




3

FARMING TECHNIQUES



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INTENSIVE FARMING

Before the 1950s, the term 'farming' referred to all agricultural activity both on a large and small scale. Intensive farming began developing, particularly in the western world, from the 1920s. It is characterised by a more intensive use of land, machines, the use of chemical fertilizers and **weed** and pest control.

FACTORS ENHANCING FARM PRODUCTIVITY

Agricultural machinery is one of the most revolutionary applications of modern technology. Advances in farm equipment over the last two centuries have completely changed the way farmers work worldwide and have made their role increasingly specialised.

Potential **cropland** is estimated at about 8.5 billion acres worldwide. There would not be enough productive land worldwide to support today's population if we used yesterday's technology.

In addition to farm equipment, a set of **complementary technologies** dealing with irrigation and the use of fertilizers and pest control systems were introduced. Irrigating the land generally triples its productivity. Fertilizer use has, in some cases, doubled **yields**.

Finally, other factors which contributed to farm productivity include innovation in **animal husbandry**, new technologies for storage, handling and processing and a wider global infrastructure for the efficient transportation, storage, distribution and trade of agricultural products.





HANDS ON LANGUAGE

COMPREHENSION CHECK

Answer the following questions.

- 1 When did intensive farming start?
- 2 What were the innovations of modern farming?
- 3 How has farmers' work changed over the centuries?
- 4 Which further innovations increased farm productivity?

VOCABULARY

Explain in your own words the meaning of the following terms.

- 1 Intensive
- 2 Revolutionary
- 3 Farm equipment
- 4 Worldwide
- 5 Pest
- 6 Storage

DEFINITIONS

Match each of the following terms with its definition.

- 1 Fertilizers
- 2 Agricultural machinery
- 3 Farm productivity
- 4 Pest control
- A Mechanical equipment to help in any farming operations
- B Regulation and reduction of organisms harmful to crops
- C The market value of an agricultural output
- D Natural or artificial substances added to soil to support plant growth

CLOZE TEST

Read the following text and fill in the blanks with the words given: testing – toxic – pollution – chemical – side – increase – health – seasons – harmful – fungal.

Pesticides

Pesticides are **1** substances used to protect crops from insects (insecticides), weeds and **2** attack (herbicides and fungicides) and rodents (rodenticides).

The use of pesticides has allowed growers to **3** yields, produce crops in otherwise unsuitable locations, extend growing **4**, maintain product quality and extend shelf-life.

Most chemicals used as pesticides, however, are **5** and the primary argument against their use is the **6** risk factor and the danger of environmental **7**.

In Europe the use of pesticides is controlled by EU Directives. Pesticides undergo rigid **8** procedures before being accepted for registration by European or national authorities.

These tests must prove that the product will have no negative **9** effects in humans and will have no **10** environmental effects.



Nurseries

While listening to the following text, fill in the blanks with the words you hear. Before listening look at the meaning of the following words: a cultivar is a plant variety that has arisen in cultivation; grafting is the insertion of a shoot from one plant into another plant; liners are tiny plants grown in long lines of trays.

A nursery is a place where **1** are propagated and grown to usable size. Plants may be propagated by **2**, but cultivars are often propagated by grafting or other nursery techniques.

There are different types of nurseries such as retail nurseries, which sell to the **3** public, wholesale nurseries, which sell only to other nurseries and to landscape **4** and private nurseries, which supply the needs of institutions or private estates. Retail and wholesale nurseries often sell by **5**.

Nurseries grow decorative plants for **6** gardening and landscaping as well as agricultural plants. **7** are generally used in a nursery to protect plants from cold weather, while allowing access to **8** and ventilation.

Annuals are sold in trays (undivided containers with multiple plants), flats (trays with built-in cells), peat pots or **9** pots. Perennials and woody plants are sold either in pots or bare-root and in a variety of **10**, from liners to mature trees.



A pot



A tray

VOCABULARY

Read the text again and find the English equivalents of the following Italian words.

- | | |
|-----------------------|-------------------------|
| 1 Vivaio | 5 All'ingrosso |
| 2 Giardinaggio | 6 Ventilazione |
| 3 Innesto | 7 Piante annuali |
| 4 Vaso | 8 Piante perenni |
| | 9 Torba |

CROP CLASSIFICATION

A crop is any cultivated plant that is harvested to obtain agricultural products.

The main agricultural products can be broadly grouped into foods, fibres, fuels and raw materials.

Specific **foods** include grain crops (cereals), vegetables, fruits, oils, meats and spices.

Fibres encompass cotton, wool, hemp, silk and flax. Lumber and bamboo are two examples of raw materials. Other useful materials are produced by plants, such as resins, dyes, drugs, biofuels and ornamental products such as cut flowers and nursery plants.



Crops can be also classified on the basis of their growing season:

- ♻️ **monsoon crops** (e.g. cotton and rice) grow from June to November and require warm, wet weather;
- ♻️ **winter crops** (e.g. wheat and sunflower) grow from October to March as they require low temperatures and a dry climate;
- ♻️ **summer crops** (e.g. watermelon and pumpkin) are grown from March to June as they require warm dry weather during their main growth period.

CROP ROTATION

Each crop has different **nutrient requirements** and affects soil balance in a different way. Some crops, like corn and tomatoes, **quickly deplete** soil nitrogen and phosphorus. For this reason, if you plant corn in the same place year after year, that plot of soil will soon run low on nitrogen and phosphorus. Other leafy and fruiting crops like lettuce and cabbage tend to use up nitrogen very quickly. In contrast, peas, beans and other legumes add nitrogen to the soil but need lots of phosphorus.

Crop rotation consists in growing a series of crops in the same area in **sequential seasons**, in order to provide the soil with various nutrients. A traditional element of crop rotation is the **replenishment** of nitrogen through the use of **green manure** after some crops have been grown in a specific plot of soil.

The choice and sequence of crops depends on the type of the soil, the climate and the precipitation. Crop rotations may include two to six or more crops over several seasons. A two crop rotation such as corn and soybean or corn and **alfalfa** use legumes to help boost nitrogen levels in the soil. Finally, crop rotation offers an excellent defense against different types of pests and diseases.



HANDS ON LANGUAGE

COMPREHENSION CHECK

Answer the following questions.

- 1 What is a crop?
- 2 What are the main categories of agricultural products?
- 3 What is crop rotation?
- 4 How many crops may be included in crop rotations?
- 5 Which factors affect the choice of crops to be rotated?
- 6 What other advantage does crop rotation offer?

FILL IN THE CHART

Complete the chart below with information from the text.

	WHEN THEY ARE GROWN	WHAT THEY REQUIRE	EXAMPLES OF CROPS
Monsoon crops			
Winter crops			
Summer crops			



HANDS ON LANGUAGE

CLOZE TEST

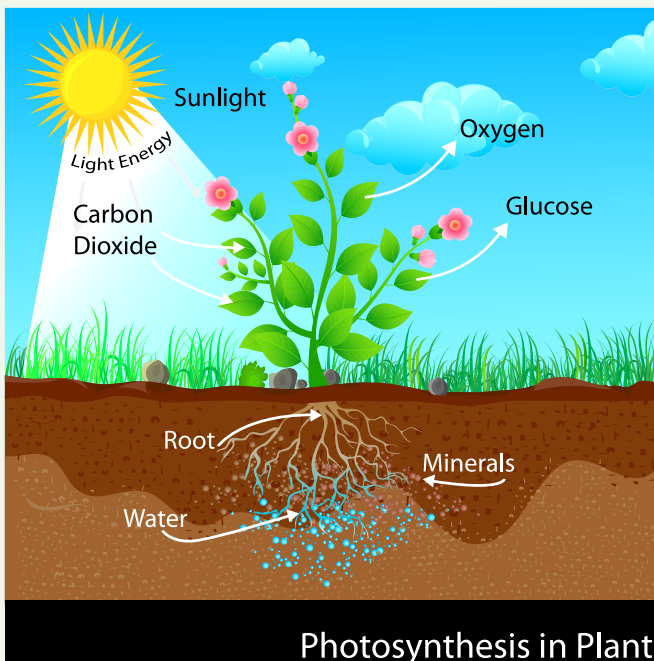
Read the following text and fill in the blanks with the words given: light – oxygen – dioxide – water – air – green – roots – body – leaves – food.

Photosynthesis

Photosynthesis is a complex process in which **1** plants use solar energy to transform **2** and carbon dioxide into **3** and glucose (a simple sugar). Plant **4** absorb water which is then carried to the **5** by the xylem – a transport tissue – while carbon dioxide is obtained from **6** that enters the leaves through the stomata and diffuses to the cells containing chlorophyll.

Chlorophyll is a green pigment that converts the active energy of **7** into a form of energy that can be stored as **8** and consumed when needed. When an animal eats part of a plant, the animal takes the plant's stored food energy into its **9**.

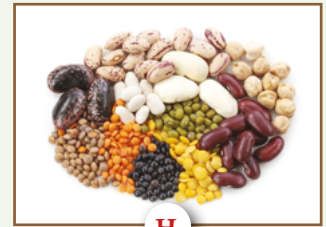
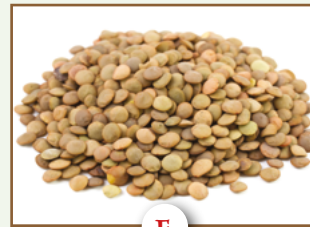
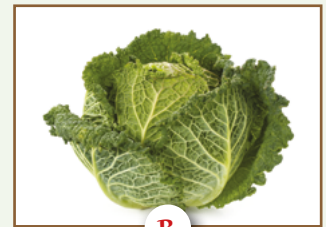
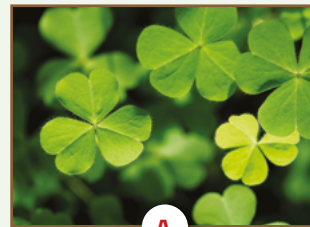
Photosynthesis also provides us with most of the oxygen we breathe. We, in turn, exhale the carbon **10** needed by plants.



MATCHING

Match each of the following crops with the corresponding picture.

- | | |
|-------------|-------------|
| 1 Cabbage | 2 Clover |
| 3 Lentils | 4 Beans |
| 5 Cotton | 6 Tobacco |
| 7 Sunflower | 8 Sugarcane |



SPEAKING

Talk about the advantages of crop rotation.



HANDS ON LANGUAGE

VOCABULARY

Match each of the following terms with its Italian equivalent.

- | | |
|-----------------|-----------------|
| 1 Fodder | A Seta |
| 2 Raw materials | B Soia |
| 3 Hemp | C Parassiti |
| 4 Silk | D Biada |
| 5 Flax | E Azoto |
| 6 Dye | F Materie prime |
| 7 Pumpkin | G Zucca |
| 8 Nitrogen | H Tinta |
| 9 Soybean | I Canapa |
| 10 Pests | J Lino |



FARM MECHANIZATION

The mechanization of agriculture, dating back to the period of the Industrial Revolution, would have been impossible without the creation of the **internal combustion engine**. Thanks to this invention, horses, donkeys and even humans in the fields were replaced by automated vehicles. Both petrol and diesel engines contributed to the development not only of tractors but also of the self-propelled, combined harvester and thresher, also called the combine.

MACHINERY DEVELOPMENT

Until the 20th century farming consisted of hard tasks such as horse- or mule-drawn ploughing, planting seeds, cutting weeds and reaping the harvest.

There were two major events that **occurred** in the early part of the 20th century paving the way for tractors to become widespread in farming. The first was Henry Ford's introduction of the Fordson tractor based on the **Model T**. The second major event that led to the increased need for the tractor was World War I. When the US entered the war they sent many men overseas. This resulted in **shortages** in many different industries, particularly the agricultural industry. For this reason, many farmers were obliged to use **tractors**.

One of the greatest inventions that supplemented the tractor was the combine. This was a machine that did it all: cutting, threshing, separating **kernels** from **husks** with blowers or **vibrating sieves**, feeding the collected grain via conveyor belts to wagons or trucks.

Moreover, instead of cutting the grain stalks and transporting them to a stationary threshing machine, these combines cut, threshed and separated the grain while moving through the field.

Tillage implements prepare the ground for planting by loosening the soil and eliminating weeds. The best-known tillage **implement** is the plough, while the most widely used type of seeder is the planter which spaces seeds out equally in long rows.



A donkey



A combine



A planter

TYPES OF FARM EQUIPMENT

Machines in agriculture are used to help perform all sorts of farming operations. They can be classified according to their function.

- ♻ Among the machines for **soil cultivation** are the cultivator, the various types of ploughs, the harrow, the rotator.
- ♻ **Planting** implements include the broadcast spreader, the planter, the seed drill.
- ♻ Among **harvesting** machinery are the cotton picker, the reaper, the sickle, the conveyor belt, the tractor, the grain dryer.
- ♻ **Hay making** machines include the bale mover, the round baler, the mower.



HANDS ON LANGUAGE

COMPREHENSION CHECK

Answer the following questions.

- 1 When did agriculture start to be mechanized?
- 2 What enhanced the mechanization of agriculture?
- 3 What is a combine used for?
- 4 What is the function of tillage implements?
- 5 What is a planter used for?
- 6 What main tasks do agricultural machines perform?

WRITING

Complete the sentences below with information from the text.

- 1 The internal _____ engine was essential for the mechanization of agriculture.
- 2 Automated machinery replaced human beings and _____ in the fields.
- 3 Both petrol and diesel engines were used to build harvesters and threshers.
- 4 Henry Ford introduced the Fordson tractor based on the T. _____
- 5 American farmers used more and more tractors when the US entered WWI as many _____ were sent overseas.
- 6 One of the most important inventions that supplemented the tractor was the _____.
- 7 Combines cut, threshed and separated the grain while moving through the _____.
- 8 A planter spaces _____ out equally in long rows.





HANDS ON LANGUAGE

VOCABULARY

Read the text again and find the English equivalents of the following Italian words.

- 1 Seminatrice
- 2 Erpice
- 3 Raccoglitrice di cotone
- 4 Nastro trasportatore
- 5 Mietitrice
- 6 Falciatrice
- 7 Essiccatoio per granaglie
- 8 Rotopressa



DEFINITIONS

Match each of the following machines with its function.

- | | |
|--------------------|--|
| 1 Cultivator | A It turns the soil before sowing seeds. |
| 2 Plough | B It spreads manure over a field as a fertilizer. |
| 3 Broadcast seeder | C It loosens and aerates soil. |
| 4 Planter | D It spreads seeds, lime, fertilizer, sand, etc. |
| 5 Manure spreader | E It harvests grain crops by reaping, threshing and winnowing. |
| 6 Combine | F It is used behind a tractor to sow crops through a field. |

VERBS

Match each of the following verbs with its Italian equivalent.

- | | | | | | |
|-------------|-------------|----------------|-------------|-------------|-------------|
| 1 To plough | 2 To winnow | 3 To cut weeds | 4 To thresh | 5 To reap | 6 To till |
| A Mietere | B Arare | C Dissodare | D Spulare | E Trebbiare | F Diserbare |



MATCHING

Match a word in the first column with one in the second column, then provide the Italian equivalents.

- | | |
|----------------|--------------|
| 1 World | A Industry |
| 2 Internal | B Stalk |
| 3 Diesel | C War |
| 4 Agricultural | D Combustion |
| 5 Grain | E Machine |
| 6 Threshing | F Engines |



IRRIGATION

Irrigation is the controlled application of water for agricultural purposes. Irrigation has been around for as long as humans have been cultivating plants. The first and most ancient irrigation method was **pouring** buckets of **water** onto plants. Pouring water on fields (flood irrigation) is still a common irrigation method today, but other more efficient and mechanized methods are also used.

Modern farming requires large amounts of water in order to improve crop yields.

IRRIGATION METHODS

Many different irrigation methods are used worldwide. The following are the most common.

Flood irrigation.

Water is **pumped** or brought to the fields and it flows along the ground among the crops. It is the oldest irrigation method but, though it is simple and cheap, about one half of the water used ends up not getting to the crops. Nevertheless, there are some things that farmers can do to make irrigation more efficient: they can level fields so that water **flows evenly**; they can release water at prearranged intervals, which reduces unwanted **runoff**; they can collect runoff in ponds and pump it back to the front of the field where it is reused for the next cycle of irrigation.

Drip irrigation.

This is a planned irrigation system in which water is applied directly to the root zone of plants by means of **applicators** (emitters, perforated plastic pipes, etc.) operated under **low pressure** with the applicators being placed either on (surface irrigation) or below (subirrigation) the ground. Up to one fourth of the water used is saved, as compared to flood irrigation.

Spray irrigation.

This system consists of a **long tube** fixed at one end to the water source, such as a well. Water flows through the tube and is shot out by a system of **spray guns**. A common type of spray-irrigation system is the **centre-pivot**. This system has a number of metal frames on rolling wheels that hold the water tube out into the fields. Electric motors move each frame in a big circle around the field, **squirting** water.



HANDS ON LANGUAGE

COMPREHENSION CHECK

Answer the following questions.

- | | |
|---|---|
| 1 What is irrigation? | 4 What is the main disadvantage of flood irrigation? |
| 2 How did farmers irrigate fields in ancient times? | 5 Where is water applied in a drip irrigation system? |
| 3 What is flood irrigation? | 6 What is spray irrigation? |

VOCABULARY

Match each of the following words with its definition.

- | | |
|----------|--|
| 1 Bucket | A A deep hole made in the ground through which water can be removed |
| 2 Pond | B The part of a plant that grows under the ground |
| 3 Pipe | C Open container used for carrying liquids |
| 4 Well | D One of the round parts under a vehicle |
| 5 Wheel | E Small area of fresh water either natural or artificially made |
| 6 Root | F A tube or cylinder of metal or other material, used to convey water or air |



HANDS ON LANGUAGE

FILL IN THE CHART

Natural conditions such as soil type, slope, climate, water quality and availability have an impact on the choice of irrigation methods. Fill in the table suggesting the most suitable irrigation method.

CONDITION	DESCRIPTION	PREFERRED IRRIGATION METHODS
1 Sandy soil	Sandy soils have low water storage capacity and high infiltration rate. They need small but constant irrigation.	
2 Steep surface	Steeper or unevenly sloped terrain may cause floods and water dispersion if water is applied in large quantities.	
3 Windy climate	Strong wind can disturb the spraying of water, changing its direction with subsequent inefficiency.	
4 Water quality	If water contains much sediment, this can clog pipes and spray guns.	

MATCHING

Match each of the following irrigation techniques with the corresponding picture.

1 Drip irrigation

2 Sprinkler

3 Basin flood

4 Center-pivot

5 Irrigation pump

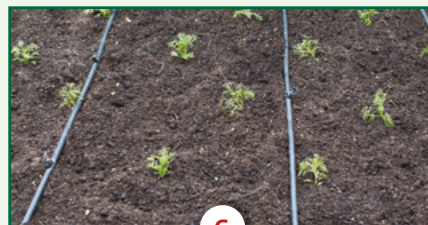
6 Spray irrigation



A



B



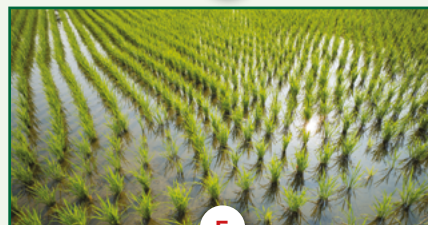
C



D



E



F

SPEAKING

Talk about the main irrigation systems.

Irrigating vegetables

While listening to the following text, fill in the blanks with the words you hear.

In farming, an adequate supply of water during the growing **1** is essential for produce quality. Generally speaking, water is mostly needed during seed germination, the first **2** of development, immediately after transplanting and during flowering and fruit production. Here are the critical watering periods of some of the most common vegetables.

- ❖ Cabbage family **3** (cabbage, broccoli, cauliflower, collards and Brussels sprouts) need a lot of water during their entire life span.
- ❖ Beans have the highest water use of any common vegetable especially during blossoming and **4** development. Blossoms fall with low moisture levels.
- ❖ Carrots and other root crops require consistent moisture. Cracking, knobbly and hot-flavoured root crops

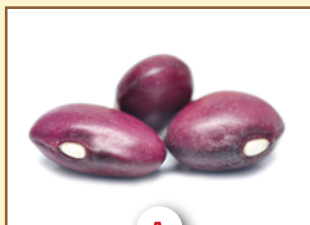
are symptoms of water shortage.

- ❖ Lettuce and other leaf vegetables need water especially during **5** development.
- ❖ Onion family crops require consistent moisture and frequent irrigation due to their inefficient **6** system.
- ❖ Peas need water most critically during pod filling.
- ❖ **7** tubers will be knobbly if they become too dry during tuber development.
- ❖ **8** family crops (tomatoes, peppers and eggplants) need water most critically during flowering and fruiting.
- ❖ Vine crops (cucumbers, **9** and winter squash and assorted melons) need water especially during **10** and fruiting.

VOCABULARY

Match each vegetable with the corresponding picture, then provide the Italian equivalent.

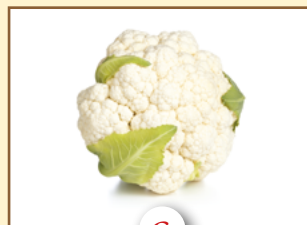
- 1** Broccoli **2** Cauliflowers **3** Brussels sprouts **4** Beans **5** Carrots **6** Lettuce
7 Onions **8** Peas **9** Tomatoes **10** Peppers **11** Eggplants **12** Squashes



A



B



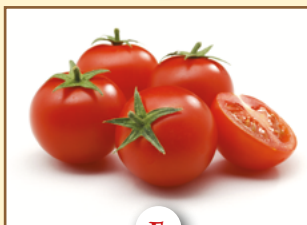
C



D



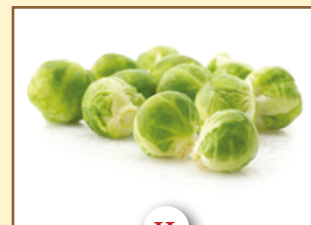
E



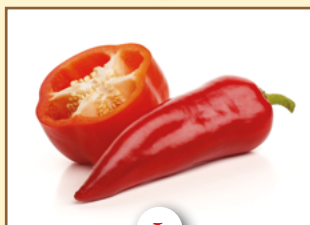
F



G



H



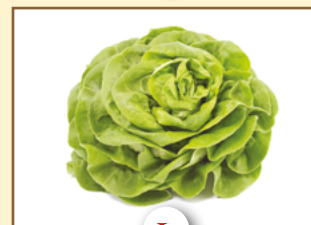
I



J



K



L



FERTILIZERS

Fertilizers are compounds given to plants with the aim of **enhancing growth** and **optimizing yields**.

They are usually applied either through the soil or through foliar feeding and they provide the three major plant nutrients (nitrogen, phosphorus and potassium), the secondary plant nutrients (calcium, sulphur and magnesium) and trace elements such as iron, manganese, zinc and copper.

They can be organic or inorganic: organic fertilizers consist of **organic matter**, while inorganic fertilizers contain simple **inorganic chemicals**. Fertilizers can be **natural compounds** such as peat or mineral deposits or **man-made** through natural processing (such as composting) or chemical processes.

ORGANIC FERTILIZERS

Examples of naturally-occurring organic fertilizers include manure, **slurry**, worm castings, peat, seaweed and **guano**. Naturally-occurring minerals such as mine rock phosphate, sulphate of potash and limestone are also considered organic fertilizers.

Some of the most common manufactured organic fertilizers are compost, dried blood, **bone meal** and seaweed extracts.

Although the density of nutrients in organic material is modest, organic fertilizers have some **advantages** if compared to inorganic fertilizers.

- 🌱 First of all, organic growers typically produce some or all of their fertilizers on-site, thus **lowering operating costs** considerably.
- 🌱 In addition, organic fertilizers **avoid** certain **long-term problems** associated with the regular use of artificial fertilizers such as the possibility of 'burning' plants with overly concentrated chemicals, the progressive decrease of 'soil health' (loss of structure, reducing ability in absorbing precipitation, etc.) and lower cost.



INORGANIC FERTILIZERS

Inorganic fertilizers are synthetic compounds which contain such elements as ammonium nitrate, ammonium sulphate, potassium chloride and magnesium sulphate. These nutrients can be readily absorbed by plants. Yet, they can also be washed away easily when irrigating. Moreover, salts and other compounds contained in inorganic fertilizers are not absorbed by plants and build up in the soil over time. When they accumulate, these compounds can alter the composition of the soil.



HANDS ON LANGUAGE

COMPREHENSION CHECK

Answer the following questions.

- 1 What is the function of fertilizers?
- 2 What are the main types of fertilizers?
- 3 How are fertilizers applied?
- 4 Which nutrients do fertilizers provide?

FILL IN THE CHART

Complete the table below with information from the text.

	EXAMPLES	ADVANTAGES	DISADVANTAGES
Organic fertilizers			
Inorganic fertilizers			

DEFINITIONS

Read the text again and find the words corresponding to the following definitions.

- 1 A black substance formed from decaying plants under the ground surface
- 2 A gas that forms most of the earth's air
- 3 Waste matter from animals that is mixed with soil to improve fertility
- 4 A plant that grows in the sea
- 5 A sedimentary rock consisting mostly of calcium carbonate
- 6 A ductile, malleable, reddish-brown metallic element



Environmental effects of fertilizers



BIOTECH FARMING

B iotechnology is any technique which uses living organisms to make products, to improve plants or animals or to develop microbes for specific uses. This definition includes the traditional methods of plant breeding and animal husbandry as well as methods of modern biotechnology like the **industrial use of DNA**, **cell fusion** and new **bioprocessing techniques**. This type of farming has developed mainly in the last thirty years with the aim to increase agricultural productivity by genetically engineering, transferring or **manipulating genes** in plants, sometimes by adding animal genes.

GENETICALLY MODIFIED ORGANISMS

The information that genes contain can be transferred between different species of animals, plants or bacteria to confer specific benefits. In addition to transferring genes between species, it is also possible to eliminate undesirable characteristics. The term 'genetically modified' (GM) refers to this **alteration of genetic material**. GM plants are often created to resist disease and eliminate the need for pesticides. Desired characteristics, such as **higher nutritional value** or **faster growth**, are chosen to produce a kind of 'super food'. But according to some experts GM foods are a health risk. For this reason many countries have adopted **mandatory** labelling for every product that has been genetically modified.



HANDS ON LANGUAGE

COMPREHENSION CHECK

Answer the following questions.

- 1 What is biotechnology?
- 2 In which sectors can biotechnology be used?
- 3 What is modern biotechnology based on?
- 4 What are genes?
- 5 What is DNA?
- 6 What are the advantages of genetic modification?
- 7 Why is labelling GM foods mandatory in many countries?

SYNONYMS

Read the text again and find synonyms for the following words.

- 1 Method
- 2 Bacteria
- 3 Conventional
- 4 Advantages
- 5 Change
- 6 Unwanted

DEFINITIONS

Match each of the following terms related to GMOs to its definition.

- | | |
|--------------------|---|
| 1 Genome | A The variety of living organisms |
| 2 Mutation | B The production of genetically identical copies of a biological entity |
| 3 Recombination | C Plant that contains genes that are derived from other species |
| 4 Cloning | D The genetic material of an organism |
| 5 Biodiversity | E Modification of the genome |
| 6 Transgenic plant | F Rearrangement of genetic material |



HANDS ON LANGUAGE

FILL IN THE CHART

What are the main advantages and disadvantages of genetically modified food? Read the article below and complete the table.

The GMO debate in the US

Genetically modified foods have been around for years, but most Americans have no idea if they are eating them.

The Food and Drug Administration says they don't need to be labeled, so the state of Vermont has moved forward on its own. Gov. Peter Shumlin signed legislation making his state the first to require labeling of genetically modified organisms, or GMOs. What about the rest of the country? And does labeling matter?

There's a lot of confusion about genetically modified foods and their safety.

Some people feel very strongly about GMOs. Opponents, who at times have protested in the streets, say consumers have the right to know whether their food contains GMOs. The Vermont law is their first major victory.

The food industry and companies that genetically engineer seeds have pushed back against the labeling laws, saying GMOs are safe and labels would be misleading. Genetically modified foods are plants or animals that have had genes copied from other plants or animals inserted into their DNA. Most of the nation's corn and soybeans are genetically engineered to resist pesticides and herbicides. A papaya in Hawaii is modified to resist a virus.



Most of the genetically modified corn and soybeans are used in cattle feed, or are made into ingredients like corn oil, corn starch, high fructose corn syrup or soybean oil. A few fruits and vegetables are engineered – the Hawaiian papaya and some squash and zucchini, for example. Only a small amount of sweet corn, the corn we eat, is genetically modified.

The vast majority of scientific research has found genetically engineered foods to be generally safe.

Though what we are eating now appears safe, the main concerns for the future would be new genetically engineered foods – from the United States or abroad – that somehow become allergenic or toxic through the engineering process.

Safe or not, consumers are increasingly interested in what is in their food, including GMOs.

"There's so much confusing speech on food packaging and food advertising that consumers are often buying things they think are GMO free when they are not" says Scott Faber of the Environmental Working Group, which is pushing for the labels.

(Adapted from www.nydailynews.com)

GENETICALLY MODIFIED FOODS

Pros		
	Cons	

ROLE-PLAY

Now split into two groups and hold a debate about GMOs.



GMOs in the world

PROJECT PAD

What is the current state of GMOs in Italy? Gather some information about the cultivation of GM crops in Italy and the current legislation and then write a short report about it.

SUSTAINABLE AND ORGANIC FARMING.

Conventional agricultural practices are often unsustainable as they cause damage to the environment. With the development of industrial farming, farm communities are disappearing and the quality of our food continues **to decline**. What's more, the use of millions of tons of agrochemicals pollutes drinking water, causing various diseases. Sustainable and organic farming address these problems by developing and adopting a more 'ecological' approach to farming.

SUSTAINABLE AGRICULTURE

The leading principle of sustainable development is **meeting** the needs of the present without preventing future generations from meeting their own needs. Sustainable agriculture aims at **producing food in an efficient manner** while **conserving and improving the environment** as well as local communities.

Sustainable farming often implies:

- 🌱 developing local markets;
- 🌱 growing food without chemical additives;
- 🌱 employing workers at living **wages**;
- 🌱 working towards a closed cycle of imports and exports;
- 🌱 putting emphasis on quality over quantity.

Some of the fundamentals of sustainable agriculture include the use of compost or manures as fertilizers; crop rotation to reduce pest problems; the growing of **cover crops** to protect the soil and build organic matter; surface cultivation rather than deep ploughing and the refusal of genetically modified organisms.

ORGANIC AGRICULTURE

Organic farming refers to agricultural production systems which do not use synthetic pesticides or fertilizers, growth regulators or livestock feed additives. 'Organic farming' is the term used in English-speaking countries, while in other markets 'bio' or 'eco' are generally used.

Organic food production is a **specific system of production**, based on a given set of standards. In 1991 the European Union passed a regulation which set out how food must be produced, processed and packaged to qualify for the description 'organic'. Because of the environmental benefit of organic farming, many EU countries have developed policies that promote this type of agriculture.

In organic farming, fields are generally smaller than those on conventional farms while hedges and dry stone walls provide homes for predatory insects which help control crop pests.

Organic farmers add composted manure and other natural wastes to soil in order to increase humus content, which ensures more nutrients for plant growth. Moreover, organic foods are minimally processed to preserve the integrity of food without artificial ingredients or preservatives.





HANDS ON LANGUAGE

COMPREHENSION CHECK

Answer the following questions.

- 1 What do we mean by sustainable agriculture?
- 2 Why is conventional agriculture unsustainable?
- 3 What kind of fertilizers are used in sustainable agriculture?
- 4 What is the main aim of sustainable agriculture?
- 5 What are the basic principles of organic farming?
- 6 What regulates the production of organic food in Europe?
- 7 How is soil treated in organic farming?
- 8 How is organic food produced?

MATCHING

Match each of the following terms with its definition.

- | | |
|---------------|---|
| 1 Additives | A Insects which damage crops |
| 2 Humus | B Things used to make a food |
| 3 Hedge | C Animals raised on a farm |
| 4 Pests | D Substances added to food to improve its taste and appearance |
| 5 Livestock | E Row of shrubs or small trees forming a boundary |
| 6 Ingredients | F Organic material resulting from decomposition of plant or animal matter |

CLOZE TEST

Read the following text and fill in the blanks with the words given: economically – consumers – environmental – rapidly – artificial – symbols – number – new.

Organic farming in the UK

Since the early 1990's, organic farming in the UK has expanded

1. The UK has some of the largest 2 of organic producers, along with other 'older' EU member states such as France, Italy and Germany. This growth has been driven by 3 and policy makers who see organic farming as making a contribution to 4, welfare, social and nutritional goals.

Organic farming as a concept is not 5, dating back to the 1920's, although many of the underlying ideas are older than that.

Organic farming means much more than not using

SYNONYMS

Read the text again and find synonyms for the following words.

- 1 Usages
- 2 Illnesses
- 3 Necessities
- 4 Law
- 5 Terrain
- 6 Ban



FROM The FARM
Fresh



6 fertilizers and pesticides. It is an approach to agriculture where the aim is to create integrated, humane, environmentally and 7 sustainable production systems.

Organic foods can be recognised by a number of 8 awarded by various organic certification bodies in the UK.

(Adapted from www.ukagriculture.com)

SPEAKING

Explain how sustainable agriculture addresses the problems caused by the development of corporate agribusiness.

Maple Organic Farm

After listening about Maple Organic Farm, where an organic kitchen garden has been created to offer visitors education in the food we eat and how it is grown, answer the questions below.

Before listening, look at the meaning of the following words: herbs are plants used to give flavour to a food; remedies are treatments that cure minor illnesses; vegetable beds are plots of ground where plants grow.

COMPREHENSION CHECK

Choose the right answer.

- 1 How many crops are on display?
 - A 70
 - B 16
 - C 60
- 2 What kinds of plants are grown on the farm?
 - A Only traditional plants
 - B Only exotic plants
 - C Both traditional and exotic
- 3 Which of the following products are not mentioned?
 - A Grapefruit
 - B Grapes
 - C Fig
- 4 Where can you have lunch?
 - A In the cafeteria
 - B In the picnic area
 - C In a pub nearby
- 5 What can you do if you want to learn how to create an organic kitchen garden?
 - A You can buy a book in the farm shop
 - B You can log onto the farm website
 - C You can attend a workshop



International trade in
organic farming



ECO-FRIENDLY FARMING

Eco-friendly agriculture refers to landscapes that support both agricultural production and biodiversity conservation, with the aim to improve the living conditions of rural communities.

Twelve percent of global greenhouse gas emissions come from agriculture while six to nine percent of farm expenses are energy related. Exploiting renewable energy in agriculture has advantages both from an economic and an ecological point of view, so many farms around the world are using on-site renewable resources to produce energy. Here is a look at how renewable energy – from solar power to microbial digestion – is transforming agriculture.

Solar installations can be placed on land that can't be used for food production or on unusable water sources while wind turbines can be placed alongside crops or even on the same land animals graze on. Turbines can produce enough energy to power a farm, or even generate extra energy to sell back to the grid.

In addition, the energy from agricultural waste can be converted to biogas. Bio-gas consists mostly of methane, which can be used in turbines designed for

natural gas.

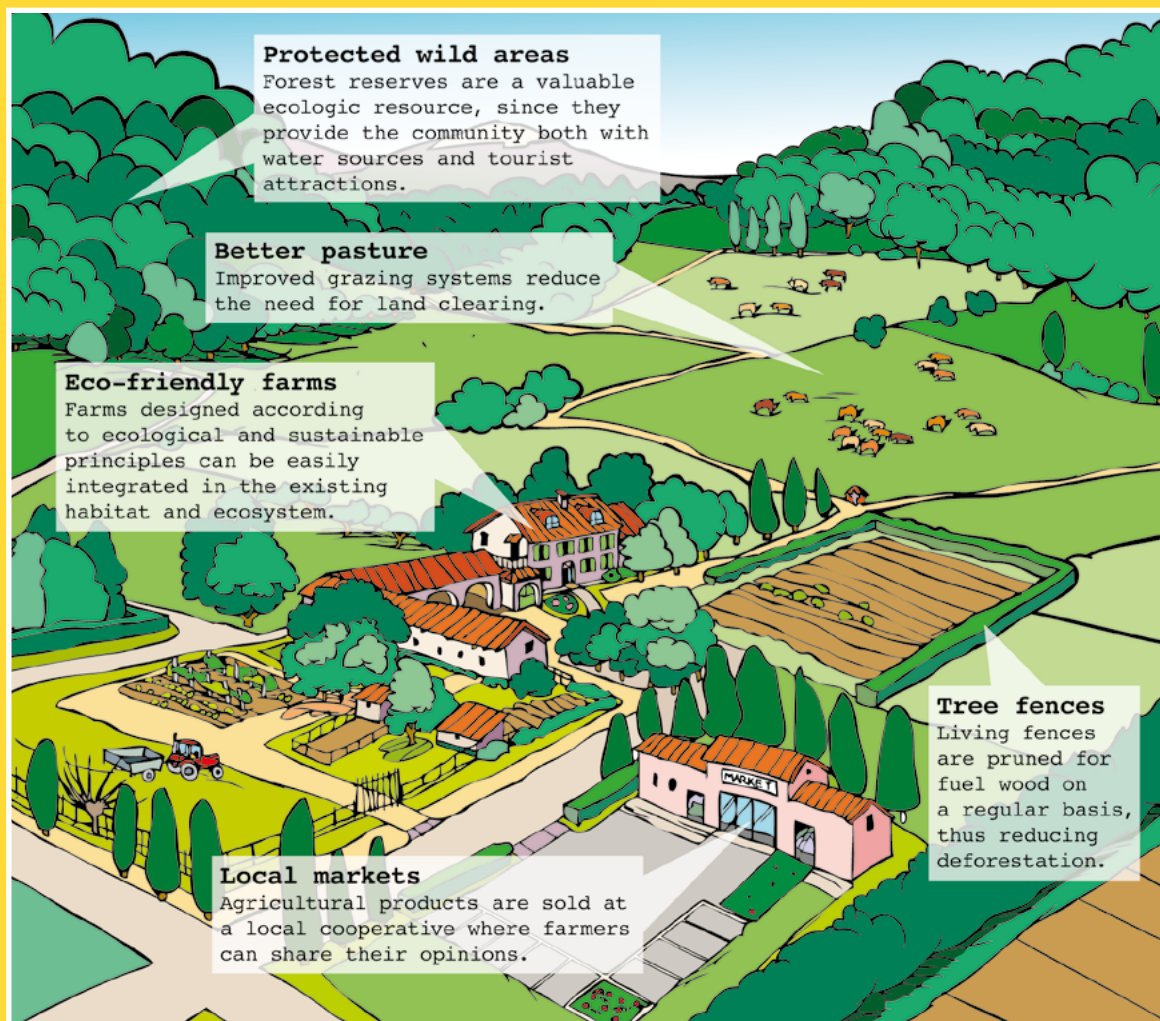
Feedstock such as rice **husks** and cheese **whey** can be used to generate electricity and **anaerobic** digesters can be used to transform animal waste into biogas.

The goals of eco-agriculture – to conserve biodiversity, enhance agricultural production and improve livelihoods among rural people – can be achieved only at a global landscape level. A landscape is viewed as a cluster of local ecosystems characterised by a particular topography, vegetation, land use and settlement. Any landscape is also influenced by historical, economic and cultural processes.

Farming communities play a vital role as managers of their ecosystems and biodiversity.

The Landscapes for People, Food and Nature Initiative is an international collaborative initiative of knowledge sharing, dialogue and action to support integrated landscape management in order to achieve three simultaneous goals: improved food production, ecosystem conservation and sustainable livelihoods.





The picture above shows some of the key issues in integrated landscape management.

COMPREHENSION CHECK

Answer the following questions.

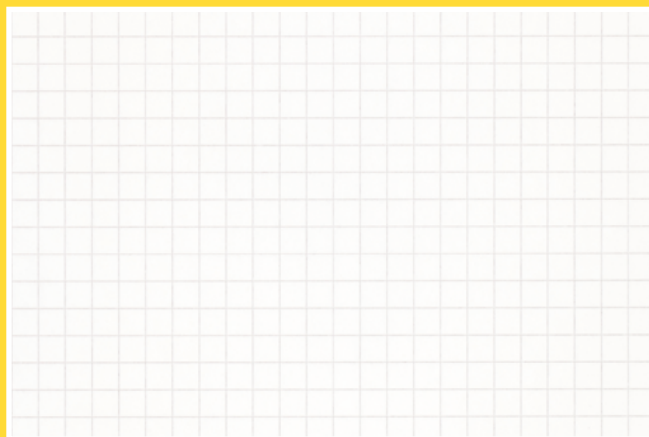
- 1 What is eco-friendly farming?
- 2 Why are more and more farms worldwide using renewable energy sources?
- 3 What are some of the renewable energy sources that can be used on a farm?
- 4 Why does landscape play such an important role in eco-agriculture?
- 5 What is the **Landscapes for People, Food and Nature Initiative**?

SPEAKING

Describe eco-friendly agriculture and its main goals to the rest of the class.

WRITING

Create a mind map highlighting all the different aspects of a landscape.



Agricultural buildings



The main house of a farm is called a **farmhouse** and serves a residential purpose in an agricultural setting.

'**Farm building**' is a more general term to describe any structure used to house families and workers as well as livestock, machines, equipment and crops. Farmhouses are generally big buildings with a back entrance complete with a washroom or lavatory and clothes-storage space. Most farmhouses also include an office and large food-storage facilities with ample refrigeration.

Livestock barns are single-floor buildings with open roof constructions, generally used for feed storage and machinery.

Buildings for machinery and supplies are designed mainly to offer protection from bad weather. Clear-span **sheds** – wood- or metal-framed – are also used to store fertilizers, seeds and pesticides.

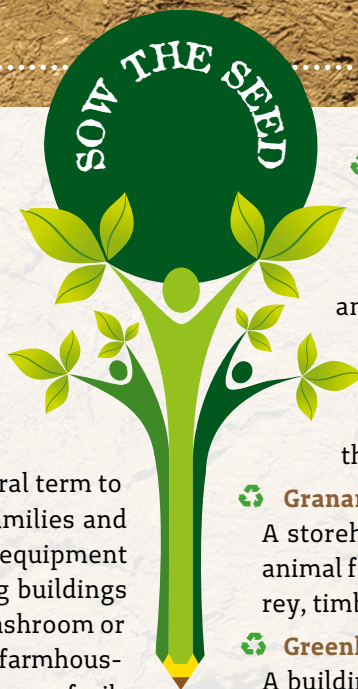
Cereal crops can be stored in **farm bins** inside a building. Hay is stored either under sheds or in special installations called **hay towers**.

Moist fodders, such as corn and grass, are generally stored in **silos**, usually made of wood, concrete or steel. Finally, fruit and vegetables are stored in **insulated** or **refrigerated** buildings.

Depending on the size of a farm and its production, it can include different buildings.

Barn

It can be used for many purposes, such as the housing of livestock and storage of crops. It can also be used to store equipment.



Chicken coop

A building where female chickens are kept. It generally has an indoor area – where the chickens sleep and nest – and an outdoor area where chickens feed and spend the majority of the day.

Cow-shed

A shelter for cows. Run-in sheds are three-sided structures with an open face.

Granary

A storehouse or room in a barn for seed grain or animal feed. They are typically square, single-storey, timber-framed structures.

Greenhouse

A building or complex made of plastic or glass in which plants are grown. Greenhouses allow sunlight to enter and prevent heat from escaping, thus providing a nurturing environment for plants.

Hayloft

A space above a barn, stable or cow-shed, traditionally used for storage of hay. Today many farmers tend to use larger bales of hay which are handled by machinery and are generally stored in more open buildings or outside.



Pigpen

A small-scale outdoor enclosure for raising pigs. The place where female pigs are kept to have their piglets is called a farrowing house.

Root cellar

Underground cellar, usually covered with earth, where root crops and other vegetables are stored at a low temperature and steady humidity. Vegetables stored in the root cellar mainly consist of potatoes, turnips and carrots. Separate cellars are occasionally used for storing fruits, such as apples.

Shed

A simple, single-storey structure used for storage. Sheds may vary considerably in size, from small open-sided tin-roofed structures to large wood-framed sheds provided with shingled roofs and windows.

**Stable**

A building in which livestock, especially horses, are kept. It is generally divided into separate stalls for individual animals. Stables can vary in size, from small buildings housing one or two animals to facilities that can house hundreds of animals.

**WRITING**

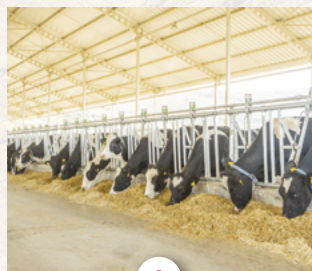
Complete the following sentences with suitable words.

- 1 Lawn mowers, rakes, hoes and other lawn tools are commonly stored in _____.
- 2 Tomatoes are often grown in _____ in cooler climates.
- 3 Potatoes last all winter in the _____.
- 4 Hens lay eggs in the _____.
- 5 The farmer milked the cows in the _____.
- 6 The farmer went into the _____ to feed the horses.

MATCHING

Match each of the following agricultural buildings with the corresponding picture.

- | | |
|-----------|--------------|
| 1 Granary | 2 Greenhouse |
| 3 Pigpen | 4 Cow-shed |

**A****B****C****D****WRITING**

Choose five of the buildings mentioned above and write a sentence with each of them.

SPEAKING

Talk about the main farm buildings and their functions.

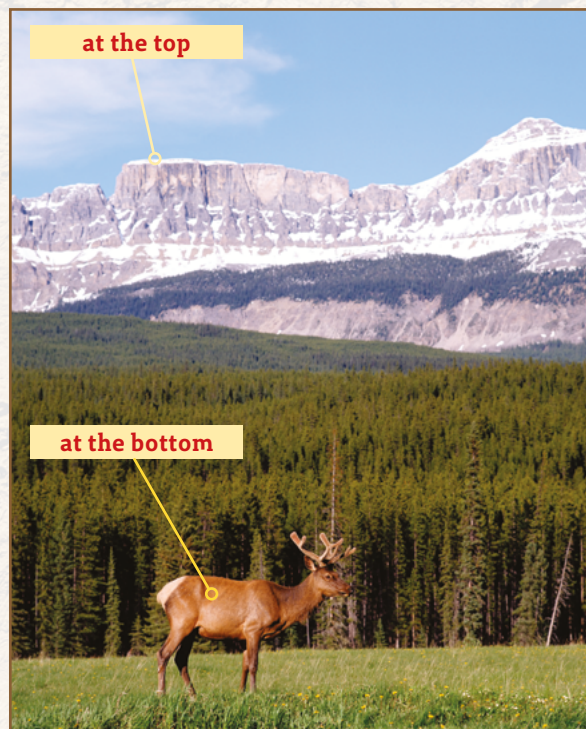
Describing a picture



Describing a picture is a useful exercise to practise both vocabulary and sentence structure. Here are some guidelines which may help you organise your picture description.

Introduction. The following phrases may be useful to introduce the image.
The photo/picture/painting shows...
You can see.../There are...
It was taken by/in...

What is where. In order to describe what you can see in the picture and where objects/people are located you may need some of the following expressions.
In the foreground/background you can see.../there is...
At the top/bottom there is/are...
On the left/right there is/are...
In the middle/centre there is/are...



Who is doing what? Describe what the people in the picture are doing using the present continuous.

What do you think about the picture? Add your personal opinion about what you see in the picture using some of the following expressions.
It seems as if.../Maybe.../I think.../I like/don't like the picture because...





Let's try together

Look at the following picture; then read the description below.



Camille Pissarro, **Haymaking at Éragny-sur-Epte**, 1889; oil on canvas; private collection.

The painting Haymaking at Éragny (1889) by Camille Pissarro depicts some rural workers during hay time. In the foreground you can see a peasant woman who is raking hay. She is wearing a long blue skirt, with a red blouse and scarf. In the middle ground other farmers are visible, scattered in the field, while in the background there are trees and houses. It's probably late afternoon and the sky is a bit cloudy. The green of the trees contrasts with the light brown of the dry soil.



SPEAKING

Describe the pictures below.



How to write instructions



Instructions are normal in the workplace. A set of instructions should help a reader accomplish a task quickly, efficiently and successfully.

In writing instructions, it is important to provide every detail.

- 🔄 Begin a sentence with a **verb** (imperative form).
- 🔄 Limit each step to one **main idea**.
- 🔄 Use a **numbered list** when the order is important. Use a bulleted list (like this list) when the order is not important.
- 🔄 Keep sentences **short** and **simple**. Add detailed explanation when necessary.
- 🔄 Do not mix instructions with conceptual information. Give the **necessary background** information before the instructions.
- 🔄 Reinforce steps with **pictures**, illustrations or diagrams.
- 🔄 Omit irrelevant or confusing information.
- 🔄 Make sure to include any **cautions** or warnings.
- 🔄 Rearrange steps in the most **efficient sequence**.
- 🔄 Observe someone performing the task and **make note** of any difficulties.
- 🔄 **Revise** your instructions.

Let's try together

Read the following instruction set.

How to mow your lawn

- Check the level of oil and gas in the lawn mower.
- Wear ear protection.
- Pick up any big sticks and/or rocks.
- Pull all weeds.
- Start the mower.
- Mow along the entire perimeter.
- Cut in opposing lines.
- Empty the grass collector from time to time.
- When all the grass is cut, turn off the engine.
- Place the mower back where it is stored.

CLOZE TEST

Read the following instructions on how to plant a tree and fill in the blanks with the words given: **root – zone – fertilizer – hole – out**.

How to plant a tree

- Dig a **1** at least twice the size of the tree's root ball.
- Loosen **2** ball.
- Spread **3** roots.
- Add some mulch around root **4** of the tree.
- Add some slow-release **5** in early spring.

SCRAMBLED SENTENCES

The following sentences go together to form a set of instructions on how to water a vegetable garden. Working in pairs, put them into the right order.

- A** How to water a vegetable garden
- B** Dig a hole with trowel into the soil to determine if water is needed.
- C** Let plants dry off before dark so they are less likely to get fungus.
- D** Water your plants in the early morning.
- E** Save rainwater in wet periods to use when your garden needs it most.
- F** Target the part of the plant that needs water.
- G** Irrigate your vegetable garden twice a week.



FIELDWORK



Growing green

Stephen visits St. Kew Organic Farm in Cornwall to find out more about organic farming. Here is an interview with Ms Brown, the farm manager.

Listen to the dialogue and fill in the blanks with the words you hear.

Organic farming at St Kew

Stephen: What does your farm produce?

Ms Brown: We grow a wide variety of vegetables and **1.** We also produce eggs and **2.**

Stephen: Where do you sell your products?

Ms Brown: At local farmers' **3** and through a CSA programme.

Stephen: What is a CSA programme?

Ms Brown: CSA stands for Community Supported Agriculture. It's a system by which customers buy pickups of fresh produce according to what's in **4**. In this way they support local farmers.

Stephen: That sounds interesting... What is the big difference between organic and conventional farming?

Ms Brown: Organic farming is actually the **5** way of farming. Today conventional farming is based on chemical inputs and mechanization, while

6 is about farming in the natural way...

Stephen: How do you treat soil?

Ms Brown: We rotate crops and we use natural **7** control and hand weeding.

Stephen: What kind of **8** do you use on your farm?

Ms Brown: We only use seeds that are organically grown. We usually save seeds from previous crops. We also use some rare seed **9** because we want to preserve the biodiversity of our food.

Stephen: What kind of fertilizers are used in organic farming?

Ms Brown: We only use manure and **10.**

Stephen: One last question, Ms. Brown. How do you **11** your animals?

Ms Brown: We use organic feed: **12** and hormones are banned.

WRITING

Complete the following short text with suitable words.

The natural way of farming

1 farming does not make use of artificial fertilizers, pesticides or herbicides. Pests are controlled using natural processes, such as crop **2** and natural predators – e.g. ladybirds to eat aphids and mint and garlic to deter insects.

Natural **3** are used such as manure and **4.** These do not contain any artificial chemicals. Organic farming helps to sustain ecosystems and **5** pollution.

ROLE-PLAY

Imagine you are Ms Brown and explain to the rest of the class what organic farming is.

PROJECT PAD

Community Supported Agriculture (CSA) is becoming more and more popular worldwide. Here are the basics.

- A farmer offers a certain number of 'shares' to the community.
- Generally the share consists of a box of vegetables.
- Consumers buy a share and in return receive a box of seasonal produce each week throughout the farming season.

Gather some information about CSA in your country/area and write a short report about it.