

# Food for Thought

A Classroom Guide to Agriculture



Mini-Kit

**Ecological Farmers Association of Ontario**



# Welcome Teachers!

The following activities are from a new classroom resource called ***Food for Thought: a Classroom Guide to Agriculture***.

Please feel free to photocopy pages for your students' use. You are also welcome to modify activities to suit the needs of your students.

## Background

***Food for Thought*** has been developed for the Ecological Farmers Association of Ontario (EFAO) with funding from Human Resources and Development Canada. EFAO members are volunteers who educate themselves and others on organic methods of farming. Through conferences, workshops, individual research and consultations, the EFAO works to enhance and share knowledge about organic farming practices both within farming circles and with consumers.

Although the focus of the EFAO is organic farming practices, the ***Food for Thought*** resource kit covers a broad range of topics. Our hope is that this kit will help to provide students with the information they need to understand the importance of all agriculture (organic or not) and to make the best choices they can as consumers. We see education in these areas as essential in moving toward a sustainable future. The activities in ***Food for Thought*** are designed to be used with students in grades one to twelve. In addition to a huge number of activities on everything from soil to ethical consumerism, the kit also includes a list of connections between the Ontario Curriculum and the activities, a glossary of terms and a resource section.

For more information about ***Food for Thought*** or about ecological agriculture, please contact:

**The Ecological Farmers Association of Ontario**  
Box 127  
Wroxeter, ON N0G 2X0  
519-335-6566  
efaod@wightman.ca  
www.efao.ca

# Isn't All Food Organic?

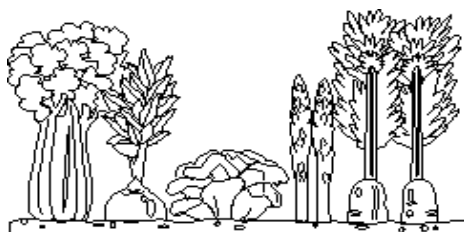
The word organic has a number of different meanings and it can be pretty confusing when it is used to describe the food we eat. If you look up “organic” in a dictionary, you will see definitions like “derived from living organisms” or “any compound containing carbon”. So, in a sense, all food *is* organic. Usually though, if the word organic is used when talking about food it is used to describe how that food has been grown. “Certified” organic means that the food has been produced using a set of guidelines approved of by the Canadian government.

Growing food is not an easy job. Farmers everywhere have to deal with some big challenges to make sure their plants and animals grow big and stay strong and healthy. They need to prevent diseases and insects that can make plants and animals sick. They need to make sure both plants and animals get enough nutrients to grow. They need to control weeds that can crowd out young plants and they need to keep animals safe from predators.

Most of the farmers in Ontario are called “conventional” farmers. They usually deal with the types of problems listed above by using “synthetic” chemicals to kill bugs and weeds, to fertilize (feed) plants, and to keep animals healthy and to help them grow quickly. “Synthetic” means that these chemicals are not found in nature. These chemicals solve many farming problems, but some people worry that they are not healthy for people or for the environment. Some chemicals can stay in the soil for a long time after their job is done. Sometimes they kill beneficial plants and insects as well as harmful ones. Sometimes they pollute our water. Some of the chemicals given to animals may end up in the meat we eat or the milk we drink.

An increasing number of people are starting to farm organically. Organic farmers are different from conventional farmers because they use nature’s ways of solving farming challenges. Organic farmers use things like compost to help keep the soil healthy. Healthy soil helps plants grow strong. They also grow a number of different types of plants and grow each type in a different place each year to make sure that nutrients in the soil don’t get used up. This also helps control insects and diseases. They use things like good bugs and natural insect repellents to control pests. Weeds are controlled by digging them up or by planting different crops at the same time to make sure there isn’t enough room for weeds. Animals spend lots of time outside, eat natural foods, and live in environments that help to keep them happy and healthy. Many organic farmers say they enjoy farming more after switching to organic methods and they are glad not to handle so many toxic materials anymore. However, some people feel that this, the organic way of farming, means more work than conventional farming and is more risky.

Any way you look at it, farming is hard but very important work!



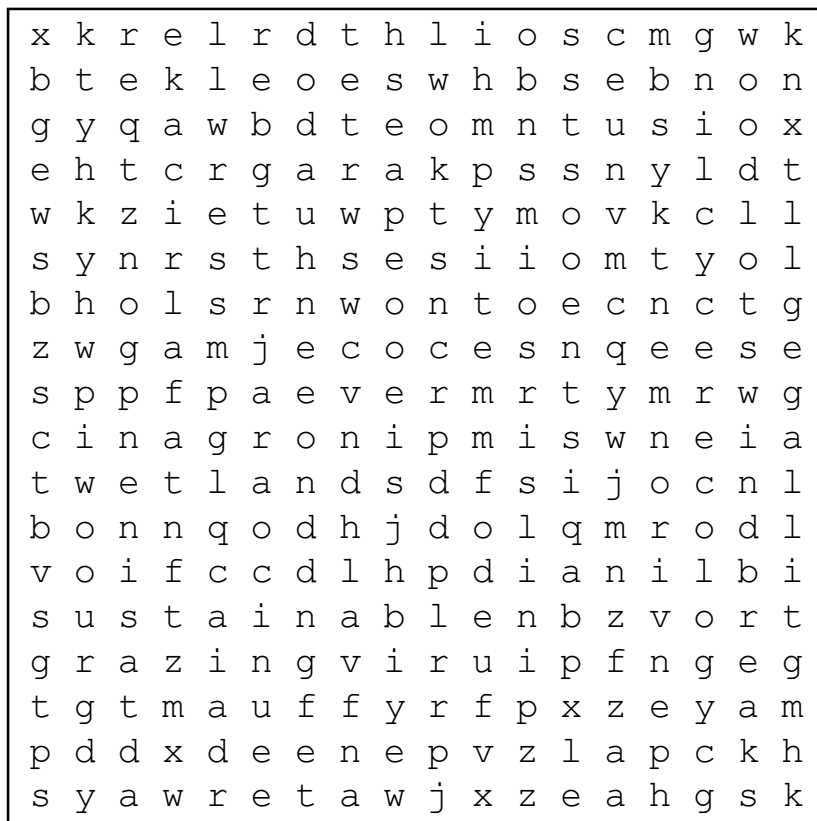
# Ecological Agriculture

Some farmers are concerned not just about finding alternatives to using chemical pesticides and synthetic fertilizers on their fields and medicines for their livestock, but are interested in the connections between all parts of their farms. Instead of looking at a farm as a series of fields or pastures, these farmers look at their farms as ecosystems. This means that features such as wood lots, waterways, wetlands, and the organisms that live in these areas are also important parts of the farm.

Some farmers take this ecological approach one step further and are trying to make their farms sustainable systems. A sustainable system uses materials in continuous cycles, uses renewable sources of energy, encourages biodiversity, and doesn't degrade the environment.

Find the words about ecological agriculture hidden in the puzzle below.

Hint: words can go up, down, or on a diagonal!



biodiversity  
compost  
connections  
earthworms  
ecology  
ecosystem

environment  
grazing  
hedgerows  
manure  
organic  
pasture

recycling  
renewable  
rotation  
soil  
sustainable  
tillage

waterways  
wetlands  
wildlife  
windbreaks  
woodlots

# Techno-Food

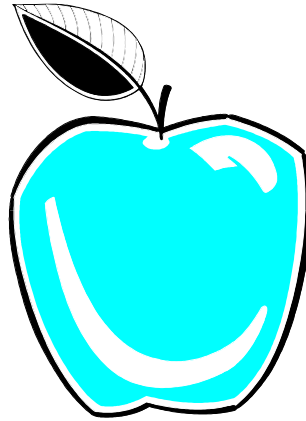
Since humans first began planting seeds to grow food, farmers have been experimenting with plants. They have saved seeds from their healthiest plants and from the plants that seem to be the most tolerant of drought and the least bothered by insects. They have even created hybrids (created by combining the pollen and seeds of different parent plants) to make new plants that are stronger, bigger and healthier than their parent plants.

In recent years, scientists have taken this one step further. Scientists have now found a way of creating new types of plants by changing the genes of the plants we know. These genes might come from another plant species or they might come from another type of organism altogether. These new plants are called Genetically Engineered varieties, or Genetically Modified Organisms (GMOs). These new plants are being made to give them built-in protection from certain types of insects or chemicals. Sometimes these new plants contain added nutrients. *Golden Rice* is an example of this type of plant. It has had vitamin A added to it. The scientists developing these new plants hope that they will make farming easier, that farmers will need to use fewer chemicals on their fields, and that they will help to find a solution to farming problems in countries where people don't have enough to eat.

Not everyone agrees that Genetically Modified Organisms are a good thing though. Some people think they are downright scary and have given them the nickname Franken-foods. People who are not in favour of GMOs argue that we don't really know if changing the genetic structure of our food is safe. They also argue that while GMOs appear to be solving some farming problems, they are also creating new problems. Because the GMOs are owned by big companies, farmers are not allowed to save seeds from their own crops. Pollen from these crops is carried by the wind to other fields and can contaminate other crops. Organic farmers can't sell their crops as organic if contamination occurs. The possibility of contamina-

# How Much Soil is There?

Soil is everywhere, isn't it? Actually, only a very small portion of the Earth can be used for growing our food. Try this "appealing" exercise to find out how much there is. (You will need an apple and a knife.)



1. Imagine that your apple is the planet Earth.
2. Cut your apple into quarters. Three parts represent all of the water on Earth; only one part is land.
3. Cut the land piece in half. One of these pieces represents deserts, mountains or land covered in ice.
4. Cut the other land piece into quarters. Three of these pieces are too hot, too rocky, too wet, or too infertile to grow food, or they are covered with roads and cities.
5. You should now be left with 1/32 of your apple. If you peel this piece of apple, the peel represents the amount of topsoil available for us to use to grow food for all the people on Earth.

Food for thought.

Activity adapted from the United States Department of Agriculture.

# Make Your Own Plant Food!

Healthy soil is full of millions of tiny creatures. Earthworms and other tiny organisms eat pieces of plants or food scraps and turn them into a natural plant food called worm compost. With the help of our friend the earthworm, you can turn your lunch or snack scraps into food for plants. Here's how:

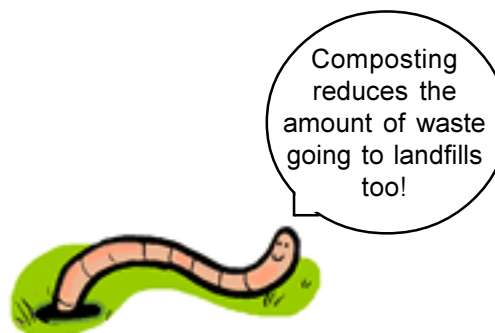
1. Start with an opaque container (does not let light in) with a lid. A medium-sized Rubbermaid container will work well for a classroom.
2. Use a drill to make holes about 0.5 centimetres big and about 10 centimetres apart in the bottom and sides of your bin.
3. Line your bin with a piece of cotton fabric or a fine screen so that your worms don't escape!
4. Fill your bin with about 20 cm of shredded newspaper. Sprinkle the paper lightly with water. The paper should be wet but not soggy.
5. Add a few tablespoons of soil or sand.
6. Add worms! Red Wigglers work well and are available at most bait shops. You will need about 50-100 worms.
7. Put the lid on and place your bin in a location where it won't be too hot or too cold. A back corner of your classroom, away from windows or heating vents, works well.
8. After a few days, begin adding food scraps to the bin. Mix the scraps into the paper rather than leaving it sitting on top.
9. Don't expect the compost to appear overnight! It will take the worms about three months to produce enough compost to use.

## Tips:

Scraps like veggies and fruit (except for citrus) work well. Avoid adding meat, dairy products or fats to your composter. The worms don't like them and they can also make your compost smelly.

To harvest your compost, gently push the contents of your composter to one side. Add fresh bedding and food scraps to the other side. Wait a few days; the worms will migrate to the new pile and you can harvest your compost!

Visit Yucky Worm World ([yucky.kids.discovery.com](http://yucky.kids.discovery.com)) for some great worm information!



# Action and Consequence

Divide into small groups. Consider one of the following situations. As a group discuss the possible actions that could be taken and the positive and negative outcomes for each action. Be prepared to share your ideas with the rest of the class.

1. You are a member of City Council for a large Ontario city. There is a proposal before council to issue a permit to build a series of new housing subdivisions and a mall on the edge of town. The development will mean that many new jobs will be created and much needed housing will be built. The proposed development is for an area that is currently classed as "Class 1" farmland (farmland with the best soil and climate conditions). Do you vote in favour or against the permit being issued? Why?
2. You just inherited a 400-hectare farm. In the middle of one of your fields is a marsh. One of your neighbours has suggested that you should drain and fill in the marsh. It would make it easier to move your tractor through the field and would increase the amount of your farmable land. What do you do and why?
3. You are a farmer who grows primarily wheat. A new genetically modified strain of wheat has recently been approved by the Canadian government. The manufacturer's salesperson that visited your farm last week said that use of this new strain could mean a substantial increase in your profits. Since last year's crop didn't do as well as you had hoped it would, this sounds great! Your neighbour, an organic farmer, is concerned that your use of a genetically modified wheat might contaminate her own organic wheat crop. What do you do?
4. While doing your weekly grocery shopping you notice that there are three types of tomatoes available for sale. One type of tomato, on special for less than half the cost of the other two, is grown in Chile. The second type is grown in British Columbia. The third, an organic tomato, comes from California. What do you buy and why?
5. You are an organic farmer raising free-range chickens. They roam in a  $\frac{1}{4}$ -hectare fenced enclosure eating grass and insects. Over the past few weeks 10 of your chickens have disappeared! You have noticed that a red-tailed hawk appears to have made a home in one of the trees near your chicken run. You try hanging fishing line across the top of your run to deter the hawk from going after your chickens, but chickens continue to disappear. How do you solve the problem?

# Action and Consequence

## Teachers' Guide

Remind students that there are no right or wrong solutions to any of these problems. If discussions seem a bit slow or wrap up too quickly, you may want to suggest some of the following points for students to consider.

### Situation 1

- Have students consider the apple exercise on page 21 of this kit.
- What would happen if the new housing development isn't built?
- Are there alternatives for where new housing could be built?

### Situation 2

- If the marsh is filled, how would wildlife be affected?
- Would drainage change if the marsh was filled? What effect would this have?
- Do farmers have a right to do what they want with the land they own?

### Situation 3

- What are the advantages and disadvantages of genetically modified organisms?
- What might the poor performance of last year's crop suggest?
- Do farmers have a right to do what they want with the land they own?
- Should farmers/landowners be responsible if actions on their land affect a neighbour?

### Situation 4

- What are the working conditions like in Chile compared to Canada and the U.S.?
- How much did it cost to transport the tomatoes and what is the environmental impact of each choice?
- Why are there no local tomatoes available? Are they in season? How might this affect your choice?

### Situation 5

- How could a hawk be beneficial to a farmer?
- Could there be another reason for the chickens disappearing?
- Are there alternatives for housing the chickens that might be in keeping with Organic practice?

# About the Ecological Farmers Association of Ontario

## **EFAO Mission and Mandate**

The Ecological Farmers Association of Ontario was established in 1979:

1. To develop and provide programs promoting the practice and advancement of ecological agriculture which maintains and enhances the health of the soil, water, crops, livestock, and the diversity of the environment.
2. To educate and increase the public's understanding of ecological methods like soil tillage, green manures, cover crops, composting, crop rotations, soil erosion control, and conservation practices by offering course, seminars, conferences, farm tours, meetings, and publishing a newsletter and by collecting, researching, and disseminating information on this topic to the general public.
3. To bring together people who are concerned about ecological agriculture so they can share experiences, support each other and create community.