

МИНИСТЕРСТВО СЕЛЬСКОГО ХОЗЯЙСТВА
И ПРОДОВОЛЬСТВИЯ РЕСПУБЛИКИ БЕЛАРУСЬ

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АНГЛИЙСКИЙ ЯЗЫК

*Учебно-методический комплекс
для студентов агроэнергетического факультета
дневной формы обучения*

Модуль 4

Учебно-профессиональное общение

Часть 2

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Модуль 4 учебно-методического комплекса включает в себя учебный материал, направленный на формирование и развитие профессиональных компетенций студентов. Цель обучения состоит в овладении студентами знаниями особенностей системы изучаемого иностранного языка в его лексико-грамматическом аспекте; социокультурными нормами производственного общения, структурой и характером профессиональной деятельности, что позволит специалисту эффективно использовать иностранный язык как средство общения в профессиональной сфере. Содержит сведения теоретического характера, аутентичные тексты и комплекс упражнений, как тренировочной, так и коммуникативной направленности по тематике модуля.

Составлен в соответствии с требованиями типовой учебной программы для высших учебных заведений по иностранному языку, утвержденной Министерством образования Республики Беларусь. Предназначен для студентов второго курса агроэнергетического факультета БГАТУ.

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ВВЕДЕНИЕ

Главной целью обучения иностранному языку является формирование иноязычной коммуникативной компетенции специалиста, позволяющей использовать иностранный язык как средство профессионального и межличностного общения.

В русле современной образовательной идеологии иностранный язык рассматривается не только в качестве средства межкультурного общения, но и средства формирования личности как субъекта национальной и мировой культуры. Предполагается, что мировоззрение, включающее в себя ценности личности, общества, государства, а также более широкого сообщества (европейского, мирового), способствует большему взаимопониманию и сближению народов в современном поликультурном мире, а, следовательно, стабильности и устойчивости его развития.

В качестве стратегической интегративной компетенции в процессе обучения иностранным языкам выступает коммуникативная (**КК**) в единстве всех составляющих: – языковой, речевой, социокультурной, компенсаторной, учебно-познавательной компетенций.

Языковая компетенция (**ЯК**) – совокупность языковых средств (фонетических, лексических, грамматических), а также правил их использования в коммуникативных целях.

Речевая компетенция (**РК**) – совокупность навыков и умений речевой деятельности (говорение, письмо, аудирование, чтение), знание норм речевого поведения, способность использовать языковые средства в связной речи в соответствии с ситуацией общения.

Социокультурная компетенция (**СК**) – совокупность знаний о национально-культурной специфике стран изучаемого языка и связанных с этим умений корректно строить свое речевое и неречевое поведение.

Компенсаторная компетенция (**КомпК**) – совокупность умений использовать дополнительные вербальные средства и невербальные способы решения коммуникативных задач в условиях дефицита имеющихся языковых средств.

Учебно-познавательная компетенция (**УПК**) – совокупность общих и специальных учебных умений, необходимых для осуществления самостоятельной деятельности по овладению иностранным языком.

В процессе социально-гуманитарной подготовки выпускник должен развить такие метапредметные компетенции (**МПК**), как владение методами системного и сравнительного анализа; сформированность критического мышления; умение работать в команде; владение навыками проектирования и прогнозирования; сформированность личностных качеств: самостоятельность, ответственность, организованность, целеустремленность, а также мотивационно-ценностные ориентации; умение учиться, постоянно повышать квалификацию.

В соответствии с целями и принципами социально-гуманитарной подготовки выпускник высшего учебного заведения при подготовке по образовательной программе первой ступени (специалист) должен приобрести следующие социально-личностные компетенции:

- компетенции культурно-ценностной и личностной ориентации (**ККЦЛО**),
- компетенции гражданственности и патриотизма (**КГП**),
- компетенции социального взаимодействия (**КСВ**),
- компетенции коммуникации (**КК = ЯК + РК + СК + КомпК + УПК**),
- компетенции здоровьесбережения (**КЗ**),
- компетенции самосовершенствования (**КС**).

В результате изучения дисциплины студент должен **знать**:

- особенности системы изучаемого иностранного языка в его фонетическом, лексическом и грамматическом аспектах (в сопоставлении с родным языком);
- социокультурные нормы бытового и делового общения, а также правила речевого этикета, позволяющие специалисту эффективно использовать иностранный язык как средство общения в современном поликультурном мире;
- историю и культуру стран изучаемого языка.

Студент должен **уметь**:

- вести общение социокультурного и профессионального характера в объеме, предусмотренном настоящей программой;
- читать и переводить литературу по специальности обучаемых (изучающее, ознакомительное, просмотровое и поисковое чтение);
- письменно выражать свои коммуникативные намерения в сферах, предусмотренных настоящей программой;
- составлять письменные документы, используя реквизиты делового письма, заполнять бланки на участие и т.п.;
- понимать аутентичную иноязычную речь на слух в объеме программной тематики.

В соответствии с учебной программой по иностранному языку изучение дисциплины «Иностранный язык» рассчитано на 150 аудиторных часов.

УМК составлен в соответствии с требованиями Типовой учебной программы для высших учебных заведений по иностранному языку, утвержденной Министерством образования РБ и предназначен для студентов агроэнергетического факультета БГАТУ. В основу структурирования содержания учебного материала положен принцип модульного подхода, который предполагает разбивку учебного материала на относительно самостоятельные модули (разделы) курса. Цель модульного обучения состоит в овладении студентами знаниями особенностей системы изучаемого иностранного языка в его лексико-грамматическом аспекте; социокультурных норм бытового и делового общения, правил речевого этикета, позволяющих специалисту эффективно использовать иностранный язык как средство общения в современном поликультурном мире; истории и культуры стран изучаемого языка.

Модуль 4 «Учебно-профессиональное общение» включает в себя тексты и упражнения, как тренировочной, так и коммуникативной направленности по тематике модуля, направленные на формирование и развитие профессиональных компетенций студентов.

Содержание учебного модуля «**М-4. Учебно-профессиональное общение. Ч. 2**» представлено в таблице:

Тема модуля	Содержание	Кол-во час.	Формируемые компетенции
Учебно-профессиональное общение Студент должен: знать: социокультурные нормы делового общения; уметь: в письменной и устной форме аргументировано представить свою точку зрения по темам «Исследовательские направления в сельском хозяйстве», «Агротехника»; владеть всеми видами чтения, сочетать диалогическую и монологическую формы речи, участвовать в дискуссии по изучаемым проблемам.	Предмет и содержание специальности и инженер-электрика, структура и характер профессиональной деятельности специалистов в сфере АПК. Контроль: Устная беседа по теме «Моя будущая специальность»	12	КК МПК КГП КСВ КЗ КС

МОДУЛЬ 4

УЧЕБНО-ПРОФЕССИОНАЛЬНОЕ ОБЩЕНИЕ

4.7 – 4.9 ИССЛЕДОВАТЕЛЬСКИЕ НАПРАВЛЕНИЯ В СЕЛЬСКОМ ХОЗЯЙСТВЕ

Text 1 Traditional and Alternative Farming

READING

Read the information below, make your own vocabulary of special terms and do the tasks that follow.

Today, there is traditional farming and what many refer to as alternative farming. Alternative farming is a general term used to describe many different farming methods and philosophies.

Traditional farming is generally associated with large areas of land that require a lot of equipment and energy, and these farms are often expensive to operate. When they have livestock, traditional farms are usually associated with intensive animal-husbandry operations.

Traditional farming also uses new scientific approaches and new technology in order to maximize productivity and profits. These farms use large amounts of herbicides, pesticides, and artificial fertilizers. Traditional farming is a business whose goal is to maximize production.

Traditional farming has adapted to a wide variety of local conditions, has been able to successfully produce many different types of food reliably (year after year), has reduced problems from disease and insects, has used machinery and labor efficiently, and has been able to profit financially. Traditional farming provides food by using centuries of accumulated experience from farmers.

Alternative farming is a general term that represents many different practices and agricultural methods that all share similar goals. Alternative agriculture places more emphasis on conservation of the land and preserving resources.

Practices that are emphasized in alternative farming include building new topsoil (composting); using natural biological approaches instead of chemical pesticides for controlling insects; and conserving soil by rotating crops, letting unused vegetation recycle back into the ground, plowing the land relative to its needs, and reducing the amount of tilling of the soil.

Sustainable agriculture looks at the farming cycle as a whole system and is a commonly used term when referring to alternative farming. This places an emphasis on working in harmony with entire ecological systems. As farmers see shifts take place in our ever-changing environment, their goal is to change their farming methods to be in harmony with the environment.

They also look at the system as a living thing with different needs for different areas within the farm. Instead of applying the same practices evenly over the entire farm, each area on the farm is assessed and treated according to its own needs.

Sustainable agriculture seeks to balance farm profit over the long term with needs for good soil and clean water, a safe and abundant food supply, and rural communities that are rewarding to live in.

Farmers of sustainable agriculture look at agriculture and ecology together, and refer to it as agroecology. In traditional methods, soil scientists study soils, hydrologists study water, and agronomists study crops. Studying these different components separately, however, can result in a lack of understanding or appreciation of how the entire system fits and works together. In agroecology, the entire system (soil, water, sun, plants, air, animals, microorganisms, and people) is studied together.

Farmers who practice sustainable agriculture strive to understand the complex relationships among all parts of the agro ecosystem.

Sustainable agriculture practices include the following:

- using no chemicals, or very few chemicals, to reduce pest damage to crops;
- using fewer herbicides (weed killers);
- minimizing runoff in order to reduce soil erosion;
- testing the soils to determine which nutrients are available;

- rotating crops so that the land is not overused or depleted of critical nutrients. Crop rotation also reduces insects and weeds;
- minimizing soil erosion by using contour plowing, cover crops to protect the soil, no-till methods, and perennial plants (plants that bloom each year without having to be reseeded);
- improving and protecting wildlife habitats;
- monitoring grazing practices so that the land is not abused and overgrazed.

Some people have argued that sustainable farming is not as productive and is more expensive than traditional farming. Others have said that, even if that is the case, they are willing to pay more. Others maintain that it does not represent lower productivity but instead builds on current agricultural achievements and can produce large crops without harming the land.

Regardless of what people have to say in favor of sustainable farming or not, it has become an important part of agriculture in the last few years. Many farmers and ranchers have chosen to use more conservative practices on their lands, and they see it as the future of a successful, long-term relationship with the ecosystem.

COMPREHENSION

A Give the Russian equivalents for the following word combinations:

a new scientific approach; to accumulate experience; to maximize production; to require a lot of equipment and energy; to place more emphasis; to conserve land/soil; to preserve resources; to recycle back into the ground; to balance farm profits; sustainable agriculture; an ever-changing environment; to apply practices; to reduce pest damage to crops; to reduce soil erosion.

B Translate the following sentences into Russian paying attention to the underlined phrases.

1) Traditional farming is generally associated with large areas of land that require a lot of equipment and energy, and these farms are often expensive to operate.

2) Traditional farming also uses new scientific approaches and new technology in order to maximize productivity and profits.

- 3) Traditional farming provides food by using centuries of accumulated experience from farmers.
- 4) Sustainable agriculture looks at the farming cycle as a whole system and is a commonly used term when referring to alternative farming.
- 5) Farmers of sustainable agriculture look at agriculture and ecology together, and refer to it as agroecology.
- 6) Sustainable agriculture seeks to balance farm profit over the long term with needs for good soil and clean water, a safe and abundant food supply, and rural communities that are rewarding to live in.
- 7) Some people have argued that sustainable farming does not represent lower productivity but instead builds on current agricultural achievements and can produce large crops without harming the land.
- 8) Studying these different components separately, however, can result in a lack of understanding or appreciation of how the entire system fits and works together.
- 9) Regardless of what people have to say in favor of sustainable farming or not it is an important part of agriculture.

C Match the sentence beginnings to the correct endings:

- a) Traditional farming is a business whose.....
 - b) Alternative agriculture places more emphasis on
 - c) Some people have argued that sustainable farming is not
 - d) Traditional farming is generally associated with large areas.....
 - e) When they have livestock, traditional farms are usually
 - f) Farmers who practice sustainable agriculture strive to understand the complex
 - g) In traditional methods, soil scientists study soils.....
 - h) Crop rotation also reduces.....
- 1)..... of land that require a lot of equipment and energy.
 - 2).....as productive and is more expensive than traditional farming.
 - 3).....insects and weeds.
 - 4).....hydrologists study water, and agronomists study crops.
 - 5).....goal is to maximize production.
 - 6).....conservation of the land and preserving resources.
 - 7).....associated with intensive animal-husbandry operations.
 - 8).....among all parts of the agro ecosystem.

D Answer the following questions.

- 1) What is alternative farming?
- 2) What is traditional farming generally associated with?
- 3) How can you explain the term agroecology?
- 4) What is sustainable agriculture?
- 5) Would you use sustainable or traditional kind of farming, if you were a farmer?

Text 2 **Organic Farming and Hydroponics Agriculture**

READING

Read the information below, make your own vocabulary of special terms and do the tasks that follow.

Organic does not refer to the food itself but how the food is produced. Organic foods are produced without using any synthetic pesticides or fertilizers. They are also not given any ionizing radiation. Organic crops are grown on soil that has been chemical-free for at least four years. Organic farming is also meant to maintain the land and keep the surrounding ecosystems healthy. Organic livestock cannot be fed non-organic feed or given any type of growth hormone or antibiotic. Before a product can be labeled organic, however, a government-approved certifier must inspect it. .

When properly managed, organic farming reduces or eliminates water pollution and helps conserve water and soil on farms. Today, organic farming represents only a small section of agriculture, but it has been growing over recent years. Because it does not require expensive chemicals, many developing countries are able to produce organic crops to export to other countries.

Most organic farmers strive to make the best use of land, animal, and plant interactions; preserve the natural nutrients; and enhance biodiversity. They practice soil and water conservation to keep erosion down. They use organic manure and mulch to improve soil structure.

They also use natural pest controls, such as biological controls (using an insect's natural predators), as well as plants with pest-control properties. They rotate their crops to keep production and fertility higher.

Hydroponics is usually defined as "the cultivation of plants in water". Hydroponic agriculture started out using only water in which to grow crops, but it has evolved over the years. It now means "the cultivation of plants without soil," because crops can be grown in water, sand, peat moss, and even rock wool.

Hydroponics works because plants do not feed on the soil -they feed on the minerals contained in the soil. Hydroponics makes those same minerals that plants need to grow available to the plants directly through water or through other media (although water is the most commonly used medium, so peat moss and rock wool do not become overused and depleted).

Farmers all over the world are using hydroponic techniques. They are an attractive choice when farmers lack fertile farmland. Many people use hydroponics in their homes so that they can have fresh vegetables all year long. People also grow hydroponic crops at home if they do not have a yard, because hydroponic crops can be grown in small, confined places.

This 'soil-free gardening' has several advantages for people who grow gardens out of their homes. For example, there are no weeds to pick; pests or diseases usually associated with soil do not exist; the plants grow faster and use less space (because the roots do not need to spread out in search of food and water); and the entire system can be automated with a timer.

For commercial farmers, hydroponics also has several advantages. Hydroponics does not require large areas of farmland; crops can be produced in greenhouses or even in desert sands: nutrients can be applied directly to the roots of the plants where they are needed; water can be reused; and water is conserved because there is less evaporation and runoff. This means that even deserts can be used to produce food using limited amounts of water.

COMPREHENSION

A Give the Russian equivalents for the following word combinations:

animal and plant interactions; to preserve the natural nutrients; a government-approved certifier; to eliminate water pollution; to enhance biodiversity; to produce organic crops; to keep production and fertility higher; to use hydroponic techniques; to associate with; a growth hormone.

B Translate the following sentences into Russian paying attention to the underlined phrases.

- 1) Organic foods are produced without using any synthetic pesticides or fertilizers.
- 2) Organic livestock cannot be fed non-organic feed or given any type of growth hormone or antibiotic.
- 3) When properly managed, organic farming reduces or eliminates water pollution and helps conserve water and soil on farms.
- 4) This 'soil-free gardening' has several advantages for people who grow gardens out of their homes.
- 5) Most organic farmers strive to make the best use of land, animal, and plant interactions; preserve the natural nutrients; and enhance biodiversity.
- 6) Many people use hydroponics in their homes so that they can have fresh vegetables all year long.
- 7) Hydroponics does not require large areas of farmland; crops can be produced in greenhouses or even in desert sands; nutrients can be applied directly to the roots of the plants where they are needed; water can be reused; and water is conserved because there is less evaporation and runoff.

C Answer the following questions.

- 1) What does organic farming mean?
- 2) Why is organic farming considered as less expensive form of farming?
- 3) How does hydroponics work?
- 4) Why are farmers all over the world widely using hydroponic techniques?
- 5) What are advantages of hydroponics?
- 6) Is hydroponics widely used in Belarus?

D Make a summary of the text.

Text 3 Precision Agriculture

Read the information below, make your own vocabulary of special terms and do the tasks that follow.

Precision agriculture is a newly emerging component of farming. With growing populations and increasing demands on the land, being productive and efficient is becoming more important. Cutting-edge positioning and information space technologies have now entered agriculture. Satellites and geographical spatial technology have taken a role recently in finding practical ways to help farmers become better and more efficient. Farmers can now operate their farms - from planting to harvesting - by managing every square foot of the land according to the needs of that particular square foot. Precision agriculture uses space satellite data (a science called remote sensing), soil sampling, and information management tools to make agricultural production as efficient as possible.

Precision agriculture uses technologies, such as Global Positioning System (GPS), Geographic Information System (GIS), and airborne images, to help farmers manage their fields. These high-tech systems can analyze soil and landscape characteristics (what type of soil it is, how steep the land is, what direction the slope faces, and how much direct sunshine it receives). These high-tech systems can determine whether pests are present (by assessing insect damage) long before humans can see the results of an infestation because satellites can pick up wavelengths in the infrared region, which are the first wavelengths to reveal changes in plant health.

GPS can provide the farmer with specific information on tillage, planting, weeds, insect and disease infestations, cultivation, and irrigation. Machine control systems automate equipment to save time and costs that would normally have to be paid to a field operator. Laser based tools provide information on land-leveling requirements and underground drainage.

This equipment collects field data, which is then downloaded into computer systems and analyzed with special software to help the farmer determine the best farming practice for his land. These systems can help the farmer manage small areas of the farm differently - according to his or her needs.

A computer can be used to analyze all the spatial data that has been collected (such as soil types, crop yield, water drainage, rainfall, and chemical doses) and look at overall relationships between the different types of information that affect crop production in a specific place. For example, this type of analysis might indicate that the farmer needs to add more fertilizer to one field, more water to another field, or pesticides in still another area. Precision agriculture allows farmers to improve the crops they grow, provides information for better farming practices, reduces unnecessary applications of pesticides or other chemicals, and gives farmers better data to manage their lands more effectively.

COMPREHENSION

A Give the Russian equivalents for the following word combinations:

to take a role in smth; to make agricultural production as efficient as possible; to reveal changes; disease infestations; soil sampling; landscape characteristics; information management tools; direct sunshine; to determine the best farming practice; to save time and costs; land-leveling requirements; underground drainage; to analyze all the spatial data; to reduce applications of pesticides / chemicals.

B Translate the following sentences into Russian paying attention to the underlined phrases.

- 1) Precision agriculture uses space satellite data soil sampling, and information management tools to make agricultural production as efficient as possible.
- 2) These high-tech systems can analyze soil and landscape characteristics (what type of soil it is, how steep the land is, what direction the slope faces, and how much direct sunshine it receives).
- 3) GPS can provide the farmer with specific information on tillage, planting, weeds, insect and disease infestations, cultivation, and irrigation.
- 4) Laser based tools provide information on land-leveling requirements and underground drainage.
- 5) A computer can be used to analyze all the spatial data that has been collected and look at overall relationships -between the different types of information that affect crop production in a specific place.

6) Precision agriculture allows farmers to improve the crops they grow, provides information for better farming practices, reduces unnecessary applications of pesticides or other chemicals.

7) The equipment collects field data, which is then downloaded into computer systems and analyzed with special software to help the farmer determine the best farming practice for his land.

C Answer the following questions.

- 1) What is precision agriculture?
- 2) Why do people have to use precision agriculture?
- 3) What technologies does precision agriculture use?
- 4) What can new technologies provide the farmers with?
- 5) How can precision agriculture help farmers in their work?
- 6) What do you think of precision agriculture?

D Discuss with your partners advantages and disadvantages of precision agriculture?

4.10 – 4.11 АГРОТЕХНИКА

Read the information below, make your own vocabulary of special terms and discuss in class what does agricultural engineering include.

Agricultural engineering is the engineering discipline that applies engineering science and technology to agricultural production and processing. Agricultural engineering combines the disciplines of animal biology, plant biology, and mechanical, civil, electrical and chemical engineering principles with knowledge of agricultural principles. It utilizes the knowledge of engineering for making agricultural machinery.

Some of the specialties of agricultural engineering deal with:

- the design of agricultural machinery, equipment, and agricultural structures;
- crop production, including seeding, tillage, irrigation and the conservation of soil and water;

- animal production, including the care and processing of poultry and fish and dairy management;
- the processing of food and other agricultural and biorenewable products, and food engineering.

Text 1 Agricultural Machinery

READING

Read the information below, make your own vocabulary of special terms and do the tasks that follow.

Devices used to till soil and to plant, cultivate, and harvest crops are called agricultural machinery. Since ancient times, when cultivation of plants was first undertaken, people have found the use of implements to be necessary. Primitive implements were pointed objects used for digging and keeping soil loosened, and sharp, knifelike objects were used for harvesting ripened crops. Modifications of these early implements led to the development of small hand tools still used in small-scale gardening, such as the spade, hoe, rake, trowel, and scythe, and larger implements, such as plows, larger rakes, and hoes that are drawn by humans, animals, or simple machines.

Much of the arable land of the earth is still tilled under conditions that do not permit use of expensive modern machinery. Modern large agricultural implements, adapted to large-scale farming methods, are usually powered by diesel- or gasoline-fueled internal-combustion engines. The most important implement of modern agriculture is the tractor. It provides locomotion for many other implements and can furnish power, via its power shaft, for the operation of machines drawn behind the tractor in the field. The power shafts of tractors may also be harnessed to belts for operating such equipment as feed grinders, pumps, or electric-power generators. Small implements, such as portable irrigators, often are powered by individual motors.

Many types of implements have been developed for the various types of activities involved in growing crops. These include breaking ground, planting, weeding, fertilizing, and combating pests.

Machinery used for harvesting differs according to the crop being harvested. Most cereal crops are harvested by means of a combine,

which is a machine equipped to remove the fruiting heads, beat off the grain kernels, and clean the grain as the combine moves through the fields. The cleaned grain is accumulated in an attached grain tank.

Corn for grain is harvested by means of a corn picker or grains combine with a corn-picker attachment. Recently developed corn combines are capable of picking, husking, and shelling up to 13 metric tons of corn per hour.

Hay harvesting usually is a multiple operation because of the necessity of drying the hay after cutting it. Hay is first cut close to the ground with a mower. After drying in the sun, most hay is baled, although some is still put up as loose hay. The field chopper is used to chop standing green hay and field-cured hay for silage.

Specialized machinery is used to harvest large root crops, such as potatoes and sugar beets. Mechanical cotton pickers and strippers are used in harvesting cotton.

Specialized machines are also used to harvest fruits and vegetables. For example, with a mechanical fruit picker, deciduous tree fruits, such as plums, cherries, and apricots, are literally shaken down. The machine, with arms attached to limbs of the tree, agitates the tree and causes the fruit to fall onto a raised catching frame that surrounds the tree. Nut crops may also be harvested in this manner.

In addition, plant breeders use modern methods such as genetic engineering to develop varieties of fruits and vegetables that are tougher and hardier for easy harvesting by machines. For example, a variety of tomato has been bred for a tougher skin that reduces bruising.

In addition to the kinds of agricultural machinery being used on large modern farms, a wide range of automated devices has been made available to farmers through the revolution in electronics. Today farmers may even be linked by personal computers to information centers that can help them to solve problems they confront in the operation of their farms.

Use of agricultural machinery substantially reduces the amount of human labor needed for raising crops. The average amount of labor required per hectare to produce and harvest corn, hay, and cereal crops has fallen to less than a fourth of what was required only a few decades ago. Mechanization, together with improved crop varieties, better techniques, and more efficient food processing, has enabled the small percentage of the population that remains living on farms to produce enough food to feed the nation.

COMPREHENSION

A Give the Russian equivalents for the following word combinations:

agricultural machinery; to undertake the cultivation of a plant; to keep soil loosened; small-scale gardening; under conditions; to be powered by engine; to provide locomotion; a portable irrigator; to beat off the grain kernels; a corn picker attachment; a raised catching frame; to confront problems; plant breeders.

B Translate the following sentences into Russian paying attention to the underlined phrases.

- 1) It provides locomotion for many other implements and can furnish power, via its power shaft, for the operation of machines drawn behind the tractor in the field.
- 2) Many types of implements have been developed for the various types of activities involved in growing crops.
- 3) For example, a variety of tomato has been bred for a tougher skin that reduces bruising.
- 4) A wide range of automated devices has been made available to farmers through the revolution in electronics.
- 5) The machine, with arms attached to limbs of the tree, agitates the tree and causes the fruit to fall onto a raised catching frame that surrounds the tree.
- 6) Today farmers may even be linked by personal computers to information centers that can help them to solve problems they confront in the operation of their farms.
- 7) Mechanization, together with improved crop varieties, better techniques, and more efficient food processing, has enabled the small percentage of the population that remains living on farms to produce enough food to feed the nation.

C Answer the following questions.

- 1) What is agricultural machinery?
- 2) What agricultural machinery is used to harvest root crops, fruits and vegetables?
- 3) Which of them are drawn by humans, animals, or simple machines?

- 4) Where can farmers use large implements drawn by machines?
- 5) What types of activities are involved in growing crops?
- 6) What helps people reduce the amount of human labor needed for raising crops today?

D Discuss with your partners the specialized machines mentioned in the text. Which of them did you see in operation?

Text 2 Methods of Crop Production

READING

Read the information below, make your own vocabulary of special terms and do the tasks that follow.

Crop farming involves at least five separate operations: (1) preparing the soil, (2) planting, (3) cultivating, (4) harvesting, and (5) processing and storage. Modern farm equipment can perform each of these operations easily and quickly. One of the most important items of equipment is the tractor, which is used to pull or push other field machinery.

The main purpose of soil preparation is to make a seedbed that is, an area of soil in which seeds can be planted and in which they will sprout, take root, and grow. Most farmers make the seedbed by an age-old process called tillage.

Tillage involves digging into the soil and mixing it. Tillage loosens the soil, kills weeds, and improves the circulation of the water and air in the soil. Plows are the chief tillage devices. The most widely used plows are moldboard plows. Other fields may have a cover crop, such as alfalfa or grass. Plant wastes and cover crops help protect soil from erosion. They also enrich the soil with nutrients if they are plowed under. Microbes cause the buried plant matter to decay. The decayed matter provides nutrients.

In many areas, the topsoil is too thin or too fragile for clean plowing. Farmers then use special plows that break up the soil without turning it over completely. This method kills fewer weeds than clean plowing does. But it leaves more plant matter on the surface and so helps reduce

erosion. This kind of plowing is called conservation tillage. Some farmers prepare a seedbed with no or little tilling. Such methods are called no-till or reduced tillage.

On sloping land, for example, farmers plow across, rather than up and down, the slope. The plowed soil forms ridges across the slope, which helps prevent erosion by rainwater. Such plowing is called contour plowing.

Soil that has been completely turned over in plowing often remains stuck together in large chunks. Most farmers therefore go over the plowed field with a device called a harrow. Harrows have sharp metal teeth or disks that break the chunks into smaller pieces and so smooth the surface for planting. Many farmers add fertilizers and pesticides to the soil during harrowing. The chemicals may be distributed by equipment attached to the harrow. In some cases, fertilizers and pesticides are applied before the soil is plowed.

Nearly all the field crops are planted by machines called planters or drills. These machines cut furrows in the soil, drop seeds into each furrow, and cover the seeds with soil – all in one operation. Planters and drills designed for no-tillage operations are similar to conventional drills. Farmers use special planting methods to help conserve soil. On sloping land, for example, crops are often planted in long strips between bands of thick clover or grass. The clover or grass helps slow the flow of rainwater down the slope. This method of planting is called strip cropping.

Herbicides applied before or during planting kill many kinds of weeds but not all. Some weeds may therefore develop with the crops. In most cases, weeds are not a problem in small-grain fields because the plants grow close together. In fields where row crops are grown, however, weeds can multiply rapidly between rows. Farmers control such weeds with cultivators. These devices stir the soil between rows and so uproot and bury any weeds.

Nearly all farmers harvest their field crops with machines. They use combines to harvest most grain and seed crops, including barley, corn, rice, soybeans, and wheat. A combine performs several tasks. First, it cuts the plant stalks. Then, it threshes the cuttings – that is, separates the grain or seeds from the straw and other wastes. The combine returns the wastes to the ground and collects the grain or seeds in a tank or bin. Some farmers harvest corn with special machines. The machines pick the ears from the

stalks but do not remove the grain from the ears. The grain is removed later. The grain is then processed to make livestock feed.

Special crop-growing methods include organic farming and hydroponics. Organic farming is the practice of raising crops without the use of synthetic chemicals. Hydroponics is the science of growing crops in water. Hydroponics involves growing crops in large tanks filled either with water or with sand or gravel covered with water.

COMPREHENSION

A Give the Russian equivalents for the following word combinations:

an age-old process; to make a seedbed; a cover crop; to protect soil from erosion; a harrow; a topsoil; to be too thin or too fragile; across a slope; to thresh a cuttings; to pick the ears from the stalks; without any processing; to multiply out of control; grain-drying equipment.

B Translate the following sentences into Russian paying attention to the underlined phrases.

- 1) The main purpose of soil preparation is to make a seedbed that is an area of soil in which seeds can be planted and in which they will sprout, take root, and grow.
- 2) This method kills fewer weeds than clean plowing does.
- 3) The plowed soil forms ridges across the slope, which helps prevent erosion by rainwater.
- 4) The chemicals may be distributed by equipment attached to the harrow.
- 5) On sloping land, for example, crops are often planted in long strips between bands of thick clover or grass.
- 6) The combine returns the wastes to the ground and collects the grain or seeds in a tank or bin.
- 7) Hydroponics is the science of growing crops in water.
- 8) Hydroponics involves growing crops in large tanks filled either with water or with sand or gravel covered with water.

C Match the sentence beginnings to the correct endings:

- a) Most farmers make the seedbed

- b) One of the most important items of equipment is the tractor
 - c) Nearly all the field crops are planted by
 - d) This method of planting is
 - e) On sloping land, for example, crops are often planted in
 - f) Organic farming is the practice of raising crops
 - g) Modern farm equipment can perform each of these
 - h) Farmers then use special plows that break up the soil
- 1).....operations easily and quickly.
 - 2).....which is used to pull or push other field machinery.
 - 3)..... long strips between bands of thick clover or grass.
 - 4)..... by an age-old process called tillage.
 - 5).....machines called planters or drills.
 - 6)..... called strip cropping.
 - 7).....without turning it over completely.
 - 8).....without the use of synthetic chemicals.

D Answer the following questions.

- 1) Should farmers use special methods to grow crops, vegetables and fruits? Motivate your answer.
- 2) What should be used to grow crops and fruits, vegetables and root crops, nuts and mushrooms?
- 3) What are the basic principles of crop production?
- 4) Do you think all pesticides must be used with extreme care? Why?
- 5) What can you say about the use of pesticides in Belarus?

E Discuss with your partners the basic methods of crop production. Why do farmers use special crop-growing methods on sloping land?

Text 3 **Animal Husbandry**

READING

Read the information below, make your own vocabulary of special terms and do the tasks that follow.

Animal husbandry is the breeding, feeding, and management of animals for the production of food, fiber, work, and pleasure. Modern methods concentrate on one type of animal in large, efficient farming units that generate animal products at the highest rate of return for investment. Intensive husbandry conditions include large numbers of animals in small lots, enriched feed, growth stimulation by various means, and vaccination against disease. Most of the world's domestic animals, however, are raised in small units under less efficient conditions and at lower rates of return.

Animals furnish about 28 percent of the world's total value of agricultural products. Traditional husbandry practices are closely associated with the degree of control needed over the animals that are kept and with the uses to which they are put. Most domesticated animals have multiple uses; for example, animals kept primarily for work also supply milk, meat, and clothing materials. The animals and their uses, however, are closely associated with the culture and experience of the people who care for them.

In some regions of the world cattle are not considered for use in the production of food. Studies have shown that the work power, fertilizer, milk, and the fuel from dung that the cattle provide in these regions are more efficient animal products than meat. Analysis of other cultural practices has often revealed unexpected efficiency of use fitted to local circumstances.

Environmental influences such as climate also play an important role in the domestication and use of animals. Domesticated animals used primarily for work, transport, and leisure are widely distributed. They include the horse, mule, donkey, ox, buffalo, camel, llama, alpaca, yak, reindeer, and dog. They are still used for draft in many countries of the world. They are also used for controlling other types of animals, for carrying packs, and for riding for leisure and sport. The world population is estimated at more than 60 million; approximately half are

in North and South America and half in Asia and Europe. The 12 million or so mules in the world are fairly evenly divided among Africa, North and Central America, and South America. Of the more than 40 million donkeys, about half are in Asia and one-fourth in Africa. Camels, llamas, and alpacas (family Camelidae) are used as beasts of burden. Of about 17 million camels in the world, approximately three-fourths are found in Africa and the rest in Asia. The llama and alpaca are mostly limited to small areas in South America. Practically all water buffalo are found in Asia.

They are used primarily as draft animals but have potential for the production of milk and meat. Oxen are also important draft animals in Asia and in some parts of southeastern Europe. Dogs are used as pack animals in Alaska and Siberia and are also used to control sheep and other animal herds.

Sheep are used for wool, meat (mutton and lamb), and to a small extent for milk. Sheep are commonly divided into three types based on the characteristics of their wool: fine, medium, and coarse. Perhaps the first animals to be used in husbandry, they were domesticated in southwestern Asia about 11,000 years ago. About one billion are now widely distributed throughout the world, with the largest populations in Africa, South America, Asia, Europe, and Oceania. Commercial sheep farming is usually conducted on large tracts of land, divided into operational units containing 1000 or more animals per unit. Sheep are also raised as a secondary enterprise on many small farms. They are well adapted to semiarid regions and to land that is too steep or rough for the cultivation of crops.

Goats were first domesticated in the same region as sheep, and for the same uses, but about 1500 years later. They are about two-fifths as numerous as sheep and show a similar distribution.

Recent evidence suggests that swine were domesticated about 9000 years ago in several world regions simultaneously. Worldwide population is estimated to be more than 700 million. Approximately half are raised in Asia, primarily in China. Europe, the former USSR, and South America also have large numbers. Unlike most domestic animals, pigs are omnivorous and compete directly with humans for many foods. They are good scavengers, however, and are highly efficient in converting cereal grains into protein and fat.

COMPREHENSION

A Give the Russian equivalents for the following word combinations:

an efficient farming unit; to generate animal products; at the highest rate of return; to vaccinate against disease; less efficient conditions; the world's total value of smth; to be closely associated with smth; to be fitted to local circumstances; environmental influences; to be used as beasts of burden; commercial sheep farming.

B Translate the following sentences into Russian paying attention to the underlined phrases.

- 1) Modern methods concentrate on one type of animal in large, efficient farming units that generate animal products at the highest rate of return for investment.
- 2) Most of the world's domestic animals, however, are raised in small units under less efficient conditions and at lower rates of return.
- 3) Most domesticated animals have multiple uses.
- 4) The animals and their uses, however, are closely associated with the culture and experience of the people who care for them.
- 5) Analysis of other cultural practices has often revealed unexpected efficiency of use fitted to local circumstances.
- 6) The world population is estimated at more than 60 million; approximately half are in North and South America and half in Asia and Europe.
- 7) Dogs are used as pack animals in Alaska and Siberia and are also used to control sheep and other animal herds.
- 8) Perhaps the first animals to be used in husbandry, they were domesticated in southwestern Asia about 11,000 years ago.
- 9) Sheep are well adapted to semiarid regions and to land that is too steep or rough for the cultivation of crops.
- 10) Recent evidence suggests that swine were domesticated about 9000 years ago in several world regions simultaneously.

C Answer the following questions.

- 1) Why did people begin to domesticate animals?
- 2) Where do people use animals not only for meat?

- 3) What are domesticated animals used primarily for?
- 4) What do intensive husbandry conditions include?
- 5) What animals do the fanners of Belarus breed?

D Formulate the main idea of each paragraph.

4.12 КОНТРОЛЬ

Рекомендуемое задание: Подготовить устное сообщение на тему «Electrical engineering speciality», используя материал изученных текстов модуля.

Рекомендуемая форма контроля: Беседа с преподавателем по подготовленной теме.

ДЛЯ ЗАМЕТОК

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РЕПОЗИТОРИЙ БГАТУ

ДЛЯ ЗАМЕТОК

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