

- STA/SFA
- STAL 3°e F.C.

Reading Texts for English : (Dispensa) 2010 - 2011

1. Mediterranean Shrub Vegetation
2. The Parts of a Plant
3. The Life Cycle of a Plant
4. Plants and Crops
5. Drainage and Irrigation
6. Manures and Fertilizers
7. Insects
8. Viruses
9. Market Gardening
10. Mediterranean Forest Fires
11. Strawberry (abstract)
12. Mad Cow Disease

***La Dispensa è disponibile nell'Aula XII e in Presidenza presso la Sig.ra Isa Florio.**

Altri Materiali :

Vocabolario inglese-italiano:

Oxford Paperback Italian Dictionary

Grammatica:

English Grammar in Use (in inglese)

R. Murphy (Cambridge University Press)

Grammar Foundations (in italiano)

M. Vince & G. Cerulli (MacMillan)

THE MEDITERRANEAN SHRUB VEGETATION (MACCHIA)

The Mediterranean shrub vegetation is typical of an environment that can be characterized in climatic terms: drought stress in summer (summer dry climate), a concentration of rainfall in the winter and relative low humidity during the dry season.

The term "Mediterranean" does not refer strictly to the Mediterranean area (basin) because, in effect, it represents a type of region having climatic similarities which can be found in some areas of California, Chile, West Australia and South Africa.

The main physionomic trait of the Mediterranean vegetation is represented by an evergreen shrub formation. The Mediterranean ecosystem also includes forest type coenoses with conifer and hardwood trees, shrubs and herbaceous vegetation such as grasses. Mountain forests include oak and beech, whereas littoral pine forests include domestic pines.

The primary species of the Mediterranean macchia in the Mediterranean basin are the Olive, the Oleander, the Holly Leaf Oak, the Pistachio and the Kermes Oak.

Studies have also been extended to landscape descriptions where soil classification, texture and colour are analyzed as well as drainage and permeability.

A: VOCABULARY Match the words from the text with the meanings.

- | | |
|-------------|------------------------------|
| 1 shrub | a completely |
| 2 drought | b consistency |
| 3 season | c community of plants |
| 4 strictly | d area of land |
| 5 trait | e bush, small tree |
| 6 coenose | f characteristic, feature |
| 7 landscape | g lack of rain |
| 8 soil | h slow flowing away of water |
| 9 texture | i time of year |
| 10 drainage | j earth, land |

B: COMPREHENSION Answer the questions, referring to the text.

- 1 What are the three characteristics of a Mediterranean climate?
- 2 Which areas have a Mediterranean climate?
- 3 Which types of vegetation are found in the Mediterranean ecosystem?
- 4 Name the primary species of the Mediterranean "macchia".
- 5 Which features are analyzed in a landscape description?

C: EXTENSION There are four seasons in the year; spring, summer, autumn and winter. Which is your favourite season? Explain why you like this time of year. (50 to 70 words)

The Parts of a Plant and their Functions

A plant is a living organism. It is made up of different parts, each of which has a particular purpose or specialized function. If one part of the plant is not functioning properly, the whole plant will suffer. But we may cut flowers off the plant or prune the roots. Such damage is only temporary, and so the plant will continue to grow.

The basic parts of a plant are the root system, which is below the ground, and the shoot system above. The root of a plant has two main functions. It takes in, or absorbs, water and minerals from the soil through the root hairs, which are single cells near the tip of each root. The other main function of the root is to hold, or anchor, the plant firmly in position in the soil.

Plants such as sugar beet and carrots are able to store food in their roots. In this way they can keep growing for more than one season. In addition, plants such as clover and lucerne, known as “legumes”, have special bacteria which live on their roots. These simple forms of life take nitrogen out of the air which is in the soil. Such leguminous plants are usually ploughed under the soil. By doing this the soil is made more fertile.

The shoot system above the ground consists of the stem, the leaves, flowers and fruit. One of the functions of the stem is to support the plant. Another important function is to enable water and minerals to pass up from the roots to the leaves and flowers. Organic materials such as sugar travel down the stem to the roots. The leaves grow out of the side of the stem. Their main job is to make food for the plant by the process known as photosynthesis. For this process sunlight is required. Water from the soil and carbon dioxide from the air are converted into sugars and other carbohydrates. During the process, oxygen is formed and released into the air.

The flower contains the reproductive organs of the plant. The stamens produce the male cells, or spermata, which are carried in the pollen grains. The carpel produces the female cells, or ovules. The fruit is the ripened ovary of the flower; it encloses the seeds and protects them while they develop. The seed itself consists of an embryo and foodstore. The embryo is the part which will develop into another plant, and the foodstore is needed to provide nourishment for the young plant as it is growing.

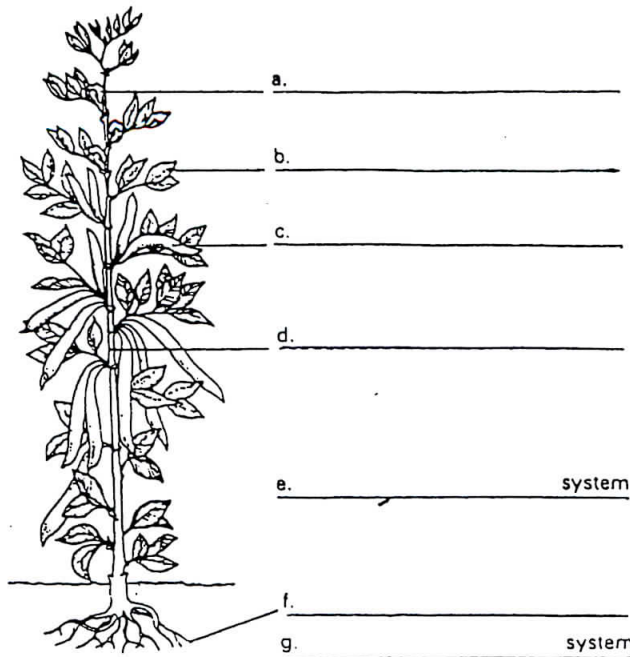
Section A: Plant nutrients

Match the nutrients with the symbols

- N iron
- K sulphur
- P nitrogen
- Ca potassium
- Mg zinc
- S phosphorus
- Zn calcium
- Fe copper
- Cu magnesium

Section B: Labelling a diagram.

Label the parts indicated in the diagram below of a mature bean plant.



Section C: True or False? Decide which of these statements are true or false according to the text. Circle your answer eg. T/F

- a) Different parts of a plant have specialized functions. T/F
- b) Not all parts of a plant need function properly. T/F
- c) If we cut flowers off a plant, the whole plant will suffer. T/F
- d) The shoot system of the plant is below the ground. T/F
- e) Water and minerals are absorbed through the root hairs. T/F
- f) The root system anchors the plant in the soil. T/F
- g) Sugar beets can keep growing for more than one season. T/F
- h) All plants have special bacteria living on their roots. T/F
- i) When clover is ploughed under the soil, the soil is made more fertile. T/F

Section D: Justify your answers to the True/ False exercise.
Say where in the text you found the answer.
Correct the statements which are false.

THE LIFE CYCLE OF A PLANT

The life cycle of a typical annual plant can be divided into several stages. The first stage is germination. The seeds remain dormant, or in a resting state, if they are kept cool and dry. When the amount of moisture and the temperature level are right, the seeds germinate and start growing.

Certain conditions are necessary for this to happen. An essential condition is that the seeds must be alive. Sometimes seeds are dried at a temperature which is too high. This has two effects: the water content in the seed is reduced too much, and certain essential proteins are destroyed. As a result, the seeds die.

Other conditions for germination concern the amount of moisture in the soil. If dry seeds are planted in a dry soil, they will not germinate until it rains. On the other hand, if there is too much water in the soil, the seeds will not germinate either. This is because wet soils remain cold for a longer period of time than drier, well-drained soils. If the soil is too cold germination will not occur. An additional reason for seeds not germinating is that badly drained soils may lack sufficient oxygen. Dormant seeds need very little oxygen to stay alive, but when they start to germinate they require more.

In the first stage of germination the primary root, or radicle, emerges. Then the stem pushes its way upward until it appears above the surface of the soil. At the same time the root system grows downward, and begins to spread through the soil. In the early stages of development the seedling depends entirely on the foodstore in the seed, but as soon as the first leaves are produced it is able to manufacture food for itself. The seedling begins photosynthesis.

Next, the plant enters the stage of rapid growth. In this stage of the life cycle, the plant begins to grow to its full size. When it is mature enough, it flowers, and when this happens pollination and fertilization are ready to take place. In the process of pollination the pollen is carried by wind or insects from the stamens to the stigma of the carpel. It germinates on the stigma and grows down the style into the ovary, where fertilization takes place.

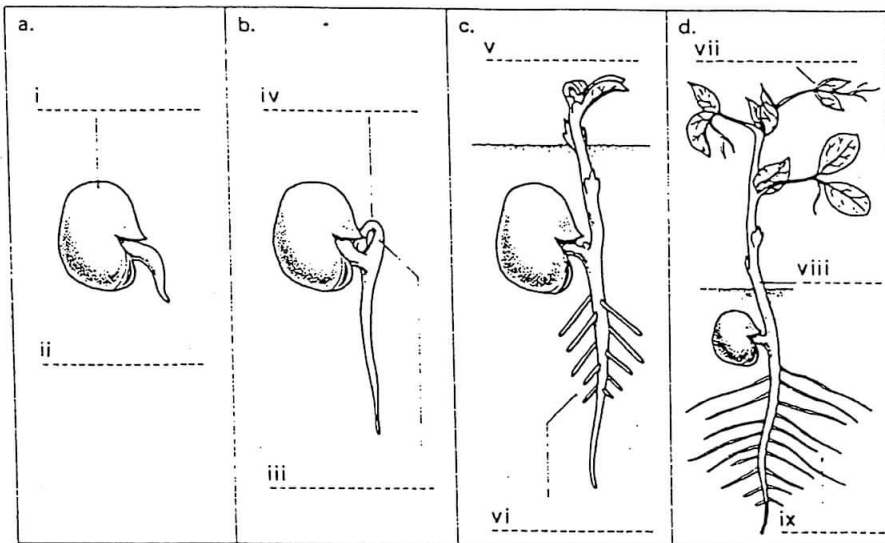
Section A: Words and meanings. Match the words from the text with the meanings.

- | | |
|--------------------|-----------------------|
| 1. stage | a. enough |
| 2. dormant | b. young plant |
| 3. (to) germinate | c. water |
| 4. alive | d. (to) become wider |
| 5. moisture | e. phase |
| 6. (to) remain | f. up/down |
| 7. (to) lack | g. resting |
| 8. sufficient | h. complete |
| 9. upward/downward | i. living |
| 10. (to) spread | j. not to have |
| 11. seedling | k. (to) begin to grow |
| 12. full | l. (to) stay |

Section B: Comprehension. Are the following statements true or false? Circle the correct answer. T/F

1. Before seeds germinate they are in a dormant state.T/F
2. A seed will germinate when the temperature level is right.T/F
3. Seeds will die if they are dried at too high a temperature.T/F
4. If a soil is too dry seeds will not germinate.T/F
5. Well drained soils are warmer than wet soils.T/F
6. Dormant seeds cannot stay alive in a badly drained soil.T/F
7. The root system forms after the stem appears above the surface of the soil. T/F
8. The seed contains enough food to nourish the seedling until the first leaves are produced. T/F
9. Rapid growth takes place after the start of photosynthesis.T/F
10. Fertilization takes place on the stamens.T/F

Section C: Labelling diagrams. SCIENZE AGRARIE 2 THE LIFE CYCLE OF A PLANT



The germination of a broad bean

secondary roots develop
 root system spreads through soil
 split testa
 photosynthesis can begin
 plumule

radicle
 curved to protect growing point
 leaves sprouting
 main shoot

Section D: Rephrasing. Rewrite the sentences replacing the words underlined with words from the text which have the same meaning.

1. The seed starts growing when there is enough air and water and the temperature is right.
2. A seed will only germinate when there is enough air in the soil.
3. Seeds which are in a resting state require little air.
4. When the stem and leaves appear above the soil surface, they begin to manufacture food.
5. After the plant has appeared above the surface of the soil it enters the stage of life when it begins to grow to full size.
6. The process of carrying the pollen to the stigma is brought about by insects or wind.

Section E: Plants and animals have certain requirements for successful growth. Describe the life cycle of a plant or an animal, the conditions it requires. 180 to 200 words.

PLANTS AND CROPS

Cultivated plants fall into two groups: herbaceous and arboreous plants. Herbaceous plants have little or no woody tissue and live for only one or two seasons. Arboreous plants have woody tissues whose cells are dead and have only one function, to make the sap circulate through the plant; they live for many years.

The products of herbaceous plants are widely used in agriculture; they can be classed as fruits, vegetables, cereals and flowers. Sometimes only part of the plant is used, for example only the fruits such as tomatoes, water melon, apples; or only the seeds, as in wheat, maize, soya; the roots, such as potatoes, sugar beet or carrots. At other times the whole plant is used as in lettuces, cabbages, flax, tobacco, fodder and cut flowers.

Cereals are plants producing farinaceous seeds. The main cereals grown in Europe are wheat, rye, oats, barley and rice. Wheat and rye are used for making bread because they contain higher amounts of protein than other grains. Barley and oats are mainly used as feed crops.

Vegetables are herbaceous plants such as cabbages, onions, carrots and lettuce which are grown for human consumption. Pulse crops (beans, lentils and peas) are leguminous plants; they have a high protein content and are widely used in human food preparation.

Industrial plants are transformed and employed in industry according to their specific uses. Soya beans have become an important industrial crop in recent years because they provide both oil and a protein-rich food, they are often imported from the USA.

Sunflowers and rape are also grown for producing oil. Sugar cane, harvested for sugar extraction is one of the main cash crops of the USA, while cotton, flax and hemp are grown for their textile fibres. Flowers and pot plants also represent an important sector of the European horticultural industry.

The marketing of agricultural products is a vast commercial operation led by the "Produce Exchange" which operates in the major towns of the world. Prices are fixed on the basis of offer and demand, and the official price lists published by the Stock Exchange make it possible to forecast market trends and plan cultivations.

SCIENZE AGRARIE DRAINAGE AND IRRIGATION

Exercise A: New vocabulary. Match the words from the text with the meanings on the right.

- | | |
|-----------------------------|------------------------------|
| 1. ease (noun) | a. to remove water |
| 2. coarse (adjective) | b. to make a tunnel |
| 3. to drain | c. excess |
| 4. a ditch | d. forward |
| 5. sloping (adjective) | e. a ceramic pipe or tube |
| 6. a tile | f. facility |
| 7. to draw off | g. a small tunnelling animal |
| 8. surplus (adjective/noun) | h. inclined |
| 9. a mole | i. a wall creating a lake |
| 10. to bore | j. to remove; take away |
| 11. a dam | k. a drainage channel |
| 12. onward (adverb) | l. large |

Exercise B: Using new vocabulary. Use some of the above words from the text to fill the gaps in the sentences.

- A sandy soil is made up of particles.
- Houses in England are built with roofs because it rains a lot.
- can cause a lot of damage to gardens and parks.
- The road from France to Italy passes through a tunnel which was under Mont Blanc.
- From the end of December, the days get longer.
- Rain water drains into at the side of the road.
- The government of Egypt built a huge across the River Nile.
- In crowded conditions, a viral infection can spread with great from one animal to another.

Exercise C: Understanding the text. Read the text and decide if the statements are true or false.

- Water passes through a permeable soil more easily than through an impermeable soil.
- When the soil particles are coarse, water percolates through the soil more slowly.
- Drainage maintains a correct balance of water and air.
- The most important technique for draining land is ditching.
- Drains should be laid far apart if the soil is impermeable.
- Underground water can be drawn off by using mole drains.
- Rivers lakes or reservoirs provide surface water for irrigation.
- Irrigation is carried out during the wet season.
- Before it can be used, subterranean water must be lifted from a well.
- The early stages of plant growth do not require as much water as the later stages.

..... connect the statements which are false.

Drainage and Irrigation

One meaning of drainage is the natural ability of the soil to allow the downward movement of water. The ease with which water can pass through a soil depends on the proportions in it of coarse and fine particles such as sand and clay. The finer the particles become, the more slowly the water percolates, or passes, through the soil. So heavy soils such as clay are more impermeable than light soils.

When there is too much water in the soil, some of it must be drained off. This is the other meaning of drainage: the removal of excess water from the soil by ditching or tiling. This is done in order to maintain a correct balance of air and water in the soil. Good drainage makes a soil easier to work. It also helps to increase the feeding area of the soil for the roots of plants. Another advantage is that a well-drained soil will have enough air for aerobic bacteria to break down humus and so provide food for the plant.

Ditching is one of the most important techniques for draining land. Ditches can be cut at certain intervals between crops. These will remove surface water. They should be wide and straight, with sloping sides, and they should be cleaned regularly. Another important technique is tile drainage. Porous drainage tiles may be laid in or on the land and these will help to draw off the surplus water. The distance between the drains will depend on the level of the land, the permeability of the soil, and the amount of rainfall. For very heavy soils, mole drainage can be used. This technique is used where water accumulates underground. A tunnel is bored about 3 inches (7-8cms) in diameter through the earth at a depth of about 2 feet (60cms).

Where and when water is in short supply, irrigation is needed to make up the deficit. We should distinguish between the collection of water and its application. There are two main sources of water for irrigation: surface water and ground water. The former may be obtained from rivers, lakes and reservoirs, and the latter is provided by underground water deposits. Irrigation from rivers is mainly along canals from dams which have been built across the rivers. The water collects behind the dam during the wet season, and it is applied in the fields during the dry season. Subterranean water is obtained by digging or drilling a well. In either case it is necessary to lift the water before it can be used for irrigation.

The amount of water which is needed for irrigation depends on a number of factors. It depends firstly on the type of soil, and the deficit in the soil. By this we mean the amount of water that is needed to bring the soil to full capacity. It also depends on the type of crop and the amount it will use at that particular time. The irrigation requirement of a crop is not the same throughout its growth period. Most plants require larger quantities of water during the later stages than in the earlier stages. Sugar cane needs heavier irrigation or more frequent irrigation from about the sixth or seventh month onwards. In the same way, grain crops require their maximum irrigation during the time earheads are forming.

Manures and Fertilizers

Plant growth cannot continue if there is not a supply of minerals in a soil. The materials which are available for this purpose can be divided into two groups: the bulky, organic materials which are called manures, and the more concentrated inorganic substances which are called fertilizers. Farmyard manure, or dung, consists of a mixture of litter, solid excreta and urine. It contains three most important substances for plant materials; nitrogen, phosphate and potash. Manure is added to the soil for several reasons. It improves the physical condition of the soil. It also keeps up the level of humus in the soil, and maintains the best conditions for the activity of soil organisms. Finally, it makes up for the plant nutrients which have been removed by crops or lost by leaching and soil erosion.

Another kind of manure is green manure. This includes leguminous crops which grow quickly, such as clover and lucerne. Such crops supply additional nitrogen as well as organic matter. A leguminous crop which is ploughed under will add as much nitrogen to the soil per acre as 3 to 10 tons of farmyard manure.

Fertilizers are usually classified according to the particular food element which forms their main constituent. So, they may be grouped as nitrogenous fertilizers, phosphatic fertilizers, potassic fertilizers and so on.

The most commonly used fertilizer which contains nitrogen is ammonium sulphate, which is made from ammonia and sulphuric acid, and which contains 21% nitrogen. This element encourages rapid vegetative growth and gives plants a healthy green colour. Another valuable nitrogenous fertilizer is urea, which is made from ammonia and carbon dioxide, and contains 46% nitrogen.

The most widely used phosphatic fertilizer, superphosphate, is made by treating mineral phosphate with sulphuric acid. Phosphorous stimulates the formation of a plant's roots, and promotes fruit and seed production. Tropical soils are often very poor in this element.

Finally, wherever high yields are expected, potash is used together with nitrogen and phosphorous. Potassium makes the plant tissues stronger, and this helps the plant to withstand mechanical damage such as broken branches and torn leaves. In this way, the entry of disease bearing agents, or pathogens, such as bacteria or fungi, is prevented. Potassium is important for all plants, but particularly so for those that produce oil and starch or sugars. Oil palm and tapioca plants require potassium in large amounts. It is usually supplied in the form of muriate of potash (potassium chloride), which contains 50 to 60% potassium oxide (K_2O) and sulphate of potash (potassium sulphate).

All plants are affected by the pH value of the soil. The less the nutrient supply, the more acid the soil becomes. Acidity makes some elements unavailable to plants. If a soil is very acid, with a pH value of less than 5.0, lime can be added to correct this acidity. The main constituent of lime is calcium, an important plant food.



Exercise A: New vocabulary. Match the words taken from the text with the meanings on the right.

- | | |
|---------------------------------|---|
| 1. supply (noun) | a. to resist |
| 2. purpose (noun) | b. organic fertilizer |
| 3. bulky (adjective) | c. precious |
| 4. manure (noun, uncountable) | d. in any place |
| 5. dung (noun, uncountable) | e. washing down |
| 6. litter (noun, uncountable) | f. voluminous |
| 7. to make up | g. animal excreta |
| 8. leaching (noun, uncountable) | h. provision |
| 9. rapid (adjective) | i. to compensate |
| 10. valuable (adjective) | j. quick, fast |
| 11. wherever (adverb) | k. aim, objective |
| 12. to withstand | l. straw used to cover the floor of animal stalls |

Exercise B: Using new vocabulary. Put some of the words from the text above into the gaps in the sentences.

- Nitrogen fertilizers can pollute water because of which takes place when it rains.
- A plant needs a good of water and sunlight.
- A greenhouse must be strong enough to the effects of wind and rain.
- The of this English course is to prepare students for the exam.
- If farmers do not vaccinate their livestock, disease spread can be very
- A dairy cow is much more than a chicken.
- Irrigation is needed there is not sufficient water for agriculture.
- In some countries, people burn the of their animals instead of wood or coal.

Exercise C: True or false? Decide which of these statements are true or false according to the text.

- Manures are as concentrated as fertilizers.
- Nitrogen, phosphate and potash are the three most important substances for plant materials.
- The level of humus in the soil can be kept up by adding manure.
- Nitrogen is supplied to the soil by quick growing leguminous crops.
- Nitrogen is the food element which is the main constituent of a nitrogenous fertilizer.
- Ammonium sulphate is a nitrogenous fertilizer.
- Fruit and seeds will not be produced if a plant is not given a phosphatic fertilizer.
- Help in withstanding mechanical damage prevents the entry of pathogens into plants.



INSECTS

Insects are classified as arthropods, i.e. they have jointed legs. They have segmented bodies which are enclosed by a hard and rigid exoskeleton or external skeleton. Although the skeleton is hard, the area between the segments is soft and therefore the insect is flexible. The body of an insect is divided into three parts: the head, the thorax and the abdomen.

The anterior or head region contains the brain and carries several sensory organs: the compound eyes, the simple eyes, the antennae and mouth parts. The compound eye is composed of numerous units which function together to provide a mosaic vision. Simple eyes are sensitive to light intensities, but do not form images.

The mouthparts of an insect vary depending on the method of feeding used by the insect, but the most common types are the chewing mouthparts and the piercing/sucking mouthparts. Caterpillars, locusts and beetles have the former while aphids, cicadas and mosquitoes have the latter.

The middle region, the thorax, bears three pairs of legs and in some insects, two pairs of wings. The legs are adapted for different functions: fossorial for digging, flat and fringed for swimming and enlarged for jumping.

The posterior region of the body is the abdomen which consists of twelve segments. It contains the reproductive organs of the insect and, in some cases, a sting which is used to paralyse prey or to defend the nest or social group.

Insects undergo changes in form as they increase in size and maturity. These changes are described as metamorphosis. One type of metamorphosis, incomplete metamorphosis, occurs in many important tropical pests, e.g. locusts and aphids. The insect passes through three distinct forms: egg, nymph and adult. In the case of aphids the female lays eggs on a leaf which becomes the food store for the nymphs, i.e. the young insects. The nymphs feed by piercing the leaf with their mouthparts and sucking the fluid from the leaf. When the number of aphids on a plant exceeds the number that can be supported by the plant, some of them grow wings and fly to new plants. Thus, if they are not controlled they can easily destroy a crop. The nymph reaches maturity in about a week.

In a second type of metamorphosis, complete metamorphosis, the insect develops through four stages: egg, larva, pupa and adult. Like insects showing incomplete metamorphosis, the adult female lays eggs on a suitable host. However, in insects showing complete metamorphosis, e.g. flies and beetles, the eggs hatch into larvae. The larval stage is a feeding stage and is remarkably different from the adult in appearance, usually in habitat, and in food consumed. Many larvae cause serious damage to crops. For example, the cotton stainer kills cotton bolls and the stalk borer makes holes in the stems of maize plants and eats the leaves and cobs. When the larvae are fully fed they form a cocoon and the pupal stage begins. During the pupal stage the insect changes in form from the larva to the adult insect.

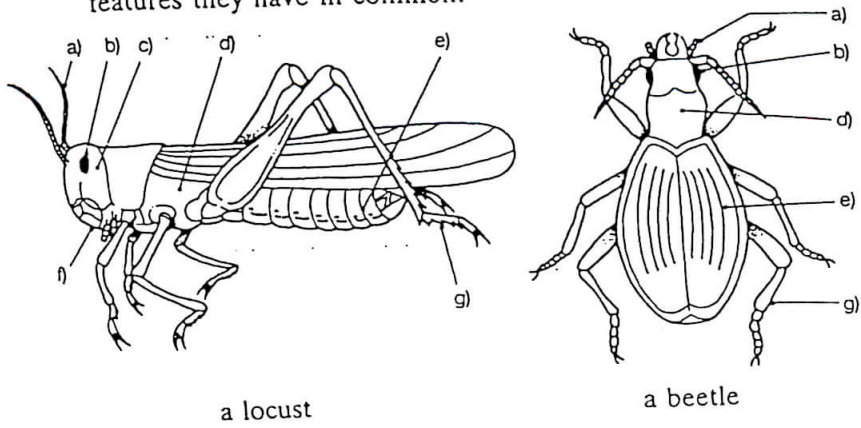
INSECTS

SECOND LEVEL ENGLISH

Insects

1. Look and read:

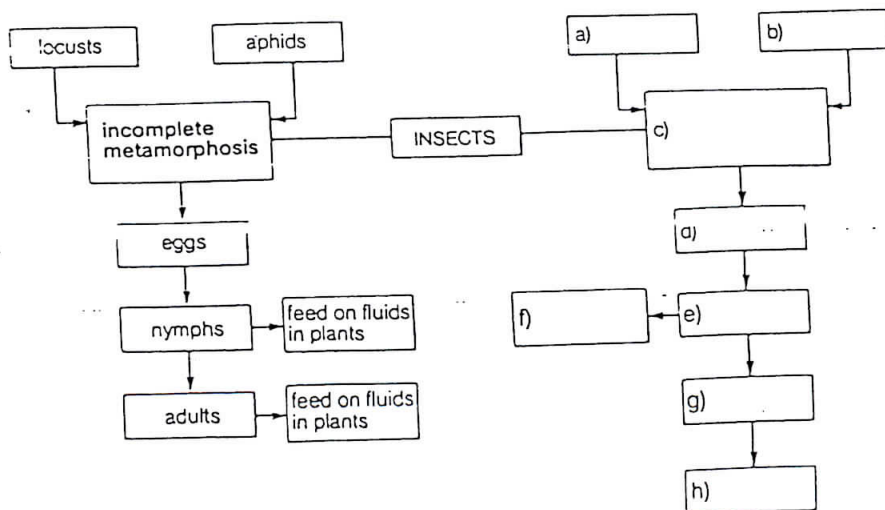
Study these two diagrams of typical insects and consider the features they have in common.



2. Copy and complete this table by filling in the names of the relevant parts next to their functions:

Parts	Functions
eyes a) _____ b) _____	to provide an image to determine light intensity
legs c) _____ d) _____ e) _____	to dig to swim to jump
mouthparts f) _____ g) _____	to eat leaves to suck liquids

Look at this chart which gives the information in the passage in note form. The left-hand side of the chart has been completed. Complete the right-hand side by referring to the passage.



Viruses

Viruses are extremely small micro-organisms which multiply only in living cells. They are the cause of many animal and plant diseases. One of the most serious viral animal diseases is foot and mouth disease, also known as epizootic apthra or apthous fever. It is a highly infectious notifiable disease of cattle, sheep, goats and pigs, caused by a Rhinovirus and characterized by vesicles in the mouth and feet; although it causes high rates of mortality only in young animals, the farmer's loss is substantial because animals affected by it do not put on weight, and the milk yield of dairy cows is reduced. In some countries, such as Britain, animals affected by foot and mouth disease have to be slaughtered immediately and the carcasses burned or buried.

Viral infections are transmitted between plants mainly by insects called vectors or carriers, in particular aphids or eelworms. Infections are spread from one animal to another by insects, by contact, or by inhalation of droplets expelled by coughing or sneezing. Viruses are resistant to antibiotics; a substance which has proved to be able to inhibit the reproduction of viruses within living cells is interferon, but it can only be used on a limited scale and under strictly controlled conditions, because of other effects it can have on living cells.

A practice which aims to protect the animal by improving its natural defence against infectious disease agents is vaccination. It consists of the injection of a vaccine containing antigens which provoke the production of antibodies in the animal. Such antibodies give a temporary or permanent protection to the animal against a particular virus or bacterium. A good vaccine should contain enough antigens, should not be toxic and should not cause disease in the animal.

Exercise A: Vocabulary. Match the words from the text with the meanings on the right.

- | | |
|-----------------|------------------------------|
| 1. highly | a. bovines (cows) |
| 2. notifiable | b. to butcher; to kill |
| 3. cattle | c. the body of a dead animal |
| 4. dairy | d. to expel from the nose |
| 5. to slaughter | e. milk producing |
| 6. a carcass | f. needing to be reported |
| 7. eelworms | g. to expel from the mouth |
| 8. to cough | h. to have a purpose |
| 9. to sneeze | i. nematodes |
| 10. to aim | j. very |

VIRUSES

Exercise B: Understanding the text. Answer the questions using COMPLETE SENTENCES.

1. What is a virus?
2. What are other names for foot and mouth disease?
3. Which animals are affected by foot and mouth?
4. What are the effects of this disease on animals?
5. What measures are taken to control this disease?
6. What terms are used to describe insects which transmit viral diseases to plants?
7. How do infections spread between animals?
8. What is the problem with the use of interferon?
9. What is the aim of vaccination?
10. How does the vaccine function?
11. What are the qualities of a good vaccine?

Exercise C: Writing descriptions. Read the example and then write about the other diseases.

Example: Smut in maize is a fungal disease caused by the organism *Ustilago zaeae*. Soft tumours appear on all parts of the plant, mostly on the cob. When the tumours are mature, they split and release a black, dusty mass of spores.

IDENTIFICATION			DESCRIPTION
<i>Crop</i>	<i>Name of disease</i>	<i>Causal organism</i>	<i>Symptoms</i>
1. Maize	smut	fungus: <i>Ustilago zaeae</i>	Soft tumours on all parts of plant, mostly cob. Tumours, when mature, split and release black dusty mass of spores.
2. Cotton	stenosis, or leaf curl	virus	Leaves of affected plant become crinkled and deformed. Yellow or pink discoloration.
3. Cotton	black arm, or angular leaf spot	bacteria: <i>Xanthomonas malvacearum</i>	All above ground parts of plant attacked. Angular spots on leaves and branches turn dark brown with reddish margin when old.
4. Sugar cane	red rot	fungus: <i>Colletotrichum falcatum</i>	Leaves wither, cane shrinks. Black specks on shrivelled rind. Split cane gives sour smell.
5. Sweet potatoes	black rot	fungus: <i>Ceratostomella funbriata</i>	Tubers attacked. Foliage turns yellow and sickly. Black cankers on portion underground. Grey-black, circular, depressed spots on fleshy roots.
6. Groundnuts	rosette disease	virus	Circular spots on both sides of leaves. Spots on upper surface dark brown with yellow halo.
7. Tomatoes	bacterial wilt	bacteria: <i>Pseudomonas solanacerum</i>	Lower leaves wilt, and eventually die.



MARKET GARDENING

Market gardening is the cultivation of vegetables for sale at markets in towns. Vegetables are short duration crops and all the family labour of the grower can be employed throughout the year. Hence, vegetable crops can be produced in succession on the same plot. Vegetables can usually be marketed at a good price. For these reasons, market gardening yields a much higher income than any other type of farming.

Successful market gardening depends on a number of factors. One of the most essential requirements is good seed, which should have high vitality and good breeding. It should be free from disease and pests and suitable for local conditions. When sown, germination should be rapid, giving healthy vigorous seedlings. Therefore, the use of commercially prepared varieties is preferable to home-grown stock.

The land selected for market gardening should have a loose, friable, free-draining soil which does not easily get waterlogged. A loam or sandy loam is usually preferred. However, a clay loam may be suitable if there is no impermeable layer within a metre of the surface. On the other hand, a stiff, hard clay should be avoided. The plots should be more or less level and laid out in beds. Narrow paths between the beds facilitate planting, watering, weeding and harvesting. Dry season beds slope inwards to hold water in the bed. Rainy season beds are ridged. In this way, water can run off easily.

Vegetable crops are heavy feeders. Consequently, they should have an ample supply of manures and fertilizers. Depending on the soil, a variable amount of organic manures should be applied. For a very sandy soil, a higher proportion is used, about 1:3. Bag fertilizers should be used which contain all the major plant nutrients. For leafy vegetables, a mixture with a high nitrogen content is best. In contrast, fruit requires a mixture with a higher level of potassium and phosphate in the later stages of growth.

Vegetables which have small seeds, such as tomato, lettuce and cabbage, are planted first in boxes or in special nursery beds to raise the seedlings. When they have grown to a suitable height they are transplanted to prepared beds. The soil should be clean and free from disease organisms. Thus the seedlings will grow straight and survive better when planted out in the production beds. There are various ways of getting rid of disease organisms. For instance, steam can be passed into mounds of nursery soil for about 24 hours. Alternatively, a chemical sterilant such as methyl bromide can be used.

The aim of transplanting is to give each plant more space to develop its roots and leaves. Planting distances vary from species to species. Generally, smaller varieties and those which mature earlier must be planted closer. The aim is to have a full crop cover of the ground when the plants are mature. For example, leafy vegetables are planted in raised beds about 15 to 25 cms apart. Chilis and aubergines, on the other hand, should be planted in rows about 60 cms apart.

Exercise A: Match the words from the text with the meanings on the right.

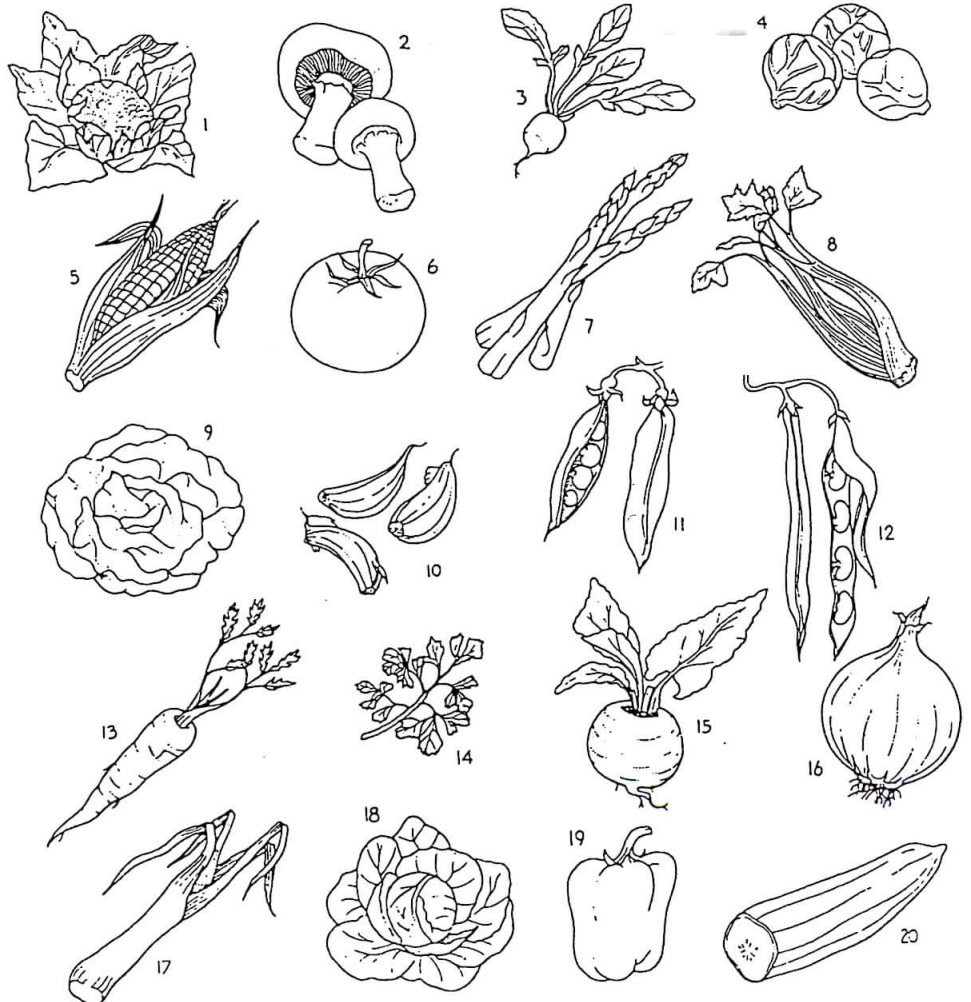
- | | |
|-------------------------|-------------------------------|
| 1. throughout | a. water vapour |
| 2. hence/thus | b. rigid |
| 3. to yield | c. open textured |
| 4. income | d. small areas of land/ plots |
| 5. suitable | e. to produce/ give |
| 6. stock | f. so/ therefore |
| 7. loose | g. during |
| 8. stiff | h. to eliminate |
| 9. paths | i. earnings |
| 10. ridged | j. adapted |
| 11. beds | k. walkways |
| 12. to get rid of sthg. | l. raised in the centre |
| 13. steam | m. varieties |

Exercise B: Answer the questions about the text using complete sentences.

1. What kind of crops are vegetable crops?
2. Why is it possible to earn well from market gardening?
3. Why is commercially prepared seed preferable?
4. What kind of soil is suitable for market gardening?
5. What is the difference between dry season and rainy season beds?
6. Which elements are important for leafy vegetables? Give two examples of leafy vegetables grown in Italy.
7. Which vegetables are planted first in nursery beds?
8. Why should the soil be clean?
9. How is it possible to eliminate disease organisms from soil?
10. What is the aim of transplanting vegetable plants?

Exercise C: Vocabulary building. Match the words to the pictures.

- | | |
|-----------|------------------|
| asparagus | beans |
| beetroot | cabbage |
| carrot | celery |
| maize | cauliflower |
| cucumber | garlic |
| pepper | leek |
| lettuce | mushroom |
| onion | parsley |
| peas | radish |
| tomato | Brussels sprouts |



Mediterranean Forest Fires

Forests contribute to the support of environmental conditions and the economic and social welfare of our planet. They are energy resources and a source of biodiversity. Despite their great importance, forests are being degraded and destroyed at an alarming pace. Deforestation has reached a critical phase in the last 30 to 40 years, especially when we consider the population increases of tropical nations.

Wildfires are a major cause of deforestation. This is because forest fires have grown in frequency and intensity, with the consequent devastation of natural ecosystems. Fire can favour regeneration in plant communities if it is a natural phenomenon. However, it is necessary to combat and limit forest fires when they become too frequent and too vast.

Forest fires are a permanent, serious problem across the whole of the Mediterranean basin. About 50,000 fires destroy 700,000-1,000,000 hectares of Mediterranean forest each year, causing great economic and ecological damage as well as loss of human life. The situation is significantly affected by climatic conditions. Prolonged summers (from June to October) with virtually no rain and average daytime temperatures well above 30°C, reduce the moisture content of forest litter. Under these conditions even a small addition of heat, such as a cigarette or lightning can start a violent conflagration. Wind is another influential climatic factor. The inland summer winds are characterized by high speed and a drying effect, for example the "tramontana" of Italy. They cause atmospheric humidity to fall below 30% and spread fires by carrying sparks over great distances.

Another important factor increases the danger of fires. Socio-economic development in the region has led to a decrease in the collection of wood and forest scrub for firewood and fodder. Populations have moved to the cities and large areas of uncultivated marginal farmland are colonized by bush and natural pine groves. The remaining population uses fire to eliminate stubble and renew pastures.

It is evident that the majority of forest fires are manmade. Natural agents do cause forest fires, but the number of natural fires is small in comparison with the number caused by humans. An important cause of forest fires is the burning of large quantities of solid waste; the European coastal areas are subject to frequent fires caused by the burning of rubbish. An increasing number of fires are ignited with the aim of destruction, above all in the Western Mediterranean. The motives are various; private revenge, hunting rights and even government forestation policies can provoke arsonists if reforestation is carried out at the expense of grazing lands, or if natural parks restrict land use.

Plants and crops - exercises

Exercise A. Match the following words from the text with their meanings on the right.

Text:	Meaning:
a. woody (adjective)	1. to collect
b. sap (noun)	2. quantity
c. cereal (noun)	3. to use
d. whole (adjective)	4. money-making
e. fodder (noun)	5. to give, produce
f. amount (noun)	6. plant with farinaceous seeds
g. employ (verb)	7. entire
h. provide (verb)	8. lymph, plant fluid
i. harvest (verb)	9. plants used as animal feed
j. cash (noun)	10. hard

Exercise B. Put some of the above words from the text into the following sentences.

1. Barley and wheat are examples of crops.
2. Farmers can pesticides to kill insects which damage crops.
3. A tree is a plant which has tissues containing.....
4. The of rainfall varies according to the season.
5. Food crops are consumed by the grower, while crops are sold.
6. Sheep wool, milk and meat.
7. Farmers can use machines to.....cereal crops.
8. Bad weather affected thecountry last month.

Exercise C. Are these statements true or false? Correct the false statements.

1. Cultivated plants are classified in two groups. T/F
2. Herbaceous plants live for more than one season. T/F
3. The cells of woody tissues are no longer alive. T/F
4. Agriculture does not use many herbaceous plants. T/F
5. Barley and oats contain more protein than wheat and rye. T/F
6. Vegetables are cultivated to be eaten by people. T/F
7. The USA is the only country which grows sugar cane. T/F
8. The fibres of some plants are used to make cloth. T/F
9. Flowers and pot plants are not grown in Europe. T/F
10. Agricultural prices are fixed according to weather conditions. T/F

Exercise A: Match the words from the text with the meanings on the right.

- | | |
|-------------------|--|
| 1. welfare | a. food for animals |
| 2. despite | b. a group of trees |
| 3. pace | c. grassland for sheep, cattle etc. |
| 4. average | d. a person who burns trees illegally |
| 5. litter/rubbish | e. speed, velocity |
| 6. lightning | f. typical |
| 7. spark | g. uncultivated trees, bushes etc. |
| 8. scrub/bush | h. health |
| 9. fodder | i. waste |
| 10. grove | j. in spite of |
| 11. stubble | k. a flash of fire |
| 12. arsonist | l. electricity from a storm |
| 13. grazing | m. plant waste remaining after harvest |

Using new words. Put some of the words from the text in Exercises a and B into the gaps.

- The Italian family consumes a lot of pasta.
- The of life is faster in the city than in the country.
- A farmer is very concerned with the of his plants and animals.
- Farmers often burn after harvesting.
- One of Bari's theatres was destroyed by an
- Different animals need different types of to satisfy their nutritional requirements.
- Cows and sheep eat a lot of grass, so farmers need big areas for
- Never stand under a tree in a storm because you could be killed by
- We put our and in bins for collection.
- There are very many orange and lemon in the Metaponto area.

Exercise B: Understanding the text. Use COMPLETE SENTENCES to answer the questions.

- Why are forests important?
- Why are wildfires a major cause of deforestation?
- What is the annual extent of damage in the Mediterranean area?
- How do the weather conditions favour the spread of fires?
- Why is wood no longer collected for firewood?
- What has happened to marginal farmland?
- How is fire used by the remaining population?
- How do most fires start?
- What is the origin of many fires in European areas?
- Which reasons are given for deliberate destruction by fire?

Exercise C: How is it possible to combat forest fires?
Discuss some of the ways to prevent them.

Exam Text 19 Exercises

Section B: Read the abstract and answer the questions with **complete** sentences.

1. What is the author's full name?
2. When was the article published?
3. Which journal published the research?
4. What was the aim of the research?
5. Where does the author work?

Section C:

Read the abstract very carefully and then decide if the following statements are TRUE or FALSE. Circle the correct answer: T / F

1. Three varieties of strawberry were studied. T / F
2. "Senga Sengana" gave bigger yields than "Korona". T / F
3. "Bounty" gave fruits of better quality than "Senga Sengana". T / F
4. "Korona" produced fruits of a lower quality than "Senga Sengana". T / F
5. "Bounty" tolerated the cold best of all the cultivars. T / F
6. Use of a 35-cm-high bed improved fruit quality. T / F
7. Flat bed production increased the yield. T / F
8. Fruit size increased when planting density was increased. T / F
9. Increased planting density caused increased yield. T / F
10. There was no significant interaction between year and cultivar. T / F

Section D: Write about some important fruit crops which are grown in Apulia (150-200 words)

Effects of bed height, plant spacing and cultivar on strawberry yield and fruit classification

Nestby, R. 1994 Effects of bed height, plant spacing and cultivar on strawberry yield and fruit classification. Norwegian Journal of Agricultural Sciences 8: 127-133. ISSN 0801-5341

In an investigation of the effects of bed height, plant spacing and cultivar on yield and fruit classification, it was found that the strawberry cultivar "Bounty" produced a larger fruit yield than "Korona", and both cultivars produced greater yields than "Senga Sengana" (SS) as a mean of two years. "Bounty" had larger and more plentiful fruits in the highest quality classification than the other cultivars. "Korona" had more rotted fruits than "Bounty" and "SS". Regarding freeze injury of crowns, it was found that "Bounty" was more freeze tolerant than "Korona" and "Korona" was more tolerant than "SS". Production on a 35-cm-high bed improved the fruit quality, and reduced the percentage of rotted fruits and culls compared with production on a flat bed, while the influence on yield was only a minor one. Increasing the plant density from 3 246 to 5 495 plants/da increased the yield by 424 kg/da but reduced fruit size, as a mean of all cultivars and two years; no significant interactions were observed between plant spacing and cultivar or plant spacing and year. For effects on yield and all yield components with exception of culls, the interactions between year and cultivar and between year and bed height were significant.

Key words: Bed height, cultivar, plant spacing, strawberry, yield.

Rolf Nestby, Kvithamar Research Station, N-7500 Stjørdal, Norway

Section A: Find words/ expressions in the abstract with the following meanings:

1. average
2. abundant
3. damaged fruits
4. small, unimportant
5. distance between plants
6. a study
7. damage caused by extreme cold
8. discarded fruits
9. bigger
10. production/output

Exam text/20"MAD COW DISEASE" (BSE)

Nobody knows how widespread the danger is, but concern is worldwide. The FAO has warned that cattle in over 100 countries may have been exposed to the disease known as "mad cow disease": bovine spongiform encephalopathy (BSE). This degenerative brain disease is incurable at present, and was first identified in Great Britain in 1985; since then it has killed about 180,000 cattle and is considered the likely cause of the deaths of over 80 people. Great Britain banned the use of the animal feeds blamed for the disease in 1986, but continued to export these feeds to other countries in Eastern Europe, the Middle East and Asia. Now the FAO is worried that BSE will develop in these areas.

Experts say that the incubation period in humans seems to take decades and that the illness is impossible to detect until its terminal stages. It is estimated that 125,000 people in Great Britain could eventually be victims of BSE's human form, Creutzfeldt Jacob disease (CJD).

There is no evidence as yet that the disease can be transmitted in blood, but blood banks in some countries now automatically reject potential donors who spent six months or more in Great Britain during the '80s and early '90s.

The safety of all kinds of cattle-derived products, from baby food to skin creams and medicines, is now being questioned. The U.S. government has asked pharmaceutical companies to ensure that vaccines no longer contain cattle products from areas where BSE has been identified.

The biggest risk comes from eating infected beef. The disease spread fast among British cattle in the 1980s when farmers routinely fed their cows on the ground up remains of cattle carcasses as a cheap protein supplement. Scientists now know that the BSE pathogen is highly infectious, and that one gram of infected meat and bone meal (MBM) is enough to transmit the disease to a healthy animal.

(Newsweek Magazine - Feb. 2001)

Exercise A: Vocabulary

Identify words/ expressions in the text which mean:

1. extensive
2. probable
3. prohibited
4. considered responsible
5. concerned
6. pulverised
7. flour/powder
8. at present
9. food for animals
10. organ which commands the nervous system

Exercise B: Answer the following questions with complete sentences.

1. What is BSE?
2. Which organ does it affect?
3. Where was it first detected?
4. How many people and cattle has it killed in GB?
5. What is the human variant called?
6. What happened in 1986?
7. How long is the incubation period?
8. Can the disease be transmitted in blood?
9. What action has the US government taken?
10. How were cattle in GB infected?
11. How is the disease transmitted to humans?
12. What is MBM?

Exercise C: Write about some of the health risks associated with food (150-200 words)