МИНИСТЕРСТВО СЕЛЬСКОГО ХОЗЯЙСТВА РФ
Федеральное государственное бюджетное образовательное учреждение высшего образования
«Брянский государственный аграрный университет»
КАФЕДРА ИНОСТРАННЫХ ЯЗЫКОВ

ГОВЕНЬКО А.М.

ИНОСТРАННЫЙ ЯЗЫК

МЕТОДИЧЕСКОЕ ПОСОБИЕ ДЛЯ АУДИТОРНЫХ ЗАНЯТИЙ И САМОСТОЯТЕЛЬНОЙ РАБОТЫ СТУДЕНТОВ ОЧНОЙ И ЗАОЧНОЙ ФОРМ ОБУЧЕНИЯ

по направлению подготовки
35.03.04 «Агрономия»

Брянская область,
2024

УДК 81:372.881.1 (076)
ББК 81.2
Г 30

Говенько, А. М. Иностранный язык: методическое пособие для аудиторных занятий и самостоятельной работы студентов очной и заочной форм обучения по направлению подготовки 35.03.04 «Агрономия » / А. М. Говенько. – Брянск: Изд-во Брянский ГАУ, 2024. – 81 с.

Учебное пособие представляет собой рекомендации студентам очной и заочной форм по организации самостоятельной работы для достижения практического владения языком, позволяющего использовать его в академической и технической сфере.

Рецензенты: доктор сельскохозяйственных наук, доцент, заведующий кафедрой агрономии, селекции и семеноводства Брянского ГАУ **В.В. Дьяченко;**

кандидат филологических наук, доцент, заведующая кафедрой социально-гуманитарных и естественно-научных дисциплин Брянского филиала ФГБОУ ВО« Российская академия народного хозяйства и государственной службы при Президенте Российской Федерации» **М.В.Резунова.**

Рекомендовано к изданию учебно-методической комиссией института экономики и агробизнесса Брянского ГАУ, протокол №3 от 26 марта 2024 года.

ПРЕДИСЛОВИЕ

Предлагаемое учебное пособие предназначено для самостоятельной работы обучающихся по программе бакалавриата, направление подготовки «Агрономия» и имеет своей целью развитие навыков чтения научно-популярной литературы с целью извлечения информации и совершенствование навыков профессионально ориентированной устной речи. Учебное пособие соответствует требованиям программы по английскому языку для сельскохозяйственных вузов и рассчитано на обучающихся, имеющих базовую языковую подготовку.

Теоретической основой учебного пособия, определившей его структуру и методику работы с ним, является положение о том, что процесс профессионально ориентированного чтения представляет собой сложную, комплексную, интеллектуально-познавательную деятельность, осуществляемую специалистом в процессе ориентировки в информационных источниках и текстах по заданной проблеме. Это положение реализуется в пособии в языковом и методическом аспектах.

Первый из них касается прежде всего грамматического и текстового материала. Грамматический материал представляет собой наиболее трудные для понимания явления, наиболее характерные для научно-популярной литературы. Теоретическая часть в каждом уроке дополнена практическими упражнениями. Предлагаемые тексты отобраны на основе анализа потенциальных ситуаций чтения и говорения, в которых может оказаться специалист в процессе ознакомления с англоязычной литературой по специальности. В учебное пособие включены оригинальные тексты, освещающие различные проблемы сельскохозяйственного производства.

Что касается методического аспекта, то здесь ставится задача максимально приблизить процесс обучения к реальной стратегии интеллектуальной обработки текста и дальнейшего использования извлеченной из текста информации. Ряд заданий направлен на формирование у обучающихся умений самостоятельно определять цели и задачи своей деятельности, планировать ее содержание и оценивать результаты.

Учебное пособие состоит из двух основных разделов – **Сельское хозяйство (What is Agriculture?)**, **Удобрения в сельском хозяйстве (Fertilizers in Agriculture)** и дополнительного раздела **Агроэкология (Agroecology)**. Работа над перечисленными разделами представляет собой поэтапное овладение различными стратегиями и тактиками чтения оригинальной научно-популярной литературы с целью поиска необходимой информации и ее возможного применения в будущей профессиональной деятельности. Обучение проводится в условиях создания проблемных ситуаций, организующих учебно-познавательную деятельность и требующих от обучающихся самостоятельного поиска, обсуждения на иностранном языке обобщений, выводов на основе заложенной в тексте информации.

Part I
WHAT IS AGRICULTURE?

Unit 1

Grammar Revision: **Passive Voice**
Text : **What is Agriculture**

Страдательный залог (Passive Voice)

Форма залога показывает, является ли подлежащее в предложении (лицо или предмет) производителем или объектом действия, выраженного сказуемым.

Пассивный залог (Passive Voice) показывает, что лицо или предмет, выраженное подлежащим, испытывает действие на себе:

The big cake was baked by Sam. Большой пирог был испечен Сэмом.

Пассивный залог употребляется, когда исполнитель действия очевиден или несуществен, или когда действие или его результат более интересны, чем исполнитель.

Образование пассивного залога

Для того, чтобы получить форму глагола в пассивном залоге, необходим вспомогательный глагол to be в соответствующем времени, лице и числе и причастие прошедшего времени (Participle II) значимого глагола:

This building will be demolished next month. – Это здание будет снесено в следующем месяце.

My dog has been stolen. – Мою собаку украли.

В отрицательных предложениях частица *not* ставится после вспомогательного глагола, а если их несколько, то после первого из них:

He has not been seen anywhere. – Его нигде не видели.

В вопросительных предложениях вспомогательный глагол (или первый из них) выносится на место перед подлежащим:

Was your wallet stolen? – Ваш бумажник был украден?

Таблица 1 – Временные формы глагола в страдательном залоге (Passive Form) To be + Participle II

Инфинитив / Время	Simple (to be asked)	Continuous	Perfect (to have been asked)
Present	*Am /asked* *Is /asked* *Are /asked*	*Am /being asked* *Is /being asked* *Are /being asked*	*Have/been asked* *Has/been asked*
Past	*Was /asked* *Were /asked*	*Was /being asked* *Were /being asked*	*Had been asked*
Future	*Shall (I, we)/ be asked* *Will /be asked*	–	*Shall /have been asked* *Will /have been asked*

Пассивный залог не может быть использован во временах группы Perfect Continuous и времени Future Continuous.

Употребление и перевод глаголов в пассивном залоге

Значение и употребление времен глагола в пассивном залоге такое же, как и времен глагола в активном залоге.

В английском языке в пассивном залоге употребляются переходные глаголы, а также некоторые непереходные глаголы. Примеры предложений с переходными глаголами в пассивном залоге:

By the middle of the nineteenth century about sixty different elements had been discovered. – К середине XIX столетия был обнаружено около 60 различных элементов.

The delegates will be met at the station. – Делегатов встретят на вокзале.

While a current is flowing through a wire, the latter is being heated. – Когда ток проходит по проволоке, последняя нагревается.

Как видно из приведенных примеров, глагол в пассивном залоге в английском языке можно переводить на русский язык несколькими способами:

а) глаголом, оканчивающимся на -ся, -сь;

б) сочетанием глагола быть с краткой формой причастия пассивного залога (в русском языке в этом сочетании глагол быть в настоящем времени не употребляется);

в) глаголом в активном залоге в 3-м лице множественного числа в составе неопределенно-личного предложения.

Дополнение в предложении с глаголом-сказуемым в пассивном залоге употребляется с предлогом *by* или *with*. Это дополнение соответствует русскому дополнению в творительном падеже без предлога.

Дополнение с предлогом *by* выражает действующее лицо или действующую силу:

The fish was caught by the seagull. – Рыба была поймана чайкой.

Дополнение с предлогом *with* выражает орудие действия:

Shafts are turned with cutters. – Валы обтачиваются резцами.

1. Translate the following sentences into Russian paying attention to Passive Constructions.

1. We were given this valuable advice by the experimenter himself. 2. Plants bearing seeds are spoken of as seed plants. 3. The delegation was shown various species of useful plants. 4. The end of the root is referred to as the root cap. 5. The endosperm should be looked upon as a food supply stored in the seed for some future use. 6. All the plants that were dealt with in this experiment are cross pollinated. 7. At first wild plants were cared for by man in a very primitive way. 8. All the roots and root branches of a plant are referred to as the root system. 9. The quality of the stored seeds is highly influenced by the storage condition. 10. This method of cultivation in not paid much attention to.

2. Put the following sentences in Perfect Passive.

Example: We have found a new variety of wheat.

A new wheat variety has been found by us.

1. This scientist has developed a new drought resistant variety. 2. We have grown perfect crops of wheat on heavy loams and clays. 3. Our experimental station has developed a new frost resistant variety

of wheat. 4. This winter wheat variety has produced a high yield. 5. The farmers of China have grown wheat at least 3000 years ago.6. Roots are known to be classified into several types. 7. This scientist is said to have developed a new drought resistant variety of wheat. 8. The seeds of wheat are known to be planted much deeper than that of clover. 9. Wheat is said to have been grown in China 3000 years ago. 10. Wheat is believed to have been grown in Asia and Northern part of Africa from time immemorial. 11. No part of the world is considered too hot for the production of wheat.

3. Fill in the gaps with *by* or *with*.

1. The hall was decorated … pink balloons. 2. The roof of the church will be repaired … local people. 3. This material has been already published … Cambridge University Press. 4. The house was built … money that he had borrowed from the bank. 5. When the accident happened, the car was brought … police.

Text

Active Vocabulary

1) acid soils – кислые почвы
2) agronomy – агрономия
3) application – применение
4) branches of agriculture – отрасли сельского хозяйства
5) cattle breeding – скотоводство
6) cotton – хлопок
7) crop growing – растениеводство
8) crop rotation – севооборот
9) equilibrium – равновесие
10) feed – корм
11) flax – лен
12) food crops – кормовые культуры
13) foodstuff – пищевой продукт
14) grain crops – зерновые культуры
15) herbicide – гербицид
16) industrial crops – технические культуры
17) intensification – интенсификация

18) liming - известкование
19) mechanization – механизация
20) mineral fertilizers – минеральные удобрения
21) nutrient substances – питательные вещества
22) organic fertilizers – органические удобрения
23) pig growing – свиноводство
24) plant protection – защита растений
25) poultry breeding – птицеводство
26) protein – белок
27) raw materials – сырье
28) soil – почва
29) to breed – разводить
30) to cultivate – возделывать
31) to disturb – беспокоить
32) to irrigate – орошать
33) utilization of fertilizers – применение удобрений
34) yield – урожай

1. Guess the meaning of the following international words and word combinations:

activity, materials, Latin, cultivation, intensification, climate, hybrid, mechanization, herbicides, biological, equilibrium, sector, economy, industry, factor, system, agronomy, technical, tractor, combine, machinery, electricity, chemical, material, chemization, mineral, organic, biological.

2. Find the correct word on the right opposite in meaning to the one on the left.

vital	vague
increase	inefficient
achievement	worse
sufficient	drawback
better	narrow
improvement	unneeded
effective	deterioration
clear	reduction

extensive	unnecessary
valuable	inadequate

3. Match the words on the right (A) with their definition on the left (B).

A	B
1) to breed	a) produce by cultivation
2) field	b) supply (land) with water
3) agriculture	c) soil management and crop production
4) economy	d) subdivisions of agriculture
5) branches of agriculture	e) a piece of ground especially for pasture or tillage or play ing games
6) soil	f) cultivation of the soil and rearing of animals
7) yield	g) upper layer of earth, in which plants grow
8) agronomy	h) produce or return as fruit, profit or result
9) to irrigate	i) management of concerns and resources of state or business or household
10) to grow	g) raise (cattle etc.)

4. What are these words derived from? Notice the different suffixes, indicating different parts of speech.

Activity, cultivation, growing, meaning, breeding, achievement, developed, agronomical, rotation, various, considerably, chemical, improvement, deliveries, intensification, comprehensive, mechanization, utilization, liming, protection, development, valuable, raising, equipment, enlargement, combination.

5. Give Russian equivalents for:

crop growing, livestock breeding, sufficient good soil, to produce high yields, crop rotation, chemical fertilizers, comprehensive mechanization, plant breeding, poultry-breeding, pig-growing, nutrient substances.

6. Open the brackets using the verbs in Passive Voice:

1. Enough food for all the people (can grow) if there is sufficient good soil for crops to produce high yields

2. An increase in the yield of grain and other crops (to ensure) by a number of factors.

3. Field work already (to mechanize) to a very high degree.

4. Depending upon the field of application crops (to subdivide) into food crops, feed crops, industrial crops and vegetables.

5. Vegetables (to grow) everywhere where the climate is most favourable for these crops.

6. Industrial crops also widely (to cultivate) by the farmers.

7. Read the text and say why agriculture is a vital sector of economy.

WHAT IS AGRICULTURE?

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

The word *ager* is a Latin word. It means a field. The word *agriculture* means the cultivation of fields and growing crops. But this is the old meaning of this word. Now it also means the use of land to breed animals.

Agriculture is the vita1 sector of the economy. Its condition and development largely determine the country's achievements, the supply of the population with foodstuffs and many industries with raw materials.

At present there are two main branches of agriculture. They are crop growing and livestock breeding.

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

The soil is the basis of agriculture. Enough food for all the people can be grown if there is sufficient good soil for crops to produce high yields. So an increase in the yield of grain and other crops is ensured by a number of factors. First comes the system of agronomical measures. All farms have to introduce better crop rotation sys-

tems. Rotation systems naturally differ in various areas and under various conditions. Second goes the technical equipment of farms. Tractors, combines, lorries and other machinery will considerably reduce the time required for agricultural work. Field work has already been mechanized to a very high degree. Power stations provide farms with electricity. Third, an increase in the deliveries of chemical fertilizers and the improvement of their quality.

The enlargement of the material and technical basis of agriculture and its intensification through chemization, the comprehensive mechanization of crop and animal farming and improvement are the key conditions for increasing agricultural production.

Depending upon the soil and climatic zones effective methods should be introduced for the utilization of mineral fertilizers in combination with organic fertilizers along with the liming of acid soils. The production and use of chemical and biological means of plant protection should be increased. But all intensification factors, such as full mechanization, high application of fertilizers and extensive use of herbicides must be used in such a way as not to disturb the biological equilibrium of the soil.

Depending upon the field of application crops can be subdivided into food crops, feed crops, industrial crops and vegetables. Potatoes and other vegetables are major food crops. Vegetables are grown everywhere where the climate is most favourable for these crops.

Industrial crops are also widely cultivated by the farmers. Perhaps the most important industrial crop for textile industry is cotton. Cotton is generally grown on the irrigated lands. Flax is another important crop. Cotton and flax oils are both edible and valuable.

Livestock breeding comprises cattle-breeding, pig-growing, poultry-breeding, etc. One of the principle problems cattle-breeding faces is that of fodder or feeds. To choose the necessary feeds, rich enough in protein and other nutrient substances is not an easy thing. Increasing the production of meat, milk and wool can be achieved by raising productivity and also by increasing the heads of livestock and the amount of poultry.

8. Find information in the text to answer the following questions.

1. What is agriculture?
2. What are the key conditions for increasing agricultural production?
3. What branches of agriculture do you know?
4. How many groups are crops subdivided into?
5. What does livestock breeding comprise?
6. What problem does cattle-breeding face?
7. How can the production of meat and milk be increased?

9. Divide the text into several parts. Find the key sentences in each part. Sum up the content of the text.

10. Refer to the text again and prove that an increase in the yield of grain and other crops can be ensured by:

– the system of agronomical measures
– the technical equipment of farms
– an increase in the deliveries of chemical fertilizers and -- an improvement of their quality

Unit 2

Grammar Revision: **Comparatives and Superlatives**
Text : **Land Economics**

Степени сравнения прилагательных и наречий (Comparatives and Superlatives)

Прилагательные в английском языке не имеют категории рода, числа, падежа. Качественные имена прилагательные в английском языке, так же как и в русском языке, имеют три степени сравнения: положительную, сравнительную и превосходную. Однако если в русском языке каждое прилагательное, как правило, имеет и сложную (состоящую из двух слов), и простую формы степеней сравнения (например: *интереснее* и *более интересный*, *интереснейший* и *самый интересный*), в английском

языке прилагательное, как правило, имеет только одну форму – либо простую, либо сложную. Особая категория английских наречий может также иметь степени сравнения.

Таблица 2 – Образование степеней сравнения в английском языке

Прилагательные, наречия	Положительная Степень	Сравнительная степень (Comparatives)	Превосходная степень (Superlatives)
1	2	3	4
Односложные, двусложные*	*hot* *easy (adj)* *polite* *soon (adv)*	*hotter* *easier* *politer* *sooner*	*(the) hottest* *(the) easiest* *(the) politest* *(the) soonest*
Многосложные	*correctly (adv)* *beautiful (adj)*	*more correctly* *more beautiful*	*(the) most correctly* *(the) most beautiful*
Смешанные случаи	*old (adj)* *often (adv),* *slowly* *quickly*	*older/elder* *oftener/more often* *slower/more slowly* *quicker/more quickly*	*oldest/eldest* *oftenest/most often* *slowest/most slowly* *quickest/most quickly*
Случаи, которые следует запомнить	*well (adv)/good (adj)* *badly/bad* *much* *little* *far* *near*	*better* *worse* *more* *less* *farther/further* *nearer*	*best* *worst* *most* *least* *farthest/furthest* *nearest*
*Двусложные прилагательные с ударением на втором слоге и прилагательные, заканчивающиеся на *-e, -er, -y, -ow*.			

Таблица 3 – Особенности употребления прилагательных в сравнительной и превосходной степени

Прилагательное	Особенность	Пример
1	2	3
Most	Имеет и другие значения: *крайне/весьма* Может использоваться с артиклем a/an *большинство/большая часть*	*This is a most interesting film. They are most eresting people. Most of my friends live in Moscow*
Farther, farthest	Используется, когда речь идёт о расстоянии: *дальше, самый дальний*	*You must go a little farther*
Further, furthest	Выражает значения: *дальнейший, последующий, добавочный*	*further information дополнительная информация further discussion дальнейшее обсуждение*
Elder, eldest	Употребляется для обозначения возрастных отношений в семье	*my elder brother*
Nearer, nearest	*Ближе, ближайший* (о расстоянии)	*Where is the nearest post office?*
Next	*Следующий* (о порядке следования)	*They live in the next house*
Later, latest	*Позже, последний* (о времени)	*I'll call you back later*
Last	*Последний* (о порядке следования)	*It's his last book*

Для сравнения качества предметов используют также следующие формулы:

1. *than – чем: Moscow is larger than St.-Petersburg.*
2. *as ... as – так(ой)же ... как: He is as young as my brother.*
3. *not so ... as – не так(ой)... как: This train goes not so quickly as that one.*
4. *the more ... the better – чем ... тем: The more you work the better you know the language.*
5. *much, far – намного,гораздо: The husband was much older than the wife.*
6. *a bit, a little – немного: Could you speak a bit louder?*

1. Open the brackets using Comparatives.

1. I don't get what you mean. Could you please talk (slowly)? 2.You should have thought about buying the dress (early). It is two days left before the prom and we will not be able to find something special. 3. Arabella laughs (loud) than before. Is everything (good) now? 4. Her mother knows the history (accurately) than her teacher. 5. All of a sudden John turned out to run (fast). 6. The situation on the labor market is getting (bad). It is getting (hard) to find an appropriate job. 7. The group of old friend arrived to the station (late) than everyone else. 8. I used to go to the swimming pool (often) than I do right now. 9. This test was very difficult. I know you can do much (good). 10. They moved (far) than they'd planned.

2. Open the brackets using Comparatives or Superlatives.

1. The Trans-Siberian railway is (long) in the world. 2. The 22nd of December is the (short) day of the year. 3. Iron is (useful) of all metals. 4. The Volga is (wide) and (deep) than the Neva River. 5. Elbrus is the (high) peak in the Caucasian Mountains. 6. His theory is (practical) than yours. 7. Moscow is the (large) city in Russia. 8. Yesterday was the (cold) day we have had this winter.

3. Fill in the gaps with *as … as* or *so … as*.

1 The temperature today is … high … it was yesterday. 2. He is not … old … he looks. 3. He is … strong … his brother. 4. This street is … wide … the next one. 5. The luggage is not … heavy … I expected. 6. His TV set is not … powerful … mine. 7. She is … tall … her mother. 8. In Novgorod it is not … hot … in Rostov.

Text

Active Vocabulary

1) application of fertilizers – применение удобрений
2) conditions – условия
3) diseases – болезни
4) drainage – осушение, дренаж
5) efficiency – эффективность
6) erosion – эрозия

7) harvest – уборка урожая
8) irrigation – орошение
9) legume – бобовая культура
10) loss – потеря
11) manure – навоз
12) moist – влажный
13) natural resources – природные ресурсы
14) nutrients – питательные вещества
15) organic matter – органическое вещество
16) productivity – производительность
17) seeds – семена
18) selection – селекция
19) soil conservation – сохранение почвы
20) tillage – обработка почвы
21) to affect – влиять
22) to expose – подвергать действию
23) to obtain – получать
24) to plow – пахать
25) weeds – сорняки

1. Guess the meaning of the following international words and word combinations:

element, erosion, result, organic, effect, controlling, method, practice, factor, to adapt, climatic, drainage, irrigation, region, physical, selection, efficiency, operation.

2. Odd word or word combination out: the one which doesn't fit into the group of synonyms.

Efficient – competent, capable, backward, producing desired result;

proper – accurate, correct, probable, fit, suitable, due;

to adapt – to adjust, to fit, to modify, to add, to alter, to suit;

to operate – to be in action, to carry on, to perform an operation, to work, to exhibit;

major – main, chief, more important, significant, rapid;

increase – growth, enlargement, reduction, magnification, addition.

3. Match the words on the right (A) with their definition on the left (B).

A	B
1) conservation	a) applying water into the soil for good growth and development of crops
2) erosion	b) making the soil more productive for growing plants
3) tillage	c) the protection of natural resources according to principles that will assure their highest economic or social efficiency
4) crop rotation	d) the total long-time characteristic weather of any region
5) soil improvement	e) the carrying away of the land surface by water or wind
6) drainage	f) the order in which crops are grown during a series of years on the same land
7) climate	g) the removal of excess water from land
8) irrigation	h) preparation of land for crop-bearing

4. Find the word on the right which should logically follow the word on the left:

high	erosion
crop	selection
organic	practices
proper	production
controlling	weeds and diseases
the effect of	matter

application of	the soil
improving	yields
irrigation	conservation
soil	fertilizers

5. What are these words derived from? Notice the different suffixes, indicating different parts of speech.

Conservation, irrigation, production, productivity, application, rotation, preparation, favourable, efficiency.

6. Read the text and say what proper land use means.

LAND ECONOMICS

Land economics deals with the efficiency of the use of land, soil conservation and irrigation practices. Crop production greatly depends on land and its productivity.

The cropland varies greatly both from one region to another and within each region. Soils are the most important natural resources. Farming destroys them to some extent, removing the essential plant-food elements and exposing soil to the effects of erosion. The latter is the resu1t of the action of wind and water. Erosion lowers productive value through the loss of the soil itself and removal of nutrients and organic material. The net effects are: higher cost of tillage and lower income.

Better land use means first of all soil conservation. It includes measures for controlling erosion, proper rotations to increase the organic matter, the application of fertilizers and manure, proper tillage methods as well as drainage and irrigation practices.

The better the soil, the higher the yield. But yields are known to be affected by many other factors as well. Among them there are: high-quality seeds of the crops adapted to the climatic and soil conditions of the region, application of fertilizers, good preparation of the land, proper rotations, drainage and irrigation where needed, timely planting, cultivating and harvesting.

Crop being well adapted to the region, better and more economical yields are obtained. Crops should be produced where physical conditions are most favourable for their growth. Thus, it is necessary to study the main physical needs of the crops to be grown.

Proper varieties should be chosen to get high yields. The proper selection of high-producing, good-quality varieties is an important part of high production efficiency.

Of all agricultural practices affecting yields seedbed preparation has been found to be the most important. Plowing is the first step in seedbed preparation. Due to this operation the soil is loosened, better conditions for the crop being provided. The right kind of preparing a seedbed is to get a fine, moist and mellow soil.

Good crop rotation is known to keep up the productivity of the soil. A rotation usually includes: a grass-farming crop, especially one that includes legumes to add nitrogen and increase the organic matter of the soil; a cereal and a cultivated crop, at which time manure and fertilizers can be applied. Well-planned rotation increase yields because of their conserving and improving the soil. They increase the supply of organic matter, which has such a good effect on the physical condition of the soil. Crop rotation proved to be highly effective in controlling weeds and diseases.

7. Find in the text English equivalents for the following Russian words:

обработка почвы, орошение, органические вещества, внесение удобрений, природные ресурсы, урожай, севооборот, климатические условия.

8. Find information in the text to answer the following questions.

1. What does land economics deal with?
2. Does crop production depend on land or its productivity?
3. What is the most important natural resource?
4. How does erosion lower productive value of soil?
5. What does soil conservation include?
6. What factors are yields affected by?

7. How does seedbed preparation affect yields?
7. What is crop rotation needed for?

9. Exclude some detailed information and retell the text.

10. What is your attitude to this problem? Are your views closer to A or B? Give arguments to support your view.

The quality and yields of crops produced depend on:

a) the soil management;

b) the quality of the seed to be used, the variety of the crops to be grown.

Unit 3

Grammar revision: **Participle I–II**
Text : **Climatic Requirements of Plants**

Причастия настоящего и прошедшего времени (Present Participle, Past Participle)

В английском языке причастие (the Participle) – это одна из неличных форм глагола, наряду с инфинитивом (the Infinitive) и герундием (the Gerund). В английском языке причастие одновременно выполняет функции таких частей речи, как прилагательного, глагола и наречия. В нашем родном языке функции Participle I выполняет деепричастие и отвечает на вопрос: «Что делая?». Английскому языку не известно деепричастие, поэтому английское причастие совмещает в себе русское причастие и деепричастие. Например:

Причастие: *Мальчик, листающий журнал…*–
The boy flipping magazine…

Деепричастие: *Просматривая книгу, мальчик нашел много интересных фактов. – Looking through the book, the boy found a lot of interesting facts.*

В английском языке известно 2 вида причастия: причастие настоящего времени (Participle I или Present Participle) и причастие прошедшего времени (Participle II или Past Participle).

Причастие настоящего времени образуется путем добавления к основе глагола (инфинитиву, но без частицы *to*) окончания *-ing*. Например: *to work – работать, working – работая*. Чтобы выразить отрицание, перед причастием ставится частица *not*. Например: *not paying attention – не обращая внимание*.

Причастие настоящего времени в английском языке имеет 4 формы:

Simple Active (простое длящееся, действительный залог): *surprising – удивляющий, удивляя;*

Simple Passive (простое длящееся, страдательный залог): *being surprised – удивляемый, будучи удивленным;*

Perfect Active (завершенное, действительный залог): *having surprised – удививший, удивив*;

Perfect Passive (завершенное, страдательный залог): *having been surprised – был удивлен, будучи удивленным.*

Для образования причастия прошедшего времени необходимо:

1) у правильных глаголов (Regular Verbs) к основной инфинитивной форме без частицы *to* добавить окончание *-ed. improved – улучшенный;*

2) у неправильных глаголов (Irregular Verbs) причастие прошедшего времени соответствует 3 форме неправильного глагола. *taken – взятый*.

Причастие II в английском языке выполняет в предложении функции определения к существительному (*cooked dinner – приготовленный ужин* либо обстоятельства: *when asked he did not answer – когда его спрашивали, он не отвечал*.

1. Translate the following word combinations paying attention to Participle I–II:

crops adapted to the conditions of the region, collective farms growing wheat, some crops grown by our farm, soil supplied with nitrogen, one of the cereal crops raised, wheat varieties best known to people, crop producing high yields

2. Choose the appropriate form of Participles and translate the sentences.

1. In our region there are some farms (grown, growing) wheat. 2. These are the crops (grown, growing) by our farm at present. 3. Small grains are the crops (harvesting, harvested) with combines. 4. This crop will grow well on the soil (supplying, supplied) with nitrogen. 5. The environmental conditions (required, requiring) by crops for their best development should be favorable. 6. Crops such as wheat, oats, rye and barley are the ones (required, requiring) relatively cool conditions for their growth. 7. Humidity is one of the most important factors (influenced, influencing) the crops growth. 8. Plants (producing, produced) flowers and fruit when days are short are known as short – day plants. 9. The crops (including, included) in the grass family are all cereals and most of forage grasses.

3. Identify the type of Participle, define its function. Translate the sentences into Russian.

1. The roots growing in the soil have two main functions. 2. The food used in growth by green plants is manufactured in the leaves. 3. Plant nutrients absorbed by the roots are transferred to the other parts of the growing plant. 4. The food used in growth by green plants is manufactured in the leaves. 5. Varying greatly with the species leaves have different shape. 6. When grown, the farm crops remove nutrients from the soil. 7. Supplying man with food and clothing plants are very important in everyday life. 8. Improving the quality of crop plant breeders increase yields.

Text

Active Vocabulary

1) adaptability – адаптируемость
2) average – средний, в среднем
3) barley – ячмень
4) corn – кукуруза
5) due to – благодаря, из-за
6) essential – важный, существенный
7) irregularities – нарушения

8) oats – овес
9) property – свойство, качество
10) relationship – отношение
11) requirements – потребности
12) to affect – влиять
13) to compensate – компенсировать
14) to conserve – сохранять
15) to incorporate – включать в состав
16) to influence – оказывать влияние
17) to mature – созревать
18) to prevent – предотвращать
19) to regulate – регулировать
20) wheat – пшеница

1. Guess the meaning of the following international words and word combinations:

climate, progress, to control, practice, to regulate, cultivation, to incorporate, organic, to compensate, irrigation, temperature, effect, erosion, problem, process.

2. Translate the following pairs of words paying attention to prefixes:

regular – irregular, proper – improper, normal – abnormal, successful – unsuccessful, possible – impossible.

3. Read the following sentences and guess the meaning of the underlined words according to the context:

1. Crops should not be harvested before they mature. 2. All crops grow best under favourable soil and climatic conditions. 3. To improve soil fertility proper fertilizers should be incorporated into the soil. 4. The same crops should not be grown for many years on the same area. When different crops are grown one after another on the same land, such system is called crop rotation.

4. Match the words on the right (A) with their definition on the left (B).

A	B
1) progress	a) total quantity
2) moisture	b) forward movement, advance, development
3) amount	c) fully developed; ripe
4) cultivation	d) season for reaping and storing of grain; season's yield
5) mature	e) liquid diffused as vapour or condensed on surface
6) harvest	f) preparation and usage of soil for crops

5. Find the synonyms on the right compatible with the words on the left:.

apply	include
due to	most important
amount	use
yield	thanks to
matter	quantity
incorporate	harvest
essential	substance
manufacture	supply
modern	produce
feed	up-to-date

6. Read the text and say how people could assist the creating better conditions for plant growth.

CLIMATIC REQUIREMENTS OF PLANTS

Man cannot influence climatic conditions. However, with new progress in science, crop production can be controlled by applying improved farming practices.

So, the farmer cannot regulate the amount of rainfall, but he can prevent loss of moisture by proper cultivation and by incorporating into the soil large amounts of organic matter which helps conserve moisture. In some areas irregularities in rainfall and lack of moisture are compensated by irrigation.

Proper temperature is also essential for successful plant growth. In addition it helps conserve water in the soil. So, some plants grow best in cool climate not only because of direct effect of temperature, but due to higher supply of water under such conditions.

Wind is another climatic factor influencing crop production. The farmer cannot control the wind, but he can farm his land in such a way as to lose as little soil as possible due to wind erosion. He can plant winter crops in areas where they will mature before dry, hot windy weather becomes a problem the next summer.

Sunlight is highly important for many processes taking place in the growing plant. There exist a relationship between length of the day and the flowering and fruiting of plants. Some plants produce flowers only when days are long and nights are short. They are called long-day plants. Some plants produce flowers and fruit in autumn when days are short and nights are long. They are called short-day plants. Some plants are not likely to be affected by the length of the day.

Crops vary in their climatic requirements. Corn can be grown under a variety of climatic conditions, the most favourable environment being the one where the average summer temperature is between 70 and 80 F. Wheat sown in the fall does best in regions where the climate is cool and moist during the fall, winter and early spring months followed by warm and dry harvest period. Low yields may often result from too low temperatures and abnormally dry weather. Wheat and corn may sometimes be grown in rotation with each other, because wheat is a winter and spring crop, and corn is a summer crop. Like potatoes, oats and barley do best in cool, moist climate.

Both quality and yield of potatoes are better in cool regions. Vegetables, because of their high adaptability, are grown under different soil and climatic conditions, soils of good physical properties being especially important.

To obtain high yield of a good quality crop it is necessary to select a proper variety best adapted to the conditions of the region it is to be grown in.

7. Agree or disagree with the following sentences:

1. Man can control the amount of moisture in the soil.
2. All plants are classified into long-day plants and short-day plants.
3. Application of the most progressive agricultural practices may improve crop production.
4. Choosing the proper variety to be grown is one of the important factors in crop production.
5. Wheat and corn have the same climatic requirements.
6. There are two ways of increasing moisture in the soil.
7. Soil moisture is in direct proportion to temperature.
8. There are no ways of controlling wind erosion.

8. Find information in the text to answer the following questions.

1. How can farmers control crop production?
2. What climatic factors are essential for plant growth?
3. What relationship exists between length of the day and the flowering and fruiting of plants?
4. What are climatic requirements of corn; wheat?
5. What else is necessary to obtain high yield of crops?

Unit 4

Grammar Revision: **Modal verbs**

Text: **Agricultural Engineering**

Модальные глаголы (Modal verbs)

Глаголы *can (could), may (might), must, ought, need* относятся к группе так называемых модальных глаголов (Modal Verbs). Модальные глаголы не употребляются самостоятельно, а только в сочетании с инфинитивом смыслового глагола. Они обозначают возможность, способность, вероятность, необходимость совершения действия, выраженного смысловым глаголом. Модальные глаголы в сочетании с инфинитивом смыслового глагола употребляются в предложении в роли составного глагольного сказуемого: *He can do it himself. Он может это сделать сам. They may come tonight. Они, может быть, придут сегодня вечером.*

Модальные глаголы не выражают конкретных процессов (действий), а показывают лишь отношение говорящего к действию, оценку действия, т. е. возможность, необходимость, предположительность, долженствование, разрешение и т. д. Модальные глаголы являются *недостаточными глаголами (Defective Verbs)*, так как они не имеют всех форм, какие есть у других глаголов. Глаголы *can* и *may* имеют формы настоящего и прошедшего времени*: can – could, may – might*, глаголы *must, ought* и *need* – только форму настоящего времени.

Модальные глаголы имеют ряд формальных отличительных особенностей.

Сочетание модального глагола с неперфектным инфинитивом относит действие к настоящему или будущему времени либо свидетельствует о его одновременности с моментом речи, и, напротив, сочетание с перфектным инфинитивом либо относит действие к прошлому, либо выражает предшествование действия относительно момента речи: *I could do it. Я мог бы сделать это* (в настоящем или будущем*). I could have done it. Я мог бы сделать это* (но уже не сделал).

Отрицательная форма образуется при помощи частицы ***not,*** которая ставится непосредственно после модального глагола, в результате чего значение меняется на противоположное*: must должен – must not не должен*. В настоящем времени *can* пишется слитно с *not: He cannot do it. You may not take it. He must not go there.* В разговорной речи в отрицательной форме обычно употребляются следующие сокращения:

cannot – can't, could not – couldn't, may not – mayn't, might not – mightn't, must not – mustn't, ought not – oughtn't, need not – needn't.

В вопросительных предложениях модальный глагол стоит на первом месте либо сразу после вспомогательного слова: *Who can do it? Кто может сделать это?*

Основные значения модальных глаголов – необходимость (долженствование), возможность и предположение. Некоторые глаголы имеют формы прошедшего времени: *can – could, may – might* (иногда называют и *will – would, shall – should*), тем не менее, все эти формы могут иметь самостоятельные, присущие только им оттенки значения.

Вместо недостающих неличных и аналитических форм модальных глаголов используют их эквиваленты: *to have, to be (=must), to be able (=can), to be allowed, to be permitted (=may).*

Отличительные свойства модальных глаголов

1. Не имеют окончания *-s* в 3-м лице единственного числа настоящего времени. *He can do it. He may take it. He must go there. He ought to help him. Need he do it?*

2. Не имеют неличных форм (инфинитива, герундия и причастия).

3. Не употребляются как отдельный член предложения – простое глагольное сказуемое, но только в сочетании с еще одним, не модальным, глаголом в форме инфинитива без частицы *to* (кроме *ought* и иногда *need*), образуя составное глагольное сказуемое. *I must go there. Я должен пойти туда. You needn't do it. Вам не нужно делать этого.* Но: *You ought to help him. Вам следовало бы помочь ему.*

4. Вопросительная и отрицательная формы модальных глаголов образуются без вспомогательного глагола: в вопросительных предложениях модальный глагол ставится перед подлежащим, в отрицательных – после него ставится отрицание *not. Can you do it? May I take it? Must he go there? Ought he to help him? Need he do it? He ought not to help him. He need not do it.*

5. Не имеют формы прошедшего времени (кроме *can* –

could, may – might) и аналитических форм (будущего времени, продолженного вида, перфектных форм и форм страдательного залога). В случае необходимости вместо отсутствующих форм используются эквиваленты модальных глаголов.

1. Use the modal verbs must (должен), can (могу, умею), may (можно, разрешено), should (следует /совет/), ought to (следует /упрек/) to complete the sentences. There may be more than one possible answer.

1. It's too far to walk from here to the station.. You ... take a taxi. 2. Sarah got the job because she ... speak five languages. 3. The windows are dirty. I ... clean them. 4. You ... use a dictionary. 5. I like this hotel room. You ... see the lake from the window. 6. It's a good film. You ... see it. 7. He ... take my book. 8. We ... go to the bank today. We have no money. 9. When you are driving, you…wear a seat belt. 10. We…see the lake from our window. 11. If you have time, you ... visit the museum. It's very interesting. 12. I ... come and see you tomorrow. 13. She ... use this "computer program. 14. Your salary is very low. You ... look for another job. 15. Mary is a very interesting person. You ... meet her. 16. Take an umbrella with you when you go out. It ... rain later. 17. Sandra ... drive but she hasn't got a car. 18. Tomorrow the game is very important for us. We ... win. 19. Students ... bring textbooks into the examination room. 20. It's late and you're very tired. You ... go to bed.

2. Translate the sentences paying attention to modal verbs and their equivalents.

1. Man can use plants for food. 2. We must know how a plant grows. 3. The farmers can grow a new corn variety on their farm. 4. All parts of a plant must be developed well. 5. They had to resow this crop because of bad weather. 6. The farmers are to increase wheat yield. 7. Some plants are so small that they can be distinguished only under microscope. 8. There are very large trees growing in California that may be 350 feet high with a diameter of 20 feet at the base. 9. Plants may be used for many different purposes. 10. Farm crops may be classified according to their use.

3. Translate the sentences into Russian. Name the sentences with the verbs «to be» and «to have» as modals.

1. Farmers will have to cultivate this soil when it is dry.

2. The farm is to increase yield of corn. 3. They had to grow some new grain crops this year. 4. The plants have very many uses.

5. These crops are very important for men. 6. Crop plants are to be classified on the basis of their use. 7. The farmer will have to plant corn later this year.

Text

Active Vocabulary

1) ability – способность
2) automatic control – автоматический контроль
3) consequently – следовательно
4) cooler – охладитель
5) demand – спрос, потребность
6) design – дизайн, проект
7) effectiveness – эффективность
8) electric power – электроэнергия
9) equipment – оборудование
10) engineering – инженерия, разработка
11) freezing – замораживание
12) opportunity – возможность
13) processing equipment – технологическое оборудование
14. reasonable – обоснованный, приемлемый
15) seasonable – соответствующий времени года
16) source – источник
17) to handle – обращаться, управлять, регулировать
18) to reduce – уменьшать, сокращать
19) variations – разновидности, изменения

1. Guess the meaning of the following international words and word combination:

industry, biological factor, engineer, principle, adaptable, effectiveness, mechanically, operation, period, design, variations, mechanization, automatic compact construction, milk, modern, reconstruction, intensification, classification, organize, stimulation, original.

2. Match the words on the right (A) with their definition on the left (B).

A	B
1) engineer	a) outfit, tools, apparatus
2) industry	b) the application of engineering knowledge to agriculture
3) selection	c) a person who works in a branch of engineering
4) biology	d) branch of trade or manufacture
5) agricultural engineering	e) the system when only best animals, plants or trees are taken and used for future production
6) nutrients	f) science of physical life of plants and animals
7) equipment	g) substances serving as or providing nourishment

3. Find the word on the right which should logically follow the word on the left:

agricultural	machines
biological	energy
field	effectiveness
electric	equipment
to reduce	the yield of crops
processing	factor
milking	knowledge
engineering	operations
to increase	engineering

4. What are these words derived from? Notice the different suffixes, indicating different parts of speech.

Engineering, application, difference, biological, adaptable, effectiveness, processing, equipment, mechanically, seasonable, freezing, resting, mechani zation, designing, operating, controlling, adapting, production, reasonable, automatic, construction, ability, cooler, heater, various.

5. Juxtapose a word on the left to the appropriate antonym on the right:

efficient	harmful
often	out-of-date
below	seldom
modern	dry
moist	inefficient
to reduce	to heat
useful	above
to cool	to increase
to produce	to take
to give	to consume

6. Look through the text to answer the following question:
What is agricultural engineering?

AGRICULTURAL ENGINEERING

1. Agricultural engineering means the application of engineering knowledge to agriculture. The agricultural engineer must understand that there are basic differences between agriculture and other industries. The biological factor is an important one in engineering application, and the engineer must know well the basic principles and practices of agriculture.

2. Changes in agricultural practices often need to make a machine adaptable or to increase its effectiveness. Processing equipment may also need changes to harvest crops mechanically, for the quality of yield of a crop may sometimes be reduced by the use of an improper machine.

3. Most field operations are seasonable in nature often with only a short period of time in which to do the job. Therefore field machinery in many cases has a low annual duty (i. e. very few hours of operation per year).

4. The field of farm machinery design gives greater opportunity to an engineer than any other field of engineering. Farm machines must work where the temperature may be above 100 F or where it is

below freezing. They must be able to work in rain and in snow as well. Instead of resting on the floor of a factory, they must operate over any kind of land. They must also be designed to handle wide variations in crop and soil conditions.

5. Not only agricultural engineers in the field of mechanization are in demand on the farm today. Electricians, i. e. agricultural engineers capable of designing, operating, controlling and adapting any form of electric energy to farm needs are wanted by modem agriculture.

6. As is known, electric power has become the main source of energy in agricultural production and its sphere of application is ever increasing.

7. For example, it is a most reasonable source of mechanical power for some kinds of equipment such as electric motors which are very suited for farm jobs because of their automatic control, long life, compact construction, ability to run in cold or hot weather, etc.

8. All kinds of equipment for handling milk, such as milking machines, milk coolers, water heaters and others are also operated by electricity.

9. The great effects of various types of radiation on seeds, plants, insects, and animals have been studied and are well known today. Those are but a few examples of electric power application on the farm which a modern agricultural engineer must work with.

7. Look back at the text again and identify in which paragraph you can find the answers to the following questions:

1. How is the equipment for handling milk operated?
2. Why are electric motors suitable for farm jobs?
3. Why are electricians wanted in modern agriculture?
4. Can radiation affect crops or animals?
5. What is meant by agricultural engineering?
6. What is there specific about field operations?
7. What factor can sometimes reduce the quality and yield of a crop?

Part II
FERTILIZERS IN AGRICULTURE

Active Vocabulary

1) arable – пахотный
2) calcium – кальций
3) magnesium – магний
4) carbon dioxide – углекислый газ
5) chlorophyll – хлорофилл
6) constituent – составляющий, составная часть
7) decomposing – разложение
8) degradation – деградация
9) eliminate – устранять
10) emit – излучать, выделять
11) enzyme – фермент
12) exhaust – истощать, исчерпывать
13) imbalance – дисбаланс
14) impact – воздействие, влияние
15) insect – насекомое
16) liquid – жидкость
17) nitrogen – азот
18) nucleic acids – нуклеиновые кислоты
19) pesticide – пестицид
20) pests – вредители
21) phosphorus – фосфор
22) plough – пашня, вспаханное поле
23) potassium – калий
24) residue – остаток
25) root – корень
26) solid – твердый
27) solution – раствор
28) storage – хранение
29) sulphur – сера
30) topsoil – верхний слой почвы

Unit 1

Grammar Revision: **Infinitive (Part I)**
Text: **Food and Fertilizers**

Инфинитив (Infinitive)

Инфинитив (the Infinitive) – это неличная форма глагола, которая называет действие. Инфинитив является основной (или I) формой глагола и представляет глагол в словаре. Признаком инфинитива является частица *to: to help – помогать, to read – читать*. Инфинитив употребляется без частицы *to* в следующих случаях:

You had better go now. – Лучше уйди / иди сейчас.

I must see you at once. – Мне надо сейчас же встретиться с тобой.

Таблица 4 – Формы инфинитива

Forms	Active	Passive
Indefinite	*to write*	*to be written*
Continuous	*to be writing*	–
Perfect	*to have written*	*to have been written*
Perfect Continuous	*to have been writing*	–

Инфинитив в форме действительного залога обозначает действие, произведённое лицом, выраженным в предложении подлежащим, а в страдательном залоге – действие, направленное на это лицо.

I like to help. – Я люблю помогать.

I like to be helped. – Я люблю, когда мне помогают.

Инфинитив в Indefinite Active обозначает действие, не уточняя характер его протекания. Инфинитив в Continuous Active подчеркивает длительность действия.

She likes to write letters. – Она могла писать письмо.

She must be still writing. – Она, должно быть, все еще пишет.

Неперфектный инфинитив выражает действие, одновременное с действием глагола-сказуемого (или следующее за ним).

Перфектный инфинитив выражает действие, предшествующее действию, выраженному глаголом-сказуемым.

I am glad to study at the University. – Я рад, что учусь в университете.

I am glad to have studied at the University. – Я рад, что учился в университете.

1. Read and translate the following sentences paying attention to the different forms of Infinitive and their meaning.

1. I'd like to go home early today. 2. It's nice to be sitting here. 3. I'm glad to have left school. 4. He doesn't like to be interrupted while he's working. 5. I remember to have been asked this question. 6. I'd like to have been sitting there when she walked in. 7. She asked me not to forget to post the letter. 8. I was sorry not to have phoned you. 9. We must make careful plans. 10. I would rather go by myself.

2. Translate the following sentences. Pay attention to difference in the translation of attributes, expressed by Participle constructions and the Infinitive.

1. The soil to be used as a seedbed should be warm, moist mellow. 2. The soil cultivated when it is too wet will not provide conditions for normal plant growth. 3. Seed planted deep enough will have a sufficient supply of moisture and nutrients. 4. Developing a new variety to be cultivated in a given area one should know its soil and climatic requirements. 5. We were given the seed to be used for sowing. 6. The seedbed prepared in spring is to provide the proper environment for seed germination. 7. Fertilizers to be applied must be of highest quality. 8. The yield of root crops produced last year was rather low. 9. The yields to be obtained on our farm greatly depend on

soil conditions. 10. The increase in corn yield to be produced greatly depends on the amount and quality of fertilizers added to the soil.

Text

1. What kind of the text would you expect from the title "Food and Fertilizers" and the following key phrases which come from the text:

plant nutrients, major nutrients, micronutrients, deficiencies of nutrients, plant gross suffer, exhausted soil, to replenish nutrients, fertilization, fertilizer application, manure.

2. Cross out words and phrases which are not connected with the problem of using fertilizers in agriculture:

fertilizers, organic, mineral, combine harvester, manure, increasing yields, nutrients, steering wheel.

3. Find the most common word or word-combination among the following:

nitrogen, phosphorus, potassium, plant nutrients, calcium, magnesium, sulphur.

4. Before you read the text decide which of the following statements you agree or disagree with:

a) Plants tend to exhaust the soil.
b) The best way to increase soil fertility is applying fertilizers.
c) It is preferable to add mineral fertilizers into the soil.
d) Fertilization is the only way to improve soil fertility.
e) Use of fertilizers has only positive effect.

5. Scan the text quickly and find what the main components of a rich soil are and how plants are supplied with them.

For this the following strategies are possible:

– look through subtitles
– look for key words
– look for word meaning through context
– categorize information
– classify information

FOOD AND FERTILIZERS

We all, 5000 millions of us, depend on plants for our food, and plants depend on mineral nutrients for their growth and development.

13 elements derived from the soil are indispensable for all plant growth. They are called plant nutrient. An additional 4 or 5 elements are beneficial for proper development of some plants.

Fertilizers are plant nutrients.

Plant nutrients

Plant form their complex organic matter from water and nutrients from the soil, carbon dioxide from the air and energy from sunlight.

Plants use six of the nutrients in relatively large amounts: nitrogen, phosphorus, potassium, sulphur, calcium and magnesium. These are called “major nutrients”. They are constituents of many plant components such as proteins, nucleic acids and chlorophyll, and are essential for processes, such as energy transfer, maintenance of internal pressure and enzyme function.

The other nutrients are required in small or trace quantities and are referred to as “micronutrients” or “trace elements”. They have a variety of essential functions in plant metabolism.

The metals are constituents of enzymes.

Micronutrients are Chlorine (Cl), Iron (Fe), Manganese (Mn), Zinc (Zn), Copper (Cu), Boron (B), Molybdenum (Mo).

When deficiencies or gross imbalances of nutrients occur, plant gross and development suffer.

For optimum plant growth, nutrients must be available for plants: in solution in the soil water, in appropriate and balanced amounts, at the right time.

Plants are supplied with nutrients mainly from: release of nutrients from soil reserves. decomposing plant residues (roots, straw, etc.), organic manures, mineral fertilizers, biological nitrogen fixation, aerial deposition.

Nutrients removed from the soil must be replenished, otherwise the soil becomes exhausted and crops will suffer and eventually fail.

Soil contains reserves of nutrients, e.g., the topsoil content of ni-

trogen ranges from some 3 to 20 t/ha. However, these reserves are mostly in forms unavailable to plants; only a minor portion in released each year through biological activity or chemical processes. Plants can only take up nutrients as water soluble compounds

When the nutrients supply is insufficient for crop needs, additional nutrients can be supplied in fertilizers to make up the difference. Mineral fertilizers are not substances foreign to nature: they contain normal plant constituents.

Fertilizer application

Most fertilizers are applied by surface spreading. In arable crops sowing and fertilization are combined in one operation, with the fertilizer placed near the seeds. Later application of nitrogen are spread on the surface. Injection of liquid ammonia into the soil using special equipment and the spreading of fertilizers dissolved in water are also used in some regions.

Plants take part most of their nutrients from the soil solution through the roots, but they can also take up some nutrients sprayed on the leaves. This is the usual application method for correcting deficiencies of micronutrients.

Fertilizers should be used according to fertilizer recommendations published by governmental and agricultural agencies and by fertilizer producers. Increasingly, fertilizer plans are made for each field. Crop requirements, nutrient supply from soils as determined by soil analysis, residues from past cropping, manure application and local soil and climatic conditions are all important in estimating the fertilizer rate.

Application timing is also important. Needs vary with the stage of plant development. Too little fertilizer reduces crop yields, too much is wasteful and result in environmental problems.

6. Sum up the ideas of the above text in some sentences. Use the strategy of classification key and additional information. If you have any difficulties refer to Part 1.

Unit 2

Grammar Revision: **Infinitive (Part II)**

Text: **Environmental and Health Impact of Fertilizer Production**

Инфинитив (Infinitive)
В функции подлежащего

Если предложение начинается с инфинитива, за которым следует глагол-сказуемое, то этот инфинитив является подлежащим, и переводится на русский язык глаголом в неопределенной форме или существительным.

В функции обстоятельств цели и следствия

Инфинитив (или инфинитивная группа, т. е. инфинитив с уточняющими его словами), находясь в начале предложения, может выполнять и другую функцию: он может быть не подлежащим, а обстоятельством цели. Такой инфинитив часто вводится союзом *in order (чтобы, для того чтобы).*

Однако союз *in order* часто опускается, и тогда предложение начинается с инфинитива (или инфинитивной группы). При переводе на русский язык перед таким инфинитивом следует добавить союз *чтобы*.

Итак, инфинитив в начале предложения переводится на русский язык либо неопределенной формой глагола (если это инфинитив в функции подлежащего), либо неопределенной формой глагола с союзом *чтобы* (если это инфинитив в функции обстоятельства цели).

Сравните:

1. *To create jobs for young people means to lower juvenile delinquency.*

2. *To create jobs for young people the government allocated additional means.*

Следовательно, обнаружив в начале предложения инфинитив, надо сначала попытаться перевести его, не добавляя союза *чтобы* (в первом примере: «*Создавать рабочие места для молодежи означает снижать уровень преступности среди молодежи*»). Если это не удается (во втором примере), значит, следует добавить

союз *чтобы*: *«Чтобы создать рабочие места для молодежи, правительство выделило дополнительные средства».*

Инфинитив в функции обстоятельства цели может находиться не только в начале предложения, но и после дополнения или обстоятельства, причем союз *in order* и в этом случае часто опускается.

Инфинитив в предложении выполняет также функцию обстоятельства следствия и переводится неопределенной формой русского глагола с союзом *чтобы* (*для того чтобы*) после слов *enough (достаточно*) и *too (слишком).* Например:

The average wage in this industry is high enough to attract workers from other industries.

The wage in this enterprise is too low to attract qualified workers.

Средняя заработная плата в этой отрасли достаточно высока для того, чтобы привлечь рабочих из других отраслей.

Заработная плата на этом предприятии слишком низкая, чтобы привлечь квалифицированных рабочих.

Инфинитивный оборот «for +существительное / местоимение + инфинитив»

Оборот «*for* + существительное (личное местоимение в объектном падеже) + инфинитив» является в предложении подлежащим, если употребляется после слов *it is necessary / important / possible* и т.п. или обстоятельством следствия после слов *too (слишком), enough* (достаточно) или обстоятельством цели. Во всех случаях инфинитивный оборот соответствует русскому придаточному предложению с союзом *чтобы*, а инфинитив в таком придаточном предложении переводится сказуемым. Например:

It is necessary for society to allocate resources sparingly.

The production costs in the enterprise are too high for it to work profitably.

В функции определения

Инфинитив или инфинитивная группа, следующие за существительным, могут являться определением к этому существительному.

Инфинитив в функции определения может переводиться на русский язык различными способами:

1. Инфинитив переводится неопределенной формой русского глагола.

2. Инфинитиву соответствует в русском языке определительное придаточное предложение, начинающееся словами *который будет* или *который должен*. Сказуемое такого придаточного предложения обозначает действие, которое должно произойти в будущем. Инфинитив, переводимый придаточным предложением, чаще всего имеет пассивную форму (*to be used, to be produced* и т. п.).

The Gross National Product per head is an important characteristic to be considered in determining living standards. –Валовой национальный продукт на душу населения – это важная характеристика, которая должна приниматься во внимание при определении уровня жизни.

Инфинитиву соответствует в русском языке определительное придаточное предложение, начинающееся словами который может. Сказуемое такого придаточного предложения обозначает действие, которое можно произвести с определяемым существительным. Инфинитив имеет, как правило, пассивную форму.

1. Translate the sentences with the Infinitive as a subject.

1. To study botany is necessary for future agronomists. 2. To plow, sow and cultivate the soil is very important for obtaining good yield. 3. To apply organic matter to the soil means to improve soil productivity. 4. To classify farm crops agronomically according to their use is very important. 5. To develop new variety of this crop was very difficult. 6. To increase the yield of the crop was the main problem of plant breeders. 7. To find new uses of plants is very important for scientists. 8. To study the structure of the plant is the first task of any agriculturist.

2. Translate the sentences paying attention to the functions of the Infinitive.

1. To develop good tubers potatoes need sandy or sandy loam soil. 2. Fine soils can store enough moisture for crops to grow normally. 3. To produce high yields crop plants require an adequate supply of plant nutrients and water. 4. Crops also require minerals in order to grow well. 5. The climate of this area is too cold to cultivate corn. 6. To apply fertilizers is the most usual practice in cultivating most crops. 7. For soil to produce good crops, it should be not too acid or too alkaline. 8. In order to improve the structure of this soil we must supply it with organic matter. 9. To get good results the plant grower must know the properties of the soil cultivated. 10. To prepare the proper seedbed is very important for obtaining good results. 11. The soils in our region are too heavy to provide normal development of tubers. 12. Legumes can be grown to improve soil fertility. 13. For soil moisture to be high enough irrigation is often necessary.

Text

1. In spite of the fact that fertilizers are widely used on various agricultural farms, the production and usage of them has harmful effect on the environment. Before you read the text agree or disagree with the following statements:

A. Air pollution is one of the greatest problems facing mankind.

B. Emissions from fertilizer production are not harmful for the environment.

C. Nothing can be done with the environmental problem.

2. Read the text and find out if it is possible to prevent or diminish the pollution of atmosphere from production and utilization of fertilizers.

To solve this problem use the pragmatic strategy. That is combine your background knowledge with the information derived from the text. Besides, pay attention to the heading, subtitles and key words.

ENVIRONMENTAL AND HEALTH IMPACT OF FERTILIZER PRODUCTION

Fertilizer production, like all industrial activities impinges on the locality and its environment:

- directly through emission
- indirectly through heavy traffic, contribution to employment, etc.

The emissions from fertilizer production depend on a number of factors: the raw materials, the processes, effluent treatment, standard of control, operation and maintenance, factory history: old facilities were designed with less emphasis on pollution control than comparable new factories.

Only general indications of emission levels can be provided because of this complexity. Individual cases must be evaluated on their merits and local conditions.

Fertilizer factories emit Ammonia, Nitrogen oxides, Nitrous oxide, Fluoride to the air and Ammonia and nitrate, Phosphate, Fluoride to the water.

The upper part of the range can be found in old plants, while modern facilities show lower losses. Fertilizer factories also emit dust and industrial noise. All compounds are not relevant for all installations, e.g., phosphate and fluoride come only from the production of phosphate fertilizers.

Some 2–3 per cent of the world's fossil fuel consumption is used for fertilizer production; this generates a corresponding amount of carbon dioxide.

Solid waste

Gypsum (calcium sulphate) is a mineral which also occurs in nature. Some 10 tonnes gypsum/t phosphorus is formed as solid waste in phosphate fertilizer plants which use sulphuric acid for acidulation.

This gypsum also contains part of the other elements present in phosphate rock. It has been common practice in the industry to pump gypsum into the sea, where it gradually dissolves. Gypsum is a natural constituent of sea water. In some places, restrictions on the disposal of gypsum into the sea have been introduced. In other areas,

disposal into the sea is permitted subject to restrictions on the cadmium content of the gypsum. Disposal on land is also used. Processes for cadmium removal in phosphate fertilizer production will eventually produce a waste that must be given appropriate attention.

Production, transport and storage of ammonia and ammonia nitrate are subject to regulations designed to ensure safe operations and prevent fires and explosions. Nitrate fertilizers can decompose in fire, e.g., in burning storage buildings, and release toxic nitrogen oxide gases. Storage of such fertilizers is a subject to regulations. The risk of decomposition depends on the fertilizer composition. Some mixtures of fertilizer compounds can self-sustain decompositions on heating. The need for avoiding these compositions limits the range of possible formulations.

Dust exposure is the main occupational health problem in fertilizer manufacture. It is not an industry associated with unusual levels of cancer incidence. But use of asbestos for heat insulation was previously a common practice in industry. This was also the case in fertilizer production, and some tragic cases of lung cancer due to asbestos occurred.

3. GROUP WORK: A DEBATE

The theme of this short debate is "The Usage of Chemicals Should be Forbidden". Decide if your group will support it or will speak against it. Work with your partner to present arguments in favour of your decision then start debating with a team that takes opposite sides.

For this look through the above 2 texts and find information about pros and cons of using fertilizers in agriculture. Which strategy do you prefer in this case?

4. Exclude some detailed information and write down the gist of the text.

Unit 3

Grammar Revision: **Conditional Clauses**
Text: **Weather and Climate: the Greenhouse Effect and Agriculture**

Условные придаточные предложения (Conditional Clauses)

Условные предложения могут выражать реальные, маловероятные (условные предложения I типа) и нереальные условия (условные предложения II типа).

Условные предложения I типа

Условие, содержащееся в условном придаточном предложении, рассматривается говорящим как реально предполагаемый факт, относящийся к настоящему, прошедшему или будущему временам. Сказуемые главного и придаточного предложений выражаются глаголами в формах изъявительного наклонения.

If the weather is nice, we go for a walk. – Если погода хорошая, мы ходим на прогулку.

If the weather was nice, we went for a walk. – Если погода была хорошая, мы ходили на прогулку.

If the weather is nice, we'll go for a walk. – Если погода будет хорошая, мы пойдём на прогулку.

Условные предложения II типа

Условие, содержащееся в условном придаточном предложении, рассматривается говорящим как маловероятное. Для выражения малой вероятности осуществления действия в настоящем или будущем временах сказуемое главного предложения употребляется в форме сослагательного наклонения *should / would + Indefinite Infinitive* без *to*, а сказуемое придаточного предложения – в форме сослагательного наклонения, аналогичной *Past Indefinite* или *were* для всех лиц от глагола *to be*.

If he were free, he would do it. – Если бы он был свободен, он бы это сделал.

If we paid more attention to grammar, we should know the language better. – Если бы мы уделяли грамматике больше внимания, мы бы знали язык лучше.

Условные предложения III типа

Условие, содержащееся в условном придаточном предложении, рассматривается говорящим как неосуществимое, так как относится к *прошлому* времени. Сказуемое главного предложения употребляется в форме сослагательного наклонения *should / would + Perfect Infinitive*, а сказуемое придаточного предложения в форме сослагательного наклонения, аналогичной *Past Perfect*.

I should not have been late yesterday, if my watch had been write. – Я бы не опоздал вчера, если бы мои часы шли правильно.

Союзы условных придаточных предложений

if – если; in case – в случае, если; suppose (that) – предположим, что; on condition (that) – при условии, что; provided (that) – при условии, что; unless – если … не; but for – если бы не.

1. Complete the sentences.

1. If people (not to drink), they (to die). 2. If you (to eat) bad food, your health (to become) worse. 3. If you (not to feel) well, you (to go) to the doctor. 4. If babies (to be) hungry, they (to cry). 5. If I (to be) thirsty, I always drink fresh water. 6. If Tom (to have) a birthday party, he usually (to invite) a lot of friends. 7. If Mary (to do) her homework well, her teacher always (to praise) her. 8. If I (to have) a headache, my mother usually (to give) me some medicine. 9. If I (to cough), I (to drink) hot milk with honey. 10. If you (to fly) by a budget airline, you (to have) to pay for your drinks and food. 11. If we (to be) late for school, our teacher (to get) angry.

2. Translate the following sentences into Russian.

1. I'll ask Tom if I see him today. 2. We would go to the party if we had time tomorrow. 3. She would pass her exam next month if she worked harder. 4. She would be happy if she met him at the party next Sunday. 5. We'll go nowhere tomorrow if it rains. 6. If she knew his phone number, she would call him next week. 7. If J. London had not learned life from his own experience, he could not have

written his great works. 8. Had the science of radio not been developed so rapidly, we should not have got such remarkable changes in the technique today. 9. Had he been a young man, he would have taken part in the expedition. 10. If you had applied this method, you would have got better results.

3. Fill in the gaps with the suitable verb form.

1. The trains all (stop) … if it snowed heavily. 2. If you (go out) … in cold weather without a coat, you would catch a cold. 3. If I saw a cheap second- hand car, I (buy) … it. 4. If you ate well and exercised regularly, you (live) … 100 years. 5. You would have had stomach ache if you (eat) … too much of that cake. 6. If it (rain) … this afternoon, I (take)… my umbrella. 7. If you did not drive carefully, you (have) … an accident. 8. If you (study) … for a higher qualification, you (get) … a better job next year. 9. If you sent the letter by first class mail, it (get) … there the following day. 10. If the weather is fine, we (go) for a picnic.

Text

1. One of the most pressing problems facing all of us is that of the gradual warming of the earth's atmosphere. Do you know the causes of this problem?

2. Before reading the text "Weather and climate: the greenhouse effect and agriculture" agree or disagree with the following statements:

1. Farmers are greatly dependent on weather changes.
2. The heat balance of the atmosphere is influenced by some of the components of the air that are present in only small amounts.
3. The increasing atmospheric concentration of gases which influence the warming of the air doesn't connected with people's activities.

3. Scan the text to answer the following question:

How does the production of fertilizers influence the global warming?

To answer this question look through the text quickly to find more essential information. Try to avoid looking for details. Get the meaning of unfamiliar words by looking at the context. If it is impossible, consult the dictionary.

WEATHER AND CLIMATE: THE GREENHOUSE EFFECT AND AGRICULTURE

Agricultural yields are very dependent on weather. There are indications that extreme weather conditions now occur more frequently than in the past. If true, this instability will influence agriculture and increase the need for food reserves. Unfortunately, accurate long-term weather forecasts are probably impossible. Some compensation for weather vagaries is possible by irrigation, but apart from this little else can be done with weather.

One aspect of the climate now attracting political attention is the problem increase in the earth's average surface temperature due to the "greenhouse effect". The heat balance of the atmosphere is influenced by some of the components of the air that are present in only small amounts: carbon dioxide, methane, nitrous oxide and the chlorofluorocarbons. These gases absorb infra-red (heat) radiation from the earth. The concentration of these gases in the air is increasing and thus the capacity of the atmosphere to retain heat. It is feared that this will give a global temperature rise and thus influence climate.

The increasing atmospheric concentration of these gases is due to human, domestic and industrial activities. The increase appears to have started with industrialization and became especially noticeable after the Second World War.

The influence of these gases on global temperature and climate is very complex. Other factors are also involved, such as regional pollutants (e.g., ozone), water vapour and clouds, and changes in the earth surface reflectance due to deforestation and other land use changes.

There is a growing consensus that the increase in the concentration of greenhouse gases gives cause for concern. The observed trends must eventually change the global surface temperature or the

atmospheric circulation pattern, or both, but the size and timing of any effects are a matter for current debate.

In principle the emissions of chlorofluorocarbons should be those easiest to reduce or eliminate. These are man-made industrial chemicals. There is now international agreement that their use should be greatly reduced and preferably eliminated.

The main concern is increasing concentration of carbon dioxide. Burning of fossil fuel emits carbon dioxide to air.

Forests contain carbon. When trees are replaced by grassland or crops with less standing biomass, carbon is liberated as carbon dioxide. The present rate of decline in forest area results in a substantial input of carbon dioxide to the atmosphere, though somewhat less in magnitude than the burning of fossil fuels.

Agricultural practices such us tillage, fertilization, manuring, crop residue management and drainage all influence nitrogen transformation processes in the soil and may therefore influence nitrous oxide emissions. Knowledge required to give guidelines on how to minimize such emissions is largely lacking. Nitrate application on excessively wet or waterlogged fields can increase nitrous oxide emissions from the soil, but it is not usual to fertilize under such conditions. Research on the influence of agriculture on nitrous oxide formation is now being undertaken in many institutions, but improved measurement methods for field emissions are needed.

4. Refer to the text once again. Scan it quickly and find out new information about the ways of rejecting the greenhouse effect. Represent them in the diagram. To search for the necessary information make use of the strategy of skimming, ranking information and cohesion.

5. Divide the text into several parts. Find the key sentences in each part. Sum up the content of the text.

Unit 4

Grammar Revision: **Sequence of Tenses**
Text: **Erosion of Soil**

Согласование времен (Sequence of Tenses)

В английском языке употребление времени глагола-сказуемого в придаточном предложении зависит от времени глагола-сказуемого в главном предложении. Это называется правилом согласования времен.

Правило согласования времен заключается в следующем:

Если в главном предложении глагол-сказуемое стоит в одной из форм настоящего или будущего времени, то глагол-сказуемое в придаточном предложении может стоять в любой временной форме, которая требуется по смыслу:

He says that he was busy yesterday. – Он говорит, что был занят вчера.

He says that he will be busy tomorrow. – Он говорит, что будет занят завтра.

He says that he is busy. – Он говорит, что занят.

Если в главном предложении глагол-сказуемое стоит в одной из форм прошедшего времени, то в придаточном предложении глагол-сказуемое нужно употреблять также в одной из форм прошедшего, а именно:

1. Если действие придаточного предложения происходит одновременно с действием главного предложения, то в придаточном предложении употребляется глагол в одной из форм Past Simple or Past Continuous:

He told me that he studied here. – Он сказал мне, что учится здесь.

She said she was preparing for a report. – Она сказала, что готовится к докладу.

2. Если действие придаточного предложения предшествует действию главного предложения, то в придаточном предложении употребляется глагол в одной из форм Past Perfect:

The rector said that the Moscow Higher Women's Courses had been reorganised into the Second Moscow State University. – Ректор сказал, что Московские высшие женские курсы были преобразованы во Второй Московский Государственный Университет.

3. Если действие придаточного предложения относится к будущему времени, а в главном действие относится к прошедшему, то глагол-сказуемое должен стоять в Future-in-the-Past.

Форма Future-in-the-Past образуется от соответствующей формы Future Simple, но вместо вспомогательного глагола *will* употребляется *would:*

I thought I would know the way this time, but I was wrong. –

Я думал, что на этот раз я узнаю дорогу, но я ошибся.

В следующих случаях правило согласования времен не соблюдается, т.е. независимо от временной формы глагола-сказуемого в главном предложении в придаточном предложении глагол-сказуемое употребляется в любой временной форме, которая требуется по смыслу:

1. Если в состав сказуемого в придаточном предложении входит один из следующих модальных глаголов: *must, ought, should:*

I knew that he must come to the Academy by 3 o'clock. –Я знал, что он должен прийти в академию к 3 часам.

2. Если в придаточном предложении сообщается об общеизвестном факте или неопровержимой истине:

The teacher told the pupils that Novosibirsk stands on the both banks of the river Ob. – Учитель рассказал ученикам, что Новосибирск расположен на обоих берегах реки Обь.

3. В придаточных определительных предложениях и в предложениях, вводимых союзными словами *as* как, в качестве, *than* чем:

It was not so cold yesterday as it is today. – Вчера не было так холодно, как сегодня.

4. Если действие придаточного предложения предшествует действию главного предложения, и время действия придаточного предложения указано точно:

I knew that she left Moscow in 1945. – Я знала, что она уехала из Москвы в 1945 году.

Но:

I knew that she had left Moscow some years ago. – Я знала, что она уехала из Москвы несколько лет назад.

1. Open the brackets and put the verbs into the correct forms.

1. I knew they (to wait) for me at the metro station and I decided to hurry. 2. I didn't know that you already (to wind) up the clock. 3. I was afraid that the little girl (not to be) able to unlock the front door and (to go) upstairs to help her. 4. He says that he (to know) the laws of the country. 5. Sarie understood why Lanny (not to come) the previous evening. 6. She asked me whether I (to remember) the legend about a faithful lion. 7. He understood that the soldiers (to arrest) him. 8. He could not understand why people (not to want) to take water from that well. 9. I suppose they (to send) a dog after the burglar immediately. 10. He said he (to leave) tomorrow morning. 11. She says she already (to find) the book. 12. He stopped and listened: the clock (to strike) five. 13. She said she (can) not tell me the right time, her watch (to be) wrong. 14. I asked my neighbour if he ever (to travel) by air before. 15. The policeman asked George where he (to run) so early. 16. The delegates were told that the guide just (to go) out and (to be) back in ten minutes.

2. Correct the mistakes.

1. Mike told the policeman that he lost his identity card. 2. Jane said to Dick that Julia doesn't live next to her. 3. She told the detective that she sees the thief in the house. 4. He said that he ate nothing since morning. 5. My girlfriend told me that she was ready in a few minutes. 6. Tom's boss said to him that he hasn't done the work properly. 7. Anna said that she doesn't want to wear her old dress. 8. Her brother told her that they will have plenty of time to do their work.

Text

1. Before reading the text "Erosion of soil" decide which of the following statements you agree or disagree with:

1. Erosion of soil gives cause for concern in agriculture.

2. Erosion is of special concern in areas such us the humid tropics and the deserts.

3. Plants play a very important part in conservation and protection of soil.

4. There is no way to reduce erosion of soil.

2. Scan information given in the text and find how the use of fertilizers influence erosion of soil.

Use the strategy of selective reading. To practice it pay attention to the italicized phrases.

EROSION OF SOIL

Soil erosion is the removal of soil from the land through the action of wind or water. It is a *natural process* that occurs even without human intervention. However, most forms of agriculture increase the erosion potential, especially practices that leave the surface of *erodible land* unprotected. Excessive erosion is a matter for serious concern. In a sustainable agriculture, soil erosion should not exceed the slow process of soil formation, and the prevention of soil erosion is a key issue in increasing the sustainability of agriculture.

Excessive erosion occurs with large variations in extent and causes between and within regions. It is difficult to measure and evaluate the gravity of the problem, but erosion is of special concern in areas such us the humid tropics, along the deserts and in parts of North America. In Europe, erosion is most serious in the Mediterranean regions.

Soil erosion by water generally begins where raindrops strike bare soil. Soil aggregates are broken up, the surface compacted, and water infiltration into the soil obstructed. Water with suspended fine soil particles runs off as surface water, giving sheet erosion, where a

thin layer of surface soil is removed. The water flowing over the soil surface can form networks of eroding channels that cut into the topsoil. In the worst cases deep gullies are formed. Suspended particles increase the water density and channeling increases the velocity of water flow. Consequently, erosion starts gently and then rapidly accelerates.

The removal of forests has reduced water infiltration into soil in catchment areas and increased flood frequency and destructiveness. *Floods enhance erosion*.

Eroded material eventually settles out, filling up water reservoirs and estuaries. The silt deposit can improve the fertility of the receiving areas, but in general soil erosion degrades agricultural land.

Wind erosion occurs when bare soil is exposed to drought and wind, e.g., the dust bowl in the USA in the thirties and more recently in Russia.

It follows from the mechanism of erosion that:

– sloping land is at greater risk than flat land, sloping land left fallow during the winter is at special risk

– erosion risks vary with soil type and structure

– vegetation reduces erosion, as leaves intercept raindrops and roots prevent channeling.

Overgrazing has damaged fragile grasslands and caused serious erosion, e.g., in Africa.

Ploughed land is at greater risk to erosion than grasslands. Specialized arable cropping generally suffers more erosion than mixed farming because with mixed farming part of the land is under grass and more organic matter is available for return to the arable part of the land. This gives some protection against erosion.

The extent of erosion is greatly influenced by soil management.

Techniques are available for *reducing soil erosion*, e.g., water interception with soil banks, strips of grass or forests, contour ploughing, use of winter or catch crops, intercropping, mulching, no-till practices, drainage, terracing, forming horizontal patches of land on steep hills, a characteristic man-made landscape feature both in South-East Asia and elsewhere.

Proper fertilizer use can help minimize erosion by ensuring an

ample supply of roots and plant residues. Where erosion has removed topsoil, liming and fertilization help the reestablishment of a good plant cover.

3. What words/ideas would you associate with the notion Erosion of Soil?

Refer to the texts you have already read looking for cognates. Do you remember that cognates in technical texts are usually expressed by special terms? A beginning has already been made for you:

removal of soil, …

4. Write your own opinion on how to prevent the erosion of soil.

5. Here are some of the greatest threats to the world's environment and their causes. Match them. Sometimes there are two or three effects for one cause.

Threats	Causes
1) pollution of rivers/lakes/oceans	a) burning of fossil fuel
2) global warming (greenhouse effect)	b) rapid industrial development
3) damage to the ecological balance	c) overuse of natural resources
4) acid rain pollution	d) too much traffic
5) changes in the local climate	e) use of pesticides
6) extinction of plant and animal life	f) unsatisfactory waste disposal
7) destruction of rainforests	g) motorway construction
8) air pollution	h) intensive tourism
9) energy shortage	i) uncontrolled cutting of forests
10) human and industrial waste	j) uncontrolled hunting and fishing

6. Which in your opinion are the five worst threats? Compare your list with your partner's.

7. PROJECT WORK

Select one or two environmental threats in your own area and make a plan for environmental action. For this evaluate the information from the texts 1 -5. Make notes on the changes and solutions you've suggested. List the steps you can undertake.

Unit 5

Grammar Revision: **Gerund**
Text: **Alternative Agriculture**

Герундий (Gerund)

Герундий – неличная форма глагола, имеет свойства как глагола, так и существительного. Подобной формы в русском языке нет. Герундий может переводиться на русский язык существительным, глаголом в личной форме или неопределенной формой глагола, деепричастием.

Герундий образуется от основы глагола с помощью суффикса *-ing: to translate – translating, to read – reading*.

Таблица 5 – Формы герундия

	Active	Passive
Indefinite	*writing*	*being written*
Perfect	*having written*	*having been written*

Формы герундия совпадают с формами Participle I и Perfect Participle. Однако это разные формы глагола, отличающиеся и по значению и по синтаксическим функциям.

Формы Indefinite Gerund обозначают действия, одновременные с действием, выраженным глаголом-сказуемым.

He likes inviting friends to his place. – Он любит приглашать друзей к себе.

He likes being invited to his friends. – Он любит, когда его приглашают к себе его друзья.

Перфектные формы герундия (Perfect Gerund) обозначают действия, предшествующие действию, выраженному глаголом-сказуемым.

He is proud of having invited this man to his place. – Он гордится тем, что пригласил этого человека к себе.
He was proud of having been invited to the party. – Он гордился тем, что его пригласили на вечер.

Функции герундия в предложении

1. Подлежащее: *Obtaining oil is no simple matter. – Добыча нефти – не легкое дело.*

2. Часть сказуемого: *Large ice masses stopped advancing. – Крупные массы льда прекратили движение.*

3. Дополнение: *These minerals are worth extracting. – Эти минералы стоит добывать.*

4. Определение: *Improved methods of observing atmosphere are developed. – Разрабатываются усовершенствованные методы наблюдения за атмосферой.*

5. Обстоятельство: *After watching the movement of clouds we determined wind direction. – Наблюдая за движением облаков мы определили направление ветра.*

1. Comment on the forms and functions of the Gerund.

1. Glaciers are capable of carrying great loads of rock debris. 2. Plants and animals derive energy by using atmospheric oxygen to convert carbon in their foods to carbon dioxide. 3. Grain size usually gives an indication of the rate of cooling. 4. Today standards of living in Northern Europe are among the highest in the world. 5. Over one half of the people who live in Southern Asia are involved in farming. 6. The polar regions are too cold for farming. 7. However, extracting oil in cold conditions would present extra problems. 8. Many small fishing ports had to stop fishing. 9. To bring oil from northern Alaska involved building through protected areas and na-

tional parks. 10. Industry does not just mean making things. 11. Farming has used more machinery and needed a smaller labour force.

2. Analyze the following ing-forms. State whether they are participles or gerunds. Translate the sentences into Russian.

1. Applying fertilizers, we may essentially increase the yield. 2. Farmers applying fertilizers to this crop usually obtain good results. 3. Farmers applying proper fertilizers, the yields are usually much higher. 4. Having applied the soil with organic matter, the collective farm obtained a good yield of small grains. 5. Being adapted to potato growing, these sandy loams will produce tubers of the highest quality. 6. Among the factors influencing crop production climate is the most important one. 7. Preparing the seedbed is one of the important operations in crop growing. 8. Planting the seed, we use farm machines in order to make the work easier.

Text

1. Farmers face too many problems in plant growing:

Erosion of Soil
Exhaustion of Soil
Plant Diseases
Pollution of the Atmosphere
Diminished Quality of the Produce
Weed Infestation
The Global Warming
Insect Problems

Read the text "Alternative agriculture" and find out how these problems can be solved in alternative agriculture.

While reading the text bear in mind the problems mentioned above.

ALTERNATIVE AGRICULTURE

Different alternative agricultural systems exist. Various names are in use for such systems, e.g., natural, organic, biological, sustainable or ecological farming.

The alternative agricultural systems differ greatly in their basic ideas and recommended practices, but have in common that they reject the use of soluble mineral fertilizers and pesticides.

Less than 1 per cent of the farms in Western Europe are presently practicing alternative farming. But in the last decade the movement towards alternative agriculture has gained in popularity and received official political recognition and support in the industrialized countries of the West. Today a main driving force is the market's demand for agricultural products made without the use of man made chemicals.

Many people find aspects of current agricultural practices disquieting and objectionable: pesticide residues in soil water and produce, increasing nitrate concentration in many ground and surface waters, landscape changes with reduced variety, animal husbandry methods that are perceived as unnatural, degrading and wasteful depopulation of the countryside and costly production in excess of domestic needs in developed countries.

Objections to the use of fertilizers are not based solely on the perception of fertilizers as a cause of pollution, soil improverishment and degradation, reduced plant resistance to diseases and diminished quality of the produce. It is also felt that the easy availability of fertilizers and pesticides has made possible practices that are regarded with distrust such us specialized farming and intensive agriculture.

Organic agriculture is now a rapidly expanding sector. Its adherents are concerned about an agriculture dependent on non-renewable resources and about "unwholesome" food with residues of chemicals. They fear degradation of the soil and are dismayed at many of the aspects of animal treatment in intensive husbandry.

Organic and other alternative agricultural farms are of various types depending on local conditions. Some are located in areas not readily suited to arable crops, have most of their land as grass-clover

meadows and produce mainly milk and some meat. Some small farms are specialized vegetable producers. But more typically, an alternative farm will practice mixed animal arable farming with some 40 per cent of the land kept as grass-clover lays. Some of this is permanent grass; the rest is ploughed every 2–3 years as part of the rotation. Part or all of the cereals, roots and legumes may be used as feed for the animals. The stocking rate should match the feed produced on the farm, e.g., in Sweden about 0,6 cows or equivalent per ha used for feed production. All animals are free range, none are permanently confined.

The organic agricultural movement comprises groups that differ in their views on inputs of manure from other farms. Some restrict such inputs to manure from farms also practicing alternative agriculture. Others permit substantial purchases of animal manure from current farming enterprises provided these follow recognized standards for animal welfare. The latter group support their own production by fertilizer use on these other farms.

So in alternative agriculture nutrient losses are compensated through: growing legumes for their nitrogen fixation; application of ground mineral rocks (e.g., stone, phosphate rock, limestone) to supply phosphorus, potassium and other elements.

Soluble mineral fertilizers are not allowed, especially not nitrogen. Rock phosphate and other nutrient minerals with a low solubility can be used. Weed are removed or damaged by mechanical soil treatment or the use of fire. Extensive crop rotation and intercropping are adopted while monocultures are avoided.

Soluble fertilizers are regarded as detrimental to soil life and proper crop development, as they give “unnatural” soil conditions through enhanced nutrient concentrations. This is said to disturb the soil’s processes and ecology and to give an unbalanced uptake of nutrients by the plants. Soil nutrient inputs should instead enhance soil nutrient reserves; the farmer should “feed the soil and no the plant”. The supply of plant nutrients should derive from mineralization as a natural process.

But cropping patterns in alternative agriculture differ from those in specialized current agriculture. Grass-clover lays and fodder crops are

necessary and extensive rotations are more common. Farms in alternative agriculture tend to have markedly less grain and meat production than those in current agriculture, and produce a relatively larger proportion of dairy products, potatoes, pulses and some vegetables.

There is a wide-spread impression that the quality of produce from alternative farm is higher than that from current agriculture. Evaluation principally concerns nutritional value, absence of noxious compounds and taste.

Statements have been made that animals on alternative farms or given feed from such farms have fewer fertility problems, remain productive longer and in general have fewer health problems than animals in current agriculture.

2. Many people find the usage of fertilizers objectionable. Look back at the texts you've already read and write down your pros and cons of using fertilizers in modern agriculture. Begin with the strategies of scanning and selecting information. What other strategies are of great help in this case?

AGAINST	FOR
– cause of pollution	– the exhaustion of soil
– pesticide residues in soil water and produce	– to minimize erosion of soil
– reduced plant resistance to diseases	– effective means of controling weeds, crop diseases and other pests
– diminished quality of the produce	
– increasing nitrate concentration in ground and surface waters	
– the production of fertilizers aggravates the global warming	

3. There are several points of view on the problem of using fertilizers in agriculture. What is your attitude to this problem? Are your views closer to A, to B or to C? Skim the texts again and find arguments to support your view.

A We have to use various fertilizers and chemicals for different purposes in agriculture because it is an effective means of improving soil fertility, controlling plants against weeds, crop diseases, other pests etc.

B Chemicals have to be combined with other methods because if too high doses of pesticide are applied it may produce undesirable effect.

C The use of fertilizers and chemicals should not be allowed because the production of fertilizers and chemicals impinges on the locality and its environment. Besides, today the market's demand for agricultural products made without the use of chemicals.

Part III

AGROECOLOGY (Additional material)

TEXT 1

Active vocabulary:

environment – окружающая среда
to quadruple – увеличивать в четыре раза
to contribute – способствовать
to accelerate – ускорять
urban development – городское развитие
expansion – расширение, увеличение, рост
exploiting – эксплуатация, использование
fossil fuels – природное топливо
water bodies – водоемы
residues – остатки
feed supplements – подкормки
contamination – заражение
aquatic resources – водные ресурсы
food chain – пищевая цепь
animal husbandry – животноводство
amalgamation – слияние, образование целого из частей
deterioration – ухудшение
compaction – уплотнение

beneficial effects – благотворное влияние
well-being – благополучие
"nutritional" security – пищевая безопасность
thriving – хорошо развивающийся
recreation facilities – развлекательные услуги
unseasonable weather – погода, несвойственная времени года
precipitation – осадки
sewage – сточные воды

Remember!

Critical reading as the process of making judgments in reading is very important in solving different problems. It is useful to evaluate what you have read and make a decision, but not to read passively.

A critical reader seriously thinks about what she/he is reading. This means that she/he:

– does not believe everything she/he reads;
– questions everything that doesn't make sense to him/her;
– analyses arguments;
– discounts arguments based on faulty reasoning;
– has good reasons for believing some things and not believing others.

What words/ideas would you associate with the notion Agriculture and Environment?

Scan information given in the text and find how the use of fertilizers influence erosion of soil.

Use the strategy of selective reading. To practice it pay attention to the italicized phrases

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 specializatioa 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 maintaining 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:

– 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;

– the decrease of biotopes valued for nature conservation;

– 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;

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

– air pollution from **intensive animal production**, manure spreading and crop spraying;

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

– 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;

– 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**.

Agriculture's beneficial effects for the environment can only be considered in the light of a clear understanding of what is meant by a desirable environment. In the broadest sense, agriculture's greatest contribution to man's well-being is to provide the food and the "nutritional" security for the release of an increasing proportion of the population into productive activities in other sectors. At the same time, this has enabled man to enjoy increasing leisure time so that we can pause, enjoy and profit from our environment. Agriculture also has a special place in keeping the countryside inhabited, attractive and thriving. The presence of farmers and the maintenance of farm buildings can also improve environmental quality.

The drainage of land farming has undoubtedly been a major cause of the elimination of malaria and probably other diseases in Europe and North America. Drainage and other soil cultivation operations can have diverse beneficial effects on **flood control** and **water purity**. On the other hand, some forms of cultivation on hillsides encourage erosion, while other forms of cultivation can be possibly beneficial effects on the environment.

Many of the phenomena now considered to pose significant long-term threats to agricultural production are only now coming under intense study. Among threats which have only relatively recently been perceived are:

– increasing concentrations of CO_2 which, in addition to being a factor in the "greenhouse effect" of atmospheric heating, may also directly affect plant metabolism;

– increases in ozone concentration at the earth's surface which appear to be causing declines in crop yield;

– diseases in ozone concentration in the upper atmosphere, which allow greater amounts of ultraviolet radiation to reach the earth's surface, with effects on plant growth;

– pollution of the soil by harmful chemical and physical agents which has led to a decline in food quality and increased cancer risks;

– global climate changes, including prolonged periods of unseasonable weather and an apparent trend towards atmosphere warming which could have far-reaching affects on growing seasons and precipitation.

In other cases, the long-term negative impact on agriculture of well-known pollution like water and air pollution from industry and **sewage spreading** on agricultural land are only now being quantified.

Although by definition unpredictable, nuclear and industrial accidents like Chernobyl have brought major pollution of soil and water resources, loss of agricultural output and the need for significant financial compensation by governments.

In several countries, pollution from other sources has led to regional declines in the quality of food production and, the quantity of food produced.

In summary, the nature, intensity, and extent of the acid deposition, photochemical oxidants and sewage in agriculture remain largely unknown. There is need for more research such as cause-effect and, as a second step, limiting needs have still to be clarified at present levels of acid deposition.

Thus, both agriculture and environment today need **human protection**.

QUESTIONS:

1. Why is the traditional harmony and interdependence between agriculture and the environment destroyed?

a) because of the accelerated urban development;

b) because of exploiting mechanization and technology;

c) because of using fertilizers and pesticides;

d) because of replacing man and beast with energy from fossil fuels;

e) because of industrial growth and expansion.

2. What are the environmental problems formed by agriculture?

a) the extinction of scarce plants and animals;

b) the contamination of ground and surface waters;

c) the human health effects of pesticides and fertilizer residues;

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

e) soil compaction, erosion and pollution;

f) hunger and malnutrition;
g) reduction in natural resources;
h) the salinization of soil;
i) losses in landscape and wildlife habitat;
j) the decrease of biotopes.

3. What is agriculture's greatest contribution to man's wellbeing?
a) access to the countryside for enjoyment and recreation;
b) provision of better wildlife habitat;
c) provision of the food and 'nutritional' security;
d) the elimination of malaria and other diseases.

4. What are the pollution phenomenon from other sources that pose significant long-term threats to agricultural production?
a) increasing concentrations of carbon dioxide;
b) desertification;
c) increases in ozone concentration at the earth's surface;
d) water logging;
e) decreases in ozone concentration in the upper atmosphere;
f) pollution of the soil by harmful chemical and physical agents;
g) global climate changes;
h) soil erosion;
i) the salinization of soil.

5. What are the main sources of nonagricultural air and water pollution?
a) industry;
b) intensive irrigation;
c) sewage;
d) acid precipitation;
e) nuclear and industrial accidents.

To solve any problem it is recommended to represent the corresponding concepts in the memory and link them.

Select one or two environmental threats in your own area and make a plan for environmental action. For this evaluate the in-

formation from the text. Make notes on the changes and solutions you've suggested. List the steps you can undertake.

TEXT 2

Active vocabulary:

fertilization – применение удобрений
nitrogen – азот
depletion – исчерпывание, истощение
fertility – плодородие
raw material – сырье
breakdown – разложение, распад
a liquified gas – сжиженный газ
compounds – химические соединения
fixation – пристрастие, закрепление
combustion – сгорание
precipitation – выпадение осадков
to contribute to smth. – способствовать ч.-л.
poultry factories – птицефабрики
oxygen carrying capacity – способность переносить кислород
the ozone layer – озоновый слой
a shield – щит, экран
the incidence of skin cancer – частота заболеваний раком кожи

Outlining helps to focus on the most important ideas of a text, separating what is central from what is peripheral. Outlining also shows how information is organized and supported in a text.

REMEMBER:

Writers generally place the main thrust of their arguments either at the beginning or at the end of a paragraph.

Connectors such as: as a result of, consequently, etc., play a crucial role in advancing the main thrust of the writer's argument. Similarly, other connectors such as for example, firstly, in addition, reflect supporting arguments. By active searching for such connectors, you are able to focus on the most important ideas of the text, separating what is peripheral from what is central.

While reading the text it is rather often not difficult to figure out the meanings of special terms from the content.

Identify the main idea in each paragraph and look for sentences that carry the main thrust of the arguments.

FERTILIZATION: ITS EFFECT

The intensive use of inorganic fertilizers, particularly those that contain nitrogen and phosphorus, is a key factor in the high yields obtained per hectare in modem intensive agriculture. In the United States, increases in yield per hectare, due in the part to the use of such materials, led to a decline in the area of cultivated land by 27 million hectares between 1944 and 1969. During this period, fertilizer use climbed from about 10.9 million tons per year. This increase was necessary partly because of the depletion of nature fertility that had occurred since American farmlands were first put into cultivation. However it was permitted some agricultural land to return temporarily to grass and woodlands, which protected it from erosion and allowed fertility to build up again.

It is easy to demonstrate that the addition of inorganic fertilizers makes rapid and significant improvement in crop yields. In general, about 20 per cent of total crop and forage production is due to fertilizer use although the specific affect varies with crop and location. In other words, if present use of fertilizer were stopped, the next season's yield would be expected to drop by that amount (all other factors being equal). On the other hand, a number of basic crop species, such as soy-beans and wheat neither receive much fertilizer nor show strong responses to it.

It is clear that fertilization is essential to permanent agriculture and just as clear that the fertilizing techniques in mechanized agriculture are highly successful. Nevertheless, there are negative side effects, moreover, the increasing energy costs and the important considerations of raw material availability make it essential to examine present fertilizers use critically.

More nitrogen fertilizers are used than any other. Now, however, a serious problem has developed in the form of increasing cost of

nitrogen fertilizer. Hydrocarbon fuels are required in quantity both as raw material and as fuel to create the high temperature and pressure conditions needed for ammonia synthesis. As a result nitrogen fertilizer costs sharply reflect changes in petroleum prices. Alternative techniques of obtaining hydrogen such as the electrolytic breakdown of water molecules, at present used only in a few plants, also have high energy costs.

Much of the nitrogen fertilizer produced is applied as anhydrous ammonia a liquified gas. It is also converted to a number of other ammonium salts, nitrates, and other compounds for use as fertilizer. These materials applied to the soil ecosystem create major changes in ecosystem dynamics.

The recent comprehensive estimates of the transfer occurring in the nitrogen cycle at the global level show that industrial fixation of nitrogen (about 30 tons per year) is still well below the rate of biological fixation (175 million tons).

A second intervention by man is the increased rate at which nitrogen oxides are introduced into the atmosphere by combustion. Most of these oxides are returned to the land surface by precipitation.

Intensive cultivation and livestock production have significantly increased the outflow of nitrogen from agroecosystems. We know that food harvests and accelerated erosion deplete the original soil nitrogen pools; two other factors also contribute to this depletion: the application of large quantities of inorganic fertilizers and the development of feedlots; poultry factories, and other sources of concentrated animal wastes.

Because of their toxicity, however, high concentrations of particular nitrogen compounds in crops and in water supplies can be a direct concern to health (when nitrate in the blood combines with hemoglobin and thus reduces its oxygen carrying capacity).

The growing use of nitrogen fertilizers has recently become a matter of concern in relation to the ozone layer of the stratosphere. Some scientists believe that the ozone layer might be reduced by roughly 20 per cent during the first quarter of the twenty-first century as a result of current and future use of nitrogen fertilizers.

The ozone layer of the stratosphere acts as a shield to absorb incoming ultraviolet radiation. Among other effects, increased ultraviolet radiation raises the incidence of skin cancer. A significant harm to health could thus be created, and close attention must be given to the movement of nitrogen compounds through the atmosphere as well as other parts of the biosphere.

Exclude some detailed information and write down the gist of the text.

Usually for quick information search it is important to focus on the most important ideas in each paragraph and look for sentences that carry the gist of it, classifying key and additional information.

To write down the main idea of the text you should avoid translating and try not to mention insignificant ideas, using semantic tips.

QUESTIONS:

1. What kinds of inorganic fertilizers greatly affect the crop yields in modern intensive agriculture?

a) containing potash;
b) containing nitrogen;
c) containing phosphorus;
d) containing manure.

2. Due to what techniques did American farmers try to improve soil fertility?

a) application of manure;
b) application of fertilizers;
c) return to grass and woodland;
d) land reclamation.

3. What is the serious problem that has developed in fertilization?

a) the increasing energy costs;
b) raw material shortage;
c) the increasing cost of nitrogen fertilizers.

4. What are the results of man's interventions into ecosystem dynamics?

a) the increased amount of nitrogen in atmosphere;

b) the increased rate at which nitrogen oxides are introduced into atmosphere;

c) the reduction of the ozone layer;

d) the increase of the ozone layer.

5. What reflects changes in petroleum prices?

a) the availability of nitrogen fertilizers;

b) the amount of nitrogen fertilizers used by farmers;

c) the cost of nitrogen fertilizes.

TEXT 4

Active vocabulary

irrigation – орошение
approximately – приблизительно
total land surface – общая поверхность земли
freshwater – пресная вода
withdrawal – изъятие, отбор воды
precipitation – выпадение осадков
in all probability – по всей вероятности
a power plant – электростанция
evaporation – испарение
stream flow – расход потока
contamination – заражение (водоема)
air pollution – загрязнение воздуха
to disregard – игнорировать, принебрегать
to acidify – окислять
to dissolve – растворять
sensitivity – чуткость, восприимчивость
artificial drainage – искусственный дренаж, осушение
consequence – последствие
to subside – снижаться, схлынуть

Do you remember that the main idea of the text as a rule is placed either at the beginning or at the end of it?

Read the title of the text and the first paragraph of it and predict what type of irrigation this text will be about.

To be more successful in decoding information you should be able to categorize information obtained from the text.

Skim the text quickly (maximum one minute) and find out the most essential information.

Remember!

– key words are important for minimum use of visual information;

– cohesive devices are textual markers indicating what you should pay attention to;

– the strategy of ranking facts plays an important role in processing the text by the reader.

IRRIGATION: ITS EFFECT

Of the total 157 million hectares of cultivated cropland in the United States, approximately 16 million, or roughly 10 per cent, are irrigated. Most of this area, 14 million hectares, lies in the western states. Crop production on much of this area, including central and southern Arizona and southeastern California, depends entirely on irrigation. Total use of water in the United States now equals about 46.9 million hectare-meters per year. About 35 per cent of this, or 16.4 million hectare-meters, is used for irrigation.

In a number of other countries, irrigation is even more important to crop production. For example, about one-third of the cultivated land of mainland China is irrigated. Worldwide, about 160 million hectares which is about 1 per cent of the earth's total land surface, are now under irrigation.

The demand for freshwater resources is continually growing. By 2005 A.D., total withdrawals are projected to be about 21 percent of total precipitation, or nearly three-fourths of stream flow. In all probability, the fraction of this withdrawal that is consumed during use will be greater, because more of this amount will go for irrigation, power plant cooling, and other uses that involve considerable evaporation.

It is also obvious that the importance of water quality will grow. With population and industrial growth, and with an increasing part of total streams flow being diverted for human use, the contamination of streams and rivers will almost inevitably increase because of urban and industrial waste discharges, drainage from irrigated cropland, runoff from urban and rural land surface and increases in solutes in rainfall caused by air pollution.

Increased water losses by evaporation from reservoirs and canal also create higher solute concentrations.

Higher solute concentrations in irrigation water create more problems of soil salinity within agroecosystems. Total solute concentrations can reach levels that interfere with crop growth through their influence on soil water potential, and particularly, ions can have toxic effects on crop species and can damage soil structure.

Disregarding toxicity, solute problems exist in three major kinds of soils, saline soils, saline-sodic soils, and sodic soils.

Water used to leach saline-sodic soils must be naturally high in calcium salts or used along with application of calcium sulfur (gypsum). Substances such as ferrous sulfate that acidify the soil and dissolve calcium carbonate can also be used to reclaim sodic soils.

The direct effects of soil solutes on crop species are of two types: osmotic effects, caused by overall concentration of solute, materials; and specific ion effects, caused by the toxicity of particular ions.

Plant species vary widely in their sensitivity to soil salinity. It should be clear that irrigation cannot be carried out except under conditions in which adequate natural or artificial drainage permit excess salts to be drained out of the productive portion of the soil system.

The natural consequence of water use involving appreciable quantities of solute is that the water leaving the soil system has a higher concentration of salts than the water applied, and so the systems that receive the outflows, either groundwater or surface water systems, are salinated.

Intensive irrigation has the potential to create secondary effects outside the agricultural lands to which water is applied; it can, for example, salinate ground and surface waters, cause land from which water is pumped to subside, and generally modify regional climate.

You have already known that cohesion provides the main thread of a text. An efficient reader reads faster and gets more information because he makes use of the strategy of cohesion.

QUESTIONS:

1. What states of America make up the most part of the cultivated crop land?

a) eastern states;
b) western states;
c) southern states;
d) northern states.

2. Which part of the earth's total land is now under irrigation?

a) about 35 per cent;
b) roughly 10 per cent;
c) about 1 per cent;
d) about 21 per cent.

3. What is the projected withdrawal of the world's freshwater resources by
2005?

a) about 1 per cent;
b) about 21 per cent;
c) about 10 per cent;
d) about 35 per cent.

4. What creates higher solute concentration of streams and rivers?

a) urban and industrial waste discharges;
b) air pollution (through rainfall);
c) water losses by evaporation;
d) intensive cultivation;
e) runoff from urban and rural land surfaces;
f) drainage from irrigated cropland.

5. What are the kinds of soils in which solute problems exist?

a) sandy soils;

b) saline soils;
c) sodic soils;
d) clay soils.

Exclude some detailed information from the text and write down the main idea o

ЗАКЛЮЧЕНИЕ

В настоящее время в условиях все возрастающего потока научно-технической информации перед специалистами часто стоит задача быстрого поиска, сбора, переработки и обсуждения информации для принятия решений в производственной деятельности. Целевой поиск информации рассматривается в качестве структурного компонента профессиональной деятельности специалиста.

Учебное пособие «Английский язык для агрономов» содержит конспект грамматического материала, представляющего особые трудности для изучающих английский язык в неязыковом вузе, а также набор практических заданий, способствующих усвоению этого материала. Текстовая часть пособия ориентирована на развитие навыков чтения, извлечения необходимой информации с помощью различных стратегий. При отборе текстового материала в качестве основного критерия служила аутентичность текстов и их информативная ценность. Тексты пособия не адаптированы, взяты из современных источников и отражают богатство и разнообразие современного английского языка.

В целом пособие позволит систематизировать знания об отдельных грамматических явлениях английского языка и сформировать навыки получения и обмена информацией в профессиональной сфере.

СПИСОК ЛИТЕРАТУРЫ

1. Англо-русский словарь синонимов. М.: Иностранный язык. Оникс, 2005. 411 с.

2. Дроздова Т.Ю., Маилова В.Г. New Student's Grammar Guide: учеб. пособие для студентов неязыковых вузов и учащихся школ и гимназий. 2-е изд., испр. и доп. СПб.: Антология, 2007. 189 с.

3. Мюллер В.К. Новый англо-русский словарь / В.К. Мюллер. М.: Дрофа, 2008. 945 с.

4. Новый англо-русский биологический словарь / под ред. О.И. Чибисовой. М.: ABBYY Press, 2009. 872 с.

5. Цебаковский С.Я. Кто боится английской грамматики?: учеб. пособие. Обнинск: Титул, 2008. 208 с.

6. Hornby A.S. Oxford Advanced Learner's Dictionary of Current English. Oxford University Press, 2005. 509 с.

7. Man and environment [Электронный ресурс]. – Режим доступа: http://www.environmentalpollution.in/essay/man-and-environment-essay-on-man-and environment/216.

ОГЛАВЛЕНИЕ

Учебное издание

Говенько Анна Михайловна

ИНОСТРАННЫЙ ЯЗЫК

МЕТОДИЧЕСКОЕ ПОСОБИЕ
ДЛЯ АУДИТОРНЫХ ЗАНЯТИЙ И САМОСТОЯТЕЛЬНОЙ РАБОТЫ
СТУДЕНТОВ ОЧНОЙ И ЗАОЧНОЙ ФОРМ ОБУЧЕНИЯ
ПО НАПРАВЛЕНИЮ ПОДГОТОВКИ
35.03.04 «АГРОНОМИЯ»

Редактор Осипова Е.Н.

Подписано к печати 03.06.2024 г. Формат 60x84 1/16.
Бумага печатная. Усл. п. л. 4,70. Тираж 25 экз. Изд. № 7678.

Издательство Брянского государственного аграрного университета
243365 Брянская обл., Выгоничский район, с. Кокино, Брянский ГАУ