Chapter 12 Outline

Food Security and Nutrition

A. Global food production has stayed ahead of population growth, but one in six people in developing countries cannot grow or buy the food they need.

B. Some people cannot grow or buy enough food to meet their basic energy needs and to get enough protein and other key ingredients. People need fairly large amounts of macronutrients (protein, carbohydrates, fats) and smaller amounts of micronutrients (vitamins such as A, C, E) and minerals (iron, iodine, calcium).
   1. Chronic undernutrition is suffered by those who can’t grow or buy enough food. Children in this group may have stunted growth, mental retardation, and be susceptible to infectious diseases.
   2. Malnutrition results from insufficient protein and other key nutrients.

C. One in three people has a deficiency of one or more vitamins and minerals, especially vitamin A, iron, and iodine.
   1. Blindness due to a vitamin A deficiency occurs in 250,000 children under 6 each year and up to 80% die within a year.
   2. Iron is needed to prevent anemia.
   3. Iodine is needed for proper thyroid function, to prevent brain damage or formation of a goiter.

D. Droughts, floods, wars, and other catastrophic events can lead to severe food shortages that cause mass starvation, many deaths, and economic and social disruption.

E. Overnutrition and lack of exercise can lead to reduced life quality, poor health, and premature death.

Food Production

A. Food production from croplands, rangelands, ocean fisheries, and aquaculture has increased dramatically.
   1. Croplands produce 77% of the world’s food.
   2. Rangelands produce meat, about 16% of the world’s food.
   3. Oceanic fisheries supply 7% of the world’s food.
   4. All three systems have increased their food yields since 1960.
      a. Technological advances have increased food production or harvesting.
      b. More sophisticated farming techniques have been developed.
      c. Expanded use of inorganic chemical fertilizers, irrigation, pesticides, high-yield crops have developed.
      d. Intense farming methods, such as densely populated feedlots and enclosed breeding/growing pens, and aquaculture ponds or ocean cages have been implemented.

B. Wheat, rice and corn provide more than half of the calories in the food consumed by the world’s people.

C. About 80% of the world’s food supply is produced by industrialized agriculture.
   1. Industrialized/high-input agriculture produces large quantities of single crop or livestock animals.
      a. This uses much energy, water, fertilizers and pesticides. Fossil fuels
      b. It is practiced on 25% of cropland, mostly in developed countries.
      c. Plantation agriculture is industrialized agriculture, primarily in tropical developing countries.
      d. Another example of industrialized agriculture is feedlots, which support rapid growth of fattened animals for meat.

D. The United States uses industrialized agriculture to produce about 17% of the world’s grain in a very efficient manner.

E. Many farmers in developing countries use low-input agriculture to grow a variety of crops on each plot of land.
   1. Traditional agriculture provides about 20% of the food supply and is practiced by 42% of the world’s people.
      a. Traditional subsistence agriculture typically supports a single farm family’s survival.
      b. Traditional intensive agriculture strives to feed not only the farmer’s family, but also additional food to sell as income. By using fertilizer, irrigating, etc., a higher yield is sought.
      c. Some traditional farmers use four types interplanting to grow several crops on the same plot of land simultaneously.
**Soil Erosion and Degradation**

A. Soil erosion lowers soil fertility and can overload nearby bodies of water with eroded sediment.

1. Water, wind and people cause soil erosion; soil components are moved from one place to another.
2. Depletion of plant nutrients in topsoil, through farming, logging, construction, overgrazing, burning vegetation, leads to loss of soil fertility.
3. Eroded soil becomes sediment in surface waters where it pollutes water, kills fish, clogs irrigation ditches, channels, reservoirs and lakes.
4. Soil erosion can occur through sheet erosion, rill erosion, and gully erosion.

B. Soil is eroding faster than it is forming on more than one-third of the world’s cropland.

1. A joint UNEP and World Resources Institute report estimated that topsoil is eroding faster than it is replenished on 38% of the world’s cropland. Worldwide erosion causes damage of at least $375 billion per year.

C. Soil erodes faster than it forms on most U.S. cropland, but since 1985, has been cut by about 40%.

D. About one-third of the world’s land has lower productivity because of drought and human activities that reduce or degrade topsoil.

1. Desertification occurs when production falls by 10% or more through a combination of natural causes (drought) and human activities. It may be moderate, severe or very severe, only in extreme cases does it lead to a desert.
2. The Dust Bowl of the 1930’s resulted in Congress passing the Soil Erosion Act in 1935 and established the Soil Conservation Service (a part of the USDA). Great Plains has major erosion.
3. Prolonged droughts can’t be controlled, but the consequences can be reduced by reducing overgrazing, deforestation, and destructive forms of planting, irrigation, and mining.
4. Restoration of these areas includes planting trees and grasses to anchor soil and hold water.

E. Repeated irrigation can reduce crop yields by causing salt buildup in the soil and waterlogging of croplands. Salinization eventually makes land unproductive.

1. 40% of the world’s food is produced on 20% of the cropland that is irrigated.
2. Salts left behind when irrigation water is not absorbed into the soil can be left in the topsoil. This is called salinization.
3. Salinization has reduced yields on 20% of the world’s cropland.
4. Waterlogging occurs when saline water (from irrigation) envelops the deep roots of plants. This saline water accumulates underground and raises the water table.

**Sustainable Agriculture through Soil Conservation**

Soil conservation seeks ways to reduce soil erosion and restore soil fertility, mostly by keeping the soil covered with vegetation.

A. Modern farm machinery can plant crops without disturbing the soil.

1. Conventional-tillage farming means plowing in the fall and leaving the soil bare all winter, making it vulnerable to wind and erosion.
2. Conservation-tillage farming disturbs the soil as little as possible while planting.
3. Minimum-tillage farming allows the soil to rest over the winter. The subsurface soil is broken up and loosened but the topsoil is not turned.
4. No-till farming uses special machines to inject seeds, fertilizers, and herbicides into thin slits in the unplowed soil and then, cover the slits.
5. About 40% of U.S. soil used conservation tillage in 2004. The USDA estimates that using it on 80% of cropland would reduce soil erosion by 50% or more.

B. Terracing, contour planting, strip cropping, alley cropping, and windbreaks are additional methods that can reduce soil erosion.

1. Terracing converts the land into a series of broad, nearly level terraces that run across the contour of the land. This method holds water for crops and reduces runoff.
2. Contour farming plows and plants crops in rows across the slope of the land, not up and down. Each row acts as a small dam.
3. Strip cropping plants alternating strips of a row crop (corn/cotton) with another crop that completely covers the soil (grass/legume). Runoff is caught by the cover crop. 1) Reduces erosion 2) Increases soil fertility
4. Plant cover crops like rye or alfalfa after harvest.
5. Leave crop residues on the land after harvest.
6. Alley cropping/agroforestry plants several crops together in strips/alleys between trees or shrubs, which may provide fruit or fuelwood.
   a. The shade of the trees/shrubs reduces evaporation and helps retain soil moisture.
   b. Fruit, fuelwood, and trimming can be used as mulch.
7. Windbreaks or shelterbelts of trees reduce wind erosion, help retain soil moisture, provide fuelwood, and support bird and insect habitats.

C. Fertilizers can help restore soil nutrients, but runoff of inorganic fertilizers can cause water pollution.
1. Organic fertilizer can be used to restore lost plant nutrients.
   a. Animal manure improves soil structure, adds nitrogen, and stimulates soil bacteria and fungi.
   b. U.S. Department of Agriculture researchers are evaluating the value of burnt chicken wastes that are rich in phosphorus as an organic fertilizer.
   c. Green manure plows freshly cut or growing green vegetation into the soil to increase organic matter and humus.
   d. Microorganisms in the soil break down organic matter in leaves, food wastes, paper and wood to form compost.
2. Crop rotation plants different crops to replenish the soil, especially if a previous crop has depleted the soil of certain nutrients.
3. Inorganic fertilizers, used with organic fertilizers, can restore soil fertility.
   a. Commercial inorganic fertilizers contain nitrogen, phosphorus, and potassium.
   b. There are advantages and disadvantages to the use of inorganic fertilizers (figure 14-15).

The Green Revolution and its Environmental Impact

A. Since 1950, high-input agriculture has produced more crops per unit of land. The following steps describe this green revolution:
1. Key grain crops of plant monocultures are bred or enhanced to produce high-yield varieties.
2. High-yields are sustained by using large amounts of fertilizer, water, and pesticides.
3. The number of crops grown per year is increased through multiple cropping.
4. There have been two green revolutions. The first revolution occurred in developing countries between 1950-1970. The second revolution has occurred since 1967 in developing countries with enough rain and/or irrigation capability.
   a. Fast-growing dwarf varieties of rice and wheat, especially for tropical and subtropical climates, have been introduced.
   b. Use of pesticides, water, and fertilizers, food yields have increased.
   c. Several crops can be planted during one year increasing food yields further.
   d. Such revolutions use machinery and fossil fuel to plant and harvest.

B. Lack of water, high costs for small farmers, and physical limits to increasing crop yields hinder expansion of the green revolution.

C. Modern agriculture has a greater harmful environmental impact than any human activity.

D. Loss of a variety of genetically different crop and livestock strains might limit the genetic raw material needed for future green and gene revolutions.

The Gene Revolution

A. To increase crop yields, we can mix the genes of different organisms. Farmers and scientists have used crossbreeding and artificial selection to develop genetically improved varieties of crop strains.
1. The current third green revolution – a gene revolution – involves using genetic engineering to develop improved strains of crops and livestock.
2. Genetic engineering, which splices a gene from one species into the DNA of another species, is creating improved strains of crops and livestock animals.
   a. This process takes 6 times as much time as traditional methods to develop a new crop.
   b. It cuts costs.
   c. It allows for all kinds of potential product development.
   d. More than 2/3rds of food products on the U.S. shelves contain ingredients made from genetically engineered crops.
   e. Scientists are experimenting with cell cultures to produce a variety of food and medical products in fermentation tanks or bioreactors.
B. Genetic engineering holds much promise but has some disadvantages. GMF (genetically modified food) has generated much controversy and fear.
1. GMF may possibly solve the world’s food problems.
2. Advantages and disadvantages of GMF include the following: (figure 13-19)
3. The Ecological Society of America recommended more caution in releasing genetically engineered organisms into the environment.
4. Several scientists feel that genetic engineering of food is based on two faulty assumptions: that world hunger is caused by a global shortage of food, and that genetic engineering is the only and best way to increase food production.
C. There is controversy over legal ownership of genetically modified crop varieties and whether genetically modified foods should be labeled.
1. Patenting the seeds of GMFs has been subject to criticism, especially by farmers in developing countries.
2. GMFs are so labeled in Japan, Europe, South Korea, Canada, Australia and New Zealand.
3. The U.S. Dept. of Agriculture opposed such labeling.

Producing More Meat
A. About half the world’s meat is produced by livestock grazing on grass and half is produced under factory-like conditions.
1. Meat and meat products are good sources of high-quality protein.
2. Animals are also fed antibiotics and steroids.
3. Industrialized animal production accounts for about 43% of the world’s beef production, half of pork production, 68% of the egg production, and almost three-fourths of the world’s poultry production.
4. In the U.S. meat production consumes 70% of the country’s grain.
5. 80% of the world’s soybean production is fed to livestock.
6. Industrial livestock production is one of the world’s biggest consumers of water.
7. Oil is also an essential ingredient in meat production. One calorie of grain-fed beef takes 33% more fossil fuel energy than producing one calorie of potatoes.
8. Cattle and dairy cows produce 16% of the world’s emission of the greenhouse gas methane.
10. Meat produces large amounts of animal waste and pollutes the environment.
11. Factory farms provide ideal conditions for organisms that cause avian flu and mad cow disease.
12. Raising cattle on rangelands and pastures is less environmentally destructive than raising them in feedlots.
B. Eating more chicken and farm-raised fish and less beef and pork reduces the harmful environmental impacts of meat production.
   - Fish → birds → pork → beef
   1. Animal protein production uses about 38% of the world’s grain harvest.
   2. The efficiency of converting grain into animal protein is shown in Figure 13-22.
C. The number of people the world can support depends mostly on their per capita consumption of grain and meat and how many children couples have.

Catching and Raising More Fish and Shellfish
A. After spectacular increases, the world’s total and per capita marine and freshwater fish and shellfish catches have leveled off.
1. Fisheries is the third major food-producing system.
2. About two-thirds of the annual commercial catch of fish and shellfish comes from the ocean. The rest comes from use of aquaculture to raise marine and freshwater fish like livestock in ponds and underwater cages.
3. Figure 13-23 shows the effects of the global efforts to boost the seafood harvest.
4. Today, 75% of the world’s fisheries are being fished at or above their sustainable capacity.
5. A 1995 study suggested that some depleted fish stocks could recover with careful management.
B. Government subsidies given to the fishing industry are a major cause of overfishing.
1. Subsides include fuel tax exemptions, price controls, low-interest loans, and grants for fishing gear.
2. Critics suggest shifting some of the money to buying out some fishing boats and retraining the crews.
C. Raising large numbers of fish and shellfish in ponds and cages is the world's fastest growing type of food production. Aquaculture is the process of raising fish and shellfish for food like crops, rather than harvesting them in the seas and inland waters.
1. Fish farming cultivates fish in a controlled environment and harvests them at a particular size.
2. Fish ranching holds species in fenced-in areas during the time they live in salt water and then releases them to harvest as they spawn in fresh water.
3. The advantages and disadvantages of aquaculture are shown in Figure 13-24.
4. Farm raised fish such as salmon have been found to contain more toxins than wild-caught fish.
5. Figure 13-25 lists some ways to make aquaculture more sustainable.

**Solutions: Moving Toward Global Food Security**
A. People in urban areas could save money by growing more of their food; up to 70% of the world's food is wasted.
B. Governments can give farmers subsidies to encourage food production or let farmers and fishers respond to market demand.
1. Price controls keep prices artificially low.
2. Farming subsidies and tax breaks encourage food production.
3. Allow market demand to determine prices. In this situation, poor people would suffer from likely rising food prices. It is felt that this should be coupled with increased aid for the poor and lower middle class.
C. We can increase global food supply by slowing population growth, sharply reducing poverty, and slowing environmental degradation of the world’s soils and cropland. According to Lester R. Brown, president of the Earth Policy Institute, the world needs to
1. Slow population growth
2. Drastically reduce poverty
3. Reduce topsoil erosion losses to below the natural rate of new topsoil formation
4. Halt desertification that is engulfing cropland
5. Eliminate overgrazing that is converting grassland to desert
6. Arrest the fall in water tables by slowing the removal of water from aquifers so they can be recharged by precipitation
7. Protect prime cropland from being converted to urban and other nonfarm uses
8. Reduce the rate of global warming that threatens to reduce harvests in some areas
9. Mount a crash program to stem the HIV epidemic in Africa.

**Protecting Food Resources: Pest Management**
A. Organisms found in nature control populations of most pest species as part of the earth’s free ecological services. A pest is any species that competes with us for food, damages lawns and gardens, destroys wood, spreads disease, or invades ecosystems.
1. Worldwide, only about 100 species of plants, animals (mostly insects), fungi, and microbes cause about 90% of the damage to the crops we grow.
2. In natural ecosystems, natural enemies (organisms) control populations of about 98% of potential pest species.
3. Clearing forests, grasslands, and spreading pesticides upsets the checks and balances of natural populations.
B. We use chemicals to repel or kill pest organisms as plants have done for millions of years. To help control pest organisms we have developed a variety of pesticides.
1. Common pesticides include insecticides, herbicides, fungicides, and rodenticides. Weeds, fungi, rodents
2. Plants have produced chemicals to ward off, deceive or poison herbivores for millions of years and is a co-evolutionary process.
3. People used sulfur, arsenic, lead and mercury to kill insects on crops, but abandoned this practice in the 1920s when people were also poisoned.
4. The first generation natural insecticides were nicotine sulfate, pyrethrum, and rotenone.
C. Chemists have developed hundreds of chemicals that can kill or repel pests. - Inorganic - Not natural
1. In 1939, Paul Muller discovered DDT was a potent insecticide. It was the first of the second-generation pesticides.
2. Since 1970 chemists have returned to natural repellents and poisons produced by plants.
3. Since 1950, pesticide use has increased 50-fold and their toxicity has increased by 10-100 times.
4. About 1/4th of pesticide use is for non-agricultural uses in the U.S.
5. Children playing on lawns where pesticides have been used are particularly vulnerable to them.
6. Broad-spectrum pesticides are toxic to many species. Narrow-spectrum pesticides are effective against a selectively defined group of organisms.
7. Pesticides vary in their persistence, the length of time they remain deadly in the environment.

D. Modern pesticides save lives, increase food supplies, increase profits for farmers, and are safe if used properly.
   1. Some important benefits of modern chemicals, shown in Figure 13-28, are:
      a. they save lives (an estimated 7 million)
      b. they increase food supplies (about 55% of the world’s potential food supply is lost to pests)
      c. they increase profits for farmers
      d. they work fast
      e. when used properly, their health risks are very low compared to their benefits.
   2. Newer pesticides are safer and more effective than many older pesticides.
   3. Botanicals and microbotanicals are the basis for a number of new pesticides.
   4. Genetically engineered pest-resistant crops could also reduce the use of toxic insecticides.

E. Scientists work to develop more efficient and safer pesticides but through Coevolution pests find ways to combat the pesticides we throw at them. The ideal pest-killing chemical would
   1. Kill only the target pest
   2. Not cause genetic resistance in the target organism
   3. Disappear or break down into harmless chemicals after doing its job
   4. Be more cost effective than doing nothing

F. Pesticides can promote genetic resistance to their effects, wipe out natural enemies of pest species, create new pest species, end up in the environment, and sometimes harm wildlife and people.
   1. Insects can rapidly become genetically resistant to widely used pesticides.
      a. The main problem with synthetic pesticides is that it accelerates the development of genetic resistance to these chemicals by pest organisms.
      b. About 1,000-1,500 organisms have developed genetic resistance to pesticides since 1945. This has led to a reemergence of a number of diseases, especially in the tropics.
   2. Farmers may also be on a financial treadmill where it costs more for less effective treatment of pest organisms.

G. Government regulation has banned a number of harmful pesticides but some scientists call for strengthening pesticide laws.
   1. A federal law regulates pesticide use in the U.S., but it can be improved.
      a. The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) was established by Congress in 1947 and amended in 1972. It requires EPA approval for use of all commercial pesticides. After more than 30 years, less than 10% of the active ingredients in pesticide products have been evaluated by the EPA.
      b. The EPA has banned or severely restricted 57 active pesticide ingredients between 1972 and 2005.
      c. The 1996 Food Quality Protection Act (FQPA) increased public protection from pesticides.
      d. Banned or severely restricted chemicals are still manufactured and exported to other countries.

H. There are cultivation, biological, and ecological alternatives to conventional chemical pesticides. A number of methods are available.
   1. Fool the pest using cultivation practices such as crop rotation.
   2. Provide homes for pest enemies.
   3. Implant genetic resistance.

*Monoculture farming would not be a good alternative

Imported food not the answer
5. Use insect pheromones to lure pest insects into traps or to lure natural predators to crop fields.
6. Use hormones that disrupt the normal insect life cycle and prevent them from reaching maturity. The disadvantages are that they take weeks to kill an insect, are often ineffective if the infestation is large and they must be applied at the right time in the life cycle.
7. Scald them. Hot water sprayed on crops has worked well on cotton, alfalfa, and potato flies and citrus groves.

1. Integrated pest management (IPM) is an ecological approach to pest control uses a mix of cultivation and biological methods, and small amounts of selected chemical pesticides as a last resort.
   a. The overall aim is integrated pest management (IPM) is to reduce crop damage to an economically tolerable level. Fields are carefully monitored for damage.

   World Agricultural Problems

   - Malnourishment - lack of proper nutrients and vitamins
   - Undernourishment - lack of calories

1. **CLIMATE CHANGES**

   a. **Desertification** - formation of desert in arid and semi-arid regions. Occurring today, mainly in Africa, Middle East, and SW USA

   **Caused by:**
   1. Overgrazing
   2. Deforestation
   3. Poor agricultural practices.

2. **SOIL EROSION**

   This is a far more critical and crucial a problem than desertification.

   a. **Erosion** - occurs when soil and rock are moved by wind or rain to a new location.
   1. **Natural** - occurs at a slow rate
   2. **Accelerated** - results from human activities. Decreases soil fertility in the short run, destroys soil in the long run.

   3. **Types of Erosion**
   b. **Rill** - gentle slope, no plant growth to stop erosion
   c. **Gully** - very obvious, steep slopes, little or no vegetation. Deepens and widens quickly.
   d. **Mass** - slumping or mud slides. Soil becomes oversaturated with water and slumps or slides down bank.

3. **SOIL MANAGEMENT – EROSION CONTROL**

   a. **Contour Farming** - planting with slope instead of against slope, slows speed of water.
   b. **Strip Cropping** - one crop planted between another. Corn-alfalfa-then corn again. Water runs through corn easily and slows down when it hits the alfalfa.
   c. **Minimum (Conservation) Tillage** - after crop is harvested, field is not plowed under. Erosion is reduced 90%. Reduces energy consumption 80%. Reduces evaporation of water. Requires more fertilizer.
   d. **Windbreaks** - planted perpendicular to direction of wind. Slows down wind speed thus, slowing erosion.
   e. **Terracing** - Used on sloped cropland to reduce speed of water. Used a great deal in S. America and Asia to grow corn, wheat, and rice.
   f. **Gully reclamation** - Gullies are planted with fast growing grasses to reduce erosion.
   g. **Crop Rotation** - planting a series of crops in the same field. Corn then wheat then clover and then corn again. Each has different nutrient requirements so the soil can recover.
BRIEF HISTORY OF AMERICANS AND THEIR IGNORANCE OF SOIL IMPORTANCE

1. MONOCULTURE FARMING
   Early settlers grew great quantities of tobacco for shipment back to the Old World. They grew tobacco year after year. This is called monoculture farming. The soil never gets a chance to recover as the only crop takes out the same nutrients.

2. SOD BUSTERS
   Great Plains settlements saw native grasses that had thick root systems that held the soil together. They were drought resistant and held moisture very well. Very rich soil. Settlers came in and turned the sod with their plows, thus the name “sod busters.” Indians also commented that the soil was “wrong end up.”

3. DIRTY THIRTIES
   For many years the soil held up wonderfully. The crops the farmers were planting were not drought resistant. After several consecutive dry years, the crops failed. Since there was nothing to hold the soil – the native grasses were gone – the soil was swept by the wind and Black Blizzards resulted. These winds carried the soil eastward. In fact, the director of the Bureau of Soils was speaking before Congress about the need for a National Soil Program, when a site not uncommon in the East during that time period occurred. Large black clouds formed overhead, and he said “There, gentlemen, goes Oklahoma.” The Soil Conservation Service was formed soon after.

Pesticides, Herbicides, Rodenticides

These products contain a range of poisons which may cause serious damage to people, pets and wildlife. They also cause other problems such as destruction of beneficial insects, development of pest resistance, and environmental contamination. Common sense and a little extra care around the house and garden can reduce or eliminate pests and weeds. For example, keep a clean garden by removing dead leaves, debris, wood and weeds; remove and destroy infected plants; use barriers and traps once you can identify specific pests; and encourage beneficial organisms like ladybugs, praying mantis, etc.

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>ALTERNATIVES</th>
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<tbody>
<tr>
<td>Household plant pesticides</td>
<td>Apply soapy water to leaves, rinse.</td>
</tr>
<tr>
<td>Garden Pesticides</td>
<td>Use biological controls, such as ladybugs for aphid control, 1/4 cup cayenne pepper in 1-pint water to spray on garden plants.</td>
</tr>
<tr>
<td>Herbicides</td>
<td>Hand pull weeds or mulch generously; cover garden with plastic in fall to prevent weed seed germination; cultivate with a hoe.</td>
</tr>
<tr>
<td>Rodent bait</td>
<td>Get a cat; sprinkle chopped bay leaves and cucumber skins around cracks and crevices; use a trap.</td>
</tr>
<tr>
<td>Insect repellant</td>
<td>Put up screens; wear protective clothing; drink brewer’s yeast (if you are not allergic to it); some commercial bath oils; plant tansy around occupied areas or use lavender oil on your skin.</td>
</tr>
<tr>
<td>Fertilizers</td>
<td>Use peat moss or compost; use organic fertilizers containing blood or fish meal (high in nitrogen) or bone meal (high in phosphorus).</td>
</tr>
<tr>
<td>Moth balls</td>
<td>Cedar chips; dried lavender.</td>
</tr>
<tr>
<td>Roaches</td>
<td>Smear grease or Vaseline around inside the rim of jar containing a banana. Make a ramp with a tongue depressor. Pests are attracted by food but are trapped and die.</td>
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<tr>
<td>Snails and slugs</td>
<td>Put out shallow pan containing beer in infested areas; overturn clay pots to lure snails from heat, capture and collect them, then stomp on them.</td>
</tr>
<tr>
<td>Ant control</td>
<td>Pour a line of cream of tartar, red chili pepper, paprika, or dried peppermint where ants enter house.</td>
</tr>
<tr>
<td>Flea and tick repellant</td>
<td>Feed pets’ brewer’s yeast, vitamin B and garlic tablets; sprinkle fennel, rue and rosemary near pet’s resting area the repel fleas.</td>
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