
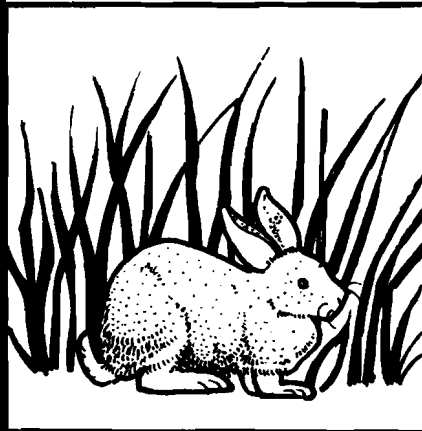


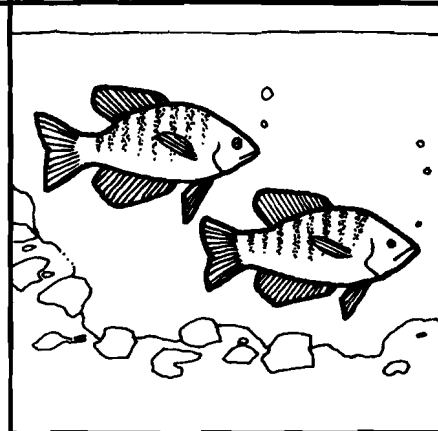
CULTURAL PRACTICES

to manage pests



IPM
made easy

Florida Cooperative Extension Service
Institute of Food and Agricultural Sciences
University of Florida, Gainesville
John T. Woeste, Dean for Extension



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Cultural Practices to Manage Pests

C. A. Boyles and P. G. Koehler

To Help You

As you use this publication, watch for words written in *italics*. Look in the glossary in the back for an explanation of these words.

Statement of Purpose

In the 1960's and 1970's, people began to worry about the harmful effects of *pesticides* and other poisons. Pesticides are needed to manage many pests of man, crops and animals. To help protect soil, water and air (the *environment*), man no longer uses some pesticides.

Integrated Pest Management (IPM) is an effective, but less harmful way of managing pests of all kinds. An IPM user looks at the whole picture — the *pest*, the *host*, and the environment. Then following IPM methods, the user chooses one or several ways to manage the pest.

Most pesticides are made from the same materials as gas and oil. Gas and oil are also used to apply pesticides. Through IPM, wiser use of pesticides helps to save energy.

The purpose of this book is for you to learn the basic ideas of IPM. It explains the basic ways man can prevent pests from becoming a problem by changing the pests' environment. You should be able to manage pests safely, with less energy and lower costs.

For more information, check these publications, available from your County Extension Agent.

**Pest Management — Where to Start —
Circular 548**

All About Pests — Circular 543

**Using Natural Enemies to Manage Pests —
Circular 545**

Spraying Away Pest — Circular 544

Plants Protected from Pests — Circular 546

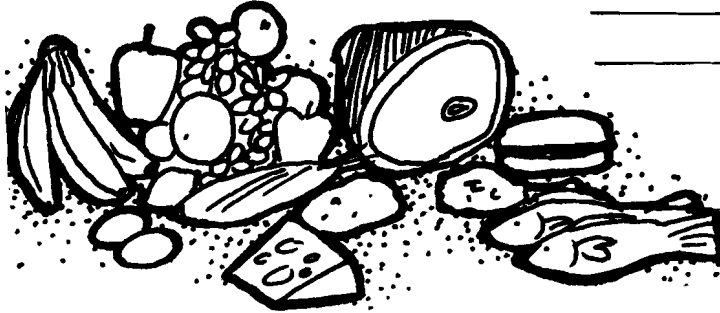
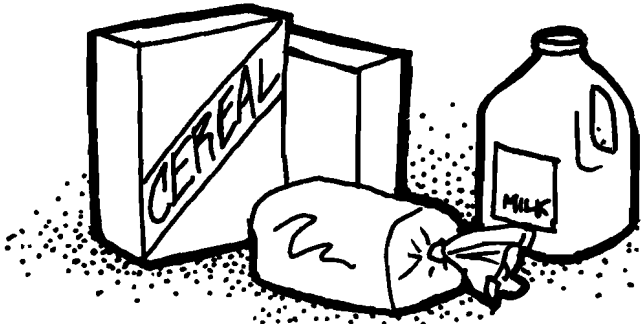
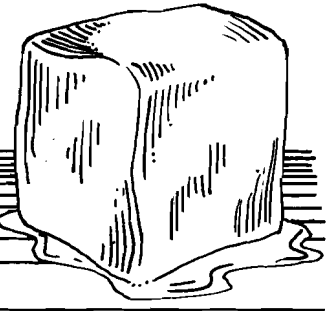
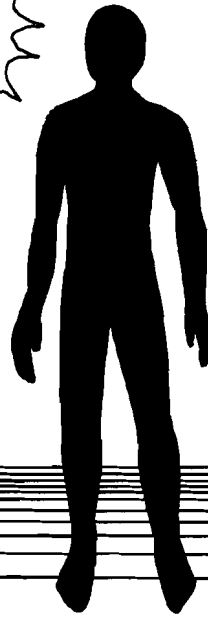
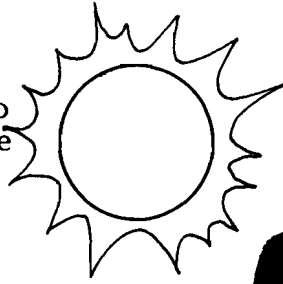
The ABC's of IPM — Circular 549

What Do I Need?

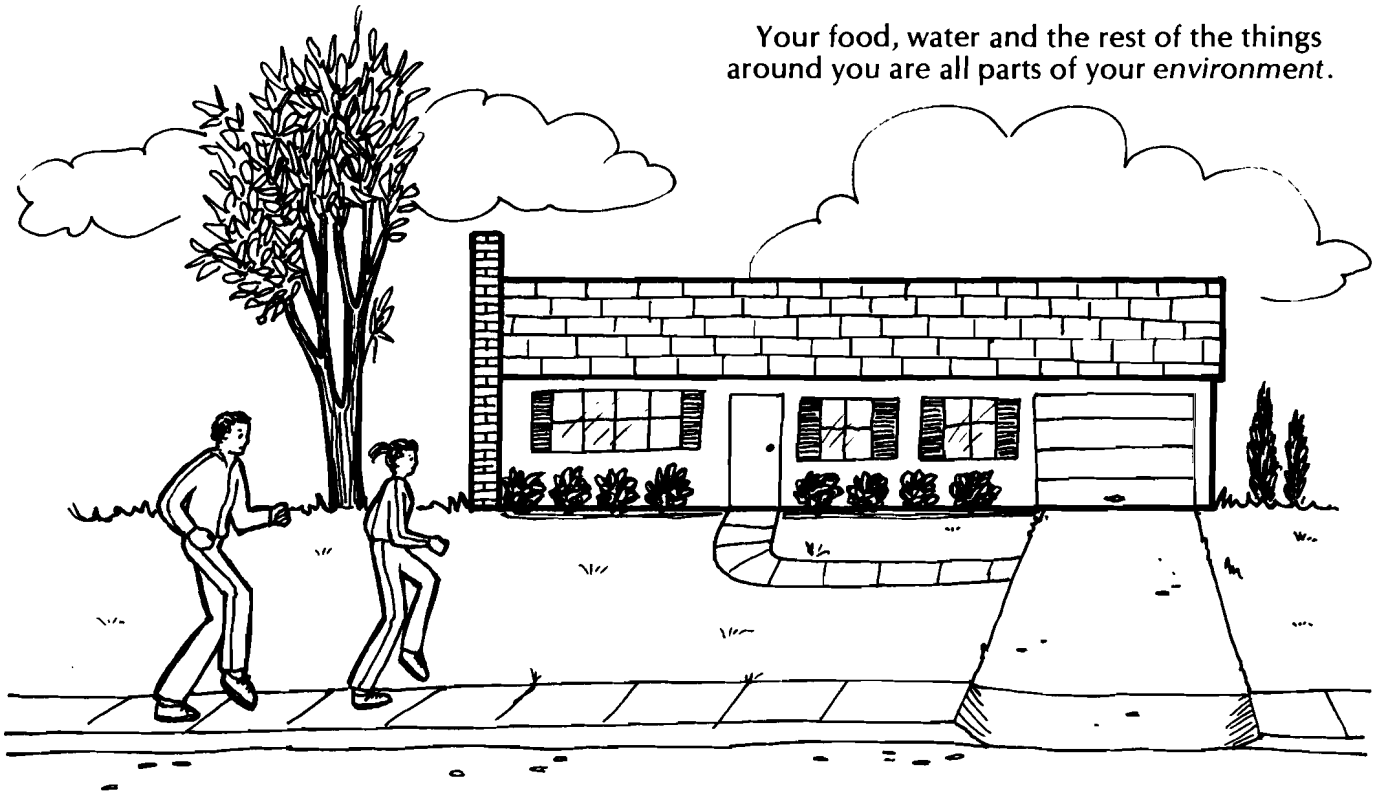
What kinds of things do you need in order to live? Water? Food? Shelter? You also have some other needs you might not have thought of.

The temperature of your surroundings must not be too hot or too cold.

The kind of food you eat is just as important as the amount.

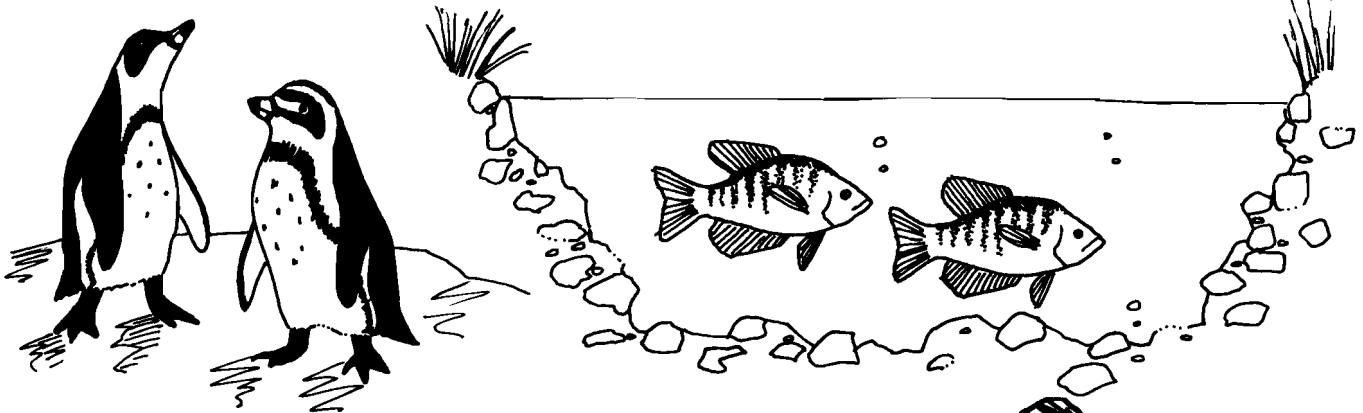


Your food, water and the rest of the things around you are all parts of your environment.

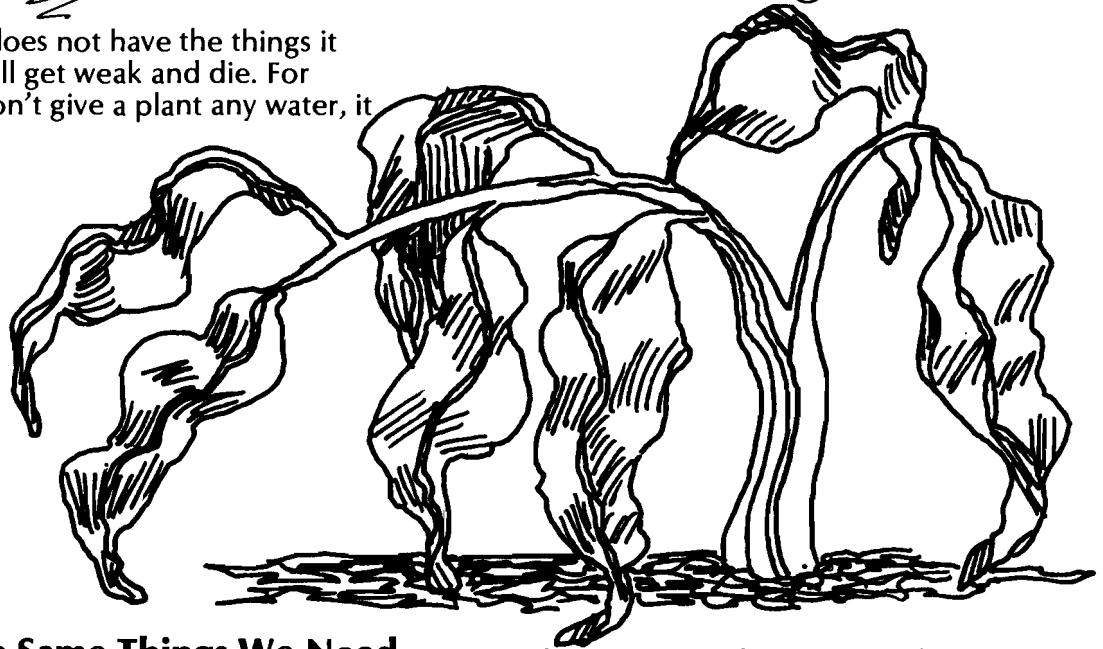


All living things have needs. Fish need water. Penguins need cold. Rabbits need green plants to eat.

Each kind of living thing lives in an area that will supply what it needs. Fish live in lakes, oceans, and rivers. Penguins live where it is cold all year round. Rabbits live in woods and fields where grass and other green plants grow.



If an *organism* does not have the things it needs to live, it will get weak and die. For example, if you don't give a plant any water, it will die.



Pests Need the Same Things We Need

Organisms that are pests have needs too. For instance, some caterpillars will eat only one kind of plant. If they don't have that kind of plant, the caterpillar will starve to death.

By changing something in a pest's surroundings, man can make it hard for some kinds of pests to live. There are lots of ways to do this. Managing pests in this way is called using cultural methods.

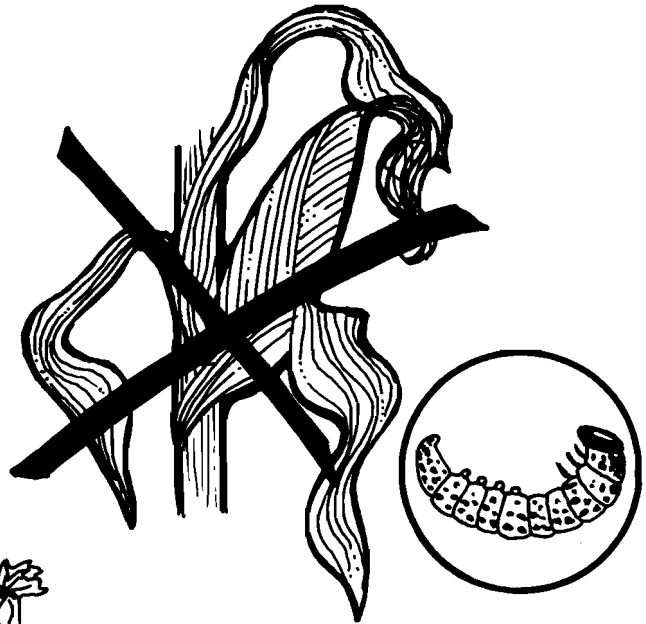
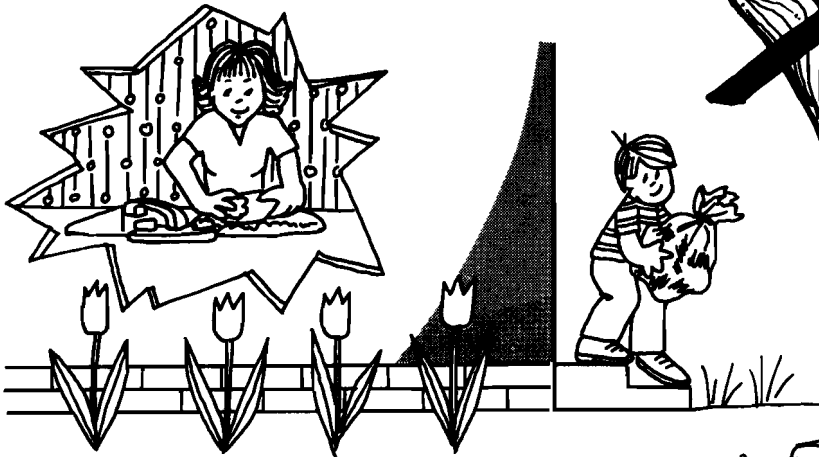


Food

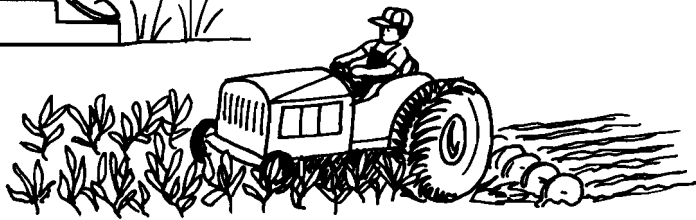
In order to live, a pest must have food. By finding ways to take away a pest's foods, man can reduce the number of pests in an area.

Sanitation. Sanitation means keeping things clean. This can reduce what pests have to eat.

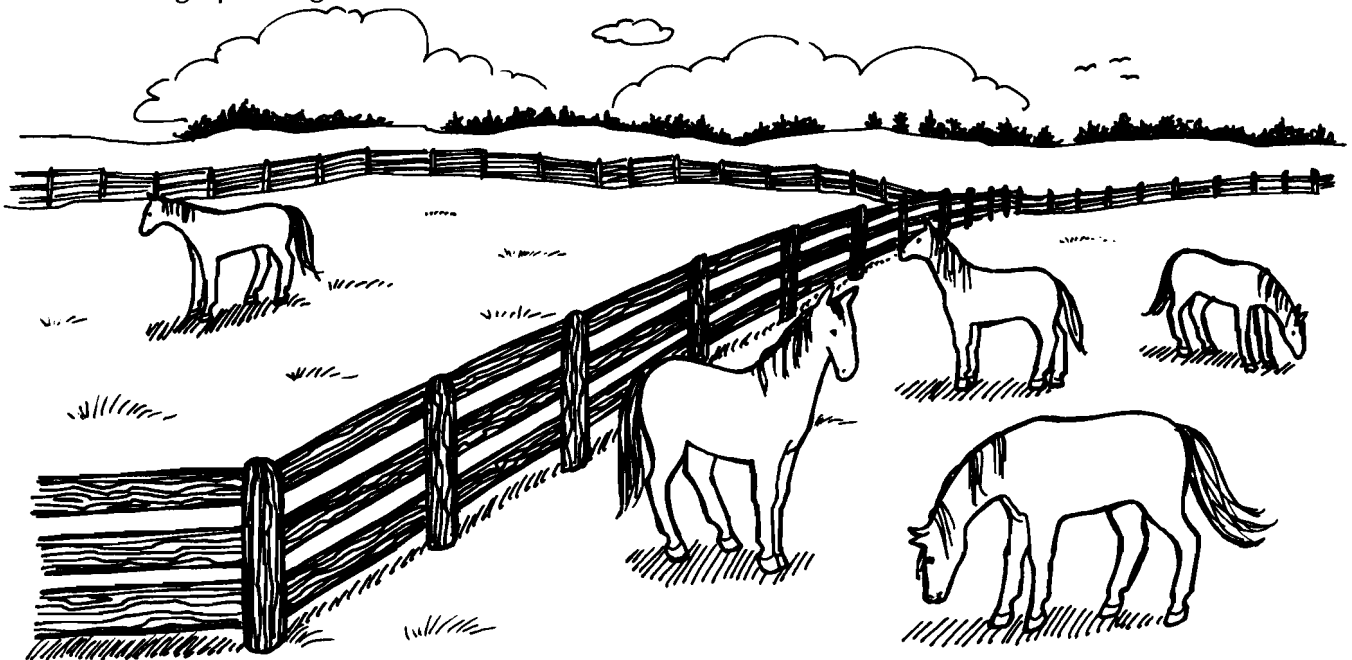
In the kitchen, sanitation includes washing the dishes and taking out the garbage. This will help reduce the number of roaches and ants because they won't have as much food to eat.



On a farm, sanitation can be used where crops are grown. After a crop is picked, the plants that are left can be plowed into the ground or removed. This can help prevent many diseases like Southern Leaf Blight of corn. Sanitation can also help prevent some insects from building up in large numbers.



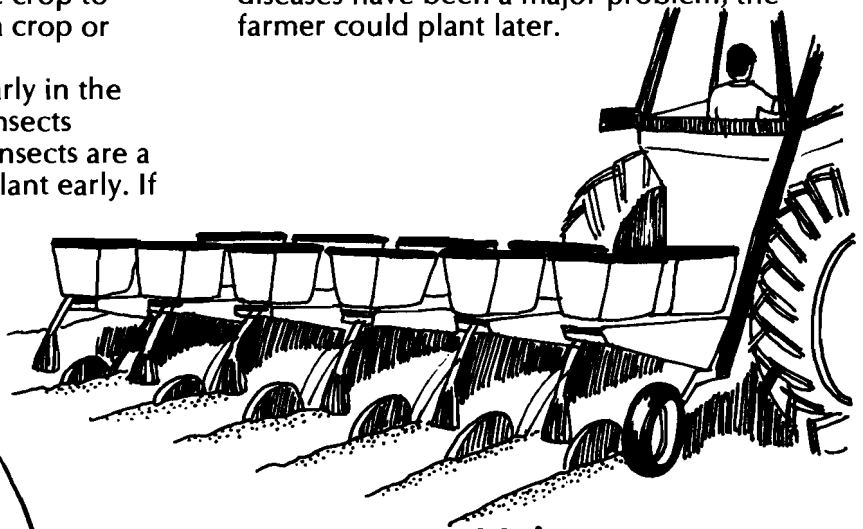
Isolation. Isolation means keeping things apart. On the farm, an animal that has a disease or pests can be kept by itself. This can help keep the disease or pests from spreading to other animals.



Timing. Timing means changing the time when you plant a crop or the time when you irrigate or do something else to the crop to make it hard for a pest to damage a crop or animal.

For example, if you plant corn early in the spring, there may not be as many insects around to damage the corn. So, if insects are a major problem, the farmer could plant early. If

you plant corn late, you may not have as much of a problem with seedling diseases. So, if diseases have been a major problem, the farmer could plant later.



Moisture

Pests, like other organisms, need moisture to live. If an area is too dry or too wet, some organisms will not do well there.

You can affect how well a pest grows in an area by changing the moisture. For example, some plant diseases are very damaging if an area around the plant is damp. If you wet the leaves when you water the plant, the disease organisms will grow well.

If you wet just the ground around the plant, the area will not be as damp. The disease organisms will not grow as well.

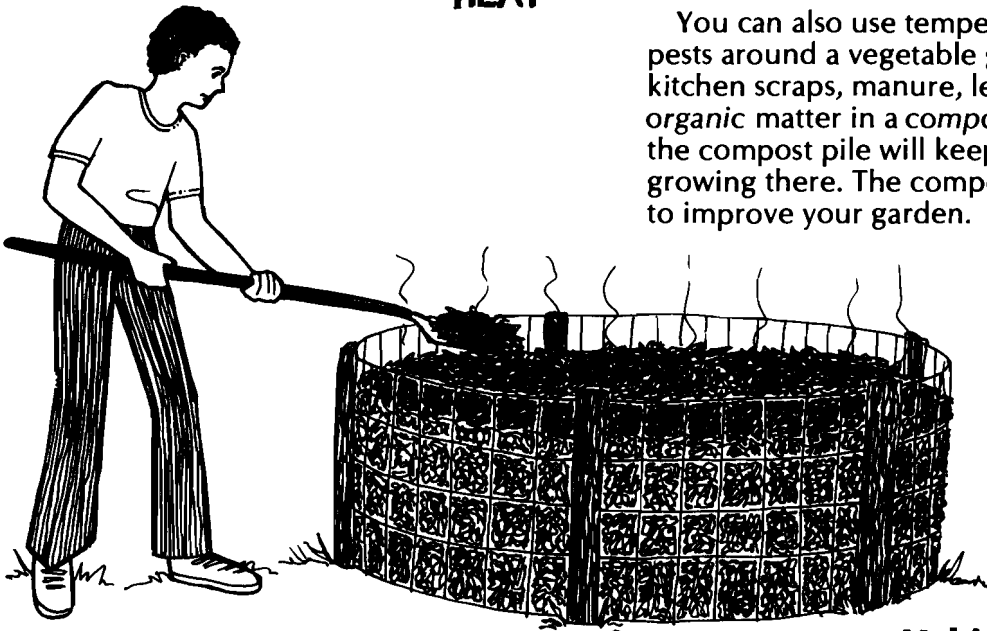
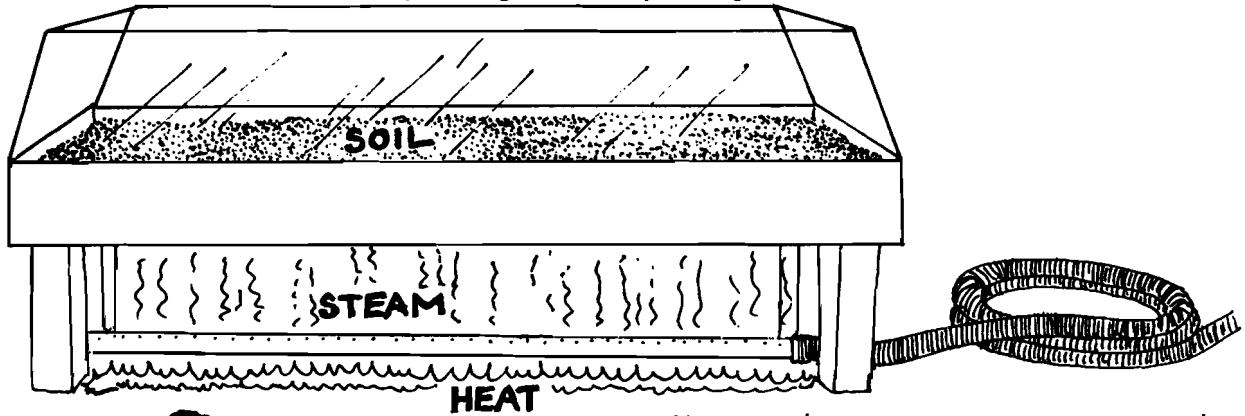
If you must wet the leaves, you can water in the morning or the middle of the day. This gives the leaves a chance to dry quickly. This is related to timing.



Temperature

You can help manage pests by changing the temperature where they live. This is often done to soil. Before planting, the

soil can be heated to a high temperature. Soil is usually *sterilized* with steam. These high temperatures can kill many pests in the soil. If these pests weren't killed, they might damage plants grown in this soil.

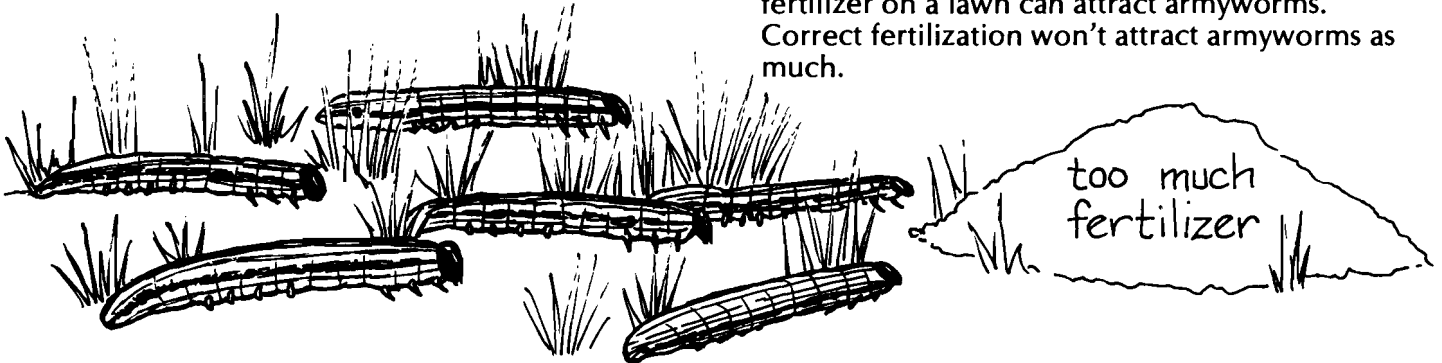


You can also use temperature to control pests around a vegetable garden. You can place kitchen scraps, manure, leaves, and other *organic* matter in a *compost* pile. The heat in the compost pile will keep fly *maggots* from growing there. The compost can be used later to improve your garden.

Habitat

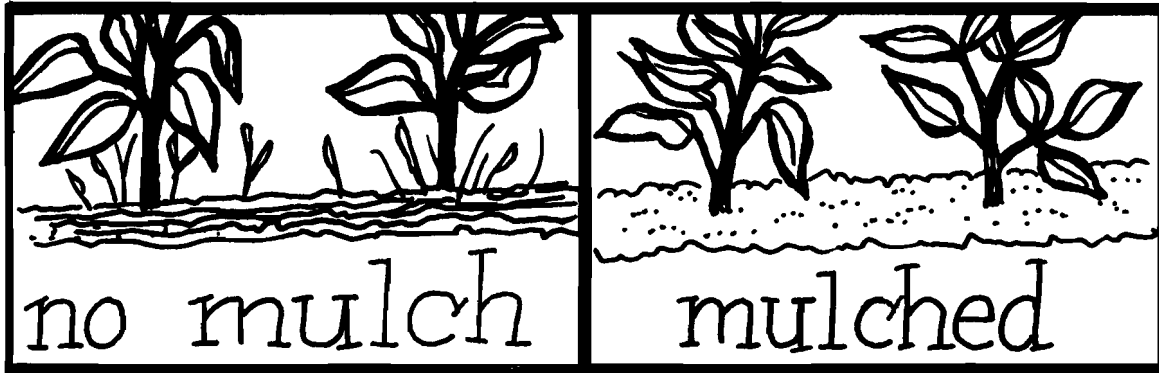
There are many ways to change a pest's *habitat*.

Fertilization. Using fertilizer correctly can reduce pest problems. Too much fertilizer can increase pest problems. For example, too much fertilizer on a lawn can attract armyworms. Correct fertilization won't attract armyworms as much.



Mulching. This means placing a layer of material on the ground around plants. Sawdust, cypress bark, pine needles, and leaves are some things that can be used as mulches. Mulch can

help keep weeds from growing. It also helps save water. Less water evaporates from mulched plants.



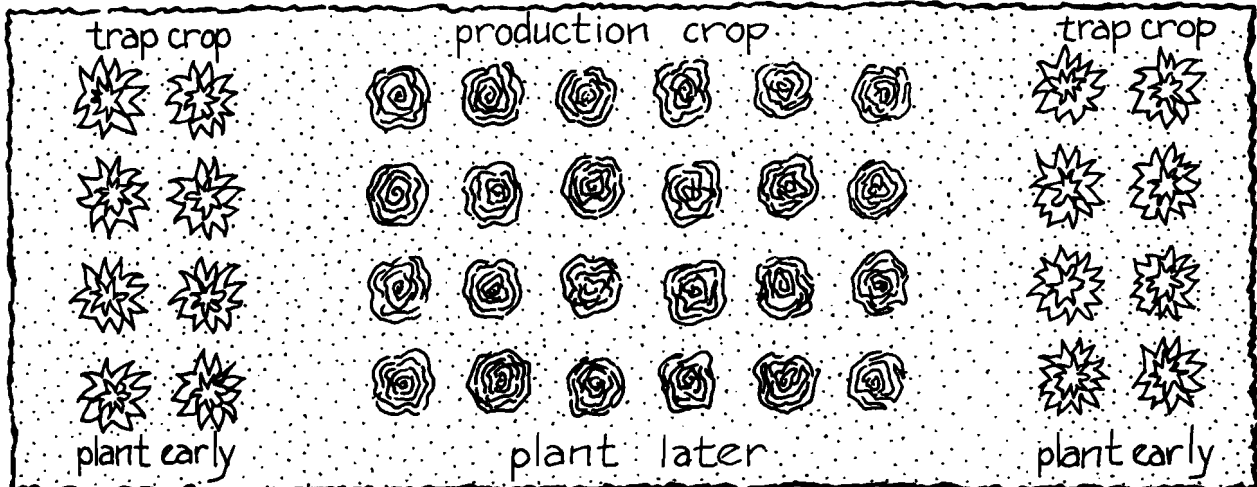
Rotation. Rotation means changing the crops you plant from year to year. You might plant corn one year, soybeans the next year, and alfalfa the next. This helps keep large numbers

of any pest from building up because most corn pests are not the same as soybean or alfalfa pests.



Trap Crops. Trap crops are plants that attract pests away from the *desired* crops. For example, small plots of cotton planted early in the year will attract boll weevils. These small

plots are the trap crops. You can then spray the trap crop to kill the boll weevil. Later, when you plant cotton for production, it should not have as many boll weevils.



Management of pests in these ways is called cultural management. Some agricultural practices change the pests' environment in several ways. An example would be *cultivation* for weed control. Turning the soil (and weeds) changes the moisture content and habitat of the weeds. This kills many weeds. Several cultural methods can be used together. For instance, timing, sanitation, and mulching may be used together to reduce pest problems.

These cultural methods have been used as long as man has grown crops. However, when the use of pesticides increased, the use of cultural methods decreased. But now with IPM programs, cultural methods are again being used.

Cultural Methods Save Energy

Using cultural methods may save time and energy. For example, you may not have to use as much fertilizer on your plants if you use cultural methods.

By mulching, you may also save fertilizers from being washed too deep in the soil, thus allowing plant food to stay where plant roots are.

Proper watering of plants may reduce energy use, too. It may cut down on the use of electricity needed to pump the water.

Think about pests on your crop or livestock. Can you think of other cultural methods you can use that would save energy?

How Cultural Methods Are Used in IPM

These cultural methods are important tools in an Integrated Pest Management program.

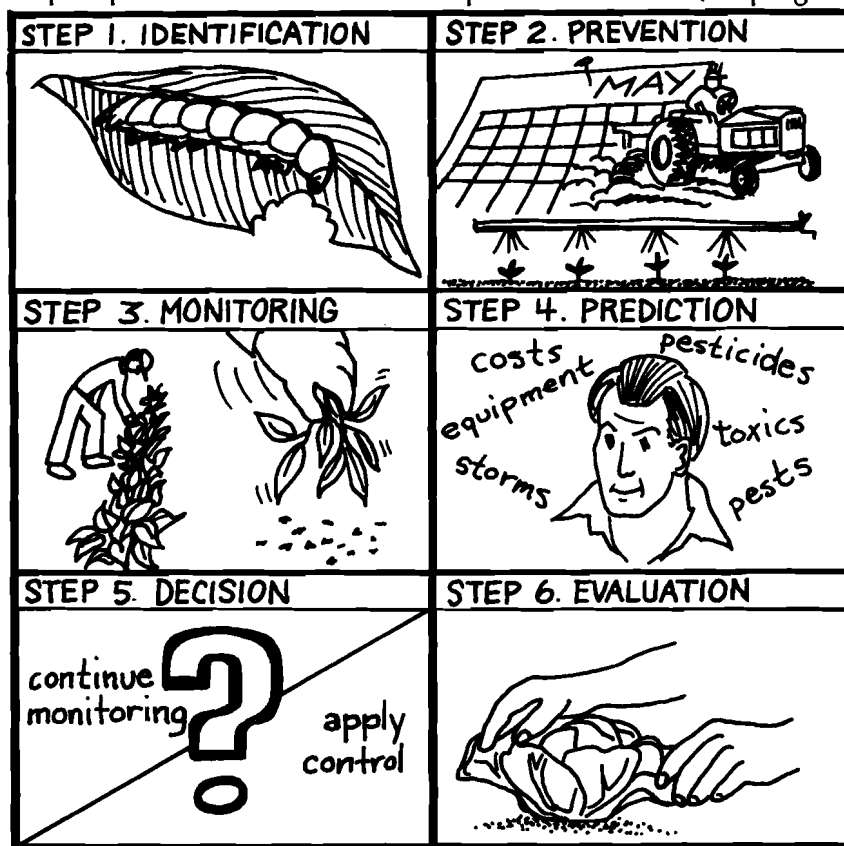
You learned about the IPM tools in **Pest Management — Where to Start:**

- Mechanical methods
- Physical methods
- Regulatory methods
- Pesticides
- Cultural practices
- Host resistance methods

You also learned about the six-step IPM process:

- Step 1. Identification
- Step 2. Prevention
- Step 3. Monitoring
- Step 4. Prediction
- Step 5. Decision
- Step 6. Evaluation

Cultural practices are part of Step 2, Prevention. All of the methods we have talked about can be used to help prevent a pest problem from developing.



Using Tools Together

When you use an IPM program, you need to know how the different tools of pest management will affect each other. For example, using cultural methods may help

natural enemies that are part of biological control. Or, if you use cultural methods, you may change the way you use pesticides. You may not need to use pesticides as often. Pesticides then work better when you do need to use them.

Glossary

1. Compost — Plant materials, like grass clippings and vegetable trimmings from the kitchen. To make a compost, make a pile of these things where it will be out of the way and let it rot. Then add it to the soil in the garden.
2. Cultivation — Plowing or tilling to improve soil for raising crops.
3. Desired — Wanted; wished for.
4. Environment — Surroundings, including anything that affects man, other animals or plants.
5. Evaporates — Changing from a liquid to a gas or vapor such as water to steam.
6. Habitat — Where a plant or animal lives. Examples: field, a forest, or the ocean.
7. Host — Any plant or animal that shelters or gives a home to a parasite or other natural enemy.
8. Maggot — The young or immature form of a fly. Maggots look like short, fat worms.
9. Organic — Having to do with plants or animals. Containing carbon.
10. Organisms — Living things; includes all animals and plants.
11. Pest — An organism that hurts something or is bad for something that belongs to man. A pest may be an insect, a plant, an animal, a disease, or any other kind of organism.
12. Pesticides — Poisons that are used to kill organisms that man regards as pests. Insecticides kill insects. Herbicides kill plants. Fungicides kill fungi.
13. Sterilized — Made free from infecting agents or organisms. To make barren or without pests, as to sterilize soil.

This publication was promulgated at a cost of \$732.58, or 30 cents per copy, to inform Florida residents about IPM (Integrated Pest Management). 5-2.4M-83

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