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ABSTRACT

Through articles and activities designed for the senior secondary level, students examine the food production system in British Columbia and the world and explore creative, sustainable alternatives for food production. A description of raising food in the first world with the critical issues of energy use and environmental degradation precedes a description of raising food in developing nations. An article explains how agricultural experts work with traditional farmers in some areas to understand soil conservation methods of the farmers and to improve traditional methods. Five activities encourage students to look at issues that surround food production and the environment. Lists of 11 audio-visual resources and 19 organizations provide further information about food and environment issues. (CK)

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# Food & Environment

## Teaching Global Issues Teachergram, Fall 1989

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teaching global issues

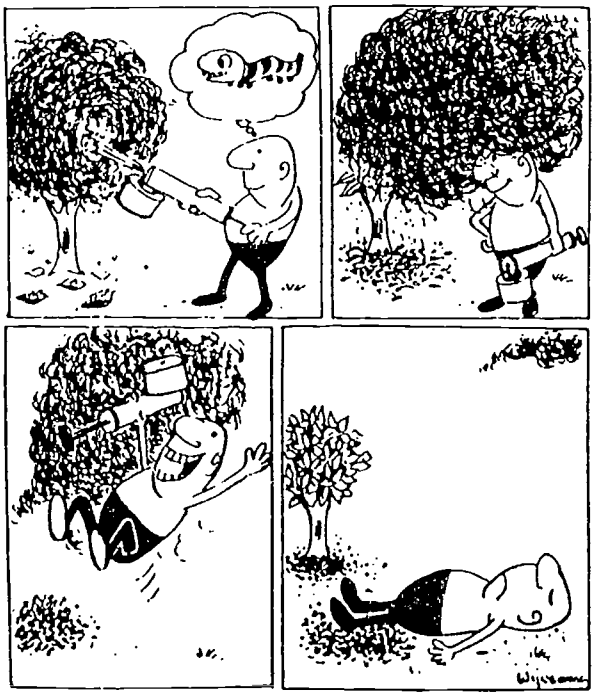
Teachergram

Fall 1989

# Food & Environment

## To the teacher

The global food system is one of paradox. Western farmers increase their efficiency per acre, but at a cost in energy and resources which cannot be sustained. Farmers in the south, crippled by increasing pressures on the land (including the pressure to produce for export to the west) increasingly plunder their land and forests. The result? In the north, enormous food surpluses and eroded land. In the south, hungry people and eroded land. This issue of Teachergram examines the ins and outs of today's food production system in B.C. and the world, and challenges students to think of creative, sustainable alternatives.



UNEP cartoon for World Environment Day 1981

*"Looking to the year 2000 and beyond, the global food system must be managed to secure 3 to 4 per cent annual increases in production, which must be sustainable economically, socially and ecologically. If this proves possible over the next 25, 50, 100 years, humankind should be able to support itself indefinitely, given the anticipated slowing of population growth. But can the global food system be so managed?" (Food 2000)*

Right now, the world grows enough food to feed itself. This doesn't mean that everyone gets fed; every year, 13 to 18 million people die from hunger and hunger-related diseases, and over 500 million people are chronically hungry. This is a problem, not of food availability, but of food distribution, and the inability of poor people to buy food.

But more and more, people are beginning to look at not just *what* we're producing, but *how* we're producing it. Increasingly, our present system of food production is being looked at in terms of sustainability. We're producing food, all right, but what are we doing to the earth? At what cost are present systems of food production being maintained? How long can we continue to maintain them? Tough questions about sustainable development are raised every time we open our mouths to take a bite. On October 16 — World Food Day — people around the world are being asked to think about how the food choices they make, both as individuals and as nations, affect the kind of environment we will have in the year 2000.

## RAISING FOOD IN THE FIRST WORLD

### The Factory Farm

Remember Old Macdonald? With his extensive assortment of animals, Old Macdonald epitomizes the picture many of us have of farms. He was a mixed farmer, growing both feed for his animals and grains for human consumption. His main methods of maintaining soil fertility were the use

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of natural fertilizers — manure from his animals, mulch from his crops — and the rotation of crops to replenish soil nutrients.

Up until World War II, he would have done fine. Now, however, if Old Macdonald is still around he has either:

- sold his animals, enlarged his land holdings, and adopted a mechanized form of farming which relies heavily on large inputs of chemical fertilizers, pesticides, and petroleum to run his machinery;
- moved to the "factory production" of one type of animal — poultry, pigs, beef — which are raised in crowded conditions, requiring high inputs of energy, antibiotics and hormones to keep them healthy in such conditions and growing fast. The manure from Old Macdonald's animal farm, far from being a benefit to aid in growing his crops, has now become a waste problem, often flushed into nearby rivers and lakes;
- sold out and moved to the city.

Whether he's raising grains or animals, New Macdonald's high-input style of farming is creating a long list of new environmental problems.

## energy use

Agriculture now uses more non-renewable petroleum than any other single industry in the USA. Petroleum products are used not just to power machines, but also in the content of nitrogen fertilizers. It is estimated that on the average Canadians consume fewer than 1 million calories of food energy a year. To produce that, the agricultural industry uses about two million calories of petroleum products alone, not counting the 12 trillion calories needed to produce the 1.5 million tonnes of nitrogen fertilizer used yearly. In terms of energy efficiency, wet rice farmers in the Philippines are approximately 6 times more efficient than the best western farming system (corn) and 165 times more efficient than broiler poultry production.

## environmental degradation

### • hitting the dust

While Old Macdonald's old-fashioned method of crop rotation took more labour than new highly mechanized, chemical-input methods, it kept the topsoil down and restored nutrients to the soil. From 1960 to 1980 in Canada, the ratio of nutrients contained in agricultural crops to the nutrients contained in the fertilizer applied to the land declined from 3.55 to 1.04. In other words, in 1960 if you spread one unit of nutrient — nitrogen, phosphorous, or potassium — on your land, you got 3.55 units of nutrient back in the crop, because nutrients were provided naturally by the soil, enriched by decades of crop rotation and natural fertilizers. In 1980, you would only get 1.04 units of crop nutrient, or just about what you put in. In B.C., the figure is .98; when we put in a unit of fertilizer nutrient, we're getting *less* than a unit of crop nutrient. The soil has lost much of its nutrient content. In 1986, the Science Council of Canada announced that:

*"soil degradation is an ongoing, insidious problem that occurs in all parts of the country at a cost of over $3.0 million per day . . ."*

Not only does it *contain* little natural nutrient, the soil is no longer able to *hold* nutrients well, and much of the fertilizer applied to it is running off. Where to? Read on.

### • infiltrating the water

World fertilizer consumption per capita climbed from 5 kg in 1950 to 25 kg in 1983. Do all these goodies go into the veggies we eat? The answer is no. For instance, only 10% of nitrogen added to land actually ends up in the crop. The rest goes elsewhere — often into nearby water sources. Ever wonder why some of your favourite swimming spots are sprouting luxuriant new crops of weed? The answer may be *eutrophication*, the stimulation of aquatic plants by run-off of nitrogen and phosphates from fertilizers. In Canada, more than two-thirds of the algae-promoting phosphorus entering Lake Erie from Ontario can be attributed to runoff and erosion from agricultural land.

Sales of chemicals to control pests and disease have risen 32-fold in 35 years. In the U.S., synthetic fertilizers and pesticides are responsible for over half of all water pollution.

### • "improving" pests

Tinkering with the finely-tuned balance of nature can sometimes lead to surprising results. Often, killing off a group of predators means a population explosion further down the line. Sometimes target pests respond to pesticides by developing pesticide resistance; the number of pesticide resistant species worldwide jumped from 25 in 1974 to 432 in 1980.

***"The energy required to feed one person in the U.S. is more than 310 gal. of petroleum a year. If we were to attempt to feed the entire world's population at that level of energy consumption, all known petroleum supplies would be used up in about 10 years."***

(Jon Bennett, ***The Hunger Machine***, 1987)

*"Spraying powerful poisons that kill all exposed insects is no more "management" of pests than killing everyone in New York city would be managing urban crime."*
(David Suzuki, Globe & Mail, April 9/88)

**• swelling the cities: paving the land**

Farming has switched from a low-cost production in Old Macdonald's time to a high-cost business. Before World War II, US farmers spent about half their income on capital investments; now they spend over 80%. The average Canadian farmer carries debts of $100,000 and one in ten farmers faces bankruptcy. This, plus the reduction in labour required in farming, means that fewer people live in the country, and more are moving to the cities.

The massive migration to the cities produces new environmental problems of its own: air pollution, waste disposal problems and the paving-over of prime farmland for roads and houses. Only 5% of Canada's area is capable of crop production, and only one half of 1% is top-notch agricultural land with no serious limitations to production. Yet between 1966 and 1986 1,750 square km. of prime agricultural land was put under pavement.

*The justification for this New Macdonald's farm, with its high mechanization and inputs, is* ***production.*** *But do we need as much production as we've been getting? In 1985, the US had carry-over stocks of 85 million tons of grain; the EEC had 20 million tons, Canada 13 million and Australia 7 million. To get rid of it, they had to sell it at bargain-basement prices or, in some cases, give it away. Imagine what it does to a small farmer in Africa to find that imported food is cheaper than the food she or he has produced!*

# Cut Your Beefing!

***What's wrong with beef? Lots, according to a growing number of environmentalists.***

• **Chopping the Rainforest:** In Latin America, the beef export market, fuelled by the North American hamburger demand, has lead to clearance of enormous areas of rainforest, rainforest which is essential to reduce global warming, and to provide a home for the millions of species of plant and animal life which we may yet need to improve our crops and medicines. From 1961 to 1978, Central America's forests declined by 40%.

• **Hogging the Water:** In North American factory farms, cattle use enormous amounts of water. Over half the total amount of water consumed in the U.S. goes to irrigate land growing feed and fodder for livestock. To produce a single pound of meat takes an average of 2,500 gallons of water — as much as a typical family uses for all its combined household purposes in a month.

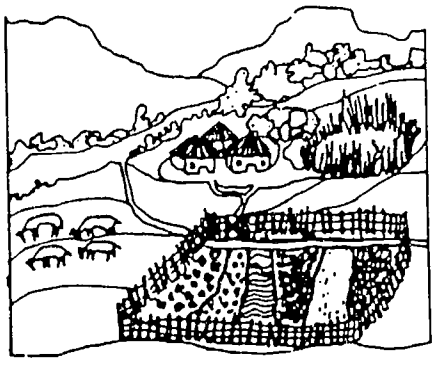
• **Creating Waste:** Cows are great producers of waste — waste that was once used for fertilizer but now, in crowded feedlots, has become a problem. One cow produces as much waste as 16 humans. In the U.S., animal wastes account for more than 10 times as much water pollution as the total amount attributable to the entire human population.

• **Gobbling Grain:** Cattle are inefficient converters of protein; of the protein fed to them, over 90% is lost. The U.S. livestock population consumes enough grain and soybeans to feed over 5 times the entire human population of the country.

Cattle producers, however, are fighting back against the increasingly bad image of their product. *"We are all very aware of the messages about cows put out by the environmental groups and the health groups,"* states Alisa Harrison of the National Cattleman's Association. *"They are using a very serious issue — the world's environment — to promote their hidden agenda, which is vegetarianism."*

*(Globe & Mail, Sept. 4/89)*

# RAISING FOOD IN THE THIRD WORLD



While Old Macdonald, as we know him, has almost disappeared in the western world, the small family farmer — who is often a woman — is the backbone of agriculture in the developing world, where 68% of people still live in rural areas. But the task of the small farmer is becoming progressively more difficult.

## cultivating under pressure

Many of the world's farmers have traditionally practiced shifting cultivation — growing crops in an area for a few years, then moving to another patch and leaving the land to lie fallow, covered by wild grasses and plants which restore its nutrients. It's a method which has worked well for centuries, but now, under pressures of increased population and use of land for export crops, farmers are reducing the fallow time, and land is becoming exhausted and eroded. When this happens, the farmer is forced to move on, usually to fragile, marginal land which erodes even more quickly. Often, farmers displace

cattle-herding nomadic people who take their herds to even more fragile land.

The pressure on the land is increased by:

• **inequality of land distribution**

In Latin America 7%of the landowners control 93% of the arable land. Large sections of prime farmland are under-cultivated or leased to multinational companies to produce export crops, while the subsistance farmers are forced to overcultivate tiny patches of land.

* *Half of Central America's agricultural land produces food for export. In several of its countries the poorest half of the population eat only half their daily protein requirement.*

* *Africa will provide for only half its food needs by 2020. Five million African children died from malnutrition in 1984 and another five million were handicapped for life. But Africa is a net exporter of beans, barley, peanuts, fresh vegetables, cattle, coffee and cocoa.*

(***Global Issues Reading Kit on Food***, VIDEA)

• **national debt**

Governments increasingly emphasize export crops at the expense of food crops, in order to earn foreign exchange for interest payments.

• **declining terms of trade**

Prices of manufactured goods from the First World go up, while prices of raw commodities from the Third World go down. In 1960 an 18-ton truck could be exchanged for 6 tonnes of jute; by 1982, the price had gone up to 26 tonnes of jute. This means that more and more land must be planted for export in order maintain the same standard of living.

## exporting disaster

First world aid to the Third World has generally consisted of exporting western agricultural ideas to areas whose fragile soils, harsh climates, and lack of government regulation turn them into ecological time bombs. The Green Revolution, built upon the goal of increased production, involved poor Third World farmers in the same high-input debt problems as many First World farmers. The richer ones prospered, while the poorer farmers lost their land and moved to the burgeoning cities. Subsidized by governments and agencies such as the World Bank, pesticides have come to play a major part in Third World agriculture, although the regulations which exist in the west — protective clothing requirements, pollution safeguards, education standards, training regulations — generally don't exist. Many chemicals which are banned or severely restricted in the industrialized nations are still shipped overseas. In 1976, 30% of total pesticide exports consisted of these hazardous materials.The result? Pollution and death.

"Because you've done it sucessfully your way for generations, it doesn't mean it works."

More than one million people are affected and at least 40,000 die each year, most of them farmers and farm workers in the developing world.

The fann methods which Third World farmers had used and perfected over the centuries—techniques such as *multi-cropping* (planting more than one crop together in order to keep plants shaded and ground covered by vegetation yearround)—were generally rejected by western experts in favour of large, mechanized, monocrop farming projects. The effects of such techniques — soil degradation and erosion — became quickly evident in the fragile soils of Africa.

Large-scale irrigation projects have featured heavily in aid projects. While irrigation is necessary to increase food production, many of the projects have neglected the *human* aspect, displacing huge numbers of people and expecting them to adjust quickly to difficult new methods. There are also many *technical* problems. FAO and UNESCO estimates show that as much as *half* of all existing irrigation schemes of the world are under the influence of salinization (too many mineral salts, due to poor drainage or naturally saline ground-water), and waterlogging, the result of ill-designed and poorly implemented systems. Each year, 1 million square km. of irrigated land are abandoned.

## "Natural" Disasters

In the early 1980s, the Swedish Red Cross began to wonder why each year it was receiving more and more appeals for relief due to natural disasters in the Third World. It collected some figures:

• **drought**

*1960s:* drought strikes 18.5 million people each year
*1970s:* drought strikes 24.4 million people each year
*1980s:* drought strikes 30 million people in Africa and 100 million people in India alone

**WHY?**

**Do you think drought is caused entirely by annual rainfall, or could it have something to do with water absorption? What happens to the water absorption when land is stripped of its vegetation? How is the water supply affected?**

• **floods**

*1960s:* 5.2 million affected/year
*1970s:* 15.4 million people affected/year
*1980s:* The trend continues, with floods in Bangladesh, Southeast Asia, the Andean nations of Latin America, and the Sudan in Africa.

**WHY?**

**In what ways are floods caused by the same factors as droughts?**

Some people call these disasters *Acts of God*. What do *you* think?

(Information from Lloyd Timberlake, ***Only One Earth***, 1987)

# *BUT .... CRISIS CAN BE ANOTHER WORD FOR OPPORTUNITY:*

Some hopeful signs:

- **A meeting of "expert" and farmer:**

Agricultural experts are now beginning to work with traditional farmers in order to understand the methods which have conserved the soil for thousands of years, and to help improve traditional methods. This meeting of minds has produced encouraging results:

* **Agroforestry**, the planting of fast-growing food and fodder-producing trees among crops, can reduce erosion, improve soil fertility, and provide wood and food for the farmer.

* Institutes such as the *International Institute of Tropical Agriculture*, in Nigeria, and the *International Crops Research Institute for the Semi-Arid Tropics* in Niger are working on **improved-yield seeds** for food crops, seeds that do well with little added input.

* **Aid agencies** are increasingly following the lead of organizations such as OXFAM, which helped Burkina Faso farmers improve their terracing by developing a surveying tool out of a length of transparent hosepipe. Tools, inputs and methods must be easy to use, fit well with traditional methods, environmentally sustainable, and CHEAP.

* **Irrigation projects** are slowly turning from massive, big-dam operations, to small-tank/reservoir schemes which involve the local people in planning, design, construction and direction.

- **IPM** (Integrated Pest Management) is a hopeful alternative to pesticides for both First and Third World farmers. Natural insect enemies, or plants with insecticidal or repellent properties can help fight pests.

- **Urban Agriculture** can improve the diets of city people, and reduce the need for transportation of food and for solid waste disposal, since some wastes can be used for composting. Hong Kong and Singapore, two of the world's most crowded cities, have urban agriculture programs. Hong Kong produces almost 50% of its fresh vegetable consumption and 75% of its poultry consumption, while Singapore produces 100% of its pork consumption, 80% of its chickens, 30% of its fish and 27% of its fresh vegetables.

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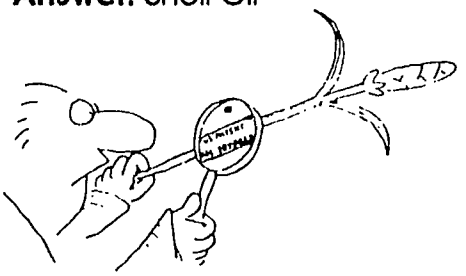
*There is still much work to be done, however, in both the technical and political areas of agricultural reform. Let's hope that by 1990 we'll be well on the way to sustainable agricultural development!*

***What are some of the steps which you think should be taken to ensure environmentally sustainable food production***
- ***in the First World?***
- ***in the Third World?***

***(Think about both the technical and the human/political aspects of the question.)***

# Seeds: a Growing Concern

**Question:** What is the world's largest seed company?
**Answer:** Shell Oil



The small, independent seed producer is, along with Old Macdonald, a relic of the past. Multinational chemical and pharmaceutical companies, like Occidental Petroleum and Ceiba-Geigy, are buying up the world's seed companies.

***Why do you think these large companies, which also produce pesticides and fertilizers, are interested in breeding and selling seeds? What particular types of seeds might they concentrate on producing?***

**Bill C-15**, or Plant Breeders' Rights (PBR), is one of the hottest issues now facing the Canadian government. It would allow the seed companies to patent new seeds for 18 years. This patenting right, they claim, will stimulate research in developing new varieties. Environmental and development groups express a number of fears about Bill C-15:

- Most of the genetic materials for these seeds came from the Third World in the first place. What will the Third World people get from this legislation? What will they pay?
- Who should have control over the genetic material of seeds: private corporations, or public research institutions?

***What effects can you think of that Plant Breeders' Rights might have on food production in Canada? in the Third World?***

*McNair, Westcoast Development Group, from* ***The Africa File, VIDEA***

# ACTIVITIES:

## 1. Notable Quotes

All of the following quotes express an opinion on what is wrong with the current food production system. In small groups, go over the quotes, and choose the two you agree with most, and the two you disagree with most. Be prepared to defend your choice.

a) "The real danger to sustainable food security comes from the greed of the rich and the spread of careless technology."
*(Food 2000)*

b) "Anything so complicated as a planet, inhabited by more than a million and a half species of plants and animals, all of them living together in a more or less balanced equilibrium in which they continuously use and re-use the same molecules of the soil and air, cannot be improved by aimless and uninformed tinkering. All changes in a complex system involve risk and should be undertaken only after careful study."
*(E.F. Schumacher, Small is Beautiful)*

c) ". . . isn't one basic reason for low production levels in the poor countries that so much land is in farms too small to be efficient? Aren't most small farmers just too backward and tradition-bound to respond to development programs?"
*(question posed in Food First)*

d) "In many developing countries, soaring population now has a dual effect on food balance. It increases demand as it degrades the agricultural resource base."
*(Lester Brown, World Watch)*

e) "The world is experiencing a resurgence of deadly diseases spread by insects because pesticides like DDT have been prematurely outlawed."
*(Ronald Reagan, 1980)*

f) "Clearly, something is seriously wrong down on the farm. In effect, western agriculture turns fossil and other forms of fuel into food, and in doing so has ceased to be a renewable, sustainable form of resource management."
*(John Dick, Ministry of Environment and Parks, Province of B.C., 1988)*

g) "If a country wishes to pay attention to the economic costs (and benefits) of agricultural production—and all countries do—it must deal with the environmental costs."
*(Food 2000)*

h) Rich countries and international agencies with the "aid" programmes and "development solutions" contribute to making an already calamitous situation even worse."
*(Susan George, Food for Beginners)*

## 2. What Can We Do?

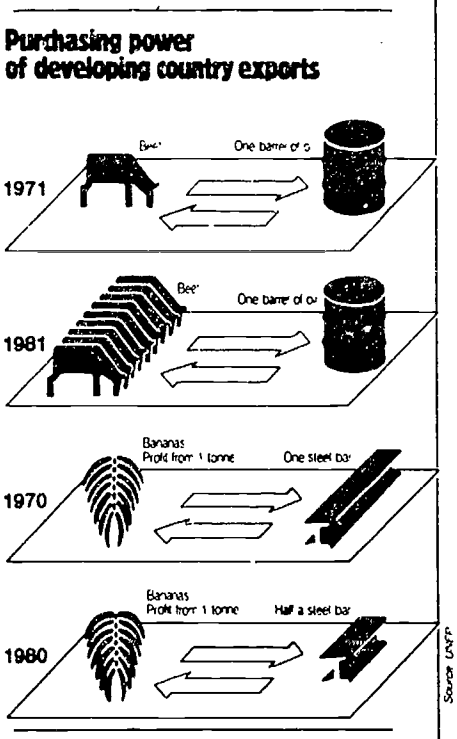
It's hard to consider an issue like world food production and environment without feeling helpless and discouraged. But small groups of concerned individuals can be a major force in changing the world. In small groups, brainstorm ideas for changing the system of world food production. Think about these things:

***What can Canada do?*** (policy towards farmers, farmland, aid policy towards developing countries)
***What can B.C. do?*** (farmland, sustainable development, education)
***What can my community do?*** (encouraging gardens, encouragement of local production, packaging laws, returnables/recyclables)
***What can I do?*** (personal food choices, support of sustainable farming practices locally and in developing countries)

When you're considering these factors, don't forget ***packaging*** of food. (Each year, every man, woman and child in the U.S. discards enough plastic to fill the average-size living room to the ceiling; Canadians are probably not far behind.) Food ***processing*** is an important factor; when food is highly processed, often the energy cost is high and the nutritional value is low. ***Transportation*** is another important issue. For every two dollars spent to grow food, we spend one dollar to move it around.

## 3. The Commodity Trap

The illustration below tells something about why developing countries, whose economies are organized around the growing of raw commodities, must devote more and more of their land to export crops, just to stay even.




You are the Minister of Trade of a small African country, dependent for its foreign exchange on cocoa and cotton, both of which have gone consistently downhill in value relative to western manufactured goods. Because of this imbalance in trade, your country has fallen into serious debt, borrowing money in the hope that the prices of cocoa and cotton would go up—something which never happened. Now you must pay enormous debt interest charges. (Last year, developing countries paid $50 billion more to the developed countries than they received in aid.) You are about to address the United Nations Conference on the subject of environmental sustainability. Write your speech, entitled

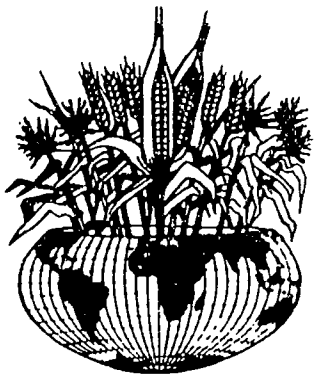
***"Environmental Enemy #1 — First World - Third World Trade Relationships"***

# 4. Environmental Cash Register

In small groups, pick a favourite food (a hamburger, a chocolate chip cookie), and list its ingredients, or components. What is the environmental cost of this food? Take on the role of "environmental detective", and list all the things you would need to know in order to assess its environmental impact. For each ingredient, you might want to consider

- where it comes from (if it comes from somewhere else, what has been displaced to grow it: rainforest? small farmers? )
- what energy would have been used to produce, process and transport it
- what relationship there is between the food value and the amount of energy and land used to produce it
- what technical questions you would like answered about its production (e.g. chemicals used to grow it)
- what economic/political questions you would like answered about its production (e.g. land ownership, prices paid to First World and Third World producers for their commodities, nutritional level of the citizens of the country which produced it)
- how the packaging affects the environment

In your group, divide up the research, and find out as much as you can about each of these issues. Put all your information together in a display, featuring a picture, model, or actual sample of your food item, and information about all of its possible environmental costs.



Graphic: *New Internationalist*

# 5. Perspectives on Land Use

When a decision is made about land use (whether to build a shopping-centre on prime farmland, whether to cut down an area of rainforest, whether to cultivate grassland), many people are often involved. These people may view the question of land use from different time perspectives.

"If only I have a good harvest this year!"

"Let's just get elected for another term, and then we'll worry about saving the world!"

"If I don't get this order filled by my deadline, I'll lose all hope of further business."

*"It took the world billions of years to produce these species; tread carefully!"*

Which of these quotes was probably uttered by a politician? an industrialist? a conservationist? a peasant farmer? What different time frame is included in each perspective?

Part of our difficulty in deciding upon a firm policy regarding ecologically sound land use may be because of the clash of these different time-frames. Either individually or in small groups, think of a contentious land use issue in your area (eg. logging, fisheries/pulp mills, use of farmland for industrial purposes or building of a dam, mining in parks, etc.) Think of what different interest-groups are actors in this land use decision. Decide what time-frame each interest-group has. Think about which groups in this decision-making process have the most power, and which groups have the most to lose. (Are these the same in this case, or different?)

a) write an essay, outlining the issue, the groups involved, their time-frames and their power. See if you can come up with solutions, ways in which the different groups might reach a compromise, or come to realize that their interests coincide.

*or*

b) in small groups, take on the roles of representatives of the different interest groups. Try to enact the discussion which these representatives might have. Stop the discussion after 10 minutes, and see if you can come up with solutions, as described in a). You might want to go on from here and choose part of your discussion and findings to present to your class.

Two good National Film Board films on this topic are *Wonderland* and *This Borrowed Land* (see page 8).

**Note: The B.C. Context:**

These figures show the total rural land and prime agricultural land converted into urban use during four periods in B.C.

| | Total Rural Land (ha) | Prime Agricultural Land (ha) |
|---|---|---|
| 1966-71: | 7,515 | 1,154 |
| 1971-76: | 7,665 | 1,690 |
| 1976-81: | 23,372 | 5,272 |
| 1981-86: | 6,778 | 1,244 |

(Environment Canada, Urbanization of Rural Land in Canada, 1981-86)

**Information Sources:** An excellent source of information about food and environment is **Food 2000**, by the World Commission on Environment and Development. (Zed Books Ltd., 1987) Further detailed information on Canada's soil situation may be obtained by contacting the Science Council of Canada for their free booklet **A Growing Concern: Soil Degradation In Canada** (100 Metcalfe St., Ottawa, Ont., K1P 5M1, (613) 995-6954). Other sources used in this Teachergram are too numerous to list, but detailed footnoting may be obtained from VIDEA (address on page 8).

# RESOURCES

## Audio-Visuals:

**The Business of Hunger** (PEMC 200984, 28 min. video, $15) Shows the relationship between multinational corporations acquiring land to grow export crops and small farmers losing their land and swelling the cities.

**Farmers Helping Farmers** (NFB 113C 0187 102, VHS, and 16 mm. film, 28 min.) Pinpoints the issue of sustainable and appropriate aid, as a small group of P.E.I. farmers fund small, self-help projects for African farmers.

**The Fragile Mountain** (NFB 106C 0182 123, 55 min.) Problems of population pressure, cultivation of marginal land, deforestation, and flood damage in Nepal.

**Hungry for Profit** (85 min. video) Current view of agribusiness in Asia Africa and Latin America (Can be shown in sections). Rental $20 from IDERA (address below).

**Man-Made Famine** (52 min. video) Excellent video showing root causes of famine and the role of women farmers in Africa. Rental $20 from IDERA (address below).

**A Question of Food** (15-min. slide-tape, filmstrip-tape, or video, plus teachers' guide and resource readings) A 1986 resource for Canadian secondary students giving overview of food problems and possible solutions. May be purchased for $20 (filmstrip), $30 (video), $75 (slide-tape) from the World Food Day Association of Canada, 255 Argyle Ave., Ottawa, Ontario K2P 1B8. (Telephone: (613) 233-9002)

**Roots of Hunger, Roots of Change** (NFB 106C 0187 141, 28 min.) The root causes of rural poverty and environmental degradation in Senegal are examined, with export cropping high on the list.

**Seeds Against the Desert** (20 min. video) On current agroforestry in Togo. A CUSO cooperant works with farmers on integrating trees with agriculture. Available for postage cost from CUSO (see address below).

**This Borrowed Land** (NFB 106C 0184 064, 29 min.) Farmers in the Peace River country—all of them women—discuss the problems of Canadian farmers, and their feelings about the proposed Site-C Dam which, if built, would flood 10,000 acres of prime farmland. Interesting questions of land-use are raised.

**Trees of Plenty** (NFB 106C 0186 134, 20 min.) Agroforestry in Nepal, Costa Rica and Nigeria.

**Wonderland** (NFB 0182 051, 27 min. 16 mm. film) Agricultural land use, urban gardening, and use of pesticides and chemical fertilizers, all set in the Fraser Valley. This film is highly recommended for B.C. students, as it discusses land use and environmental questions in the B.C. context.

## Organizations:

The following B.C. organizations all offer additional resources — print, audio-visual, speakers — on food and environment issues.

**BCTF Global Education Project**
2235 Burrard Street
Vancouver, B.C. V6J 3H9
1-800-663-9163/ 731-8121

**Canadian Catholic Organization for Development & Peace**
150 Robson Street
Vancouver, B.C. V6B 2A7
683-0281 (loc. 256)

**Canadian Red Cross Society, B.C./Yukon Division**
International Services — Susan Soux
4750 Oak Street
Vancouver, B.C. V6H 2N9
879-7551

**C.A.S.E. (Citizens' Association to Save the Environment)**
6002 West Saanich Road
Victoria, B.C. V8X 4M6
652-3487/ 652-3132

**CUSO**
2524 Cypress Street
Vancouver, B.C. V6J 3N2
732-1814

**Global Institute**
5016 1A Avenue
Delta, B.C. V4M 3P9
943-6337

**Global Village (Nanaimo)**
101 - 259 Pine Street,
Nanaimo, B.C. V9R 2B7
753-3322

**Hope International Development Agency**
210 - 6th Street
New Westminster, B.C. V3L 3A2
525-5481

**IDERA**
2524 Cypress Street
Vancouver, B.C. V6J 3N2
738-8815 (AV rental)
732-1496 (other)

**Kootenay Centre For a Sustainable Future**
Box 727
Nelson, B.C. V1L 5R4
354-4035

**Mennonite Central Committee**
P.O. Box 2038
Clearbrook, B.C. V2T 3T8
850-6639 / 533-0035

**Northwest Development Education**
Box 207
Terrace, B.C. V8G 4A6
635-2436

**OXFAM Canada**
2524 Cypress Street
Vancouver, B.C. V6J 3N2
736-7678

**OXFAM Canada - Vancouver Island Outreach Project**
205 - 620 View Street
Victoria, B.C. V8W 1J6
381-5226

**Tools for Peace**
1672 East 10th Avenue
Vancouver, B.C. V5N 1X5
879-7216

**United Nations Association (Vancouver)**
Suite #210 - 1956 W. Broadway
Vancouver, B.C. V6J 1Z2
733-3912

**United Nations Association (Victoria)**
217 - 620 View Street
Victoria, B.C. V8W 1J6
383-4635

**Victoria Y International**
880 Courtenay Street,
Victoria, B.C. V8W 1C4
386-7511

**VIDEA**
407 - 620 View Street
Victoria, B.C. V8W 1J6
385-2333

## Teachergram

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*Teachergram may be copied for classroom use.*