with the rate of obesity, the health of the population is also at stake. Large numbers of people are beginning to question the quality of what's on their plate.

What can we do to ensure the security of our food production systems? What are the responsibilities of each of the players in the food production chain? Of governments? Of citizens? Can we reconcile food production with protection of the environment and fair redistribution of food resources while maintaining our social fabric and improving the health of the world's population? In this context, choosing how we eat is not merely an individual decision; it is a social choice.

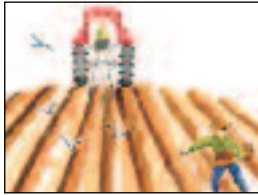


# Lots of people around the table

It takes a lot of people to put food on our plates. In 2007, Québec had some 42,540 people working in almost 30,000 agricultural businesses. That makes agriculture the most important activity of the primary sector from the point of view of both the economy and employment<sup>1</sup>. If we add to these the jobs associated with bringing product to market (processing, packaging, marketing, advertising, distribution, and restaurant services), then roughly one in eight jobs is related to the bio-food industry. Finally, if we also consider the production and distribution of seed and fertilisers, care of animals, maintenance of machinery and transportation, it becomes clear that this sector is not far from being the principal economic activity in Québec.

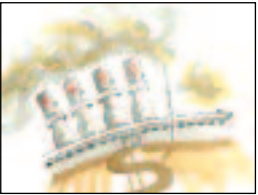
Worldwide, there are 1.3 billion farm workers who are the first link in the food chain providing subsistence to almost half of the world's population.

On behalf of all those people, *bon appétit!*



## The producer

Feeding the planet with the fruits of the earth, putting my knowledge at the service of your table, that's how I earn my living. To increase my profit margin, I specialise and tend my land. To ensure consistent production, I adopt the best agricultural practices. Despite all the budgetary challenges, I'm really proud of what I do!



## The processor

Listen here, farmers! I'm the guy who adds value to your products. I perfect, I refine, I improve the flavour. I dilute, I extend, I cook my heart out. I season and I treat with preservatives. I dry and I freeze. In short, I satisfy consumer demand.



## The packager

Trust me with your products, from near or afar. In my factory, I carefully package apples or sausages, tomatoes or rabbits. In cartons, in plastics, in fine paper, I protect your cargo as needed. For handling, for shipping by land or sea, for storage or attractive presentation, I'll wrap anything up for you, by machine or by hand.



## The financier

I buy and I sell. Coffee, apples or white bread, if it's profitable, it's all the same to me. I buy the food, the factory and even the field. I own all the production inputs. I'm also a manufacturer. I acquire a little more every year, depending on my forecasts and my financial plan. To achieve economies of scale, I support the standardisation of foods and the manipulation of consumer attitudes.



## The advertiser

Fish, chickens, peppers, I'll sell anything. My messages are catchy, my concepts seductive. "Happiness for young and old," that's my slogan. If you want to sell your food, if you want your business to be profitable, I'm the answer!



## The retailer

The shelves are full in the castle of the kings of distribution. You want local products, we have them. You want exotic products, we import them. Between the producer and the kitchen cupboard, we bring it all together. We are the heart of the market!



## The consumer

Whether at home or in a restaurant, I love a well-dressed table. When I shop, I look for perfect and healthful merchandise. At the same time, I want to pay as little as I can. Sometimes I wonder why so many people are suffering from hunger? Can I change things by being less a consumer and more a citizen?



## Production

Agricultural production today is 1.6 times what it was only fifty years ago. This increase is attributable, in developed countries, to motorisation, large-scale mechanisation, selective breeding for higher yield, fertilisation and crop specialisation. In developing countries, this increase is largely a result of selective breeding for high yield, an increase in the area of irrigated land and the cultivation of arid lands.

While agriculture in the North is in relatively good health, in part because of state subsidies, the situation is more difficult in developing countries. There, most farmers, generally women, do not enjoy the benefits of modern agricultural techniques. Ironically, almost half of them do not have enough to eat. Under-equipped, under-productive and poor, they are subject, at one and the same time, to competition engendered by the liberalisation of markets and to the continuing decline in prices they receive for their production. Many, totally impoverished, are forced to leave the countryside and join the destitute multitudes already populating the shantytowns surrounding cities in the South (see the pamphlet *The Challenge of Feeding the World*).

In principle, global agricultural production should be able to satisfy the energy needs of the entire world population. On average, each of us expends roughly 2,700 calories a day. This average, however, cannot conceal the fact that food resources are very poorly distributed, whether between men and women, among countries, or among the inhabitants of a single country. The fact is, entire segments of the population do not have enough food, while others are suffering from obesity. Thus, global demographic projections pose the dual challenge of doubling food production in the next fifty years while ensuring more equitable distribution. The challenge becomes more daunting when we consider the limits to the exploitation of the planet's resources in earth and water. Vast regions are already fully exploited and, in many cases, dangerously over-exploited and degraded.

### A question of scale?

A Québec farmer was hosting a farmer from the United States, who asked him to describe his land. The Québec farmer replied, "If you look down there, off to the right, you'll see a strip that marks the boundary of my land. If you look to the left, my land extends to the river. The road you came in on is the other boundary of my land." In reply, the American farmer described his own land: "At five in the morning, I jump in my pick-up and drive south till nine o'clock. Then I turn west and keep on till one in the afternoon. I have a bite to eat, get back in the truck, then head north. I finally get home about six o'clock. That's how I do the tour of my land." Unimpressed, the Québec farmer opined, "Yeah, I used to have a truck like that!"

This story is a good illustration of how different models of agriculture exist side by side. Our neighbours to the south have chosen to practise a productivist model of agriculture on a large scale, while the family farm remains the norm in Québec. For example, the average Québec dairy farm has 55 cows compared

to over 650 in California. In the consumer egg sector, the average Québec farm has 35,000 laying hens, while in the U.S., it is not uncommon to find farms with 8 million<sup>2</sup>. In emerging economies, farms are more and more adopting the productivist model, often without taking the precautions necessary to protect the environment and the health of the population. This gives them a competitive advantage over farmers governed by more rigid standards. In Latin America, the peasants, who often eke out a living from unproductive land, exist side by side with rich farmers, descendants of the Spanish colonisers, who control most of the cultivable lands. The majority of African farmers have only a small plot of land, a few fowl and a couple of goats to satisfy the needs of their families. They have to compete with imported foods that flood the market at prices they can't begin to match. Farmers everywhere are forced to deal with the rules imposed by the globalisation of markets. In that context, the challenge facing the vast majority of farmers on the planet is twofold: live—often just survive—and feed the world (see the pamphlet *Living off the Earth, Here and Elsewhere*).



## Processing

At the level of the family, this step consists of preparing meals. However, changes in the lifestyles of populations (urbanisation, lack of time, working women, etc.) have produced considerable changes in the dietary habits of Québécois. Lovers of prepared foods, juices and soft-drinks, breads, pastries, and frozen foods, they have made a significant contribution to the growth of Québec's agri-food processing industry, making it one of the largest employers in the manufacturing sector. This industry directly supports almost 72,000 jobs in over 1,400 businesses, and indirectly supports another 72,000. Almost 85% of agricultural production relies on this industry as their principal purchaser. The agri-food processing industry is the second largest in Québec, with 5.1 billion dollars of gross domestic product (GDP), representing 34% of the total GDP of the Québec bio-food industry. And foods processed here are increasingly more popular abroad. Almost half of Québec processors are present on the international market in over 140 different countries<sup>3</sup>.

Of course, the original purpose of processing was preservation along with the improvement of taste and appearance. For example, flour from which the fat contained in the germ of the grain has been removed has a longer shelf-life. As more additives are introduced, nutrients are diminished; bread, rice, potatoes become whiter and less natural. The by-product of refining is often the elimination of vegetable fibre, among other things. Foods are changed not only by what is removed but by what is added. In general, the more a food is processed, the more additives are required. Some additives have an ancient ancestry, such as salt and nitrites. Cooks have always resorted to yeasts to make dough rise, to thickeners for their sauces, and to colourings to transform good quality raw materials into foods that are safe, healthful and tasty. The goal of traditional cooking is,

therefore, little different from that for the prepared or preserved foods we eat today. Additives are used to preserve foods, to improve taste, to increase nutritional value (vitamins, trace elements...), to prevent oxidation, etc. In most countries, these products must be clearly indicated on the label in the list headed "Ingredients" and be approved for use. Their addition is strictly regulated in order to ensure food safety. While some of these products have created fears on the part of consumers, they have rarely caused any true allergic reactions, though they have occasionally been associated with food intolerances.<sup>4</sup>

A new kind of product has been appearing on the market: nutraceuticals or functional foods. Manufactured from food materials, they are generally sold in the form of pills, powders, syrups or other medicinal formulations. Through nutrition, they are intended to prevent major chronic illnesses such as obesity, diabetes, cardiovascular disease, gastro-intestinal disorders, immune disorders and conditions associated with aging. Compared to traditional foods, these nutraceutical products are sold at high cost and a far greater profit margin, which serves as a significant incentive to those marketing them. Would you rather eat an orange or swallow a vitamin C pill?

Source: Institut des nutraceutiques et des aliments fonctionnels (INAF) [www.inaf.ulaval.ca/](http://www.inaf.ulaval.ca/)

## Around the world with a mustard seed

Food processing is a very lucrative affair. Foods, whether from here or elsewhere, are generally processed in industrialised countries before being resold in the local or international markets. For example, mustard seed from Manitoba is sold in France before returning to Canada...in the form of Dijon mustard!



## Packaging

Packaging serves to protect or to facilitate the handling, the transportation, the storage or the presentation of consumer products. In the past forty years, the quantity of products in Québec that are packaged has increased by 80%. Almost 40% of all packaging, over a million tonnes, can be found in our shopping carts. It enjoys a brief stay in our refrigerators or pantries before being relegated to the garbage can or recycling bin. Cereal boxes, tin cans, plastic juice bottles, styrofoam trays and all the other food-related wastes, including food wastes, constitute almost 70% of the contents of our garbage cans. Until recently, when Québec consumers began to carry their own reusable shopping bags, supermarket excursions alone generated 13 million plastic bags a week. In the South, plastic bags are omnipresent in the environment and have become a serious problem.

Most of the time, packaging serves as a marketing or communication tool, exploited by advertisers, who are always looking for the ideal formula to make the consumer buy the product. Loyalty to the brand or company logo, the lure of the packaging or, occasionally, the surprise gift it announces attract consumers to one product rather than another, which may be identical in every other respect.

Faced with these tonnes of packaging and the other garbage generated by our consumer behaviours, it becomes essential that we attempt to reduce at source, to recycle, and to compost the waste that Québec society has been creating for more than twenty years.



## Advertising

If packaging persuades consumers to buy a particular product, advertising attempts to condition them to seek it out on the shelves. Fast-food chains alone in the United States spend \$3 billion a year on television advertising. To that, add the cost of advertising for prepared foods, frozen foods, and junk food, and it becomes clear that most advertising is pushing foods rich in fat and calories. In 2002, barely 2% of the industry's advertising dollar was spent promoting fruits, vegetables or other healthful foods<sup>5</sup>. Since then, there has been a substantial increase in the share of advertising to encourage healthful eating.

In 2002, to persuade consumers to buy their products, all businesses together spent \$1.4 trillion, the equivalent of 70% of the debt of all third-world countries. Since 1980, advertising budgets in developing countries have increased considerably in an effort to convert their populations to a western style of consumption.

## Labelling

If the purpose of advertising is to sell, the purpose of labelling is to inform and protect the consumer. In most countries, regulations require manufacturers to indicate the ingredients in their products along with the amounts of proteins, carbohydrates and fats. The amounts of fibre, vitamins A and C, calcium and iron, sodium, cholesterol, as well as trans fats, which are particularly dangerous to health, have been added to labels in recent years. All information on food labels must be true, accurate and not misleading. Advertising is also regulated to protect consumers against false representation.



## Stranglehold on the market

At the heart of the agri-food production chain is a player who wields substantial power: the merchant. At the local level, he buys from local suppliers, deals with processing companies, imports a variety of products, determines prices on the basis of market conditions, and cultivates the best relationship possible with customers. He could be an independent entrepreneur or part of a distribution chain.

On the larger scale, these businessmen are waging a real war for market share with their competitors. In the past few years, competition has been particularly fierce in the distribution sector. In Québec, three huge chains control most distribution. Around the world, only in Australia do we see a similar concentration, a phenomenon that benefits neither farmers nor consumers.

Internationally, this tendency is exacerbated by the liberalisation of markets and pressure from the World Trade Organisation (WTO) and the World Bank to treat the agriculture and food sector as if it were trading in any other merchandise (see the pamphlet *The Challenge of Feeding the World*). That logic of horizontal mergers and acquisitions allows businesses to take over a huge share of the market and thus to determine the prices of goods. Confronted by these giants, small merchants have no choice but to go along. The situation is particularly critical in the United States. In the last decade, during which a single food distribution giant has come to dominate the American market, thirty-one supermarket chains have sought bankruptcy protection. Among those, twenty-seven blamed the competition from that company as the main reason for their failure<sup>6</sup>.

Other interests seek to control the full range of players associated with a single product. This is known as vertical integration. They own the lands that are rented to farmers under an exclusive contract for production at a fixed price. They further own the processing and packaging plants, the transportation companies, and have privileged access to distribution networks as well as the publicity apparatus to whet the appetites of potential clients. Acting horizontally and vertically, the agri-

food industry has all the power it needs to influence government food policy.

This situation creates an environment in which it is impossible for most developing countries to compete. Today's globalisation imposes the market economy on all the countries of the world. The General Agreement on Tariffs and Trade (GATT), now replaced by the WTO, forbids all forms of distinction between rich countries and poor. That means that peasants in the South are forced to compete with transnational corporations. The products of northern agriculture, heavily subsidised, sell for far less than the local products, forcing many local farmers to abandon their land. For example, Senegal imports rice, even though it was self-sufficient prior to the signature of the agreements. Surplus production is bought for a pittance from rich countries and, by ricochet, from poor peasants as well. When transnational corporations team up with local governments, they can ensure a total monopoly on a region. This situation is extremely troubling, as we are witnessing a veritable race to acquire arable farmland in developing countries. Two and a half million hectares of arable land in five Sub-Saharan countries have already been bought or rented over the past five years for a total of \$920 million<sup>7</sup> (see the pamphlet *The Challenge of Feeding the World*).

### The market's counter-attack

The success of markets such as those of the Vieux-Port in Québec City, Byward in Ottawa, and Jean-Talon in Montréal are evidence that consumers want a direct link with producers. Local markets, which have long been bullied by the big grocery chains, are enjoying a renaissance. In the past five years, their numbers have almost doubled in the U.S. and in Europe. Buy-local programs are also growing rapidly, along with fair trade, which eliminates middle-men to the benefit of both the producer and the consumer.



## Distribution and food services

Food distribution is an important link in the agri-food cycle that satisfies consumer need. In Québec, shippers supply more than 9,000 points of sale. The distribution market is dominated by three main companies that control a large share of the market. The largest of these controls almost 35% of the Québec food market. Despite these giants, almost 70% of the distribution points belong to independent retailers. In the various retail locations, everything is calculated to seduce the consumer: featured product placement, sales, background music and tasting stations.

For a number of years now, restaurants have occupied an increasingly important position between the distributor and the consumer. Changes in work location and conditions, an increase in purchasing power, and more free time are among the factors that explain the changes in consumer behaviour.

In Québec, there are currently more than 12,000 restaurants, visited on average two or three times a week per person. Of that number, almost a third are fast-food restaurants. The growth of this type of restaurant has been phenomenal. They are commonly located in the workplace, in supermarkets and department stores, and in the vicinity of schools. Their popularity derives in part from their accessibility, the speed of service, the uniformity of their product anywhere in the world, their prices, and their generally friendly service—not to mention their canny combination of sugar and fat, the two tastes our bodies naturally crave. It is no surprise that the global plague of obesity coincides with the rise of fast-food (see the pamphlet *Environment, Food and Health*).

### Fast food on trial!

Since the increase in obesity coincides with the growth of fast-food, John F. Banzhaf, a professor at George Washington University, wants to take those corporations to court and tax their product like cigarettes. For him, their responsibility is perfectly clear. Given the costs of obesity to the health care system, he wants to sue those who have pocketed the profits from it without paying for the social consequences.



## Consumption

Every February 12, the average Canadian has earned the income necessary to pay his annual food bill. The portion of today's budget consecrated

to food is from 10% to 12%, compared to 22% fifty years ago. After the U.S., Canada is the cheapest place to feed ourselves.

So it is in grocery stores that increases in price in relation to quality are least popular. Consumers are generally looking for security in taste, perfection in appearance, and always, the lowest price. They are more and more demanding a broad range of products, available year round, packaged and ready-to-serve. The more household incomes increase, the more processed products, red meats and fatty foods figure in our diet. This collective character trait has impelled the agri-food industry, not without an impact on society and the environment, to intensify agricultural production, increase the number of processed foods, and increase imported and convenience foods.

For the last several years, "citizens and consumers, who were kept on the sidelines of the debate on agricultural issues, have made their presence known and are now expressing their concerns and their demands regarding health and the environment, addressing themselves directly to farmers and agribusiness. Agriculture is no longer being viewed in the same way. The inter-relationships between the agri-food sector and health are recognised, and agricultural production is now subject to principles of respect for the environment and what society is prepared to accept. In short, agriculture has become a social concern<sup>8</sup>."

In developing countries, two-thirds of jobs are directly related to agricultural activity and 75% of the poorest citizens come from rural families. In 2008, the sharp increase in the cost of basic foodstuffs and the "food riots" thrust issues of agriculture and food supply to the forefront of international concern. Citizen-consumers are in a position to contribute to the solution through a rediscovery of the pleasures associated with eating and a better understanding of the role each of the players performs in the agri-food production chain. Learning more about the impact of the agri-food cycle on the health of the population and of the planet, the inequalities it creates between North and South, between rich and poor provides us with a better understanding of the issues at stake. Supporting local producers, encouraging fair trade, refusing over-packaging, and fighting for food self-sovereignty, in solidarity with agricultural workers here and elsewhere, enable us to envision an agriculture that respects the environment as well as the people who are a part of it.

# Meeting the challenges

Respecting the balance of natural cycles takes into account both the resources we remove from the environment and the products we reject into it. Each player in the food production chain, from producer to consumer, shares responsibility for the crisis that threatens the global environment. Understanding the nature of the effects of the food industry on the environment is an essential condition to action, whether individual or collective.

## Understanding natural cycles

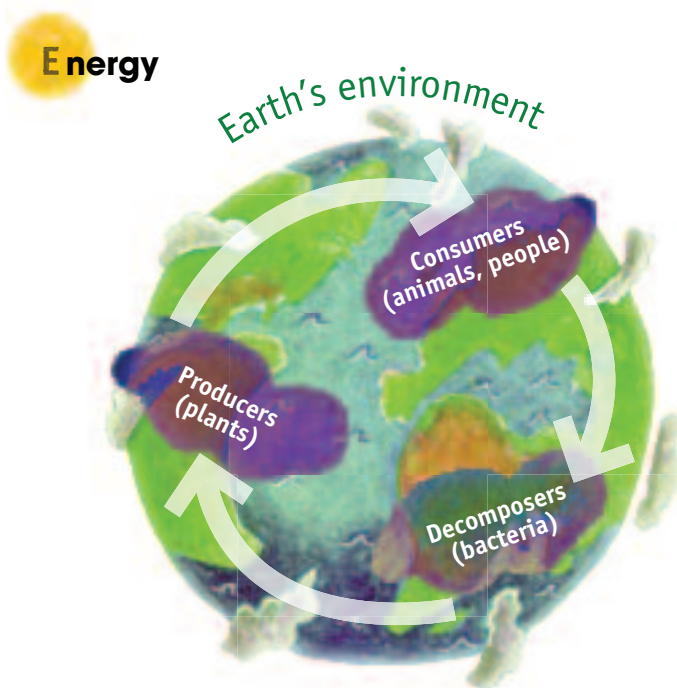
Understanding the effects of our methods of food production assumes a *prima facie* awareness of how the great cycle of life functions. The Earth is a closed system, an ingenious mechanism that ensures a constant and eternal circulation of the same natural elements. Everything is organised around four basic elements that exist in a state of dynamic equilibrium: water (the hydrosphere), air (the atmosphere), earth (the lithosphere) and living organisms (the biosphere). There is but a single external contribution to the system—the light of the sun. This enables matter and energy to circulate and life to develop. In other words, we live in a kind of vivarium with nobody to come along once a day to throw in our daily food ration.

Our survival, therefore, depends on the ability of natural systems to produce, in the form of food, the energy we need to maintain our metabolic functions (respiration, digestion, etc.) and to perform our daily tasks. As we cannot make direct use of the sun's energy, we are totally dependent on another kingdom of life: plants. These possess the characteristic of being able to produce their own food through the process of photosynthesis using the energy from the sun, carbon dioxide, and minerals dissolved in water. For that reason, we refer to them as PRODUCERS...and they came long before agricultural producers. They are at the base of what is known as the food chain, which all nourishment on earth depends on, and, as a consequence, includes even the food industry. In other words, without this plant magic, you can forget your *blanquette de veau au vermouth*, your *gnocchi in rosé sauce*....Eating is more than a basic need...it is, in fact, nothing more nor less than a daily chance to taste a bit of sunlight.

And that is exactly what those who, in the food cycle, we call CONSUMERS are tasting. Whether they obtain nourishment directly from plants or animals, or whether they eat a bit of both, it all serves to recycle the solar energy transformed by plants. Since part of that energy is lost in the journey through the various stages of transformation, the further a creature exists from plants in the food chain, the more energy is required to feed it. The same principle applies in the food industry—the further from the site of production, the more processing is required and the more energy is consumed.

And, finally, one very important player is too often forgotten. In the natural systems, as we said, matter circulates in a closed system. Thus, plant products once assimilated have to be reintegrated into the cycle when they are eliminated by consumers or,

ultimately, when the latter die. That is the role of DECOMPOSERS. These organisms that feed on matter eliminated by other plants and animals reduce organic matter to its simplest form, which allows it to be reintroduced into the cycle and to avoid the worst-case scenario—a mountain of excrement and corpses and the exhaustion of the raw materials of life. In that event, scarcity would result not in higher prices, but in the disappearance of life. Vermicomposting, where worms are used to compost food wastes, are a good example of the value of decomposers.



"If the bee disappears from the surface of the earth, man would have no more than four years to live. No more bees, no more pollination, no more plants...no more men." (Albert Einstein)

And that is perhaps the most important lesson to be learnt from an understanding of natural cycles. Indifference to the reintroduction of raw materials is a dead-end scenario. It is to deny our condition of living on a planet with limited space and resources.

# Drawing on the resources of the earth

For thousands of years, the earth has been feeding the human family without any changes to its ability to produce the fruits we demand of it. From the Sacred Earth of the ancients, to Mother Earth for generations of farmers, the planet has become, for gigantic multinational agribusinesses, nothing more than a substrate for production and, thus, a commodity for speculation. Huge-scale industrial agriculture implies the replacement of a balanced ecosystem with another that is both artificial and highly simplified. Agricultural production comes to depend on resources that are added and substantial energy imported from outside the system.

In Québec, where the majority of farms are family operations, farmers have helped to reverse this tendency by creating conservation clubs in order to promote sustainable development of Québec farming through the adoption of practices that respect the environment.



Photo FAO-15157-A

## Filling the glass or the plate?

Among all human activities, agriculture is the largest consumer of surface and ground water. Almost 70% of the world's water is used to water crops and irrigate lands. This is already causing major problems, particularly in megalopolises where the need for water for domestic use is often in conflict with that for the cultivation of lands that feed those same cities. In Québec, where water is abundant, only 2% of land surfaces are irrigated by farmers. The main focus is on draining lands.



Photo FAO-7398

## Preserving the soil

Preparing land for cultivation usually involves removing all the existing plant cover that preserves the soil. In thus denuding the surface, inappropriate agricultural practices can leave the nutritive elements of the land at the mercy of erosion by wind and water. Despite the land's ability to regenerate, the current rate of soil erosion considerably exceeds its capacity to recover. As a result, lands are rendered permanently unproductive. There exist organic farming techniques, now being employed by conventional agriculture, that allow better protection of the plant cover.



Photo FAO-18169

## The threat to biodiversity

Almost 80% of world food supply is ensured by less than two dozen plant and animal species out of the 7,000 raised. In the quest for profitability, various natural regions are surrendered to monoculture, thus reducing the genetic diversity of the crops we depend on. In reducing that diversity, we also reduce our ability to produce new species or strains that help ensure the security of the food supply for an ever-increasing population. Within the next thirty years, over twenty per cent of biological diversity will have vanished. The recent renewal of interest in heritage varieties of fruits and vegetables and for traditional animal breeds offers a ray of hope.

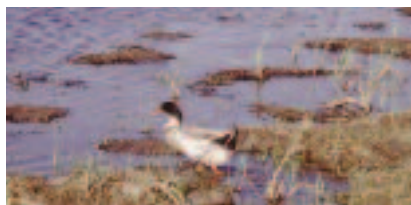


Photo FAO-17948

## What happened to the ducks?

Wetlands are transitional zones between earth and water, breeding grounds that also serve as regulators for water flow. Rich in biodiversity, they serve as filters to purify water, while playing an important role in flood control. Since 1985, between 56% and 65% of wetlands have been drained for agriculture in Europe and North America, 27% in Asia, 6% in South America, and 2% in Africa<sup>9</sup>.



Photo FAO-18602

## Restrict transportation

Every food item on your plate has travelled an average of 2,400 kilometres. So that we can enjoy the world's diversity and benefit from year-round access to products, we make further demands on non-renewable energy resources such as gas and oil, which accentuate the phenomenon of climate change. In Québec, a third of the trucks on our highways are transporting food.

## Destructive wastes in the environment

Agriculture, like all other human activities, has effects, often considerable, on the environment. Given the world's ever-growing need for food, it is essential that we employ practices that respect the environment. In Québec and elsewhere in the world, agro-ecological measures to minimise those effects are already being implemented.



Photo FAO-11451

### Climate out of control

The soil, because of the organic matter that provides its fertility, retains three times the amount of carbon as all surface vegetation. Practices of large-scale intensive cultivation, such as soil denudation, accelerate degradation of the soil and the emission of carbon dioxide into the atmosphere. Cattle farming contributes to the production of methane and is thought by the United Nations Food and Agriculture Organisation (FAO) to be responsible for 18% of greenhouse gases on the planet<sup>10</sup>. Exhaust emissions from transportation further add to the pollution. Climate change produces a range of disruptions, floods and droughts that, in turn, affect agricultural production.



Photo FAO-15157-A

### Running out of water

Almost 20% of the world's population lacks potable water. Between 80% and 90% of diseases and 33% of deaths in third-world countries are attributable to contaminated water. Projected water shortages pose a serious threat to health, environment, food supply and world peace. Almost 25 million people are water refugees. The earth's agri-food activities account for 70% of the water used by human beings.



Photo FAO-18521

### No more garbage! The bin is full!

Each link in the agri-food chain generates its own waste products. In Northern countries, the world leaders in waste, we have recovery and recycling programs and sanitary waste dumps that reduce the impact of that waste. In the Southern Hemisphere, where measures to deal with this scourge are virtually non-existent, shanty towns spring up on the perimeters of mountains of garbage. Every year, 40% of the food in the U.S. is thrown out, according to one study that appeared in the scientific review PLoS ONE in November 2009<sup>11</sup>.



Photo Lori Skelton

### Yikes, there's a bug!

The use of pesticides remains the most common technique for protecting crops against insect and plant pests. Worldwide in 2006, their importation represented sales of \$17.5 billion, an increase of over 50% compared to the year 2000<sup>12</sup>. With rains, these chemicals find their way into surface and groundwater. Recent studies clearly link synthetic pesticides with a variety of long-term health problems affecting, in particular, immune, endocrine and reproductive systems<sup>13</sup>. There exist, nevertheless, a number of organic strategies to deal with these scourges.



Photo FAO-17751

## Compensating for the loss of productivity of the soil

The denudation of soils left to the mercy of erosion along with monocultures which draw constantly on the same nutrients are at the heart of the loss of soil productivity. Industrial fertilisers, the remedy used to permit higher yields, also contribute to pollution. In Québec, their use has decreased by 35% in the last fifteen years. Instead, we have taken advantage of animal manures that, when the earth isn't saturated, contribute to the regeneration of soils.



Photo FAO-14519

## Planetary specialisation

The search for higher and higher yields has led to a gradual specialisation of the planet, where certain countries or regions concentrate production on a particular species. A good example is the production of pork in Brittany, where pigs outnumber Bretons three to one. While important efforts have been made to balance the ecological cycle, this concentration creates quantities of manure that vastly exceed the capacity of the soil to absorb and reintroduce into the natural cycle. At the same time, the pressures of industrialisation and standardisation of foods have led to the disappearance every month of a variety of chicken, cow, pig and even rabbit<sup>14</sup>.



Photo Unesco / Malenpre, Georges

## Protect the countryside?

Everywhere in the world, centuries of agriculture have served to create rural landscapes unique in the diversity of their fields, the variety of their crops and their harmony with forests and other natural features—in short, in the richness of the rural environment. The standardisation of lifestyles, international competition, the constraints imposed by an ever more rationalised and profit-driven agricultural model—while these may respond to consumer demand for lower prices, they are also slowly eradicating those landscapes with their infinite variety.

## Solutions for a sustainable agriculture

Our food supply model, through the jobs it helps to maintain, supports a substantial portion of our society's economic activity. It also has an impact on the way of life of peoples of other countries with which we trade. If, in our weekly shopping, every Québec family put \$20 worth of locally grown, rather than imported food in the cart, over 100,000 jobs would be created in Québec. In fact, every purchase we make is a vote (a position taken) that, combined with those of other consumers, decides the agricultural context, production methods, marketing, and the kind of products we put on our plates.

For a number of years, the agricultural picture in Québec has been changing. It represents the political and social choices we have made since the beginning of the 1970s. At that time, the Québec agri-food community adopted a model in response to the appetite of a growing population that wanted to pay the lowest possible price for the groceries in their shopping carts. Many family farms were unable to resist the pressure to produce more cheaply while facing an economic context under increasing pressure from foreign competition. Since the 1990s, Québec farmers have faced additional constraints created by the globalisation of markets. Following the Agricultural Summit of 1992, the agricultural community agreed to answer the government's call to

participate in Québec's economic growth by placing greater emphasis on exports. It did so with a commitment to respect the rural heritage, the sustainability of resources and the environment,

as well as its own values. It clearly met the challenge, as evidenced by Québec's present favourable agricultural commercial balance; however, not all the effects of that growth have been positive. It has been accompanied by a reduction in the number of farms, a greater concentration of their production, and an increase in their surface area, with all the consequences that implies in terms of the economy, the environment and society.

The publication of the report of the Commission on the Future of Agriculture and Agri-food in Québec in 2008 breathed new life into agricultural development. The report underlined the attachment of farmers and the population to the family farm "on a human scale." It recognised the importance of protecting agricultural lands for future generations. In it we see a desire on the part of all the players for greater independence in food production and the need to give priority to serving the local market. It underlined the necessity to preserve, even reinforce those measures particular to the Québec farming system, such as supply management to stabilise prices and avoid losses as well as marketing collectives, which are very much a product of cooperative values. It noted the importance of maintaining and improving insurance and income protection programs, always stressing the essential role agriculture plays in the economy and occupancy of the land. Finally, it recognised the considerable investment by farmers in equipment and in new practices to eliminate or minimise the effects of their activities on the environment, while improving harmonious relations with their neighbours.

In pursuing efforts toward a more sustainable agriculture, our farmers are developing greater solidarity with other farmers throughout the world. They defend with tooth and nail the processes they have collectively devised to ensure recognition of their place in society. They take part in important national and international negotiations on the future of agriculture and demand fairer trade practices. They advocate the principle of food sovereignty and do not hesitate to support family farmers in developing countries through the UPA-DI, the international cooperation division of the Union des producteurs agricoles promoting direct farmer-to-farmer cooperation.

While the situation is far from perfect, more and more farmers, here and elsewhere, are realising the importance of reinventing an agriculture that is productive, since the world has to be fed, but also sustainable, more economical in terms of input, and less destructive to the environment. An agriculture that



Photo Unesco / Marco Dominio



Photo Nicolas McComber

employs new techniques to fight diseases and pests, based on technological advances arising not only from scientific research but also from the traditional wisdom of those who work the land. They are demanding an agriculture where performance is measured not solely in terms of yield, but also of ecological benefits such as carbon capture, the preservation of biodiversity, the beauty of the countryside and the respectful use of water and other resources. Taking inspiration from natural cycles, these farmers hope to put nature at the service of agriculture.

With the citizen-consumer, these farmers practise at one end of a long food chain. Together, we will determine, by our choices, the very nature of what we will find on our plates in the years to come. Always remember that we will eat as we conduct ourselves as a society. The food on our plates is more than an individual choice—it is a social choice.


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