

UNIT 1

TASK 1. Read the following international words and find their Ukrainian equivalents:

activity, produce, cultivation, basis, traditional, climate, hybrid, herbicide, equilibrium, natural, mechanization, machinery, temperature, condition, structure, regulate, combination, system, type, management.

TASK 2. Study the new words:

- to mean (meant) – означати
- branch – галузь
- experience – досвід
- to reclaim – освоювати
- to disturb – порушувати
- crops – сільськогосподарські культури
- livestock – худоба
- to take into consideration – брати до уваги
- rainfall – дощ
- clay soils – глинисті ґрунти
- loamy soils – жирні глинисті ґрунти
- fertile – родючий
- moisture – волога
- food – пожива, їжа
- to provide – надавати, забезпечувати
- germination – проростання
- seed – насіння
- supply – постачання
- nutrient – поживна речовина
- need – потреба
- by means of – при допомозі
- manure – гній
- in order to – для того, щоб
- requirement – вимога, потреба
- cereals – хлібні злаки
- grain crop – зернова культура
- wheat – пшениця
- oat – овес
- cotton – бавовна
- corn – кукурудза
- weed – бур'ян
- pest – комаха
- disease – хвороба

TASK 3. Compare the words, define their word-building means and translate:

- farm, farming
- to produce, produce, production, productive, productivity

- to cultivate, cultivated, cultivation
- nature, natural, naturally
- to grow, grew, grown, growing, growth
- fertile, fertility, fertilizer
- germinate, germination
- to vary, various, variant, variety
- crop, grain crops, cropping

TASK 4. Read Text A and find out:

- 1) what is the meaning of the word "ager"?
- 2) what is the basis of agriculture?

Text A WHAT IS AGRICULTURE?

1. Agriculture is a human activity¹ in which people use areas of land to produce food, clothing and other necessary materials.

2. The word² "ager" is a Latin word. It means³ a field. The word "agriculture" means the cultivation of fields and growing crops. But this is the old meaning of this word. Now it also means the use of land to breed animals. At present there are two main branches⁴ of agriculture. They are crop growing and animal breeding.

3. We do not know when people began to grow crops. It was many thousand years ago. Now crop growing is a highly developed branch of agriculture.

4. The soil is the basis of agriculture. Enough food for all the people can be grown if there is sufficient good soil for crops to produce high yields. There are two ways to grow enough food. They are the increase in area of arable land and the intensification of agricultural production in the areas already used for cropping. At present the second way is more important because there is not enough experience⁵ to reclaim⁶ tropical and subtropical lands.

5. The intensification of production in the traditional agricultural areas is based on the knowledge of climate, soils and their use, and on a large collection of high-yielding varieties and hybrids of agricultural crops.

6. All intensification factors, such as full mechanization, high application of fertilizers and extensive use of herbicides must be used in such a way as not to disturb⁷ the biological equilibrium⁸ of the soil.

Notes and Commentaries:

¹activity – діяльність ²word – слово ³to mean (meant) – означати ⁴branch – галузь ⁵experience – досвід (життєвий) ⁶to reclaim – оволодівати ⁷to disturb – порушува

TASK 5. Read the text once more and translate it with the help of a dictionary.

TASK 6. In list B find synonyms to the words from list A:

A. yield, to require, sufficient, cropping, use, at present, type, plant nutrients, to start, forest, poor yield

B. to begin, wood, plant food, low yield, enough, growing, harvest, variety, now,

application, to need

TASK 7. Find in the text the nouns with the same roots as the following verbs:

To act, to mean, to cultivate, to breed, to increase, to produce, to fertilize

TASK 8. Fill in the blanks with the necessary words from the text:

1. You should take into ... the annual rainfall and the soil type.
2. Crop rotation helps to keep the soil in ... condition and to control ... and ...
3. It is ... to obtain high yields if the soil is in poor condition.
4. ... and fertilizers should be added to the soil.
5. The supply of plant ... varies with the type of soil.
6. The proper ... of the soil is very important for keeping it in healthy condition.

TASK 9. In the right column find a word that doesn't correspond to the word from the left column:

- | | |
|------------------------|---|
| 1. Plant nutrients | 1. Available, proper, climatic, needed, valuable |
| 2. Soil | 2. Poor, sandy, fertile, annual, loamy |
| 3. Yield | 3. High, annual, loamy, low, poor |
| 4. Climatic conditions | 4. Improper, various, optimum, agricultural, proper |

TASK 10. Below are the answers. Ask questions about them:

1. Successful farming means the best use of natural conditions.
2. Moisture conditions, available plant nutrients and the structure of the soil are the main factors of soil fertility.
3. Manures and fertilizers are added to the soil to meet some plant food needs.
4. Cotton requires higher temperatures than wheat.
5. The control of weeds, pests and diseases is necessary to keep the soil in proper condition.

TASK 11. Retell the text. Use the key-words:

human activity, to use, to produce, "ager", to mean, field, crop, to breed animals, branch, soil, basis, high yield, arable land, intensification, knowledge, high-yielding, varieties and hybrids, mechanization, fertilizer, herbicide, to disturb.

TASK 12. Skim Text B and find out if the given statements agree with the text:

1. Developed agriculture includes successful use of soils, high-yielding varieties and hybrids of crops, productive-animal breeding, full mechanization and high application of fertilizers.
2. The most important factor about the soil is its fertility.
3. Soil fertility cannot be improved in good farming.
4. The need of nutrients never takes into consideration the soil types.

Text B. FACTORS AFFECTING SUCCESSFUL FARMING

1. Successful farming means making the best and the most scientific use of natural conditions, land, crops, livestock, machinery and all the other things which have to be put together to make the farming system work¹.

2. Important points to be taken into consideration are: the soil types of the district, annual rainfall, maximum and minimum temperatures, etc.

3. Some good clay and loamy soils are naturally highly fertile, some light sandy soils are naturally poor. The various factors that make up soil fertility are: moisture conditions, plant food and soil structure.

4. All these things may be regulated by a proper management of the soil. So, one important job for the farmer is to get the land into good condition² and to keep it that way. Such land is more easily cultivated, provides better conditions for germination of seed and for growth and in the end produces better crops.

5. The supply of the plant nutrients varies with the type of soil and its previous cropping and management, but it is under the control of the farmer, too.

Notes and commentaries:

¹To make the system work – змусити систему працювати; ²to get...into condition – привести в ...стан

TASK 13. Make a written translation of Text C. Use a dictionary:

Text C. CONDITIONS OF SCIENTIFIC AGRICULTURE

1. In order to understand the scientific growing of crops one must know the temperature requirements of plants, the optimum temperature for germination and growth varying with different kinds of plants. So, such cereals or grain crops as wheat and oats will grow at a lower temperature than cotton or corn.

2. Good farming keeps land and crops in healthy conditions and grows the largest crops possible. Land and crops are kept in healthy condition by good cultivation and by keeping up the amount of organic matter, by good management, by a proper rotation, and by the control of weeds, pests and diseases.

UNIT 2

TASK 1. Read the words and find their Ukrainian equivalents:

physical, chemical, biological, complex, fundamental, drainage, nature, culture, finally, formation, process, potential, series, season, result, reproduce, generation, forage, organic, fragment, texture.

TASK 2. Study the new words:

- vital – життєво важливий
- mankind – людство
- slope – схил
- weathering – вивітрювання
- rock – гірська порода, каміння
- utility – призначення, корисність, практичність
- depth – глибина
- ability – здатність
- to provide – забезпечувати
- elevation – підйом
- to require – вимагати
- demand – потреба
- moisture – волога
- tilth – 1) обробіток ґрунту; 2) структура ґрунту
- to improve – покращувати
- treatment – використання
- to obtain – одержувати
- horticulture – садівництво
- existence – існування
- source – джерело
- raw materials – сировинні матеріали
- grain – зернова культура
- remains – рештки
- heat – тепло
- fine sandy soil – тонкий піщаний ґрунт
- loam soil – глинистий, суглинистий, мергельний ґрунт
- silt soil – ілистий ґрунт; алювіальний ґрунт
- shale soil – глинисто-сланцевий ґрунт
- muck soil – 1) торф'яний нанос; 2) гній
- limy soil – вапняний ґрунт

TASK 3. Translate the words. Pay attention to their word-building means:

differ — difference — different — differently;
variable — variant — variation — varied — variety — various — vary
vegetable — to vegetate — vegetation
to grow — growth — growing
to utilize — utility

fertile – fertility – fertilizer – fertilization
result – to result – resulting
complex – complexity
to produce – production – to reproduce – reproduction – product – productivity
– productively
to depend – dependent

TASK 4. Read Text A and find out what are the factors influencing the development of soils:

Text A. SOIL

1. Soil plays a vital and important role in the life of the world and mankind. It is in fact a highly organized physical, chemical and biological complex all of us are dependent on. As the supporter of vegetable life, the soil plays the most fundamental of roles in providing food for all animals and men.

2. Soils develop under the influences of climate, vegetation, slope and drainage, time, the nature of the parent material, and the culture. Climate influences plants, animals and soil directly. Plants influence the soil, the animals and the climate near the ground. Animals play a considerable role in soil development, the type of soil often influences the animals which are present in it, while the animals also influence the vegetation which is growing in the soil. Finally climate through weathering influences the rocks, which in time become part of the soil through the process of soil formation.

3. All soils do not have the same utility, but man uses different soils in different ways. "Good" land for production of food-stuffs must lie well and have good depth, for yields are dependent upon the ability of the soil to take up and use fertilizers and water. Man has done much to adapt crops to the soil and to provide various kinds of fertilizers for plant growth and development. Soils that are not good for the production of food-stuffs may be valuable in other ways. For example, podzols in high elevations are poor for crops but they comprise excellent forest soils.

4. Each soil series requires skilful handling if it is to produce to its maximum potential; but no two series make the same demands. From season to season conditions of temperature and moisture change, so the farmer must change his management to produce better drainage, improve tilth, prevent erosion, and test his soil to identify the proper kind and the correct proportion of fertilizer needed. Only by careful study of the soil, resulting in an understanding of the complexity of its nature and uses, will man be able to provide food for all the people who will inhabit the Earth. The soil cannot reproduce itself. Therefore, man should improve it through good management and treatment so that future generations can farm more efficiently than their fathers and grandfathers have done. Man can improve the soil now in use and discover how more kinds of soils can be utilized more productively.

5. So, the results obtained in soil science can be applied to practical problems in agriculture, horticulture, forestry, engineering, and in planning the future use of

land.

TASK 5. Read the text once more and translate it with the help of a dictionary.

TASK 6. In list B find synonyms to the words and word-combinations from list A:

A. 1. Consume. 2. Different. 3. Raw material. 4. May. 5. Need. 6. A number of. 7. Receive. 8. Supply. 9. Soil. 10. Correct. 11. Food.

B. 1. Obtain. 2. Require. 3. Can. 4. Eat up. 5. Many. 6. Give. 7. Various. 8. Stuff. 9. To absorb. 10. Land. 11. Right.

TASK 7. Find in the text verbs having the same roots as the following nouns:

Farm, utility, influence, identification, usefulness, development, play, adaptation, production, study.

TASK 8. Fill in the blanks with appropriate words from the list below:

1. Grains, fruits and vegetables are food products ... by man directly from the soil.

2. Domestic animals ... grain and forage ... by the soil and in their turn ... us milk, meat, eggs, and other products.

3. They also supply us with wool and leather for the production of

4. Soils ... in a number of characteristics.

5. Soils are ... in certain elements but deficient in others.

may, produced, vary, received, rich, give, clothing, consume

TASK 9. Translate the following word-combinations into English:

1. Залежати від. 2. Єдине джерело. 3. Родючість ґрунту. 4. Їжа людини. 5. Кількісне співвідношення. 6. Розвиток рослини. 7. Кліматичні умови. 8. Обробка ґрунту. 9. Збереження ґрунту. 10. Так само як і. 11. Запас води. 12. Мінеральна речовина. 13. Виробництво матеріалів. 14. Залишки мінералів.

TASK 10. Answer the following questions:

1. What does the soil produce for man?

2. What is the growth and development of plants dependent on?

3. What food products does the soil produce for man?

4. What do domestic animals supply us with?

5. How is organic matter mixed with the mineral matter?

6. How can soils be subdivided in accordance with texture and age?

7. What is one of the most important tasks of the farmer?

TASK 11. Translate the following sentences into English:

1. Людина прямо чи опосередковано залежить від ґрунту.

2. Ґрунт є єдиним джерелом харчування для людини.

3. Зростання та розвиток рослин залежать від родючості ґрунту.

4. Домашні тварини споживають рослини, вирощені ґрунтом, і, у свою чергу, постачають людину продуктами харчування.
5. Вони дають нам м'ясо, молоко, яйця, вовну та іншу продукцію.
6. Вовна, шкіра, щетина, пір'я та пух є сировиною для виробництва споживчих товарів.
7. Рослини потребують сприятливих кліматичних умов та родючого ґрунту для хорошого зростання та розвитку.
8. Найкращим ґрунтом для виробництва зернових культур та овочів є чорнозем.
9. Регулярне постачання водою, поживними речовинами, теплом, світлом та повітрям – важливі умови гарного росту рослин.
10. Врожайність рослин залежить також від правильного обробітку ґрунту.
11. Збереження ґрунту – одна з найважливіших турбот робітників сільського господарства.

TASK 12. Skim Text B and find out, which sentences do not coincide with the contents of the text:

1. Soil science is only of theoretical value.
2. Different soils have the same utility.
3. To improve the soil, one should study it thoroughly.
4. Soil requirements are always the same.
5. Soils that are not valuable for grain crops may be very good for some other purposes.
6. Climate is influenced by soil.

Text B. THE BASIS OF LIFE

1. During his existence on the Earth man has depended upon the soil, either directly or indirectly¹. The soil is the only source for the production of raw materials used by us for food and clothing.
2. The growth and development of all cultivated plants is greatly dependent on the fertility of the soil. Grains, 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 their turn³ supply us with meat, milk, eggs, and other products used for human food. They supply us with wool and leather for the manufacture of clothing as well.
3. Soils vary in a number of characteristics. Some soils are rich in all kinds of food required by plants; some are rich in certain elements but deficient in others.
4. All agricultural soils contain some organic matter mixed in different proportions with the mineral one. Fragments of all kinds of minerals and rocks as well as the remains of all the plants and animals may be found in the soil and make a home⁴ for plant development.
5. Plants require favourable soil and climate conditions. There is a continuous supply of water, plant feed, heat, light and air.
6. In respect of⁵ texture and also age, soils can be subdivided into fine sandy soil, sandy soil, loam soil, sandy-loam soil, silt-loam soil, shale-loam soil, muck

soil, podzol soil, limy soil, solonets soil, chernozem (black earth soil), brown soil, red soil.

7. In his management of the soil, the farmer may do much to regulate the supply of water and organic matter. One of the most important tasks is the proper management and preservation of the soil⁶.

Notes and Commentaries:

¹**either directly or indirectly** – безпосередньо чи опосередковано;
²**cultivated plants** – культурні рослини; ³**in their turn** – в свою чергу; ⁴**make a home** – є середовищем; ⁵**in respect of** – щодо; ⁶**the proper management and preservation of the soil** – правильна обробка і збереження

TASK 13. Fill in the blanks and give a name to the following text:

... is the one basic material. Everything depends on it and its productivity. To handle ... properly and to produce the most and the best from it, we must know it well.

A ... is a living thing. It must be living to grow plants and to make all the chemical changes needed in the substances that are added to it.

Different factors play their role in ... improvement, good management being the most important one.

TASK 14. Translate Text C in writing:

Text C. FORESTS SAVE WATER

1. When we cut down trees or plow under grass, the land is left with nothing on it to hold back the water. Every time it rains, the water flows over the land and is carried out to sea where we can't use it. Such water carries soil and minerals with it. Often, the amount of water is so great that rivers flood. The water is wasted¹.

2. We can conserve water by seeing to it that trees, grass or other types of vegetation are planted to absorb or slow down the run-off of waters.

3. The "floor"² of a forest is spongy³ and absorbs water from rain and snow. The soil of grasslands also stores" water this way.

4. Millions of hectares are made bare each year by forest fires. Fire prevention is, therefore, another important part of water conservation.

Notes and Commentaries:

¹**to waste** – втрачати (дарма); ²**"floor"** – тут підстилка; ³**spongy** – губчатий.

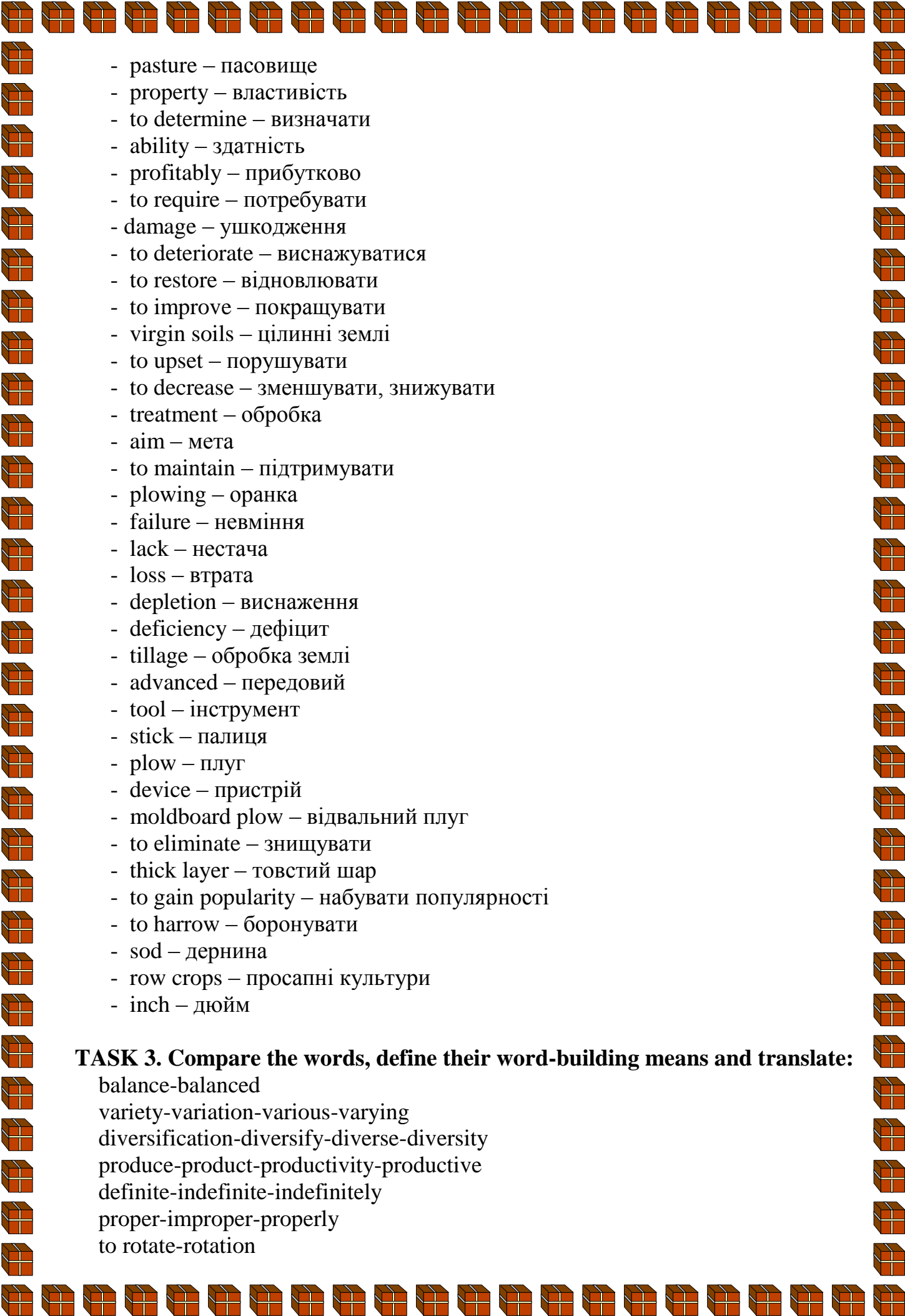
UNIT 3

TASK 1. Find Ukrainian equivalents to the following international words:

variety, variations, correct, effective, protection, systematic, rotation, method, conservation, diversification, operation, result, technological state, progress, design, diesel, idea, experimental, combining, aeration.

TASK 2. Study the new words:

- quality – якість
- suitable – відповідний

- 
- pasture – пасовище
 - property – властивість
 - to determine – визначати
 - ability – здатність
 - profitably – прибутково
 - to require – потребувати
 - damage – ушкодження
 - to deteriorate – виснажуватися
 - to restore – відновлювати
 - to improve – покращувати
 - virgin soils – цілинні землі
 - to upset – порушувати
 - to decrease – зменшувати, знижувати
 - treatment – обробка
 - aim – мета
 - to maintain – підтримувати
 - plowing – оранка
 - failure – невміння
 - lack – нестача
 - loss – втрата
 - depletion – виснаження
 - deficiency – дефіцит
 - tillage – обробка землі
 - advanced – передовий
 - tool – інструмент
 - stick – палиця
 - plow – плуг
 - device – пристрій
 - moldboard plow – відвальний плуг
 - to eliminate – знищувати
 - thick layer – товстий шар
 - to gain popularity – набувати популярності
 - to harrow – боронувати
 - sod – дернина
 - row crops – просапні культури
 - inch – дюйм

TASK 3. Compare the words, define their word-building means and translate:

balance-balanced
 variety-variation-various-varying
 diversification-diversify-diverse-diversity
 produce-product-productivity-productive
 definite-indefinite-indefinitely
 proper-improper-properly
 to rotate-rotation

final-finally
to improve-improvement
alternative-alternating
to till-tilled-tillage-tilth

TASK 4. Read Text A and find out what must be done to preserve soil productivity:

Text A. AGRICULTURAL OPERATIONS

1. Soils are used in a great variety of ways, agriculture being the leading soil use.

There has always been great variation in the quality of soils available for agriculture. In most instances, the better soils are used for crops, and the less suitable ones are kept for pastures or timberlands.

2. Properties that determine the agricultural quality of soils include: 1) ability to produce high crop yields under good management and careful handling; 2) the ease with which they can be used profitably; 3) the amount and kind of care they require. Good soils respond well to proper management, which involves correct cropping practices, use of fertilizers, and effective protection against damage.

3. Land use is a continuous operation. Farmers normally do not put their land aside while they are restoring their soils; they repair and improve them while the land is in use. The ways that soils are used, the length of time they remain productive, and the harvests they yield depend to a marked degree upon the care they receive.

4. Time makes little change in virgin soils. But when soils are used for crops or pasture, the balance that nature has given them is upset in various ways and to varying degrees. Changes in the nature of soils cannot be avoided as they are put to diverse uses. These changes may result in improvement in productivity. Frequently, however, soil use results in soil damage and decreased yields. Thus careful treatment of soils in ways that will keep them productive through continuous use is the aim of every good agricultural programme.

5. The systematic alternating of crops from field to field is known as crop rotation, which is one of the methods of soil conservation. A good rotation system consists of adjusting the crop arrangement to the physical nature of the land and, in the same time, maintaining a balanced economic farming programme. Rotation implies the growing of more than one crop on a farm. In other words, rotation and diversification go hand in hand.

6. Improper use may result in the deterioration of soil structure; several things may contribute to this deterioration, including: plowing when soil is too wet; failure to return organic matter; unwise use or lack of lime; neglecting to rotate crops. An even more serious and widespread kind of soil damage is the loss of essential plant nutrients. This may result from continuous growing of the same crop and from failing to fertilize it properly. Still another serious cause of depletion in most soils is known to be the loss of organic matter.

7. Most kinds of soil damage are related to each other in many ways. For

example, organic deficiency is definitely a factor in soil erosion and in structural breakdown as well as in the deficiency of plant nutrients. Consequently, understanding these relationships and properly evaluating them in a balanced farming programme make modern agriculture truly a scientific undertaking.

8. Under careful and proper use soils may continue indefinitely to produce good yields. It is improper use and lack of care that harm soils. Thus good care is of vital importance in prolonging the useful life of soils.

TASK 5. Read the text once more and translate it with the help of a dictionary.

TASK 6. Find the pairs of synonyms from both lists:

A. to succeed, economic loss, to raise, damage, to deplete the soil, unrational use, tool, tilling, suitable, to eliminate.

B. to increase, deterioration, to profit, to upset soil productivity, economic benefit, cultivation of soil, unwise use, proper, device, to put aside.

TASK 7. Name the nouns with the roots:

To grow, to till, to eliminate, to rotate, to improve, to treat, to fail, to deplete.

TASK 8. Fill in the blanks with the following words:

invention, tool, appeared, designed, device, engine, obtain, ways, invented

1. For over two hundred years this simple ... was the only agricultural tool. 2. The first moldboards did not reach its present form for almost a hundred years following their 3. This idea ... at the beginning of the 20th century. 4. Some time later the gasoline ... appeared. 5. There are different... of using this new tillage machinery. 6. We shall be able to ... good results in agriculture only by using proper tillage machinery. 7. Who ... the tractor? 8. They knew of the young inventor having ... a device. 9. Having invented a new ... the young specialists solved an important problem.

TASK 9. Read the statements and say which are true and which are false. Give reasons for your answers:

1. a) The earliest efforts of people were to lift themselves from primitive cultures through better tools for tilling.

b) The earliest efforts of people were to lift themselves through fertilizing the farmland.

2. a) Until the 19th century, man's tools for tilling the earth remained basically unchanged.

b) Until the 19th century, man's tools for tilling the earth changed basically.

3. a) In the middle of the 18th century farmers tried a device to ease their lives.

b) In the middle of the 18th century farmers used the device to ease their lives.

4. a) The moldboard plow was designed to eliminate weeds.

b) The moldboard plow was designed to eliminate weeds by turning over a thick layer of earth.

5. a) The new plow, introduced in 1863, allowed the farmer to sit behind it.
b) The new plow, introduced in 1863, allowed the farmer to ride instead of walk behind it.
6. a) The development of mechanical power for farm work was of greatest significance.
b) The development of mechanical power for farm work was of some significance.
7. a) The gasoline engine mounted on a farm tractor appeared as the 20th century opened.
b) The gasoline engine mounted on a farm tractor was used in the middle of the 19th century.
8. a) Today the farmer has a wide range of tractor makes.
b) Today the farmer has new types of tractors.

TASK 10. Use the text to express your point of view on the statements:

1. The better soils are used only for crops.
2. Properties of productive agricultural soils include 3 points.
3. The care of soils is a continuous operation.
4. Crop rotation is the most important factor of soil conservation.
5. Every factor of soil deterioration can be avoided by proper management.
6. A scientific approach to agriculture is the key to soil productivity.

TASK 11. Retell Text A.

TASK 12. Skim Text B and arrange the following points according to its contents:

- Wrong land-use practices
- New technology of tillage
- Man's strivings about improvement of farming
- Primitive agricultural instruments
- New possibilities for agriculture of the last century.

Text B. TILLAGE

1. The earliest efforts of people were to lift themselves from primitive cultures through better tools for tilling, better methods of using the land.
2. If we took a look of our agricultural past now, we should explain why farming as an industry hasn't reached a technological state as advanced as electronics and other industries.
3. Man required some 10,000 years to learn to make bread. And, until the 19th century, man's tools for tilling the earth remained mainly unchanged – the sharpened stick, the crude plow.
4. Had the farmers in those days known more about land they wouldn't have continued overlooking the richer farmland, and depleting the soil's fertility. The more they overworked it, the less crop they got.
5. In the middle of the 18th century farmers tried a device to ease their lives. That was the moldboard plow¹, which was designed to eliminate weeds, by turning over

a thick layer of earth.

6. It remained unchanged for the next century, although the steel plow was introduced in 1837. The cast-iron plow would poison the soil as some farmers thought.

7. Of greatest significance, however, was the development of mechanical power for farm work. The most far-reaching² invention for agriculture was the gasoline engine mounted on a farm tractor. This combination appeared as the 20th century opened. Today, the farmer has a wide range of tractor makes: gasoline and diesel, with engines varying from 20 h.p.³ to 300-400 h.p. With the efficient power, the farmer has been able to plow and disk, and harrow, and plant, and fertilize, and finally harvest faster, easier and more profitably.

Notes and Commentaries:

¹**cast-iron plow** – плуг, відлтий з чавуну; ²**far-reaching** – далекосяжний; ³**h.p.-horse power** – кінська сила.

TASK 13. Make a written translation of text C:

Text C. NO-TILLAGE METHOD

1. Planting corn and other row crops directly into sod is a new practice. More and more growers are using this easy and economical method of planting row crops.

2. The idea of planting row crops without plowing goes back to at least 1943. But no-tillage or zero-tillage¹ remained largely experimental until several effective herbicides have been developed.

3. With the development of atrazine in the early 60s, zero-tillage system has been gradually gaining popularity.

4. Crops are planted in unprepared soil in a narrow seed furrow² opened with a coulter³. Tilled area is only 2 to 3 inches wide. Using this tillage system one should be very careful in applying the proper amount of herbicides for weed control. They should include both a contact herbicide to kill early weeds or sod, and a residual⁴ herbicide.

5. At present the scientists agree that zero-tillage is quite a promising⁵ method but it will never fit all farms and all conditions.


Notes and Commentaries:

¹**zero-tillage** – нульовий обробіток; ²**furrow** – борозна; ³**coulter** – ніж плуга, різак; ⁴**residual** – пожнивний; ⁵**promising** – перспективний

UNIT 4

TASK 1. Read the following international words and find their Ukrainian equivalents:

application, group, benefit, principal, extract, practically, oil, cotton, practice, extensively, prehistoric, condition, adequate, correct, location, civilization, satisfied, culture.



TASK 2. Study the new words:

- gruels – рідка (вівсяна) каша
- malting – пивоваріння
- buckwheat – гречка
- millet – просо
- porrige – каша
- grapes – виноград
- to supply – забезпечувати
- provender – фураж
- cattle – худоба
- clover – конюшина
- timothy – тимофіївка
- alfalfa – люцерна
- vetch – віка
- swede – брюква
- mangle – мангрове дерево
- flax – льон
- fine fiber – тонка тканина
- linen – білизна
- hemp – конопля
- rough cloth – груба тканина
- sacking – мішковина
- sowing – посів
- oil-cake – жмих
- tuber crop – бульбова культура
- cereal crop – зернова культура
- seed-bed – грядка
- depth – глибина
- capping – щільна поверхня
- crust – кірка
- drilling – посів
- stiff-strawed – твердий сорт
- dressing – обробка
- to mature – дозрівати
- shelter – притулок
- to cause – спричиняти
- to increase – збільшувати
- timber – деревина

TASK 3. Compare the words, define their word-building means and translate:

- to depend – dependent – depending
- prime – primary – primitive
- to cultivate – cultivation
- important – importance
- to apply – application

- significant – significantly- significance
- to prepare – preparation
- nutrient – nutritive – nutrition

TASK 4. Use the following word-building means to form the new words, translate the words:

- ing: plant, depend, follow, include, make, feed, return, precede, produce, grow
- in- : direct, dependent

TASK 5. Read and translate Text A and find out what are the groups of plants:

Text A. FIELD CROPS

1. By the word "crop" we understand every useful plant cultivated for the benefit of mankind¹. Depending upon their field of application², crops can be subdivided into the following four groups:

2. Food crops³, including mainly cereals, or grain crops. The most important of them is wheat, which is grown practically at all latitudes. Wheat is followed by⁴ rye grown essentially in Northern countries. Next to rye in significance comes barley used for the preparation of gruels and for malting. Buckwheat and millet serve principally for making gruels. Oats belong both to the group of food and feed crops. Porridge made of it is a highly nutritive food for man, but oats are practically widely used for feeding domestic animals. To the group of food crops also belong rice, tea, coffee, cocoa, grapes, etc.

3. Feed crops⁵ are those, the main purpose of which is to supply provender to cattle. Many varieties of grasses belong to this group: clover, timothy, alfalfa, vetch, etc. Many of these grasses serve at the same time the purpose of returning to the soil those particular nutritive elements which the preceding crop⁶ has extracted from the earth. Swedes and mangle are also important feed crops.

4. Industrial crops⁷ are those that provide raw materials for further processing⁸. Sugar beet is the main primary⁹ for the sugar industry. The flax plant yields the fine fibres of which linen is made. Flax oil received from the seeds is known to be a food product and an industrial as well. The hemp plant also yields raw materials for producing rough cloth, sacking and oil. Perhaps the most important industrial crop for the textile industry is cotton. The cotton plant yields the cotton fibre. The seeds are either kept for sowing again, or are used in making oil and oil-cake for cattle. The main oil crop in our country is the sunflower plant, which gives one of the best food oils and oil-cake for cattle. The potato plant is one of the most important field crops. This tuber crop is a very valuable food, feed, and industrial crop as well. Nowadays the cultivation of the potato plant has widely spread throughout the world¹⁰. Potatoes are grown on almost all classes of soil. That is why¹¹ this tuber crop is grown in all regions of our country.

5. The fourth group of crops is represented¹² by vegetables.

Notes and Commentaries:

¹cultivated for the benefit of mankind – які вирощуються для користі

людини; ²**depending upon their field of application** – залежно від сфери їх застосування; ³**food crops** – харчові культури; ⁴**wheat is followed by** – за пшеницею йде; ⁵**feed crops** – кормові культури; ⁶**the preceding crop** – культура-попередник; ⁷**industrial crops** – технічні культури; ⁸**for further processing** – для подальшої переробки; ⁹**primary** – первинна сировина; ¹⁰**has widely spread throughout the world** – широко розповсюдилася по всьому світі; ¹¹**that is why** – ось чому; ¹²**is represented** – представлена.

TASK 6. Arrange the following words in pairs of synonyms:

apply, produce, important, provender, earth, particular, provide, specific, soil, forage, use, make, significant, give.

TASK 7. Find a Ukrainian equivalent to every English word:

1. to return	a. специфічний
2. crop	b. вилучати
3. to subdivide	c. використовувати
4. to depend	d. в основному
5. essentially	e. значення
6. to use	f. слугувати
7. preparation	g. жмих
8. significance	h. залежати
9. to serve	i. підрозділяти
10. particular	j. сільськогосподарська культура
11. to extract	k. повертати
12. oil-cake	l. приготування

TASK 8. Fill in the blanks with appropriate words given below:

1. Linen is made of fine ... fibres. 2. Flax oil is made of the ... of flax. 3. The hemp plant ... raw materials for clothing, sacking and 4. The ... is one of the best oil producers. 5. The ... plant is a valuable tuber crop. 6. To the fourth group of crops belong

potato, vegetables, yields, seeds, oil, flax, grown, sunflower

TASK 9. Make up sentences joining the appropriate words and word combinations given in brackets:

1. Industrial crops include (vegetables, grasses, flax, hemp, cotton).
2. (Cotton, tea, rye, rice) grow in Northern countries.
3. Linen is made of (rye, cotton, flax, hemp) fibres.
4. The hemp plant serves for (making gruels, malting, producing oil).

TASK 10. Use the text to check whether you know:

What plant do we call crop?

How many groups of crops do you know?

What are the main food crops?
What is barley used for?
To what group do oats belong?
What is the main purpose of feed crops?
Are grasses only feed crops?
What do industrial crops provide?
What is the main primary for the sugar industry?
What does the flax plant provide?

TASK 11. Translate the following sentences into English:

1. Сільськогосподарська культура – це будь-яка рослина, що вирощується на користь людині. 2. Культурні рослини можна поділити на чотири групи. 3. До харчових культур відносяться в основному зернові культури. 4. Пшениця вирощується практично на всіх широтах. 5. За пшеницею за її важливістю йде жито. 6. Жито культивується в основному в північних країнах. 7. Наступним за значенням злаком є ячмінь. 8. Овес належить як до харчових, так і до кормових культур. 9. Овес широко використовується для годування домашніх тварин. 10. Основне призначення кормових культур – постачати худобу фуражем. 11. До цієї групи сільськогосподарських культур належать, в першу чергу, трави. 12. До кормових культур належать також кормовий буряк і брюква. 13. Технічні культури є сировиною для промисловості. 14. До технічних культур відносять бавовну, цукровий буряк, льон, інші культури.

TASK 12. Skim Text B and make a plan of the text:

Text B. WHEAT

1. Wheat-growing was extensively practiced throughout Europe in prehistoric times, and this cereal was of great importance in the ancient civilizations of Persia, Greece and Egypt. It spread to all temperate countries where it now plays a major part in the food supply of many nations and it is also widely cultivated in the tropical and subtropical areas.

2. Cultivation. It is often said that winter wheat does best on a well-formed seed-bed. Ploughing should be done as early as possible and the normal depth would be in the region of 6 inches. The type of seed-bed required for winter wheat can be described as one with a reasonable tilth in the top 2-3 inches. This is to prevent capping, a condition which can easily arise with heavy rain, when the soil surface runs together forming a crust.

3. Manuring. With all crops it is essential to ensure that adequate supplies of phosphate and potash are available during the first few weeks of growth. Combine-drilling is the most economical way of applying these fertilizers.

4. The short, stiff-strawed varieties of wheat can stand high levels of nitrogen fertilizer whereas the taller one used to produce quality straw will only tolerate moderate amounts. Of all the cereals winter wheat will give the highest response on this fertilizer, and to obtain the best return the proper dressing should be applied at the correct time.

5. Harvest. Winter wheat is normally harvested from August to October (in Britain), depending on the type of summer experienced and also the geographical location. Spring wheat matures much later than winter wheat and later than the other cereals.

TASK 13. Use the information from Texts A and B to speak about the agricultural crops and their growing.

TASK 14. Make a written translation of Text C:

Text C. PLANTS AND THEIR USES

1. From earliest times plants are known to play an important part in everyday life of man. We know plants to provide us with food, clothing, shelter and many other necessary things. We are still as dependent upon plants as primitive man was many thousand years ago. Great necessity caused primitive man to grow plants. And the cultivation of plants is thought to be closely connected with man's progress. In order to grow plants man had to settle down and to begin building homes. Primitive men had few needs except food and clothing.

2. Civilization has increased man's wants to a surprising extent. The man of today is no longer satisfied with merely having food to eat and house to live in. He wants raw materials which can be made into useful things and products.

3. Many things we use in everyday life are made from plants. The paper we write on, the clothes we wear, the tables we sit at, all come from plants. Plants are used as timber in the making of furniture and as fuel. Many drugs are made from plants.

4. Plant culture began a great many years ago. The most important plants in the world are said to have been grown 4,000 years ago.

UNIT 5

TASK 1. Try to understand the following words without using a dictionary:

Drainage, irrigation, practice, productiveness, to inhibit, liberation, condition, adaptable, texture.

TASK 2. Learn the new words:

- unfit – непридатний
- purpose – мета
- to remove – видаляти
- to exclude – витіснити
- root – корінь
- ripening – дозрівання
- arid – посушливий
- annual – річний
- feature – характеристика

- to saturate – зволожувати
- slope – нахил
- flooding – затоплення
- furrow – борозна
- sprinkling – дощування
- surface – поверхня
- ridge – гребінь борозни
- sown – р.р. від to sow (sowed, sown) – сіяти
- impervious – водонепроникний
- disadvantage – недолік
- to create – створювати
- environment – навколишнє середовище

TASK 3. In list B find antonyms to the words from list A:

A. surface, irrigation, to require, suited, to sink, adaptable, advantage, to irrigate, dry, to exclude, early, useful, stimulate, slow, high, short, more, big, poor, question, many, hot.

B. to provide, disadvantage, subsurface, late, useless, irrigation, unsuitable, unfit, to run along, low, rapid, inhibit, wet, to include, to drain, cold, few, long, less, answer, small, rich.

TASK 4. Use the following affixes to make new words. Translate the formed words:

- less: hope, purpose, need, water, use, slope
- un: fit, drained, usual, reasonable, suited, like.

TASK 5. Read Text A and find out what the purpose of drainage and irrigation is:

Text A. DRAINAGE AND IRRIGATION

1. There are many lands that are unfit for cultivation because they are too wet or dry. These lands need reclamation and improvement. There are many different ways of reclaiming and improving such lands. Drainage and irrigation are the most common practices¹.

2. The purpose of drainage is to increase the productiveness of agricultural soils. This purpose can be achieved by removing the free water, which excludes air and inhibits the growth and activity of plant roots. Drained soils are more easily and sooner worked². Drainage ensures a longer growing season³ and earlier ripening. The useful action of microorganisms is stimulated, and there is a more rapid liberation of plant food.

3. Irrigation is an important practice in arid regions where the annual rainfall is very low. All crops need water very much. Some crops are more drought-resistant⁴ others are less drought-resistant. Plants with a long growing season — sugar beet, potatoes and especially grasses require more water than cereals. Irrigation is especially useful for orchards.

4. In Ukraine many former useless lands have been reclaimed and improved.

The south-eastern part of our country is located in the desert zone. Effective agricultural practice in this arid and hot zone is impossible without irrigation.

5. Drainage works are mainly carried out⁵ in the north of Ukraine. Farmers harvest high yields of crops on the irrigated and drained lands.

Notes and Commentaries:

- ¹**the most common practice** – найбільш розповсюджені загальні прийоми;
²**are more easily and sooner worked** – легше і швидше обробляються;
³**growing season** – вегетаційний період; ⁴**drought-resistant** – посухостійкий;
⁵**are mainly carried out** – в основному проводяться

TASK 6. Read the text once more and translate it.

TASK 7. Check whether you are sure to find the Ukrainian translation from list B to every English word from list A:

A. land, cultivation, unfit, improvement, drainage, irrigation, reclamation, to increase, to achieve, purpose, to inhibit, removing, activity, arid, to need.

B. меліорація, осушення, призначення, зрошення, земля, покращення, непридатний, обробіток, гальмувати, діяльність, досягати, збільшувати, посушливий, турбувати, видалення.

TASK 8. Try to complete the sentences with necessary words from the list:

Common, proper, reclaimed, ensures, lands, various, achieved, increase, inhibits, worked

1. Many ... are unfit for cultivation. 2. They are too wet or dry for ... cultivation. 3. These soils must be ... and improved. 4. There are ... ways of reclaiming and improving. 5. Drainage and irrigation are the most ... methods of land reclamation and improvement. 6. The purpose of drainage is to ... the productiveness of soils. 7. This can be ... by removing the free water. 8. The free water ... the growth and activity of plant roots. 9. Drained soils are more easily and sooner.... 10. Drainage ... a longer growing season and earlier ripening.

TASK 9. Find out what sentences from the text can be the answers to the next questions:

1. Why are many lands unfit for cultivation?
2. What do those lands need?
3. What are the most common practices of improving such lands?
4. What is the purpose of drainage?
5. How can this purpose be achieved?
6. Why is the free water in the soil harmful?
7. What is the advantage of drained soils?
8. What does the drainage ensure?
9. Is the action of microorganisms useful?
10. Where is irrigation an important practice?
11. What do all crops need very much?
12. What plants require more water?

13. What regions of Ukraine undergo extensive irrigation and melioration?

TASK 10. Present your point of view on the necessity and effectiveness of drainage and irrigation. Use colloquial phrases:

I consider that....

I believe that....

I would like to say that....

It is necessary to say that....

TASK 11. Skim Text B and find out:

1. What is the subject of the text?
2. What are the main points of the text?
3. What does the author want to stress?
4. What conclusion does the author come to?
5. What is your point of view on the considered problem?

Text B. METHODS OF IRRIGATION

1. The methods by which irrigation is applied to the land depends, under ideal conditions, on individual land features such as the slope of the land, the crops to be irrigated, the nature of the water-supply and the ability of the soil to absorb and hold water.

2. There are four general methods of applying water: 1) by flooding, thus wetting the land surface; 2) by furrows, thus wetting only part of the ground surface; 3) by sprinkling, in which the soil is wetted with a spray; 4) by subirrigation, in which the soil is wetted only a little, but in which the subsoil is saturated. The first three methods come under the general heading of surface irrigation. Flood irrigation generally requires large streams or canals, gentle topography (ground slopes should usually be no greater than 3 per cent), and careful levelling of the land. In theory, it should be possible to ensure that every part of the area to be irrigated absorbs the predetermined amount of water; but in practice, although all parts usually receive an adequate amount, some receive too much. For this reason, flood irrigation is more suited to close-growing crops like rice.

3. Furrow irrigation is a method by which water is run in furrows, normally made by cultivating between crop rows. The earth is thrown up into ridges between the furrows and the seeds are planted in the centre of the ridges. Furrow irrigation is very common because it is adaptable to a great variety of land slopes and soil textures and can be used with either large or small streams of irrigation water. Difficulties may arise with the use of furrow irrigation on unsuitable soils. If the soil is very pervious, the water running along the furrows may sink vertically into the soil without ever reaching the centre of the ridges where the seeds are sown. On the other hand, the soil may be so impervious that the water does not reach the centre of the ridge and the seeds do not germinate anyhow. A more general disadvantage of furrow irrigation is that to ensure that the whole of the irrigation area receives enough water, it is almost always necessary to overwater some parts.

TASK 12. Make a written translation of Text C:

Text C. IRRIGATION ENGINEERING IN THE FUTURE

1. Irrigation of crops has been a normal practice in the arid regions during all the history of man. In some cases it was the overflow of the river that wetted the soil. In others, man diverted small streams of water to his crops, or brought himself water to his plants. However, it is only in recent years that man understood the need to irrigate land in the so-called "wet regions" — for example in the tropics. Here temperatures allow year-long cropping but in most hot areas growth periods take place each year which limits growth of most crops. Irrigation during the dry periods can mean the difference between one crop a year to several.

2. Thus during the next 50 years irrigation will become a usual practice in all areas of the world. In the high rainfall areas it must be done with good surface and subsurface drainage. The removal of water during wet periods and the application of water during dry periods will allow to create an environment most suitable to crop production.

3. There will be no continuously wet areas which encourage the production of insects.

4. By 2020 man will have automated his irrigation to the point where at the beginning of the season "can set it and forget it", and the optimum amounts of water at the optimum timing will automatically come to his crops. Irrigation projects will be operated from a central office including the river structures for both flood control and for water supply needs for irrigation, pollution control, etc.

UNIT 6

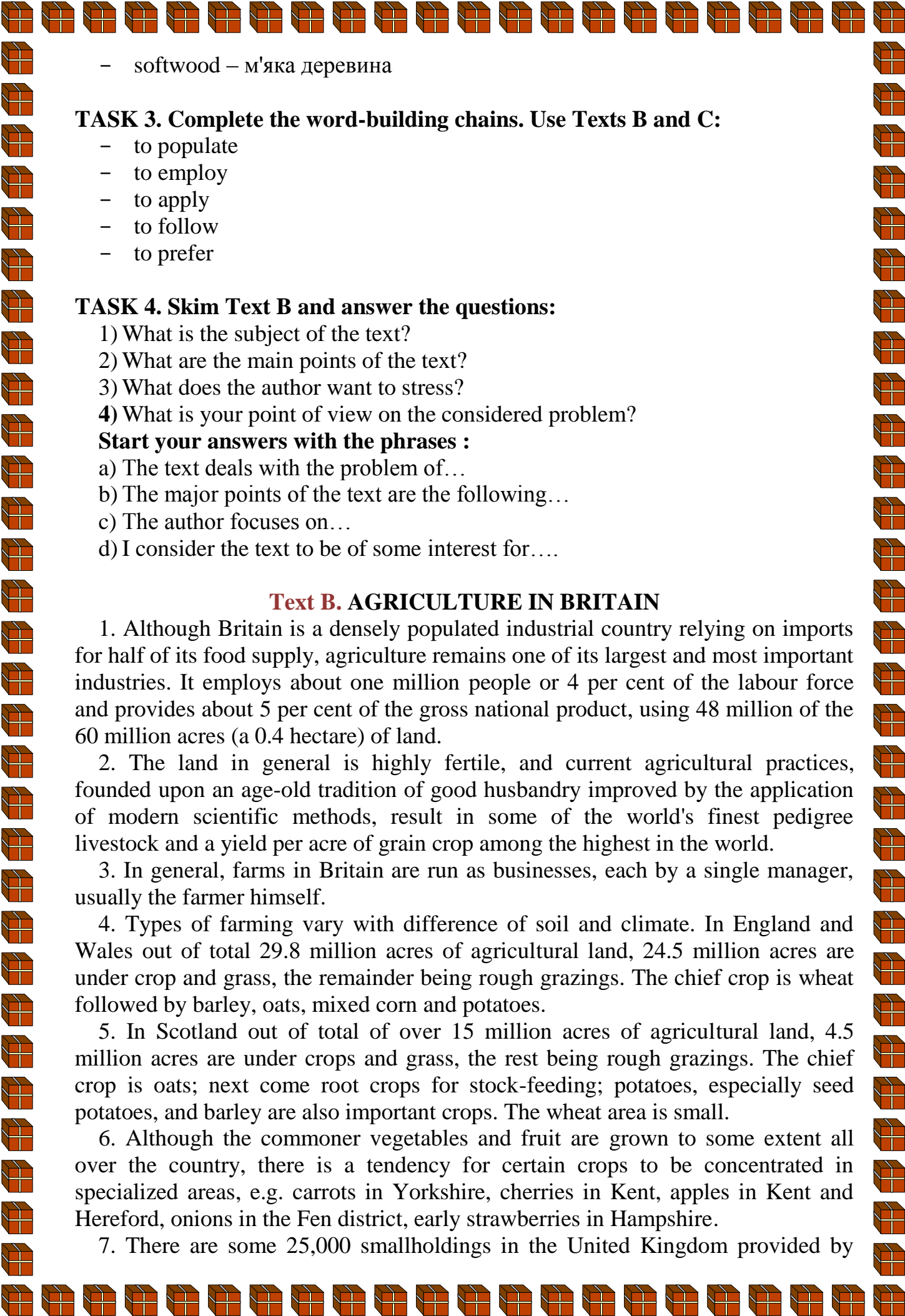
TASK 1. Study the topic "Great Britain".

TASK 2. Guess the meaning of the next words comparing them with their Ukrainian equivalents:

Practice, method, result – to result, type, total, per cent, acre, tendency, to concentrate, experience, permanent, to assist, to form, prehistoric, to prevent, regeneration, protection, to represent, private, voluntary, royal.

TASK 3. Study the new words:

- to employ – працевлаштовувати
- gross national product – валовий національний продукт
- current – сучасний
- pedigree livestock – племінна худоба
- grass – трава
- rough grazings – пасовища
- stock-feeding – тваринництво
- to some extent – до певної міри
- carrot – морква
- onion – цибуля
- strawberry – полуниця
- smallholding – ділянка від 1 до 50 акрів, що надається в оренду
- opportunity – можливість
- on one's own account – за власний рахунок
- allotment – присадибна ділянка не більше 1/4 акра
- if practicable – по можливості
- poultry – птиця
- rabbit – кролик
- bee – бджола
- goat – коза, козел
- advice – порада
- guidance facilities – навчальна література
- trading facilities – торгівельне обладнання
- National Council for Domestic Food Production – Національна рада сприяння розвитку присадибних господарств
- grazing of cattle – випасання великої рогатої худоби
- sheep – вівця
- hunting – полювання
- landowner – землевласник
- estate – господарство
- emergency call – нещастя
- demand – потреба
- timber – деревина
- conifer trees – хвойні дерева

- 
- softwood – м'яка деревина

TASK 3. Complete the word-building chains. Use Texts B and C:

- to populate
- to employ
- to apply
- to follow
- to prefer

TASK 4. Skim Text B and answer the questions:

- 1) What is the subject of the text?
- 2) What are the main points of the text?
- 3) What does the author want to stress?
- 4) What is your point of view on the considered problem?

Start your answers with the phrases :

- a) The text deals with the problem of...
- b) The major points of the text are the following...
- c) The author focuses on...
- d) I consider the text to be of some interest for....

Text B. AGRICULTURE IN BRITAIN

1. Although Britain is a densely populated industrial country relying on imports for half of its food supply, agriculture remains one of its largest and most important industries. It employs about one million people or 4 per cent of the labour force and provides about 5 per cent of the gross national product, using 48 million of the 60 million acres (a 0.4 hectare) of land.

2. The land in general is highly fertile, and current agricultural practices, founded upon an age-old tradition of good husbandry improved by the application of modern scientific methods, result in some of the world's finest pedigree livestock and a yield per acre of grain crop among the highest in the world.

3. In general, farms in Britain are run as businesses, each by a single manager, usually the farmer himself.

4. Types of farming vary with difference of soil and climate. In England and Wales out of total 29.8 million acres of agricultural land, 24.5 million acres are under crop and grass, the remainder being rough grazings. The chief crop is wheat followed by barley, oats, mixed corn and potatoes.

5. In Scotland out of total of over 15 million acres of agricultural land, 4.5 million acres are under crops and grass, the rest being rough grazings. The chief crop is oats; next come root crops for stock-feeding; potatoes, especially seed potatoes, and barley are also important crops. The wheat area is small.

6. Although the commoner vegetables and fruit are grown to some extent all over the country, there is a tendency for certain crops to be concentrated in specialized areas, e.g. carrots in Yorkshire, cherries in Kent, apples in Kent and Hereford, onions in the Fen district, early strawberries in Hampshire.

7. There are some 25,000 smallholdings in the United Kingdom provided by

county councils. The smallholdings are let only to people with practical experience in agriculture, preferably agricultural workers, with the object of affording them an opportunity to become farmers on their own account.

8. There are also rather more than one million allotments in Great Britain. Most of these are allotment gardens and about half are permanent statutory allotments provided by local authorities that have the duty to provide allotments, if practicable, where there is a need.

9. The growing of vegetables and fruit and the keeping of small livestock such as poultry, rabbits, bees, pigs and goats by gardeners and allotment-holders is wide-spread in Britain.

10. Voluntary organizations exist to provide advice, guidance and trading facilities and generally to assist persons interested in the movement. The National Council for Domestic Food Production, formed in 1951, co-ordinates the work of these organizations and encourages the development of domestic food production.

TASK 5. Make a written translation of Text C:

Text C. BRITAIN'S FORESTS

1. In prehistoric times, Britain was well-covered with trees. But as the population changed and grew, as agriculture developed and the need for timber increased, the forest areas gradually disappeared. The grazing of cattle and sheep prevented much natural regeneration of trees. However, some woodland areas enjoyed a royal protection because of the facilities they offered for game, hunting. Similar control was exercised by landowners. Some of these woodland areas as New Forest, Forest of Dean and Epping Forest, still exist with many of the old customs and laws still surviving.

2. Some landowners managed their estates well and responded to emergency calls, and it is thanks to them that we have these trees we do possess, and were able to face up to some of the demands for timber during the two great world wars.

3. So much home-grown limber was used in the First World War, that it was quite obvious that the growing of trees should no longer be left to individuals. There had to be a national policy. Accordingly, the Forestry Commission was set up in 1919. The Second World War once again made great demand for timber reserves because the effective blockade of the ports made the import of this bulky item a great problem.

4. But in spite of the two wars the Forestry Commission has now planted 1, 5 million acres of trees in the 500 forests of the country. The annual programme in recent years has been 100 million new trees planted each year. Of these, 90 percent are conifer trees because they are quick growing. The softwood they provide represents practically 90 per cent of our timber needs. The Forestry Commission, with their scientific and financial resources advise and assist private landowners who have between them 2,5 million acres of woodland.

5. There is a number of forest schools which train the men who look after Britain's forests. A number of universities have specialist courses, which provide a steady flow of men who will occupy various positions both in State and private

woodlands.

6. The target in the 1970s was to have 5 million acres of trees providing about one third of a national need of timber.

UNIT 7

TASK 1. Name Ukrainian equivalents to the next international words:

to transport, to associate, efficient method, spraying machines, selective, uniform, to result, phosphorus, nitrate, chemicals, herbicide, specific, to minimize, to mix, condition, action, biennial, extensive.

TASK 2. Study the new words :

- to cause – спричиняти
- rate- норма
- average- середній
- subject to loss – причина втрати
- excess – надлишок
- short supply – нестача
- emergence – поява сходів рослин

TASK 3. Choose words with the same roots for word-building chains; translate the words:

caused, fertility, less, necessary, fertilization, excess, apply, low, fertilized, least, applying, cause, fertilize, little, unnecessary, lowest, fertilizer, excessive, application, necessarily, over-fertilized, applied, causing, lower, necessity.

TASK 4. Read and translate Text A and find out what the main principle of applying fertilizers is:

Text A. SOME PARTS OF THE FIELD NEED MORE FERTILIZERS

1. Variability¹ is typical of almost anything in nature. The soils on which we grow our crops are no exception².

2. Good and poor areas of crop growth in a field may be caused by variation in one or a combination of some soil factors, but one very common cause of the differences is variation in soil fertility.

3. So, we can say that a field is almost never an area of uniform soil fertility. Yet, the entire field is almost always fertilized at one rate from end to end.

4. Two approaches³ are most common as far as the rate of fertilization is concerned⁴:

- 1). Fertilize at a rate which will be best for the biggest part of the field.
- 2). Fertilize the entire field so that the lowest fertility area receives an adequate amount of nutrients.

5. With practice No. 1, part of the field will receive less than adequate fertilizer and consequently there will be less than maximum yield from those areas.

6. Also, part of the field, being above average in fertility, will receive more

fertilizer than necessary, resulting in unnecessary added cost⁵. And, if the excess⁶ is nitrogen fertilizer, it then becomes subject to loss to the surface and ground waters.

7. Under practice No. 2, if the entire field is fertilized at the rate needed by the lowest fertility level, a very large part of the field will be over-fertilized, resulting in unnecessary added cost for the excess of fertilizer. Also, an excess of nitrogen can result in an undesirably high level of protein in wheat.

8. Neither system, therefore, results in maximum possible crop production per acre of land. What can be done to solve this problem? First, one must recognize that a field is seldom an area of uniform soil fertility. Second, one should determine soil fertility in different parts of the field. Finally, prepare a soil fertility map and fertilize each area according to need so that maximum production can be achieved.

Notes and commentaries:

¹**variability** – мінливість, непостійність ²**exception** – виключення ³**approach** – підхід ⁴**as far as ... is concerned** – що стосується ⁵**cost** – ціна, вартість ⁶**excess** – надлишок

TASK 5.

a) in Text A find and write out the words with the root "vary" and explain the situation they describe.

b) write out from the text word combinations with the word "uniform" and translate them adequately.

TASK 6. Analyze and translate the following word combinations:

- nitrogen application
- surface and ground waters
- the lowest fertility level
- maximum possible crop production
- a soil fertility map
- the practices outlined
- chemical weed control
- specific weed species
- the crop grown
- conditions affecting herbicide effectiveness
- pre-emergence surface-applied herbicides
- moisture and organic matter content

TASK 7. Choose proper continuation for every sentence:

1. With no tillage method applying fertilizers....	a. under this system;
2. The experiments concluded show that....	b. may appear to be difficult;
3. However, denitrification losses are higher...	c. 20 per cent more nitrogen than normal;

4. Most agronomists recommend to apply....	d. of chemicals is needed to control weeds;
5. Under no-plow system a greater amount....	e. surface application of fertilizers is practical and effective.

TASK 8. Use information from Text A to complete the sentences:

1. Crops grow differently in the field because of....
2. Fields are usually fertilized....
3. Neither of two approaches to fertilization brings....
4. Fields should be fertilized according to.....

TASK 9. Work in pairs. Exchange your opinions on the next questions:

1. Why should each part of the field be fertilized at its own rate?
2. What are the methods of usual fertilization of each field?
3. How can one obtain maximum yield from each part of the field?
4. What nutrients are most variable?
5. What does the excess of nitrogen applied result in?

Use phrases:

- I am going to ask you a question.
- I'd like to know
- What is your opinion on the question....
- I believe that...
- In my opinion...
- As to me...

TASK 10. Skim Text B. Use the following phrases to render the text in English orally:

- a) The text deals with the problem of...
- b) The major points of the text are the following...
- c) The author focuses on...
- d) I consider the text to be of some interest for...

Text B. WHY HERBICIDES DON'T ALWAYS WORK

1. Chemical weed control is important in growing many crops to get high yields, but herbicides don't always work. There are some reasons for this.

2. Weed control with chemicals is affected by things that can be arranged into three groups: selection, application and environment¹.

3. Selecting the proper chemical to control the weeds that are present is probably one of the most important things. To do this properly one should know specific weed species that are found or are likely to be found in the crop grown. Then one should choose the herbicide or a mixture of herbicides, to control those weeds.

4. Improper application is another common reason for herbicide failure². Properly working machines for the application of the herbicides, the right rate per acre and good timing are the things that must be paid attention to to minimize the

possibility of failure.

5. A pre-emergence herbicide must be placed evenly³ on the surface of the soil. For the chemical to move into the germination zone of the weeds, rainfall is required within seven to ten days after application.

6. Some herbicides are volatile⁴. They must be incorporated⁵ into the soil just after spraying. If this is not done the herbicide effectiveness will be reduced.

7. Post-emergence herbicides should be applied after the weeds come up.

8. Growers should carefully prepare the machines for the application of the herbicides. If they use some herbicides at a time⁶, the chemicals must be mixed thoroughly.

9. The right rate of chemical application per acre is also very important. Applying too low rates of the chemical may allow weeds to grow. Too high rates can cause the injury⁷ of the growing crop.

10. Timing of the application is another factor of herbicide effectiveness. Some must be applied about ten weeks before planting, while others should be applied two weeks before planting.

11. Environmental conditions affecting herbicide effectiveness cannot usually be controlled, but information about them can be helpful.

12. As has already been said rainfall is necessary for the action of pre-emergence surface-applied herbicides.

13. Strong winds may cause uneven herbicide spraying. With volatile herbicides winds and high temperatures may cause a loss of the chemical.

14. Soil structure, moisture and organic matter content also affect the effectiveness of the herbicides.

15. Weed species, stage of growth and life cycle must also be taken into consideration in applying the herbicides. Young weeds, for instance, are easier to control than old ones. Biennial weeds are easier controlled in the rosette stage⁸ than in the seed-formation stage while perennial weeds are usually controlled in the seedling stage before the extensive root system is developed.


Notes and commentaries:

¹**environment** – навколишнє середовище ²**failure** – неуспіх, невдача ³**evenly** – рівномірно ⁴**volatile** – летючий ⁵**to incorporate** – вносити (добрива) ⁶**at a time** -одночасно, за один раз ⁷**injury** – шкода, пошкодження ⁸**rosette stage** – стадія розетки (розпластане прикореневе листя)

TASK 11. Translate Text C in writing:

Text C. WEEDS

Weeds are found on every farm and in every field. It is impossible to find land completely free from weeds. There are many ways in which weeds may be spread. They are mostly transported by seed, by water, by wind and the animals. Many weed seeds can live in the soil for some years, making the control much more difficult. Weeds reduce growth and yields of cultivated crops as they take away their food water. The best time to kill most weeds is before they can be seen and the best way to kill them is by means of cultivation. Good plowing is the basis of



weed control. Rotation of crops is another method. Each type of crop is associated with certain weeds, so if the same crop is grown for many years, this will increase the number of weeds. By crop rotation many weeds are controlled. Chemical weed control is a rather efficient method, too. Spraying machines are used to apply different weedkiller. There exist weedkillers that kill only certain plants or groups of plants. They are killed selective weedkillers and can be used to kill weeds growing in many crops. Nowadays hormone weedkillers are produced which kill the weeds by stopping their growth. Hormones can kill underground parts of weeds, and sometimes they remain in the soil for some time after spraying. At present hormones which can kill many kinds of weeds are being developed.