

The other desert color — green — identifies the few arable areas. Here life-giving water is available from rivers such as the Nile or from underground reserves.

The line between green and brown is often sharp in desert regions. The rich green of an irrigated oasis or river valley suddenly ends. Beyond is the vast, dry emptiness of brown terrain.

## UNIT 9.

**Exercise 1. Read and translate the text. Learn unknown words.**

### *Vegetation and Soils*

# **NATURAL VEGETATION**



*Natural vegetation regions.* Vegetation is plant life. The kind of natural vegetation a place has depends upon several factors: climate, relief, soils. Climate plays a particularly important role in the distribution of vegetation, as different kinds of plants need different amounts of heat

and moisture in order to grow well. Trees generally need more moisture than grasses. For areas with a heavy and well-distributed rainfall and at least one month per year with average temperatures above 10°C the natural vegetation is forest where the trees are dominant plants.

In areas where the rainfall is moderate or light and is very seasonal in its distribution, some type of grassland, where grasses are the dominant plants, is formed. In very dry or very cold conditions only a few plants can live. Plants able to live in deserts survive by adapting to the extremely dry conditions. In cold areas some vegetation survives by growing rapidly during the short period when the ground thaws.

The exact nature of the forest, grassland and desert types of vegetation, however, varies greatly.

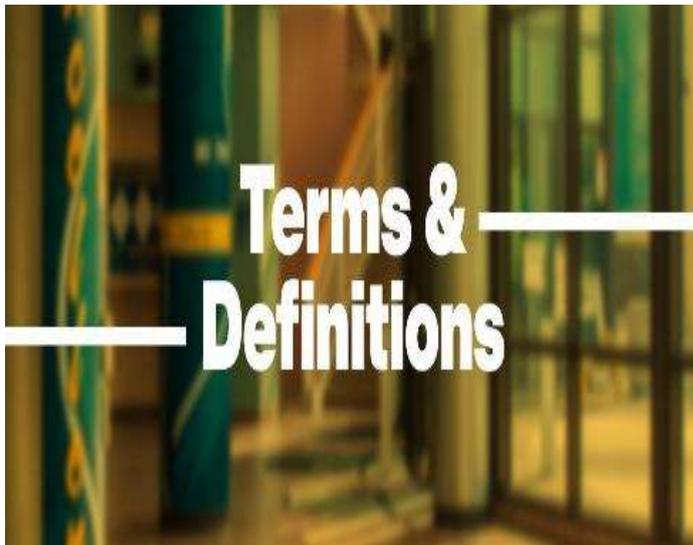
For example, the tropical rain forests of the Amazon basin are very different from the coniferous (needle leaf) forests of the interior of northern Canada and Russia or scrub forests typical for Mediterranean climate region. Similarly, the savanna grasslands of East Africa are very different from the temperate grasslands of the steppes of Ukraine.

### **Exercise 2. Give equivalents for:**

Рослинне життя, dominant plants, пасовища, to thaw, тропічні ліси, to depend upon several factors, рельєф, moderate rainfall, різна кількість вологи, average temperatures, принаймні, very dry or very cold conditions, пристосовуватися, during the short period, пустеля, coniferous (needle leaf) forests.

### **Exercise 3. Answer the questions:**

1. What is the definition of the term 'vegetation'?
2. What factors does vegetation depend on?
3. How is vegetation connected to climatic conditions? Are they interdependent?
4. Where are forests and grasslands usually found? What are the different types of forests and grasslands?
5. How does the vegetation differ with the distribution of moisture?
6. Give examples of dominant plants in steppes, deserts, grasslands?



**Exercise 4. Learn the following definitions.**

**VEGETATION (n)**

1. the process of growth in plants; type of development, growing, growth, maturation.

2. all the plant life in a particular region or period.

*Synonyms:* botany, flora

**Exercise 5. Choose a suitable word for each sentence. Translate the sentences into your native tongue and write down your own sentences with the underlined words:**

1. Vegetation ..... climatic conditions and plant-growth patterns.

*differs from*                      *found in*                      *depends on*

2. Global vegetation regions ..... forest-lands, grasslands, vegetation in dry and cold regions, and mountain vegetation.

*divide*                      *include*                      *survive*

3. One can distinguish between different types of forests all over the world. You can admire the beauty of tropical ..... near the Equator or investigate boreal forests close to the Arctic Circle.

*deserts*                      *rainforests*                      *coniferous forests*

4. Grasslands can be found on every continent except Antarctica. The ..... type of vegetation here is grasses.

*extraordinary*                      *rare*                      *dominant*

5. Arctic tundra has a ..... landscape and is frozen for much of the year.

*rich*                      *bare*                      *vivid*

6. .... the barren look of hot deserts, they are full of animal life.

*In spite*                      *Deprived*                      *Despite*

7. Most desert animals, for instance, lizards or snakes, are ..... It means they are active at night.

*nordic*

*nocturnal*

*nonverbal*

**Exercise 6. Scan the text and get ready to speak about the role of soil plant vegetation.**

## UNIT 10.

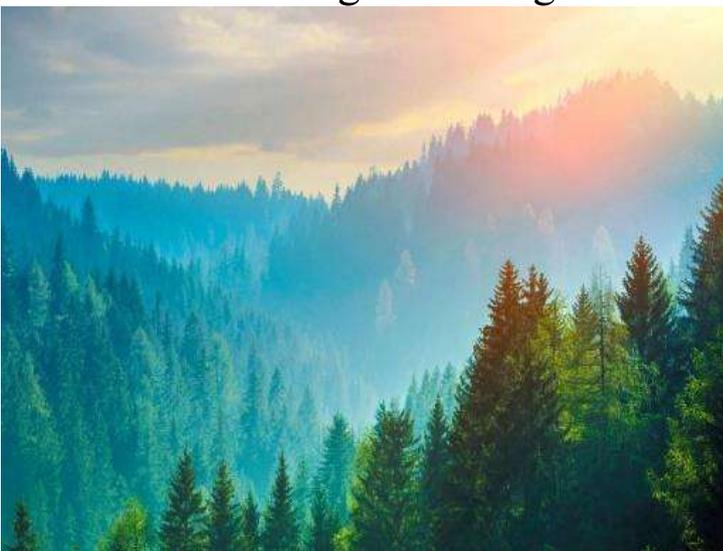
**Exercise 1. Read and translate the text. Learn unknown words.**

### *Vegetation Regions*

All plant life which covers the ground in a particular area is called **vegetation**. Based on the type of climate, soil, elevation (the height above sea level), and the soil's ability to hold water, we can distinguish between many vegetation regions. These regions are areas with distinct plant types. Among them, the five which spread across the largest land areas on Earth are **forests, grasslands, tundra, deserts, and ice sheets**.

### **Forests**

Forests are vegetation regions dominated by trees and bushes.

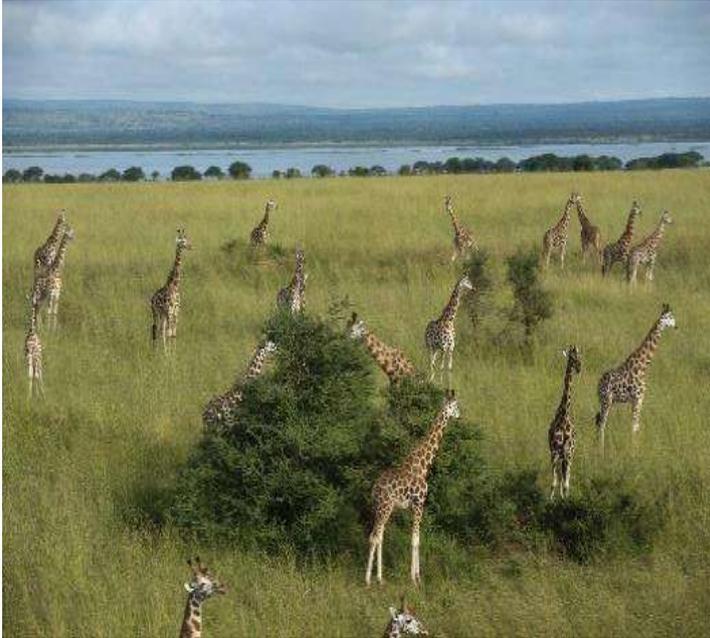


Numerous different types of forests such as tropical rain forests, cool climate forests, and temperate forests, are found all over the world, even close to the Arctic Circle (the area around the North Pole).

Trees and their leaves can be viewed as

one factor used for distinguishing between different types of forests. For example, deciduous (losing its leaves every year) forests' trees have green leaves which change their color in the fall, become red or yellow, and then fall to the ground when the winter starts.

The evergreen forests, on the other hand, have trees with leaves that stay green all the time. Evergreen rainforests are especially rich in wildlife, they provide a perfect habitat for thousands of animal and plant species.



**Grassland** vegetation regions are dominated by grass. These large, flat, open areas are found on every continent other than Antarctica. The type of grass depends on the climate of the area.

Grasslands are divided into two major types: tropical grasslands and temperate grasslands. Tropical grasslands are also called savannas, and they are usually found in Africa, where it is warm and dry all year.

Temperate grasslands are more common in the Americas. Grasslands support many plant-eating animal species. The reason why grasslands can survive all the grazing is because the grass grows from the bottom, not the tips, so, in fact, it grows more when it is eaten.

## **Tundra**

The vegetation region called tundra is found in cold places where it is very difficult for trees to grow. For this reason, the vegetation in the tundra typically includes shrubs (bushes), grass, and mosses (small green plants without flowers).

Because the ground is often too cold for plants to be able to develop their roots, few species live in the tundra. Plants such as wildflowers only appear in the summer.



There are two distinct types of tundra: alpine (of the mountains) and arctic (of the North Pole). In the alpine tundra, weather conditions are very harsh, with cold winds and snow. One example of such a vegetation region is the mountain range of the Himalayas in Tibet.

Arctic tundra dominates the far north of our planet, especially the north of Russia and Canada. The soil stays frozen for most of the year or even permanently (this is called permafrost).

**Exercise 2. Develop your reading skills. Read the following text and do the comprehension tasks. Decide whether the following statements are true or false.**

1. Different types of forests are found across the planet.
2. The main representatives of forests are bushes and mosses.
3. Coniferous trees always change their color in autumn.
4. Rainforests give shelter to sea turtles.
5. Scientists distinguish between seven vegetation regions.
6. Temperate grasslands are vast mountainous areas found in Africa.
7. Savannas are also called tropical grasslands and are found close to tropical rainforests.
8. All forest trees have green leaves all year-round.
9. Few species can survive in the arctic tundra.
10. The ice sheet supports many plant species.
11. Grasslands are great habitats for plant-eating animals.

12. Snakes and lizards, are only active at night when the temperatures reach their maximum level.
13. Because it is difficult for low-to-ground vegetation to survive in harsh tundra conditions, the dominant plants there are high trees able to adapt and withstand tundra conditions.

**Exercise 3. Use various sources to search the information and get ready to answer the following questions.**

1. What are the tundra's distinct seasons?
2. What is the maximum summer temperature there?
3. What is permafrost?
4. Why do the plants grow in groups in the tundra?
5. What are the major world's grasslands?
6. What types are temperate grasslands presented by?
7. What makes a forest a rainforest?
8. What are the three major areas of tropical rainforests?
9. What are the rainforest layers? Describe them.
10. What leads to disappearance of rainforests?

**Exercise 4. Read short texts about the next two vegetation regions and decide which answer (A, B, C or D) best fits each gap. There is an example at the beginning (0).**



Deserts are a (0)  B  habitat for most animals and plants. This vegetation region is very dry, receiving less than 10 cm of rain a year. Some deserts like the Atacama in Chile never get any rain. The temperatures go from very hot during the day to much colder at night. Because the area is so dry, the soil is often very (1) \_\_\_\_\_ or rocky. Desert plants, such as (2)

\_\_\_\_\_, for example, have very deep and widespread roots, so they can reach any water (3) \_\_\_\_\_ underground. They store water in their small leaves and use their (4) \_\_\_\_\_ (thin, sharp points) to protect themselves from being eaten.

Surprisingly, many animal (5) \_\_\_\_\_ have made deserts their home. Most of them, like snakes and lizards, are *only active at night* when the temperatures cool down.

0	A	hail	B	harsh	C	harvest	D	heaven
1	A	sandy	B	stunning	C	slippery	D	sunny
2	A	peacock	B	cackles	C	cactusess	D	cacti
3	A	sustainable	B	adoptable	C	available	D	suitable
4	A	pickles	B	prickles	C	beetles	D	beeds
5	A	species	B	spices	C	spies	D	spoons

### Ice Sheets



(6) \_\_\_\_\_ it is defined as a separate vegetation region, the ice sheet has almost no vegetation at all. As its name suggests, the ice sheet is a large area of ice. It (7) \_\_\_\_\_ over 20,000 square miles (50,000 square kilometers).

All this ice was formed as (8) \_\_\_\_\_ of snow did not entirely melt but piled up and grew thicker.

This vegetation region is (9) \_\_\_\_\_ in Greenland (the largest island in the world, located close to the North Pole) and Antarctica. These two ice sheets alone contain some 99 percent of all freshwater ice on Earth.

The ice sheet is very important because, thanks to these layers of ice, scientists are able to monitor the levels of pollution and volcanic

gases in the atmosphere. The ice layers can also tell us much about our planet's climate history.

6	A	Thought	B	Although	C	Otherwise	D	Through
7	A	expands	B	extrails	C	exaggerates	D	exhausts
8	A	lovers	B	lawns	C	lawyers	D	layers
9	A	fund	B	founded	C	fond	D	found

**Exercise 4. Scan the text and choose the correct answer to the following questions.**

1. **Vegetation provides \_\_\_\_\_ to animals and provides us with timber and many other forest produce.**
  - A. roof
  - B. climate change
  - C. shelter
  - D. species
2. **The verb "graze" means .....**
  - A. to treat someone badly
  - B. to feed on grass
  - C. to look at someone for a long time
  - D. to do something on purpose
3. **Bamboo is the fastest-growing \_\_\_\_\_ plant in the world.**
  - A. paper
  - B. woody
  - C. glass
  - D. oxygen
4. **What does the word "store" mean?**
  - A. to save for later
  - B. to sell with a discount
  - C. to buy something new
  - D. to hide something in a secret place
5. **The term "habitat" means .....**
  - A. a house built by yourself or construction company
  - B. the natural environment of an animal

- C. the time mammals spend sleeping
- D. the amount of food consumed daily

**6. What does "distinguish" mean?**

- A. to treat everyone with candies
- B. to understand several languages
- C. to see differences between two or more things
- D. to reduce the amount of something

**7. Scientists distinguish \_\_\_\_\_ several vegetation regions.**

- A. between
- B. of
- C. from
- D. among

**8. Cacti \_\_\_\_\_ water in their leaves.**

- A. lag behind
- B. store
- C. deposit
- D. withdraw

**9. Deserts have almost no \_\_\_\_\_ or rainfall.**

- A. repetition
- B. precipitation
- C. reproduction
- D. prohibition

**10. Scientists carefully monitor the \_\_\_\_\_ of pollution.**

- A. levels
- B. volumes
- C. degrees
- D. sizes

**11. \_\_\_\_\_ forests have trees with cones and needles instead of leaves.**

- A. Boreal
- B. Rain
- C. Coniferous
- D. Old

**12. During the 1600s, tulips were so valuable in Holland that their \_\_\_\_\_ were worth more than gold.**

- A. lamps

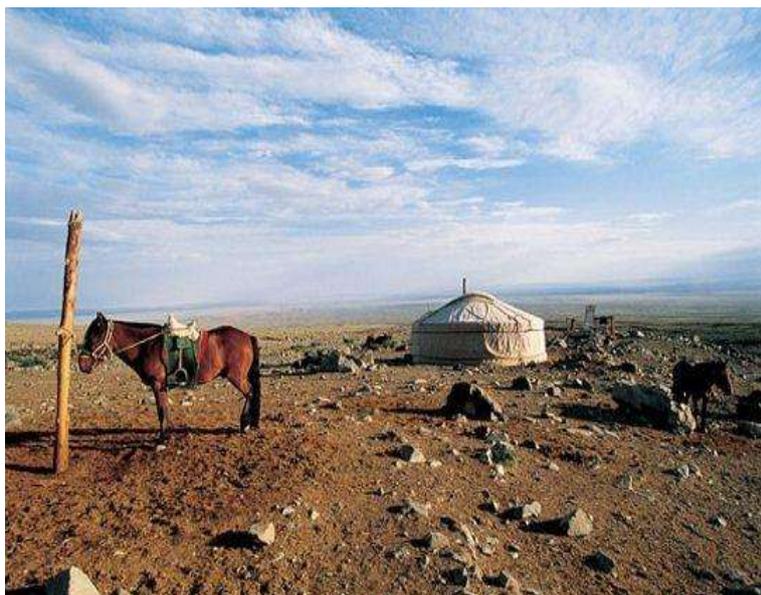
- B. loops
- C. bulbs
- D. buds

**Exercise 5. Answer the questions.**

1. Which vegetation region receives very little rain?
2. When do wildflowers appear in the tundra?
3. What characteristics of soil depend on vegetation?
4. Where is nearly all freshwater ice on Earth found?
5. How do cacti protect themselves from being eaten?

**Exercise 6. Choose the most appropriate word from the box and use the verb in the necessary tense form.**

<i>representatives</i>	<i>stretch</i>	<i>unlike</i>	<i>conserve</i>
<i>nomads</i>	<i>receive</i>	<i>habitat</i>	<i>desert</i>
<i>contrast</i>	<i>cover</i>	<i>conditions</i>	<i>cattle</i>



The Gobi is the fifth largest ..... in the world. It ..... across Central Asia over large parts of China and Mongolia. In ..... to the Sahara, the Gobi is a cold desert. Ice and snow ..... its large territory in the winter. It can be

explained by the fact that the Gobi is approximately 1500 m above the sea level.

The Gobi can be considered one of the driest places on our planet. It ..... less than 200 mm of rainfall per year.

..... the Sahara, the Gobi is mostly bare rock. It is the ..... for many unusual animal species including the mountain sheep, snow leopard, lynx and a small population of Gobi bears.

The ..... of flora are wild onions, shrubs, grasses and the Saxaul Tree. The tree is often bent in gnarly shapes by the wind. The leaves of the tree are small. It helps to ..... water which is very sparse in this region.

The population density is small (one person per square km). Most of the people living in the Gobi Desert are Mongolian. They are ..... They usually move from one place to another to find better living ..... The main occupation of the inhabitants is nomadic ..... raising.



### What is a collocation?

A collocation is two or more words that often go together. These combinations just sound "right" to native English speakers, who use them all the time. On the other hand, other combinations may be unnatural and just sound "wrong".

#### **NATURAL ENGLISH**

the fast train  
fast food

a quick shower  
a quick meal

#### **UNNATURAL ENGLISH**

the ~~quick~~ train  
~~quick~~ food

a ~~fast~~ shower  
a ~~fast~~ meal

### **Vegetation Collocations**

- growing close together in large amounts: ***dense, lush, thick***      *The land in this region is very fertile, with dense vegetation.*

2. **green**                      *The island has a warm tropical climate with a rich landscape covered in lush green vegetation.*
3. **natural, semi-natural**                      *Great care has been taken to preserve the natural vegetation in the area.*

**Exercise 7. Using the collocations describe the vegetation of the area you live in.**

## UNIT 11.

**Exercise 1. Read and translate the text. Learn unknown words.**

### *Soil composition*

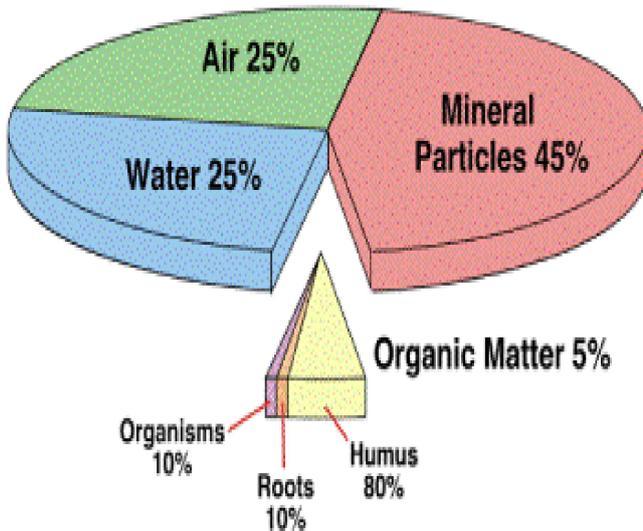
Climate, vegetation and soil are closely related components of nature and their global distributions over the earth's surface are very similar.

Soils are a mixture of mineral and organic matter in which plants grow. The concept of soil as a medium of plant growth was born in antiquity and remains as one of the most important concepts of soil today.

Soils are of great importance to people. Compared with the total volume of the earth, the soil forms a very thin layer, from a few centimetres to several metres in thickness. Yet this thin layer of soil produces most of our food supply.

This productive topsoil upon which agriculture depends has taken hundreds of years to develop, but if it is misused it can be destroyed within a very short time.

The soil has five basic components: mineral particles formed by the breakdown of rocks; decayed organic materials; water which has soaked into the ground as a result of precipitation; air; living organisms such as earthworms and many others.



The soil can be viewed as a mixture of mineral and organic particles of varying size and composition in regard to plant growth. The particles occupy about 50 percent of the soil's volume.

The remaining soil volume, about 50 percent, is pore space, composed of pores of varying shapes and sizes. The pore spaces contain air and water and serve as channels for the movement of air and water.

Roots anchored in soil support plants and roots absorb water and nutrients. The three essential things that plants absorb from the soil and use are:

(1) *water* that is mainly evaporated from plant leaves, (2) *nutrients* for nutrition, and (3) *oxygen* for root respiration.

One of the most obvious functions of soil is to provide support for plants. Roots anchored in soil enable growing plants to remain upright.

**Exercise 2. Give equivalents for:**

closely related components, забезпечувати підтримку рослин, to be of great importance to smb., коріння рослин, the total volume, давати змогу, particles of varying size, поживні речовини, to ossure, дихання, anchored in soil, поглинати з ґрунту, to ossure, відмерлі органічні рештки, the movement of air and water.

**Exercise 3. Insert the prepositions if necessary:**

components ... nature, a mixture ... mineral and organic matter, a medium ... plant growth, the total volume ... the earth, formed ...

the breakdown ... rocks, a result ... precipitation, ... regard ...  
plant growth, channels ... the movement ... air and water.

#### **Exercise 4. Guessing the meaning of unknown words.**

##### **A. Match the words with their meanings.**

##### **B.**

- |   |           |         |   |   |
|---|-----------|---------|---|---|
| 1 | soil      | organic | a | thickness of material, typically one of several, covering a surface or body                                     |
| 2 | nutrients |         | b | bear all or part of the weight of; hold up.   |
| 3 | support   |         | c | substances that provide nourishment essential for the maintenance of life and for growth                        |
| 4 | absorb    |         | d | the fraction of the soil that consists of plant or animal tissue in various stages of breakdown (decomposition) |
| 5 | layer     |         | e | take in or soak up (energy or a liquid or other substance) by chemical or physical action                       |

##### **C. Open the brackets and write the correct tense form of the verb. Look at the following examples and make up your own sentences with the underlined words.**

1. Fish is a source of many important nutrients, (to include) protein, vitamins, and minerals.
2. The dome (to support) by a hundred white columns.
3. All houses in the town (to cover) with a layer of ash after the volcano eruption.
4. The dark material (to absorb) a lot of heat during the day.
5. Layers of leaves or other organic matter sometimes (to add) to speed decomposition.

##### **C. Choose the right word to complete the sentence.**

1. The experts have found poisonous organic matter in water *samples* / *sands* / *additives* they studied.

2. Vegetarians need to get enough protein, iron and vitamin B12, *nuts / nutrients / nutritious* usually found in meat.
3. Do not overmix the *layers / lawyers / levels*, this can bury organic matter too deeply.
4. Manure is used by many farmers for soil fertilization because it is relatively cheap and replenishes *nutritious / nutrition / nutrients* and organic matter.
5. This cream is *absorb / abandon / absorbed* directly into your skin to keep it from becoming dry.

**Exercise 5. Choose the right word to fill in the gaps:**

1. The soil can be viewed as a (суміш мінеральних та органічних часток різного розміру) and composition in regard to plant growth.
2. Roots anchored in soil (підтримують) plants and roots (поглинають) water and nutrients, (чи не так)?
3. One of the most obvious functions of soil is to (забезпечувати) support for plants.
4. Plants absorb from the soil water, (поживні речовини для живлення), and oxygen for (дихання коріння).
5. The productive topsoil can be (знищений) within a very short time if it is misused by people.



**Exercise 6. Using the collocations describe the types of soil of the area you live in.**

*Verb + soil*  
*cultivate, turn, till, fertilize, dig*

If you cultivate the soil too deeply, the surface will only dry out faster.

*Adjectives + soil*  
*dry, wet, fertile, rich, poor, barren*

Strawberry grows well on this sandy soil.

*Soil + noun*  
*fertility, samples, erosion, types, survey,*

Soil fertility can be enhanced through organic and inorganic fertilizers.

**Exercise 7. Read the text and give the definition of the term “soil”.**

### *Essential Nutrient Elements*

Plants need certain essential nutrient elements to complete their life cycle. At least 16 elements are currently considered essential for the growth of most vascular plants. Carbon, hydrogen, and oxygen are combined in photosynthetic reactions and are obtained from air and water. These three elements compose 90 percent or more of the dry matter of plants. The remaining 13 elements are obtained largely from the soil.

Nitrogen (N), phosphorus (P), potassium (K), calcium (Ca), magnesium (Mg), and sulfur (S) are required in relatively large amounts and are referred to as macronutrients.

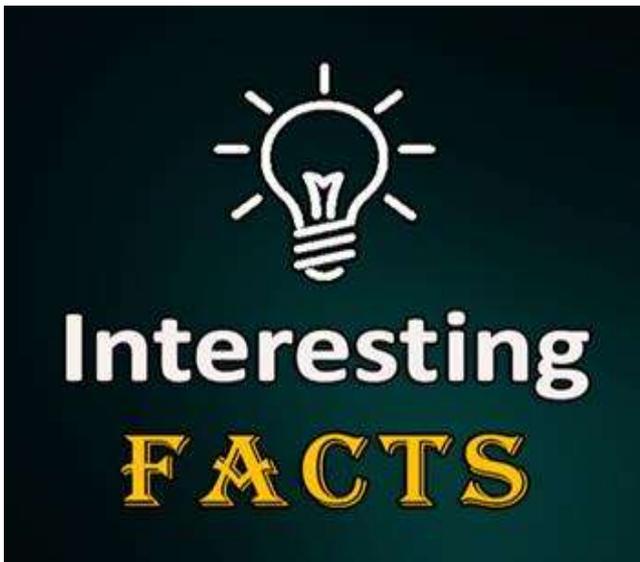
Elements required in considerably smaller amounts are called micronutrients. They include boron (B), chlorine (Cl), copper (Cu), iron (Fe), manganese (Mn), molybdenum (Mo), and zinc (Zn).

Most of the nutrients in soils exist in minerals and organic matter. Minerals are inorganic substances occurring naturally in the earth. The organic matter in soils consists of the recent remains of plants, microbes, and animals and the resistant organic compounds resulting from the rotting or decomposition processes.

**Exercise 8. Answer the questions:**

1. What is the soil? What is its role in the life of plants?
2. Does it take much time to form a fertile layer of soil?
3. What main parts does the soil consist of?
4. What function do plant roots perform?
5. What things do plants absorb from the soil?
6. What type of soil does Ukrainian Polissia have?

7. What types of soils are favourable for cultivation of wheat (strawberry, grapes)?
8. How can the quality of soil affect the growth of plants?
9. Why is humus important?
10. Why is soil considered to be a non-renewable resource?
11. Is it possible for people to protect the soil?



### ***Formation of the Soil profile***

Soil is the product of two major processes. These are the decomposition of rock and the decay of plant and animal life. The processes of physical and chemical weathering are responsible for breaking down the bedrock into fragments. These rock fragments provide the original material for the formation of soils. It is colonized by living things (organisms). Decayed plants and animals form humus, which makes up the top level. Soil rich in humus is usually fertile and is black or dark brown.

Below humus lies a layer of mineral particles that washes down from the humus. Finally, there is a layer of parent material, or solid rock. This section down through a soil from the surface to the underlying rock is called the soil profile. In a mature soil, profile usually consists of successive (coming one after the other) layers — horizons. Different soil profiles are found under different conditions, and soils are recognized and classified on the basis of the parts of the profile which are present.

### ***Factors influencing soil development***

The climate is the most important factor of soil formation. It affects soil type both directly through the weathering effects, and indirectly as a result of its influence upon plant life. In tropics

temperatures are high throughout the year, and as a result weathering takes place much more rapidly than it does in places which are further from the equator. It has been estimated that in tropical regions the effectiveness of weathering is almost ten times that of polar regions, and more than three times that of temperate regions. As a result, deeper weathering is characteristic of tropical regions.

In the areas which have very heavy rainfall for much of the year there is a downward movement of water in the soil. The water dissolves the soluble materials and soluble humus in the soil, and carries both downwards. This process is known as leaching. The materials carried downwards by the water are redeposited at a lower level in the soil. In the areas which have long and severe dry season, evaporation is greater than precipitation for a large part of the year, and so water tends to move upwards by capillary action. On reaching the surface the water evaporates, leaving behind those salts which were dissolved in it.

Both plants and animals influence soil development. The amount of plant material which is returned to the soil, obviously depends to a great extent upon the kind of vegetation cover. Soils of forest areas generally have much higher humus content than those of savanna areas. Dead plants provide nitrogen and other elements such as phosphorous, calcium and potassium, which are broken down from decaying plant by bacteria, and which plants can absorb again by their roots. The influence of animals on the soil is largely mechanical. Earthworms are particularly important as they change the texture and chemical composition of the soil as it passes through their digestive system. Ants and burrowing animals also disturb and rearrange the soil making it more porous and sponge-like, so that it can retain water and permit the passage of air.

In many parts of the world, people play an important part in modifying the soil by their methods of farming.



## SOIL SMARTS QUIZ



1. Microorganisms in the soil generally harm plants.

A. True                      B. False

2. In order the soil to be healthy, it should be allowed to rest from time to time. No plants should be grown on it.

A. True                      B. False

3. Sand is soil with tiny pieces of rock visible to your eyes.

A. True                      B. False

4. The part of the earth's surface consisting of disintegrated rock and humus is called \_\_\_\_\_.

A. sand                      B. clay                      C. soil                      D. layer

5. Where is humus found? In \_\_\_\_\_.

A. top soil                      B. mines                      C. core                      D. rocks

6. What soil is made of broken down pieces of dead plants and animals?

A. clay                      B. minerals                      C. sand                      D. humus

7. Which three layers form the soil profile?

- A. Air, water and soil.
- B. Minerals, organic matter and living organisms.
- C. Clay, silt and sand.
- D. The topsoil, subsoil and parent material.

8. Sandy soil is \_\_\_\_\_.

A. Sticky                      B. Gritty                      C. Smooth                      D. Fluffy

9. Why is organic matter an important part of soil?

*A. It helps to improve water filtration.*

*B. It can break down organic pollutants.*

*C. It converts nitrogen in the air into nitrates used by plants.*

*D. It is rich in nutrients important for fertility.*

10. Which of the following is NOT a threat to the soil?

*A. Soil erosion*

*B. Percolation*

*C. Deforestation*

*D. Climate change*

11. What is soil erosion?

*A. It is the process by which soil is formed.*

*B. A harmful process that involves the removal and transport of soil by wind and water.*

*C. A natural method of filtering harmful pollutants.*

*D. A process often referred to as the 'greenhouse' effect.*

12. Cultivating different crops each year is called .....

*A. windbreakers*

*B. soil tillage*

*C. crop rotation*

*D. perennials*

13. Soils that develop on steep slopes are subject to greater erosion than soils developed on gentler slopes.

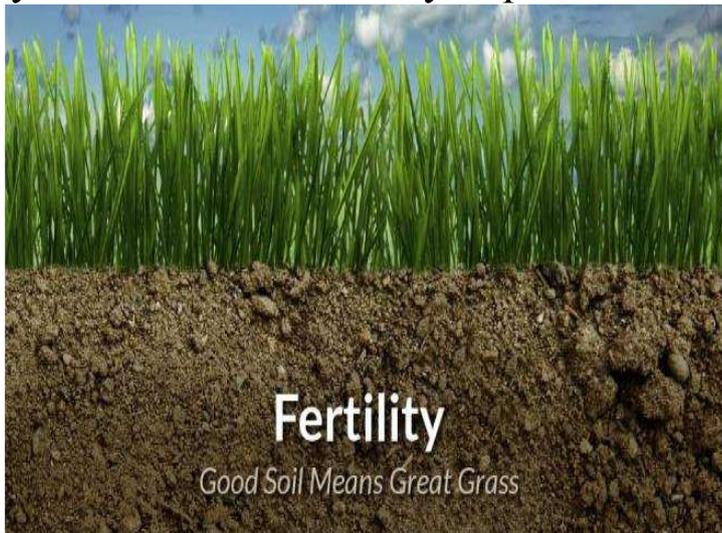
*True      False*

## UNIT 12.

### Exercise 1. Read and translate the text. Learn unknown words.

#### *Soil Fertility and Soil Productivity*

An important property of soil is its fertility. Fertility is the ability of soil to provide the plants with such conditions during their vegetative period that will ensure their growth, development and yields. The soil fertility depends on both the properties of the soil



itself (natural fertility) and the activity of man in cultivating the soil (artificial fertility).

Soil fertility is also defined as the ability of soil to supply essential elements for plant growth without a toxic concentration of any element.

An assessment of soil fertility can be made with a series of chemical tests.

Soil productivity is the soil's capacity to produce a certain yield of crops or other plants with optimum management.

The protection and improvement of soil are among the essential problems involving the protection of the environment. Healthy soil is the basis of large-scale agricultural production. Agricultural and forest soils are threatened to a great extent by degradation and reduction of nutrients.

#### **Exercise 2. Give English equivalents:**

головна проблема; здатність забезпечувати; вегетативний період; родючість ґрунту; залежати від; оцінка родючості; захист ґрунтів; навколишнє середовище; урожай; сільськогосподарське виробництво.

**Exercise 3. Fill in the spaces with the appropriate words:**

1. An important property of soil is its ...
2. Fertility is the ability of soil to ... the plants with necessary for vegetative period conditions.
3. Fertility depends on ... of soil and the activity of man in cultivating the soil.
4. Agricultural and forest soils are ... by degradation and reduction of nutrients.
5. A number of chemical tests is required in order to .....

**Exercise 4. Answer the following questions:**

1. What is soil?
2. What property does it possess?
3. How can you define the notion of “soil fertility”?
4. What does soil fertility depend on?
5. Describe the difference between the natural and artificial fertility.
6. What steps should be taken to assess soil fertility?
7. What is soil productivity?
8. What threatens agricultural and forest soils?

**Exercise 5. Read a short text and decide which answer (A, B, C or D) best fits each gap.**

Vegetable growers should (1) \_\_\_\_\_ good soil fertility to attain good yield. Good soil is not only rich in the basic (2) \_\_\_\_\_; it is also physically well-structured and biologically active. When plants get minerals, they become (3) \_\_\_\_\_ and grow well. Ideally, organic matter should (4) \_\_\_\_\_ and returned to the soil. The amount of humus in the soil decreases through mineralization; thus, resupplying lost humus every year is a must for maintaining soil fertility and good (5) \_\_\_\_\_. (6) \_\_\_\_\_ 37 tons (metric tons) of humus per hectare are necessary for this purpose. Organic matter can be added to the soil using liquid manure, mulching, farmyard manure, green manure.

1	A	mainstream	B	maintain	C	endure	D	endorse
2	A	nourishment	B	notorious	C	novelty	D	nutrients
3	A	robust	B	relevant	C	heavy	D	leather
4	A	add	B	be added	C	to be added	D	added
5	A	equilibrium	B	equality	C	quantity	D	quality
6	A	Evidently	B	Approximately	C	Suitably	D	Lately

### Exercise 6. Translate into English:

1. Грунт – це верхній родючий пласт земної кори.
2. Родючість ґрунту залежить від його природної родючості та діяльності людини при його обробітку.
3. «Здоровий» ґрунт є основою широкомасштабного с/г виробництва .
4. Що загрожує с/г та лісовим ґрунтам? Їм загрожує виродження та зменшення поживних речовин.
5. Ґрунт є обмеженим природним ресурсом, який легко розрушити .
6. Які методи ви застосовуєте, щоб захистити якість ґрунту?
7. Який урожай картоплі ви зібрали минулого року?
8. Чи може агроном дати оцінку родючості ґрунту?
9. Поліпшення родючості ґрунту – це одна з основних проблем сільського господарства.
10. Ріст рослин залежить від родючості ґрунту, чи не так?

### Exercise 7. Read the abstract. How do you understand “intelligent intervention”? Suggest other ways to improve soil fertility.

Soil fertility experts know that most soils today need their health and vitality rebuilt. Many years ago nature built healthy, vital soils. During the centuries the soils have been undergone the influence of human activity and now they need to be rebuilt. Unfortunately, we do not have much time for this process, so the intelligent intervention is needed. There exist a number of methods and

approaches that are considered to be beneficial in establishing self-regenerative and fertile soils. Proper cultivation, grazing, composting, soil conservation, green manuring play a great role in achieving the aim of recovering the soils.

## UNIT 13.

### Exercise 1. Read and translate the text. Learn unknown words.

*farming* – сільське господарство

*loamy soils* – суглинки

*to till* – обробляти ґрунт

*tillage* – обробіток ґрунту (за допомогою с/г знарядь)

*to lack* – відчувати нестачу

*germination* – проростання

*to supply (with)* – постачати

*consume* – споживати

*consumer* – споживач

*lime* – вапно

*poor / rich soils* – бідні / багаті ґрунти

*rate* – норма, ступінь, темп

*treatment* – обробіток



successful work of the farming system.

### *Soil and its*

### *Management*

Good farming means proper use of many factors such as natural conditions, land, crops, livestock, machinery, fertilizers and some others. The combination of all these factors promotes to the

One of the most important points to be taken into consideration in farming is the soil. *Soil* is a natural resource that supports plant life, it is a mixture of particles of rock, organic materials, living forms, air and water.

During his entire existence upon the Earth man has depended upon the soil either directly or indirectly. Grain, fruits and vegetables are food products obtained by man directly from the soil. Domestic animals consume grain and forage produced by the soil and in turn supply people with meat, milk, eggs and other products used for human food. These are the products obtained from the soil indirectly.

Some good clay and loamy soils are naturally poor. Various factors that make up soil fertility are moisture conditions, plant food, and soil structure. All these components may be regulated by proper management of the soil.

*Soil management* is the science of tillage operations, cropping practices, using fertilizers, lime and other treatments conducted on, or applied to, a soil for the production of crops.

Plant growth and yields can be increased by applying certain recommended soil management practices. Liming, fertilization and irrigation immediate yield increases. Good soil management results in better yields and lower cost per unit of production. Fertile soils produce plants that are less affected by diseases and less likely to be attacked by insects. In this case small losses of crops result.

Some time ago attention was centered on such macroelements as phosphorus, nitrogen and potassium. Now, it is well known that in addition to primary plant food elements mentioned, so-called secondary elements (calcium, magnesium, and sulphur) as well as microelements or trace elements (boron, copper, manganese, zinc, and molybdenum) may be highly important for crop yields, for livestock and human health.

That is why all farmers should make soil tests in order to determine whether any essential elements are lacking in the soil and to determine the rate of fertilizers to be applied.

**Exercise 2. Answer the questions:**

1. What is the soil?
2. Give the examples of products people obtain from the soil directly or indirectly.
3. Which soils are considered to be poor? Are soils in your area rich or poor?
4. What factors influence soil fertility?
5. What does good soil management mean?
6. What should people do to get good soil?
7. Is it possible to increase crop yields? How can this goal be reached?
8. What micro and macroelements are vital for successful plant growing?
9. Why should farmers make soil tests?

**Exercise 3. Give equivalents:**

Entire, loam, clay loam, forage, treatment, to conduct, to germinate, lack, fertile, soil management, use of fertilizers, disease, to result in, essential, tillage operations, to consume, obtained from the soil, naturally poor, yields, to be affected by, treatment, liming, to determine, livestock .

**Exercise 4. Match the words with close meaning.**

- |   |           |   |             |
|---|-----------|---|-------------|
| 1 | important | a | living      |
| 2 | mixture   | b | cultivation |
| 3 | existence | c | combination |
| 4 | poor      | d | use         |
| 5 | tillage   | e | significant |
| 6 | apply     | f | harvest     |
| 7 | yield     | g | exhausted   |

**Exercise 5. Define the part of speech of the following words. Use five of them to make collocations and write your own sentences.**

Loamy, management, liming, various, growth, consume, fertilizers, essential, secondary, lower, indirectly, obtained, structure.

**Exercise 5. Match the words with their definitions:**

1	A mixture of organic matter and the soil that is subjected to biological decomposition.	a	<i>seedbed</i>
2	. Making the soil more productive for growing plants.	b	<i>plant nutrient</i>
3	The protection of natural resources according to principles that will assure their highest economic or social efficiency.	c	<i>compost</i>
4	A chemical used to kill insects.	d	<i>soil improvement</i>
5	All the external conditions that may act upon an organism to influence its development or existence.	e	<i>drainage</i>
6	The soil prepared for sowing seed.	f	<i>insecticide</i>
7	A chemical required for plant growth and development.	g	<i>dryland farming</i>
8	The removal of excess water from land.	h	<i>environment</i>
9	The practice of crop production in low rainfall areas without irrigation.	i	<i>conservation</i>

**Exercise 6. Put special questions to the following sentences:**

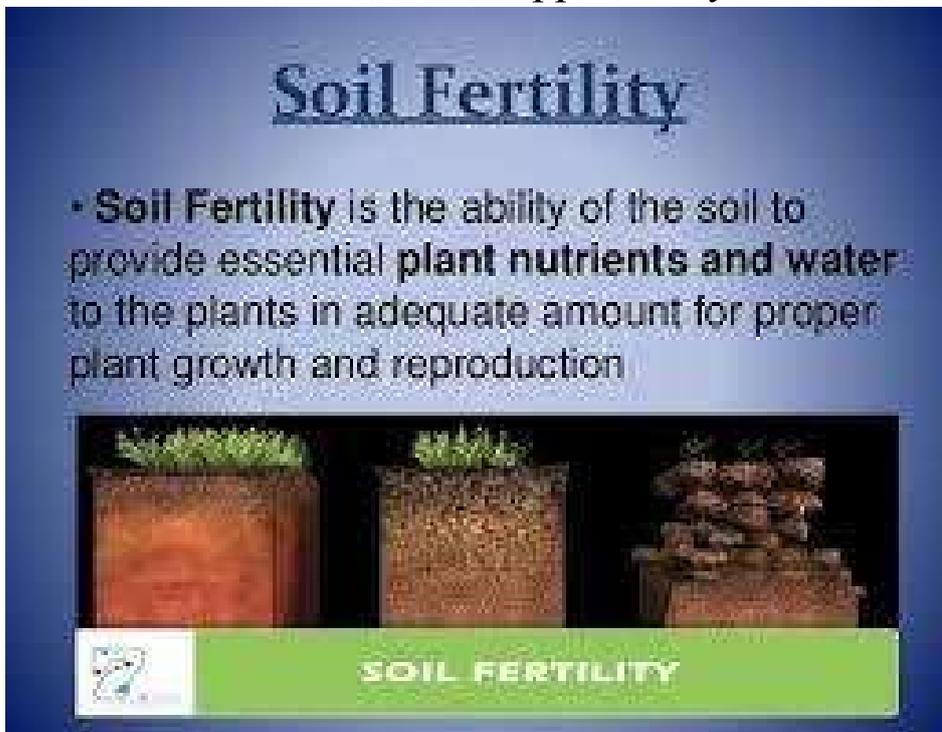
1. Successful farming means proper use of natural conditions.
2. Moisture, plant nutrients and soil structure are the main components of fertile soil.
3. Fertilizers are added to the soil to meet the plant food needs.
4. Cotton requires higher temperature for its growth than wheat.
5. Farmers can increase the yields provided they apply proper soil management practices.
6. Grain is obtained by man directly from the soil.
7. Soil tests are required to determine what elements are deficient.
8. Proper temperature is also essential for successful plant growth.
9. Crops vary in their climatic requirements.
10. Crop yields are affected by soil and climatic conditions.

### Exercise 7. Are the following sentences true or false?

1. Dairy and meat products are obtained directly from the soil.
2. Loamy and sandy soils are more fertile than black soils.
3. Tillage operations include ploughing and harrowing.
4. Liming is harmful for the soil and does not produce any yield increases.
5. Irrigation is usually applied to watery soils.
6. Calcium and Sulphur are primary plant food elements.
7. Soil tests are aimed at determining the number of insects and worms in the soil.
8. Every day the probes of air, water and soil are tested to ensure high yields.

### Exercise 8. Read a short text and decide which answer (A, B, C or D) best fits each gap.

Crops (1) \_\_\_\_\_ nutrients just like people do. A fertile soil will (2) \_\_\_\_\_ all the major nutrients for basic plant nutrition (e.g., nitrogen, phosphorus, and potassium), as well as other nutrients needed in smaller quantities (e.g., calcium, magnesium, sulfur, iron, zinc, copper, molybdenum, nickel).



**Soil Fertility**

• **Soil Fertility** is the ability of the soil to provide essential **plant nutrients and water** to the plants in adequate amount for proper plant growth and reproduction

SOIL FERTILITY

The slide features three soil samples in wooden boxes. The first is a dark, rich brown soil with a small green plant growing. The second is a lighter brown, loamy soil with a small green plant. The third is a very dark, almost black soil with a small green plant. A green banner at the bottom contains the text 'SOIL FERTILITY' and a small logo on the left.

Fertile soil usually also has some organic matter that improves soil structure, soil moisture (3) \_\_\_\_\_, and also nutrient retention, and a pH between 6 and 7. Unfortunately, many soils do not have adequate levels of all the necessary plant nutrients, or conditions in the soil

are (4) \_\_\_\_\_ for plant uptake of certain nutrients.

Soil scientists that focus on soil fertility (5) \_\_\_\_\_ in managing nutrients to improve crop production. They concentrate on using commercial fertilizers, manures, waste products, and composts to add nutrients and organic matter to the soil. Sometime they also add chemicals that change the pH to a more optimum level. Soil fertility experts must also be careful to (6) \_\_\_\_\_ that practices are environmentally sustainable. Inappropriate management of nutrients can lead to (7) the \_\_\_\_\_ of lakes, rivers, streams, and groundwater. Moreover, adding amendments to the soil is expensive and can lead to a reduction in the profitability of farming operations. In addition, the toxic levels of nutrients are considered to be (8) \_\_\_\_\_ than too little nutrients for the plants.

1	A	build	B	observe	C	need	D	buy
2	A	contrast	B	cooperate	C	contain	D	coexist
3	A	rehabilitation	B	revolution	C	retention	D	reduction
4	A	unfavorable	B	appropriate	C	super	D	suitable
5	A	are interesting	B	are interested	C	interested	D	interest
6	A	improve	B	increase	C	engage	D	ensure
7	A	contribution	B	contaminati on	C	conglome ration	D	conversati on
8	A	gooder	B	worse	C	the best	D	the worst

**Exercise 9. Write a short summary of the text ‘Soil and its management’.**