ИНОСТРАННЫЙ ЯЗЫК В ВУЗЕ

Владимирский государственный университет

MY SPECIALITY IS SOIL SCIENCE
МОЯ СПЕЦИАЛЬНОСТЬ «ПОЧВОВЕДЕНИЕ»

Учебное пособие по обучению чтению
и развитию навыков устной речи на английском языке

Владимир 2025

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«Владимирский государственный университет
имени Александра Григорьевича и Николая Григорьевича Столетовых»

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Направлено на формирование у студентов умения логически мыслить, аргументированно и ясно строить устные и письменные высказывания на иностранном языке, корректно выражать собственную точку зрения в межличностном общении.

Предназначено для студентов вузов направления подготовки 06.03.02 «Почвоведение» очной формы обучения. Может быть полезно в качестве справочника для студентов заочной формы обучения с элементами дистанционных образовательных технологий.

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CONTENTS

PREFACE

Цель изучения пособия – развитие и совершенствование у студентов практических умений и навыков чтения и говорения в сфере профессионального общения. Издание призвано научить студентов быстро извлекать информацию при чтении, излагать содержание по-английски просто и понятно, самостоятельно делать сообщения, вести диалог на иностранном языке, обсуждать темы различного характера. Составлено в соответствии с требованиями к результатам освоения основных образовательных программ для студентов бакалавриата второго курса специальности 06.03.02 «Почвоведение».

Структурная единица пособия – учебный модуль (Unit), который включает в себя:

– базовый текст, содержащий основную смысловую информацию урока;

– комплекс упражнений, направленных на развитие навыков разговорной речи;

– творческие задания, формирующие умение выражать свое отношение к обсуждаемой проблеме;

– грамматические упражнения как для работы в аудитории, так и для самостоятельной работы.

Пособие включает в себя тексты как на профессиональную, так и общекультурную тематику В плане языковой организации тексты, представленные в пособии, выдержаны в нейтральном стиле, имеют среднюю степень сложности.

Издание обеспечивает коммуникативную и профессиональную направленность обучения иностранному языку и нацелено на решение задач межличностного и межкультурного взаимодействия.

Part I
FUNDAMENTALS OF SOIL SCIENCE

Unit 1. INTRODUCTION IN THE SOIL SCIENCE

I. Read and translate the text A.

THE SOIL SCIENCE

By the middle of the 20th century Russian soil science has become a powerful science with developed methodology. A progressive approach to the study of soils has been established. Ideas about the continuous variability of soils over time, about the cyclicity of soil-forming processes, about the special role of organisms, biological processes in soil formation and the biogenic cycle of substances, about the relationship of soil development with the functioning of ecosystems, about the special role of human activity in soil formation have been developed. In Russia, soil science developed faster than agricultural production. Thus, scientific prerequisites were created for optimizing environmental management in agriculture. In this regard, special mention should be made of the creation of many general and thematic soil maps of various scales and detailed monographs on soils in all regions of the country. Among the most important achievements of soil science in other areas, the following should be noted:

• development of the doctrine of weathering crusts and landscape geochemistry based on the biogeochemical ideas of V. I. Vernadsky;

• development of methods for studying soil organic matter, identification of its role in the processes of soil formation and fertility soils;

• study of soil processes and regimes;

• study of the biological cycle of substances;

• study of physicochemical and chemical properties of soils;

• achievements in the field of soil physics.

Despite all the importance and priority of theoretical soil science, the relevance of many applied problems does not decrease. There is an idea that they should be dealt with by a special science – agricultural or agronomic soil science.

Agronomic soil science is the science of soils and their relationship with plants, the patterns of functioning and evolution involved in agricultural production (arable) soils and identifying ways of their rational use, about soil fertility, methods of its expanded reproduction and soil cultivation.

Agricultural soil science includes the study of local soil characteristics for adaptation of agriculture to them, the study of soil erosion, and large-scale soil mapping for agricultural purposes.

The greatest impact on agricultural soil science was exerted by large scientific schools of soil science and their founders. The role of soil science should be decisive in the reclamation of semi-hydromorphic and hydromorphic soils of the taiga-forest zone with their extraordinary diversity, solonetz-solonchak complexes, etc.

II. Make up your own questions to the text.

III. Translate the words and word combinations from Russian into English using the dictionary and memorize them.

Наибольшее влияние; агропочвоведение; крупные научные школы почвоведения; основатели почвоведения; роль почвоведения; мелиорация; полугидроморфные почвы; гидроморфные почвы; таежно-лесная зона; многообразие; солонцово-солончаковые комплексы; наука о почвах; взаимосвязь с растениями; закономерности функционирования и эволюции; сельскохозяйственное производство; пахотные почвы; рациональное использование; почвенное плодородие; окультуривание почв; изучение местных особенностей почв; земледелие; изучение эрозии почв; крупномасштабное почвенное картографирование; развитая методология; прогрессивный подход; изменчивость почв во времени; цикличность почвообразовательных процессов; особая роль организмов; биологические процессы; биогенный круговорот веществ; функционирование экосистем; особая роль деятельности человека в почвообразовании.

IV. Translate the words and word combinations from English into Russian using the dictionary and memorize them.

Acid soils; agronomy; application; branches of agriculture; cattle breeding; cotton; crop growing; crop rotation; equilibrium; feed; flax; food crops; foodstuff; grain crops; herbicide; industrial crops; intensification; liming; mechanization; mineral fertilizers; nutrient substances; organic fertilizers; pig growing; plant protection; poultry breeding; protein; raw materials; soil; to breed; to cultivate; to disturb; to irrigate; utilization of fertilizers; yield; agronomic science; rational use of arable crops; soils for the cultivation; cultivated plants; soil fertility; high and stable harvests; a branch of agricultural production; farming; branch of the country's agro-industrial complex (AIC); cultural plants; cultivated by humans; biological characteristics; solar energy; cultivated plants; require favorable soil conditions; the main task of general agriculture.

V. Find the sentences with the following words and word combinations in the text A and translate them into Russian.

Agronomic soil science; their relationship with plants; identifying ways of their rational use; expanded reproduction and soil cultivation; priority of theoretical soil science; problems does not decrease; they should be dealt with by a special science; agricultural or agronomic soil science; scientific prerequisites; environmental management in agriculture; the creation of many general and thematic soil maps; soils in all regions of the country; important achievements of soil science; Russian soil science has become a powerful science; the study of soils has become established; the cyclicity of soil-forming processes; the special role of organisms; biological processes in soil formation; the nutrient cycle of substances; the special role of human activity in soil formation; soil science developed faster; than agricultural production; the study of local soil characteristics; the study of soil erosion; large-scale soil mapping for agricultural purposes.

VI. Insert the missing words and word combinations and translate the sentences.

1. The greatest … on agricultural soil … was exerted by large scientific … of … science and their … .

2. The … of soil science should … decisive in the reclamation of … – … and … soils of the taiga-forest … with their extraordinary … , solonetz-solonchak … , etc.

3. Among the most important … of soil science in other areas, the following should be … : the development of the … of weathering … and … geochemistry based … the biogeochemical ideas of V. I. … .

4. The most … achievement in soil … is the development of … for studying soil … matter, identification of … … in the processes of … formation and … soils.

5. … the … of the 20^{th} century … soil science … become a powerful … with developed … .

6. A progressive … to the … of soils … become established.

7. Ideas about the continuous … of soils over time, about the … cyclicity of soil-forming … , about the special role of … , … processes in soil formation have … developed.

8. … soil science is the … of soils and their … with plants, the patterns of … and evolution … in agricultural … soils.

9. The study … … the identification of ways of rational … of soils, … information about soil … , methods of … extended … and tillage.

10. Agricultural soil science … the study of … soil … for adaptation of … to them, the study of soil … , and large-scale soil … for agricultural … .

11. … all the … and priority of … soil science, the relevance of many applied problems … … decrease… .

12. … … an idea that they should … dealt with … a special science – agricultural or … soil science.

13. In … , soil science developed … than agricultural … .

14. Thus, … … were created for optimizing … management … agriculture.

15. In this … , special mention … … made of the … of many general and … soil maps of various … and detailed … on soils in all … of the country.

16. ... the most important … of soil science in … areas, the following … … noted … of physicochemical and … properties of soils.

VII. Translate into English the text B using the dictionary.

СТРУКТУРА ПОЧВЫ

Структура почвы представляет собой более высокий уровень организации твердого вещества почвы и играет важную роль в формировании агрономических свойств и режимов почвы: водно-воздушного режима, сложения, условий обработки и в целом плодородия почвы. Структура почвы – это результат почвообразования, соответственно, разные типы почв и генетических горизонтов будут иметь разный тип структуры. Однако в типах структуры имеется меньшее разнообразие, чем в типах почвообразования, поскольку участвующие в образовании почвенной структуры силы менее специфичны и широко представлены во всех почвах.

Структурные почвы по сравнению с малоструктурными и бесструктурными обладают хорошей водо- и воздухопроницаемостью, благоприятным температурным режимом, высокой противоэрозионной устойчивостью, легче обрабатываются, создают благоприятные условия для прорастания семян и распространения корневых систем растений. Если почва не распадается на естественные структурные отдельности, а имеет сыпучее состояние (как песок или пыль), то она называется бесструктурной раздельно-частичной; если же почва выламывается большими глыбами произвольной формы, то она называется бесструктурной массивной.

Структура – это совокупность структурных агрегатов почвы или какого-либо ее горизонта. Почвенная структура – это взаимное расположение в почвенном теле структурных отдельностей определенной формы и размеров.

Структурность почвы – это ее способность распадаться в естественном состоянии на отдельные комочки (структурные элементы, структурные отдельности, структурные агрегаты) различной величины.

Структурный состав почвы – это распределение структурных агрегатов в массе почвы в соответствии с их размерами (эффективными диаметрами) [2, с. 133].

VIII. Be ready to give the summary of the text orally. Pay attention to the following expressions and using them make up your own sentences based on the text A.

The text deals with (the problem of)…

It touches upon…

The extract from the article is concerned with…

The article is about…

The text centres round the problem of…

The article focuses on the problem of…

According to the text…

According to the author…

It further says that…

According to the figures (data, information, opinions) from the text…

It is clear from the text that…

The problem of the text is of great importance…

To sum it up…

On the whole…

In conclusion it is possible to say that…

IX. Discuss the following statements.

1. Biological processes in soil formation.

2. The relationship of soil development with the functioning of ecosystems.

3. Special role of human activity in soil formation.

4. The environmental management in agriculture.

5. The most important achievements of soil science.

6. What specific features of soil science do you consider important nowadays?

X. Make up your own presentation on the topic: "A progressive approaches to the study of soils".

REVIEWING GRAMMAR

The Indefinite Tenses

The Present Indefinite (Simple) Tense

The Present Simple широко используют в устной речи и употребляют:

1) для выражения обычных, регулярных, повторяющихся или постоянных действий в настоящем времени, факта (*The sun rises every morning; Penguins live in the Antarctica*).

Часто употребляются обстоятельства времени, выражающие частоту и повторность действия (*always, often, usually, regularly, every day etc.*) или редкую повторяемость и ее отсутствие (*never, seldom, sometimes etc.*): *We often go to the movies on Sundays; My friend sometimes lends me his book*;

2) выражения мыслей и чувств (*I think so, I like it*). Во фразах типа *I promise, I agree, etc*. (*I promise I'll pay you back*);

3) выражения заранее намеченных действий в ближайшем будущем, по расписанию, программе, главным образом с глаголами *to leave, to start, to come, to return, to go, to arrive etc.: What time does your train leave tomorrow? The match starts at half past seven; The new supermarket opens this Friday.*

В утвердительных предложениях используют **глагол в форме инфинитива без частицы *to***. Если подлежащее 3-го лица единственного числа (*he, she, it*), то к форме глагола-сказуемого присоединяют окончание ***-es / -s***.

Вспомогательный глагол ***do / does*** используют в вопросительных и отрицательных предложениях.

Grammar Exercises

1. Fill in *am / is / are.*

1. I … an English student. 2. His name … George Brown. 3. Mr. and Mrs. Brown … his father and mother. 4. My brother's name … Benny, and my sister's names … Betty and Rose. 5. We … members of one family. 6. … Helen married? 7. … they married? 8. Mr. Sandford … Betty's brother-in-law. 9. How old … you? – I … eighteen. 10. What … you all? – We … all students. 11. … your girl-friends students. 12. … Betty's schoolmates kind and jolly? 13. His companions … well-bred. 14. … Benny eager to have a dog? 15. She … a naughty child. 16. I … eager to have a girlfriend. 17. I … two years younger than my cousin. 18. He … as young as his boyfriend. 19. My niece … eighteen months old.

2. Put the verb in the brackets into the correct form of the Present Simple.

1. Ann … doesn't drink (*not / drink*) tea very often. 2. What time (*the library / close*) here? 3. I've got a computer, but I (*not / use*) it much. 4. Where (*your friend / come*) from? He's British. 5. What (*you / do*)? I'm a tutor.

3. Translate into English.

1. Моя семья обычно обедает в ресторане. 2. Наши друзья всегда пьют кофе на завтрак. 3. Днем у нее масса работы. 4. Я занимаюсь английским по вечерам. 5. Мы никогда не едим мясо.

4. Make the sentences negative and interrogative

1. He goes to school every day. 2. My sister works here. 3. They eat a lot. 4. We work every day. 5. He comes from Germany. 6. They live in the USA. 7. He plays football every day. 8. His father works at an office.

5. Complete the sentences by putting in the verbs. Use positive or negative meanings of the Present Simple.

Model: Claire is very sociable. *She (know)* ***knows*** *lots of people.*

We've got plenty of chairs, thanks. We (*not / want*) ***don't want*** any more.

1. My friend is finding life in Paris a bit difficult. He (*not / speak*) French. 2. Most students live quite close to the college, so they (*walk*) there. 3. I've got four cats and two dogs. I (*love*) animals. 4. No breakfast for Mark, thanks. He (*not / eat*) breakfast. 5. What's the matter? You (*not / look*) very happy.

6. Put the verb into the correct form. Write sentences about yourself. Use *always / never / often / sometimes/ usually*.

Model: Watch television. – *I never watch television / I usually watch television in the evening (etc.)*

1. Read in bed. 2. Get up before 7 o'clock. 3. Go to university / by bus. 4. Drink coffee. 5. Watch soap operas.

Unit 2. THE HISTORY OF AGRICULTURE DEVELOPMENT

I. Read and translate the text A.

SCIENTIFIC FOUNDATIONS OF AGRICULTURE FORMATION

The emergence of arable farming led to a new form of management with a profound change in the primary landscapes. On a large scale, the process of deforestation has begun, and, consequently, the primary stage of soil degradation. The accumulation of empirical knowledge about the soil began from the time when man moved from collecting wild plants to growing them in the fields, to cultivating the soil.

Many scientists believe that agriculture began with tillage. N. I. Vavilov (1887 – 1943) developed a polycentric concept of the origin of world agriculture. In 1926 – 1935, he singled out eight main geographical areas. They are West Asian, Indian, Central Asian, Chinese, Mediterranean, African, Mexican, South American. The regions gave rise not only to agriculture, but also to most modern cultivated plants.

Studies have shown that the primary centers of agriculture originated independently in different regions and number from 5 to 3 thousand to 8 – 6 thousand years B C. Agricultural implements were extremely primitive. For centuries, the main tillage tools were a plough, a hoe, a wooden harrow, and a sickle and a flail.

Most studies associate the emergence of agriculture with the developed gathering of natural products. From gathering to the techniques of conscious cultivation of cultivated plants, there was a long and unexplored path that led humanity to agriculture by trial and error.

With the advent of writing, the most valuable observations on agriculture began to be reflected in rock paintings and other writings, and then in chronicles. Mesopotamia was one of the oldest countries with highly developed agriculture.

The second period in the development of agriculture is associated with the era of feudalism, which is characterized by the stagnation of natural sciences. This period lasted until the 18th century, when economic trans-

formations began to take place, which gave impetus to the further development of productive forces.

The development of natural and exact sciences played a significant role in the development of agriculture as a science in Russia and other countries.

Scientific research was in demand and aimed at the development of industry, agriculture, military affairs, etc.

Carried out in the 18th century Peter I and Catherine II reforms they relied on the fact that "agriculture is the first and main work."

M. V. Lomonosov (1711 – 1765) played an exceptionally important role in the formation of agronomy and other sciences in Russia. The tasks of correcting agriculture, according to M. V. Lomonosov were reduced to a comprehensive study of agriculture in all areas of Russia and finding the means to improve it.

He considered the rise of agriculture possible only with the help of science.

On the initiative of M. V. Lomonosov, the Free Economic Society (VEO) was founded in 1765, which played an important role in the development of domestic agronomy. The works of this society have been published for 105 years; they published the results of the first scientific research and accumulated experience in agriculture.

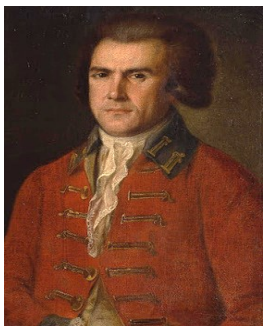
A. T. Bolotov (1738 – 1833) is considered one of the founders of Russian agronomic science. Bolotov was a true innovator, he came up with a program of priority research in the field of agriculture on the following issues: studying the properties and qualities of land, correcting and fertilizing land, processing and preparing land for sowing, seed preparation, sowing, crop care, harvesting.

References

1. ***Nikolai Ivanovich Vavilov*** is a Russian and Soviet geneticist, botanist, breeder, chemist, geographer, public and statesman. Under the leadership of N. I. Vavilov, the world's largest collection of seeds of cultivated plants was created. He laid the foundations of the system

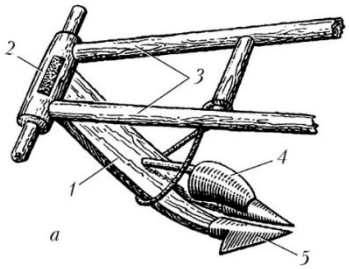
of state testing of varieties of field crops. He formulated the principles of the country's main scientific center for agricultural sciences, created a network of scientific institutions in this field.

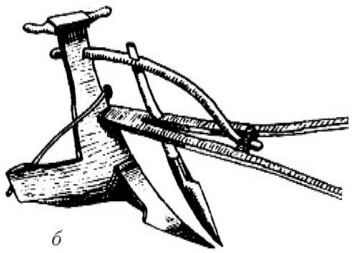
2. ***Mikhail Vasilyevich Lomonosov*** – born in 1711 in the Arkhangelsk province died in 1765, the first major Russian natural scientist, also known as a polymath – "one whose intellectual abilities, interests and activities are not limited to one area of knowledge and the only area of their application, as well as an individual who achieves tangible practical results in all d irections."



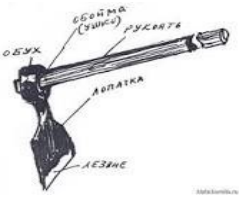
3. ***Andrey Timofeevich Bolotov*** (1738 – 1833) was a Russian writer, memoirist, moral philosopher, scientist, botanist and forester. One of the founders of agronomy and pomology in Russia. He made a great contribution to the recognition of tomatoes and potatoes as agricultural crops in Russia.

4. ***A plough*** is an ancient Russian arable tillage tool.

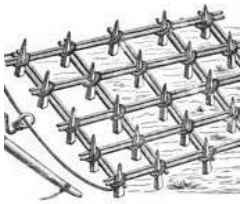




5. ***The hoe*** is a hand-held agricultural tool for cultivating the land.



6. ***A harrow*** is an agricultural tool for surface tillage.



7. ***Sickle*** is a manual harvesting tool in the form of a finely serrated knife curved in a semicircle for cutting cereals from the root.

8. ***A flail*** is a hand tool for threshing.

II. Make up your own questions to the text.

III. Translate the words and word combinations from Russian into English using the dictionary and memorize them.

Появление земледелия; ландшафт; процесс вырубки леса; первичная стадия деградации почвы; накопление эмпирических знаний о почве; основные почвообрабатывающие орудия труда; соха; мотыга; деревянная борона; уборочные орудия труда; серп; цеп; выращивание культурных растений; сбор дикорастущих растений; выращивание на полях; возделывание почвы; обработка почвы; разработать полицентрическую концепцию зарождения мирового земледелия; выделить восемь основных географических областей истории развития земледелия; наиболее ценные наблюдения по земледелию; эпоха феодализма; западноазиатская; индийская; среднеазиатская; китайская; средиземноморская; африканская; мексиканская; южноамериканская; земледельческие орудия; на протяжении столетий; метод проб и ошибок; застой естественных наук; экономические преобразования; толчок дальнейшему развитию.

IV. Translate the words and word combinations from English into Russian using the dictionary and memorize them.

To played an exceptionally important role; the formation of agronomy in Russia; a comprehensive study of agriculture; to find the means to improve smth; the primary stage of soil degradation; the accumulation of empirical knowledge; from collecting wild plants to growing them in the fields; to cultivating the soil; many scientists believe; to single out eight main geographical areas; the rise of agriculture; with the help of science; to play an important role in the development of domestic agronomy; for 105 years; the results of the first scientific research; accumulated experience in agriculture; to led to a new form of management; with a profound change in the primary landscapes; on a large scale; the process of deforestation has begun; consequently; cultivated plants; to led humanity to agriculture by trial and error; with the advent of writing; the most valuable observations on agriculture; chronicles.

V. Find the sentences with the following words and word combinations in the text A and translate them into Russian.

The development of natural and exact sciences; in Russia and other countries; in demand and aimed at the development of industry, agriculture, military affairs, etc.; carried out in the 18th century; “agriculture is the first and main work”; associate the emergence of agriculture; from gathering to the techniques; led humanity to agriculture by trial and error; to play an exceptionally important role; the tasks of correcting agriculture; and finding the means to improve it; with the advent of writing; to be reflected in rock paintings and other writings; one of the oldest countries with highly developed agriculture; possible only with the help of science; which played an important role in the development of domestic agronomy; they published the results of the first scientific research; associated with the era of feudalism; this period lasted until the 18th century; development of productive forces; a profound change in the primary landscapes; the primary stage of soil degradation; knowledge about the soil; from collecting wild plants;

one of the founders of Russian agronomic science; a program of priority research in the field of agriculture.

VI. Insert the missing words and word combinations and translate the sentences.

1. … was a true … , he came up with a program of … research in the field of … .
2. He considered the … of agriculture possible only with the … of science.
3. Many scientists … that agriculture began with … .
4. N. I. Vavilov developed a … concept of the … of … agriculture.
5. In 1926 – 1935, he … … … main geographical areas.
6. Studies … … that the primary centers of agriculture … independently in different … and number from … to … thousand to …-… thousand years BC.
7. … implements were extremely … .
8. For centuries, the main … … were a … , a … , a wooden … , and a sickle and a … .
9. Most … associate the … of agriculture … the developed gathering of … products..
10. From gathering to the … of conscious …of cultivated plants, there was a … and … path that … humanity to agriculture … … and … .
11. Carried out in the 18th century … … and … … … they relied on the fact that "… is the first and … work".
12. M. V. Lomonosov (1711 – 1765) … … … important role in the formation of… and other sciences in … .
13. The tasks of correcting agriculture, according to … … … were reduced to a … study of agriculture in all areas of Russia and … the means to … it.
14. The … … in the development of … is … with the era of … .
15. This period is … by the stagnation of … sciences.

16. … … lasted until the … … , when … transformations … to take place, which gave … to the … development of productive … .

17. The … of … … led to a new form of … with a profound … in the primary … .

18. On a large … , the process of … has … , and, consequently, the primary stage of soil degradation.

VII. Translate into English the text B using the dictionary.

ПРОИСХОЖДЕНИЕ МИРОВОГО ЗЕМЛЕДЕЛИЯ

Где впервые зародилась земледельческая культура на Земле? Какие орудия применял первобытный земледелец? Какие растения первоначально были взяты в культуру? Эти и другие вопросы имеют большое значение для современного земледельца. Зная прошлое, можно без ошибок научиться управлять современными технологиями.

С момента своего зарождения в эпоху первобытно-общинного строя и кочевого образа жизни земледелие развивалось лишь на примитивной практике и по народным приметам. Наиболее ценные наблюдения и практический опыт постепенно накапливались и передавались от одного поколения к другому. До возникновения письменности опыт передавался только устно. С появлением письменности наиболее ценные наблюдения по земледелию стали отражаться в наскальных и других писаниях, а затем в летописях.

Одной из древнейших стран с высокоразвитым земледелием была Месопотамия. Уже в начале IV тыс. до н. э. здесь образовалось государство шумеров, в котором земледелие достигло высокого для того времени уровня развития. Результаты своей деятельности, накопленный опыт, различные советы по выполнению полевых работ шумеры записывали на глиняных дощечках-табличках. Эти таблички они называли «календарем земледельца».

В этом календаре были приведены советы по обработке почвы, борьбе с сорными растениями, подготовке к посеву и выращиванию культур. Также археологи обнаружили там содержание диспута о переходе от мотыжного земледелия к плужному.

В Древней Греции также много внимания уделяли роли агрономических знаний и советов по земледелию. Известный древнегреческий философ Аристотель (384 – 322 г. до н. э.) написал несколько трактатов по сельскому хозяйству – «Естественная история», «О возникновении животных» и другие, в которых совершил первую попытку классификации растений и животных, привел способы их содержания, а также возделывания.

В Древнем Риме (IV – II в. до н. э.) литература по земледелию представлена трудами выдающихся натуралистов того времени – Магона, Катона, Варрона, Вергилия, Колумеллы. Катон в своем трактате «О земледелии» дал классификацию почв по их пригодности для возделывания культурных растений, изложил советы по развитию виноградарства, садоводства и животноводства.

References

1. ***Mesopotamia*** is a historical and geographical region in the Middle East, located in the valley of two rivers – the Tigris and Euphrates, in the Fertile Crescent zone; the site of one of the oldest civilizations in human history. Modern states, including the lands of Mesopotamia – Iraq, northeastern Syria, peripherally Türkiye and Iran.

2. ***Sumer*** is an ancient region in Southern Mesopotamia in the territory of modern Iraq. In the 19th century, after this area, researchers gave the name to the Sumerian language and the population that spoke it – the Sumerians.

VIII. Be ready to give the summary of the text orally. Pay attention to the following expressions and using them make up your own sentences based on the text A.

The text deals with (the problem of)…

It touches upon…

The extract from the article is concerned with…

The article is about…

The text centres round the problem of…

The article focuses on the problem of…

According to the text…

According to the author…

It further says that…

According to the figures (data, information, opinions) from the text…

It is clear from the text that…

The problem of the text is of great importance…

To sum it up…

On the whole…

In conclusion it is possible to say that…

IX. Discuss the following statements.

1. Where did agriculture originate on earth? What tools did the primitive farmer use? What plants were originally taken into cultivation?

2. What is the essence of N. I. Vavilov's polycentric concept of the origin of world agriculture?

3. In what millennium BC did the primary centers of agriculture originate?

4. What were the soil-cultivating and harvesting tools?

5. What era of agricultural development is the second period associated with?

6. Which outstanding scientists dealt with issues of agronomy?

X. Make up your own presentation on the topic: "A. T. Bolotov and N. I. Vavilov – the founders of Russian agronomic science".

REVIEWING GRAMMAR

The Indefinite Tenses

The Past Simple (Indefinite) Tense

Правильные глаголы (Regular Verbs) образуют прошедшее время путем добавления к основной форме глагола окончания ***-ed***.

Неправильные глаголы (Irregular Verbs) имеют три основные формы: 1) инфинитив; 2) прошедшее неопределенное время (*Past Simple (Indefinite)*); 3) причастие прошедшего времени.

Отрицательная и вопросительная формы образуются при помощи вспомогательного глагола прошедшего времени ***did (not)*** и глагола-сказуемого в форме инфинитива **без частицы *to*** (*He liked the film / He didn't like the film / Did he like the film*?).

The Past Simple используют: 1) для описания факта прошлого, описания привычки, занятий (*Emma passed her exam last year*; *When she was young she played football*); 2) перечисления прошедших действий, происходивших одно за другим (*She put on her coat, took her bag and left the house*).

Positive		**Question**			**Negative**		
I / We / You / She / He / It / They	*enjoyed* *saw* *went*	*Did*	I / we / you / she / he / it / they	*enjoy?* *see?* *go?*	I / We / You / She / He / It / They	*didn't*	*enjoy* *see* *go*

Часто употребляются такие обстоятельства времени, как: ***yesterday*** – вчера; ***last week*** – на прошлой неделе; ***a year ago*** – год назад; ***in 1999*** – в 1999; ***then*** – тогда; ***when*** – когда.

Grammar Exercises

1. Complete the sentences with the Simple Past tense of the verbs in the brackets.

1. The boys (*whisper*) secrets to each other. 2. Uncle Ben (*hurry*) to catch his bus. 3. We (*return*) our books to the library. 4. She (*kiss*) the frog and it (*change*) into a prince. 5. Someone (*tap*) me on the shoulder.

2. Write these sentences in the positive, interrogative and negative forms of the Past Simple.

Model: He teaches history at the university. – *He taught history at the university. Did he teach history at the university? He didn't teach history at the university*.

1. My parents leave home at 8 o'clock. 2. You smoke a lot. 3. I look very tired. 4. We stop at Oxford. 5. The restaurant closes at 11 o'clock.

3. Translate into English.

1. Мой отец родился в 1965 году. 2. Когда мне было 7 лет, я пошел в школу. 3. Все наши друзья хорошо окончили школу, поступили в университет, нашли вечернюю работу. 4. Летом мы ездили отдыхать на юг. 5. Где ты был вчера?

4. Complete the conversation. Put in the Past Simple negatives and questions.

Model: **Nina:** (*You / have*) ***Did you have*** a nice weekend in Paris?

Mark: Yes, thanks. It was good. We looked around and then we saw a show. (*We / not / try*) to do too much.

Nina: What sights (*you / see*)?

Mark: We had a look round the Louvre. (*I / not / know*) there was so much in there.

Nina: And what show (*you / go*) to?

Mark: Oh, a musical. I forget the name. (*I / not / like*) it.

Nina: Oh, dear. And (*Sarah / enjoy*) it?

Mark: No, not really. But we enjoyed the weekend. Sarah did some shopping, too, but (*I / not / want*) to go shopping.

Unit 3. SCIENTIFIC FOUNDATIONS AND TASKS OF SOIL CULTIVATION

I. ***Read and translate the text A.***

METHODS AND TECHNIQUES FOR TILLAGE

Tillage methods are used to increase the effective fertility and productivity of agricultural crops. This takes into account climatic conditions, soil type and degree of soil cultivation, requirements of cultivated crops. There are moldboard, non-mouldboard, rotary and combined methods of tillage.

The moldboard method involves processing with moldboard implements with full or partial wrapping of the processed layer in order to change the location of layers or genetic soil horizons of different quality in the vertical direction in combination with loosening, mixing, cutting and incorporating plant residues and fertilizers into the soil.

The non-moldboard method involves processing with non-mouldboard tillage implements and machines without changing arrangement of layers and genetic horizons of different quality in terms of fertility for the purpose of loosening or compaction, cutting weeds and preserving plant residues on the soil surface.

The rotary method involves processing with rotating working tools of tillage implements and techniques for eliminating differentiation of the

treated layer by its density composition and fertility by active crumbling and mixing soil, plant residues and fertilizers to form a mixed layer.

Combined methods include processing with combined and conventional tillage tools, and machines that provide different combinations across horizons and layers, and also on the timing of implementation of moldboard, non-moldboard and rotary methods of soil cultivation.

Tillage method is a single mechanical impact on the soil by the working tools of tillage machines and tools in one way or another to perform one or more technological operations to a certain depth.

Basic tillage refers to the deepest tillage of the soil, which significantly changes its composition for a specific crop rotation. The main processing includes plowing and deep loosening.

According to the depth of cultivation, processing methods are divided into surface tillage – this is tillage of the soil with various implements to a depth of up to 8 cm, and small ones – from 8 to 16 cm. Techniques for such processing include: scuffling, cultivating, harrowing, packing, floating, sloughing etc.

Special soil treatment is used in the presence of specific conditions for a specific purpose. To the techniques special processing includes multilayer (tiered) processing with using longline plows, plantation plowing, soil slotting, moling.

II. Make up your own questions to the text.

III. Translate the words and word combinations from Russian into English using the dictionary and memorize them.

Обработка почвы; механическое воздействие на почву; почвообрабатывающие машины и орудия; оптимальные почвенные условия; уничтожение сорняков; защита почвы от эрозии; регулирование почвенных режимов; поддержание хорошего фитосанитарного состояния почвы и посевов; эффективность плодородия и урожайность культур; пахотный слой; водно-воздушный, тепловой и питательный режимы; оборачивание и перемешивание слоев почвы; уничтожение

растущих сорняков; севооборот; отвальный способ обработки почвы; безотвальный способ обработки почвы; роторный и комбинированный способы обработки почвы; генетические горизонты почвы; рыхление почвы; перемешивание почвы; заделка удобрений в почву; климатические условия; тип почвы; степень окультуренности почвы; вспашка и глубокое рыхление почвы; глубина обработки почвы; поверхностная обработка почвы; ярусный плуг; плантажная вспашка; щелевание; кротование.

IV. Translate the words and word combinations from English into Russian using the dictionary and memorize them.

The moldboard method; full or partial wrapping; in order to change the location of layers; genetic soil horizons; loosening, mixing, cutting; to fertilize into the soil: the non-moldboard method; non-mouldboard tillage; without changing arrangement of layers; genetic horizons of different quality; in terms of fertility; compaction, cutting weeds; on the soil surface; the rotary method; rotating working tools of tillage; density composition and fertility; by active crumbling and mixing soil; mixed layer; combined methods; conventional tillage tools; across horizons and layers; soil cultivation; working tools of tillage machines; to perform one or more technological operations; a certain depth; a specific crop rotation; plowing; moldboards of various designs; screw moldboard plow; plows with a cylindrical moldboard surface.

V. Find the sentences with the following words and word combinations in the text A and translate them into Russian.

Basic tillage refers to; for a specific crop rotation; to include plowing and deep loosening; processing methods are divided into; with various implements to a depth; techniques for such processing include; processing with rotating working tools; by its density composition; fertility by active crumbling and mixing; soil, plant residues and fertilizers to form a mixed layer; processing with combined and conventional tillage tools; across horizons and layers; rotary methods of soil cultivation; a single mechanical

impact on the soil; to perform one or more technological operations; to increase the effective fertility and productivity of agricultural crops; climatic conditions, soil type and degree of soil cultivation; rotary and combined methods of tillage; special soil treatment; specific conditions for a specific purpose; multilayer (tiered) processing with using longline plows; the moldboard method involves; full or partial wrapping of the processed layer; in the vertical direction in combination with.

VI. Insert the missing words and word combinations.

1. The … … involves processing with … implements with … or … wrapping of the processed layer … … to change the location of layers or genetic soil horizons of different quality in the vertical direction in combination with loosening, mixing, cutting and incorporating plant residues and fertilizers into the soil.

2. The moldboard method … processing with moldboard … with full or partial … of the processed … in order … … the genetic soil horizons of different … in the … direction in combination with … , … , … .

3. … … are used to … the effective … and … of agricultural crops.

4. This … … … climatic conditions, soil … and … of soil cultivation, requirements of … crops.

5. There are moldboard, non-mouldboard, … and … … of tillage.

6. … … … processing with combined and conventional tillage tools, and machines that … different combinations across … and … .

7. … … a single mechanical impact on the soil by the working … of … machines and tools in one way or another to perform one or more … … to a certain depth.

8. According to the … of … this is tillage of the … to a depth … 8 to 16 cm.

9. … … is used in the presence of … … for a specific purpose.

10. To the techniques special processing includes … (…) processing with using … plows, plantation … , soil … , moling.

11. According to the … of … , processing methods are … … superficial – this is … of the soil with … implements to a … of up to 8 cm.

12. Techniques for such processing include: … , … , … , … , … , … etc.

13. The … … involves processing with … working tools of tillage implements and … for eliminating differentiation of the … layer.

14. The …-… … involves processing with … – tillage … and machines without changing arrangement of layers and genetic horizons.

15. Layers and genetic … of different … in terms of … for the purpose of … or compaction, … … and preserving plant … on the … surface.

VII. Translate into English the text B using the dictionary.

ПРИЕМЫ ОСНОВНОЙ ОБРАБОТКИ ПОЧВЫ

Вспашку выполняют плугами с отвалами различной конструкции, что определяет несходство по составу производимых технологических операций и качеству их выполнения. Плуги с винтовыми отвалами хорошо оборачивают пласт почвы, но плохо его крошат; и напротив, плуги с цилиндрической поверхностью отвала хорошо крошат пласт почвы, но плохо его оборачивают.

Если при работе плуга пласт почвы полностью оборачивается (т. е. на 180°), то говорят о вспашке с оборотом пласта. При неполном опрокидывании пласта почвы и косой его постановке на 135° на ребро говорят о вспашке со взметом пласта.

Однако лучшего оборачивания и крошения пласта почвы, особенно освобождающейся из-под многолетних трав, достигают при вспашке плугом с культурным отвалом и установленным перед ним

предплужником. Предплужник снимает на 2/3 ширины захвата основного корпуса верхний слой почвы толщиной 8…10 см, содержащий стерню, растительные остатки, вредных насекомых и фитопатогенные микроорганизмы, семена и органы вегетативного возобновления сорняков, и сбрасывает его на дно борозды.

В районах, подверженных ветровой эрозии, чтобы сохранить на поверхности стерню и другие растительные остатки, которые предохраняют почву от выдувания и накапливают большое количество влаги в виде снега, так необходимой в засушливых степных районах, проводят только рыхление почвы без ее оборачивания, которое называют безотвальной вспашкой. Такую вспашку на глубину 27…30 см и более, разработанную в начале 50-х годов XX в. академиком Т. С. Мальцевым, широко применяют в Западной и Восточной Сибири и Европейской части России с использованием ранее безотвальных плугов, а позднее плоскорезов и глубокорыхлителей различной конструкции: КПЭ-3,8, КПП-2,2, КПГ-2-150, КПГ-250, ГУН-4 – типа параплау и др. [3, с. 150].

VIII. Be ready to give the summary of the text orally. Pay attention to the following expressions and using them make up your own sentences based on the text A.

The text deals with (the problem of)…

It touches upon…

The extract from the article is concerned with…

The article is about…

The text centres round the problem of…

The article focuses on the problem of…

According to the text…

According to the author…

It further says that…

According to the figures (data, information, opinions) from the text…

It is clear from the text that…

The problem of the text is of great importance…

To sum it up…

On the whole…

In conclusion it is possible to say that…

IX. Discuss the following statements.

1. What methods of soil cultivation do you know?

2. Discuss the advantages and disadvantages of all types of plowing

3. To create optimal living conditions for plants, they use various methods and techniques of soil cultivation.

4. Define the method of tillage.

5. You know that plowing is carried out with plows with moldboards of various designs. What determines the dissimilarity in the composition of technological operations performed and the quality of their implementation?

6. What agricultural machinery is used for plowing and cultivating the soil?

X. Make up your own presentation on the topic: "The main tasks of the tillage system in modern agriculture?".

REVIEWING GRAMMAR

The Indefinite Tenses

The Future Simple (Indefinite) Tense

The Future Simple образуется при помощи вспомогательного глагола ***will*** и ***основы инфинитива основного глагола***. *The Future Simple* употребляют для обозначения: действия, которое, возможно, произойдет в будущем, предположения по поводу будущего (*We'll travel around the world one day; You'll be a great doctor one day*), намерения, решения, принятого спонтанно, в момент разговора (*The bag is too heavy, I'll help you*), будущего действия после слов *hope, think, expect, I'm sure, I'm afraid, probably, perhaps* (*We hope we'll see them tonight*).

Positive		**Negative**		**Question**		
I / We / You / She / He / It / They	*will wash*	I / We / You / She / He / It / They	*will not (won't) wash*	*Will*	I / we / you / she / he / it / they	*wash?*

Часто употребляются такие обстоятельства времени, как: ***tomorrow*** – завтра; ***next week*** – на следующей неделе; ***soon*** – скоро; ***in many years*** – через много лет; ***tonight*** – сегодня вечером; ***the day after tomorrow*** – послезавтра.

Grammar Exercises

1. Write down the sentences using the verbs in brackets in Future Simple.

1. I (*to see*) them next Saturday. 2. They (*to be*) here tomorrow. 3. We (*to have*) the test in a week. 4. She (*to spend*) holidays in the country. 5. The journey (*to take*) three hours. 6. I (*to open*) the door for you. 7. I (*to go*) to school tomorrow? 8. They (*to come*) back next week?

2. Put in *will (‘ll)* ***or*** *won’t.*

Model: Can you wait for me? I *won’t* be very long.

1. There is no need to take an umbrella with you. It … rain. 2. If you don’t eat anything now, you … be hungry later. 3. I’m sorry about what happened yesterday. It … happen again. 4. I’ve got some incredible news! You … never believe what happened. 5. Don’t ask Amanda for advice. She … know what to do.

3. Make the following interrogative and negative.

1. The meeting will begin at eight. 2. They will be in Brussels the day after tomorrow. 3. She will cook breakfast for us. 4. We shall start at dawn. 5. The boy will be seven next year. 6. The plane will take off in five minutes. 7. We shall climb the mountain next week. 8. I shall see you on Monday. 9. I’ll buy a camera next month. 10. They’ll tell us about it.

4. Translate into English.

1. Мой друг окончит университет в следующем году. 2. Кто будет переводить этот текст? 3. Вероятно, я вскоре получу интересную работу. 4. Как долго твои родственники пробудут в нашем городе? 5. У нас не будет экзаменов зимой.

5. Write down the sentences using the verbs in brackets in Present Simple or Future Simple. All the sentences refer to future.

1. When I (*to see*) him, I (*to phone*) you. 2. If he (*to decide*) not to do it, he (*to be*) right. 3. Tell me when she (*to come*) to visit you. 4. I (*to give*) it to him when he (*to visit*) us. 5. You (*to pass*) your exam if you (*to work*) hard. 6. We (*to go*) to the country next week if the weather (*to be*) fine. 7. As soon as we (*to know*) results, we (*to inform*) you. 8. Don't open the car door before it (*to stop*). 9. You (*not like*) this film when you (*to see*) it. 10. Wait for me till I (*to return*).

6. Write down the sentences using the verbs in brackets in Present, Past, Future Simple

1. She (*not / to teach*) English at school. 2. You (*to meet*) him yesterday? 3. The firm (*to buy*) new computers next month. 4. The Dean (*to ask*) many questions at the lecture last week. 5. Where you (*to go*) next summer? 6. They (*to use*) new scientific data for their last experiment. 7. When the concert (*to be over*) all the people (*to leave*) the hall. 8. Every year students (*to take part*) in scientific research. 9. The first computer (*to appear*) in the 1960s. 10. If the weather (*to be*) fine, we (*to go*) to the village.

Unit 4. AGRONOMY PROBLEMS AND TASKS IN MODERN SOIL SCIENCE

I. Read and translate the text A.

A PROGRESSIVE APPROACH TO THE STUDY OF SOILS

By the middle of the 20th century. Russian soil science has become a powerful science with developed methodology. A progressive approach to the study of soils was established. Ideas about the continuous variability of soils over time, the cyclical nature of soil-forming processes, the special role of organisms, biological processes in soil formation and the nutrient

cycle of substances have been gained its development. Despite all the importance and priority of theoretical soil science, the relevance of many applied problems does not decrease. There is an idea that they should be dealt with by a special science – agricultural or agronomic soil science.

Agronomic soil science is the science of soils and their relationship with plants, the patterns of functioning and evolution involved in agricultural production of (arable) soils and identifying ways of their rational use, soil fertility, methods of its expanded reproduction and soil cultivation.

Solonetz
Автор: Clemens Pfeiffer, 1190 Wien.
Источник:
https://commons.wikimedia.org/w/index.php?curid=558199

Solonchak

Agricultural soil science includes the study of local soil characteristics for adaptation of agriculture to them, the study of soil erosion, and large-scale soil mapping for agricultural purposes. In recent years, V. I. Kiryushin is actively developing new approaches to territorial planning on a landscape-ecological basis and to the design of agricultural landscapes.

He developed classifications of ecological and socio-economic functions of landscapes and methods of structural and functional analysis of landscapes for the purpose of landscape planning and design. Large schools of soil reclamation science have developed in Russia.

The chemical reclamation of acidic soils and solonetzes has received a diverse theoretical basis.

The school of genesis and reclamation of solonetzes created by K. K. Giedroyets and developed by his followers has worldwide recognition. The role of soil science should be decisive in the reclamation of semi-

hydromorphic and hydromorphic soils of the taiga-forest zone with their extraordinary diversity of solonetz-solonchak complexes and etc.

The most obvious example of an unsuccessful experience in land management design is the oblivion of the landscape concept of land use by V. V. Dokuchaev, which was rethought only a century later. The condition for the development of a natural system is its openness. In "Russian Chernozem" V. V. Dokuchaev proved that soil science has its own independent object of study – soil, a natural historical body with a structure, properties and processes unique to it. He proposed a research method and methodology, established the nature of the connection and interaction of soil with other natural bodies and phenomena.

II. Make up your own questions to the text.

III. Translate the words and word combinations from Russian into English using the dictionary and memorize them.

Роль почвоведения; мелиорация; полугидроморфные и гидроморфные почвы; таежно-лесная зона; солонцово-солончаковые комплексы; почвенно-мелиоративные карты; землеоценочные материалы; проекты мелиорации; осушаемые и орошаемые земли; разработка и освоение мелиоративных технологий; влияние антропогенных факторов; почвенно-ландшафтные условия; современные агрогеоинформационные системы; понимание агроэкологических условий; почвенно-ландшафтные условия; землеустроительная служба; мелиоративные и агротехнические мероприятия; степные ландшафты; агрономическое почвоведение; закономерности их функционирования и эволюции; сельскохозяйственное производство; пахотные почвы; почвенное плодородие; окультуривание почв; земледелие; изучение эрозии почв; крупномасштабное почвенное картографирование; для целей сельского хозяйства; наибольшее влияние; крупные научные школы почвоведения и их основатели; конкретные практические рекомендации и демонстрационные полевые опыты.

IV. Translate the words and word combinations from English into Russian using the dictionary and memorize them.

The most obvious example; the nature of the connection and interaction of soil; other natural bodies and phenomena; Russian soil science; to become a powerful science; with developed methodology; a progressive approach to the study of soils;an unsuccessful experience; land management design; the landscape concept of land; condition for the development of a natural system; to prove; own independent object of study; soil; a natural historical body; the cyclicity of soil-forming processes; the special role of organisms; biological processes in soil formation; the nutrient cycle of substances; the relationship between soil development with the functioning of ecosystems; a structure; properties; unique; to propose a research method and methodology; to establish; ideas about the continuous variability of soils over time; the special role of human activity in soil formation; the patterns of functioning and evolution; to identify ways of their rational use; soil fertility; methods of soil cultivation.

V. Find the sentences with the following words and word combinations in the text A and translate them into Russian.

Dokuchaev proved; independent object of study; properties and processes unique; the most obvious example established the nature of the connection and interaction of soil; with other natural bodies and phenomena; with their extraordinary diversity; the school of genesis; for agricultural purposes reclamation of solonetzes created by K. K. Giedroyets; agricultural or agronomic soil science; the study of soil erosion; his followers; should be decisive in the reclamation of semi-hydromorphic and hydromorphic soils; has received a diverse theoretical basis;classifications of ecological and socio-economic functions of landscapes the taiga-forest zone; solonetz-solonchak complexes; the oblivion of the landscape concept; includes the study of local soil; have developed in Russia; characteristics for adaptation of agriculture; new approaches to territorial planning; to the design of agricultural landscapes; methods of structural and functional analysis; for the purpose of landscape planning and design; soil rec-

lamation science; acidic soils and solonetzes; despite all the importance and priority of theoretical soil science; does not decrease; they should be dealt with by a special science. Agronomic soil science is the science of soils and their relationship with plants, the patterns of functioning and evolution involved in agricultural production of (arable) soils and identifying ways of their rational use, soil fertility, methods of its expanded reproduction and soil cultivation.

VI. Insert the missing words and word combinations.

1. In recent years, … … … is actively developing … … to territorial planning on a …- basis and to the … of agricultural … .
2. … soil science is the … of soils and their … with … .
3. The patterns of … and … involved in agricultural production of (…) soils and identifying … of their rational… .
4. Agronomic … … is the science of soil … , methods of its … reproduction and soil … .
5. By the … of the … … Russian soil science has … a powerful science with … methodology.
6. A … … to the study of soils was established.
7. Ideas about the continuous … of … over time, the … … of soil-forming processes, the special role of … , biological … in soil formation and the … … of substances have … gained its … .
8. Despite all the … and … of theoretical … , the relevance of many applied problems … … decrease.
9. There … … … that they should be dealt with by a special science – … or … soil science.
10. He developed … of ecological and … – … of landscapes and methods of structural and functional analysis of … for the purpose of landscape … and design.
11. Large… of soil reclamation … have developed in … .
12. The … reclamation of … soils and … has received a … theoretical basis.

13. The most … example of an … … in land management … is the oblivion of the landscape concept of land use by … … … , which was re-thought only a … later.

14. In "… … " V. V. Dokuchaev proved that soil science … … … … object of study – soil.

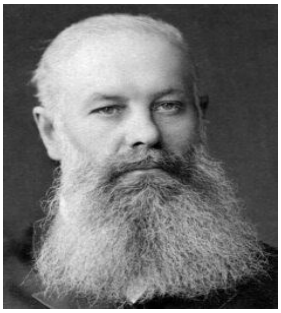
15. Soil is a … … … with a structure, properties and processes unique to it.

16. He … a research method and … , established the nature of the connection and … of soil with other … … and phenomena.

VII. Translate into English the text B using the dictionary.

ВКЛАД ОТЕЧЕСТВЕННЫХ УЧЕНЫХ В ИЗУЧЕНИЕ ВОДНОЙ И ВЕТРОВОЙ ЭРОЗИИ ПОЧВ

Водная и ветровая эрозия почв по своему происхождению связана с земледельческими экспансиями и низкой культурой земледелия. Она приобрела такой размах и последствия, что стала предметом почвенной науки. Сущность этого явления была раскрыта еще В. В. Докучаевым в книге «Наши степи прежде и теперь».



В. В. Докучаев наглядно показал, что массовая распашка земель на юге России привела к развитию водной эрозии. Именно это бедствие наряду с усыханием территории из-за усиления поверхностного стока послужило поводом для разработки В. В. Докучаевым комплекса мер по «оздоровлению земледелия» и, по существу, биосферной концепции землепользования. Тем не менее при сельскохозяйственном использовании Великих равнин Северной Америки все повторилось, но уже в катастрофических масштабах.

В результате сплошной массовой распашки земель разыгралась невиданная ветровая эрозия. Пыльные потоки с Дикого Запада достигали Атлантического океана. Потребовались огромные усилия науки и государства для ликвидации последствий этого явления путем создания почвозащитной системы земледелия. Этого урока оказалось

вовсе недостаточно, судя по многочисленным проявлениям опустынивания в различных странах.

Спустя два десятилетия после североамериканской катастрофы нечто подобное повторилось в бывшем СССР после массовой распашки целинных земель на юге Сибири и в Казахстане. Это был огромный «пыльный котел», охвативший миллионы гектаров. Мобилизовав все силы целинников, с пыльными бурями в этом районе удалось справиться намного быстрее, чем в Америке, в определенной мере благодаря использованию канадского опыта.

Решающую роль сыграли ученые ВНИИ зернового хозяйства, разработавшие под руководством ***А. И. Бараева*** почвозащитную систему земледелия, основанную на обработке почвы с сохранением на поверхности пожнивных остатков.

Автор: неизвестен. Источник: https://upload.wikimedia.org/wikipedia/ru/0/01/Александр_Иванович_Бараев.jpg?20140721110631

Однако начинавшаяся массовая распашка целинных земель сопровождалась проявлением ветровой эрозии, а безотвальный плуг Т. С. Мальцева не создавал ветроустойчивости. Больше годился североамериканский опыт, который он изучил во время командировки в Канаду в 1957 – 1958 годы. Этот опыт и послужил основой почвозащитной системы земледелия в Казахстане. Не механический перенос, а разработка с его учетом защитных мер в других природных условиях.

Автор: неизвестен. Источник: http://photo.rgakfd.ru/photo/1122856

Т. С. Мальцев – Почетный академик ВАСХНИЛ, заслуженный работник сельского хозяйства СССР, почетный гражданин России, дважды Герой Социалистического Труда. Большая заслуга Т. С. Мальцева – разработка технологии

подготовки чистых паров в севооборотах засушливых районов, позволяющая получить более высокие урожаи зерновых. В 1950-е годы. Т. С. Мальцев обосновал более поздние сроки сева яровой пшеницы для степных районов Сибири и Северного Казахстана.

Для новой технологии нужна и другая техника. Мальцев в содружестве с инженерами разработал безотвальный плуг, бороны, лущильники с плоскими дисками.

В результате селекционной деятельности под руководством Т. С. Мальцева были выведены и районированы четыре сорта пшеницы – Шадринская, Вера, Курганская-1, Коллективная-2 [1, с. 29 – 31].

VIII. Be ready to give the summary of the text orally. Pay attention to the following expressions and using them make up your own sentences based on the text A.

The text deals with (the problem of)…

It touches upon…

The extract from the article is concerned with…

The article is about…

The text centres round the problem of…

The article focuses on the problem of…

According to the text…

According to the author…

It further says that…

According to the figures (data, information, opinions) from the text…

It is clear from the text that…

The problem of the text is of great importance…

To sum it up…

On the whole…

In conclusion it is possible to say that…

IX. Discuss the following statements.

1. Russian soil science has become a powerful science with developed methodology.

2. A progressive approach to the study of soils.

3. The importance and priority of theoretical soil science.

4. The importance of agricultural or agronomic soil science.

5. The role of soil science should be decisive in the reclamation of semi-hydromorphic and hydromorphic soils of the taiga-forest zone. Why? Prove your opinion.

6. What are the causes of water and wind soil erosion?

X. Make up your own presentation on the topic: "Contribution of V. V. Dokuchaev and V. I. Kiryushin in the development of Soil Science".

REVIEWING GRAMMAR

The Continuous Tenses

The Present Continuous (Progressive) Tense

The Present Continuous образуется при помощи вспомогательного глагола ***to be*** в соответствующем времени, лице и числе (*I* – ***am***; *He / she / it* – ***is***; *They / we / you* – ***are***) и глагола-сказуемого в форме инфинитива **без частицы *to*** с окончанием ***-ing***.

The Present Continuous означает: 1) длящийся процесс, действие которого происходит в момент речи (*I'm waiting for the train I'm at the station now*); 2) середину какого-либо процесса, пусть даже он происходит не в момент речи (*I'm quite busy these days; I'm doing a course at university*); 3) встречи, события, запланированные на ближайшее будущее; то, что, возможно, занесено в ваш ежедневник; часто с глаголами *go, come, see, meet, stay, have, leave (I'm meeting Henry at six o'clock; We're having a party tomorrow*).

Positive / Negative			**Question**		
I	*am (not)*		*Am*	I	
He / She / It	*is (isn't)*	*liv**ing*** *do**ing***	*Is*	he / she / it	*liv**ing**?* *do**ing**?*
We / You / They	*are (aren't)*	*watch**ing***	*Are*	we / you / they	*watch**ing**?*

Часто употребляются такие обстоятельства времени, как: ***now*** – сейчас; ***at the moment*** – в данный момент; ***at present*** – в настоящее время, теперь; ***these days*** – теперь.

С глаголами, которые обозначают не действие, а состояние (non-continuous verbs), ***Present Continuous обычно не употребляется:*** *to be, to feel, to forget, to live, to love, to like, to want, to think, to hear, to see, to remember, to know, to stay, to mean, to understand, to believe, to belong, to sound, to smell, to prefer, to have(=possess) и т. д.*

Grammar Exercises

1. What's happening at the moment? Make up true sentences.

Model: (I / eat). – *I'm not eating.*

1. I / learn / English. 2. The sun / shine. 3. My teacher / sit / on a chair. 4. You / listen / to music. 5. Students / wear / shoes.

2. Fill in the blank spaces with the Present Continuous tense of the verbs in the brackets.

1. He (*fix*) my bike in the garage. 2. I (*help*) Mom in the kitchen. 3. My sister and I (*watch*) television in our bedroom. 4. They (*come*) with us to the museum. 5. We (*paint*) some pictures for Aunt Susan.

3. Translate into English.

1. Не входите в аудиторию! Студенты пишут там контрольную работу. 2. Этот писатель пишет новую книгу. 3. Не мешайте мне. Я готовлюсь к докладу. 4. О чем вы думаете? 5. Осторожно! Та машина едет с огромной скоростью!

4. What can you say in these situations? Add a sentence with the Present Continuous.

Model: A friend rings you up in the middle of your favourite film. – *Is it important? I'm watching the most impressive blockbuster*.

1. A friend is at your flat and suggests going out, but you can see rain outside. – I don't want to go out now. Look, … . 2. A friend rings you up at work. – Sorry, I can't talk now. … . 3. You want to get off the bus, but the old lady next to you is sitting on your coat. – Excuse me, … . 4. A friend of yours wants to discuss the latest news with you, but you've just started to make a report. – Can I talk to you later? … . 5. You have been ill, but you're better now. – I'm OK now. … .

5. Complete the sentences. Put in the Present Continuous or Present Simple of the verbs in the brackets.

Model: (*I / write*) ***I'm writing*** to my parents. (*I / write*) ***I write*** to them every weekend.

1. (*It / snow*) outside. (*It / come*) down quite hard, look. 2. Normally (*I / start*) work at eight o'clock, but (*I / start*) at seven this week. We're very busy at the moment. 3. I haven't got a car at the moment, so (*I / go*) to work on the bus this week. Usually (*I / drive*) to work. 4. The sun (*rise*)

in the east, remember. It's behind us so (*we / travel*) west. 5. I'm afraid I have no time to help just now (*I / write*) a report. But (*I / promise*) I'll give you some help later. 6. (*I / want*) a new car (*I / save*) up to buy one.

6. Complete the following sentences with either the Simple Present form or the Present Continuous form of the verbs in the brackets.

1. The teacher always (*give*) us interesting project work. 2. The wind (*blow*) very strongly today. 3. I (*like*) chocolate ice cream. 4. Be quiet! We (*try*) to listen to the radio. 5. Let's go inside now. It (*begin*) to rain. 6. Penguins (*eat*) fish. 7. Dad never (*let*) us play in the street when it's dark. 8. The children (*go*) swimming every day. 9. We're trying to catch the ball that (*roll*) down the hill. 10. My teacher (*know*) a lot about plants and animals.

Unit 5. AGRICULTURE AND ENVIRONMENT

I. Read and translate the text A.

THE SIGNIFICANT ROLE OF AGRICULTURE AND ENVIRONMENT

Agriculture has had a long positive association with the environment; its production has quadrupled in this century alone, contributing to accelerated urban development, industrial growth and expansion of the service sector. But at the same time agricultural pollution has increased and the quality of a number of rural landscapes has declined.

Farming has become much more mechanized and more intensive, with greater regional and on-farm specialization and greater regional concentration. Exploiting mechanization and technology, replacing man and beast with energy from fossil fuels, strengthening the productivity of the soil and crop yields with fertilizers and pesticides (pesticides are understood to include insecticides, herbicides and fungicides), agriculture has evolved to a state where short term profits can be made without maintain-

ing the traditional harmony and interdependence between agriculture and the environment which has existed for centuries

While agriculture still makes a significant contribution to the landscape in many areas, because of a failure to integrate agricultural and environmental policies the above changes have often brought with them a number of significant problems.

These problems, which vary in character and degree from country to country and region to region, include concerns about:

1) the human health effects of pesticide and fertilizer residues, heavy metals, feed supplements and contaminants in soil, water bodies, food products and the food chain;

2) the decrease of biotopes valued for nature conservation;

3) the contamination of ground and surface waters by nitrates and phosphates leading to local health risks, declines in the quality of aquatic resources, losses in recreation values and increased water supply costs;

4) agricultural pollution problems associated with the growth of intensive animal husbandry;

5) air pollution from intensive animal production, manure spreading and crop spraying;

6) the salinization of soils which is contaminating water supplies and causing losses in soil productivity and landscape values;

7) losses of landscape and wildlife habitat caused by the amalgamation of farms, the growing emergence of monocultures, the removal of hedges, walls and terraces, the draining of wetlands and the deterioration and destruction of traditional farm buildings;

8) soil compaction, erosion and pollution which have led to productivity losses, declines in the quality of water resources and reduction in the capacity of water storages.

At the same time the policies of other sectors and the pollution which has resulted from some of them have had bad effects on agriculture in some regions. Severe financial problems have also arisen within the agricultural sector.

II. Make up your own questions to the text.

III. Translate the words and word combinations from Russian into English using the dictionary and memorize them.

Сельское хозяйство; связь с окружающей средой; сельскохозяйственное загрязнение; более механизировано и интенсивно; региональная и внутрихозяйственная специализация; использовать механизацию и технологии; заменить человека; из ископаемого топлива; повысить продуктивность почвы; урожайность сельскохозяйственных культур; с помощью удобрений и пестицидов; инсектициды; гербициды; фунгициды; краткосрочная перспектива; прибыль; гармония и взаимозависимость между сельским хозяйством и окружающей средой; существовать на протяжении веков; по-прежнему; вносить значительный вклад; интегрировать сельскохозяйственную и экологическую политику; вышеупомянутые изменения; ряд серьезных проблем; различаться по характеру и степени; воздействие на здоровье человека остатков пестицидов и удобрений; тяжелые металлы; кормовые добавки; загрязняющие вещества в почве; водоемы; пищевые продукты; уменьшение природоохранных биотопов; загрязнение подземных и поверхностных вод нитратами и фосфатами; снижение качества водных ресурсов; потеря рекреационной ценности; увеличение затрат на водоснабжение.

IV. Translate the words and word combinations from English into Russian using the dictionary and memorize them.

Over the centuries; highly valued; wilderness state; to demand access to the countryside; enjoyment and recreation; may be difficult to reconcile with; a prosperous agriculture; opportunities; recreation facilities; to increase the value of the land; land maintenance efforts; income from agriculture; reserves and forests; people’s vision of an ideal countryside; hedgerows; wildlife habitat; the drainage of land farming; undoubtedly; soil cultivation operations; flood control and water purity; hillsides encourage erosion; significant-long-term-threats; significant structural change;

vary from country to country and region to region; a desire to improve the environment; promote regional diversification; reduce the dependence of certain rural areas on agriculture; agriculture's beneficial effects for the environment; a desirable environment; agriculture's greatest contribution to man's well-being; to provide the food and the "nutritional" security; at the same time; to enjoy increasing leisure time; enjoy and profit from our environment.

V. Find the sentences with the following words and word combinations in the text A and translate them into Russian.

Exploiting mechanization and technology; agricultural pollution has increased; landscapes has declined; energy from fossil fuels; crop yields with fertilizers; agriculture has evolved to a state; which has existed for centuries; a long positive association with the environment; contributing to accelerated urban development; the draining of wetlands and the deterioration and destruction of traditional farm buildings; the service sector; without maintaining the traditional harmony; makes a significant contribution to the landscape; changes have often brought with them a number of significant problems; in character and degree from country to country; air pollution from intensive animal production, manure spreading and crop spraying; water supplies and causing losses in soil productivity and landscape values; losses of landscape and wildlife habitat caused by the amalgamation of farms; in character and degree from country to country; heavy metals, feed supplements and contaminants in soil; water bodies, food products and the food chain; he biotopes valued for nature conservation; the contamination of ground and surface waters; declines in the quality of aquatic resources; losses in recreation values and increased water supply costs; pollution problems associated with the growth of intensive animal husbandry; much more mechanized and more intensive; on-farm specialization and greater regional concentration.

VI. Insert the missing words and word combinations.

1. At the … … the policies of other sectors and the pollution which has resulted from some of them … … bad effects on … in some … .

2. … financial problems have also … within the … sector.

3. The problem includes: … of landscape and … … caused by the amalgamation of … , the growing … of monocultures.

4. The … includes: the human … … of pesticide and fertilizer residues, … … , feed supplements and … in soil .

5. … problems, which … in character and … from country to … and … to region.

6. … has … much more mechanized and … …more intensive. With greater regional and on-farm specializatioa and greater regional concentration.

7. Exploiting … and technology, replacing … and … with energy from … fuels, strengthening the … of the soil has … for centuries.

8. Agriculture … … a long positive … with the … .

9. Its production has … in this century … , contributing to accelerated… development, … growth and expansion of the … … .

10. But at the … … agricultural … has increased and the … of a number of … landscapes … .

11. Pesticides … understood to include … , herbicides and … .

12. The problem is to … the motivation of human … .

13. Agriculture has … to a state where … … profits can be made without … the traditional harmony and… between agriculture and the … which has existed for … .

14. While agriculture … … a significant contribution to the … in many areas, because of a … to integrate … and environmental … the above … have often brought … … a number of significant… .

15. The problem includes: soil … , erosion and pollution which … … … productivity … , declines in the quality of … … and reduction in the … of … storages.

16. The … includes: the contamination of … and … waters by … and … leading to local … … , declines in the quality of … … , losses in recreation … and increased … … costs.

VII. Translate into English the text B using the dictionary.

ЗАЩИТА ЧЕЛОВЕКОМ ОКРУЖАЮЩЕЙ СРЕДЫ И СЕЛЬСКОХОЗЯЙСТВЕННЫХ ЗЕМЕЛЬ

На протяжении нескольких веков сельское хозяйство формировало ландшафт, который сейчас высоко ценится, поэтому вызывает удивление тот факт, что множество людей хотели бы вернуть его в состояние дикой природы. Похоже, представление большей части населения об идеальной сельской местности включает в себя сельское хозяйство в дополнение к заповедникам и лесам.

Дренаж и другие операции по обработке почвы могут оказывать разнообразное благотворное воздействие на борьбу с наводнениями и чистоту воды. С другой стороны, одни формы культивирования на склонах холмов способствуют эрозии, в то время как другие формы культивирования могут оказывать благотворное воздействие на окружающую среду.

Среди угроз, оказывающих негативное воздействие на сельское хозяйство, которые были замечены сравнительно недавно, можно назвать следующие:

1) повышение концентрации CO_2, что не только является фактором «парникового эффекта» нагрева атмосферы, но и может непосредственно влиять на метаболизм растений;

2) увеличение концентрации озона у поверхности земли, что, по-видимому, приводит к снижению урожайности сельскохозяйственных культур;

3) болезни, связанные с концентрацией озона в верхних слоях атмосферы, которые позволяют большему количеству ультрафиолетового излучения достигать земной поверхности и при этом оказывать влияние на рост растений;

4) загрязнение почвы вредными химическими и физическими агентами, что приводит к ухудшению качества продуктов питания и повышению риска онкологических заболеваний;

5) глобальные изменения климата, включая длительные периоды установления погоды, не соответствующей сезону, и очевидную тенденцию к потеплению атмосферы, что может иметь далеко идущие последствия для вегетационного периода и количества осадков.

В случаях долгосрочного негативного воздействия на сельское хозяйство происходит загрязнение воды и воздуха от промышленности и распространение сточных вод на сельскохозяйственные угодья.

Таким образом, природа, интенсивность и масштабы кислотных отложений, фотохимических окислителей и сточных вод в сельском хозяйстве остаются в значительной степени неизвестными. Существует необходимость дополнительных исследований, таких как установление причинно-следственных связей, а также еще предстоит уточнить ограничивающие потребности при нынешних уровнях кислотных отложений. Поэтому и сельское хозяйство, и окружающая среда сегодня нуждаются в защите человека.

VIII. Be ready to give the summary of the text orally. Pay attention to the following expressions and using them make up your own sentences based on the text A.

The text deals with (the problem of)…

It touches upon…

The extract from the article is concerned with…

The article is about…

The text centres round the problem of…

The article focuses on the problem of…

According to the text…

According to the author…

It further says that…

According to the figures (data, information, opinions) from the text…

It is clear from the text that…

The problem of the text is of great importance…

To sum it up…

On the whole…

In conclusion it is possible to say that…

IX. Discuss the following statements.

1. The traditional harmony and interdependence between agriculture and the environment destroyed.
2. The environmental problems formed by agriculture.
3. The agriculture's greatest contribution to man's wellbeing.
4. The pollution phenomenon that pose significant long-term threats to agricultural production.
5. The main sources of nonagricultural air and water pollution.
6. People and environmental protection.

X. Make up your own presentation on the topic: "The significant role of agriculture and environment".

REVIEWING GRAMMAR

The Continuous Tenses

The Past Continuous (Progressive) Tense

The Past Continuous образуется при помощи вспомогательного глагола ***to be*** в соответствующем прошедшем времени, лице и числе (I / He / she / it – ***was***; They / we / you – ***were***) и глагола-сказуемого в форме инфинитива **без частицы *to*** с окончанием ***-ing***.

The Past Continuous означает: 1) действие в процессе, которое совершалось в определенный момент или протекало в течение четко ограниченного периода времени в прошлом (*I was watching television at 17:30 yesterday; We were all dancing at the party the whole night*); 2) два и более действия, которые происходили в одно время в прошлом (*They were dancing while he was playing the guitar*); 3) действие в процессе, которое совершалось в прошлом (*Past Continuous*), пока другое однократное действие его не прервало (*Past Simple*) (*He was painted the bedroom* (процесс в прошлом) *when suddenly he fell off the ladder* (однократное действие)).

Глаголы состояния (non-continuous verbs) в Past Continuous не употребляются.

Positive / Negative			**Question**		
I / He / She / It	*was (wasn't)*	*liv**ing***	*Was*	I / he / she / it	*liv**ing**?*
We / You / They	*were (weren't)*	*do**ing*** *watch**ing***	*Were*	we / you / they	*do**ing**?* *watch**ing**?*

Часто употребляются такие обстоятельства времени, как: ***at… o'clock yesterday*** – вчера в… часов; ***at that time*** – в то время; ***from 5 till 6 last Sunday (from 5 to 6 o'clock)*** – с 5 до 6 в прошлое воскресенье; ***the whole evening*** – весь вечер.

Grammar Exercises

1. Answer the questions using the words from the round brackets

Model: – Where were you at 6 o'clock? (*Library / read a book.*)

– I was reading a book in the library.

1. Where were you at this time last week? (*Spain / stay at the hotel.)* 2. What was your grandmother doing the whole yesterday evening? (*Armchair / watch a serial.*) 3. What were you doing from 2 to 3? (*Home / make lunch.*) 4. Where was your brother at midday? (*Walk with his dog / park.*)

2. Complete the sentences with the past progressive tense of the verbs in brackets.

1. At the party lots of people (*dance*) in the street while our neighbours (*have*) a barbecue. 2. I (*sit*) in my bedroom and (*read*) a book from 4 till midnight. 3. Someone (*make*) a very loud noise in the street. 4. Why you all (*laugh*) when I came in? 5. Sally (*practice*) the piano the whole morning.

3. Translate into English.

1. Где вы работали сегодня в 9 часов утра? 2. Он с друзьями занимался английским весь день. 3. Мы смотрели телевизор, а они слушали радио. 4. Во время обеда она читала научный журнал. 5. Автобус стоял на остановке с 3 до 4, а затем уехал.

4. Add a sentence with the past continuous to say that an action lasted a long time.

Model: You had to work yesterday. The work went on all day. – *I was working all day.*

1. You had to make phone calls. The calls went on all evening. 2. Students had to wait in the rain. The rain lasted for half an hour. 3. We had to make sandwiches. This went on all afternoon. 4. The lorry had to stay in a traffic jam. It was there for two hours. 5. Your neighbour played loud music. This went on all night.

Past Continuous or Past Simple?

5. Put in the correct form of the verbs in the brackets using the Past Continuous or Past Simple.

Model: When Martin (*arrive*) ***arrived*** home, Anna was (*talk*) ***talking*** to someone on the phone. Martin (*start*) ***started*** to get the tea.

1. I (*lie*) in the bath when the phone (*ring*). It (*stop*) after a few rings. 2. It (*be*) cold when we (*leave*) the house that day, and a light snow (*fall*). 3. Your friend who (*come*) here the other day (*seem*) very nice.

I (*enjoy*) meeting her. 4. When I (*open*) the cupboard door, a pile of books (*fall*) out. 5. I (*walk*) along the street when I suddenly (*feel*) something hit me in the back. I (*not / know*) what it was.

6. Each of these sentences has a mistake, correct them.

Model: The hotel were very quite. – *The hotel was very quiet.*

1. It was peaceful, and the birds were sing. 2. I washed my hair when the phone rang. 3. You came to the club last night? 4. As I was watching him, the man was suddenly running away. 5. Everything was seeming OK. 6. Where bought you that bag?

Unit 6. SOIL COMPOSITION

I. Read and translate the text A.

FACTORS THAT DETERMINE THE CAPACITY OF A SOIL

There are many factors that determine the capacity of a soil to provide nutrients for crop production. Some of the factors can be controlled by the farmer, while some are impractical to control. A farmer should recognize the soil characteristics over which he has little or no control and those characteristics which he can profitably manage. Any farmer should be able to apply knowledge gained by soil scientists and agrochemists for rationalizing farming and improving soil management.

This text deals with the composition of the soil framework or solid phase as viewed from different standpoints. The subject matter provides both a brief review of such basic material and an insight into the value of the various characterizations of soil composition for evaluating soil as a substrate for plant growth.

1. In what terms have soils been described?

2. Why is the mechanical composition of a soil the basis of characterizing soils?

3. What is the mechanical composition of a soil?

4. Into what three main fractions is the soil separated?

5. How do we call the process by which the mechanical composition is measured?

Soils have been described for many years in terms of the proportions of particles of different sizes that they contain. This basis of characterizing soils developed because particle size is an obvious characteristic and because particle size is related to soil behaviour and plant response. The effect of particle size of soils is not one of the primary factors that effect plant growth.

The mechanical composition of a soil is the weight, percentage of the mineral matter that occurs in each of two or more specified size fractions. Ordinarily the soil is separated into at least three size fractions, namely, sand, silt, and clay.

The process by which the mechanical com position is measured is known as mechanical analysis. The numerous methods of mechanical analysis are based on the fact that the rate of fall soil particles through water increases with the diameter of the particles or on some combination of this property with the use of sieves for separating coarse particles.

1. What determines the soil class, texture, or textural grade?

2. What increases as the texture becomes finer?

3 What varies with the texture?

4. Under what conditions does the nitrogen supply usually increase?

The relative proportions of sand, silt and clay in the soil determine what is called the soil class texture or textural grade. There is an infinite number of textural grades. That plant growth is related in some way to the mechanical composition of soils has been recognized for many years. The water-holding capacity increases as the texture becomes finer. A second important soil condition that varies with the texture is the nitrogen supply. Under similar environmental conditions the nitrogen supply usually increases as the texture becomes finer.

II. Make up your own questions to the text.

III. Translate the words and word combinations from Russian into English using the dictionary and memorize them.

Емкость; водоудерживающая способность; крупнокомковатый; рассматривать вопрос; характеризовать; описывать; определять; оседать; мелкозернистый; структура; увеличение; качество; способность проникновения; частица; прибыльный; доходный; свойство; осознавать; быть связанным; чувствительность; решето; подобный; сходный; величина; твердая фаза; объект; иметь тенденцию; вид; вес; анализ; частица; прибор для разделения почв; мелкая часть; измельченное вещество; способность почвы удерживать воду; определение элементов; оценить текстуру; небольшая порция почвы для исследования; особенность почвы; минеральные частицы; диаметром менее 0,002 мм; слой почвы; камень; делить; грубый; глина; субстрат; чтобы получить результат; характеристики почвы; твердый; непрактичный; разные результаты исследования; объединять усилия; жидкость; практичный; похожие результаты; убыточный.

IV. Translate the words and word combinations from English into Russian using the dictionary and memorize them.

Substrate; solid; review; composition; basis; material; ordinarily; mechanical; analysis; diameter; proportion; texture; fraction; fact; action; rationalize; the composition of the soil; the effects of the various factors; the basis of characterizing soils; the soil development; the effect of particle size of soils on plant growth; soil behavior; the productive capacity of the soil; the physical properties of the soil; particle size; the soil com position; related to; chemical properties; water-holding; coarse; deal with; determine; fall; fine; a framework; gain; grade; insight; particle; profitable; property; recognize; relate to; response; sieve; similar; solid; subject-matter; tend (to) ; view; weight; all factors; to determine the productivity of a soil; to control by the farmer; use for rationalizing farming; improving soil management; to determine the soil class; textural grade; the texture becomes finer; varies with the texture; three main size fractions of the soil; kinds of soil particles; the important soil properties; chemical composition;

effects of particle size on soil particles; micro-organisms; decomposition of the organic matter.

V. Find the sentences with the following words and word combinations in the text A and translate them into Russian.

Deals with; related in some way to the mechanical composition of soils; the soil framework; from different standpoints; the subject matter provides; for separating coarse particles; into the value of the various characterizations; for plant growth; have soils been described; the mechanical composition of a soil; three main fractions; soil separated; we call the process; is measured; for many years; of different sizes that they contain; particle size is an obvious characteristic; soil behavior and plant response; one of the primary factors that effect plant growth; percentage of the mineral matter; two or more specified size fractions; at least three size fractions; namely, sand, silt, and clay; for rationalizing farming and improving soil management;is known as mechanical analysis; the numerous methods of mechanical analysis; which he can profitably manage; through water increases; this property with the use of sieves; to provide nutrients for crop production; determines the soil class, texture, or textural grade; texture becomes finer; the texture becomes finer;what conditions does the nitrogen supply usually increase; proportions of sand, silt and clay in the soil; class texture or textural grade; an infinite number of textural grades; plant growth; that determine the capacity of a soil; can be controlled by the farmer; a farmer should recognize the soil characteristics; should be able to apply knowledge gained by soil scientists; similar environmental conditions.

VI. Insert the missing words and word combinations.

1. The water-holding … increases as the texture … finer.

2. The … composition of a … is the … , percentage of the … matter that occurs in each of … or more specified size … .

3. A … … soil condition that … with the texture is the … supply.

4. Ordinarily the … is separated … at least … size fractions, namely, … , … , and … .

5. Under similar … … the nitrogen supply usually increases as the… becomes … .

6. The process … … the mechanical composition … … is known as mechanical … .

7. … determines the … class, texture, or textural … ?

8. The relative proportions of … , … and … in the soil determine what… called the … … texture or textural grade.

9. … increases as the texture becomes … ?

10. … … an infinite number of textural grades.

11. … varies with the texture?

12. That … … is related in some … … the mechanical composition of soils … … recognized for many … .

13. The … … of mechanical analysis … based … the fact that the rate of fall … … through … … with the diameter of the particles or on some combination of this … with the …of sieves for … coarse … .

14. Soils … … described for many … in terms of the … of particles of different … that they … .

15. This basis of characterizing … … because particle size … an obvious characteristic and … particle … is … … soil behaviour and plant … .

16. The … of particle size of … … not one of the primary … that … plant growth.

17. … … many factors that … the capacity of a … to provide … for crop … .

18. Some of the factors … … controlled … the …, while some are impractical … control.

VII. Translate into English the text B using the dictionary.

МИНЕРАЛОГИЧЕСКИЙ СОСТАВ ПОЧВЫ

Минералогический состав определяет валовой (элементный) химический состав почв, в том числе содержание биологически важных элементов P, K, Ca, Mg, Na, микроэлементов (кроме азота, носителем которого является гумус). В этом заключается ресурсная экологическая функция минералов.

Общая характеристика первичных минералов:

1) входят в состав преимущественно крупных фракций почвы – песчаной и пылеватой, имеющих размер более 0,001 – 0,002 мм;

2) переходят в состав почвы из магматических и метаморфических пород в результате процессов физического выветривания, не меняя химического состава, т. е. являются остаточным материалом;

3) имеют жесткую, неподвижную кристаллическую решетку, практически не обладают влагоемкостью, физико-химической поглотительной способностью;

4) обилие первичных минералов в твердой фазе почв свидетельствует об их относительной молодости. С увеличением возраста почв содержание и число видов первичных минералов постепенно уменьшается. В древних палеоавтоморфных почвах первичные минералы представлены наиболее устойчивыми против выветривания видами;

5) содержание первичных минералов в почвообразующих породах и почвах коррелирует с гранулометрическим составом. Они составляют 90 – 98 % массы песков, 50 – 80 % массы суглинков, 10 – 12 % массы глин;

6) последовательность местонахождения первичных минералов:

- магматические горные породы (природные ассоциации первичных минералов);

↓ физическое выветривание, геологический транспорт;

- осадочные горные породы. Состоят из первичных и вторичных минералов;

↓ процесс почвообразования;

- твердая фаза почв, песчаные и пылеватые фракции;

7) первичные минералы содержат исходный запас элементов питания растений, кроме азота, в значительной мере определяют элементный химический состав почв, их физические свойства;

8) современное земледелие использует минеральный потенциал мезокайнозоя. Исходя из этого почвы можно отнести к невозобновляемым природным ресурсам [6, с. 7 – 9].

VIII. Be ready to give the summary of the text orally. Pay attention to the following expressions and using them make up your own sentences based on the text A.

The text deals with (the problem of)…

It touches upon…

The extract from the article is concerned with…

The article is about…

The text centres round the problem of…

The article focuses on the problem of…

According to the text…

According to the author…

It further says that…

According to the figures (data, information, opinions) from the text…

It is clear from the text that…

The problem of the text is of great importance…

To sum it up…

On the whole…

In conclusion it is possible to say that…

IX. Discuss the following statements.

1. There are many factors that determine the capacity of a soil to provide nutrients for crop production.

2. Any farmer should be able to apply knowledge gained by soil scientists.

3. The effect of particle size of soils is not one of the primary factors that effect plant growth.

4. Describe the sequence of occurrence of primary minerals resource ecological function of minerals.

5. Define the mineralogical composition of soil.

6. Into what three main fractions is the soil separated?

7. In what terms have soils been described?

X. Make up your own presentation on the topic: "Ecological Function of Minerals".

REVIEWING GRAMMAR

The Continuous Tenses

The Future Continuous (Progressive) Tense

The Future Continuous Tense образуется при помощи вспомогательного глагола ***to be*** в соответствующем будущем времени (***will be***) и глагола-сказуемого в форме инфинитива **без частицы *to*** с окончанием ***-ing***.

The Future Continuous употребляют для выражения действия, которое будет длиться в точно указанный момент или период в будущем (*This time tomorrow I'll be working at home*).

Глаголы состояния (non-continuous verbs) в Future Continuous не употребляются.

Positive / Negative			Question			
I	*will be*	*liv**ing***		I		*liv**ing**?*
He / She / It	*(won't*	*do**ing***	*Will*	he / she / it	*be*	*do**ing**?*
We / You / They	*be*)	*watch**ing***		we / you / they		*watch**ing**?*

Часто употребляются такие обстоятельства времени, как: ***this time tomorrow*** – в это время завтра; ***from 8 till 9 tomorrow*** – с 8 до 9 завтра; ***tomorrow at 6 o'clock*** – завтра в 6.

Grammar Exercises

1. Write these sentences in question and negative forms.

1. We will be relaxing on the beach at this time on Saturday. 2. Students will be answering the teacher's questions at 10 o'clock tomorrow. 3. You will be taking an exam from 8 to 12 on Wednesday. 4. Bill will be making a report on economy the whole day tomorrow. 5. I will be fixing a car at 5.

2. Describe your tomorrow day. Begin with:

1. Tomorrow at 9 am I will be… . 2. At midday I… . 3. My best friend from 10 to 2 pm… . 4. At 6 o'clock in the evening my parents… . 5. At midnight our group mates… .

3. Make the questions according to the answers.

1. … will you be doing at 6? – I'll be taking an exam. 2. … will Steve be writing the article? – Tomorrow. 3. … will they be making the presentation tomorrow at 1 o'clock? – They were absent yesterday. 4. … will my mother be planting flowers after breakfast? – In the garden. 5. … will we be watching after supper? – A new documentary about our planet.

Unit 7. ORGANIC MATTER

I. Read and translate the text A.

USE OF ORGANIC SUBSTANCES

In addition to inorganic materials soils contain organic matter in amounts varying from as little as 1 percent to more than 80 percent. This organic matter is largely plant residues and microscopic life that feeds on them. It contains the mineral elements that are found in plants, subject to such losses as may have occurred through leaching. Organic matter also contains nitrogen in protein and related forms which is released as ammonia and nitrates during microbial decomposition. The quantity of this element in the form of organic matter in inorganic soils norm ally ranges between 0.1 and 0.5 percent. Peat soils may contain as much as 4 percent nitgoren on a dry-matter basis. All soils contain organic matter. Without it they would not be soils. The organic matter serves a variety of purposes one of which is a source of food for the many millions of microbes contained in each pound of good soil. But it has great value also as a source of inorganic elements for crop plants. About 4 percent of the dry weight of fresh organic matter in the form of crop residues that are left behind on or in the soil will remain as ash when they are burned. This ash is the mineral matter that these residues contained. Its usefulness to the next crop is much greater than its quantity as related to that of the total inorganic mass of the soil. Organic matter also has highly important effects on the physical properties of soils. These, in turn, affect the rate of release of the soil's inorganic constituents to plant roots.

Humus. All humus is organic matter but not all organic matter is humus. Humus is the combined microbial tissue (living and dead) and partially decomposed plant and animal residues. The original tissue of higher plants cannot be recognized in humus because of the partial decomposition. The data indicate that lignin increases as percentage of the remaining

material, during decomposition of organic matter, while cellulose and hemicellulose compounds decrease in percentage. It is also shown that the protein content of the soil is much greater than the protein content of plant materials. The lignin of the soil is not exactly the same in composition as the lignin of plant tissue as some modification takes place under the influence of the microbial population. The proteins in humus are not the same kinds of proteins that were in the plant tissue. Because of the great need for nitrogen by the microorganism s during their growth they utilize the nitrogen of proteins in plant tissue to form the protein for their own tissue. About 70 to 80 percent of the humus of the soil is composed of lignin and proteins.

II. Make up your own questions to the text.

III. Translate the words and word combinations from Russian into English using the dictionary and memorize them.

Количество этого элемента; в виде органического вещества; в неорганических почвах; обычно колеблется; торфяные почвы; могут содержать; азот; в пересчете на сухое вещество; лигнин почвы; по составу; не совсем такой; лигнин растительной ткани; под влиянием микробной популяции; происходит некоторая модификация; белки в гумусе; из-за большой потребности микроорганизмов в азоте; во время роста; они используют азот; белки растительной ткани; образование белка для своих собственных тканей; источник пищи для многих миллионов микробов; как источник неорганических элементов для сельскохозяйственных растений; сухой вес свежего органического вещества; в виде пожнивных остатков; оставшихся на почве; при их сжигании останется золой; пепел представляет собой; минеральное вещество; полезность для следующего урожая; физические свойства почв; неорганические компоненты почвы в корнях растений.

IV. Translate the words and word combinations from English into Russian using the dictionary and memorize them.

Divided into; origin and formation; basis the organic matter; in the topsoil; most upland soils; per cent; soil-fertility and crop-rotation; to study; subject; erosion; to require; favourable weather; good physical condition of the soil; freedom from insects and diseases; weeds; plants differ greatly; in their response to light intensity; length of day; temperature; soil conditions; moisture conditions; competition with other plants; the organic matter; made up of residues of animals and higher plants; living and dead microbial tissue; humus; to combine microbial tissue; partially decomposed plant and animal residues; the original tissue of higher plants; cannot be recognized; the data indicate; lignin increases; percentage; the remaining material; during decomposition of organic matter; cellulose; hemicellulose; to decrease; the protein content of the soil; the protein content of plant materials; inorganic materials; the mineral elements; nitrogen; microbial decomposition.

V. Find the sentences with the following words and word combinations in the text A and translate them into Russian.

In addition to inorganic materials; soils contain organic matter; in amounts varying from; as little as one per cent; largely plant residues and microscopic life; it contains the mineral elements; that are found in plants; such losses as may have occurred through leaching; contains nitrogen in protein; released as ammonia and nitrates; during microbial decomposition; the quantity of this element; soils normally ranges; peat soils may contain; on a dry-matter; basis; they would not be soils; a variety of purposes; a source of food; millions of microbes; each pound of good soil; it has great value; a source of inorganic elements; dry weight of fresh organic matter; left behind on or in the soil; will remain; as ash; they are burned; its usefulness; much greater than its quantity; the total inorganic mass of the soil.

VI. Insert the missing words and word combinations.

1. About 4 … … of the dry weight of … … matter in the form of crop residues that … left behind … or … the soil will remain as … when they are … .

2. In … … inorganic materials soils contain … … in amounts varying from as little as … percent to more than … … … .

3. This … … the mineral matter that these residues contained.

4. This … … is largely plant residues and … life that feeds … them.

5. It's … to the next crop is… … than its quantity as … … that of the total inorganic mass of the soil.

6. It … the mineral … that are found in … , subject to such losses as may … … through leaching.

7. However, they understand it … .

8. … … also contains … in … and related forms which … released as … and … during … decomposition.

9. All … is organic … but not all … matter is … .

10. … of the great need for … by the microorganism s during their … they utilize the … of proteins in … tissue to … the … for their own tissue.

11. … … the combined … tissue (living and …) and partially decomposed plant and animal … .

12. About … to … per cent of the … of the soil … composed of … and proteins.

13. The … … that … increases as percentage of the … material, during decomposition of … matter.

14. It is also … that the protein content of the … … much greater than the protein … of plant … .

15. The original tissue of … … cannot be recognized in humus because of the … … .

16. The … of the … is not exactly the … in composition as the … of plant tissue as some … takes place under the … of the … population.

17. The … … serves a variety of … one of which is a source of … for the many millions of … contained in each pound of … … .

18. The proteins in … are not the same … of proteins that … in the plant … .

VII. Translate into English the text B using the dictionary.

ПОЧВЕННЫЙ ПОКРОВ ВЛАДИМИРСКОГО КРАЯ

Почвенный покров Владимирского края включает в себя плодородные темноцветные карбонатные и серые лесные почвы, связанные с широколиственными лесами в Ополье. По подсчетам ученых, они занимают 417,5 тыс. га, или 14,3 % общей площади. Сюда можно отнести Суздальский и Юрьев-Польский районы, части Александровского, Кольчугинского и Собинского районов

Дерновые аллювиальные (пойменные) почвы располагаются по берегам Оки и Клязьмы. Дерново-подзолистые почвы, сформировавшиеся под хвойными и смешанными лесами, среднесуглинистого типа, занимают значительную часть территории Владимира, Вязниковский, Муромский, частично Ковровский, Камешковский, Гороховецкий, Селивановский, Собинский, Киржачский, Александровский районы.

Почвы супесчаного и песчаного типов находим в Гусь-Хрустальном, Меленковском, Петушинском, Судогодском районах, а также в южной части Киржачского, Собинского, Муромского и Селивановского районов. Подзолисто-болотные и болотные почвы располагаются в пределах мещерской низменности и гороховецких болот. Ученые-исследователи отмечают недостаточную обеспеченность почв бором и серой, а 85 – 98 % почв относятся к категории низкообеспеченных цинком.

Деградация земель наиболее распространена в виде водной эрозии и составляет около 175 тыс. га эродированных земель и около 700 тыс. га эрозионноопасных земель. Почвенный покров Владимирского ополья отмечается высокой пестротой распределения физических и химических свойств.

Серые лесные почвы Владимирского ополья интересны отчетливо выраженной разницей физико-химических свойств отдельных горизонтов почвенного профиля, что отражается в особенностях структуры и строении порового пространства. Наименее уплотнены гумусовые горизонты. Агосерые почвы, занимающие небольшие

площади территории комплексно почвенного покрова Владимирского ополья, отличаются спецификой физических свойств и наиболее высокой водоустойчивостью агрегатов пахотного горизонта.

VIII. Be ready to give the summary of the text orally. Pay attention to the following expressions and using them make up your own sentences based on the text A.

The text deals with (the problem of)…

It touches upon…

The extract from the article is concerned with…

The article is about…

The text centres round the problem of…

The article focuses on the problem of…

According to the text…

According to the author…

It further says that…

According to the figures (data, information, opinions) from the text…

It is clear from the text that…

The problem of the text is of great importance…

To sum it up…

On the whole…

In conclusion it is possible to say that…

IX. Discuss the following statements.

1. Soils may be divided into three classes regarding origin and formation.

2. High yields require favorable weather, good physical condition of the soil, freedom from insects and diseases, and weeds.

3. Plants differ greatly in their response to light intensity, length of day, temperature, soil conditions, moisture conditions, and competition with other plants.

4. The organic matter is made up of residues of animals and higher plants and of living and dead microbial tissue.

5. Mechanical analysis of soil consists in determining the size distribution of the primary particles of which it is made.

X. Make up your own presentation on the topic: "The Role of Organic for Soils".

REVIEWING GRAMMAR

The Perfect Tenses

The Present Perfect Tense

The Present Perfect образуется при помощи вспомогательного глагола ***to have / to has*** (в 3-м лице ед. ч.) и причастия прошедшего времени ***Participle II (-ed / III форма неправильного глагола)*** глагола-сказуемого.

The Present Perfect употребляется: 1) когда виден результат того, что происходило в прошлом (опыт, события, новости) (*I have done my report on history; She has already cooked the birthday cake*); 2) чтобы рассказать о действиях, которые начались в прошлом и все еще продолжаются в настоящем (*I have known Mary for ten years; Bob has been in love since last year*); 3) когда говорят о событии, которое произошло в неистекший отрезок времени *(today, this week, this month)* (*I have bought a book today*).

Positive		Negative		Question		
I / You / We / They	*have* washed	I / You / We / They	*haven't* washed	*Have*	I / you / we / they	washed*?*
He / She / It	*has* washed	He / She / It	*hasn't* washed	*Has*	he / she / it	washed*?*

Часто употребляются такие обстоятельства времени, как: ***already*** – уже (что-то сделано, произошло); ***yet*** – уже (что-то сделано, произошло); ***just*** – только что (что-то произошло); ***never*** – никогда (не делал, не совершал за все это время); ***ever*** – когда-либо (за все это время) – вопросительные предложения; ***for (ten years)*** – в течение (десяти) лет; ***recently*** – недавно, за последнее время; ***so far*** – до сих пор, пока, до настоящего времени; ***since Friday*** – с пятницы (и до настоящего времени) (ʻ*How long have you known him?*' ʻ*I have known him for ten years*'. – ʻКак долго / Сколько лет ты его знаешь?' ʻЯ знаю его десять лет').

Grammar Exercises

1. Change the sentences into Present Perfect and translate them.

1. Students are writing a dictation. 2. They are having tea. 3. We are looking for more CDs with good music. 4. Molly is translating a difficult article from German into Russian. 5. I'm telling my friends an interesting story.

2. Complete the sentences using word in brackets.

Model: My friend (*open*) ***has opened*** a shop in the village.

1. I (*not / do*) my homework yet. 2. (*You / send*) aunt Mary a birthday card yet? 3. Nalini (*not / hear*) from his brother for two months. 4. We (*have*) a lot of work to do recently. 5. They (*be*) in France for two years.

3. Translate into English.

1. Я никогда не видел таких прекрасных картин. 2. Мы только что говорили с деканом о моем новом проекте. 3. Твой друг когда-нибудь был в Волгограде? 4. Студенты недавно успешно сдали сложный экзамен. 5. Где вы были все это время?

4. Make a sentence. Use the present perfect.

Model: I'm tired. (*I / walk / miles.*) – ***I've walked miles.***

1. Emma's computer is working now. (*She / repair / it.*) 2. It's cooler in here now. (*I / open / the window.*) 3. The visitors are here at last. (*They / arrive.*) 4. Mark's car isn't blocking us in now. (*He / move / it.*) 5. We haven't got any new videos. (*We / watch / all these.*)

Present Perfect or Past Simple?

5. Put in the correct verb form.

Model: (*I / do*) ***I've done*** all the housework. The flat is really clean now.

A young couple (*buy*) ***bought*** the house next door. But they didn't live there long.

1. Our visitors (*arrive*). They're sitting in the garden. 2. There's still a problem with the television. Someone (*repair*) it, but then it broke down again. 3. (*I / lose*) my bank card. I can't find it anywhere. 4. The match (*start*). United are playing well. 5. My sister (*run*) away from home. But she came back two days later. 6. (*We / plant*) an apple tree in the garden. Unfortunately it died. 7. Prices (*go*) up. Everything is more expensive this year. 8. (*I / make*) a cake. Would you like a piece?

6. Choose the best sentence a) or b).

Model: – Have you heard about the woman walking across the US?

– Yes, *she's reached* the Rockies.

a) The walk is continuing; *b) The walk has finished.*

1. – Have you ever played beach volleyball?

– Yes, we played it on holiday.

a) The holiday is still going on; b) The holiday is over.

2. – Did you know old Mr. Blacsmith?

– No, I never met him.

a) Mr. Blacsmith is probably alive; b) Mr. Blacsmith is probably dead.

3. – David Green is a great footballer.

– Yes, he's scored 200 goals for United.

a) David Green still plays for United; b) David Green has left United.

Unit 8. SOME PHYSICAL PROPERTIES OF SOILS

I. Read and translate the text A.

THE IMPORTANT PHYSICAL CHARACTERISTICS OF SOILS

The physical properties of soils are determined largely by the size and arrangement of the primary particles of which they are constituted. For this reason it is desirable in studying the physical characteristics of any given soil to know its particle size distribution and the extent to which its finer particles are aggregated. A sandy soil contains a high percentage of relatively large particles in comparison with the size of those that make up the larger part of a clay soil. The surface area exposed by the particles in a sandy soil is much less than that of the particles in a clay soil, as a result, a sandy soil has less capacity to retain water against loss by drainage evaporation and removal by plant roots. It is less able to absorb any soluble salts that may be formed by decomposition of its organic matter or may be applied in the form of fertilizers. Sandy soils, therefore, are more subject to nutrient deficiencies than are clay soils. On the other hand, clay soils often developed bad physical states if for any reason the aggregates in which the very fine particles are normally grouped are broken down into their primary units.

The quantity and nature of ***the colloidal matter in soils*** are of particular interest from the physical point of view. This colloidal matter consists of the very smallest particles in clay fraction. Since clay is defined as a soil separate, the particles of which are 0.002 millimeter or less in diameter, the question naturally arises as to the lower limits of these particle sizes. This lower limit will be that of a molecule, at which point it goes into solution. A molecule of hydrogen is estimated to have a diameter of 0.16^{-6} millimeter, and a molecule of chloroform has a diameter about 8 times that of hydrogen. The longest diameter of a particle of kaolinite, the most highly weathered clay mineral, would be somewhat greater than that of chloroform.

Regulation of the thermal regime is decided depending on the conditions of heat supply. In northern regions with increased soil moisture and less influx of solar radiation, measures aimed at increasing soil temperature are important, in southern arid regions – at decreasing them. In the taiga-forest zone, where the most important limiting factor in agriculture is the lack of heat, the removal of excess moisture is the main condition for improving the thermal regime of soils. An important role in this regard belongs to agrotechnical measures along with reclamation. Among them, the cultivation of crops on the ridges deserves special mention.

An important technique for increasing the heat supply of plant seedlings is rolling the crops, which helps to increase thermal conductivity and, accordingly, warm the soil. A special problem in the taiga-forest zone is improving the temperature regime of drained peat bog soils, characterized by sharp temperature contrasts. They warm up slowly, and frozen horizons can remain in their profile for a long time.

II. Make up your own questions to the text.

III. Translate the words and word combinations from Russian into English using the dictionary and memorize them.

Характер упаковки почвенных частиц; разрушать; когезия; желательный; оценка, оценивать; мера, измерение; специфический, особенный; отношение, связь; ограничивать; объект, предмет; подвергать

обработке; капельный метод; дренаж; коллоид; характеристика почвы; поверхность; единица измерения; распространять; распределение по размерам; расположение частиц почвы; в основном; определяют воздушно-водные отношения; влияют на микробиологические свойства почв; по мере увеличения; содержание коллоидов; движение воздуха и воды; становится более ограниченным; сохранение питательных элементов увеличивается; общеизвестный факт; химический анализ почвы; большое количество питательных элементов; из-за плохих физических свойств; эффективная структура; лучше всего определить; путем измерения определенных свойств; расположение составляющих частиц почвы; физический анализ почв; водоудерживающая способность; поровое пространство; проницаемость для воды и воздуха; агрегация; полевые условия; при перемещении почвы в; лаборатория; незначительное изменение; отсутствие изменений; химический состав; биологические свойства.

IV. Translate the words and word combinations from English into Russian using the dictionary and memorize them.

Adjacent; air-dry; bulk; bond; crust; density; gently; immerse; impact raindrop; to involve; judge; litter; nest; numerous; to occur; overall; permeability; platelike; prismlike; probe; unt-pointed; push; raindrop; raise record; removal saturate; shape; successive; survey; swelling tension; top unit; to bear a relation; in part; survey soil; soil-moisture tension; bonds; a density; a soil permeability; regulation of the thermal regime; similar; chemical forces; holding atoms together; to form molecules; quality of a soil that enables water or air to move through it; alike; the systematic examination of soils; their description and classification; the mapping of kinds of soil; the equivalent; negative pressure of suction of water in soil; the proportion to volume; a method used by an expert; to determine the value; the heat supply of plant; to immerse; anything that joins or keeps together; to measure; to put into water or other liquid; to evaluate; a connection; a technique; to find the extent, size, volume, etc.; comparison with unit of standard.

V. Find the sentences with the following words and word combinations in the text A and translate them into Russian.

The surface area; of the particles in a clay soil; a sandy soil has less capacity to retain water; subject to nutrient deficiencies than are clay soils; clay soils often developed bad physical states; removal by plant roots; to absorb any soluble salts; its organic matter or may be applied in the form of fertilizers; the colloidal matter in soils are of particular interest; particle of kaolinite, the most highly weathered clay mineral; as to the lower limits of these particle sizes; are determined largely by the size and arrangement of the primary particles; it is desirable in studying the physical characteristics; to know its particle size distribution; the very fine particles are normally grouped; are broken down into their primary units; lower limit will be that of a molecule; at which point it goes into solution; is estimated to have a diameter of 0.16^{-6} millimeter; a molecule of chloroform has a diameter about 8 times that of hydrogen; would be somewhat greater than that of chloroform; a very smallest particles in clay fraction; the particles of which are 0.002 millimeter or less in diameter.

VI. Insert the missing words and word combinations.

1. The … … exposed by the par- tides in a … … is much less than that of the particles in … … .

2. The … … of … … determined largely … size and arrangement of the primary particles of which … … constituted.

3. As a … , a sandy … has less capacity to … water against loss by … evaporation and … by plant … .

4. For … … it is … in studying the … characteristics of any given soil.

5. It … less able to … any soluble … that … … … by decomposition of its organic … or may … applied in the form of … .

6. For this reason … … desirable to know … particle … distribution and the … to which … finer particles … aggregated.

7. … soils, therefore, are more subject to … deficiencies than … … soils.

8. A … soil contains a … … of relatively large particles in … … the size of those that … … the larger part of a … soil.

9. On the … … , clay soils often developed …physical … if for … … the aggregates in … the very fine … are normally … … broken down into their … units.

10. The … and … of the colloidal matter in soils … of particular interest from the… point of … .

11. This … … consists of the very smallest particles in clay fraction.

12. This … limit … … that of a molecule, at … point … goes into … .

13. The … diameter of a … of kaolinite, the … highly … clay mineral, would be … greater than … of … .

14. … … … defined as a … … , the particles of which are 0.002 millimeter the question naturally arises as to the … … of these particle … .

15. A … of … is estimated to have a … of 0.16^{-6} millimeter.

16. A molecule of … has a diameter about … … that of hydrogen.

VII. Translate into English the text B using the dictionary.

ОСОБЕННОСТИ ТЕПЛОВОГО РЕЖИМА ПОЧВЫ

Тепловым режимом почвы называют совокупность процессов поступления, переноса, аккумуляции и отдачи тепла. Он оценивается температурой почвы, суточными и годовыми закономерностями ее изменения, тепловыми свойствами почвы: теплоемкостью, теплопроводностью и температуропроводностью.

Теплоемкость – физическая величина, определяемая как количество теплоты, которое необходимо подвести к телу в данном процессе, чтобы его температура возросла на 1 К.

Теплоемкость почвы – это количество тепла в калориях, необходимое для нагревания единицы массы или объема сухой почвы на 1°С. Сухие почвы имеют близкую величину теплоемкости – 0,217 – 0,248 (удельная теплоемкость). С увеличением уплотнения и влажности теплоемкость почв повышается; это связано с тем, что теплоем-

кость воды составляет 1, а теплоемкость воздуха близка к нулю (0,000306).

Теплопроводность – способность материальных тел проводить тепловую энергию от более нагретых частей тела к менее нагретым частям тела путем хаотического движения частиц тела (атомов, молекул, электронов и т. п.). Такой теплообмен может происходить в любых телах с неоднородным распределением температур, но механизм переноса теплоты будет зависеть от агрегатного состояния вещества.

Теплопроводность почвы – способность почвы проводить тепло путем теплового взаимодействия соприкасающихся между собой твердых, жидких и газообразных частиц.

Температуропроводность – физическая величина, характеризующая скорость выравнивания температуры вещества в неравновесных тепловых процессах. Численно равна отношению теплопроводности к удельной теплоемкости при постоянном давлении.

Температуропроводность почвы – важная характеристика, определяющая скорость прогревания и охлаждения почвы. Эта характеристика динамическая, с изменением влажности почвы температуропроводность может изменяться в 1,5 – 5,0 раз. При этом величины температуропроводности и диапазоны изменчивости с влажностью для разных почв могут существенно различаться.

Таким образом, тепловой режим почвы обусловлен как климатическими условиями, так и свойствами самой почвы, а также зависит от рельефа, литологических, гидрогеологических условий, растительности. Тепловой режим характеризуется радиационным и тепловым балансами [1, с. 67 – 68].

VIII. Be ready to give the summary of the text orally. Pay attention to the following expressions and using them make up your own sentences based on the text A.

The text deals with (the problem of)…

It touches upon…

The extract from the article is concerned with…

The article is about…

The text centres round the problem of…

The article focuses on the problem of…

According to the text…

According to the author…

It further says that…

According to the figures (data, information, opinions) from the text…

It is clear from the text that…

The problem of the text is of great importance…

To sum it up…

On the whole…

In conclusion it is possible to say that…

IX. Discuss the following statements.

1. The physical properties of soils are determined by…
2. The main physical characteristics of soils in Vladimir region.
3. Clay soils often developed bad physical states.
4. The quantity and nature of the colloidal matter in soils are of particular interest from the physical point of view.
5. Describe the thermal regime of the soil.
6. Define thermal conductivity of soil.
7. Reasons for the need to study the physical properties of soils.

X. Make up your own presentation on the topic: "Thermal Regime of the Soil, its Balance and Regulation".

REVIEWING GRAMMAR

The Perfect Tenses

The Past Perfect Tense

The Past Perfect Tense образуется с помощью вспомогательного глагола ***to have*** в прошедшем времени ***had*** и ***Participle II (-ed / III форма неправильного глагола)*** глагола-сказуемого.

Глагол в *Past Perfect* обозначает действие, законченное к определенному моменту в прошлом или до начала другого действия (*He had read the book by 10 o'clock yesterday; When we came to the airport the plane had already landed*).

Это время употребляется в предложениях, в которых одно действие завершилось до другого действия, длящегося в прошлом (*He had read the book and was watching TV when I came*).

Positive		**Negative**		**Question**		
I / You / We / They / He / She / It	*had* washed	I / You / We / They / He / She / It	*hadn't* washed	*Had*	I / you / we / they / he / she / it	washed?

Часто употребляются такие обстоятельства времени, как: ***by the time*** – к этому времени; ***already*** – уже; ***till / until*** – до (какого-то времени).

Grammar Exercises

1. Put these sentences in the question and negative forms.

1. You had studied English before you entered the University. 2. They had arrived at the station by 6 o'clock. 3. James had finished reading the book by last Sunday. 4. I had done my lessons by the time you called me up. 5. The teacher had given the students their homework before the bell rang.

2. Read the situation and write the sentences from the words in brackets.

Model: You went to Sue's house, but she wasn't there. (*She / go / out.*) – ***She had gone out***.

1. You went back to your home town after many years. It wasn't the same as before. (*It / change / a lot.*) 2. I invited Ian to the party but he couldn't come. (*He / arrange / to do something else.*) 3. You went to the cinema last night. You got to the cinema late. (*The film / already / begun.*) 4. It was nice to see Dan again after such a long time. *(I / not / see / him / for five years.*) 5. I offered my parents something to eat, but they weren't hungry. (*They / just / have breakfast.*)

3. Translate into English.

1. Когда вы пришли, я уже перевел весь текст. 2. К тому времени как Вы позвонили, гости еще не собрались. 3. Вы изучали английский перед тем, как поступили на эти курсы? 4. Дождь уже прекратился, когда мы вышли из дома. 5. Сколько страниц этой книги твой брат прочитал к концу прошлой недели?

4. Make the questions to the underlined words.

1. <u>The people</u> went home after they <u>had finished</u> their work. 2. <u>The young man has decided</u> to buy the new vase after the old one had fallen down and broken to pieces. 3. The lecture has begun <u>by the time I entered the room</u>.

Unit 9. SOIL PRODUCTIVITY

I. Read and translate the text A.

CONFIGURATION OF SOIL

Soil structure

The structure of the soil is usually called its general appearance with well-visible soil horizons. It is best to explore it on a slice of sufficient area. In this way, soil horizons (layers) can be identified, which are located one above the other and differ in composition, structure, color, physical and chemical properties.

Several successive horizons make up the genetic profile of the soil, by the nature of which it is possible to determine the type and type of soil, which is important for its cultivation. Currently, scientists identify the following types of soil horizons:

• organogenic which is represented by such varieties as peat horizon, litter, turf, humus horizon and humus horizon. It is characterized by the accumulation of a significant amount of substances of organic origin;

• eluvial, having the following types – rejuvenated, podzolic, segregated and laminated. It is characterized by the removal of mineral or organic components;

• illuvial, the distinctive property of which is the accumulation of mineral and organic elements transmitted by the eluvial horizon;

• metamorphic, which is formed from the changed mineral component of the soil;

• hydrogenically accumulative, the basis for the formation of which are areas with the maximum accumulation of certain substances transferred with the groundwater flow (iron oxides, easily soluble salts, carbonates, gypsum, etc.);

• crustal, formed from various substances (gypsum, amorphous silica, carbonates, etc.);

• gley – in the process of formation of this horizon is dominated by restorative conditions;

• subsurface, which is also called maternal. It is the basis for overlying soil horizons, and also covers the underlying rock located under it, which differs in composition.

Coloring

The color of the soil is one of its main morphological characteristics. This parameter is determined by a number of factors, among which the chemical composition of the soil, the peculiarities of the soil formation process and the humidity level should be especially noted.

In addition, the color of the soil is determined by certain substances-pigments that are part of it. Thus, the upper layers usually have dark shades of brown and gray due to the presence of a significant amount of humus in them.

In the event that the soil contains manganese or iron, the particles acquire a reddish, brown or ochre hue. Soils become whitish, as a rule, when the process of podzolization is activated, that is, the leaching of mineral components. In addition, the soil also gets a similar color due to salinization, precipitation and carbonation, as well as with an increase in the content of kaolin, magnesium, silica, gypsum and calcium carbonate.

Soils in the horizons in most cases do not have a pure color. The color of a particular soil layer is quite difficult to determine accurately. Most often, scientists use compound adjectives when describing (for example, reddish-brown, bluish-brown, whitish-bluish, etc.). In this case, the dominant shade usually occupies the last position.

Composition

The weathering processes constantly occurring on our planet lead to the fact that solid, densely structured mountain horizons transform over time, acquiring the appearance of a loose mass, the components of which are particles of different sizes. They are commonly called mechanical elements.

Those of them that are approximately the same size gradually combine to form fractions. By the nature of the aggregates of the latter, it is possible to judge the mechanical composition of the soil in this area.

Depending on the number of mechanical elements of one size or another, all soils are divided into several varieties.

Автор: неизвестен. Источник: http://soil.msu.ru/fizika-istoria/389-278

The classification of ***N. A. Kaczynski*** is used to describe and install the type of soil. The basis for dividing soils into subspecies is data on the content of physical clay in them, or components whose value does not reach 0.01 mm.

The mechanical composition of the soil should be considered the most important parameter for determining the soil subtype. In addition, such a characteristic should be taken into account when choosing processing methods and measures for its cultivation and increasing the level of fertility [7].

II. Make up your own questions to the text.

III. Translate the words and word combinations from Russian into English using the dictionary and memorize them.

Строение почвы; строение грунта; почвенные горизонты; исследовать; на срезе; почвенные слои; располагаться один над другим; различаются по составу; занимать последнюю позицию; достаточно сложен для точного определения; различаются по структуре; различаются по окраске; физические и химические свойства; последовательно сменяющие друг друга горизонты; генетический профиль почвы; определять вид и тип грунта; в настоящее время; ученые выделяют; сизо-бурая почва; следующие типы почвенных горизонтов; окраска грунта; данный параметр; обусловлен рядом факторов; белесовато-сизая почва; следует особенно отметить; особенности процесса почвообразования; уровень влажности; кроме того; цвет почвы; вещества-пигменты; верхние слои почвы; темные оттенки коричневого и серого; значительное количество гумуса; в большинстве случаев; чистая окраска; цвет того или иного слоя грунта; чаще всего; красновато-коричневая почва; доминирующий оттенок; обычно; процессы

выветривания; с течением времени; вид рыхлой массы; частицы разной величины; механические элементы; приблизительно одинаковый размер; фракции.

IV. Translate the words and word combinations from English into Russian using the dictionary and memorize them.

Organogenic; a significant amount of substances; varieties; humus horizon; peat horizon; litter; characterized by; turf; accumulation; organic origin; the following types; eluvial; the accumulation of mineral and organic elements; carbonates; illuvial; gypsum; segregated and laminated; rejuvenated; podzolic; the removal of mineral or organic components; hydrogenically accumulative; the distinctive property; transmitted by the eluvial horizon; metamorphic; mineral component of the soil; crustal; the basis for the formation; subsurface; the maximum accumulation of certain substances; iron oxides; easily soluble salts; carbonates; gypsum; formed from various substances; amorphous silica; gley; located under; dominated by restorative conditions; maternal; the underlying rock; differs in composition; color of the soil; the humidity level; main morphological characteristics; the chemical composition of the soil; the peculiarities of the soil formation process; should be especially noted; in addition; certain substances; pigments; the upper layers; dark shades of brown and gray; due to the presence of a significant amount of humus in them.

V. Find the sentences with the following words and word combinations in the text A and translate them into Russian.

In the event that; the particles acquire a reddish, brown or ochre hue; as a rule, when the process of podzolization is activated; the soil also gets a similar color due to salinization; magnesium, silica, gypsum and calcium carbonate; constantly occurring on our planet; the components of which are particles of different sizes; commonly called mechanical elements; that are approximately the same size; gradually combine to form fractions; it is possible to judge the mechanical composition of the soil in this area; all soils are divided into several varieties; soils in the horizons; do not have a

pure color; a particular soil layer is quite difficult to determine accurately; scientists use compound adjectives; bluish-brown, whitish-bluish; the dominant shade usually occupies the last position; general appearance with well-visible soil horizons; to explore it on a slice of sufficient area; soil horizons (layers) can be identified; differ in composition, structure, color, physical and chemical properties; should be considered the most important parameter; a characteristic should be taken into account; for its cultivation and increasing the level of fertility.

VI. Insert the missing words and word combinations.

1. The … of N. A. Kaczynski is used to describe and install the … of … .

2. The … for dividing … into subspecies is … on the content of physical …y in them, or components … value … not reach 0.01 … .

3. The … … constantly occurring on … … lead to the fact that solid, … structured … … transform over … , acquiring the … of a loose … , the components of which … particles of … sizes.

4. They … commonly … mechanical elements.

5. Those of … that … approximately the … … gradually combine … form fractions.

6. … the … of the aggregates of the … , it is possible … … the mechanical composition of the … in this area.

7. Depending … the number of mechanical … of one size or … , all soils … divided … several … .

8. In the … that the soil contains … or iron, the particles … a reddish, … or ochre … .

9. … become … , as a rule, when the … of podzolization is … , that is, the leaching of … components.

10. In … , the soil also gets a similar … due to salinization, … and carbonation, ... with an increase in the content of … , magnesium, … , gypsum and … … .

11. The … of the … is one of its … morphological … .

12. This parameter … determined … a number of … .

13. Among … … the chemical composition of the … , the peculiarities of the soil … … and the humidity … should be especially … .

14. In … , the … of the soil is determined … certain substances-… that … part of it.

15. … , the … … usually have … shades of … and gray due to the … of a significant amount of … in them.

16. … successive … make up the … profile of the … , by the nature of which it is possible to … type of soil.

17. … … important for its cultivation.

18. Currently, scientists … the following … of soil horizons.

VII. Translate into English the text B using the dictionary.

ФИЗИЧЕСКИЕ СВОЙСТВА ПОЧВЫ

Все свойства почвы, относящиеся к категории физических, можно разделить на ***основные и функциональные***. К первой группе относятся удельный и объемный вес, пластичность, твердость, пористость, связность, спелость и липкость, а ко второй – воздушные, водные и тепловые характеристики.

Водные свойства отражают способность грунта впитывать, пропускать и удерживать влагу, поступающую в нее в виде осадков или поливной воды, а также переносить ее из глубинных слоев в поверхностные, к растениям. Влага способна оказывать существенное влияние на химические, физические, воздушные и тепловые качества почвы. Физические характеристики грунта, находясь в тесной связи с другими его свойствами, обусловлены процессом почвообразования, который, в свою очередь, изменяется в зависимости от основных и функциональных качеств.

Объемным весом почвы принято называть единицу объема сухого грунта в его природном сложении. Для определения этого параметра проводят взвешивание образца почвы, имеющего ненарушенную структуру и определенный объем.

Удельный вес – это единица веса твердой массы грунта без пор, т. е. выражение соотношения веса твердой фазы почвы заданного объема и веса воды, имеющего такой же объем и температуру 40 °С.

Пористостью, или скважностью, называют общий объем пор между составляющими твердой фазы почвы, который выражается в соотношении объема грунта к объему пор. Величина пор, их сочетаемость и форма могут быть разнообразными, поскольку они образуются в результате случайного взаимодействия полидисперсных частиц.

Пластичность почвы – это ее способность при создании определенного влажностного уровня изменять первоначальную форму и сохранять новую, заданную. Такое качество она получает за счет формирования гидратированных уплотненных оболочек, которые образуются вокруг мелких ее частиц. Максимальными показателями пластичности обладает жирная глина, в структуру которой входят тончайшие чешуеобразные частицы, расположенные слоями – одна поверх другой.

Липкость – это такое свойство почвы, при котором она, находясь во влажном состоянии, прилипает к поверхности соприкасающихся с ней предметов. Показатели этого параметра обусловлены главным образом составом почвы и уровнем ее влажности. Липкость способна проявляться при влажности от 40 до 60 % в бесструктурных грунтах и от 60 до 70 % в структурных. При условии дальнейшего увлажнения она переходит в разряд текучести, а при высушивании материала такое свойство может быть полностью утраченным. Таким образом, можно говорить о том, что липкость – это качество почвы, которое зависит от уровня влажности в соответствующий момент времени.

Связность – это термин, которым обозначают свойство почвы, выражающееся в соединении составляющих ее частиц. Для измерения данной величины используют показатели силы, которая способствует удерживанию и сцеплению частиц друг с другом. Связность зависит от когезии, адсорбции, степени увлажненности грунта и его цементи-

рующей способности, которая, в свою очередь, обусловлена структурой и составом почвы.

Твердостью, или плотностью, называют степень сопротивления почвы действию твердого предмета [7].

VIII. Be ready to give the summary of the text orally. Pay attention to the following expressions and using them make up your own sentences based on the text A.

The text deals with (the problem of)…

It touches upon…

The extract from the article is concerned with…

The article is about…

The text centres round the problem of…

The article focuses on the problem of…

According to the text…

According to the author…

It further says that…

According to the figures (data, information, opinions) from the text…

It is clear from the text that…

The problem of the text is of great importance…

To sum it up…

On the whole…

In conclusion it is possible to say that…

IX. Discuss the following statements.

1. Give a description of the genetic profile of the soil.

2. What methods can be used to determine the type and type of soil?

3. What types of soil horizons do you know? Name them.

4. The color of the soil is one of its main morphological characteristics. Give your arguments.

5. Soils in the horizons in most cases do not have a pure color. Give us your examples.

6. Why should the mechanical composition of the soil be considered the most important parameter for determining the soil subtype?

7. What characteristics should be considered when choosing tillage methods?

8. What measures do you think are necessary to cultivate and increase fertility?

X. Make up your own presentation on the topic: "N. A. Kaczynski's classification for the description and installation of the soil type".

REVIEWING GRAMMAR

The Perfect Tenses

The Future Perfect Tense

The Future Perfect – сложная временная форма, образующаяся при помощи вспомогательного глагола ***to have*** в *Future Simple* ***(will have)*** и ***Past Participle (-ed / III форма неправильного глагола)*** глагола-сказуемого. *Future Perfect* обозначает действие, которое будет закончено до определенного момента в будущем (*By the end of the term we'll have read four English books).*

Positive		Negative		Question			
I / You / We / They / He / She / It	*will have* asked	I / You / We / They / He / She / It	*will not (won't) have* asked	*Will*	I / you / we / they / he / she / it	*have*	asked?

Grammar Exercises

1. Put these sentences in the question and negative forms.

1. Trevor and Laura *will have lived* here for four years next April. 2. This chess game is going to last ages. They *won't have finished* it until midnight. 3. *I will have read* this book by the time it's due back to the library. 4. My husband *will have finished* his work by half past eight, so he should be home about nine. 5. Phone me after 8 o'clock. We'*ll have finished* dinner by then.

2. Translate into English.

1. Моя сестра вернется домой к 10 часам. Перезвоните позднее. 2. К концу сентября мы получим хорошую премию. 3. Я плохо себя чувствую, но к концу надели я выздоровею. 4. На следующей неделе у меня будет больше времени, так как я сдам все экзамены. 5. Когда мой папа вернется домой, он будет очень усталым.

3. Paul wants to be an artist. He's reading about a famous artist called Winston Plummer.

Winston Plummer was a great artist, who had a wonderful career. He won lots of prizes before he was twenty. By the age of twenty-five he had had his own exhibition. He was the subject of a TV documentary by the time he was thirty. By the age of thirty-five he had become world-famous. He made millions of pounds from his pictures before he was forty.

Paul is daydreaming about his own future career. What is he thinking?

Model: I hope I'll *have won lots of prizes* before I'm twenty.

1. Perhaps … my own exhibition by the age of twenty-five. 2. I wonder if … by the time I'm thirty. 3. Maybe … by the age of thirty-five. 4. I hope … by the age of forty.

4. How good is your maths? Can you work out the answers?

Model: It's quarter to six. Melanie is putting something in the oven. It needs to be in the oven for an hour and a half. *When will it have cooked?* It will have cooked ***at quarter past seven.***

1. It's seven o'clock in the evening, and Andrew is starting to write an essay. He writes one page every fifteen minutes. He plans to finish the essay at midnight. *How many pages will he have written?* He will have written … pages. 2. It's Monday morning, and Sarah is travelling to work. It's twenty miles from her home to the office. *How far will she have travelled to and from work by the time she gets home on Friday?* She will have traveled … miles. 3. Matthew is doing press-ups – one every two seconds. *How many will he have done after five minutes?* He will have done … press-ups.

Unit 10. NATURE PROTECTION AS THE MOST IMPORTANT TASK AT THE PRESENT STAGE OF SOCIETY DEVELOPMENT

I. Read and translate the text A.

PROBLEMS OF NATURE PROTECTION AND RATIONAL USE OF NATURAL RESOURCES

Nature protection is one of the most important tasks at the present stage of society's development. And it is no coincidence that the issues of environmental protection and the rational use of natural resources are the subject of constant attention. The problems of nature protection have economic, health, conservation and aesthetic aspects. It is important to ensure the protection of nature in the process of its use. It is necessary to develop

methods for an objective assessment of the state of natural conditions and resources and to determine the permissible forms and scales of anthropogenic impact on the natural environment.

One of the main environmental problems is the most rational use of land resources. It is somehow connected with the territorial aspect of land use.

The form of organization of the territory of an agro-industrial association and its individual enterprises is significantly, and sometimes decisively influenced by the requirements of a socio-economic nature, protection and protection of natural resources.

Environmental protection measures are always interrelated with such basic issues of agricultural systems as land management and land reclamation, the structure of acreage and crop rotation system, soil treatment system and machinery, the use of natural forage lands, measures to protect soils from erosion, increase soil fertility, plant protection from pests and diseases.

For more successful implementation of environmental protection measures in practice, it is necessary to strengthen the environmental orientation in land management materials by developing scientific and methodological recommendations for the design of environmental protection measures. Nature protection issues are taken into account in each component of the land management project. Proper use of land requires the creation of appropriate territorial conditions in the area and in general in all farms belonging to the agro-industrial association.

The organization of the territory of the district should most fully meet the requirements of the normal uninterrupted functioning of the agro-industrial association, the best implementation of numerous and complex inter-economic relations of its enterprises and organizations. It should create optimal conditions for production, transportation, processing and storage agricultural products in full and with high quality. And at the same time, it must meet the requirements of rational and effective use and protection of land [1, c. 148].

II. Make up your own questions to the text.

III. Translate the words and word combinations from Russian into English using the dictionary and memorize them.

Охрана природы; проблемы охраны природы; одна из важнейших задач; на современном этапе развития общества; несмотря на; вопросы охраны окружающей среды; рациональное использование природных ресурсов; предмет постоянного внимания; естественный ландшафт; хозяйственно-экономический, здравоохранительный, заповедный и эстетический аспекты; важное значение; обеспечение охраны природы; необходимость; разрабатывать методы; совершенствование территориальной организации; объективная оценка; состояние природных условий и ресурсов; определение допустимых форм и масштабов антропогенного воздействия на природную среду; сельскохозяйственное производство; единая система; функционировать; в соответствии с природно-экологическими процессами; подвергаться различным социально-экономическим воздействиям; повышение эффективности сельскохозяйственного производства; в процессе интенсификации сельского хозяйства; мелиорация земель; межхозяйственная кооперация; агропромышленная интеграция; новые формы территориальной организации; существенные изменения в природе; возникновение новой географической среды; в этих условиях; комплексное использование природных ресурсов; рациональное природопользование.

IV. Translate the words and word combinations from English into Russian using the dictionary and memorize them.

The land management service; land utilization; land management; in modern conditions; high concentration and specialization of agricultural production; to acquire a new quality; land use; production location; capital construction; land reclamation; chemicalization; the administrative district; the territory of a separate farm; to solve the tasks of the inter-farm; the territorial structure of cooperative associations; agro-industrial complexes; the national economy; taking into account; the prospects for economic development; a new geographical environment; to form; the process of inten-

sification of agriculture; for more successful implementation; measures in practice; it is necessary to strengthen the environmental orientation; to develop scientific and methodological recommendations; environmental protection measures; the most important issues; specific decisions; reflection and problems associated with; the introduction of zonal farming systems; environmental protection measures; interrelated with; basic issues of agricultural systems; land reclamation; the structure of acreage; crop rotation system; soil treatment system; machinery; the use of natural forage lands; measures to protect soils from erosion; increase soil fertility; plant protection from pests and diseases.

V. Insert the missing words and word combinations translate the sentences.

1. Environmental … … are always interrelated with such basic … of agricultural systems as land … and … reclamation.

2. … … measures are the structure of … and crop … system, … treatment system and … , the use of natural … lands.

3. There are also such … … to protect soils from… , increase soil … , plant protection from … and … .

4. … of the … environmental problems … the most rational… of land … .

5. … … somehow connected … the territorial … of land use.

6. The … of organization of the … of an agro-… association … influenced by the … of a socio-economic … .

7. The form of … of the territory of an … … is influenced by the … of natural … .

8. For more successful … of environmental … measures it is … to … the environmental orientation in … management… .

9. … … scientific and … recommendations for the … of environmental protection… .

10. Nature protection issues … … … … in each component of the land management project.

11. … … of land requires the … of appropriate … … in the area.

12. Proper use of land … the creation of … territorial … belonging to the agro-industrial … .

13. The … of the territory … meet the requirements of the … uninterrupted functioning of the … – … association

14. The organization of the … should most … meet the … of numerous and complex inter-economic relations of its enterprises and organizations.

15. … … … optimal conditions for production, … , processing and … agricultural … in full and with … quality.

16. And ... … ... ... , it must meet the requirements of … and … use and protection of land.

17. … protection … one of the most … tasks at the … stage of society's … .

18. It is … … that the issues of …protection and the rational … of natural resources … the subject of constant … .

19. The problems of nature protection … … , health, … and aesthetic aspects.

20. It is important … … the protection of … in the process of its … .

VI. Translate into English the text B using the dictionary.

СОВРЕМЕННЫЕ ЗАКОНЫ И ПРИНЦИПЫ ЭКОЛОГИИ

Определенные закономерности развития биосферы позволили сформулировать современные законы и принципы экологии. Наиболее известны законы-афоризмы американского биолога и эколога Б. Коммонера:

– все связано со всем (о всеобщей связи вещей и явлений в природе);

– все должно куда-то деваться;

– ничто не дается даром;

– природа знает лучше.

Следствие из первого закона:

1) закон больших чисел – совокупное действие большого числа случайностей приводит к результату, не зависящему от случая, а имеющему закономерный характер;

2) закон оптимальности – любая система (природа, общество) функционирует с наибольшей эффективностью в характерных для нее пространственно-временных пределах.

Следствия из второго закона:

1) закон развития системы за счет окружающей ее среды – любая система может развиваться только за счет использования материально-энергетических и информационных возможностей окружающей среды. Абсолютно изолированное саморазвитие невозможно;

2) закон неустранимости – образующиеся в процессе производства отхода неустранимы бесследно, они могут быть лишь переведены из одной формы в другую или перемещены в пространстве, а их воздействие может быть растянуто во времени.

Также широко известны в экологии «железные законы» американского биолога П. Р. Эрлиха по охране природной среды:

1) в охране природы возможны только усиленная оборона или отступление, наступление невозможно, так как вид или экосистема, однажды уничтоженные, не могут быть восстановлены;

2) продолжающийся рост народонаселения и охрана природы принципиально противоречат друг другу;

3) экономические системы, охваченные манией роста и охраной природы, также принципиально противоречат друг другу;

4) для человечества смертельно опасно представление о том, что при выработке решений об использовании земли надо принимать во внимание одни лишь ближайшие цели и немедленное благо для самого человека;

5) охрана природы должна считаться одной из важнейших задач повышения благосостояния населения, а в более отдаленной перспективе стать проблемой выживания человечества в современной при-

родной среде. Эрих утверждал, что выбросы парниковых газов приведут к таянию ледников и что человечество вытеснит дикую природу.

Всемирно известный российской ученый В. И. Вернадский считал, что по мере своего развития человечество превращается в мощную геологическую силу, соизмеримую с такими силами природы, как цунами, извержение вулканов, землетрясение, способную не только преобразовать биосферу, но и разрушить ее.

Советский эколог Н. Ф. Реймерс сформулировал пять законов социальной экологии.

1. «Правило социально-экономического равновесия» – общество развивается тогда и настолько, насколько сохраняется равновесие между его «давлением» на среду и возможностью восстановления этой среды.

2. «Принцип культурного управления развитием» говорит об ограниченности экологического развития экологическими рамками и указывает на необходимость управлять развитием с учетом глубоких процессов взаимодействия, происходящих между обществом, природой и человеком.

3. «Правило социально-экономической замены» содержит мысль о необходимости понимания возможного изменения социально-экологических потребностей человека разными способами, обусловленными характерными специфическими особенностями природной среды и влияющими на нее.

4. «Закон исторической (социально-экономической) необратимости» содержит мысль об исторической необратимости процесса развития общества.

5. «Закон ноосферы Вернадского» – биосфера неизбежно переходит в ноосферу, в которой человеческий разум играет преобладающую роль в развитии системы «человек – природа». Тем самым хаотическое саморазвитие природы в процессе естественной саморегуляции заменяется разумной стратегией, которая основывается на принципах прогнозирования и планового регулирования процесса развития природы.

В истории развития человечества выделяют следующие этапы взаимодействия природы и общества в зависимости от уровня развития материального производства.

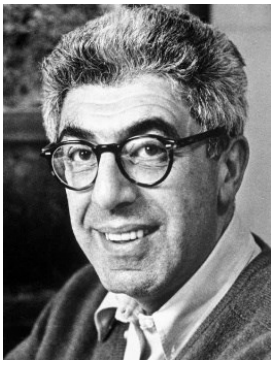
Первый этап – древнекаменный век (палеолит), длился более 3 миллионов лет. Влияние человека на природу минимально.

Второй этап – новокаменный век (неолит), начало – 10 тысяч лет назад, ознаменовался появлением земледелия и скотоводства, переходом от присваивающих форм хозяйства, свойственных палеолиту, к производящей экономике: интенсивная вырубка лесов, появление ирригационных систем, населенных пунктов, городов – центров торговли, мануфактурное преобразование ландшафтов.

Третий этап – промышленный переворот на рубеже XVIII – XIX веков, переход от ремесленного производства к промышленному, от ручного труда – к машинному. Это позволило человечеству создать грандиозные производительные силы. Изъятие из природной среды все большего количества ресурсов, загрязнение окружающей среды (появление отходов производства, выбросов загрязняющих веществ), продолжение вырубки лесов.

Четвертый этап – эпоха научно-технической революции (НТР) во второй половине XX века, охватившей все сферы жизни человека и все регионы мира. Особенности: появление химии и нефтехимии, таких продуктов и отходов, которые не перерабатываются природой; бурные темпы развития энергетики; развитие транспортных систем; развитие сельского хозяйства.

Пятый этап: 1972 год – совещание ООН в Стокгольме; 1992 год – совещание ООН в Рио-де-Жанейро («Декларация Рио», «Повестка дня на XXI век»). Пятый этап осуществляет хозяйственное развитие с учетом экологических ограничений.

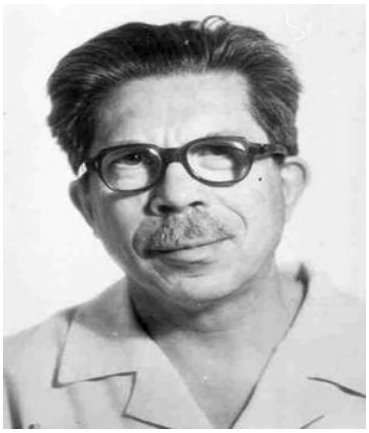


References

1. ***Barry Commoner*** (born May 28, 1917 Brooklyn) is an American biologist and ecologist. In the late 50s, he gained fame as an opponent of nuclear tests. He has written several books about the dangers of such tests for the Earth’s Ecosystem.

2. *Paul Ralph Ehrlich* (born May 29, 1932, Philadelphia, Pennsylvania) is an American biologist. Doctor (1957), professor at Stanford University, where he has worked since 1959, member of the US National Academy of Sciences (1985) and the American Philosophical Society (1990), foreign member of the Royal Society of London (2012). Demographer, biologist, university lecturer, environmentalist.

3. *Vladimir Ivanovich Vernadsky* (born February 28, 1863 in St. Petersburg). Russian scientist. Creator of scientific schools of mineralogy, geochemistry and the sciences of biogeochemistry. One of the representatives of Russian cosmism. His scientific interests included: mineralogy, crystallography, geochemistry, geology, soil science, radiogeology, biology, paleontology, biogeochemistry, meteorology, philosophy and history of science. In addition, he was involved in organizational and social activities.



4. *Nikolai Fedorovich Reimers* (born February 4, 1931 in Odessa). Soviet zoologist, ecologist, one of the main participants in the development of nature reserves in the USSR. Doctor of Biological Sciences, professor. From the problems of autecology and population ecology, Reimers subsequently moves on to the study of problems of theoretical ecology, ecological-economic science (bioeconomics) and human ecology. Actively promotes and popularizes science, nature conservation, conservation and rational use of natural resources (in the magazines “Science and Life”, “Nature”, “Chemistry and Life” and newspaper publications), and conducts many lectures.

VII. Be ready to give the summary of the text orally. Pay attention to the following expressions and using them make up your own sentences based on the text A.

The text deals with (the problem of)…

It touches upon…

The extract from the article is concerned with…

The article is about…

The text centres round the problem of…

The article focuses on the problem of…

According to the text…

According to the author…

It further says that…

According to the figures (data, information, opinions) from the text…

It is clear from the text that…

The problem of the text is of great importance…

To sum it up…

On the whole…

In conclusion it is possible to say that…

VIII. Discuss the following statements.

1. What famous foreign and Soviet scientists contributed to the conservation of natural resources?

2. The connection between soil science and other sciences.

3. What do you think means a reasonable strategy, which is based on the principles of forecasting and planned regulation of the process of natural development?

4. Nature protection should be taken into account and considered one of the most important tasks for improving the well-being of the population.

5. How important are the “iron laws” of P. R. Ehrlich in ecology for environmental protection?

6. One of the main environmental problems is the most rational use of land resources.

7. The problems of nature protection have economic, health, conservation and aesthetic aspects.

8. It is necessary to develop methods for an objective assessment of the state of natural conditions.

9. It is necessary to determine the permissible forms and scales of anthropogenic impact on the natural environment.

IX. Make up your own presentation on the topic: "Nature Protection as the Most Important Task at the Present Stage of Society Development".

REVIEWING GRAMMAR

The Perfect Continuous Tenses

The Present Perfect Continuous (Progressive) Tense

The Present Perfect Continuous Tense образуется при помощи вспомогательного глагола ***to be*** в *Present Perfect* ***(have been, has been)*** и глагола-сказуемого с окончанием ***-ing***. *The Present Perfect Continuous* обозначает действие или состояние, которое началось в прошлом и продолжалось в течение определенного периода до момента речи и либо все еще продолжается в этот момент, либо закончилось непосредственно перед ним (*I have been waiting for him for two hours*).

Глаголы состояния (non-continuous verbs) в Present Perfect Continuous не употребляются.

Positive		Negative		Question			
I / You / We / They	*have been* washing	I / You / We / They	*haven't been* washing	*Have*	I / you / we / they	*been*	washing?
He / She / It	*has been* washing	He / She / It	*hasn't been* washing	*Has*	he / she / it	*been*	washing?

Часто употребляются такие обстоятельства времени, как: ***for (ten years)*** – в течение (десяти) лет; ***for a long time*** – на протяжении долгого времени; ***all day long*** – в течение всего дня; ***since Friday*** – с пятницы (и до настоящего времени).

Grammar Exercises

1. Write a question for each situation.

Model: You ask: (*You / swim*?) – ***Have you been swimming*?**

You meet Sam as he is leaving the swimming pool.

1. You have just arrived to meet a friend who is waiting for you. You ask: (*You / wait / long?*) 2. You meet a friend in the street. His clothes are completely wet. You ask: (*What / you / do?*) 3. A friend of yours is now working in a supermarket. You ask: (*How long / you / work / there?)* 4. The fellow student tells you about his job – he sells computers. You want to know how long. You ask: (*How long / you / sell / computers?*)

2. Translate into English.

1. Как долго вы изучаете испанский язык? 2. Мы живем здесь только год. 3. Дождь идет с раннего утра. 4. Чем он занимается с тех пор, как мы виделись с ним в последний раз? 5. Я пытаюсь отремонтировать компьютер на протяжении всего дня.

3. Put in the verbs. Use the present perfect continuous.

Model: **Emma:** It's OK. (*I / not / wait.*) – ***I haven't been waiting long.***

Ilona: Sorry I'm late.

Emma: What (*you / do*)?

Nelly: I've been with Mrs. King. (*She / help*) me with my English.

Nelly: Your English is very good. You don't need lessons, surely. How long (*you / study*) English?

Ilona: Er, eight years now. But my accent wasn't so good before I came to England. (*I / try*) to improve it. I think (*it / get*) better lately.

Nelly: Your accent is fine, Ilona. Honestly.

Revision

4. Translate into English.

1. На кухне шумела вода. Алиса мыла посуду. 2. Извини, у меня мокрые руки. Я мыла посуду. 3. Ты вымыла посуду? 4. Кто съел мое яблоко? 5. Они сидели за столом и ели спагетти. 6. Вы уже обсудили этот вопрос? 7. Запишите то, что мы тут сегодня обсуждали. 8. Они закончили писать и обсуждали, кто отправит письмо. 9. Они разговаривали о погоде и планах на лето. 10. О чем вы тут разговаривали?

5. Write down sentences using the correct tense of the verbs in brackets.

1. I'll read for an hour or so before I (*to turn off*) the light. 2. We shall be obliged to you if you (*to find out*) it. 3. Shall we go somewhere if the weather (*to change*) for the worse? 4. I am so tired that I shall go to bed as soon as I (*to get*) home. 5. He will sleep until the alarm (*to wake up*) him. 6. They don't know when he (*to call*). 7. You will get wet through unless you (*to take*) an umbrella. 8. Ring up when you (*to get*) back. 9. I am not sure if he (*to ring*). 10. We shall go to the country if the weather (*to keep*) fine. 11. He won't come unless you (*to ask*) him.

12. I will ask him if he (*to do*) it. 13. I will be cooking dinner while you (*to pack*). 14. We will have finished the work by the time they (*to arrive*). 15. He won't tell me if something (*to go*) wrong. 16. I would like to know when you (*to return*) the money. 17. Will you see him after he (*to get*) back from holiday? 18. Could you find out when the concert (*to start*)?

Unit 11. SOIL WATER REGIME. ITS BALANCE AND REGULATION

I. Read and translate the text A.

SOIL WATER REGIME AND ITS COMPONENTS

The water regime of the soil is a set of processes of moisture entering the soil, its movement and flow from the soil. It determines the water content in the soil during the year and its individual periods, its movement in the groundwater-soil-plant-atmosphere system, the water regime of the soil is characterized by layered dynamics of water content and/or the energy state of water (humidity and/or moisture pressure), correlated with soil-hydrological constants.

Soil-hydrological constants (PGCs) are the boundary values of humidity, at which quantitative changes in water mobility turn into qualitative differences. Maximum adsorption moisture capacity or hygroscopic humidity is the largest amount of strongly bound, strictly oriented water retained by adsorption forces.

The adsorption of water vapor occurs from soil or atmospheric air. Such water is present in air-dry soil. It is observed only in soil samples that are in laboratory conditions and very rarely in natural conditions.

The relative humidity of the air (or the relative pressure of 40 water vapors) in the laboratory is a value, although noticeably fluctuating (from 30 to 80 %), but not much changing maximum adsorption moisture capacity.

Maximum hygroscopicity is the largest amount of sorbed vaporous water from air with a relative humidity of 98 %.

Saturation of the air with water vapor increases the amount of sorbed water, so a polymolecular layer of adsorbed water forms around the soil particle. It corresponds to loosely bound water. This is a “milestone” value and is quite conditional. It can be determined only in the laboratory, under conditions of equilibrium of soil with water vapor at their content in the surrounding atmosphere equal to 98 %.

The main categories and forms of soil water differ in the strength of the bond with the solid phase of the soil and the degree of mobility.

Solid water (ice) is formed in the soil in the form of ice when it freezes in the autumn–winter period (seasonal freezing) or remains at a certain depth in the freezing thickness of the soil, without thawing even in summer. Solid water in the soil, capable of melting and evaporating, is a potential source of liquid and vaporous water. Solid water is stationary, inaccessible to plants.

Vaporous – it is contained in the form of water vapor in the soil in the air, often saturating it to 100 %. It moves from places with greater elasticity of water vapor, as well as with air flow. Vaporous moisture practically does not matter in the supply of plants with water.

Chemically bounded water is a hydroxyl group (OH-) of substances in the soil: hydroxides of iron, aluminum, titanium, manganese, colloidal dispersed clay minerals, organic and organomineral compounds. Chemically bound water is not available to plants.

Physically bound or sorbed water is called hygroscopic water. It is formed as a result of the sorption of water vapor from the air by soil particles. This water covers the soil particles with a thin film consisting of 1 – 3 layers of molecules. The water molecules sorbed by the soil, being dipoles, are in a strictly oriented position.

Loosely bound water is the second form of physically bound, or sorbed, water, called film water; it is formed in as a result of additional sorption of water molecules in contact with solid colloidal soil particles with liquid water. Loosely bound water is weakly mobile, hardly accessible to plants [1, c. 39].

II. Make up your own questions to the text.

III. Translate the words and word combinations from Russian into English using the dictionary and memorize them.

Водный режим почвы; поступление влаги в почву; содержание воды в почве; грунтовые воды; атмосфера; энергетическое состояние воды; влажность; давление влаги; почвенно-гидрологические константы; максимальная адсорбционная влагоемкость; гигроскопическая влажность; адсорбционные силы; адсорбция паров воды; почвенный воздух; атмосферный воздух; воздушно-сухая почва; рыхлосвязанная вода; песок; парафин; капиллярно-подвешенная вода; дренируемая гомогенная почва; гравитационная вода; диапазон подвижной влаги; диапазон легкоподвижной влаги; корнеобитаемый слой; труднодоступная вода; недоступность воды; категории и формы почвенной воды; твердая фаза почвы; степень подвижности почвы; твердая вода; сезонное промерзание почвы; таять; испаряться; потенциальный источник жидкой и парообразной воды; парообразная вода; поток воздуха; химически связанная (конституционная) вода; гидроксильная группа (OH-); гидроксиды железа, алюминия, титана, марганца; коллоидно-дисперсные глинистые минералы; органические и органоминеральные соединения; кристаллизационная вода; молекулы воды; свободная или гравитационная вода.

IV. Translate the words and word combinations using the dictionary and memorize them.

The water regime of the soil; processes of moisture; plant; atmosphere system; the water regime; flow from the soil; to determine; the water content in the soil; moisture pressure; correlated with soil-hydrological constants; during the year; individual periods; movement in the groundwater; characterized by; layered dynamics of water content; the energy state of water; humidity; the second form; physically bound; film water; as a result; additional sorption of water; molecules; contact with solid colloidal soil particles; hygroscopicity; sorbed water; the surrounding atmosphere;

main categories and forms of soil water; differ; the solid phase of the soil; the degree of mobility; to vaporize; air; saturation of the air; to increase; a polymolecular layer of adsorbed water; the soil particle; correspond to; loosely bound water; a “milestone” value; the laboratory; conditions; equilibrium of soil; liquid water; weakly; mobile; solid water; in the form of ice; to freeze; in the autumn-winter period; seasonal freezing; remains at a certain depth; thickness of the soil; without thawing even in summer; capable of melting; a potential source of liquid and vaporous water; hardly accessible to plants.

V. Find the sentences with the following words and word combinations in the text A and translate them into Russian.

Physically bound; hygroscopic water; it is formed; vapor from the air; water covers the soil particles; 1 – 3 layers of molecules; the water molecules; being dipoles; in a strictly oriented position; chemically bounded water; hydroxyl group (OH-) of substances in the soil; not available to plants; water vapor increases; a polymolecular layer of adsorbed water; soil particle; it corresponds to loosely bound water; quite conditional; under conditions of equilibrium of soil; with water vapor; at their content in the surrounding atmosphere; the main categories and forms of soil water; the solid phase of the soil; the degree of mobility; is formed in the soil in the form of ice; when in the autumn-winter period; at a certain depth; without thawing even in summer; capable of melting and evaporating; a potential source of liquid and vaporous water; stationary, inaccessible to plants; it is contained in the form of water vapor in the soil in the air; moves from places with greater elasticity of water vapor; moisture practically does not matter in the supply; occurs from soil or atmospheric air; present in air-dry soil; only in soil samples; very rarely in natural conditions; humidity of the air; although noticeably fluctuating; maximum adsorption moisture capacity; hygroscopicity is the largest amount of sorbed vaporous water.

VI. Insert the missing words and word combinations.

1. Soil-… constants … the boundary values of … , at which quantitative … in water mobility … … qualitative differences.

2. The … of water vapor … from soil or atmospheric … .

3. … adsorption moisture … or hygroscopic humidity … … largest amount of strongly … , strictly oriented … retained by adsorption … .

4. Such water … present in air-dry … .

5. … of the … with water vapor … the amount of sorbed … .

6. … … observed only in … … that … in laboratory … and very rarely in … conditions.

7. The main … and …of soil water … in the strength of the … with the … phase of the … and the degree of … .

8. … … water is the second form of … bound, or sorbed, water, called … … .

9. It corresponds to … … water.

10. … … … in as a result of additional sorption of water … in contact with … … soil particles with … water.

11. This is a "…" value and … … conditional.

12. Solid water (…) … … in the soil in the form of … when it … in the …-… period.

13. It … … … in the laboratory, under conditions of equilibrium of soil with … … at their content in the … atmosphere … to 98 %.

14. … … water is weakly mobile, hardly accessible to … .

15. …remains at a certain … in the … thickness of the … , without thawing even in … .

16. … … in the soil, capable of … and … , is a potential … of … and … water.

17. Solid water … stationary, … to plants.

18. Vaporous – it … contained in the … of water … in the … in the … .

19. It … from … with greater … of water … , as well as with … flow.

20. … … practically … … matter in the … of … with water.

21. Chemically … … is a hydroxyl … (…) of substances in the soil: hydroxides of … , aluminum, … , manganese, … … clay … , organic and … compounds.

22. … bound water … … … to plants.

VII. Translate into English the text B using the dictionary.

СОСТАВЛЯЮЩИЕ ВОДНОГО БАЛАНСА. АТМОСФЕРНЫЕ ОСАДКИ

Количество осадков (жидких и твердых) определяется климатом местности. Однако поступление их в почву в значительной мере зависит от растительного покрова. Часть осадков задерживается растительностью, особенно кронами деревьев, их количество зависит от состава, возраста растений и полноты насаждения, а также от количества осадков и интенсивности их выпадения.

Атмосферные осадки – это вода в жидком и твердом состоянии, выпадающая из облаков или осаждающаяся непосредственно из воздуха. Среди осадков, выпадающих из облаков, наиболее распространены дождь, морось, снег, мокрый снег, снежная крупа, ледяная крупа, снежные зерна, град, ледяной дождь, ледяные иглы. Непосредственно из воздуха осаждаются роса, иней, изморозь. Чем слабее дождь, тем больше выпавшей влаги задерживается на кронах деревьев. Одна часть задержанной влаги стекает по стволам и, следовательно, также поступает в почву, другая ее часть испаряется. Накопление твердых осадков под лесной растительностью обычно больше, чем на открытых пространствах, с которых снег сносится в овраги и балки. Облесенные площади отличаются от открытых не только накоплением снега, но и тем, что снеготаяние на них происходит медленнее, чем на открытых площадях. Для опушек лесных массивов, а также для искусственных лесных полос шириной от двух-трех до нескольких десятков метров большое значение имеет навивание снега ветром в зимнее время. При этом у опушек и в полосах образуются большие сугробы, запас воды в которых в несколько раз превышает ее средний

запас на соседних открытых площадках. Таким образом, в этих местах создаются дополнительные запасы снеговой воды, поступающие потом в почву [1, с. 47 – 48].

VIII. Be ready to give the summary of the text orally. Pay attention to the following expressions and using them make up your own sentences based on the text A.

The text deals with (the problem of)…

It touches upon…

The extract from the article is concerned with…

The article is about…

The text centres round the problem of…

The article focuses on the problem of…

According to the text…

According to the author…

It further says that…

According to the figures (data, information, opinions) from the text…

It is clear from the text that…

The problem of the text is of great importance…

To sum it up…

On the whole…

In conclusion it is possible to say that…

IX. Discuss the following statements.

1. An important characteristic of the water regime is the water balance – an assessment of the arrival and consumption of moisture in a certain layer of soil for a specific period.

2. The condensation horizon can occur at different depths and is associated with the temperature difference between individual morphological horizons or soil layers.

3. Tell us about the scientists who proposed a system of hydrological horizons and hydrological profiles.

4. What determines the quantitative estimates of soil-hydrological constants?

5. What are the most important characteristics of the water regime of the soil?

X. Make up your own presentation on the topic: "Moisture intake from groundwater".

REVIEWING GRAMMAR

The Passive Voice

Глагол-сказуемое в *Passive Voice* (страдательном залоге) показывает, что в предложении подлежащее является объектом действия со стороны другого лица или предмета (*I wrote three letters yesterday* – Past Simple of the Active Voice). (*Three letters were written yesterday* – the Past Simple Passive).

Времена страдательного залога образуются при помощи вспомогательного глагола в соответствующем времени действительного залога и глагола-сказуемого в форме причастия прошедшего времени ***Participle II (-ed / III форма неправильного глагола)*** глагола-сказуемого – объект действия выражен подлежащим, а субъект действия либо совсем не упоминается, либо указан с предлогами ***by*** или ***with*** (*Football is played all over the world; The sky was covered with clouds*).

Времена Perfect Continuous и Future Continuous в страдательном залоге не употребляются.

Tenses	Active	Passive
Present Simple	We *bake* the bread here	The bread *is baked* here
Present Continuous	We *are baking* the bread	The bread *is being baked*
Present Perfect	We *have baked* the bread	The bread *has been baked*
Past Simple	We *baked* the bread yesterday	The bread *was baked yesterday*
Past Continuous	We *were baking* the bread	The bread *was being baked*
Past Perfect	We *had baked* the bread	The bread *had been baked*
Future Simple	We *will bake* the bread next	The bread *will be baked* next
To be going to	We *are going to bake* the bread	The bread *is going to be baked*
Modals	We *should* bake the bread soon	The bread *should be baked* soon

Grammar Exercises

1. Open the brackets.

1. Those magazines (*return*) to the library yesterday. 2. Why your home task (*not / do*)? 3. The children (*take*) to the circus this afternoon. 4. Dictionaries may not (*use*) at the examination. 5. This room (*not / use*) for a long time.

2. Translate into English.

1. Его часто посылают за границу. 2. Телеграмма была получена вчера. 3. Когда будет переведена эта книга? 4. Кому поручили это задание? 5. Мне предложили очень интересную работу.

3. Rewrite these sentences beginning with the underlined words.

Model: Thieves robbed a <u>woman</u>. – *A woman was robbed.*

1. They may ban <u>the film</u>. 2. They offered <u>Nancy</u> a pay increase. 3. We need to correct <u>the mistakes</u>. 4. Someone reported that <u>the situation</u> was under control. 5. They are testing <u>the new drug</u>.

Unit 12. THE THERMAL REGIME OF THE SOIL AND ITS REGULATION

I. Read and translate the text A.

FEATURES OF THE THERMAL REGIME OF THE SOIL

The thermal regime of the soil is called the totality of the processes of receipt, transfer, accumulation and return of heat. It is estimated by soil temperature, daily and annual patterns of its change, thermal properties of the soil: heat capacity, thermal conductivity and thermometric conductivity. Heat capacity is a physical quantity defined as the amount of heat that must be brought to a body in a given process so that its temperature increases by one Kelvin.

Soil thermal conductivity is the ability of the soil to conduct heat through the thermal interaction of solid, liquid and gaseous particles in contact with each other.

The thermal conductivity of the soil is an important characteristic that determines the rate of warming and cooling of the soil. This characteristic is dynamic, with a change in soil moisture, the thermal conductivity can change 1.5 – 5.0 times. At the same time, the values of thermal conductivity and ranges of variability with humidity for different soils may differ significantly. The thermal regime of the soil is due to both climatic conditions and the properties of the soil itself, and also depends on the relief, lithological, hydrogeological conditions, vegetation. The thermal regime is characterized by radiation and thermal balances.

The radiation balance of the soil is an important indicator that allows you to determine the amount of energy entering, absorbed and reflected by the soil. In the process of this balance, the soil interacts with solar radiation, and also transmits and releases heat. Measuring the radiation balance of the soil is useful in agricultural and environmental science.

The thermal balance of the soil is one of the important factors influencing the growth and development of plants. It represents a state of equilibrium between the thermal energy entering the soil and its losses. The optimal thermal balance provides favorable conditions for the life and functioning of plants.

To understand the essence of the effect of heat on soil formation, it is important to know first of all the radiation balance, the depth of penetration of the heat wave into the soil, the sum of temperatures above 10 °C at a depth of 20 cm (a layer of 0 – 20 cm contains a maximum of roots).

The conversion of heat entering the soil is closely related to thermal conductivity and heat capacity. Heat transfer in soil is the process of heat exchange between the soil surface and its deep layers. Heat transfer is closely related to thermal conductivity due to the temperature difference between different soil layers and the heat capacity of the soil. The heat flow is directed from the more heated layers to the less heated ones: in summer – deep into the soil, in winter – to its surface. The main mechanisms of thermal conductivity are conduction, heat and mass transfer and convection [1, c. 67].

II. Make up your own questions to the text.

III. Translate the words and word combinations from Russian into English using the dictionary and memorize them.

Тепловой режим почвы; совокупность процессов поступления, переноса, аккумуляции и отдачи тепла; температура почвы; суточные закономерности; годовые закономерности; изменения почвы; тепловые свойства почвы; теплоемкость; теплопроводность; температуропроводность; физическая величина; количество теплоты; количество тепла в калориях; объем сухой почвы; влажность почв; способность почвы проводить тепло; скорость прогревания и охлаждения почвы; климатические условия; свойства самой почвы; рельеф; литологические и гидрогеологические условия; растительность; радиационный и

тепловой баланс; аграрная и экологическая науки; кондукция; теплопароперенос; конвекция; климат; снежный покров; тепловые свойства почвы; атмосфера; средние годовые температуры воздуха и почвы; замерзание почвы; замерзание влаги в почве; раствор солей различных концентраций; внутри земное тепло.

IV. Translate the words and word combinations from English into Russian using the dictionary and memorize them.

The conversion of heat; thermal conductivity; heat capacity; to transfer; the process of heat; to exchange; the soil surface; deep layers; closely related to due to; the temperature; different soil layers; the heat capacity of the soil; heat flow; deep into the soil; surface; the main mechanisms; conduction; convection; an important characteristic; to determine; the rate of warming and cooling of the soil; dynamic; soil moisture; at the same time; the values of thermal conductivity; ranges of variability; humidity; different soils; significantly; the thermal regime of the soil; due to climatic conditions; the properties of the soil; to depend on; the relief; lithological; hydrogeological conditions; vegetation; radiation and thermal balances; receipt; transfer; accumulation; return of heat; soil temperature; daily and annual patterns of its change; a physical quantity; the ability of the soil to conduct heat; through the thermal interaction of solid, liquid and gaseous particles; contact with each other; to understand the essence; it is important to know; maximum.

V. Find the sentences with the following words and word combinations in the text A and translate them into Russian.

The radiation balance of the soil; absorbed and reflected by the soil; the soil interacts with solar radiation; and releases heat; is an important characteristic measuring the radiation balance of the soil; the thermal conductivity can change 1.5 – 5.0 times; with a change in soil moisture; useful in agricultural and environmental science; the thermal regime of the soil; the values of thermal conductivity; to conduct heat through the thermal in-

teraction of solid, liquid and gaseous particles in contact with each other; climatic conditions and the properties of the soil itself; for different soils may differ; heat capacity, thermal conductivity; also depends on the relief, lithological, hydrogeological conditions; flow is directed from; in summer – deep into the soil, in winter – to its surface; thermal regime of the soil; transfer, accumulation and return of heat; daily and annual patterns; thermal properties of the soil; a physical quantity; by radiation and thermal balances; so that its temperature increases; must be brought to a body in a given process; main mechanisms of thermal conductivity; heat and mass transfer; thermometric conductivity; closely related to thermal conductivity; soil is the process of heat exchange; to the temperature; soil layers and the heat capacity of the soil; convection soil thermal conductivity.

VI. Insert the missing words and word combinations.

1. The … balance of the … … one of the important … influencing the … … and development of… .

2. The … … of the … … called the totality of the processes of receipt, transfer, … and return of … .

3. The … thermal … provides … … for the life and … of plants.

4. It is … … … temperature, daily and … patterns of … … , thermal … of the soil: … capacity, … conductivity and … conductivity.

5. It … a state of … between the … … entering the soil and its losses.

6. … … is the ability of the soil to … … through the thermal interaction of … , … and … particles in contact with … … .

7. … … … to know first of all the … … , the … of penetration of the … … into the … , the sum of … above … °C at a … of … cm.

8. … … is a … … defined as the amount of … that must be … … a body in a given … so that its … increases by one … .

9. The … conductivity of the … is an important … that determines the … of … and … of the … .

10. The … … of the … … an important … that allows you to … the amount of … entering, … and reflected by the… .

11. The thermal regime of the soil is due to … … … and the properties of the … … .

12. In the … of this … , the … … with solar … , and also transmits and releases … .

13. At the … … , the values of … … and ranges of variability with … for different … may differ … .

14. … the … … of the soil is useful in … and … science.

15. The … … is directed from the more … … to the less heated ones: in … – deep into the … , in … – to its surface.

16. The main mechanisms of … … are … , … and mass transfer and … .

17. The … of … entering the … … closely related to … conductivity and … capacity.

18. … transfer in … is the process of … … between the soil … and its deep … .

VII. Translate into English the text B using the dictionary.

ВЛИЯНИЕ ТЕПЛОВОГО РЕЖИМА НА ИНТЕНСИВНОСТЬ ПОЧВЕННЫХ ПРОЦЕССОВ

Наиболее общие особенности влияния теплового режима на интенсивность почвенных процессов – ускорение движения воды при повышении температуры почвы и, соответственно, более интенсивная миграция питательных веществ.

С повышением температуры увеличивается концентрация солей и снижается содержание газов, в том числе кислорода, в почвенном растворе. При переувлажнении усиливаются процессы оглеения, может резко снижаться окислительно-восстановительный потенциал, ухудшается состояние растений вплоть до полной их гибели вследствие накопления токсичных продуктов анаэробного брожения. При увеличении температуры ускоряются многие химические реакции, в том числе

в почве. Усиливаются процессы окисления органического вещества, обмена между почвой и раствором, диффузии веществ в почве. Все эти реакции прямо влияют на доступность питательных веществ растениям. Именно поэтому более бедные элементами питания почвы влажных тропиков и субтропиков лучше снабжают растения питательными веществами и производят бóльшую фитомассу растений.

В красноземах диффузия питательных веществ к корню идет значительно быстрее, чем в северных почвах, хотя для одной и той же температуры коэффициент диффузии в красноземах меньше, чем в других почвах ($2 \cdot 10^{-6} \ldots 5 \cdot 10^{-6}$ по сравнению с $4 \cdot 10 \ldots 6 \cdot 10$ см/с в черноземах и дерново-подзолистых почвах). Изучение температурной зависимости диффузии веществ в почве свидетельствует о том, что те вещества, которые не взаимодействуют с почвой, имеют прямую зависимость коэффициента диффузии от температуры. Но если диффундируют вещества, взаимодействующие с твердой фазой почвы, например катионы К, Na+, участвующие в процессах обмена с почвенным поглощающим комплексом, то при достижении определенной температуры отмечается отклонение зависимости от прямой.

Коэффициент диффузии этих катионов уменьшается из-за увеличения поглощения их почвенным поглощающим комплексом. Температура почв определяет газовый режим: при увеличении температуры усиливаются биологическая активность и выделение CO_2 из почвы.

При низких температурах ухудшается питательный режим растений, снижается потребление растениями фосфора и калия, сдерживаются процессы минерализации азота в почве [1, с. 79].

VIII. Be ready to give the summary of the text orally. Pay attention to the following expressions and using them make up your own sentences based on the text A.

The text deals with (the problem of)…

It touches upon…

The extract from the article is concerned with…

The article is about…

The text centres round the problem of…

The article focuses on the problem of…

According to the text…

According to the author…

It further says that…

According to the figures (data, information, opinions) from the text…

It is clear from the text that…

The problem of the text is of great importance…

To sum it up…

On the whole…

In conclusion it is possible to say that…

IX. Discuss the following statements.

1. What does the term “thermal balance of the soil” mean?

2. How many types of temperature (thermal) regime has V. N. Dimo identified? Name them.

3. As the temperature increases, many chemical reactions accelerate, including in the soil. Is that true?

4. Describe the principles of soil thawing.

5. Describe the main varieties of the thermal balance of the soil.

6. What are the features of the thermal balance of the soil?

7. The thermal balance of the soil is one of the important factors influencing the growth and development of plants. Prove your position.

8. The radiation balance of the soil is an important indicator that allows you to determine the amount of energy entering, absorbed and reflected by the soil.

X. Make up your own presentation on the topic: “The influence of relief on the temperature regime of the soil”.

REVIEWING GRAMMAR

Indirect Speech and Sequence of Tenses

В английском языке существует закон согласования времен, который действует в сфере одной временной плоскости и преимущественно в сложных предложениях с придаточным дополнительным, т. е. временная форма глагола в придаточном предложении зависит от временной формы глагола в главном предложении и определяется правилами согласования времен:

1) если глагол в главном предложении имеет форму настоящего или будущего времени, то в придаточном предложении глагол ставится в том времени, которое требуется по смыслу;

2) если глагол в главном предложении стоит в одном из прошедших времен, то в придаточном предложении происходит сдвиг времени в прошедшее (по сравнению с тем, которое требуется по смыслу и ситуации).

При переводе прямой речи в косвенную речь происходит сдвиг времен в соответствии со следующей таблицей.

Direct speech	Reported speech
Present Simple (Indefinite) *V-1, V-s*	Past Simple (Indefinite) *V-2, V-ed*
Present Progressive (Continuous) *am, is, are + V-ing*	Past Progressive (Continuous) *was, were + V-ing*
Present Perfect *have, has + V-3, V-ed*	Past Perfect *had + V-3, V-ed*
Present Perfect Progressive (Continuos) *have been + V-ing*	Past Perfect Progressive (Continuous) *had been + V-ing*
Past Simple / Past Indefinite *V-2, V-ed*	Past Perfect *had + V-3, V-ed*
Past Progressive (Continuous) *was, were + V-ing*	Past Perfect Progressive (Continuous) *had been + V-ing*
Past Perfect *had + V-3, V-ed*	Past Perfect *had + V-3, V-ed*
Past Perfect Progressive (Continuous) *had been + V-ing*	Past Perfect Progressive (Continuous) *had been + V-ing*
Future Simple (Indefinite) *shall, will + V-1*	Future-in-the-Past *would + V-1*
Future Progressive (Continuous) *shall, will + be + V-ing*	Future-in-the-Past *would be + V-ing*
Future Perfect *shall, will+have+V-3, V-ed*	Future-in-the-Past *would+have+V-3,V-ed*
Future Perfect Progressive (Continuous) *shall, will + have + been + V-ing*	Future-in-the-Past *would + have + been + V-ing*

При переводе прямой речи в косвенную одновременно с временным сдвигом меняются некоторые указательные местоимения, обстоятельства времени, места, наречия и другие слова, обозначающие время действия.

Direct speech		Reported speech	
now	сейчас	then	тогда
here	здесь	there	там
this/these	это, этот/эти	that/those	то, тот/те
today	сегодня	that day	в тот день
tomorrow	завтра	the next day, the following day	на следующий день
yesterday	вчера	the day before, the previous day	накануне
next week/month/year	на следующей неделе/в месяце/году	the next/the following week/month/year	на следующей неделе/в следующем месяце/году
last week/month/year	на прошлой неделе/в прошлом месяце/году	the previous week/month/year the year/month/week before	за неделю/месяц/год до
In a day/week/month/year	в течение дня/недели/месяца/года	the day/week/month/year later	через день/неделю/месяц/год
ago	назад	before	до

Примечание. В некоторых случаях временного сдвига в придаточных предложениях не происходит:

1) глагол в определительных, причинных и сравнительных придаточных предложениях ставится в той форме, которая соответствует смыслу и ситуации (*I **couldn't find** the book you **are speaking** about; It **was not** so cold yesterday as it **is** today; I **did not answer** your letter because I **don't like** to write letters*);

2) глагол *must* употребляется в придаточном предложении независимо от времени глагола в главном предложении (*The mother **told** the child that she **must not play** in the street*);

3) если в придаточном предложении указывается определенная дата события, то употребляется *Past Simple* (*Indefinite*) (*He **said** that he **was born** in 1989*);

4) временного сдвига не наблюдается, если он приводит к противоречию с действительностью (*I **thought** you **received** this letter yesterday*).

Приказ или просьба в косвенной речи передается через инфинитив. Наиболее часто используемые глаголы для передачи приказа в косвенной речи: ***to tell, to order, to command***. Просьба в косвенной речи обычно передается с помощью глагола ***to ask***. Наиболее эмоциональные формы передаются через глаголы ***to beg, to implore*** – умолять, **to urge** – настаивать, уговаривать.

В косвенных вопросах меняется порядок слов, т. е. вопрос превращается в придаточное предложение. Если необходимо, то меняется и время глагола в придаточном предложении. Для введения косвенного вопроса используются союзы ***if / whether*** после глаголов ***ask, want to know, wonder, not know, didn't say, tell me.*** Специальные косвенные вопросы вводятся теми же вопросительными местоимениями, которые использовались в прямой речи.

Grammar Exercises

1. Choose the correct variant.

1. I was told my friends *(to visit)* the art gallery the following week.
a) had visited; b) was visited; c) would visit.
2. Teacher told us the story that *(to happen)* many centuries ago.
a) would happen; b) had happened; c) has happened.
3. He understood that his brother *(to want)* to go with him.
a) wants; b) had wanted; c) wanted.
4. She hoped that her parents *(not to return)* home early.
a) didn't return; b) haven't returned; c) wouldn't return.
5. Margaret knew that we *(to be)* at the conference then.
a) were; b) are; c) had been.
6. Bill said that he *(to be)* busy the day before.
a) would be; b) was; c) had been.

7. He told us that he *(to translate)* the text then.

a) had translated; b) was translating; c) had translated.

8. I knew that my classes already *(to finish).*

a) had finished; b) are finished; c) were finished.

9. They thought that he *(to come)* in some minutes.

a) had come; b) had came; c) would come.

10. He didn't know that she *(to leave)* a week ago.

a) was leaving; b) had left; c) left.

2. Change into reported speech.

1. John (to his sister): Buy three envelopes for me. 2. Richard (to his younger brother): Don't play in the street. 3. Kate (to her friend): Let me have the August number of the magazine, please. 4. Steve (to his mother): We have received a registered letter from Moscow. 5. Rose: I hope I shall be back in an hour. 6. Roger: I have never been in mountains. 7. Jack: I'm expecting a letter from my pen-friend. 8. Mother to her children: Don't turn off the gas! 9. Man: I had to buy the newspaper at a stand. 10. Woman (to the shop-assistant): Have you weighed and rapped up the chicken?

3. Choose the correct sentence in reported speech.

1. She said, "He's having a bath".

a) She said that he would have a bath;

b) She said that he was having a bath.

2. He told the boy, "Don't be afraid of my dog".

a) He told the boy not to be afraid of his dog;

b) He told the boy don't be afraid of his dog.

3. They told us, "We've bought everything we need".

a) They told us that they had bought everything they need;

b) They told us that they bought everything they need.

4. He asked me, "Are you busy now?"

a) He asked me if I were busy then;

b) He asked me if I would be busy then.

5. She told him, “Come here and sit down”.

a) She told him that he would come there and sit down;

b) She told him to come there and to sit down.

6. Mother told her child, “Why did you go there?”

a) Mother asked her son why he went there;

b) Mother asked her son why he had gone there.

7. Teacher told me, “Show me your notes”.

a) Teacher asked me to show my notes;

b) Teacher told me that I show her my notes.

8. They asked Bill, “Will you see her tomorrow?”

a) They asked Bill would he see her tomorrow;

b) They asked Bill if he would see her the next day.

9. He asked his students, “Who has written the essay?”

a) He asked his students who was written the essay;

b) He asked his students who had written the essay.

10. His friend said, “I’ve been looking for my glasses since morning”.

a) His friend said that he had been looking for his glasses since morning;

b) His friend said that he has been looking for his glasses since morning.

4. Change the following sentences into Direct Speech.

1. My sister said that she hadn’t got a watch. 2. The teacher told his students that he was pleased with their work. 3. I told him that I hadn’t seen his brother for a long time. 4. I told my mother that Henry was studying medicine at the University. 5. She told the grocer that she didn’t want any sugar. 6. We told the teacher that we didn’t understand his question. 7. He told the taxi-driver that he was driving too fast. 8. She said that her children were playing in the garden. 9. The mother asked if we promised not to play with the ball in the street. 10. The passenger asked the man when the train would arrive at the station.

5. Choose the correct word from those in parentheses.

1. My grandmother always *(says / tells)* me about her childhood. 2. "Don't do that!" she *(said / told)* them. 3. Did she *(say / tell)* you where she had put my books? 4. When I was introduced to the actor he *(said / told)* a few words to me. 5. That little boy is very bad. He *(says / tells)* a lot of lies. 6. She *(said / told)* to me she didn't know what to do. 7. He often *(says / tells)* things like that. 8. The porter *(asked / interested)* the passengers where their luggage was. 9. George *(asked / urged)* to the boys didn't miss their school. 10. The ticket-inspector *(said / asked)* the passengers to show their tickets.

6. Put sentences into reported speech in the form of orders, requests or commands.

1. Father said, "Pack the things, Johnny." 2. Mother said, "Don't put your old boots in the suitcase, Dick." 3. Lily said, "Will you please carry this heavy box for me, William?" 4. George said to the boys, "Don't miss your classes!" 5. The pilot said to the passengers, "Don't leave your places, please!" 6. The father said to the family, "Get the things ready by two o'clock." 7. Mary said to her brother, "Take the letter to the Post Office, please." 8. The old man said to the little girl, "Don't run across the street." 9. I said to my friend, "Meet me outside the cinema at six o'clock." 10. The doctor said to the sick man, "Don't go back to work for a fortnight."

7. Put sentences into reported speech in the form of questions.

1. The mother said, "Do you promise not to play with the ball in the street?" 2. The man asked the clerk behind the counter, "Is it true that train 35 is late?" 3. The porter asked the passengers, "Where is your luggage?" 4. The woman asked the girl, "Does train 17 leave at 6 or at 7 p. m." 5. The boy asked his mother, "Which plain is ours?" 6. The man asked his friend, "Do you agree to go there by plane?" 7. Mother asked Jane, "What are you doing here?" 8. Ann asked Mary, "What do you usually have for breakfast?" 9. The inspector asked, "Who caused the accident?" 10. Margaret asked Richard, "Where are you going for your holidays?"

8. Open the brackets, paying attention to the Sequence of Tenses and translate the sentences into Russian.

1. I didn't know that you already *(to read)* this book. 2. He did it better than I *(to expect)*. 3. He said that the bus *(to be)* soon. 4. I think it all happened soon after the meeting *(to end)*. 5. They decided that they *(to bring)* us all necessary books. 6. He said that he *(can)* not do it without my help. 7. He asked the students whether they ever *(to see)* such a film. 8. It was decided that we *(to start)* our work at eight o'clock. 9. I told you that I *(to leave)* for Minsk on the following day. 10. The visitors were told that the secretary just *(to go out)* and *(to come back)*.

9. Translate the sentences from Russian into English paying attention to the Sequence of Tenses.

1. Кондуктор сказал пассажирам не выскакивать из автобуса на ходу. 2. Он напомнил мне отправить письмо. 3. Отец запретил детям входить в его кабинет. 4. Инспектор предупредил нас, что здесь стоянка запрещена. 5. Гид посоветовал нам заглянуть в этот небольшой музей. 6. Я спросила своих гостей, хорошо ли они спали. 7. Он поинтересовался, часто ли мы ходим в театр. 8. Она спросила меня, видел ли я Джона в последнее время. 9. Она спросила, работаем ли мы сейчас. 10. Они спросили меня, когда начинается мой рабочий день. 11. Он спросил, какую музыку любят мои друзья. 12. Мы спросили его, кто из его друзей знает два иностранных языка. 13. Журналисты спросили писателя, над какой книгой он работает. 14. Я спросила у нее, какие еще французские книги он прочитал за последнее время. 15. Друзья спросили его, куда он ездил в прошлое воскресенье. 16. Врач спросил меня, занимаюсь ли я гимнастикой для поддержания своего здоровья. 17. Я сказал, что вернусь к вечеру. 18. Когда я позвонила ей, она сказала, что не желает обсуждать эти проблемы по телефону. 18. Он улыбнулся и спросил, что меня беспокоит. 19. Мама попросила меня закрыть окно. 20. Мой друг сказал мне, что у нас мало времени для выполнения этого задания.

Unit 13. THE AIR REGIME OF THE SOIL. ITS BALANCE AND REGULATION

I. Read and translate the text A.

FEATURES OF THE SOIL AIR REGIME

The air regime of the soil is called the totality of all phenomena of air entering the soil, its movement along the soil profile, changes in composition and physical condition during interaction with solid, liquid and living phases of the soil, as well as gas exchange of soil air with atmospheric air.

Soil air is a mixture of gases and volatile organic compounds that fill the pores of the soil free of water. Soil air is in three states:

1) free;
2) adsorbed;
3) soluble.

Free soil air resides in large non-capillary and capillary pores of the soil, moves freely in it, and provides soil aeration and gas exchange between the soil and the atmosphere. The trapped soil air is located in the pores and is isolated from all sides by water plugs. In clay soils, the content of trapped air can reach 12 % or more, while on average it makes up 6 – 8 % of the total soil volume. The trapped air is stationary, practically does not participate in gas exchange, and prevents water filtration in the soil. Escaping from the pores when displaced by water, trapped air can cause the destruction of the soil structure.

Adsorbed soil air is gases and volatile organic compounds adsorbed on the surface of soil particles.

Dissolved soil air is gases dissolved in soil water. The solubility of gases in soil water increases with an increase in their concentration in free soil air, as well as with a decrease in soil temperature. The process of atmospheric air entering the soil and replacing soil air with it is called soil aeration.

Since the oxygen concentration in the soil air is always lower and carbon dioxide is higher than in the atmosphere. Conditions are created under the influence of diffusion for continuous oxygen supply to the soil and the release of CO_2 into the atmosphere. With a decrease in the porosity of aeration, unfavorable soil processes develop; plants suffer from lack of air. Critical values of aeration porosity, at which root growth slows down, anaerobic processes, begin to dominate, and the conditions of functioning of soil biota change markedly.

Breathability increases with increasing pore size. In structural soils, where, along with capillary pores, there are quite a lot of large non-capillary pores, the most favorable conditions for air permeability are created.

The composition of soil air differs significantly from atmospheric air. It has less oxygen and more CO_2. Depending on the course of microbiological processes, the nitrogen content also changes. In swampy and swampy soils, soil air may contain noticeable amounts of NH_3, CH_4, H_2, and H_2S. When the concentration of O_2 in the soil air is below 10 – 15 %, the oppression of some crops begins. At a concentration of 2.5 – 5.0 %, aerobic conditions are replaced by anaerobic ones [1, c. 82].

II. Make up your own questions to the text.

III. Translate the words and word combinations from Russian into English using the dictionary and memorize them.

Воздушный режим почвы; поступление воздуха в почву; почвенный воздух; смесь газов и летучих органических соединений; свободные от воды; передвижения по профилю почвы; изменения состава почвы; изменения физического состояния почвы; взаимодействие с твердой, жидкой и живой фазами почвы; газообмен почвенного воздуха с атмосферным; заполнять поры почвы; свободное состояние почвы; адсорбированное состояние почвы; растворимое состояние почвы; крупные некапиллярные и капиллярные поры почвы; свободно перемещаться; обеспечивать аэрацию почвы; газообмен между

почвой и атмосферой; защемленный почвенный воздух; водные пробки; глинистые почвы; содержание защемленного воздуха; общий объем почвы; препятствовать фильтрации воды в почве; при вытеснении водой; вызвать разрушение почвенной структуры; адсорбированный почвенный воздух; летучие органические соединения.

IV. Translate the words and word combinations from English into Russian using the dictionary and memorize them.

The oxygen concentration; carbon dioxide; the atmosphere conditions; under the influence of diffusion; to supply; a decrease in the porosity of aeration; unfavorable; to develop; plants; to suffer; lack of air; critical values; root growth slows down; anaerobic processes; begin to dominate; pore size; capillary pores; non-capillary pores; the most favorable conditions; the air regime of the soil; phenomena of air; entering the soil; movement along the soil profile; changes in composition and physical condition; interaction with solid, liquid and living phases of the soil; as well as; gas exchange of soil air; atmospheric air; volatile organic compounds; free of water; soil air; free soil; soil aeration; to provide; the trapped soil air; to isolate; by water plugs; clay soils; the content of trapped air; average; the total soil volume; adsorbed soil air; the surface; soil particles; dissolved soil air; solubility of gases in soil; to increase concentration in free soil air; soil temperature.

V. Find the sentences with the following words and word combinations in the text A and translate them into Russian.

The process of atmospheric air; in the porosity of aeration; plants suffer from lack of air; it is called soil aeration; the oxygen concentration; begin to dominate; changes in composition and physical condition; biota change markedly; always lower and carbon dioxide is higher; are created under the influence of diffusion; the destruction of the soil structure; it makes up 6 – 8 % of the total soil volume; anaerobic processes; as well as gas exchange of soil air with atmospheric air; free soil air resides in large non-capillary and capillary pores; that fill the pores of the soil free of wa-

ter; prevents water filtration in the soil gas exchange between the soil and the atmosphere; the content of trapped air can reach 12 % or more; located in the pores and is isolated from all sides by water plugs; practically does not participate in gas exchange; when displaced by water; gases and volatile organic compounds adsorbed on the surface of soil particles; is called the totality of all phenomena of air; with solid, liquid and living phases of the soil; volatile organic compounds; soil air is in three states.

VI. Insert the missing words and word combinations.

1. Soil air … a mixture of … and volatile… … that fill the pores of the soil free of water.

2. … … … is gases and volatile organic compounds … on the surface of … particles.

3. The … … … is located in the … and is isolated from all sides by … plugs.

4. Soil air … in three states: … , … , … .

5. In … … , the content of … … can reach 12 % or more, while on … it makes up 6 – 8 % of the … … volume.

6. … … … resides in large non-capillary and … … of the soil.

7. Since the … … in the soil air … always … and carbon … is higher … in the … .

8. Non-capillary and capillary pores of the soil … … provides soil … and … exchange between the … and the … .

9. Conditions … created under the influence of … for continuous … supply to the … and the release of … into the … .

10. … processes begin to … and the conditions of … of soil … change markedly.

11. With a decrease in the … of … , unfavorable … processes … , plants suffer from … of … .

12. In … … , where, along with … pores, there … quite a lot of large …-… pores.

13. Critical values of … … , at which root growth … … .

14. The trapped air … stationary, practically … … participate in … exchange, prevents … filtration in the … .

15. Dissolved soil … … gases dissolved in … … .

16. Escaping from the … when displaced by … , trapped air … cause the … of the soil … .

17. The solubility of … in … water increases with an … in their concentration in … … air, as well as with a … in soil … .

18. The process of atmospheric air entering the soil and replacing soil air with … … … … … … .

19. … increases with increasing … … .

VII. Translate into English the text B using the dictionary.

РЕГУЛИРОВАНИЕ ВОЗДУШНОГО РЕЖИМА

Важное условие оптимизации воздушного режима – поддержание оптимального структурного состояния почвы, что достигается различными средствами систем земледелия, в том числе применением органических удобрений. Важную роль в регулировании воздушного режима играет обработка почвы, направленная на создание достаточно мощного пахотного слоя, на устранение плужной подошвы. При обеспечении этих условий перспективна минимизация обработки почвы вплоть до полного отказа от нее на почвах с благоприятными физическими свойствами. В этом случае заметно сокращается эмиссия CO_2, что связано, в частности, с уменьшением интенсивности процессов минерализации органического вещества.

Поскольку воздушный режим зависит от увлажнения почвы, оптимизация первого в большой мере связана с регулированием водного режима, особенно в условиях орошения и осушения почв.

При этом необходимо поддерживать уровень грунтовых вод на глубине, обеспечивающей достаточную аэрацию корнеобитаемого слоя. Следует устранять почвенную корку, которая особенно часто образуется при орошении почв. Почвенная корка, затрудняющая доступ воздуха и тем плохо влияющая на рост растений, образуется на

плотных глинистых почвах, когда от сильных дождей изобильно содержащиеся в них иловатые части закупоривают более крупные поры, отчего почвы «заплывают».

Из всех газов почвенного воздуха наиболее динамичны кислород и диоксид углерода. Различную концентрацию кислорода и диоксида углерода в почвенном воздухе объясняют, с одной стороны, интенсивностью потребления кислорода и продуцированием CO_2, а с другой – скоростью газообмена между почвенным и атмосферным воздухом. Выделение CO_2 из почвы в приземный слой атмосферы принято называть дыханием почвы.

VIII. Be ready to give the summary of the text orally. Pay attention to the following expressions and using them make up your own sentences based on the text A.

The text deals with (the problem of)…

It touches upon…

The extract from the article is concerned with…

The article is about…

The text centres round the problem of…

The article focuses on the problem of…

According to the text…

According to the author…

It further says that…

According to the figures (data, information, opinions) from the text…

It is clear from the text that…

The problem of the text is of great importance…

To sum it up…

On the whole…

In conclusion it is possible to say that…

IX. Discuss the following statements.

1. What is the air capacity of the soil and what causes it?
2. What is the difference between soil air and atmospheric air?
3. Is an increase in the concentration of carbon dioxide in soil air harmful or beneficial to plants?
4. What promotes air exchange between soil and atmosphere?
5. The intensity of C02 intake from the soil is determined by the type of soil, its temperature, time of day, season, respiration of roots and microflora. Give your arguments.
6. Soil air is significantly different in composition from atmospheric air. Name the chemical composition of atmospheric and soil air.

X. Make up your own presentation on the topic: "The Greenhouse Effect is a Global Environmental Resource that Affects the Climate".

REVIEWING GRAMMAR

Modal Verbs

Модальные глаголы не обозначают само действие, а указывают на отношение к нему говорящего лица. Модальные глаголы ***can, may, must*** выражают способность, возможность, допустимость, долженствование.

Модальные глаголы употребляются только в сочетании с инфинитивом смыслового глагола **без частицы *to***, исключения составляют

эквиваленты модальных глаголов ***to be able to, to be allowed, to have to, to be to, ought to***. Эти глаголы часто называют недостаточными, так как они:

1) не имеют неличных форм – инфинитива, причастия, герундия;

2) не изменяются ни по лицам, ни по числам (не имеют окончания в 3-м лице единственного числа);

3) образуют вопросительную форму путем постановки модальных глаголов *can, may, must* перед подлежащим, а отрицательную форму – путем добавления отрицания *not* к модальному глаголу.

Для выражения необходимости, допустимости, способности выполнения какого-нибудь действия после подлежащего ставится модальный глагол *can, may, must*, затем смысловой глагол в первой форме.

Shall, will в модальном значении могут употребляться со всеми лицами. Однако чтобы отличить их от вспомогательных глаголов, *shall* употребляется со 2-м и 3-м лицом в значении долженствования, необходимости; *will* с 1-м лицом употребляется в значении желания, намерения. *Will* в модальном значении может выражать также тенденцию к исполнению действия.

Should употребляется как модальный глагол для выражения долженствования или совета для всех лиц единственного и множественного чисел.

Would придает намерение, повторяемость и систематичность действия в прошлом и переводится на русский язык как «бывало, обычно», а в отрицательной форме передает нежелание, противодействие усилиям человека. В технической литературе употребляется для выражения обычности или неизбежности действия.

Варианты употребления модальных глаголов в сочетании с Passive и Perfect Infinitive

Сочетание модальных глаголов с *Infinitive Passive* указывает на то, что подлежащее является объектом, на который направлено действие.

Модальные глаголы ***must, may, might*** в сочетании с *Perfect Infinitive* выражают возможность или вероятность действия, относящегося к прошлому, и обычно переводятся словами «должно быть», «возможно».

Глаголы ***can*** и ***could*** в отрицательной форме в сочетании с *Perfect Infinitive* выражают сомнение в возможности совершения действия в прошлом и обычно переводятся при помощи словосочетания «не может быть».

Модальные глаголы ***ought (to), should, might*** в сочетании с *Perfect Infinitive* указывают на то, что действие, которое могло или должно было бы совершиться, не совершилось.

Таблица модальных глаголов и их эквивалентов

Модальные глаголы и их эквиваленты	**Значение**	**Present**	**Past**	**Future**
1) Can *To be able (to)*	1) физическая, умственная способность, возможность или умение совершения действия; 2) удивление, сомнение по поводу возможности совершения действия. Быть в состоянии совершить действие	Can *Am, is, are able (to)*	Could *Was, were able (to)*	– *Shall/will be able (to)*
2) May *To be allowed (to)*	Разрешение, предположение (с оттенком сомнения) или допускаемая возможность совершения действия. Допущение возможности, разрешение совершить действие	May *Am, is, are allowed (to)*	Might *Was, were allowed (to)*	– *Shall/will be allowed (to)*

Окончание

Модальные глаголы и их эквиваленты	**Значение**	**Present**	**Past**	**Future**
3) Must	Выражает долженствование, предположение, которое граничит с уверенностью, необходимостью и неизбежностью совершения действия.	Must	–	–
To have (to)	Вынужденная необходимость (в силу непредвиденных обстоятельств)	*To have (to)*	*Had (to)*	*Shall/will have (to)*
To be (to)		*To be (be)*	*Was, were (to)*	–
Should	Необходимость, предусмотренная планом; по расписанию; по договоренности.	*Should*	–	–
Ought (to)	Необходимость как нечто требуемое; совет. Необходимость как моральный долг, как нечто отвечающее общепринятым взглядам или когда мы говорим о законе, правилах.	*Ought (to)*	–	–
Needn't	Нет никакой необходимости (нужды) выполнения действия	*Needn't*	–	–

Grammar Exercises

1. Rephrase the following situations using an appropriate modal verb.

1. I advise you to stop eating chocolate. You … stop eating chocolate. 2. I insist that you do your homework. You … do your homework. 3. Will you let me speak to David, please? … I speak to David, please? 4. She can hear you well enough. You … shout. 5. Talking is not permitted during the test. You … talk during the test. 6. It isn't right to speak to your mother like that. You … speak to your mother like that. 7. It isn't possible for him to come to the party. He … come to the party. 8. He is obliged to go to the police station once a week. He … to go to the police station once a week. 9. It's forbidden to feed the animals in the Zoo. You … feed the animals in the Zoo. 10. It's necessary to dust the furniture. You … dust the furniture. 11. Would you mind if I read your book? … I read your book? 12. Perhaps they'll come with us. They … come with us. 13. Would you mind if I use your glasses? … I use your glasses? 14. Let's try doing this exercise. … we try doing this exercise. 15. He can do it himself. Why … he ask anybody for help? 16. Perhaps, she will phone them today. She … phone them today.

2. Choose the correct modal verb.

1. Mike ... play the piano very well. And what about you?

a) can; b) should; c) must.

2. I ... skate when I was little.

a) can't; b) couldn't; c) mustn't.

3. We ... hurry. We've got plenty of time.

a) can't; b) needn't; c) must.

4. ... you help me with this task?

a) Could; b) Must; c) May.

5. I'm sorry I'm late. ... I come in?

a) Must; b) Should; c) May.

6. ... you speak any foreign languages?
a) Can; b) Should; c) May.
7. It’s raining. You ... take an umbrella.
a) can’t; b) don’t have to; c) should.
8. I’m afraid I ... come to the party on Friday.
a) can; b) can’t; c) may.
9. You ... go there at once. It’s really very urgent.
a) don’t have to; b) needn’t; c) must.
10. When I was young, I ... run for miles.
a) could; b) must; c) should.
11. ‘... I translate this sentence?’ ‘No, you needn’t.’
a) Can; b) May; c) Must.
12. ‘... I smoke here?’ ‘No, you mustn’t.’
a) Can; b) May; c) Should.
13. I looked everywhere for the book but I ... find it.
a) couldn’t; b) mustn’t; c) shouldn’t.
14. You ... drive carefully on a busy road.
a) can; b) may; c) should.
15. There’s nothing I ... do about it.
a) can; b) may; c) don’t have to.
16. Schools ... teach children the difference between right and wrong.
a) can’t; b) mustn’t; c) must.
17. I don’t feel well today. ... I leave earlier?
a) Should; b) May; c) Must.
18. That ... be true! It’s absolutely impossible.
a) can’t; b) must; c) needn’t.
19. Yesterday I stayed at home because I ... help my father.
a) must; b) had to; c) can.
20. You ... use my dictionary as long as you like.
a) must; b) have to; c) may.

3. Fill in the necessary modal verbs.

1. Sally's husband ... play football, tennis but he ... not cook or iron. 2. "... I ask you a question?" – "You certainly ...". 3. You ... not put so much sugar in your tea. 4. You ... stay in town for the whole summer or you ... go to the seaside with us if you want. 5. ... I do anything for you? 6. We ... to meet at 5, but I ... put off the meeting till later. 7. Sorry, madam. You ... not smoke here. 8. We ... phone her at her office. She ... be still working. 9. You ... be more attentive next time. 10. In many countries people ... drive the car at the age of 16. 11. I'm sorry. I ... not come at 6 o'clock tomorrow. I ... attend a meeting which begins at the same time. 12. I'm afraid something is wrong. They ... be back an hour ago. 13. – ... you help me with Math? – No, I ... not. I ... read a whole chapter in Geography. 14. We ... hear some music through the open window. 15. I'm late. I ... hurry. 16. You ... not eat so much sweets. You ... become fat. 17. Mother leaves home early on Mondays and he ... make his breakfast himself. 18. Every child ... know traffic rules. 19. It's dark outside, it ... be about 7 o'clock now 20. The doctor says I ... stay in bed for a week.

4. Choose the correct modal verb.

1. I don't want anyone to know it. You (*mustn't / don't have to*) tell anyone. 2. Listen! I (*can / must*) hear someone crying. 3. When we were at school, we (*had to / ought to*) wear a uniform. 4. You (*don't have / mustn't*) wear your seatbelt during the whole of the flight. 5. You (*should / have to*) tell her that you are sorry. 6. You (*need / must*) be a member of the library before you can borrow books. 7. I (*needn't / shouldn't*) wear glasses because my eyesight is still quite good. 8. When I first come to Madrid, I (*could / couldn't*) say only a few words in Spanish. 9. Helen (*must / had to*) leave the meeting early because she had a train to catch. 10. I (*didn't need to / couldn't*) get tickets after all – they were sold out. 11. I left my bike outside the house last night and this morning it isn't there any more. Somebody (*can't / must*) have stolen it. 12. 'I can't find my umbrella.' 'You (*should / might*) have left it in the restaurant last night.' 13. (*Must / May*) I see your passport, please? 14. He's not working tomor-

row, so he (*doesn't have to / should*) get up early. 15. Ann was in a very difficult situation. It (*must / can't*) have been easy for her. 16. That shirt is dirty. You (*have to / needn't*) wash it. 17. Last year I got a lot of money, so we (*had to / were able to*) buy a new house. 18. I had forgotten to bring my camera, so I (*couldn't / shouldn't*) take any pictures. 19. Don't tell anybody what I said. You (*must / can*) keep it secret. 20. I'm really hungry. I (*could / might*) eat a horse!

5. Complete this text using the verbs below.

should (4) can (3) ought (1) have to (1) need (1)

How to be a friend of the Earth

There are many simple things we … (1) all do to stop the destruction of the environment. First of all, we … (2) not dump our rubbish without thinking which things, such as bottles and paper, … (3) be recycled. We … (4) put objects that we … (5) recycle in recycling bins. Secondly, instead of taking our car wherever we go, we … (6) to leave it at home whenever possible, and go on foot or by public transport. If there is something wrong with our car's exhaust pipe, we … (7) get it fixed immediately. When we … (8) to drive to the supermarket to do our shopping, we … (9) always remember to take our own bag, so that we don't … (10) to use the supermarket's plastic bags.

6. Translate the sentences using modal verbs.

1. Он, наверное, учит это стихотворение уже час. 2. Тебе следовало бы давно забыть об этом. 3. Автобус должен был прийти пять минут назад. 4. Не может быть, чтобы он был занят сейчас. 5. Возможно, он сможет помочь тебе. 6. Вам не надо приходить завтра. 7. Должно быть, ему пришлось сделать это. 8. Не могли бы Вы повторить свой вопрос? 9. Может быть, мне придется работать в воскресенье. 10. Вероятно, он все еще ждет меня. 11. Тебе следует закончить эту работу. 12. Через год я смогу говорить по-английски очень хорошо. 13. Что тебе пришлось делать вчера? 14. Можно мне выйти? 15. Он должен был прийти час назад. 16. Неужели он забыл про мой

день рождения? 17. Учитель сказал, что мы можем идти домой. 18. Ты не должен читать эту книгу. 19. В прошлом году я не умел плавать, а теперь могу. 20. Возможно, он все еще ждет меня.

7. Translate the sentences into Russian.

1. Carol can speak three foreign languages. 2. Could you help me with my translation? 3. We were to meet at the railway station at 12 o'clock. 4. You may take a day off whenever you like. 5. Jim said that he might go home for the holidays. 6. You must tell me the truth. 7. I have to do some shopping today. 8. You don't have to answer my question if you don't want to. 9. Students should be well prepared for every exam. 10. Do you think Paul ought to see a doctor? 11. If you don't take your umbrella, you can get wet. 12. When Bob was a child he could play the piano wonderfully. 13. It can't true. 14. May I have my test on Tuesday? 15. It's 7 o'clock now. They must be at home now. 16. Do we have to stay in town the whole summer? 17. Children shouldn't smoke. 18. You oughtn't to eat cakes. 19. He might be ill. He ate too much yesterday. 20. Parents must take care of their children.

Unit 14. BIOLOGICAL PROCESSES IN THE SOIL

I. Read and translate the text A.

SOIL BIOTA. SOIL ALGAE AND THEIR FUNCTIONING

The totality of numerous populations of various organisms performing these functions is called "soil biota". It is represented by higher plants, soil algae, animals, fungi, lichens, prokaryotes, viruses and phages.

Among the soil algae, the most widespread are green and blue-green (about 500 species of each department), followed by diatoms (about 300 species. and yellow-green (more than 150 species). The role of algae as the first settlers on various mineral substrates is known, inhabiting rocks and various surfaces with sufficient illumination. Algae are found in all soils,

including semi-arid and desert soils. Their number and biomass depend on humidity and lighting conditions, varying from 5.000 to 1.5 million cells per 1 g of soil.

Their number increases on surfaces with a low projective coating of higher plants, in particular on salt pans, takyrs. The annual production of soil algae in different soils ranges from 50 to 1500 kg/ha.

The functions of algae in soils are determined by the role of primary producers of organic matter, as well as the accumulation of organic matter enriched with nitrogen.

Blue-green algae (cyanobacteria) are able to fix atmospheric nitrogen. This exceptional ability of cyanobacteria (prokaryoteS. it is not peculiar to other algae -eukaryotes), for which ammonium and nitrate compounds serve as nitrogen sources In this regard, algae compete with plants for available forms of nitrogen. In fallow fields and after harvesting, the development of algae can contribute to the temporary fixation of nitrogen compounds and prevent their leaching from the soil.

Algae have a beneficial effect on the oxygen regime of soils, on the soil structure. Since they are photosynthetic microorganisms, they do not need ready-made organic substances. However, in soil layers where sunlight does not penetrate, some of them begin to lead a heterotrophic lifestyle and absorb dissolved organic substances. The degree of manifestation of different types of nutrition in the metabolism of algae depends on the illumination, the amount of organic and mineral substances in the medium, the redox potential and the pH of the medium. Algae are sensitive indicators of soil pollution.

Green algae react sensitively to salinization, pH changes have a detrimental effect on blue-green ones. Yellow-green algae (Latin Xanthophyta) or Heterocontae (Latin Heterocontae) is a division of lower plants that includes algae whose chloroplasts are colored yellow-green or yellow.

Yellow-green algae serve as indicators of soil contamination with pesticides and other toxins. Representatives are unicellular, colonial and multicellular, mainly freshwater organisms. Similarly to golden algae, the division of yellow-green into classes is based on the diversity of the morphological organization of the thallus [1, c. 97 – 101].

II. Make up your own questions to the text.

III. Translate the words and word combinations from Russian into English using the dictionary and memorize them.

Водоросли; первопоселенцы; различные минеральные субстраты; заселять; скалы; атмосферный азот; различные поверхности; достаточное освещение; обнаруживать; сине-зеленые водоросли (цианобактерии); фиксировать; исключительная способность цианобактерий; источники азота; в том числе; полупустынные почвы; пустынные почвы; численность; биомасса; зависеть от влажности; условия освещения; изменяться; клетки; количество; солонцы; такыры; почвенные водоросли; функции водорослей; роль первичных продуцентов органического вещества; аммонийные и нитратные соединения во всех почвах; накопление органического вещества; обогащенные азотом почвы; обеспечивая воспроизводство ее плодородия и экологических функций; совокупность многочисленных популяций; разнообразные организмы; «почвенная биота»; животные; грибы; лишайники; прокариоты; вирусы; фаги; конкуренты растений; доступные формы азота; паровые поля; после уборки урожая; развитие водорослей; временное закрепление соединений азота; предотвращать вымывание из почвы; благоприятное влияние; кислородный режим почв; почвенная структура; фотосинтезирующие микроорганизмы; готовые органические вещества; слои почвы; солнечный свет; гетеротрофный образ жизни; поглощать растворенные органические вещества.

IV. Translate the words and word combinations from English into Russian using the dictionary and memorize them.

Green algae; yellow-green algae; golden algae; blue-green algae; salinization; a detrimental effect; unicellular, colonial and multicellular; freshwater organisms; a division of lower plants; to include; chloroplasts; to serve; animals; fungi; lichens; indicators of soil contamination; pesticides; toxins; rrepresentatives; based on the diversity of the morphological organization of the thallus; various organisms; to per-

form; represented by higher plants; soil algae; prokaryotes; viruses; phages; the most widespread; species; diatoms; various mineral substrates; to inhabit; rocks; various surfaces; sufficient illumination; semi-arid and desert soils; to depend on humidity; lighting conditions; on surface; a low projective coating of higher plants; in particular; on salt pans; takyrs; the annual production of soil algae; to determine by; organic matter; as well as; the accumulation of organic matter; nitrogen; to fix atmospheric nitrogen; a beneficial effect; the oxygen regime of soils; the soil structure; photosynthetic microorganisms; ready-made organic substances; begin to lead a heterotrophic lifestyle.

V. Find the sentences with the following words and word combinations in the text A and translate them into Russian.

In soil layers; does not penetrate; the amount of organic and mineral substances; absorb dissolved organic substances; different types of nutrition; in the medium; can contribute to the temporary fixation of nitrogen;sensitive indicators of soil pollution; exceptional ability of cyanobacteria; and nitrate compounds serve as nitrogen sources; primary producers of organic matter; functions of algae in soils for available forms of nitrogen; on surfaces with a low projective coating of higher plants; in different soils ranges from 50 to 1500 kg/ha; able to fix atmospheric nitrogen; the most widespread are green and blue-green; that includes algae whose chloroplasts; algae as the first settlers on various mineral substrates; with sufficient illumination; including semi-arid and desert soils; lighting conditions, varying from 5.000 to 1.5 million cells per 1 g of soil; the totality of numerous populations; is called “soil biota”; higher plants, soil algae, animals, fungi, lichens, prokaryotes, viruses and phages; react sensitively to salinization; a detrimental effect on blue-green ones; is a division of lower plants; serve as indicators of soil contamination ; unicellular, colonial and multicellular, mainly freshwater organisms; to golden algae, the division of yellow-green; the morphological organization of the thallus.

VI. Insert the missing words and word combinations.

1. The totality of numerous … of various organisms … these functions is called "… …".

2. Their number … … … with a low projective … of higher … , in particular on … … , takyrs.

3. It … represented by … plants, soil … , animals, … , lichens, … , viruses and … .

4. The … production of … … in different soils … from … to … .

5. The … of algae as the … settlers on various… substrates is … , inhabiting rocks and various … with sufficient … ..

6. The functions of … in … are determined… the role of … producers of organic … .

7. Algae … found in … soils, including …-… and desert … .

8. Blue-green algae … able … fix atmospheric … . In this regard, algae compete with plants for available forms of nitrogen. In fallow fields and after harvesting, the development of algae can contribute to the temporary fixation of nitrogen compounds and prevent their leaching from the soil.

9. Their … and … depend … humidity and … conditions, varying from 5.000 to … … per 1 g of … .

10. This exceptional … of cyanobacteria for which …and … compounds serve as … sources.

11. Yellow-green algae serve as … of … contamination with … and other toxins.

12. In this regard, algae … with … for available forms of … .

13. Representatives …unicellular, … and multicellular, mainly … organisms.

14. In … … and after … , the development of algae …contribute to the … fixation of … compounds and … their … from the soil.

15. Similarly to … … , the division of …-… into classes… based … the diversity of the … organization of the … .

16. The degree of … of different types of nutrition in the … of algae depends on the … .

17. Algae … a beneficial … … the … regime of soils and on the soil … .

18. Since … … photosynthetic … , they do not need …-…organic substances.

VI. Translate into English the text B using the dictionary.

ПОЧВЕННЫЕ ГРИБЫ И ИХ ФУНКЦИИ

Почвенные грибы – это разнородная и многообразная в таксономическом отношении группа сапротрофных организмов. Они обитают в почве и на всех поступающих в почву субстратах животного и главным образом растительного происхождения, осуществляя превращение этих субстратов с новообразованием органического вещества. К почвенным грибам могут относиться и некоторые факультативные паразиты, проходящие часть цикла развития как сапротрофы в почве.

Грибы играют особую роль в разложении органического вещества почв. Соприкасаясь с субстратом клеточной оболочкой, они выделяют через последнюю во внешнюю среду ферменты и поглощают питательные вещества абсорбтивным путем.

Все почвенные грибы – аэробные организмы. Среди них есть паразиты и симбиотрофы, хищники и сапрофиты, развивающиеся на мертвых остатках растений и животных. Грибы являются гетеротрофами, но в зависимости от набора ферментов, которыми они располагают, выделяют экологические группы, различающиеся по своим пищевым потребностям и возможностям освоения субстратов.

Различают так называемые сахарные грибы, использующие легкодоступные углеводы, крахмал, гемицеллюлозу. Более медленно растут целлюлозо-разрушающие грибы, которые не выдерживают конкуренции с сахарными грибами за легкодоступные субстраты. В группу разлагателей лигнина входят грибы, которые начинают развиваться, когда все легкодоступные субстраты уже использованы.

По мере разложения растительных остатков начинают развиваться грибы, способные разлагать гумусовые вещества.

Многие почвенные грибы синтезируют черные пигменты – меланины. После отмирания мицелия меланины накапливаются в почве и входят в состав почвенного гумуса. Мицелий грибов агрегирует почвенные частицы, структурируя почву. Грибы выделяют в среду многие органические кислоты, растворяют труднодоступные для растений фосфаты. Они способны осуществлять процесс гетеротрофной нитрификации. За одни сутки грибы разлагают в 1 – 2 раза больше органического вещества, чем потребляют.

VIII. Be ready to give the summary of the text orally. Pay attention to the following expressions and using them make up your own sentences based on the text A.

The text deals with (the problem of)…

It touches upon…

The extract from the article is concerned with…

The article is about…

The text centres round the problem of…

The article focuses on the problem of…

According to the text…

According to the author…

It further says that…

According to the figures (data, information, opinions) from the text…

It is clear from the text that…

The problem of the text is of great importance…

To sum it up…

On the whole…

In conclusion it is possible to say that…

IX. Discuss the following statements.

1. Soil biota. General characteristics, ecological features, taxonomy.
2. Higher plants, their connection with soil formation.
3. Soil algae. Features of their use of soil as a habitat.
4. Soil animals. General characteristics.
5. Soil protozoaand their relationship to the soil.
6. Worms in the soil. The main groups of soil worms. The role of worms in the soil formation process.
7. All soil fungi are aerobic organisms. Give a brief description of each class of mushrooms.
8. Cellulose-destroying fungi grow more slowly, which cannot compete with sugar mushrooms. Name the reasons.

X. Make up your own presentation on the topic: "Soil Processes Occurring with the Participation of Animals".

REVIEWING GRAMMAR

The Infinitive

Инфинитив, являясь неличной формой глагола, имеет свойства как существительного, так и глагола. Инфинитив может выполнять функции подлежащего, дополнения, обстоятельства, определения, а также может быть именной частью составного сказуемого (***To make*** *mistakes is easy;* ***It*** *is easy* ***to make*** *mistakes.* – Ошибиться легко

(в функции ***подлежащего***); *His task was* ***to complete*** *the work in time. – Его задача состояла в том, чтобы закончить работу вовремя* (в функции ***именной части сказуемого***); *He likes* ***to read*** *English. – Ему нравится читать по-английски* (в функции ***дополнения***); *He stopped for a minute* ***to rest (in order to rest).*** *– Он остановился, чтобы передохнуть* (в функции ***обстоятельства цели***); *He's looking for a place* ***to live in.*** *– Он ищет себе жилье*. (в функции ***определения***) (буквально: место, где он может жить)).

Если определение выражено инфинитивом в пассивной форме, то на русский язык оно переводится придаточным определительным предложением с оттенком долженствования (*The texts* ***to be typed*** *today are* ***on*** *your desk. – Тексты, которые следует напечатать сегодня, на Вашем столе* (в функции ***определения***)).

Формы инфинитива

Voice Tense	**Active**	**Passive**
Indefinite	He is glad to help his friend – Он рад *помочь* своему другу	He is glad to be helped – Он рад, что ему *помогают*
Continuous	He is glad to be helping his friend – Он рад, что *помогает* своему другу (сейчас)	–
Perfect	He is glad to have helped his friend – Он рад, что *помог* своему другу	He is glad to have been helped – Он рад, что ему *помогли*

Инфинитив в функции определения после слов ***the first, the last*** и т. п. переводится на русский язык глаголом в личной форме в том времени, в каком стоит глагол-сказуемое английского предложения (*He was the first* ***to come.*** *– Он* ***пришел*** *первым*.)

Употребление форм инфинитива

Инфинитив может выражать характер действия (длительность, законченность) и имеет залог.

1. *Indefinite Infinitive* (*Active* и *Passive*) обозначает действие, одновременное действию, выраженному глаголом-сказуемым (***I*** *want* ***to show*** *you a new picture* (*Active*). – ***Я*** *хочу* ***показать*** *вам новую картину*; *I want* ***to be shown*** *a new picture* (*Passive*). – *Я хочу, чтобы* ***мне показали*** *новую картину*).

2. *Continuous Infinitive* (*Active)* обозначает действие, которое развивается одновременно с действием, выраженным глаголом-сказуемым (*Why's she so late? She can't still* ***be working.*** *– Почему она опаздывает? Не может быть, чтобы она все еще работала*).

3. *Perfect Infinitive* (*Active* и *Passive*) обозначает действие, предшествовавшее действию, выраженному глаголом-сказуемым (*She said she was sorry* ***to*** *have* ***missed*** *you. – Она сказала, что сожалеет, что не встретилась с вами*).

The Objective Infinitive Construction

Объектный инфинитивный оборот (сложное дополнение Complex Object) представляет собой *существительное* (в общем падеже) или *местоимение* (в объектном падеже: ***me, him, her, us, you, them***) + + *инфинитив смыслового глагола.*

Объектный инфинитивный оборот равнозначен придаточному предложению и поэтому имеет два элемента: имя (существительное или местоимение), обозначающее лицо или предмет, которое совершает действие (соответствует подлежащему придаточного предложения), и инфинитив, выражающий действие, совершаемое лицом или предметом (соответствует сказуемому придаточного предложения). Поэтому объектный инфинитивный оборот переводится на русский язык придаточным дополнительным предложением, вводимым союзами ***что, чтобы, как*** (*I expect that she will come tomorrow;* ***I*** *expect* ***her to come*** *tomorrow. – Я ожидаю, что она придет завтра*).

Объектный инфинитивный оборот употребляется после глаголов, выражающих:

1) желание или потребность: ***want, wish, desire, should like*** (***He*** *wants* ***me to help*** *him. – Он хочет, чтобы я помог ему; I wish* ***my friends to come*** *on Sunday. – Я хочу, чтобы мои друзья пришли в воскресенье*);

2) предположение, мнение, суждение: ***suppose, expect, consider, assume, prove, believe, understand, think*** (*I consider* ***him to be*** *dangerous. – Я считаю, что он опасен; They expect* ***the ship to arrive*** *tonight. – Они ожидают, что пароход прибудет сегодня вечером*);

3) физическое восприятие и ощущение: ***watch, observe, notice, see, hear, feel***. После всех этих глаголов, а также после глаголов ***to make, to cause*** в значении ***заставлять, вынудить*** инфинитив употребляется ***без частицы to*** (*We did not see* ***the teacher enter*** *the room. – Мы не видели, как преподаватель вошел в комнату; Have you heard* ***him*** *play the piano? – Вы слышали, как он играет на пианино?*);

4) знание, осведомленность, утверждение, констатацию факта: note; ***find, claim, state*** (*We found* ***him (to be)*** *dishonest. – Мы обнаружили, что он нечестен*);

5) принуждение, разрешение или запрет: ***make, cause, force, allow, permit, order, to command, to enable***. Объектный инфинитивный оборот после этих глаголов не переводится развернутым придаточным предложением (*Our English teacher makes us* ***learn*** *the words for every lesson. – Наш преподаватель английского языка заставляет нас учить слова к каждому уроку*).

The Subjective Infinitive Construction

Субъектный инфинитивный оборот (сложное подлежащее Complex Subject) состоит из *существительного* (в общем падеже) или *местоимения* (в именительном падеже: ***I, you, he, she, it, we, they***) + + *инфинитива смыслового глагола*, стоящего после сказуемого (***The results obtained*** *are considered* ***to be satisfactory.*** *– Считают, что полученные результаты удовлетворительны*).

Субъектный инфинитивный оборот употребляется:

1) когда сказуемое выражено следующими глаголами в страдательном залоге: ***to know*** **–** знать; ***to consider*** **–** считать, рассматривать; ***to say*** **–** говорить; ***to state*** **–** заявлять, сообщать; ***to report*** **–** сообщать; ***to think*** **–** думать, считать; ***to believe, to find*** **–** полагать, считать, ***to suppose, to assume*** **–** предполагать; ***to expect*** **–** ожидать и др. **(*The atom*** *is known* ***to emit*** *rays of different length. – Известно,* ***что атом испускает*** *лучи различной длины. Или: Атом, как известно, испускает лучи различной длины*);

2) когда сказуемое выражено глаголами, которые употребляются в действительном залоге: ***to seem, to appear*** **–** казаться; ***to prove*** **–** оказываться; ***to happen*** **–** оказываться, случаться (***The capacity of this mobile power station*** *seems* ***to range*** *from 600 to 700 kilowatts. –* ***Мощность этой передвижной электростанции****, как оказывается, колеблется от 600 до 700 киловатт*).

Глагол ***to appear*** в таких предложениях часто переводится «по-видимому» (***This laboratory*** *appears* ***to be working out*** *new possible applications of a laser. – По-видимому,* ***в этой лаборатории разрабатываются*** *новые возможные применения лазера*);

3) когда сказуемое выражено прилагательными: ***likely*** **–** вероятный, ***unlikely*** **–** маловероятный; **certain** **–** несомненный; ***sure*** **–** верный в сочетании с глаголом ***to be*** (*Under these conditions* ***the output of the plant*** *is likely* ***to increase. –*** *При этих условиях* ***производительность завода,*** *вероятно*, ***увеличится***; ***The application of this device*** *is certain* ***to give*** *better results. – Применение этого прибора несомненно даст лучшие результаты*).

Предложение с субъектным инфинитивным оборотом переводится на русский язык:

1) сложноподчиненным предложением. Сказуемое английского предложения, которое стоит в страдательном залоге **(*is said, was considered*)**, переводится на русский язык глаголом в 3-м лице множественного числа (*говорят, полагали* и т. д.), за которым следует придаточное дополнительное предложение с союзом *что*;

2) простым предложением с вводными словами: *как известно, как считали, вероятно, по-видимому.*

Как уже говорилось, перфектные формы инфинитива выражают действие, предшествующее действию глагола-сказуемого, и переводятся на русский язык глаголом в прошедшем времени (***The new device*** *is reported* ***to have been put*** *into mass production. – Сообщают,* ***что*** *этот новый* ***прибор*** *уже* ***запущен*** *в массовое производство*).

Предложный инфинитивный оборот *for* + существительное (местоимение) + **инфинитив с *to*** выполняют роль любого члена предложения – дополнения, обстоятельства, части сказуемого и так далее и переводятся придаточным предложением, вводимым союзами *что, чтобы, для того чтобы,* подлежащим которого становится существительное или местоимение, стоящее перед инфинитивом, а сказуемым – инфинитив (*Everybody waited* ***for the new data*** *of the experiment* ***to be published.*** *– Все ожидали,* ***что новые данные*** *эксперимента* ***будут опубликованы***).

Возможен перевод этого оборота существительным или инфинитивом (*It was important* ***for us to solve*** *this problem as soon as possible. – Нам было важно* ***решить*** *эту проблему как можно скорее*).

Grammar Exercises

1. Translate paying attention to the form and function of the Infinitive.

My hobby is to read books. I like to read books everywhere – at home, at the institute, but mostly in the bus on my way home or to the institute. If I want to read a book I always remember that some books are to be tasted, others to be swallowed, and some few to be chewed and digested. I also know well that there is a great difference between the eager man who wants to read a book, and the tired man who wants a book to read.

2. Translate the phrases given below paying attention to the form and function of the infinitives.

I am happy to help you.
I am glad to have helped him.
He was glad to have been helped.
I am glad to be helping them.
I am glad to be helped.
I am glad to be helping them.
I am glad to be helped.
To send the letter to inform them.
The house to be built.
To build the road to connect two towns.

3. Translate the phrases and say how the attribute is expressed.

The remark made.
The distance travelled.
The money paid.
The delayed train.
The translated article.
The problem to be solved.
The new device to be introduced.
The theory to be considered.
The instrument to be used.
The bridge to be constructed.

4. Translate the sentences below paying attention to the form and function of the infinitives.

1. They were happy to take part in our expedition. 2. She wanted to be answered at once. 3. He was happy to be working with the famous scientist. 4. It's very difficult to drive a car in a big city. 5. Water may be used to drive dynamos which generate electricity. 6. Sputniks do not need any additional energy to move along their orbit. 7. Newton made use of the three laws of motion to explain the movement of the Moon around the Earth and of the planets around the Sun. 8. To extend the main street they had to destroy some old buildings. 9. The workers will use powerful machinery to assemble these huge units. 10. He was saving money to travel about the country.

5. Translate the sentences below paying attention to the form and function of the infinitives.

1. The problem to be discussed is connected with the city water supply system. 2. This method is not good enough to be used everywhere.

3. A new comfortable coach was developed to transport people over long distances. 4. It did not take much time to pave the road. 5. The internal combustion engine to be used in this lorry is of a new design. 6. The road surface to be repaired was destroyed many years ago by heavy vehicles. 7. Goods to be transported to the north are stored at the railway station. 8. He was too tired to be asked any questions. 9. England looks like one well-ordered park. Englishmen like to preserve various old trees. There are some trees which were even too old to be cut for building ships in the seventeenth century. 10. A high speed electronic machine has introduced great changes in carrying out various mathematical calculations. This electronic machine works according to a programme to be prepared in advance and can carryout several thousand arithmetic operations per second.

6. Translate the sentences below paying attention to the Complex Object with the infinitive used with and without *to.*

1. He wanted us to visit the art exhibition. 2. I expect you to tell me everything. 3. I suppose her to be about 50. 4. The teacher does not consider him to be a good student. 5. The engineer expected the work to be done in time. 6. We expect you to show good results. 7. We know him to have graduated from the Institute two years ago. 8. Everybody knows him to be working on a new book. 9. We thought him to have taken part in their experiment. 10. She felt somebody touch her. 11. We heard him come in and close the door behind him. 12. She watched the boy buy a newspaper, open it, look it through and then throw it away. 13. I heard him mention my sister's name. 14. Many people like to watch the sun rise. 15. She saw her son fall and shouted.

7. Translate the sentences below paying attention to the Complex Subject.

1. The lecture was said to be very interesting. 2. The members of the committee are reported to come to an agreement. 3. The English delegation is believed to come at the end of the month. 4. She seems to know English and French. 5. He proved to be a good teacher. 6. This school is considered

to be the best in the town. 7. The weather appears to be improving. 8. The doctor happened to be there at the time of the accident. 9. She seems to be waiting for you. 10. Lake Baikal is said to be the deepest in the world.

8. Translate the sentences below paying attention to the infinitive constructions (Complex Object and Complex Subject).

1. A lot of people came to watch the ocean liner return home after a long voyage. 2. Everybody thought him to be quite a reliable person. 3. The captain declared the load to be too much for his small boat. 4. He seems to know a great deal about the history of navigation. 5. The boat, though very small, proved to be quite reliable. 6. The 20th century is considered to be the century of space travels. 7. The motor proved to be quite efficient. 8. Atomic ice-breakers are known to operate on a negligible quantity of atomic fuel. 9. The results of the test were found to be very interesting. 10. I know them to be working on the problem of protecting the cosmonauts from the effect of sun radiation. 11. Rubber is known to have been brought from America. 12. Ink is supposed to have been invented in Egypt. 13. We expected him to be appointed director of a new automobile plant. 14. This question appears to be of great importance. 15. The plan proved to be a great success.

9. Translate into Russian paying attention to the translation of the infinitive and infinitive constructions.

1. The child wanted to be taken seriously. 2. He didn't hear the boy enter the room. 3. The dog was the first to feel danger. 4. This question is too complicated to be answered at once. 5. To explain the problem the students were interested in, the engineer demonstrated some diagrams. 6. A delegation is expected to arrive in the capital of the country to discuss the creation of a shipping line to operate between the two countries. 7. The computer is said to be able to do computation in milliseconds. 8. He seemed to be completely exhausted after a whole day of hard work. 9. His knowledge of the subject proved to be both deep and many-sided. 10. Nothing could make him change his decision. 11. I tried to make him understand that his behaviour was no good. 12. He knows the language well enough to read English newspapers and magazines.

Unit 15. TYPES OF SOILS AND THEIR CLASSIFICATION

I. Read and translate the text A.

CLASSIFICATION OF FERTILIZERS

Fertilizers are substances designed to nourish plants and increase soil fertility.

Fertilizers are divided into 4 groups:

1) organic;

2) mineral;

3) organomineral;

4) bacterial.

Organic fertilizers are the organic substances of plant or animal origin: manure, slurry, peat, bird droppings, compost, household waste, straw, green fertilizer, feces, vermicompost. The nutrients in them are in organic form and are used by plants after mineralization for several years. Organic and some limestone fertilizers are classified as local fertilizers, since farms prepare them on their own from industrial waste such as manure, slurry, garbage, etc. or natural resources such as peat, lime, limestone tuffs, sapropel, dolomite, natural dolomite flour, marl, gage, peat, lying on the territory of the farm.

Mineral (artificial) fertilizers are fertilizers of chemical (industrial-factory) or fossil origin containing nutrients in mineral form. Nutrients are elements of fertilizer necessary for the growth and development of plants, to increase soil fertility.

Organomineral fertilizers are a mixture of organic and mineral fertilizers obtained in a single technological process or by mechanical mixing.

This group includes the “Universal” (its base is pure lowland peat, N – 7 %, P – 7 %, K – 8 %, MgO – 1.5 %), “Root mixture” (the basis is chicken manure, N – 5 %, P – 3 %, K – 5 %, trace elements) and others.

Organomineral fertilizers are currently intensively supplied to the retail trade. They are used in personal subsidiary farms when planting plants and sowing seeds in the ground, for the preparation of soil mixtures.

Bacterial fertilizers are preparations containing selectively-cultivated microorganisms that fix atmospheric nitrogen, or mineralize the organic matter of the soil and fertilizers (azotobacterin, soil nitragin, phosphorobacterin, etc.). Bacteria preparations are classified as artificial fertilizers.

According to the nature of the effect on soil and plant growth, fertilizers are divided into direct and indirect fertilizers.

Direct-acting fertilizers are used to nourish plants, to create crop productivity they are nitrogen, phosphorus, nitrogen-phosphate, boric, nitrogen-phosphorus-potassium, manure, compost, etc.

Indirect fertilizers are used to improve soil properties or affect the mobilization of nutrients contained in it (limestone, gypsum, bacterial). The division of fertilizers into direct and indirect action is very conditional, since any direct-acting fertilizer is also indirect. Once in the soil, fertilizers can have both a positive effect on soil properties and the nutrient regime of plants, and a negative one. For example, it can be over-calcification and phosphorification of soils, accumulation of nitrates, heavy metals and nonmetals, radionuclides in plants.

II. Make up your own questions to the text.

III. Translate the words and word combinations from Russian into English using the dictionary and memorize them.

Удобрения; вещества; питание растений; повышение плодородия почвы; в течение нескольких лет; органические удобрения; навоз; навозная жижа; торф; удобрения химического происхождения; хозяйственные отходы; солома; зеленое удобрение; фекалии; в минеральной форме; биогумус; птичий помет; компост; элементы питания; растительного или животного происхождения; органическая форма;

путем механического смешивания; использовать; после минерализации; куриный помет; минеральные удобрения; искусственные удобрения; рост и развитие растений; повышение плодородия почвы; удобрения промышленно-заводского происхождения; органическое вещество почвы; азотобактерин; удобрения ископаемого происхождения; содержать питательные элементы; органоминеральные удобрения; смесь органических и минеральных удобрений; получать; единый технологический процесс; фосфорные; азотно-фосфорные; борные; чистый низинный торф; корневая смесь; микроэлементы; бактериальные удобрения; культура микроорганизмов; атмосферный азот; нитрагин почвенный; фосфоробактерин; удобрения прямого и косвенного действия; для питания растений; для создания продуктивности культур; азотные; азотно-фосфорно-калийные удобрения.

IV. Translate the words and word combinations from English into Russian using the dictionary and memorize them.

According to the nature; the effect on soil and plant growth; nitrogen-phosphorus; boric; fertilizers; divided into; direct and indirect fertilizers; to feed plants; to create crop productivity; nitrogen; phosphorus; nitrogen-phosphorus-potassium; manure; compost; indirect fertilizers; to improve soil properties; the mobilization of nutrients; limestone; gypsum; bacterial; the division of fertilizers; conditional; a positive effect on soil properties; the nutrient regime of plants; calcification and phosphorification of soils, accumulation of nitrates; heavy metals; non-metals; radionuclides in plants; bacterial fertilizers; selectively-cultivated microorganisms; atmospheric nitrogen; mineralize the organic matter of the soil; azotobacterin; soil nitragin; phosphorobacterin; bacteria preparations; artificial fertilizers; organic fertilizers; manure; slurry; peat; bird droppings; compost; household waste; straw; green fertilizer; feces; vermicompost; for several years; limestone fertilizers; farms prepare them; from industrial waste;

garbage; natural resources; peat; lime; limestone tuffs; sapropel; dolomite; natural dolomite flour; marl; gage; on the territory of the farm.

V. Find the sentences with the following words and word combinations in the text A and translate them into Russian.

Fertilizers are substances; increase soil fertility; divided into four groups; fertilizers of chemical (industrial-factory); containing nutrients in mineral form; elements of fertilizer necessary for the growth; to increase soil fertility; a mixture of organic and mineral fertilizers; by mechanical mixing; this group includes the "Universal"; the basis is chicken manure; intensively supplied to the retail trade; in personal subsidiary farms; the preparation of soil mixtures; preparations containing selectively-cultivated microorganisms; fix atmospheric nitrogen; Bacteria preparations are classified as artificial fertilizers; the effect on soil and plant growth; direct and indirect fertilizers; to feed plants, to create crop productivity; to improve soil properties or affect the mobilization of nutrients contained in it; fertilizers into direct and indirect action; since any direct-acting fertilizer is also indirect; fertilizers can have both a positive effect on soil properties; phorification of soils, accumulation of nitrates, heavy metals and non-metals, radionuclides in plants; fossil origin containing nutrients in mineral form.

VI. Insert the missing words and word combinations.

1. … … … a mixture of organic and mineral fertilizers obtained in a single … process or by … mixing.

2. Fertilizers … substances intended for … plants and increase … fertility.

3. Organomineral fertilizers are currently … supplied to the … … .

4. Organic … … the organic substances of plant or … origin.

5. They … … in personal subsidiary … when planting … and … seeds in the ground, for the … of soil mixtures.

6. The … in them … in … form and … used … plants after mineralization for … years.

7. … … are used to … soil properties or affect the … of nutrients contained in it (… , … , …).

8. … and some … fertilizers … classified as … fertilizers, … farms prepare them on their … from … waste.

9. … fertilizers … preparations containing selectively-cultivated … that fix atmospheric … , or mineralize the … … of the soil and … .

10. Once in the … , fertilizers … … both a … effect on soil properties and the nutrient … of plants, and a … one.

11. … preparations … classified as … fertilizers.

12. The … of fertilizers into … and … action is very … , since any direct-acting … … also indirect.

13. According to the … of the effect on … and plant … , fertilizers … divided … direct and … fertilizers.

14. … … are fertilizers of … or fossil … containing nutrients in mineral form.

15. Nutrients … elements of … necessary for the … and development of plants, to … soil fertility.

16. …-… fertilizers … used to … plants, to create crop productivity.

VII. Translate into English the text B using the dictionary.

МИНЕРАЛЬНЫЕ УДОБРЕНИЯ И ИХ СВОЙСТВА

Минеральные удобрения – это соли, получаемые путем химической или механической обработки минерального сырья (апатитов, фосфоритов, калийных солей, доломитов и др.). Исходное сырье для удобрений – атмосферный азот; побочные продукты некоторых химических производств, содержащие элементы питания для растений (газы коксовых печей, шлаки).

Минеральные удобрения по химическому составу подразделяют на простые (одинарные, односторонние, однокомпонентные) и комплексные (многосторонние). Простые минеральные удобрения содержат только один из основных элементов питания, т. е. одно действующее вещество. Однако это определение условно, так как в простых удобрениях кроме одного из основных элементов питания могут содержаться в качестве примесей сера, магний, кальций и микроэлементы.

Простые минеральные удобрения по действующему веществу делят на азотные, фосфорные, калийные, магниевые, борные, медные, кобальтовые, марганцевые и др. ***Азотные удобрения*** в зависимости от формы соединения азота подразделяют на шесть групп: аммонийные, нитратные, аммонийно-нитратные, аммиакаты и азотные растворы, амидные, аммиачные. ***Фосфорные удобрения*** по растворимости и усвояемости растениями подразделяют на четыре группы: растворимые в воде, полурастворимые, труднорастворимые, комбинированные. ***Калийные удобрения*** делят на три группы: концентрированные, смешанные, сырые соли. Отходы промышленности, т. е. древесную и сланцевую золу, цементную пыль, калий-электролит также можно использовать в качестве калийных удобрений. ***Известняковые удобрения*** состоят в основном из углекислых солей кальция и магния или отходов промышленности, богатых известью. Используют их для нейтрализации кислотности, улучшения агрохимических, агрофизических и биологических свойств почв, а также для обеспечения растений кальцием и магнием.

VIII. Be ready to give the summary of the text orally. Pay attention to the following expressions and using them make up your own sentences based on the text A.

The text deals with (the problem of)…

It touches upon…

The extract from the article is concerned with…

The article is about…

The text centres round the problem of…

The article focuses on the problem of…

According to the text…

According to the author…

It further says that…

According to the figures (data, information, opinions) from the text…

It is clear from the text that…

The problem of the text is of great importance…

To sum it up…

On the whole…

In conclusion it is possible to say that…

IX. Discuss the following statements.

1. The importance of agricultural chemicalization.
2. The basic agrochemical laws of fertilizer application.
3. Environmental aspects of fertilizer application.
4. Macro- and microelements, their role in plant nutrition.
5. The importance of trace elements in plant life.
6. The effect of mineral nutrition conditions on the content of proteins, fats and carbohydrates.
7. What types of simple mineral fertilizers are divided according to the active substance?
8. What are limestone fertilizers made of and what are they used for in agriculture?

X. Make up your own presentation on the topic: "The Physiological and Biochemical Direction, Created by Academician D. N. Pryanishnikov, as the Basis of Agrochemistry".

REVIEWING GRAMMAR

The Gerund

Герундий – неличная форма глагола, имеющая грамматические особенности как глагола, так и существительного и всегда выражающая действие как процесс.

Например: ***increasing*** – увеличение; ***obtaining*** – получение; ***heating*** – нагревание и т. д.

Глагольные свойства герундия

1. Герундий имеет две грамматические категории глагола: залог (действительный и страдательный) и относительное время.

2. Герундий переходного глагола употребляется с прямым дополнением (*I like translating the articles. – Мне нравится переводить статьи*).

3. Герундий может определяться наречием (*I was frightened by his opening the door so suddenly. – Я испугался, когда он так неожиданно открыл дверь*).

Формы герундия

Voice **Tense**	**Active**	**Passive**
Indefinite Perfect	writing having written	being written having been written

Синтаксические функции герундия в предложении и способы его перевода на русский язык

Герундий, как и существительное, может выполнять в предложении все функции, кроме функции глагольного сказуемого.

Функция	**Пример**	**Перевод**
1. Подлежащее	Smoking is not allowed here	*Курить (курение)* здесь не разрешается
2. Именная часть составного сказуемого	His hobby is driving a car	Его любимое занятие – *водить (вождение)* машину
3. Дополнение а) прямое; б) предложное	 The car needs repairing; They spoke about their travelling to the North	 Машина нуждается *в ремонте;* Они говорили *о поездке* на север
4. Определение	There are different ways of obtaining this substance	Существуют различные способы *получения* этого вещества
5. Обстоятельство	After receiving good results they stopped experiments	*Получив* (после того как получили) хорошие результаты, они прекратили эксперименты

1. В функции подлежащего, определения, именной части сказуемого и прямого дополнения герундий переводится существительным или инфинитивом.

2. В функции предложного дополнения герундий переводится существительным или придаточным предложением**.**

3. В функции обстоятельства герундий переводится существительным с предлогом, деепричастием или придаточным предложением.

4. Сложные формы герундия чаще всего переводятся придаточным предложением (*I know of his having been appointed to a new job. – Я знаю, что его назначили на новую работу*).

The Gerundial Construction (герундиальный оборот)

В сочетании с существительным (в притяжательном или общем падеже) или притяжательным местоимением герундий образует сложные члены предложения, которые могут выполнять в предложении различные функции и на русский язык обычно переводятся придаточными предложениями, вводимыми словами ***то, что; в том, что; тем, что; о том, что (The man's coming*** *so early surprised us. – То, что этот человек пришел так рано, удивило нас; We objected to* ***your going*** *there. – Мы возражали против того, чтобы вы пошли туда; They insist on* ***this experiment being made*** *once more. – Они настаивают на том, чтобы этот эксперимент был проведен еще раз).*

Grammar Exercises

1. Translate the sentences below paying attention to the gerunds.

1. Reading English technical magazines is important for an engineer. 2. He remembers having added some water to the mixture. 3. They finished installing the apparatus only on Saturday. 4. They began making the experiment in May. 5. After failing his examination in January he had to take it again in February. 6. After graduating from the Institute he worked in the Far North. 7. At the meeting they discussed different ways of improving their work. 8. There are different ways of obtaining the substance. 9. He improved his report by changing the end. 10. Instead of restoring the old theatre they decided to build a new one in the centre of the town.

2. Translate the sentences below paying attention to the gerundial constructions.

1. I know of his having been sent to work to the Far East. 2. What is the reason for his having left our city so suddenly? 3. We heard of the experiment having been started last week. 4. The organizers of the conference were informed of his refusing to take part in it. 5. I remember his having been interested in languages in his childhood. 6. They objected to his staying at home.

3. Translate the sentences paying attention to gerunds and gerundial constructions

1. I remember your having objected to this schedule. 2. He entered the room without noticing her. 3. We were surprised at hearing his name among the winners. 4. Nothing could prevent him from playing tennis practically every day. 5. Did you have any difficulty in solving this problem? 6. He improved his report by changing the end. 7. She is against being sent to this faraway place. 8. Is there any possibility of their finding a suitable building material so soon? 9. They insisted on the question being reconsidered. 10. Flying is better for long journeys but travelling by car is more interesting. 11. Wood has many uses. We use it for making chairs and tables. It is used for building houses. It is used for making matches. 12. Thank you for doing this work for me.

Gerund or Infinitive?

У герундия и инфинитива много общего, поскольку и тот, и другой обладают свойствами существительного и глагола. Однако в инфинитиве преобладающими являются свойства глагола, а в герундии – существительного.

Одна из проблем, связанных с выбором точного английского эквивалента, – согласование некоторых глаголов с герундием и инфинитивом. После одних глаголов можно использовать только инфинитив, после других – только герундий, некоторые же глаголы допускают после себя использование и инфинитива, и герундия.

Инфинитив используется, как правило, после следующих глаголов: ***agree*** – соглашаться; ***intend*** – намереваться; ***appear*** – казаться, появляться; ***learn*** – узнавать, учить; ***arrange*** – устраивать, организовывать; ***manage*** – справляться, успешно выполнять; ***ask*** – просить, спрашивать; ***mean*** – подразумевать, иметь в виду; ***claim*** – требовать, признавать; ***offer*** – предлагать; ***consent*** – соглашаться, смиряться; ***plan*** – планировать; ***decide*** – решать; ***prepare*** – готовить; ***demand*** – требовать; ***pretend*** – притворяться, представлять себе; ***deserve*** – заслужи-

вать; ***promise*** – обещать; ***expect*** – ожидать; ***refuse*** – отказывать; ***fail*** – терпеть неудачу; ***seem*** – казаться; ***forget*** – забывать; ***threaten*** – угрожать; ***hesitate*** – колебаться; ***wait*** – ждать; ***hope*** – надеяться; ***want*** – хотеть.

После следующих глаголов, как правило, *используется герундий:* ***forbid*** – запрещать; ***admit*** – признавать; ***mention*** – упоминать; ***appreciate*** – ценить, признавать; ***miss*** – пропускать, скучать; ***avoid*** – избегать; ***postpone*** – откладывать; ***complete*** – завершать; ***practise*** – практиковать; ***consider*** – считать, оценивать; ***quit*** – прекращать, бросать; ***delay*** – откладывать; ***recall*** – вспоминать; ***deny*** – отрицать; ***recommend*** – рекомендовать; ***discuss*** – обсуждать; ***risk*** – рисковать; ***enjoy*** – наслаждаться, получать удовольствие; ***suggest*** – предлагать; ***finish*** – заканчивать; ***tolerate*** – терпеть, выносить; ***keep*** – держать, продолжать; ***understand*** – понимать; ***regret*** – сожалеть.

Основная разница в значении герундия и инфинитива состоит в том, что герундий имеет более общее значение, в то время как значение инфинитива более определенное и связано с какой-то конкретной ситуацией. Когда они сочетаются с одним и тем же глаголом, следует четко представлять разницу между ними.

1. С глаголами ***to like, to hate, to prefer*** герундий обозначает более общее или повторяющееся действие, инфинитив – более конкретное одиночное (*I like swimming (I am fond of swimming); I hate interrupting people; They prefer staying indoors when the weather is cold; I shouldn't like to swim in this lake; I hate to interrupt you, but I have to; I'd prefer to stay at home in this cold weather*).

2. С глаголами ***to begin*** и ***to start*** может использоваться любая форма, однако если значение имеет общий характер, то предпочтителен герундий (*She began singing when a child; She went over to the piano and began to sing*).

3. Герундий не используется

a) после глаголов во времени Continuous (*He is beginning to study French; It's beginning to rain)*;

b) с глаголами ***to understand*** и ***to see*** (в значении *to understand*) (*He began to understand how it was done*);

с) когда подлежащее является неодушевленным предметом (*The doors began to creak; The clock began to strike.*)

4. После глагола ***to remember*** следует герундий, если он обозначает предшествующее действие (*to recall* – вспоминать, *to keep in one's memory* – держать в памяти), или инфинитив, когда он обозначает одновременное действие (работу памяти, запоминание) (*I remembered posting the letters. / I remembered to post the letters. – Я помнил, что опустил письмо; I remembered and posted. – Я не забыл опустить письмо*).

То же самое относится к глаголу ***to forget*** *(I shall never forget hearing him sing – Я никогда не забуду как он пел; Don't forget to post the letters! – Не забудь опустить письма!; I didn't forget to post the letters. – Я не забыл опустить письма*).

5. После глагола ***to regret*** следует герундий, если предполагается предшествие одного действия другому, или инфинитив, если предполагается их одновременность (*I regret following his advice. – Я сожалею, что последовал его совету; I regret to inform you. – С сожалением сообщаю вам это; I regret to have to inform you. – Сожалею, что вынужден сообщить вам это*).

6. После глагола ***to stop*** герундий используется, когда предполагается конец им обозначаемого действия, в то время как используемый после этого глагола инфинитив будет являться обстоятельством цели (*Stop arguing! – Перестань спорить! I stopped talking. – Я замолчал; I stopped to talk to a friend of mine. – Я остановилась, чтобы поговорить с другом)*.

7. После фазового глагола ***to go on*** герундий означает продолжение действия (*How long do you intend to go on playing those records? – Как долго ты намерен продолжать проигрывать эти пластинки?*)

Инфинитив после *to go on* означает переход к какому-то новому действию (*He welcomed the new students and went on to explain the college regulations. – Он приветствовал новых студентов и перешел к объяснению правил распорядка в колледже*).

8. После глагола ***to allow*** используется герундий, если после этого глагола не употребляется дополнение (*They don't allow smoking here. – Здесь курить запрещено; They allowed us to smoke. – Они разрешили нам курить*).

Обратите внимание на то, что существуют отдельные случаи употребления герундия:

1) после таких фраз, как: *It's no use* / *It's useless* – бесполезно; ***It's no good*** – не стоит; ***I can't help*** – не могу не; (*It's no good leaving the work incompleted. – Не стоит оставлять работу незавершенной; I can't help being surprised at their success. – Не могу не удивляться их успеху*);

2) после прилагательных ***like, busy, worth (worth-while)*** (One more fact is worth mentioning. – Стоит упомянуть еще один факт; He is busy checking the equipment' for the experiment. – Он занят проверкой оборудования для проведения эксперимента);

3) после глаголов, требующих после себя предлога: ***rely on, depend on, insist on, think of, thank for, devote to, object to, succeed in, prevent from*** *(Our success depends on being supplied with the necessary equipment. – Наш успех зависит от обеспечения необходимым оборудованием; They succeeded in obtaining all the instruments they needed. – Им удалось получить все необходимые приборы*);

4) после прилагательных и причастий прошедшего времени, требующих после себя предлога**:** ***fond of, tired of, proud of, used to*** (*He is used to working under such conditions. – Он привык работать в таких условиях*);

5) после таких существительных, как: ***idea, method, way, pleasure***, требующих после себя предлога ***of*** (*I like your idea of spending the evening at home. – Мне нравится твоя идея провести вечер дома*);

6) после предлогов ***in, on (upon), after, before, by, without*** (On pressing the button you will get the information desired. – Нажав кнопку, вы получите необходимую информацию).

Grammar Exercises

1. Choose the correct form of the verb in the brackets in the following sentences.

1. The teacher decided (*to accept / accepting*) the paper. 2. They appreciate (*to have / having*) this information. 3. His father doesn't approve of his (*to go / going*) to Europe. 4. We found it very difficult (*reaching / to reach*) a decision. 5. Donna is interested in (*to open / opening*) a bar. 6. George has no intention of (*to leave / leaving*) the city now. 7. We are eager (*to return / returning*) to school in the fall. 8. You would be better off (*to buy / buying*) this car. 9. She refused (*to accept / accepting*) the gift. 10. Mary regrets (*to be / being*) the one to have to tell him. 11. George pretended (*to be / being*) sick yesterday. 12. Carlos hopes (*to finish / finishing*) his thesis this year. 13. They agreed (*to leave / leaving*) early. 14. Helen was anxious (*to tell / telling*) her family about her promotion. 15. We are not ready (*to stop / stopping*) this research at this time. 16. Henry shouldn't risk (*to drive / driving*) so fast. 17. He demands (*to know / knowing*) what is going on. 18. She is looking forward to (*return / returning*) to her country. 19. There is no excuse for (*to leave / leaving*) the room in this condition. 20. Gerald returned to his home after (*to leave / leaving*) the game.

2. Choose the correct form of the verb in the brackets in the following sentences.

1. They denied (*to steal / stealing*) the money. 2. He gave up (*to smoke / smoking*). 3. I don't want (*to go / going*) out tonight. I am too tired. 4. Try to avoid (*to make / making*) him angry. 5. Is there anything here worth (*to buy / buying*)? 6. I refuse (*to answer / answering*) any more questions. 7. He finished (*to speak / speaking*) and sat down. 8. Would you mind (*to put / putting*) your pet snake somewhere else? 9. I've enjoyed (*to meet / meeting*) you. I hope (*to see / seeing*) you again soon. 10. The boy's father promised (*to pay / paying*) for the broken window. 11. He de-

cided (*to steal / stealing*) her bag. 12. I don't feel like (*to work / working*). What about (*to go / going*) to a disco instead? 13. Would you like (*to join / joining*) us? 14. I hope (*to see / seeing*) you soon. 15. Please go on (*to write / writing*). I don't mind (*to wait / waiting*). 16. He keeps (*to ask / asking*) me the time and I keep (*to tell / telling*) him (*to buy / buying*) himself a watch. 17. I wish (*to see / seeing*) him as soon as possible. 18. I offered (*to help / helping*) him to translate the text. 19. Tom suggested (*to go / going*) to the cinema. 20. How old were you when you learnt (*to drive / driving*)?

3. Translate into Russian.

1. I can't help mentioning one more interesting fact. 2. The idea of using this technique is new and somewhat unexpected. 3. It's worth mentioning in this connection that this technique found no support two years ago. 4. It's useless devoting too much time to this problem without specifying all the details of the procedure. It's no good wasting much time in debates. 5. We insist on treating an-other important element in this technique. 6. The way of avoiding these difficulties is unknown at present. 7. This procedure will give us the possibility of determining both the state estimation and the time delay.

4. Translate into English.

1. Стоит рассмотреть этот вопрос. 2. Бесполезно думать об этом. 3. Не стоит тратить на это время. 4. Мы не можем не предпринять еще одну попытку. 5. Им удалось объяснить это явление. 6. Подумайте о том, как объяснить результаты ваших опытов. 7. Вы будете возражать против участия в этой работе? 8. Я устал от выполнения такой работы. 9. Идея использовать высокое напряжение не нова.

Unit 16. SOIL DIAGNOSTICS

I. Read and translate the text A.

SOIL SAMPLING AND PREPARATION FOR ANALYSIS

Knowledge of the chemical composition and quality indicators of the obtained products of agricultural plants allows us to solve the following tasks:

1) to investigate the transformation of elements in the soil-plant-fertilizer system;

2) to determine the content of the main biocomponents in plant objects and their compliance with accepted norms and standards;

3) to determine the suitability of plants for the consumer;

4) to diagnose the availability of nutrients to plants and, based on the results, carry out the necessary fertilizing.

In fresh plant material, at natural humidity, the water-soluble forms of proteins, carbohydrates, enzymes, the content of nitrates and nitrites are determined. In fixed (dried first at a temperature of 90 – 95 °C, and then at a temperature of 50 – 60 °C to an air-dry state) samples, the ash composition of plants, the total content of proteins, carbohydrates, fats and other substances are determined.

The selection of plant samples and the compilation of average samples for research is a very responsible operation, on which the reliability of the analysis results largely depends. Different plant materials have different chemical composition and have different properties, therefore, the sampling technique of plant substances should be differentiated. Plant samples in crops are taken in dry weather, in the morning, after the dew has dried.

The selection of plants in mass crops is taken from random places of the studied area by randomization. To do this, the plot (plan) is divided into 50 – 100 parts of 1 – 5 m^2, and by drawing lots, using numbered cards, the required number of squares is selected for sampling. The sampling sites are plotted on the plan. Diagonal sampling is used to take samples from

vegetative plants that are easily accessible. Plants are taken diagonally across the field, at 7 – 10 points, at equal distances in certain intervals, in an amount sufficient to obtain a sample.

Before taking average samples from ***forage crops,*** for example, corn, 10 sampling points are planned along one of the diagonals of the accounting plot. When selecting nests, the number of plants in them is taken into account. So, if 75 % of the sampling points have 2 plants each, and the rest have 3, then 7 sampling points with 2 plants and 3 sampling points with 3 plants should be planned for sampling. For the sample, all plants are selected from the intended selection point in order to more accurately take into account the influence of the feeding area, which falls on average on each plant of the plot.

Samples from ***forage root crops***, for example, are taken 2 – 3 days before harvesting. Ten typical plants are dug out, located at equal distances from each other along the diagonal of the plot. The sample does not take flower plants that are damaged mechanically or by pests and diseases. The excavated plants are cleaned from the ground, small roots and tails are cut from the root crops. The tops are cut off equally at the base of the leaf petioles (the average sample is 0.5 kg). The roots and tops are weighed separately.

For potatoes and vegetables, for example, samples are taken during the withering and dying phase of the tops 1 – 2 days before or during harvesting. Diagonally, 10 plants are dug out, located at equal distances from each other. The tubers are shaken off the ground, separated from the stolons and divided into standard and non-standard ones. In an average sample weighing about 2 kg, at least 20 tubers are selected from standard potatoes. The tops of the selected plants are crushed into pieces of 1 – 2 cm, mixed and an average sample weighing 0.5 kg is taken. The sample is dried to an air-dry state, having previously taken a sample to determine humidity [1, c. 545].

II. Make up your own questions to the text.

III. Translate the words and word combinations from Russian into English using the dictionary and memorize them.

Знание химического состава; пригодность растений; потребители; производить диагностику; показатели качества; полученная продукция; сельскохозяйственные растения; позволять; решать следующие задачи; исследовать; обеспечить растения питательными веществами; результаты; проводить необходимые подкормки; трансформация элементов; система «почва – растение – удобрение»; определять; содержание; основные биокомпоненты; растительные объекты; соответствие; содержание; принятые нормы; стандарты; отбор растительных проб; составление средних проб; для исследования; ответственная работа; в значительной степени; достоверность результатов; анализы; неодинаковый химический состав; обладать различными свойствами; техника отбора проб; растительные вещества; растительные пробы; в посевах; в сухую погоду; в утренние часы.

IV. Translate the words and word combinations from English into Russian using the dictionary and memorize them.

Plant material; at natural humidity; the water-soluble forms; proteins; carbohydrates; enzymes; the content of nitrates; to determine; at a temperature; an air-dry state; samples; the ash composition of plants; the total content of proteins; fats and other substances; the selection of plants; in mass crops; taken from random places; to study area; randomization; the plan; to divide into; by drawing lots; using numbered cards; the required number of squares; to select for sampling; the sampling sites; to plot on the plan; diagonal sampling; to take samples from vegetative plants; easily accessible; across the field; at equal distances; in certain intervals; in an amount sufficient to obtain a sample; for the sample; to select; from the intended selection point; in order to; more accurately; take into account; the influence of the feeding area; on average; on each plant; the plot; sample of cobs; sample of green mass; taken from each plot; leaves; stems; wrappers; to reduce.

V. Find the sentences with the following words and word combinations in the text A and translate them into Russian.

Fresh plant material; forms of proteins, carbohydrates, enzymes; nitrites are determined; the ash composition of plants; fats and other substances are determined; in mass crops is taken from random places; studied area by randomization; is divided into 50 – 100 parts of 1 – 5 m^2 and by drawing lots is selected for sampling; sites are plotted on the plan; sampling is used to take samples from vegetative plants; are taken diagonally across the field; in an amount sufficient to obtain a sample; samples are taken during the withering and dying phase of the tops; plants are dug out, located at equal distances from each other; separated from the stolons and divided into standard and non-standard ones; at least 20 tubers are selected from standard potatoes;the selected plants are crushed into pieces of 1 – 2 cm; having previously taken a sample to determine humidity; taking average samples from forage crops; are planned along one of the diagonals; the number of plants in them is taken into account; have 2 plants each, and the rest have 3, then 7 sampling points with 2 plants; all plants are selected from the intended selection point; the influence of the feeding area; samples and the compilation of average samples for research; results largely depends; different chemical composition and have different properties; should be differentiated; samples in crops are taken in dry weather; in the morning, after the dew has dried.

VI. Insert the missing words and word combinations.

1. Samples from … … crops, for example, … … 2 – 3 days before … .

2. In … plant material, at … … , the water-soluble forms of proteins, … , … , the content of nitrates and nitrites … determined.

3. Ten typical plants … dug … , located at equal … from each other … the diagonal of the … .

4. In fixed (… … at a temperature of …-… °C, and then at a temperature of 50 – 60 °C to an …-… state) samples, the … composition of … , the total content of … , carbohydrates, … and other substances … determined.

5. The sample … … take flower plants that … … mechanically or by pests and … .

6. … of the … … and … indicators of the … … of agricultural plants allows us … … the following tasks.

7. The … plants … cleaned … the ground, small … and … are cut from the root … .

8. The … of plants in mass … … … … random places of the studied area … … … .

9. The tops … … … equally at the base of the leaf … (the average … is 0.5 kg).

10. To … this, the plot (…) is … … 50 – 100 parts of 1 – 5 m^2 and by … lots, using numbered … , the … number of squares … selected for … .

11. The roots and tops … weighed separately.

12. The sampling sites … plotted on the plan.

13. The … … plant samples and the compilation of … … for research … a very responsible operation, on which the reliability of the analysis results largely … .

14. … … is used to … samples from … plants that … easily accessible.

15. Different … materials … different … composition and … different … , therefore, the sampling … of plant … should … differentiated

16. Plants … … diagonally across the field, at …-… points, at equal … in certain intervals , in … … … to obtain a sample.

VII. Translate into English the text B using the dictionary.

ОТБОР ПРОБ В ОПЫТАХ

Кормовые культуры. Перед взятием средних проб кукурузы намечают по одной из диагоналей учетной делянки десять точек отбора. При отборе гнезд принимают во внимание количество растений в них. Так, если в 75 % точек отбора имеется по два растения, а в остальных – по три, то для отбора образца должно быть намечено семь точек отбора с двумя растениями и три точки отбора с тремя растениями. Для пробы отбирают все растения из намеченной точки

отбора, чтобы более точно учитывать влияние площади питания, приходящейся в среднем на каждое растение делянки. С каждой делянки берут по одной пробе початков и одной пробе зеленой массы (1 кг листьев, стеблей, оберток). Если масса собранных растений велика для образца, то ее уменьшают.

Однолетние, многолетние травы и травосмеси скашивают со всей площади и взвешивают. Пробы берут во все укосы каждого года пользования. Сразу после скашивания из 15 – 20 точек берут по одному пробному снопу (около 1 кг), составленному из отдельных пучков растений.

На пастбищах пробы трав отбирают для анализов перед началом стравливания. Для этого отмечают каждый раз на новом месте загона четыре площадки по 0,25 $м^2$, отмечая их на плане поля. Траву срезают на высоту 5 – 6 см для высокотравных растений и 3 – 4 см для низкотравных.

Кормовые корнеплоды. Пробы отбирают за два-три дня до уборки. Выкапывают десять типичных растений, расположенных на равных расстояниях друг от друга по диагонали делянки.

В пробу не берут цветушные растения, поврежденные механически или вредителями и болезнями. Выкопанные растения очищают от земли, обрезают с корнеплодов мелкие корешки и хвостики.

Ботву обрезают одинаково у основания черешков листьев (средняя проба 0,5 кг). Корни и ботву взвешивают отдельно.

Картофель и овощи. Пробы картофеля отбирают в фазу увядания и отмирания ботвы за один-два дня до уборки урожая или во время уборки урожая. По диагонали делянки выкапывают десять растений, расположенных на равных расстояниях друг от друга. Клубни отряхивают от земли, отделяют от стволов и делят на стандартные и нестандартные. В средней пробе массой около 2 кг отбирают из стандартного картофеля не менее двадцати клубней. Ботву отобранных растений измельчают на куски 1 – 2 см, перемешивают и отбирают среднюю пробу массой 0,5 кг. Пробу высушивают до воздушно-сухого состояния, предварительно взяв навеску для определения влажности [1, с. 547].

VIII. Be ready to give the summary of the text orally. Pay attention to the following expressions and using them make up your own sentences based on the text A.

The text deals with (the problem of)…

It touches upon…

The extract from the article is concerned with…

The article is about…

The text centres round the problem of…

The article focuses on the problem of…

According to the text…

According to the author…

It further says that…

According to the figures (data, information, opinions) from the text…

It is clear from the text that…

The problem of the text is of great importance…

To sum it up…

On the whole…

In conclusion it is possible to say that…

IX. Discuss the following statements.

1. Diagnostics of plant nutrition. Types of diagnostics.
2. Visual diagnostics of plant nutrition, its advantages and disadvantages.
3. Chemical diagnostics of plant nutrition.
4. Methods of diagnosis of contaminated soils.
5. The main indicators for assessing the reclamation state of soils.
6. Features of soil research on irrigated lands.
7. Features of studying the soil cover of eroded lands.

X. Make up your own presentation on the topic: "Types and methods of laboratory soil research".

REVIEWING GRAMMAR

Simple Sentence

По структуре предложения делят на *простые* и *сложные*. По цели высказывания различают четыре вида предложений: *повествовательные, вопросительные, восклицательные и повелительные.*

Sentence parts (члены предложения)

В английском языке, как и в русском, выделяют пять членов предложения, которые подразделяются:

1) на *главные* (the main sentence parts): подлежащее (subject) и сказуемое (predicate);

2) *второстепенные* (subordinate part of the sentence): дополнение (object), определение (attribute) и обстоятельство (adverbial modifier).

Для правильного перевода предложений необходимо прежде всего определить, какой частью речи является переводимое слово и какую синтаксическую функцию оно выполняет в данном предложении.

Для этого необходимо знать:

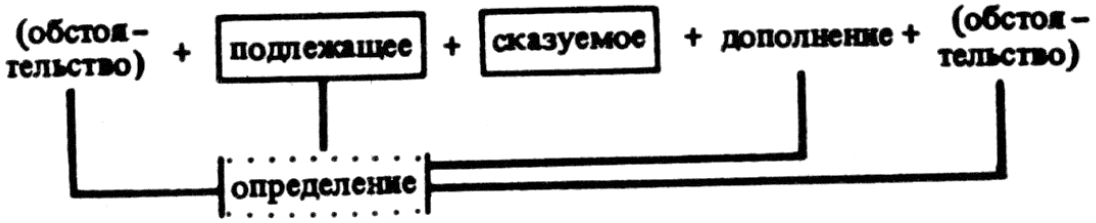
а) место слова в предложении;

б) показатели частей речи (артикль, предлог и др.);

в) признаки частей речи (окончания, суффиксы).

Word order (порядок слов)

В английском языке в повествовательном предложении (утвердительном и отрицательном) прямой порядок слов (direct word order), т. е. подлежащее + сказуемое. Дополнение следует непосредственно за сказуемым, обстоятельство может стоять в начале предложения (перед подлежащим) или в конце предложения. Определение – единственный член предложения, который не имеет фиксированного положения, так как может определять любой член предложения (кроме сказуемого, если это не именное составное).



Найти подлежащее можно по следующим признакам:

1) перед существительным (или группой существительного), стоящим перед сказуемым, отсутствует предлог;

2) личное местоимение стоит в именительном падеже;

3) инфинитив или герундий стоят перед сказуемым (и если нет другого подлежащего).

Найти сказуемое можно:

а) по вспомогательным глаголам: ***to be (am, is, are, was, were); to have (has, had); to do (does, did); shall (should) will (would)***;

б) модальным глаголам: ***must; can (could); may (might)***;

в) окончанию глагола ***-s, -es*** в 3-м лице единственного числа и окончанию ***-ed*** в Past Indefinite, учитывая место слова в предложении;

г) наречиям неопределенного времени **(*always, seldom, often, just, never*** и др.), которые обычно стоят перед глаголом или между вспомогательным и смысловым глаголом (*I **often** go to work by bus. – Я часто езжу на работу автобусом*);

д) личному местоимению в объектном падеже без предлога, которое всегда следует за сказуемым (*She gave **me** a valuable information on the new device – Она дала **мне** ценную информацию об этом новом приборе*).

Сказуемое бывает трех видов:

а) **простое (глагольное)** (*My brother **does not live** in Moscow, he **lives** here. – Мой брат **живет не** в Москве, он **живет** здесь*);

б) **составное именное** (compound nominal predicate) выражается глаголом-связкой (link-verb) (***to be, to become, to get, to grow*** и др.) и именной частью (predicative), выраженной именем существительным, прилагательным, местоимением, а также инфинитивом или герундием (*My brother **is a student. –** Мой брат – **студент**; It **will become colder** next month. – В следующем месяце **станет холоднее**; His aim **is to graduate** from the institute this year. – Его цель состоит в том, чтобы **окончить** институт в этом году*);

в) **составное глагольное** (compound verbal predicate) состоит из модального глагола (или его эквивалента) или глаголов, выражающих начало, продолжение или конец действия, и смыслового глагола (*I **must work hard** at my English. – Я **должен** усердно **работать** над*

своим английским; She ***began to translate*** *this article into Russian yesterday. – Она* ***начала переводить*** *эту статью на русский язык вчера*).

Дополнение следует за сказуемым:

а) **прямое дополнение** (direct object) (кого? что?), например: ***I*** *never see* ***him*** *here. –* ***Я*** *никогда не вижу* ***его*** *здесь*.

б) **косвенное дополнение** *(indirect object)* (кому? чему?) дополнение может быть как с предлогом (если стоит после прямого), так и без предлога (если предшествует ему), например: ***I*** *showed my drawing to* ***him*** *yesterday. – Я показал* ***свой чертеж*** *(что?) ему (кому?) вчера;* ***I*** *showed him* ***my drawing*** *yesterday. – Я показал* ***ему свой рисунок*** *вчера*;

в) **предложное дополнение** (с кем? с чем? о ком? о чем?), например: *This article is* ***about our plant****. – Это статья* ***о нашем заводе***;

г) **сложное дополнение,** например: *The engineer wants* ***me to make*** *this design. – Инженер хочет, чтобы* ***я сделал*** *этот проект.*

Обстоятельство стоит в конце предложения или перед подлежащим. Имеются обстоятельства места, времени, причины, цели и др. (где? когда? зачем? почему?), например*:* ***In the morning*** *I work* ***at the plant.*** *–* ***Утром*** *я работаю* ***на заводе.***

Определение (какой? чей? который? сколько?) обычно стоит перед определяемым словом, а иногда после него, например: ***This young*** *engineer works in a lab* ***organized*** *last year. –* ***Этот молодой*** *инженер работает в лаборатории,* ***созданной*** *в прошлом году.*

Grammar Exercises

1. Make sentences with the words given below observing correct word order.

1. She, won, easily, the game. 2. Tennis, every weekend, ken, plays. 3. Quietly, the door, i, closed. 4. His name, after a few minutes, i, remembered. 5. A letter to her parents, ann, writes, every week. 6. Some interesting books, found, we, in the library. 7. Across from the park, they, a new hotel, are building. 8. To the bank, i, every friday, go. 9. On saturday night, didn't see, at the party, you, i. 10. Brightly, is, shining, sun, the. 11. A, decided, go, on, picnic, to, we. 12. Always, at nine o'clock, out of the garage, in the morning, gets, his car, he. 13. He, into town, after breakfast, often, mrs. Hodges, takes. 14. A parking place, near the shops, they, find, rarely. 15. Sometimes, in a garage, mr. Hodges, his car, parks. 16. Fly, with my parents, to Florida, sometimes, i, in winter. 17. Late, came, last year, she, often, to school, in spring. 18. Often, have, at about three o'clock, a cup of tea, they, at the hotel, in the afternoon. 19. Meet, at the bar, they, after dinner, always, their friends. 20. Enjoys, very much, swimming, in our pool, always, in the morning, she.

2. Mark the sentences with the wrong word order and correct them in accordance with the rules. Work according to the model.

Model: Tom walks every morning to work. – *Tom walks to work every morning.*

1. Jim doesn't like very much baseball. 2. Ann drives every day her car to work. 3. When I heard the news, I immediately called Tom. 4. Maria

speaks very well English. 5. After eating quickly my dinner, I went out. 6. You watch all the time television. 7. Liz smokes about 20 cigarettes every day. 8. I think I'll go early to bed tonight. 9. You should go to the dentist every six months. 10. We went last night to the movies. 11. We go every summer to the sea in August. 12. In the evening my parents go to the cinema with their friends.

3. Find the subject and the predicate of the sentences, comment on the word order and translate the sentences.

1. John often comes late to class. 2. My friend and I both have a dog named Spot. 3. Many parts of the Asian coastline were destroyed by a tsunami in 2004. 4. The old hotel at the end of the street is going to be knocked down to make way for a new supermarket. 5. Sitting in a tree at the bottom of the garden was a huge black bird with long blue tail feathers. 6. In the evening we came to the place again. 7. On Saturdays I never get up before 9 o'clock. 8. Before giving a test the teacher should make sure that the students are well-prepared. 9. Lying on the sofa watching old films is my favourite hobby. 10. Our family has always been a very happy one.

Part II
ADDITIONAL READING TEXTS

Text 1. HIGHER EDUCATION IN RUSSIA

I. Study and memorize the following words and expressions:

1) **the jurisdiction** – юрисдикция;
2) **the Ministry of Science and Higher Education** – Министерство науки и высшего образования;
3) **responsible for** – ответственный за;
4) **the accreditation and licensing** – аккредитация и лицензирование;
5) **State Educational Standards** – государственные образовательные стандарты;
6) **to maintain** – поддерживать;
7) **to construct** – создавать, придумывать;
8) **at least** – по крайней мере;
9) **a secondary education** – среднее образование;
10) **pursuit** – стремление;
11) **prestigious** – престижный;
12) **demands**– требования;
13) **educational establishments** – образовательные заведения;
14) **annually** – ежегодно;
15) **to involve** – включать (в себя);
16) **to employ** – предоставлять работу, нанимать;
17) **an applicant** – кандидат, соискатель;
18) **public and non-public** (nonState) – государственный и негосударственный;
19) **postgraduate higher education** – послевузовское высшее образование;
20) **to receive** – получать;
21) **to be capable** – быть способным;

22) **mutual recognition** – общее признание;
23) **validation** – признание законной силы;
24) **seal** – гарантия, доказательство;
25) **irrespective** – независимо от, несмотря на;
26) **ownership pattern** – формы собственности;
27) **assessment week** – зачетная неделя;
28) **assignment works** – задания, работы;
29) **to defend course projects** – представлять к защите дипломные проекты;
30) **in recent years** – в (за) последние годы;
31) **drastic changes** – кардинальные перемены;
32) **comprehensive transformation** – всестороннее преобразование;
33) **diversification** – расширение области деятельности;
34) **emergence** – ученый.

II. Find Russian equivalents to the following words and word combinations.

The jurisdiction; State Educational Standards; basic higher education; postgraduate higher education; in the middle of the 18th century; very prestigious; began to change; academic year; each semester; the national emblem; similar to that of Britain; in Soviet times; evolutionary reformation; open for everything new; another type of education; the international educational organizations; people are employed in the sphere of education; levels of higher education; major international experts.

III. Find English equivalents to the Russian words and word combinations.

Образовательная система России; поступать в вуз; сдавать единый государственный экзамен; участие в конкурсе; самый образованный народ; государственные образовательные учреждения; частные школы; учиться в гимназии; быть ответственным за что-либо; требование времени; учиться на бакалавра; получать степень магистра; увлекаться спортом; стать широко образованной личностью; посту-

пать в аспирантуру; заниматься наукой; принимать участие в российских и международных симпозиумах; публиковать научные работы; выступать на различных научных конференциях.

IV. Insert the missing words and word combinations.

1. The system was … similar to that of … .
2. The … of higher education was and still is considered to be … … .
3. There are … educational establishments of … … … … in the Russian Federation.
4. More than … … … are employed in the … … … .
5. … has the most … … in the world.
6. I wash the dishes, go shopping and …
7. About 300.000 applicants from … … … of the world come to study at … … .
8. … … in Russia is provided by … … … … accredited higher education institutions.
9. Major… … have noted that Russian … … is one of the most educational systems in the world.
10. The … … starts on 1st of September and ends at … … … … .
11. Russian educational system is … … that is why it is always open for everything new.

Constructed; very flexible; Germany; pursuit; very prestigious; 180,000 academic year; all types and categories; 6 million people; sphere of education; Russia; educated population; the end of June; all the countries; Russian universities; Higher Education; public and non-public (non-State); international experts; educational; system developed and advanced.

V. Read and translate the text A.

HIGHER EDUCATION IN RUSSIA

History of education in Russia

Russia's higher education system started with the foundation of the universities in Moscow and St. Petersburg in the middle of the 18th century. The system was constructed similar to that of Germany. In Soviet times, all

of the population in Russia had at least a secondary education. The pursuit of higher education was and still is considered to be very prestigious. Due in great part to demands of the international educational organizations, the system of education in Russia began to change over the past four to five years. Universities began transitioning to a system similar to that of Britain and the USA: 4 years for the Bachelor's degree and 2 years for a Master's degree.

Educational establishments

There are 180.000 educational establishments of all types and categories in the Russian Federation. About 35 million people or 25 % of the total population of the country are annually involved in one or another type of education. More than 6 million people are employed in the sphere of education. Russia has the most educated population in the world. More than half of Russians have higher education qualification. About 300.000 applicants from all the countries of the world come to study at Russian universities. Higher Education in Russia is provided by public and non-public (non-State) accredited higher education institutions. There are two levels of higher education:

– Basic higher education (4 years) leading to the Bakalavr's degree, the first university level degree. This is equivalent to the B. Sc. degree in the US or Western Europe;

– Postgraduate higher education (5 – 6 years or more). After two years, students are entitled to receive a Magistr's degree. This is equivalent to a Master's Degree (M. Sc, M. A.) in the US or Western Europe. After a Master's degree, students can continue to study towards a doctoral degree: Kandidat Nauk degree (the first level, equivalent to Ph. D.) and Doktor Nauk degree (the second, highest level, equivalent to Professor).

In the Russian Federation there are:

− More than 700 State Higher Educational Institutions;

− More than 15 million students;

− More than 350.000 foreign students studying at Russian State Universities.

Russian system of higher education

Major international experts have noted that Russian educational system is one of the most developed and advanced educational systems in the world. In the context of a changing society, the educational system proved to be capable of adapting to rapid transformations of new realities and to the phase of prolonged evolutionary reformation. Only accredited higher education establishments have the right to issue state diplomas and degrees ensuring full vocational and academic rights, and are covered by the international agreements on mutual recognition and validation of education documents. Only accredited higher education establishments have the right to use the seal with the national emblem of the Russian Federation. All state degrees award specific qualifications to a graduate, irrespective of the type of educational institution (University, Academy, and Institute) and the ownership pattern (state, municipal, non-state), are equal in status.

Academic year and semester

The academic year starts on 1st of September and ends at the end of June. It is divided into an autumn and spring semester. A study period of 16 weeks in autumn term and a study period of 15 – 16 weeks in spring term. Each semester ends with one assessment week during which students take course tests and present assignment works and defend course projects.

Exam session: Two or three weeks' period of examinations and final assessments take place each semester.

In recent years, the system of education of the Russian Federation has been undergoing drastic changes in the framework of the comprehensive transformation of the country as a whole. The main changes have been proceeding along the diversification: emergence of new types of educational institutions, introduction of a multi-level higher education system (Bachelor's and Master's Degrees in addition to the traditional Diploma – Specialist Degree), and profound changes in curricula. Russian educational system is very flexible that is why it is always open for everything new [8].

VI. Comprehension check. Answer the following questions.

1. Under whose jurisdiction is higher education in Russia?
2. What is the Ministry of Science and Higher Education in the Russian Federation responsible for?
3. What did Russia's higher education system start with and when did it start?
4. What was the higher education system constructed similar to?
5. What education did the population in Russia have in Soviet time?
6. Is the pursuit of higher education considered to be very prestigious or not?
7. Why did the system of education in Russia begin to change over the past years?
8. How did universities begin transitioning?
9. How many educational establishments of all types and categories are there in the Russian Federation?
10. How many people are employed in the sphere of education?
11. What part of the population in Russia has higher education qualification?
12. How many levels of higher education are there and what are they?
13. How many Higher Educational Institutions are there in Russia?
14. What is the number of students in Russia?
15. How many foreign students are studying at Russian State Universities?
16. What have international experts noted about Russian educational system?
17. What did the Russian educational system prove in the context of a changing society?
18. What education establishments have the right to issue state diplomas and degrees ensuring full vocational and academic rights and mutual recognition and validation of education documents?
19. What qualifications do all state degrees award to graduates?
20. When does the academic year start and end? How many semesters are academic years divided?

21. How does each semester end?

22. What main changes have been proceeding along the diversification of the education system?

VII. Find the English equivalents of the following words and expressions in the text A.

Государственные образовательные стандарты; Министерство науки и высшего образования Российской Федерации; среднее образование; стремление получить высшее образование; степень бакалавра; степень магистра; государственные и негосударственные аккредитованные высшие учебные заведения; выдавать дипломы государственного образца; тип учебного заведения; учебный год; многоступенчатая система высшего образования.

VIII. Match the words and expressions with their translation.

1) responsible;	a) переход;
2) accrediting;	b) сфера образования;
3) changing society;	c) конструировать, образовывать, строить;
4) construct;	d) меняющееся общество;
5) demand;	e) ежегодно;
6) transitioning;	f) взаимное признание;
7) annually;	g) аккредитация;
8) sphere of education;	h) претерпевать, подвергаться;
9) mutual recognition;	i) возникновение;
10) validation;	j) требование;
11) adapting;	k) рамки;
12) framework;	l) легализация; подтверждение;
13) emergence;	m) ответственный;
14) undergo.	n) приспособление, адаптация.

IX. Tell whether the sentences below true or false. Start your corrections with the words: it is true, it is false. Correct the false statements.

1. Higher education is under the jurisdiction of various ministries. 2. Russia's higher education system started with the foundation of the universities in the 12th century. 3. In Soviet times, all of the population in Russia had at least a secondary education. 4. Universities began transitioning to a system similar to that of Germany. 5. There are more than 200.000 educational establishments of all types and categories in the Russian Federation. 6. Russia has the most educated population in the world. 7. Higher Education in Russia is provided only by public higher education institutions. 8. In the Russian Federation there are more than 1000 State Higher Educational Institutions. 9. Only universities have the right to issue state diplomas and degrees ensuring full vocational and academic rights. 10. The academic year is divided into three semesters; a study period of 4 weeks in each semester.

X. Translate sentences into English.

1. Высшее образование находится в ведении Министерства науки и высшего образования Российской Федерации, которое отвечает за аккредитацию и лицензирование высших учебных заведений, а также за разработку и поддержание государственных образовательных стандартов. 2. В советское время у всего населения России было как минимум среднее образование. 3. Во многом благодаря требованиям международных образовательных организаций за последние четыре-пять лет система образования в России начала меняться. 4. В Российской Федерации насчитывается 180 000 образовательных учреждений всех типов и категорий. 5. На обучение в российские вузы приезжают около 300 000 абитуриентов со всех стран мира. 6. Крупнейшие международные эксперты отмечают, что российская система образования – одна из самых развитых и передовых в мире. 7. Только аккредитованные высшие учебные заведения имеют право использовать печать с государственным гербом Российской Федерации. 8. Экзаменационные сессии с двух- или трехнедельным перио-

дом экзаменов и итоговых оценок проводятся каждый семестр. 9. В последние годы система образования Российской Федерации претерпевает кардинальные изменения в рамках комплексной трансформации страны в целом. 10. Российская система образования очень гибкая, поэтому всегда открыта для всего нового.

XI. Divide the text into logical parts and speak briefly about Russia's higher education.

XII. Make up your own presentation on the topic: "Education in Russia".

Text 2. EDUCATION IN BRITAIN

I. ***Read and translate the text.***

EDUCATION IN BRITAIN'S UNIVERSITIES

The academic year in Britain's universities, Polytechnics, ***Colleges of Education*** is divided into three terms, which usually run from the beginning of October to the middle of December, from the middle of January to the end of March, and from the middle of April to the end of June or the beginning of July.

There are 109 recognized universities in Britain. The oldest and best-known universities are located in Oxford, Cambridge, London, Leeds, Manchester, Liverpool, Edinburgh, Southampton, Cardiff, Bristol, Birmingham.

Good A-level results in at least two subjects are necessary to get a place at a university. However, good exam passes alone are not enough. Universities choose their students after interviews. For all British citizens a place at a university brings with it ***a grant*** from their local education authority.

English universities greatly differ from each other. They differ in date of foundation, size, history, tradition, general organization, methods of instruction, way of student life.

After three years of study a university graduate will leave with the Degree of ***Bachelor of Arts***, Science, Engineering, Medicine, etc. Later he may continue to take ***a Master's Degree*** and then ***a Doctor's Degree***. Research is an important feature of university work.

The Oxford and Cambridge Universities date from the 12th and 13th centuries.

The Scottish universities of St. Andrews, Glasgow, Aberdeen and Edinburgh date from the 15th and 16th centuries.

In the 19th and the early part of the 20th centuries the so-called ***Red-brick universities*** were founded. These include London, Manchester, Leeds, Liverpool, Sheffield, and Birmingham. During the late sixties and early seventies some 20 "new" universities were set up. Sometimes they are called "concrete and glass" universities. Among them are the universities of Sussex, York, East Anglia and some others.

During these years the Government set up thirty Polytechnics. The Polytechnics, like the universities, offer first and higher degrees. Some of them offer full-time and ***sandwich courses***. Colleges of Education provide two-year courses in teacher education or sometimes three years if the graduate specializes in some particular subject.

Some of those who decide to leave school at the age of 16 may go to a further education college where they can follow a course in typing, engineering, town planning, cooking, or hairdressing, full-time or part-time. Further education colleges have strong ties with commerce and industry.

There is an interesting form of studies which is called ***the Open University***. It is intended for people who study in their own free time and who "attend" lectures by watching television and listening to the radio. They keep in touch by phone and letter with their tutors and attend summer schools. The Open University students have no formal qualifications and would be unable to enter ordinary universities.

Some 80.000 overseas students study at British universities or further education colleges or train in nursing, law, banking or in industry [9, c. 9 – 11].

References

1. ***College of Education*** – педагогический колледж *(трехгодичный педагогический институт; в 1965 году такие колледжи получили статус университетов).*

2. ***Grant*** – стипендия *(обычно выплачивается студентам из средств государственного бюджета или местных органов власти).*

3. ***Bachelor of Arts*** – бакалавр искусств *(обладатель степени бакалавра по одной из гуманитарных или математических наук в университете).*

4. ***Master's Degree*** – ученая степень магистра *(присуждается университетом лицам, успешно завершившим по крайней мере год учебы и выполнившим исследовательскую работу после окончания университета).*

5. ***Doctor's Degree*** – ученая степень доктора.

6. ***Redbrick universities*** – «краснокирпичные» университеты *(разговорное название университетов, появившихся в XIX – начале XX века).*

7. ***Sandwich course*** – курсы «сандвич» *(для работающих; обычно при техническом колледже, где занятия чередуются с работой на предприятии).*

8. ***Open University*** – открытый университет, университет для всех *(функционирует с 1971 года).*

II. Comprehension check. Answer the following questions.

1. How many terms is the academic year in Britain's universities, Polytechnics, Colleges of Education divided into?
2. How long do the terms usually run?
3. How many universities are there in Britain?
4. Where are the oldest and best-known universities located?
5. What is necessary to get a place at a university?
6. How do universities choose their students?

7. What does a place at a university bring with it for all British citizens?

8. How do English universities differ from each other?

9. What degree will a university graduate leave with after three years of study?

10. What other degrees can university graduates get?

11. What is an important feature of university work?

12. What centuries do Oxford and Cambridge Universities date from?

13. What centuries do the Scottish universities of St. Andrews, Glasgow, Aberdeen and Edinburgh date from?

14. When were the so-called Redbrick universities founded?

15. When were 20 "new" universities set up? How are they sometimes called?

16. What degrees and courses did the Polytechnics offer?

17. What courses do Colleges of Education provide?

18. Where may those who decide to leave school at the age of 16 go?

19. What can they study at further education colleges?

20. Who is the Open University intended for?

21. How do people study and attend lectures at the Open University?

22. How do they keep in touch with their tutors?

23. How many overseas students study at British universities or further education colleges?

III. Give a short summary of the text B using the following words and word combinations.

The academic year; Britain's universities; divided into; terms; usually run; recognized universities; the oldest and best-known universities; A-level results; at least two subjects; necessary; greatly differ from each other; The Scottish universities; date from the fifteenth and sixteenth centuries; the Government set up; full-time and sandwich courses; the graduate specializes; strong ties with commerce and industry; the Open University; study in their own free time; by watching television; listening to the

radio; be unable to enter; overseas students; further education; train in nursing, law, banking or in industry.

IV. Translate into English.

1. Образование – важная часть современной жизни. 2. Быть образованным – значит знать много необходимых и полезных вещей для жизни. 3. В последнее время происходит положительная динамика роста числа иностранных студентов. 4. После окончания 11-го класса средней школы, лицея или гимназии ученики могут получить высшее образование. 5. Учиться в России престижно и выгодно. Вы можете быть уверены, что получите все необходимые знания по выбранной специальности. 6. Получать образование можно как на коммерческой основе, так и бесплатно, при поддержке Правительства России. 7. История высшего образования в России возвращает нас к 1755 году, когда в Москве был основан первый университет по инициативе Михаила Ломоносова. 8. Многие учебные заведения предлагают степень бакалавра с четырехлетней программой и степень магистра с двухлетней программой обучения. 9. После получения высшего образования можно дополнительно поступать в аспирантуру и учиться еще в течение трех лет. 10. Высшее образование – это своеобразный признак интеллигентности и высокого уровня культуры личности.

V. Make up your own dialogue with your group-mates using the following words and word combinations.

Nice to meet you; University; enter exams; favorite subjects; years old; friendly; good looking; canteen; party; curriculum; tutor; teaching staff; mark; mid-sessional exam; sessional exam; a freshman; tuition; paid by the students; free of charge; the term of studying.

VI. Tell about your institution using the following sentences.

1. My name is … . I'm a … year student at the … institute of the … university. 2. I study these subjects: … … … … . 3. After I graduate from the university, I'll be … (a teacher, an engineer, a lawyer, … etc.) 4. My

university was founded in … . 5. It's one of the … (oldest, newest, largest) higher education establishments in Russia. 6. The university campus consists of a number of big buildings, including the teaching blocks, administrative block, libraries and hostels. 7. There are … institutes at university, including the faculty of … and … . 8. The overall number of students studying at University in the daytime, evening and extra-mural departments is about … thousand (hundred). 9. Most of them live in the hostel, the others live either with their families or rent rooms. 10. We students take an active part in social work. Most of us also go in for sport.

VII. Discuss the following statements.

1. Higher education plays a very important role in our life. 2. There are many good universities in our country. 3. I think that choosing a future profession and university is a serious step in every person's life. 4. Higher education gives many future possibilities. 5. Higher education gives the chance to find an interesting and well-paid job after graduating from the university. 6. Education makes people kin, helps them understand each other better. 7. Human progress mostly depended upon well-educated people.

VIII. Give a short summary of the text "Education in Britain". Use active words and word combinations from the text.

IX. Make up your own presentation on the topic: "Higher Education in Great Britain".

Text 3. ENGLISH-SPEAKING WORLD

I. Study and memorize the following words and expressions:

1) **adult population** – взрослое население;
2) **aeronautical and maritime communications** – авиационные и морские системы связи;
3) **approximately** – приблизительно;
4) **estimate** – оценивать;
5) **in descending order** – в убывающем порядке;
6) **international treaty** – международный договор;
7) **native speaker** – носитель языка;
8) **percentage** – процентное отношение;
9) **taught as a foreign language** – преподаваемый как иностранный язык;
10) **the European Union** – Европейский Союз;
11) **the United Nations / the United Nations Organisation / the UN** – Организация Объединенных Наций;
12) **widely spoken language –** широко распространенный язык.

II. Find Russian equivalents to the English words and word combinations.

The following percentage; multiple regional varieties; feed back into the language; open to language shift; lead to; increasing use of the English language; web content; English literature predominates; came from authors; articles; magazines and journals; approximately; 330 to 360 million people; speak English; as their first language; more than half; a majority of native English speakers; the first place where English was spoken; the most widely spoken language worldwide; non-native speakers; native English speakers.

III. Find English equivalents to the Russian words and word combinations.

Открытый для изменения язык; написанные авторами; многочисленные местные диалекты; подпитывать язык; увеличение использования английского языка; приводить к чему-либо; информационное наполнение сайта; английская литература доминирует; статьи и журналы (популярные и научные периодические издания); следующее процентное соотношение; огромный импульс; превосходить численно; подсчитывать; огромное заблуждение; неизвестные диалекты; не до конца изученный; влияющий на; современная наука; изучение движения языков; известные ученые-лингвисты; существующий века.

IV. Read and translate the text.

ENGLISH-SPEAKING WORLD

Approximately 330 to 360 million people speak English as their first language. More than half of these (231 million) live in the United States, followed by some 60 million in the United Kingdom, the first place where English was spoken.

English is the third largest language by number of native speakers, after Mandarin and Spanish.

Estimates that include second language speakers vary greatly, from 470 million to more than 1 billion. David Crystal calculates that non-native speakers as of 2003 outnumbered native speakers by a ratio of 3 to 1. When combining native and non-native speakers, English is the most widely spoken language worldwide.

There are six large countries with a majority of native English speakers that are sometimes grouped under the term Anglosphere. They are, in descending order of English speakers, the United States (at least 231 million), the United Kingdom (60 million), Canada (19 million), Australia (at least 17 million), Ireland (4.2 million), and New Zealand (3.7 million).

India has the largest number of second-language speakers of English, India has more people who speak or understand English than any other country in the world.

Because English is so widely spoken, it has often been referred to as a "world language", the lingua franca of the modern era, and while it is not an official language in most countries, it is currently the language most often taught as a foreign language. It is, by international treaty, the official language for aeronautical and maritime communications. English is one of the official languages of the United Nations and many other international organizations, including the International Olympic Committee.

English is studied most often in the European Union, and the perception of the usefulness of foreign languages among Europeans is 67 percent in favour of English ahead of 17 percent for German and 16 percent for French (as of 2012). Among some of the non-English-speaking EU countries, the following percentages of the adult population claimed to be able to converse in English in 2012: 90 percent in the Netherlands, 89 percent in Malta, 86 percent in Sweden and Denmark, 73 percent in Cyprus and Austria, 70 percent in Finland, and over 50 percent in Greece, Luxembourg, Slovenia and Germany. In 2012, excluding native speakers, 38 percent of Europeans consider that they can speak English.

Books, magazines, and newspapers written in English are available in many countries around the world, and English is the most commonly used language in the sciences with Science Citation Index reporting as early as 1997 that 95 % of its articles were written in English, even though only half of them came from authors in English-speaking countries.

In publishing, English literature predominates considerably with 28 percent of all books published in the world and 30 percent of web content in 2011 (from 50 percent in 2000).

This increasing use of the English language globally has had a large impact on many other languages, leading to language shift and even language death, and to claims of linguistic imperialism. English itself has become more open to language shift as multiple regional varieties feed back into the language as a whole.

V. Match the adjectives with the nouns:

1) largest;	a) communities;
2) federal;	b) territories;
3) dependent;	c) language;
4) modern;	d) government;
5) linguistic;	e) colony;
6) international;	f) era;
7) former British;	g) treaty;
8) foreign.	h) imperialism.

VI. Match the words and word combinations in A with their synonyms in B.

A: native, to publish, to complain, official, to exclude, to understand, to teach, to study, to claim, indeed.

B: natural, to grumble, keep out, ceremonial, to train, comprehend, to demand, to lean, make public, certainly.

VII. Comprehension check. Answer the following questions.

1. How many people speak English as their first language?
2. Where do more than half of them live?
3. Where was English first spoken?
4. How does English rate in the world by number of native speakers?
5. What is the number of the second language speakers of English?
6. How did the number of non-native English speakers outnumber native ones in 2003?
7. How does English rate in the world when combining native and non-native speakers?
8. What is the term “Anglosphere” mean?
9. What country has the largest number of second-language speakers of English?
10. Why has English often been referred to as a “world language”?
11. In what fields is English the official language by international treaty?

12. In what international organizations is English one of the official languages?

13. How is English treated in the European Union?

14. What percent of Europeans considers that they can speak English?

15. Are books, magazines, and newspapers written in English available in many countries around the world?

16. What language is the most commonly used in sciences?

17. What did Science Citation Index report as early as 1997?

18. What situation with the English language can be observed in publishing?

19. What will the increasing use of the English language globally lead to?

20. How has English changed?

VIII. Arrange the following sentences in the order they appear in the text.

1. There are six large countries with a majority of native English speakers that are sometimes grouped under the term Anglosphere. 2. English is the third largest language by number of native speakers, after Mandarin and Spanish. 3. Estimates that include second language speakers vary greatly, from 470 million to more than one billion. 4. Approximately 330 to 360 million people speak English as their first language. 5. English is one of the official languages of the United Nations and many other international organizations, including the International Olympic Committee. 6. India has the largest number of second-language speakers of English, India has more people who speak or understand English than any other country in the world.

IX. Translate the sentences into English.

1. Английский язык широко распространен в странах Европейского Союза. 2. Согласно данным Французской академии наук, современное человечество говорит почти на трех тысячах языков. Все языки делятся на семьи. 3. Английский язык относится к германским языкам индоевропейской группы языков. 4. Английский язык – офи-

циальный язык Великобритании, Новой Зеландии, Австралии и 31 штата Америки. 5. Сегодня английский язык становится популярным во всем мире. 6. Насчитывается около 500 млн человек носителей английского языка в 12 англоговорящих странах, а людей, использующих английский в качестве второго языка, – около 600 млн человек. 7. Современному образованному человеку требуется владение хотя бы одним иностранным языком, потому что границы образования, науки, экономики, бизнеса, спорта распространяются далеко за пределы одной страны. 8. Ученые доказали, что дети, которые владеют иностранным языком, намного внимательнее, сообразительнее и организованнее, чем их ровесники, не изучающие иностранный язык. 9. Владение иностранным языком в современном мире – это одна из базовых характеристик успешного человека. 10. Сегодня значение английского языка в науке, где он играет роль языка научной коммуникации, особенно велико. 11. Очевидно, что современная наука в любой стране не может замыкаться внутри своего национального языка, подобная тенденция ведет к снижению конкурентоспособности в научной сфере и, как следствие, к снижению уровня исследований.

X. Fill in the gaps with an appropriate English words and word combinations and translate sentences into Russian.

1. English is (*изучаться*) most often in the European Union, and the (*осознавать*) of the usefulness of foreign languages among Europeans is 67 (*процент*) in favour of English ahead of 17 percent for (*немецкий язык*) and 16 percent for (*французский язык*). 2. This (*возрастающий*) use of the (*английский язык*) globally has had a large (*толчок*) on many other languages, leading to language (*изменяться*) and even language death, and to (*заявлять*) of linguistic imperialism. 3. English is the most (*как правило*) used language in the (*науках*) with Science Citation Index. 4. (*Приблизительно*) 330 to 360 million people speak English as their (*первый язык*). 5. (*Более половины*) of these (*231 million*) live in the United States, followed by some 60 million in (*Соединенное Королевство Великобритании*), the (*первое место*) where English was spoken.

6. English is the third largest language (*по числу носителей языка*), after Mandarin and Spanish. 7. There are six large countries with (*большинство*) of native English speakers that are (*иногда*) grouped (*под термином*) Anglosphere. 8. They are, (*в порядке убывания*) of English speakers, (*Соединенные Штаты Америки*) at least 231 million, the United Kingdom – 60 million, (*Канада*) – 19 million, (*Австралия*) – (*как минимум*) 17 million, (*Ирландия*) – 4.2 million, and (*Новая Зеландия*) – 3.7 million. 9. (*Индия*) has the largest number of (*носители второго языка*) of English, India has more people who (*говорить*) or (*понимать*) English than (*любая другая страна в мире*). 10. Books, magazines, and newspapers (*написанные на английском языке*) are (*доступны*) in many countries (*во всем мире*). 11. It is, (*согласно Международному договору*), the official language for (*аэронавигационный*) and (*морской*) communications. 12. English is one of the official languages of (*Организация Объединенных Наций*) and many other international organizations, (*включать*) the International (*Олимпийский комитет*).

XI. Discuss the following statements.

1. International English is the concept of the English language as a global means of communication in numerous dialects, and the movement towards an international standard for the language. 2. There have been many proposals for making International English more accessible to people from different nationalities. 3. The modern concept of International English does not exist in isolation, but is the product of centuries of development of the English language. 4. English language teaching is almost always related to a corresponding culture, e. g., learners either deal with American English and therefore with American culture, or British English and therefore with British culture. 5. International English sometimes refers to English as it is actually being used and developed in the world; as a language owned not just by native speakers, but by all those who come to use it. 6. International English reaches toward cultural neutrality. 7. Many non-native English speakers study the subject with the goal of do-

ing business with English-speaking countries, or with companies located outside the English-speaking world.

XII. Give a short summary of the text "English-Speaking World". Use active words and word combinations from the text.

XIII. Make up your own presentation on the topic: "English as an International Language".

Text 4. VLADIMIR STATE UNIVERSITY

I. Study and memorize the following words and expressions:

1) **to be known** – быть известным;
2) **to become** – становиться;
3) **branch** – подразделение, отрасль, ветвь;
4) **extramural engineering Institute** – вечерний технический институт;
5) **to be given the status** – присвоить статус;
6) **to be named after** – быть названным в честь кого-либо
7) **Humanitarian University** – Гуманитарный университет;
8) **foreign students** – иностранные студенты;
9) **to provide** – обеспечивать; предоставлять;
10) **to train** – обучать / готовить специалистов;
11) **numerous professions and specialties** – многочисленные профессии и специальности;
12) **alongside with** – параллельно с чем-либо;
13) **the full-time students** – студенты дневной формы обучения;
14) **part-time students** – студенты заочной формы обучения;
15) **to combine work and study** – совмещать работу и учебу;
16) **halls of residence** – общежития;
17) **well-equipped laboratories** – хорошо оборудованные лаборатории;

18) **workshops** – мастерские;

19) **teaching staff** – преподавательский состав;

20) **highly qualified specialists** – высококвалифицированные специалисты;

21) **to possess** – располагать / иметь;

22) **assistant** – преподаватель;

23) **different branches of science** – различные отрасли науки.

II. Match the words and word combinations in A with their synonyms in B.

A. Status, foreign, profession, specialty, lawyer, architect, manager, combine, building, residence, lecture, common, workshop, journal, general, state, staff, branch, class, final, course, start, ready, outstanding, satellite.

B. Rank, remarkable personnel, country, profession, sputnik, overseas, occupation, legal adviser, designer, business executive, join, house, place, talk, workroom, periodical, , division, grade, last, program.

III. Match the words and word combinations in A with their antonyms in B.

A. Big, present, twice, well-equipped, qualified, success, serious, take, numerous, attractive, artificial, combine, offer, permit.

B. Forbid, small, repulsive, natural, absent, once, badly equipped, similar, failure, separate, funny, give, refuse, unqualified.

IV. Train the pronunciation of the following words:

University [ˌjuːnɪ’vɜːsətɪ], Extramural [ɛkstrə’mjʊər(ə)l], Engineering [ɛndʒɪ’nɪərɪŋ], Institute [‘ɪnstɪtjuːt], Polytechnic [ˌpɒlɪ’tɛknɪk], status [‘steɪtəs], known [nəun], Alexander [ˌælɪg’zɑːndə], Humanitarian [hjuːˌmænɪ’teərɪən], foreign [‘fɔrɪn], study [‘stʌdɪ], provide [prə’vaɪd], numerous [‘njuːm(ə)rəs], professions [prə’feʃ(ə)nz], specialties [‘speʃ(ə)ltɪz], engineer [ɛndʒɪ’nɪə], lawyer [‘lɔɪə, ‘lɔːjə], architect [‘ɑːkɪtekt], economist [ɪ’kɔnəmɪst], manager [‘mænɪʤə], alongside [əˌlɔŋ’saɪd], combine [kəm’baɪn], building [‘bɪldɪŋ], hall [hɔːl], residence [‘rezɪd(ə)n(t)s], lecture

[‘lekʧə], well-equipped [welɪ’kwɪpt], laboratory [lə’bɔrət(ə)rɪ], workshop [‘wɜ:kʃɔp], highly [‘haɪlɪ], qualified [‘kwɔlɪfaɪd], specialist [‘speʃ(ə)lɪst], technical [‘teknɪk(ə)l], journal [‘ʤɜ:n(ə)l], periodicals [ˌpɪərɪ’ɔdɪk(ə)lz], seminar [‘semɪnɑ:], both [bəuθ], general [‘ʤen(ə)r(ə)l], educational [ˌeʤu’keɪʃ(ə)n(ə)l, edju-], subject [‘sʌbʤekt], mathematics [ˌmæθ(ə)’mætɪks], physics [‘fɪzɪks], chemistry [‘kemɪstrɪ], drawing [‘drɔ:ɪŋ], physical training [‘fɪzɪk(ə)l ‘treɪnɪŋ], twice [twaɪs], innovative [‘ɪnəuveɪtɪv, -veɪ-], technology [tek’nɔləʤɪ], college [‘kɔlɪʤ].

V. Find Russian equivalents of the English words and word combinations. Remember them.

The state university, became bigger, became its part, more than, a good library, foreign students, to provide, was named after, consists of, work and study, sports centres, halls of residence, thousands of books, reading halls, reading up, academic group, consists of, general educational and special subjects.

VI. Find English equivalents of the Russian words and word combinations. Remember them.

Изучать специальные предметы, готовиться к семинарам и практическим занятиям, различные отрасли науки, сдавать государственные экзамены, представить к защите дипломный проект, принимать активное участие в исследовательской работе, читальные залы, готовиться к занятиям на следующий день, путешествовать в различные страны мира, свободно говорить на иностранном языке, читать иностранную литературу, смотреть телевизионные программы, серьезное внимание уделяется, ежегодные спортивные соревнования среди студентов, в распоряжении студентов колледжа.

VII. Read and translate the text A.

VLADIMIR STATE UNIVERSITY

Vladimir State University named after A. G. and N. G. Stoletov’s (VlSU) is a higher educational institution in Vladimir, the largest university in the Vladimir region and one of the largest in the Central Federal Dis-

trict. In April 2017, it became one of the Regional Flagship Universities. Since its establishment, the university has trained more than 60 thousand specialists. Vladimir State University cooperates with more than 40 universities around the world, and more than 30 educational centers operate on its basis.

VlSU's international activities are aimed at developing and strengthening international cooperation in the field of educational and research activities in order to improve the quality of education and the level of scientific research, as well as integration into the global scientific and educational system.

The University was founded in 1958 as the Vladimir Branch of oscow Extramural Engineering Institute; in 1964 it became the Vladimir Polytechnic Institute. Vladimir Polytechnic Institute was given the status of the state university in 1996. Now it is known as the Vladimir State University.

In 2008, Vladimir State University was awarded the honorary title named after Alexander Grigoryevich and Nikolai Grigoryevich Stoletov's. In July 2009, VlSU was one of the first universities in Russia to be certified by the International Body BUREAU VERITAS CERTIFICATION for compliance with the Russian standard ISO 9001:2008, with accreditation in GOST R (Russia), ANAB (USA), DAR (Germany). In 2011 the University became bigger when Vladimir State Humanitarian University became its part.

At present more than 27/000 students from the Russian Federation and about 460 foreign students study at the University. Now there are 11 institutes. The Vladimir State University provides training in numerous professions and specialties. It trains engineers, lawyers, architects, economists, managers and other specialists. Alongside with the full-time students there are also part-time students combining work and study.

The University has 11 buildings, 3 sports centres and 13 halls of residence. There are large lecture rooms, well-equipped laboratories and workshops at the University. The teaching staff consists of highly qualified specialists: professors, lecturers and assistants.

There is a good library at the University, which possesses thousands of books on different branches of science, technical journals and periodicals.

In the reading halls you can see students over their books reading up for their seminars and classes.

Each academic group consists of 20 – 25 students. The students of the University study both general educational and special subjects: mathematics, physics, chemistry, a foreign language, drawing, physical training. Twice a year they pass examinations. At the end of the course of study students submit diploma projects and take final examinations. In addition to their studies students also take an active part in the research work held at different faculties.

Classes begin at half past eight and are over at about four or five o'clock.

The students have lectures, seminars and classes. When classes are over they often go to the reading halls to read up for their seminars or prepare for the following day's classes.

Serious attention is paid at the University to the teaching and learning of foreign languages, because speaking a foreign language one can not only read the papers, magazines and books by outstanding writers, but as well watch satellite TV programs, travel easily in the different parts of the world.

Besides, understanding and speaking a foreign language or two became necessary while applying for a good and well-paid job. The graduates of the University receive professional training and have a good grounding in theoretical knowledge. They work as engineers, managers, economists, lawyers in various small and large companies in Vladimir, the Vladimir Region and other places of the country.

In 2008 a College of Innovative Technologies and Business Studies was founded at the Vladimir State University. College students study at the university classrooms, lecture rooms and laboratories. At the College stu-

dents disposal there is a comfortable hall of residence, libraries with reading rooms, dining halls, a clinic, a dispensary, “Polytechnic” sports camp. The student life is filled not only with the educational process. There are also interesting parties, cultural and sports events, such as, annual sports competitions among the students in swimming, football, basketball, weightlifting and also festival "Student Spring" for those guys who like fun, dances and music.

VIII. Comprehension check. Answer the following questions.

1. When was the University founded?
2. When was it named the Vladimir Polytechnic Institute?
3. When was the Vladimir Polytechnic Institute given the status of the state university?
4. How is the University named now?
5. When was it named after Alexander Grigorievich and Nikolai Grigorevich Stoletovs?
6. What happened in the history of the University in 2011?
7. How many students study at the Vladimir State University nowadays?
8. How many institutes and faculties are there?
9. What specialists does it train?
10. How many buildings, sports centres and halls of residence does the University have?
11. What do students have at their disposal?
12. How many students does each academic group consist of?
13. What subjects do students study?
14. How often do they pass their exams?
15. What do students do at the end of the course of study?
16. What is serious attention paid to at the University?
17. Why is serious attention at the University paid to the foreign languages?

18. Where do the graduates of the University work?

19. When was a College of Innovative Technologies and Business Studies founded at the University?

20. Where do College students study?

21. What do the College students have at their disposal?

22. What is the College students' life like?

IX. Give a short summary of the text "Vladimir State University". Use active words and word combinations from the text.

X. Make up your own presentation on the topic: "Vladimir State University in Future".

CONCLUSION

Учебное пособие предназначено для формирования у студентов умений читать, переводить оригинальную литературу, обсуждать насущные проблемы в области почвоведения на английском языке.

Тексты пособия включают в себя информацию о почве, ее составе, свойствах, происхождении, распространении, использовании, деградации и восстановлении. Учебный материал отражает различные проблемы изучения и обработки почв, а также научные теории по исследованию в различных областях, а именно земледелии, растениеводстве, агрохимии, лесоводстве, мелиорации.

История знаний о почве насчитывает несколько тысячелетий, она изобилует интересными и важными фактами, тесно связана с развитием земледелия и всей цивилизации. Почва всегда была важнейшей естественной производительной силой человеческого общества и давно стала предметом труда. Знание специальной лексики на английском языке пригодится студентам при подготовке выступлений на международных студенческих форумах и круглых столах, поможет правильно оценить современные научные открытия в области почвоведения.

LIST OF SOURCES

1. Основы агропочвоведения [Электронный ресурс] : учеб. пособие / авт.-сост.: А. О. Рагимов [и др.] ; Владим. гос. ун-т им. А. Г. и Н. Г. Столетовых. – Владимир : Изд-во ВлГУ, 2024. – 770 с. – ISBN 978-5-9984-1946-1. – URL: https://dspace.www1.vlsu.ru/handle/123456789/11425 (дата обращения: 17.03.2025).

2. Почвоведение : учеб. пособие / А. О. Рагимов [и др.] ; Владим. гос. ун-т им. А. Г. и Н. Г. Столетовых. – Владимир : Изд-во ВлГУ, 2020. – 251 с. – ISBN 978-5-9984-1110-6. – URL: http://e.lib.vlsu.ru/handle/123456789/8319 (дата обращения: 17.03.2025).

3. Общее земледелие [Электронный ресурс] : учеб. пособие / А. А. Корчагин, М. А. Мазиров, И. М. Щукин ; Владим. гос. ун-т им. А. Г. и Н. Г. Столетовых ; Верхневолж. федер. аграр. науч. центр. – Владимир : Изд-во ВлГУ, 2021. – 193 с. – ISBN 978-5-9984-1287-5. – URL: http://dspace.www1.vlsu.ru/handle/123456789/8727 (дата обращения: 17.03.2025).

4. Матяр, Т. И. Грамматика – правила и упражнения : учеб. пособие по англ. яз. / Т. И. Матяр, Л. В. Новикова, Л. В. Удалова ; Владим. гос. ун-т им. А. Г. и Н. Г. Столетовых. – Владимир : Изд-во ВлГУ, 2016. – 168 с. – ISBN 978-5-9984-0736-9.

5. Учебное пособие по обучению чтению и развитию навыков устной речи на английском языке : Средне-продвинутый уровень / Л. В. Новикова ; Владим. гос. ун-т им. А. Г. и Н. Г. Столетовых. – Владимир : Изд-во ВлГУ, 2020. – 168 с. – ISBN 978-5-9984-1140-3.

6. Скрябина, О. А. Минералогический состав почв и почвообразующих пород : учеб. пособие для студентов, обучающихся по направлению 110100 «Агрохимия и агропочвоведение» / О. А. Скрябина ; Перм. гос. с.-х. акад. им. акад. Д. Н. Прянишникова. – Пермь, 2011. – 117 с. – ISBN 978-5-94279-100-1.

7. Физические и химические свойства почвы [Электронный ресурс]. – URL: https://azbyka.ru/garden/fizicheskie-i-himicheskie-svojstva-pochvy/ (дата обращения: 15.09.2024).

8. Education in Russia [Электронный ресурс]. – URL: https://eduinrus.ru/en/about-education-in-russia/education-in-russia (дата обращения: 15.09.2024).

9. Английский язык : метод. указания по развитию навыков уст. речи для студентов отделения политологии / сост. Е. В. Вагина ; Яросл. гос. ун-т. – Ярославль, 2002. – 24 с.

Учебное электронное издание

MY SPECIALITY IS SOIL SCIENCE

МОЯ СПЕЦИАЛЬНОСТЬ «ПОЧВОВЕДЕНИЕ»

Учебное пособие по обучению чтению
и развитию навыков устной речи на английском языке

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