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ОСНОВЫ РАСТЕНИЕВОДСТВА НА АНГЛИЙСКОМ ЯЗЫКЕ

Учебное пособие

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Цель пособия – формирование и развитие у обучающихся практических навыков и умений, необходимых для чтения специализированной литературы, устного и письменного общения в сфере профессиональной коммуникации на английском языке. Акцент сделан на коммуникативном компоненте владения языком: включено много упражнений по аудированию и говорению.

В издании, подготовленном в соответствии с Федеральным государственным образовательным стандартом, учтены особенности преподавания иностранного языка в неязыковых вузах. Может служить самостоятельным пособием для групп с уровнем владения языком A2-B1. Пособие можно использовать в качестве источника дополнительного материала в комплексе с пособием «Основы агрономии» Л.Е. Бабушкина, Т.А. Васильченко, А.А. Зайцев и др.

Для студентов бакалавриата, обучающихся по ФГОС ВО по направлениям подготовки 35.03.04 «Агрономия», 35.03.03 «Агрохимия и агропочвоведение».

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The purpose of the manual is to form and develop students' practical skills and abilities necessary for reading specialized literature, oral and written communication in the field of professional communication in English.

The publication, prepared in accordance with the Federal State Educational Standard, considers the peculiarities of teaching a foreign language in non-linguistic universities.

It is intended for bachelor students studying under the Federal State Educational Standard in the fields of study 35.03.04 "Agronomy", 35.03.03 "Agrochemistry and agro-soil science".

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ОГЛАВЛЕНИЕ

ВВЕДЕНИЕ

Цель данного учебного пособия – формирование и развитие у обучающихся практических навыков и умений, необходимых для чтения специализированной литературы, устного и письменного общения в сфере профессиональной коммуникации на английском языке. Настоящее учебное пособие предназначено для работы на занятиях со студентами бакалавриата, обучающимися по направлениям подготовки 35.03.04 «Агрономия», 35.03.03 «Агрохимия и агропочвоведение».

Пособие состоит из пяти модулей (modules), которые содержат темы специализированного характера – основы сельского хозяйства, подготовка к посадке, выращивание сельскохозяйственных культур и уход за ними, послеуборочные мероприятия, подведение итогов. Модули в свою очередь делятся на отдельные занятия (units), общее количество которых составляет 12 занятий. В каждом уроке вы встретите разнообразные тексты, посвящённые актуальным вопросам агрономии, агрохимии и агропочвоведению, а также задания, ориентированные на развитие навыков чтения, аудирования, письма и говорения. Лексические упражнения помогут вам обогатить словарный запас, освоить профессиональную терминологию и научиться правильно использовать её в различных ситуациях. Грамматические упражнения закрепят ваше знание основных структур английского языка, необходимых для точного выражения мыслей и идей. Каждое занятие содержит широкий спектр теоретического материала и упражнений:

– разминка (*warm-up*) направлена на выявление остаточных знаний обучающихся относительно темы занятия, а также на развитие способности говорения;

– словарный минимум (*active vocabulary*) представлен ключевыми словами и словосочетаниями по теме занятия с фонетической транскрипцией и переводом на русский язык;

– чтение (*reading*) содержит текст, соответствующий теме занятия, а также послетекстовые заданий на проверку понимания прочитанного;

– грамматика (*grammar focus*) отражает грамматические темы;

– аудирование (*listening*) оснащено различными видами заданий по теме занятия;

– практика письма (*writing practice*) включает написание эссе, перевод и реферирование текстов;

– практика говорения (*speaking practice*) включает упражнения, направленные на развитие различных языковых навыков.

Учебное пособие заканчивается двумя приложениями, первое содержит план реферирования на английском и русском языке, второе приложение включает в себя грамматический справочник. Мы рассчитываем, что этот учебный курс станет для вас ценным ресурсом в изучении английского языка и поможет вам добиться успеха в вашей профессиональной деятельности. Мы желаем вам захватывающего образовательного путешествия и уверенного владения английским языком!

Module 1. Agriculture Basics

Unit 1.1 – What is Agriculture?

➢ **WARM-UP**

Exercise 1. Discuss the following questions.

1. What do you already know about agriculture?
2. What types of agriculture do you know?
3. What role does agriculture play in society?
4. What problems does modern agriculture face?
5. What are the prospects for agricultural development in the future?

➢ **ACTIVE VOCABULARY**

Exercise 2. Memorize the following words and phrases paying attention to their pronunciation.

aquaponics – /ˌækwəˈpɒnɪks/ – аквапоника

breeding – /ˈbriːdɪŋ/ – разведение

climate – /ˈklaɪmət/ – климат

commercial – /kəˈmɜːʃəl/ – коммерческий

fertility – /fɜːˈtɪlətɪ/ – плодородие

harvest – /ˈhɑːvɪst/ – сбор урожая

hydroponics – /haɪˈdrəpɒnɪks/ – гидропоника

innovation – /ɪnəˈveɪʃn/ – инновация

crop – /krɒp/ – культура (сельскохозяйственная), урожай

cultivate – /ˈkʌltɪveɪt/ – возделывать, культивировать

depletion – /dɪˈpliːʃn/ – истощение

drought – /draʊt/ – засуха

efficiency – /ɪˈfɪʃnsi/ – эффективность

employment – /ɪmˈplɔɪmənt/ – занятость

erosion – /iˈroʊʒən/ – эрозия

evolve – /ɪˈvɒlv/ – развиваться, эволюционировать

export – /ekˈspɔːt/ – экспорт

livestock – /ˈlaɪvstɒk/ – скот

nutrient – /ˈnjuːtriənt/ – питательное вещество

organic – /ɔːˈgænɪk/ – органический

overuse – /ˈəʊvəˌjuːs/ – чрезмерное использование

pesticide – /ˈpɛstɪsaɪd/ – пестицид

subsistence – /səbˈsɪstəns/ – существование, пропитание

sustainable – /səˈsteɪnəbl/ – устойчивый

waste – /weɪst/ – отходы, тратить в пустую

Exercise 3. Match the synonyms.

1. breeding	a. work
2. subsistence	b. harvest
3. hydroponics	c. business-related
4. commercial	d. soilless growing
5. cultivate	e. survival
6. employment	f. raising
7. crop	g. grow

Exercise 4. Match the antonyms.

1. livestock	a. barrenness
2. organic	b. toxin
3. erosion	c. stagnation
4. nutrient	d. deposition
5. fertility	e. wild animals
6. sustainable	f. flood
7. innovation	g. synthetic
8. drought	h. unsustainable

Exercise 5. Fill in the gaps with the words from the box.

organic, commercial, livestock, drought, fertility, hydroponics, sustainable, nutrient, employment, harvest

1. Farmers _____ crops during autumn.
2. Sheep and cows are examples of _____.
3. They decided to start a _____ farm to sell their produce in the market.
4. Using organic methods helps maintain soil _____.
5. _____ farming uses water instead of soil to grow plants.
6. The government wants to promote _____ agriculture to protect the environment.
7. Exports play a significant role in creating _____ opportunities.
8. Climate change causes more frequent _____ which affects crop yield.
9. _____ helps plants absorb essential minerals.
10. _____ farming avoids the use of chemical pesticides.

Exercise 6. Read the sentences, paying attention to the translation of the new words.

1. We need to cultivate more land to meet the growing demand for food.
2. The subsistence farmer grows just enough crops to feed his family.
3. The company specializes in exporting organic fruits and vegetables.
4. Aquaponics combines fish farming with hydroponic plant cultivation.
5. Innovations in agriculture have evolved to include more organic methods, reducing waste and improving efficiency.
6. Subsistence farmers often struggle with low yields due to poor climate conditions and lack of access to modern technology.
7. Harvesting crops at the right time ensures maximum yield and minimizes losses from pests or diseases
8. Efficient use of resources, such as water and nutrients, is crucial for maintaining long-term agricultural productivity.
9. Overuse of land for monoculture farming can lead to soil depletion and reduced biodiversity, making it less sustainable in the long run.

10. Using aquaponics and hydroponics can make traditional farming more sustainable and efficient.

Exercise 7. Make up your own sentences using the active vocabulary, e.g.:

Breed: Farmers need to breed strong and healthy livestock to ensure good milk production.

Drought: Climate change is causing unpredictable weather patterns, leading to more frequent droughts.

Fertility: Sustainable agriculture practices help prevent soil erosion and maintain long-term fertility.

➢ **READING**

Exercise 8. Read the text and do the tasks.

Agriculture is the science and practice of cultivating land for growing crops and raising livestock. It involves various activities such as planting, harvesting, breeding animals, and managing resources to ensure sustainable food production. Agricultural practices have been essential since ancient times when humans transitioned from hunting and gathering to settled farming communities. Early civilizations in Mesopotamia, Egypt, India, and China developed sophisticated agricultural systems that allowed them to support large populations.

There are several types of agriculture: subsistence farming, commercial farming, organic farming, hydroponics and aquaponics.

Subsistence farming focuses on producing enough food to feed a family or small community. It often uses traditional methods and does not involve selling surplus produce.

In commercial farming farmers grow crops and raise livestock primarily for sale in markets. Commercial farms may specialize in specific products like wheat, corn, dairy, or meat.

Organic farming avoids the use of synthetic fertilizers, pesticides, and genetically modified organisms (GMOs). Instead, it relies on natural methods to maintain soil fertility and control pests.

Hydroponics and Aquaponics involve growing plants without soil, using nutrient-rich water solutions. Hydroponics focuses solely on plant growth, while aquaponics integrates fish farming with hydroponic systems.

Agriculture plays a crucial role in society by providing food, fiber, and other raw materials necessary for human survival and economic development.

Agricultural exports contribute significantly to national economies, especially in developing countries. Agriculture provides jobs both directly through farming and indirectly through related industries such as processing, transportation, and marketing. Modern agricultural practices aim to minimize environmental impact and conserve natural resources for future generations.

Despite its importance, agriculture faces numerous challenges. Changing weather patterns, including droughts, floods, and extreme temperatures, can negatively affect crop yields and livestock health. Overuse of land and unsustainable farming practices lead to soil erosion and loss of fertility. Managing pests and diseases requires careful planning and use of appropriate technologies to prevent crop losses. Access to clean water for irrigation is becoming increasingly difficult due to depletion of groundwater reserves and competition from other sectors.

To meet the demands of a growing global population and address environmental concerns, agriculture must continue to evolve. Innovations such as precision farming, genetic engineering, and vertical farming offer promising solutions. Precision farming utilizes technology to optimize inputs and outputs, reducing waste and increasing efficiency. Genetic engineering allows scientists to develop crops resistant to pests, diseases, and climatic conditions. Vertical farming involves growing crops indoors in stacked layers, making efficient use of limited urban spaces. In conclusion, agriculture remains an indispensable sector that shapes our lives and sustains societies worldwide.

Exercise 9. Mark the following statements as true or false based on the text, correct the false ones.

1. Agriculture involves only growing crops.
2. Subsistence farming produces food mainly for commercial purposes.
3. Organic farming uses synthetic fertilizers and pesticides.
4. Hydroponics and aquaponics rely on soil for plant growth.
5. Climate change has no effect on agriculture.
6. Soil degradation is caused by overuse of land and unsustainable farming practices.
7. Pest and disease control is not important in agriculture.
8. Water scarcity is not a concern for agriculture.
9. Precision farming aims to increase waste and reduce efficiency.
10. Genetic engineering cannot help create crops resistant to pests and diseases.

Exercise 10. Answer the following questions based on the text.

1. What is agriculture, and what activities does it involve?
2. When did the transition from hunting and gathering to settled farming occur, and where did early civilizations develop sophisticated agricultural systems?
3. What are the differences between subsistence farming and commercial farming?
4. What is the difference between organic farming and conventional farming?
5. What techniques are involved in hydroponics and aquaponics?
6. What are some key benefits of agriculture in society?
7. What challenges does agriculture face today?
8. How can innovations like precision farming help address agricultural challenges?
9. What advantages does genetic engineering offer in agriculture?
10. How does vertical farming contribute to sustainable food production in urban areas?

➢ **GRAMMAR FOCUS**

Exercise 11. Complete the sentences by putting the verbs in brackets into the correct form of the Present Simple Active.

1. Agriculture (involve) various activities such as planting and harvesting.
2. Subsistence farming (focus) on producing enough food to feed a family.
3. Commercial farms (specialize) in specific products like wheat or dairy.
4. Organic farming (avoid) the use of synthetic fertilizers and pesticides.
5. Hydroponics (rely) on nutrient-rich water solutions for plant growth.
6. Aquaponics (integrate) fish farming with hydroponic systems.
7. Agriculture (play) a crucial role in ensuring food security.
8. Modern agricultural practices (aim) to minimize environmental impact.
9. Climate change (affect) crop yields and livestock health.

➢ LISTENING

What is agriculture? https://youtu.be/4LyeGHBhWYk?feature=shared

Exercise 12. Listen to the audio. Fill in the gaps with the proper words from the audio.

Agriculture is the intentional cultivation of _____ and animals. It is believed that farming began in the Middle East, in the area of Turkey about _____years ago. The development of agriculture permitted unprecedented growth of human population and the emergence of towns and cities in _____. Many early civilizations began along major river systems Egyptians, along the _____, the Chinese Empire along the Huang River and the Mesopotamian countries along the Tigris and Euphrates. Yearly floods of these rivers provided the early civilizations with _____. Silt is like a natural fertilizer, bringing new minerals to enrich the soil. Families did most of the labor like _____by hand. A major advance in agriculture was the development of the plow. It could cut a thin strip in the ground making planting seeds much easier. Early farmers used oxen or other animals to _____. Farming remained pretty much the same until the 17th, hundreds. In the _____, there was a rapid rise in mechanization with the _____. Harvester farming tasks could be done on a scale that was previously impossible.

Exercise 13. Answer the questions.

1. In what ways does agriculture affect society?
2. What does agriculture refer to?
3. Where and when did farming begin?
4. How did the development of agriculture impact human population and settlements?
5. Name three ancient civilizations that developed along major river systems.
6. What benefits did yearly floods provide for early civilizations?
7. What significant invention improved planting efficiency in agriculture?
8. When did mechanization start to significantly change farming methods?

➢ **WRITING PRACTICE**

Exercise 14. Choose one of the following topics and write an essay:

1. **The history of agriculture development:** Consider how agriculture has evolved from ancient times to the present day. Indicate the key stages in the evolution of agricultural technologies, the impact of climate change and social factors on the development of the industry.
2. **The role of agriculture in a country's economy:** Analyze the importance of agriculture for a country's economy. What are its contributions to GDP, employment, and food security?

➢ **SPEAKING PRACTICE**

Exercise 15. Make up a plan and retell the text.

Exercise 16. Analyze infographics and speak about the benefits of organic agriculture. Use the models for help:

Let's speak about …	On the one hand…
As you know …	On the other hand, …
As compared to ... / In comparison with ...	Let me give you an example what I mean…
In contrast to…	To sum up I'd like to say…
In addition to …	In conclusion I can say that…


BENEFITS OF ORGANIC AGRICULTURE
1. Reduced Environmental Pollution and Degradation
2. Increased Biodiversity and Soil Health
3. Lower Pesticide and Chemical Use
4. Greater Resilience to Climate Change Impacts
5. Improved Long-Term Soil Quality
6. Reduced Fossil Fuel Usage in Production
7. Increased Nutrient Density of Produce
8. Financial Support for Local Farmers and Producers

Unit 1.2 – Factors Affecting Crop Production

➢ WARM-UP

Exercise 1. Discuss the following questions.

1. How do climate change and extreme weather impact crop production?
2. What major tech advancements have improved crop yields recently?
3. What economic factors influence farmers' crop selection and management?
4. How does government policy affect crop production success globally?
5. What social and cultural factors determine which crops are grown in different regions?

➢ ACTIVE VOCABULARY

Exercise 2. Memorize the following words and phrases paying attention to their pronunciation.

access – /ˈæksəs/ – доступ

adequate – /ˈædɪkwət/ – адекватный, достаточный

agriculture – /ˈægrɪˌkʌltʃə(r)/ – сельское хозяйство

market demand – /mɑːkɪt dɪˈmænd/ – спрос на рынке

nutrients – /njuːtriənts/ – питательные вещества

awareness – /əˈwɛənəs/ – осведомленность, понимание

availability – /əˌveɪləˈbɪlɪti/ – доступность

clayey – /ˈkleɪi/ – глинистый

crop production – /krɒp prəˈdʌkʃn/ – производство сельскохозяйственных культур

exposure – /ɪkˈspəʊʒə/ – воздействие

fertility – /fɜːˈtɪliti/ – плодородие

fluctuation – /ˌflʌktʃuˈeɪʃn/ – колебание

impact – /ˈɪmpækt/ – воздействие, влияние

irrigation – /ˌɪrɪˈgeɪʃ(ə)n/ – орошение

labor force – /leɪbə fɔrs/ – рабочая сила

organic farming – /ɔːgænɪk fɑːmɪŋ/ – органическое земледелие

pesticide – /pɛstɪsaɪd/ – пестицид

productivity – /prɒdʌktɪvəti/ – продуктивность

profitability – /prɒfitəˈbɪləti/ – прибыльность

retention – /rɪˈtenʃən/ – удерживание

slope – /sləʊp/ – склон

sustainability – /səsteɪnəˈbɪlɪti/ – устойчивость

technology – /tekˈnɒlədʒi/ – технология

thrive – /θraɪv/ – процветать

topography – /təˈpɒgrəfi/ – топография

yield – /jiːld/ – урожай

Exercise 3. Match the synonyms.

1. adequate	a. cultivation
2. agriculture	b. fecundity
3. awareness	c. effect
4. availability	d. sufficient
5. crop production	e. consciousness
6. fertility	f. farming
7. impact	g. watering
8. irrigation	h. accessibility

Exercise 4. Match the antonyms.

1. adequate	a. pollutants
2. nutrients	b. inefficiency
3. organic farming	c. depletion
4. pesticides	d. tradition
5. productivity	e. loss

6. sustainability
7. technology
8. yield

f. chemical-intensive farming
g. pest repellents
h. inadequate

Exercise 5. Fill in the gaps with the words from the box.

technology, productivity, awareness, topography, yield, pesticide, irrigation, availability, fertility, market demand

1. _____ helps distribute water evenly across fields, improving overall crop growth.
2. The local government aims to increase _____ by providing training programs for young farmers.
3. Understanding the _____ of land is important for selecting appropriate crops.
4. Modern _____ has revolutionized the way we grow food.
5. Implementing effective _____ systems can help control pests without harming the environment.
6. Maintaining soil _____ is vital for high-quality _____.
7. Balancing supply with _____ ensures stable prices and market stability.
8. The _____ of affordable fertilizers influences the cost-effectiveness of crop production.
9. Raising _____ among consumers about the benefits of organic produce can boost sales.

Exercise 6. Read the sentences, paying attention to the translation of the new words.

1. Agriculture is a significant sector in many developing countries.
2. The availability of water resources affects the success of crop production.
3. Awareness about sustainable practices is crucial for maintaining soil fertility.
4. The use of organic farming methods can reduce reliance on harmful pesticides.
5. Increased irrigation systems have had a positive impact on crop yield.

6. Market demand for organic products has increased due to greater public awareness.
7. Improving productivity requires advanced agricultural technology.
8. The flat topography of this region makes it ideal for large-scale farming.
9. Ensuring sustainability in agriculture involves managing nutrient cycles effectively.
10. A skilled labor force is essential for implementing modern farming techniques.

Exercise 7. Make up your own sentences using the active vocabulary, e.g.:

1. Overuse: The excessive use of pesticides can harm the environment and human health.
2. Cultivate: Farmers need to carefully cultivate their fields to ensure high-quality crops.
3. Crop: This year's wheat crop was significantly affected by the severe drought.

➢ **READING**

Exercise 8. Read the text and do the tasks.

Crop production is a complex process that involves multiple factors influencing the growth, yield, and quality of crops. These factors can be broadly categorized into natural, technological, economic, and social aspects. We will explore these factors in detail and understand how they impact different types of crops.

Natural factors include climate, soil, topography and water availability. Climate plays a crucial role in determining which crops can be grown in a particular region. Temperature, precipitation, humidity, and daylight hours significantly affect plant growth. For instance, tropical climates are suitable for growing crops like bananas and coffee, while temperate climates favor wheat and barley cultivation. The quality of soil is another critical factor. Different soil types have varying levels of fertility, nutrient content, and structure. Some plants require nutrient-rich soils, while others thrive in sandy or clayey soils. Additionally, soil pH affects the

availability of certain nutrients to plants. Topography influences water distribution, sunlight exposure, and moisture retention. Hilly regions may not be as conducive to agriculture compared to flatlands, but some crops, such as grapes, grow well on slopes. Adequate water supply is essential for healthy plant growth. Insufficient water can lead to reduced yields, so access to irrigation sources and rainfall patterns must be considered when selecting crop locations.

Technological factors are agronomic practices, mechanization and genetic modification. Modern agronomic techniques include the use of fertilizers, pesticides, irrigation systems, and other technologies aimed at enhancing crop productivity. Implementing these methods requires knowledge about each crop's specific requirements and growing conditions. Using agricultural machinery speeds up planting, crop maintenance, and harvesting processes. Mechanized field operations reduce labor costs and increase efficiency. Genetically modified organisms (GMOs) are used to create disease-resistant and pest-resistant crop varieties, as well as to improve their productivity. However, this method remains controversial among scientists and the public.

There are some economic factors influencing the growth, yield, and quality of crops. They are input prices, government support and market demand. Costs of seeds, fertilizers, fuel, and other materials directly influence the profitability of crop production. Fluctuations in global market prices can significantly impact farmers' incomes. Government subsidies and support programs help farmers manage risks and remain competitive. This support is particularly important during periods of economic instability. Market demand for specific crops changes based on consumer preferences and trends. Farmers need to adapt to these shifts to maintain profitability.

Such social factors as labor force, cultural traditions and environmental awareness are the factors that also influence crop production. Access to skilled workers is vital for successful farming. Many countries face challenges due to labor shortages, especially during peak harvest seasons. Cultural practices and traditions also influence crop choices. Certain products might hold symbolic significance in

specific regions, making them popular locally. Rising environmental consciousness has led to increased interest in organic farming. Consumers increasingly prefer food produced without chemical fertilizers and pesticides.

Exercise 9. Mark the following statements as true or false based on the text, correct the false ones.

1. Tropical climates are suitable for growing crops like bananas and coffee.
2. Temperate climates favor the cultivation of wheat and barley.
3. Sandy soils are always less fertile than loamy soils.
4. Flatlands are generally more conducive to agriculture than hilly regions.
5. Genetic modification is universally accepted and widely practiced without controversy.
6. Government support programs aim to make crop production less profitable for farmers.
7. Market demand for specific crops never changes over time.
8. Environmental awareness has no impact on consumer preference for organically produced foods.
9. All crops benefit equally from mechanization.
10. The availability of water is irrelevant to crop production.

Exercise 10. Answer the following questions based on the text.

1. What four broad categories of factors influence crop production?
2. How do weather conditions affect plant growth?
3. Why is soil quality important for crop production? Give examples.
4. How does topography impact water distribution and sunlight exposure?
5. Why is water availability crucial for plant growth? What happens with insufficient water?
6. List three modern agronomic techniques to enhance crop productivity.
7. How do agricultural machines improve crop production?
8. What are GMOs used for in crop production and why is it controversial?

9. How do input prices affect crop production profitability?

10. What role do government subsidies play in supporting farmers?

➢ GRAMMAR FOCUS

Exercise 11. Complete the sentences by putting the verbs in brackets into the correct form.

1. Climate (play) a crucial role in determining which crops can be grown in a particular region.

2. Temperature, precipitation, humidity, and daylight hours significantly affect plant growth.

3. Tropical climates (be) suitable for growing crops like bananas and coffee.

4. Temperate climates favor wheat and barley cultivation.

5. The quality of soil (be) another critical factor.

6. Different soil types (have) varying levels of fertility, nutrient content, and structure.

7. Some plants (require) nutrient-rich soils, while others (thrive) in sandy or clayey soils.

8. Soil pH (affect) the availability of certain nutrients to plants.

9. Topography (influence) water distribution, sunlight exposure, and moisture retention.

10. Hilly regions may (not be) as conducive to agriculture compared to flatlands.

Exercise 12. Put the words in the correct order to make up sentences.

1. crops, Some, grapes, such as, slopes, well, on, grow.

2. water, Adequate, essential, supply, is, for, growth, healthy, plant.

3. water, lead, can, to, yields, reduced, Insufficient.

4. Access, to, sources, irrigation, and, patterns, rainfall, be, considered, must, when, selecting, locations, crop.

5. techniques, Modern, include, the, use, agronomic, of, fertilizers, pesticides, systems, technologies, other, irrigation, and.

Exercise 13. Transfer the sentences from Active Voice into Passive Voice.

1. Implementing these methods requires knowledge about each crop's specific requirements and growing conditions.
2. Agricultural machinery speeds up planting, crop maintenance, and harvesting processes.
3. Mechanized field operations reduce labor costs and increase efficiency.
4. This method remains controversial among scientists and the public.
5. Costs of seeds, fertilizers, fuel, and other materials directly influence the profitability of crop production.
6. Fluctuations in global market prices can significantly impact farmers' incomes.
7. Government subsidies and support programs help farmers manage risks and remain competitive.

➢ **LISTENING**

Environmental factors affecting crop production

https://youtu.be/GZ2g0xxktwo?si=NktFTmzNGaUMApTn

Exercise 14. Listen to the audio. Are the statements True or False?

1. There 4 factors affecting crop production.
2. The elements of climate are rainfall, humidity, light, temperature, drought, wind, sunlight.
3. Drought is defined as lack of or insufficient rainfall in the area.
4. Rainfall is defined as air in motion.
5. Soil organisms are bacteria, fungi, earthworms, rodents and termites.
6. Soil PH doesn't affect the availability of soil nutrients to plants.
7. Topography is the shape of the land in relation to the underlying rocks of the Earth surface.

Exercise 15. Use the information above to speak about the environmental factors.

➢ **WRITING PRACTICE**

Exercise 16. Write a summary to the text according to the plan (см. Приложение 1)

➢ **SPEAKING PRACTICE**

Exercise 17. Work in pairs or small groups to discuss various factors that affect crop production. Each group member should take turns presenting their ideas and engaging in a conversation about the topic. Use the questions provided as prompts to guide your discussion.

Questions for Discussion:

1. What environmental factors can influence crop production? For example, what role does climate play?
2. How do soil conditions affect crop growth and yield?
3. What technological advancements have improved crop production over the years?
4. How does water availability impact crop production?
5. How might future changes in climate or technology affect crop production globally?

Unit 1.3 – Types of Crops

➢ **WARM-UP**

Exercise 1. Discuss the following questions.

1. What are the main differences between cereal crops and legume crops?
2. How do root and tuber crops contribute to global food security?
3. Why are oilseed crops becoming increasingly important in modern agriculture?
4. Discuss the environmental impact of growing fiber crops like cotton and hemp.
5. Compare the cultivation methods and uses of sugarcane and sugar beet.

➢ **ACTIVE VOCABULARY**

Exercise 2. Memorize the following words and phrases paying attention to their pronunciation.

bean – /biːn/ – боб, фасоль

carbohydrate – /ˈkɑːboʊˈhʌɪdreɪt/ – углевод

cereal – /ˈsɪərɪəl/ – злак

chickpea – /tʃɪkˈpiː/ – нут

cruciferous – /ˈkruːsɪfərəs/ – крестоцветный

encompass – /ɛnˈkʌmpəs/ – охватывать, включать в себя

perennial – /pəˈreniəl/ – многолетний (растение)

pod – /ˈpɑd/ – стручок

protein – /prəˈtiːn/ – белок

raw – /rɔː/ – сырое

rotation – /roʊˈteɪʃən/ – ротация

root – /ruːt/ – корень

fiber – /'faɪbə(r)/ – волокно
fuel – /fjʊəl/ – топливо
grain – /greɪn/ – зерно
industrial – /ɪnˈdʌstriəl/ – промышленный
legume – /'legjum/ – бобовый
lentil – /'lentl/ – чечевица
nitrogen – /'naɪtrədʒən/ – азот
pea – /piː/ – горох
peanut – /pɪˈnʌt/ – арахис
security – /siˈkjʊrəti/ – безопасность
soybean – /soʊbiːn/ – соевый боб
staple – /steɪpl/ – основное продовольствие
starch – /stɑːrtʃ/ – крахмал
storage – /'stɔrɪdʒ/ – хранение
sucrose – /'suːkroʊz/ – сахароза
sugarcane – /'ʃuːgəkeɪn/ – сахарный тростник
tuber – /'tuːbə/ – клубень
vitamin – /'vɪtəmɪn/ – витамин

Exercise 3. Match the synonyms.

1. bean	a. repository
2. cereal	b. grains
3. fuel	c. micronutrient
4. rotation	d. safety
5. vitamin	e. energy
6. tuber	f. cycle
7. storage	g. legume
8. lecurity	h. root

Exercise 4. Fill in the gaps with the words from the box.

cereal, security, beans, fiber, chickpeas, peanuts, nitrogen, proteins, vitamins, rotation

1. A healthy diet should include plenty of _____ and vegetables.
2. Many people eat _____ for breakfast because it provides energy for the day.
3. The farmer decided to plant _____ this year instead of corn.
4. _____ are essential for building muscle and repairing tissues.
5. Legumes like _____ can be used in various dishes such as hummus.
6. Eating raw fruits and vegetables ensures you get more _____.
7. Nuts like _____ contain healthy fats and proteins.

8. Storing food properly helps maintain its nutritional value and _____.

9. _____ fixation by legumes improves soil fertility.

Exercise 5. Make up your own sentences using the active vocabulary, e.g.:

1. **Grains***:* Grain such as rice and wheat are staple foods in many cultures.

2. **Root:** Root vegetables like carrots and beets grow underground.

3. **Rotation**: Proper crop rotation helps replenish nutrients in the soil.

➢ **READING**

Exercise 6. Read the text and do the tasks.

Agriculture is a vital sector that provides food for the world's population. Different types of crops are grown to meet various needs, including food, feed, fiber, fuel, and industrial raw materials. Let's explore some common categories of crops, they include cereals, legumes, root and tuber crops, oilseed crops, fiber crops, sugar crops, vegetable crops, fruits and nuts.

Cereals, also known as grains, are one of the most important crop groups in agriculture. They include staple foods such as wheat, rice, corn (maize), barley, oats, rye, sorghum, and millet. These crops provide carbohydrates, proteins, vitamins, and minerals essential for human nutrition. Cereal production is crucial for global food security.

Legumes are plants that produce pods containing seeds. They are rich in protein and often used in vegetarian diets. Common legumes include beans, peas, lentils, chickpeas, soybeans, and peanuts. Legumes can fix nitrogen in the soil, making them beneficial in crop rotation systems.

Root and tuber crops have underground storage organs, which are high in starch and energy. Roots and tubers include potatoes, sweet potatoes, cassava (manioc), yams, and taro. They play a significant role in providing calories and nutrients, especially in developing countries.

Oilseed crops are plants whose seeds contain high levels of oil. The extracted oils are used for cooking, biofuels, and various industrial applications. Major oilseed

crops include soybeans, rapeseed (canola), sunflower, palm kernel, and groundnuts (peanuts).

Fiber crops are cultivated primarily for their fibers, which can be processed into textiles, paper, and other products. Cotton, flax, hemp, jute, and sisal are examples of fiber crops. Cotton is particularly important globally due to its widespread use in clothing and household items.

Sugar Crops. Sugarcane and sugar beet are two major sources of sucrose, commonly known as table sugar. Sugarcane is a tropical grass, while sugar beet is a root vegetable. Both crops are widely cultivated to meet the demand for sugar in food processing industries.

The diversity of crops ensures that agricultural production meets the varied needs of humanity. Each type of crop has unique characteristics and requirements, contributing significantly to global food supply, industry, and economy. Understanding these different crop types helps farmers make informed decisions about what to grow based on local conditions and market demands.

Exercise 7. Give Russian equivalents to different types of crops and match them with the appropriate category.

Beans, peas, lentils, chickpeas, soybeans, and peanuts are examples of…	fiber crops
Soybeans, rapeseed (canola), sunflower, palm kernel, and groundnuts (peanuts) are examples of…	cereals
Cotton, flax, hemp, jute, and sisal are examples of …	legumes
Wheat, rice, corn (maize), barley, oats, rye, sorghum, and millet are examples of …	oilseed crops

Exercise 8. Mark the following statements as true or false based on the text, correct the false ones.

1. Agriculture is a vital sector that provides food for the world's population.
2. Cereals, such as wheat and rice, are not important for human nutrition.
3. Legumes do not fix nitrogen in the soil.
4. Root and tuber crops, like potatoes, are low in starch and energy.
5. Oilseed crops, such as sunflowers, are only used for cooking oil.
6. Fiber crops, such as cotton, are mainly used for making clothes.
7. Sugarcane and sugar beet are not major sources of table sugar.

Exercise 9. Answer the following questions based on the text.

1. What does agriculture provide for the world's population?
2. Name three cereal crops mentioned in the text.
3. Which nutrient do legumes provide in abundance?
4. What are the main uses of oil extracted from oilseed crops?
5. Why are fiber crops important globally?
6. What two crops are major sources of table sugar?
7. How do legumes benefit the soil?
8. What role do roots and tubers play in providing nutrients?

➢ **GRAMMAR FOCUS**

Exercise 10. Transfer the sentences from Past Simple into Present Simple.

1. Agriculture was a vital sector that provided food for the world's population.
2. Different types of crops were grown to meet various needs.
3. Cereals included staple foods such as wheat, rice, and corn.
4. Legumes produced pods containing seeds.
5. Root and tuber crops played a significant role in providing calories and nutrients.
6. Extracted oils were used for cooking, biofuels, and various industrial applications.
7. Fiber crops were cultivated primarily for their fibers.
8. Sugarcane and sugar beet were two major sources of sucrose.

Exercise 11. Put different types of questions to the sentences and ask your partner to answer them.

1. Agriculture is a vital sector that provides food for the world's population.
2. Different types of crops are grown to meet various needs.
3. Cereals are one of the most important crop groups in agriculture.
4. These crops provide essential nutrients for human nutrition.
5. Cereal production is crucial for global food security.
6. Legumes are plants that produce pods containing seeds.
7. Legumes can fix nitrogen in the soil.
8. Roots and tubers are high in starch and energy.
9. The extracted oils are used for various purposes.
10. The diversity of crops meet the varied needs of humanity.

➢ **LISTENING**

Classification of crops based on their life cycle

https://youtu.be/zb8NG1vvt8U?si=tMoiqAZbrW-szlZa

Exercise 12. Listen to the audio. Answer the questions.

1. What is a cycle of a crop?
2. How many classes can the crop be classified on the basis of their life cycle?
3. What are they?
4. What are annual crops?
5. What are the examples of annual crops?
6. Does it take two years to complete their life cycle for perennial crops?
7. What are the examples of biennial crops?
8. How long is the life cycle of perennial crops?
9. What are the examples of perennial crops?

Classification of crops based on morphology

https://youtu.be/XylXQr2zhRI?si=cmr8hsGJd8Slf4K2

Exercise 13. Listen to the audio. Are the statements True or False? Correct the false ones. Some words for help:

Slender hollow stem – тонкий полый стебель

Net venation – сетчатое жилкование

1. There are three broad classes of crops based on what they look like.
2. Crops can be classified into monocotyledons and dicotyledons.
3. Monocotyledons are plants that have seeds with two cotyledons each or two seed leaves.
4. The example of monocotyledons is maize.
5. The example of dicotyledons is wheat.
6. Monocot have tap root that are almost of the same size.
7. The leaves of monocot are short and wide and have parallel veins.
8. Dicot have fibrous roots and a main stem bearing several branches.
9. The leaves of dicot are short and broad and leaves have net venation.

➢ **WRITING PRACTICE**

Exercise 14. Select two different categories of crops (for example, cereals and oilseeds) and compare them based on the following parameters:

1. Main plant species within each category.
2. Climatic conditions required for growing these crops.
3. Methods of cultivation and care for the crops.
4. Uses of products obtained from these crops.
5. Economic significance of each crop category.

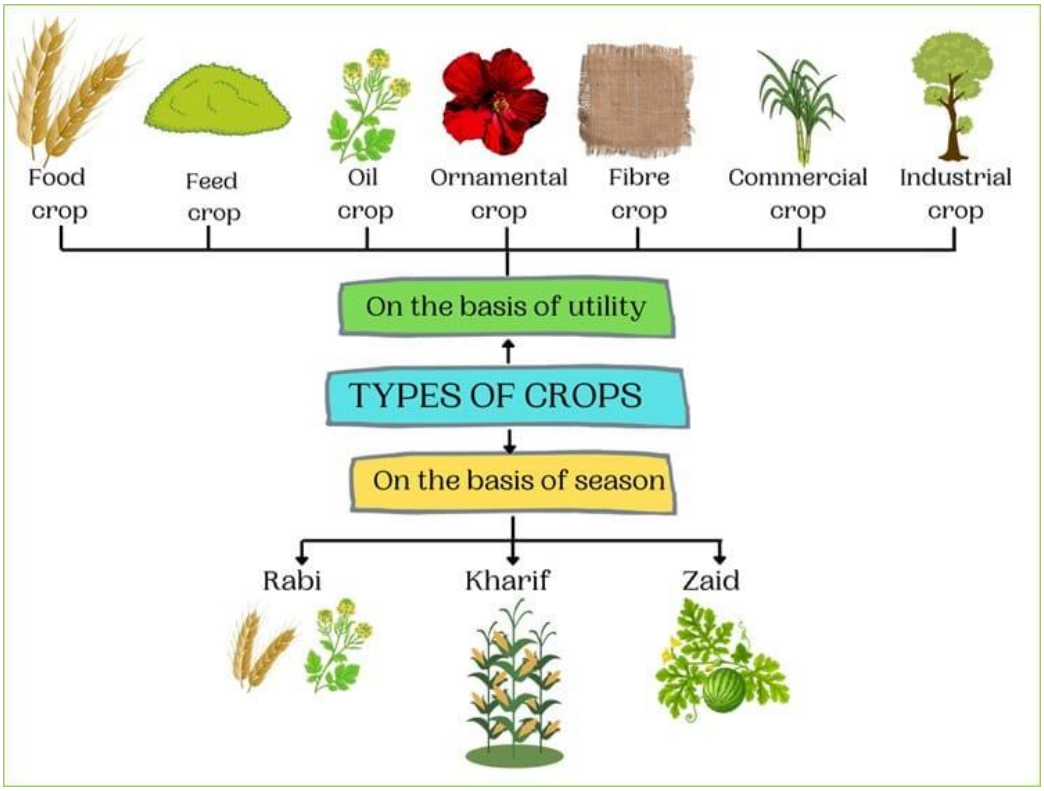
Use specific examples and data to substantiate your analysis.

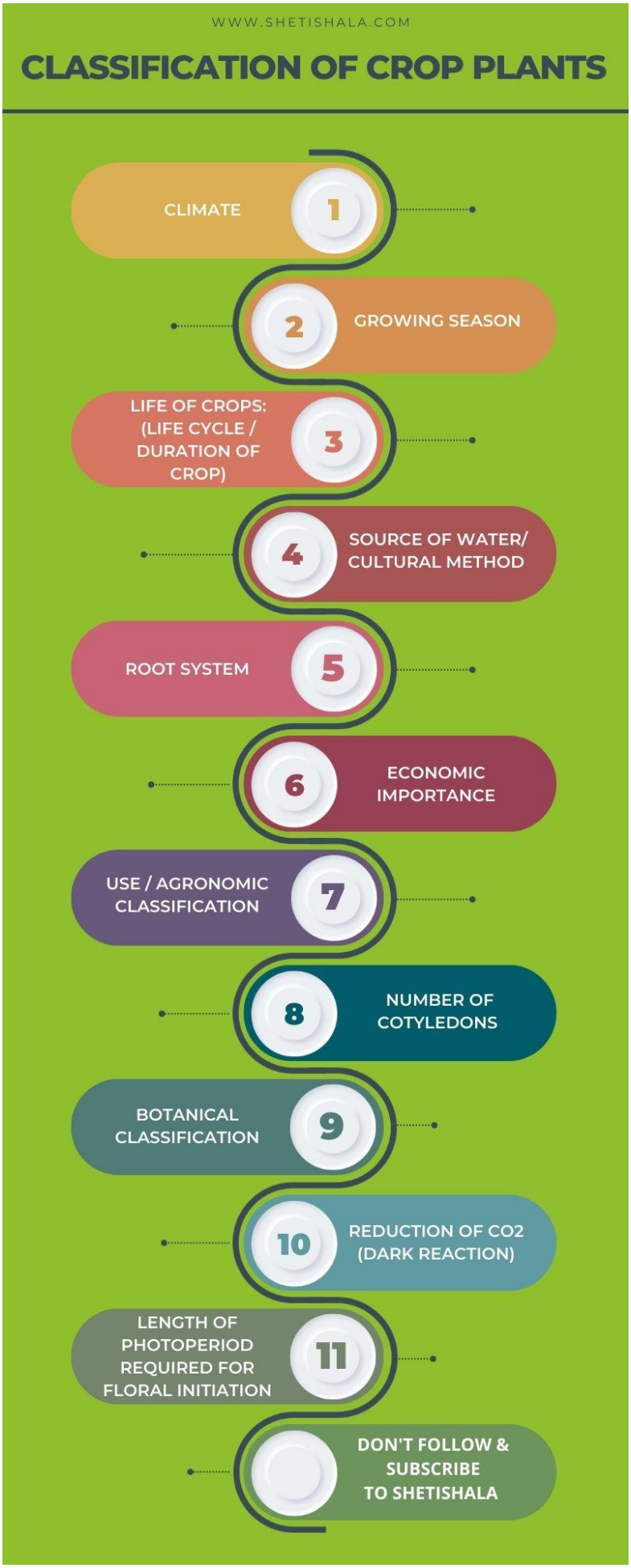
➢ **SPEAKING PRACTICE**

Exercise 15. Make up a plan and retell the text.

Exercise 16. Analyze infographics and speak about the classification of crop plants. Use the models for help:

At the beginning I'd like to say that…	Besides, …
We live in a world in which ...	In addition to ...
It is a well-known fact that ...	All in all, I believe that…


Food crop
Feed crop
Oil crop
Ornamental crop
Fibre crop
Commercial crop
Industrial crop
On the basis of utility
TYPES OF CROPS
On the basis of season
Rabi
Kharif
Zaid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CLASSIFICATION OF CROP PLANTS
CLIMATE
1
2
GROWING SEASON
LIFE OF CROPS: (LIFE CYCLE / DURATION OF CROP)
3
4
SOURCE OF WATER/ CULTURAL METHOD
ROOT SYSTEM
5
6
ECONOMIC IMPORTANCE
USE / AGRONOMIC CLASSIFICATION
7
8
NUMBER OF COTYLEDONS
BOTANICAL CLASSIFICATION
9
10
REDUCTION OF CO2 (DARK REACTION)
LENGTH OF PHOTOPERIOD REQUIRED FOR FLORAL INITIATION
11
DON'T FOLLOW & SUBSCRIBE TO SHETISHALA

Module 2. Preparation for Planting

Unit 2.1 – Manure and Fertilization

➢ **WARM-UP**

Exercise 1. Discuss the following questions.

1. What are the main differences between using manure and mineral fertilizers in soil preparation?
2. How do you determine the appropriate amount of manure or fertilizer to use for a particular type of plant or soil condition?
3. What challenges might arise if manure is not properly composted before being applied to the soil?
4. Can you describe a situation where a combination of organic and mineral fertilizers would be most effective?
5. What steps should be taken to minimize the risk of soil degradation or contamination when using fertilizers?

➢ **ACTIVE VOCABULARY**

Exercise 2. Memorize the following words and phrases paying attention to their pronunciation.

absorb – /əbˈsɔːb/ – поглощать, впитывать
aged – /ˈeɪdʒd/ – состаренный, выдержанный
airy – /ˈɛəri/ – воздушный, свежий
application – /ˌæplɪˈkeɪʃn/ – применение, заявка
capacity – /kəˈpæsəti/ – емкость
crucial – /ˈkruːʃl/ – критический, решающий
decomposition – /diːˌkɑːmpəˈzɪʃən/ – разложение, распад
diversity – /daɪˈvɜːrsəti/ – разнообразие
enhance – /ɪnˈhæns/ – усиливать, улучшать
ensure – /ɪnˈʃʊə(r)/ – обеспечивать, гарантировать
enrich – /ɪnˈrɪtʃ/ – обогащать **equilibrium** – /iːkwɪˈlɪbriəm/ – равновесие
facilitate – /fəˈsɪlɪteɪt/ – облегчать, способствовать
fertilizer – /ˈfɜːrtlaɪzə(r)/ – удобрение
fertility – /fɜːˈtɪləti/ – плодородие
holistic – /hoʊˈlɪstɪk/ – целостный, холистический
leach out – /liːtʃ aʊt/ – вымываться, выщелачиваться
loose – /luːs/ – свободный, рыхлый
manure – /məˈnjʊr/ – навоз, удобрение
nitrate accumulation – /naɪtreɪt əˌkjumjəˈleɪʃn/ – накопление нитратов
nitrogen – /ˈnaɪtrədʒən/ – азот
organic matter – /ɔːgˈænɪk ˈmætə(r)/ – органическое вещество
pathogen – /ˈpæθədʒen/ – патоген, возбудитель болезни
phosphorus – /ˈfɑːsfərəs/ – фосфор
potassium – /pəˈtæsiəm/ – калий **proper** – /ˈprɑːpə(r)/ – правильный, надлежащий
replenish – /rɪˈplenɪʃ/ – пополнять, восстанавливать
robust – /roʊˈbʌst/ – крепкий, здоровый
salinity – /səˈlɪnəti/ – соленость

Exercise 3. Match the synonyms.

1. absorb
2. loose
3. proper
4. replenish
5. robust
6. enrich
7. crucial
8. aged

a. sturdy
b. enhance
c. appropriate
d. rigid
e. fundamental
f. ancient
g. consume
h. restore

Exercise 4. Match the antonyms.

1. airy	a. freshness
2. capacity	b. sterility
3. diversity	c. identity
4. equilibrium	d. deficiency
5. holistic	e. disequilibrium
6. leach out	f. retain
7. fertility	g. partial
8. salinity	h. dense

Exercise 5. Fill in the gaps with the words from the box.

enrich, diversity, enhance, absorb, airy, aged, application, crucial, capacity, decomposition

1. The sponge is designed to efficiently _____ liquids.
2. The _____ cheese had a unique and rich flavor.
3. The open window made the room feel more _____ and comfortable.
4. He submitted his job _____ early to increase his chances.
5. The auditorium has a seating _____ of 5000 people.
6. It is _____ to study hard if you want to pass the exam.
7. The process of _____ breaks down organic matter into simpler substances.
8. The city is known for its cultural _____.
9. Regular exercise can _____ your physical fitness.
10. Adding compost to the soil will help to _____ it with nutrients.

Exercise 6. Make up your own sentences using the active vocabulary, e.g.:

1. **Absorb**: The towel quickly absorbed the spilled water from the floor.
2. **Decomposition**: The decomposition of leaves creates a rich layer of humus in the forest.
3. **Enrich:** Adding compost to the garden enriches the soil with essential nutrients.

➢ **READING**

Exercise 7. Read the text and do the tasks.

Preparing the soil before planting is a crucial step to ensure optimal conditions for plant growth and development. Proper use of organic fertilizers such as manure, along with mineral fertilizers, helps to improve soil structure, enhance fertility, and create an ideal environment for root systems. You will explore various aspects of soil preparation for planting, including the selection and application of different types of fertilizers.

Manure organic materials like animal manure play a vital role in improving soil quality. They enrich the soil with organic matter, enhance its structure, increase water-holding capacity, and promote beneficial microbial activity. Let's consider the advantages of using manure:

1. Nutrients: manure contains nitrogen (N), phosphorus (P), and potassium (K), which are essential for healthy plant growth and fruit production.

2. Soil structure improvement: the decomposition of organic matter forms humus, making the soil loose and airy, facilitating oxygen access to plant roots.

3. Microbial support: microorganisms present in manure aid in breaking down organic material into forms that plants can easily absorb.

4. Environmental safety: using manure instead of chemical fertilizers reduces environmental pollution risks and supports sustainable agriculture.

However, it's important to keep some considerations in mind when applying manure. Fresh manure may contain pathogens and weed seeds, so it’s recommended to use composted or aged (выдержанный) manure. Overapplication of manure can lead to nitrate accumulation and other harmful substances in the soil, so following recommended rates is crucial.

Mineral fertilizers provide nutrients in readily available forms for plants. They can be used to quickly replenish specific nutrient deficiencies in the soil. Common types of mineral fertilizers include: Nitrogen fertilizers (e.g., ammonium nitrate, urea): stimulate green leafy growth in plants; Phosphate fertilizers (e.g., superphosphate): essential for root formation and flowering; Potassium fertilizers

(e.g., potassium chloride): increase plant resistance to stress and improve fruit quality. When using mineral fertilizers, take note of some points. Maintaining a balance between NPK (nitrogen, phosphorus, and potassium) is critical to avoid imbalances and negative impacts on plants. Mineral fertilizers leach out of the soil quickly, requiring multiple applications throughout the growing season. Excessive use of mineral fertilizers can raise soil salinity levels, negatively affecting plant health.

To achieve the best results in preparing your soil for planting, combining organic and mineral fertilizers is advisable. This approach ensures that plants receive all necessary nutrients while also enhancing soil structure and biological diversity. Here's a sample holistic strategy: in autumn, apply composted manure or humus to improve soil structure and enrich it with organic matter: in spring, add mineral fertilizers based on crop-specific needs and soil test results; regularly mulch to maintain moisture levels and suppress weeds.

Proper soil preparation involves a series of measures aimed at improving physical, chemical, and biological properties. Utilizing both manure and mineral fertilizers creates favorable conditions for robust plant growth, high yields, and superior product quality. It's essential to follow dosage recommendations and timing guidelines to prevent adverse effects and maintain ecological equilibrium.

Exercise 8. Mark the following statements as true or false based on the text, correct the false ones.

1. Manure provides essential nutrients such as nitrogen, phosphorus, and potassium for plant growth.
2. Fresh manure is always safe to use without any risk of pathogens or weed seeds.
3. Mineral fertilizers are only effective when applied once per growing season.
4. Overapplication of manure can lead to harmful nitrate accumulation in the soil.
5. Combining organic and mineral fertilizers is not recommended for optimal soil preparation.

6. Improving soil structure through the use of manure increases water-holding capacity.

7. Excessive use of mineral fertilizers can decrease soil salinity levels.

8. Microorganisms in manure help break down organic material into forms that plants cannot absorb.

9. Using manure instead of chemical fertilizers supports sustainable agriculture practices.

10. Proper soil preparation includes maintaining a balance between nitrogen, phosphorus, and potassium.

Exercise 9. Answer the following questions based on the text.

1. What is the importance of preparing the soil before planting?

2. How does the use of organic fertilizers like manure help improve soil structure and fertility?

3. What are the four main advantages of using manure in soil preparation?

4. Why is it recommended to use composted or aged manure instead of fresh manure?

5. What potential issues can arise from overapplying manure to the soil?

6. What types of mineral fertilizers are commonly used and what do they contribute to plant growth?

7. What precautions should be taken when using mineral fertilizers?

8. What benefits can be achieved by combining organic and mineral fertilizers in soil preparation?

9. Describe a holistic strategy for preparing soil for planting using both organic and mineral fertilizers.

10. What steps are involved in proper soil preparation to ensure robust plant growth and high yields?

➢ GRAMMAR FOCUS

Exercise 10. Put the words in the correct order to make up sentences.

1. an is essential Phosphorus mineral for bone metabolism health and energy.
2. potassium Bananas good are a source of, regulate which blood helps pressure.
3. nitrogen require for photosynthesis Plants and growth.
4. often Farmers use cow as a manure natural fertilizer for fields their.
5. bacteria can Pathogenic cause infections serious if untreated left.

➢ LISTENING

Soil preparation https://youtu.be/8ulpy_GFLDk?si=s0NPI06Bxp08O05d

Exercise 11. Listen to the audio. Answer the questions.

1. What is the most important requirement for agriculture?
2. Why does soil need to be loosened up before cultivation?
3. What are the natural agents that help the growth of the plants?
4. What are the advantages of loosening of the soil?
5. What is humus?
6. What does the process of loosening and turning of the soil called?
7. What would you do if the soil is hard?
8. Do we add some manure to the soil if the soil hasn't regained its fertility?
9. How many types of equipment are used in the first stage of agriculture?

➢ WRITING PRACTICE

Exercise 12. Write a summary to the text according to the plan.

➢ SPEAKING PRACTICE

Exercise 13. Work in pairs or small groups to discuss various aspects of manure and fertilization in agriculture. Each group member should take turns presenting their ideas and engaging in a conversation about the topic. Use the questions provided as prompts to guide your discussion.

Questions for Discussion:

1. What is the difference between organic manure and chemical fertilizers?
2. How does manure contribute to soil fertility and crop productivity?
3. What are the advantages and disadvantages of using chemical fertilizers?
4. How does composting help in producing high-quality organic manure?
5. How can farmers balance the use of manure and fertilizers to achieve optimal crop yields?

Exercise 14. Debate on Organic vs. Chemical Fertilizers.

Instructions: Form two teams for a debate on the topic of organic versus chemical fertilizers. One team will argue in favor of organic fertilizers, while the other will defend the use of chemical fertilizers. Each team will have 10 minutes to present their arguments, followed by a 5-minute rebuttal period. After both sides have presented, there will be a 15-minute open discussion where participants can ask questions and challenge each other's points.

Each team should prepare arguments addressing the following points:

1. *Environmental impact:* Discuss the effects of each type of fertilizer on soil health, water quality, and biodiversity.
2. *Cost and availability:* Compare the costs and accessibility of organic and chemical fertilizers for farmers.
3. *Crop yield and quality:* Evaluate the impact of each type of fertilizer on crop yield, nutritional value, and taste.
4. *Long-term sustainability*: Argue whether organic or chemical fertilizers are more sustainable in the long run.
5. *Health concerns:* Address potential health risks associated with the consumption of produce grown with each type of fertilizer.
6. *Market demand:* Discuss consumer preferences and market trends regarding organically and conventionally grown produce.

Unit 2.2 – Sowing Seeds and Seedling Care

➢ **WARM-UP**

Exercise 1. Discuss the following questions.

1. What are some key factors to consider when selecting seeds for planting?
2. How do you determine the ideal time for sowing seeds based on climate and weather conditions?
3. What methods can be used to prepare the soil for optimal seed germination?
4. How can you ensure proper care for seedlings to promote healthy growth?
5. What challenges might arise during the preparation phase and how can they be solved?

➢ **ACTIVE VOCABULARY**

Exercise 2. Memorize the following words and phrases paying attention to their pronunciation.

adherence – /ədˈhɪərəns/ – соблюдение требований, приверженность

abundant – /əˈbʌndənt/ –обильный, изобилующий

moisten – /moisn/ – увлажнять, смачивать

planting – /ˈplɑːntɪŋ/ – посадка,

requirement – /rɪˈkwaɪəmənt/ – требование, необходимость

boost – /buːst/ – повышение, увеличение

cultivation – /kʌltɪ'veɪʃən/ – культивирование, возделывание

depth – /depθ/ – глубина

emerge – /i'mɜːdʒ/ – появляться, возникать

expiration date – /ɪkspaɪərəl deɪt/ – срок годности

facilitate – /fə'sɪlɪteɪt/ – облегчать, содействовать

maintain – /men'teɪn/ – поддерживать, сохранять

maintenance – /meɪn'tənəns/ – обслуживание, содержание

seedling – /siːdlɪŋ/ – рассада, всходы

shoot – /ʃuːt/ – побег, росток

sow – /saʊ/ – сеять, засевать

sprout – /spraʊt/ – всход, побег

surface-sown – /sɜːfɪs saʊn/ – высеянный на поверхности

top-notch – /tɑp nɒtʃ/ – первоклассный, высшего качества

vary – /ˈveəri/ – варьироваться, различаться

vigorous – /'vigərəs/ – энергичный, сильный

Exercise 3. Match the synonyms.

1. vary	a. plant
2. requirement	b. dampen
3. planting	c. upkeep
4. maintenance	d. freshness
5. expiration date	e. profundity
6. moisten	f. necessity
7. sow	g. diversify
8. depth	h. sowing

Exercise 4. Fill in the gaps with the words from the box.

top-notch, surface-sown, varying maintenance, boost, sprout, moisten, expiration date, vigorous, dosage

1. It is important to check the _____ of food products before consuming them.
2. To ensure healthy growth, it is essential to regularly _____ the soil.
3. After planting seeds, you should wait for them to _____.
4. Some plants are best suited for _____, while others need to be planted at a specific depth.

5. Proper _____ helps plants grow strong and healthy.

6. Fertilizers can help _____ plant growth by providing necessary nutrients.

7. A _____ seedling will develop into a robust plant if given proper care.

8. The _____ application of fertilizer can promote abundant foliar growth.

9. Following the recommended _____ ensures that plants receive the right amount of nutrients.

10. _____ different types of plants add variety and interest to your garden.

Exercise 5. Make up your own sentences using the active vocabulary, e.g.:

1. **Vary**: You can vary the types of vegetables you plant each season to keep your garden diverse.

2. **Requirement**: Watering is a basic requirement for maintaining healthy plants.

3. **Planting**: Planting seeds too deep may prevent them from emerging properly.

Exercise 6. Read the sentences, paying attention to the translation of the new words.

1. Regular maintenance includes watering, weeding, and pruning.
2. Always check the expiration date on fertilizers to ensure they remain effective.
3. Before sowing seeds, it's important to moisten the soil thoroughly.
4. Sow seeds evenly across the prepared soil for uniform germination.
5. The appropriate planting depth varies depending on the type of seed.
6. Some seeds, such as lettuce, are typically surface-sown.
7. Seeds usually start to sprout within a week or two after planting.
8. Seedlings emerge from the soil when conditions are favorable.
9. A healthy seedling has strong roots and vibrant leaves.

➢ **READING**

Exercise 7. Read the text and do the tasks.

Preparing the soil before planting is a crucial step to ensure optimal conditions for plant growth and development. The use of organic fertilizers such as compost or

manure, along with mineral fertilizers, helps to improve soil structure, enhance fertility, and create an ideal environment for the root system. We will explore various aspects of soil preparation for planting, including seed sowing techniques and seedling care.

The first step in preparing for planting is selecting high-quality seeds. Consider the climate in your area, the type of soil, and your cultivation goals. Different plants have varying requirements for planting and maintenance. When choosing seeds, pay attention to their origin, expiration date, and manufacturer's recommendations regarding sowing times.

Before sowing seeds, prepare the soil properly. Key stages include:

1. Tilling the Soil: remove weeds and stones, then till the earth to a depth of about 20-30 cm. This aerates the soil and allows nutrients to reach future plant roots.

2. Adding Fertilizers: incorporate organic fertilizers like compost, manure, or aged manure. These materials enrich the soil with nutrients and improve its texture.

3. Moistening the Soil: moisten the soil prior to sowing to ensure adequate moisture for seed germination.

After preparing the soil, proceed to sow the seeds. Follow the instructions on the seed packet regarding seed depth and spacing. General guidelines include: smaller seeds are typically surface-sown, lightly covered with soil; larger seeds are planted deeper, usually 2-3 cm deep; space seeds according to the recommended distance for the particular plant variety.

Once sprouts emerge, it's essential to provide them with appropriate care. Water the seedlings regularly but avoid overwatering, which could damage delicate shoots. Provide sufficient light, but protect against direct sunlight that might burn tender leaves. Maintain a stable temperature between 18-25°C to facilitate vigorous seedling growth. As the seedlings develop, introduce small amounts of liquid fertilizers to boost root and stimulate growth.

Thoughtful soil preparation and attentive seedling management are fundamental for successful plant establishment. Balancing organic and mineral fertilizer inputs establishes favorable conditions for robust plant growth, leading to

abundant harvests and top-notch produce. Adherence to fertilizer dosages and timelines prevents adverse outcomes and maintains ecological harmony.

Exercise 8. Mark the following statements as true or false based on the text, correct the false ones.

1. Preparing the soil before planting is not important for plant growth.
2. Organic fertilizers such as compost or manure cannot improve soil structure.
3. When selecting seeds, it is unnecessary to consider the climate and soil type.
4. Tilling the soil to a depth of 50-60 cm is recommended for optimal aeration.
5. Smaller seeds should be planted deeper than larger seeds.
6. Overwatering seedlings can damage delicate shoots.
7. Direct sunlight is beneficial for all types of seedlings.
8. Liquid fertilizers should be introduced immediately after sowing seeds.
9. Balanced use of organic and mineral fertilizers leads to poor plant growth.
10. Ignoring fertilizer dosages and timelines can cause ecological harm.

Exercise 9. Answer the following questions based on the text.

1. Why is preparing the soil before planting considered a crucial step?
2. What benefits do organic fertilizers provide to the soil?
3. What factors should be considered when selecting seeds for planting?
4. List three key stages involved in preparing the soil for planting.
5. How should smaller seeds be sown compared to larger seeds?
6. What are the general guidelines for watering and lighting seedlings?
7. What range of temperatures is ideal for promoting vigorous seedling growth?
8. What role do liquid fertilizers play in seedling development?
9. How can thoughtful soil preparation contribute to successful plant establishment?
10. Why is adhering to fertilizer dosages and timelines important for maintaining ecological harmony?

➢ **GRAMMAR FOCUS**

Exercise 10. Make up general questions to the sentences, e.g.:

New shoots indicate that the plant is growing vigorously.

Do new shoots indicate that the plant is growing vigorously?

1. New shoots indicate that the plant is growing vigorously.
2. Maintaining a consistent watering schedule is crucial for plant health.
3. Mulching can facilitate moisture retention in the soil.
4. Vigorous plants are more resistant to pests and diseases.
5. Adding compost can boost nutrient levels in the soil.

Exercise 11. Insert an appropriate modal verb (can, must, should) before the infinitive in each sentence to express possibility, necessity, or recommendation, e.g.:

Maintaining a consistent watering schedule is crucial for plant health.

You must maintain a consistent watering schedule for plant health.

1. Using top-notch gardening tools makes maintenance tasks easier and more efficient.
2. Maintaining a consistent watering schedule is crucial for plant health.
3. Following the correct dosage instructions prevents over-fertilization.

Exercise 12. Convert active constructions into Passive Voice where possible.

1. New shoots indicate that the plant is growing vigorously.
2. Maintaining a consistent watering schedule is crucial for plant health.
3. Mulching can facilitate moisture retention in the soil.
4. Vigorous plants are more resistant to pests and diseases.
5. Adding compost can boost nutrient levels in the soil.
6. Foliar sprays can provide plants with additional nutrients directly through their leaves.

7. Abundant rainfall can lead to lush, green vegetation.

8. Using top-notch gardening tools makes maintenance tasks easier and more efficient.

9. Following the correct dosage instructions prevents over-fertilization.

➢ LISTENING

What is sowing? ***https://youtu.be/a5rD20SJsAQ?si=b3UQ1Ra25deIhh1f***

Exercise 13. Listen to the audio. Are the statements True or False? Correct the false ones.

1. The process of putting seeds in the soil is called harvesting.
2. Sowing is very important part of crop production.
3. For sowing farmers select small and dirty seeds.
4. Seed drill isn't used for sowing nowadays.
5. Seed drill helps to sow seeds uniformly at proper distance and depth.
6. Keeping distance between seeds doesn't help to avoid overcrowding of plants.

➢WRITING PRACTICE

Exercise 14. Choose one of the following topics and write an essay:

1. **The importance of proper seed selection for successful plant growth**: Discuss the factors to consider when choosing seeds, such as variety, quality, and suitability for local conditions. Explain how proper seed selection impacts germination rates and overall plant health.

2. **Soil preparation techniques for optimal seed germination:** Describe the steps involved in preparing the soil for planting, including tilling, adding nutrients, and ensuring proper drainage. Highlight the benefits of different soil preparation methods and their impact on seedling establishment.

➢ SPEAKING PRACTICE

Exercise 15. Make up a plan and retell the text.

Exercise 16. Look at the picture and speak about plant seeding process. Use the words and word combinations for help:

- to choose the seeds;
- to select high-quality seeds;
- to plant the seeds;
- at the appropriate depth;
- to cover with soil;
- to water gently;
- to label each pot;
- to ensure adequate sunlight, temperature, and humidity levels;
- to monitor growth;
- to transplant the plant.

Module 3. Growing Crops and Managing

Unit 3.1 – Fields Irrigation Systems

➢ **WARM-UP**

Exercise 1. Discuss the following questions.

1. What are the benefits of having an irrigation system in place for fields?
2. How do you ensure that the irrigation system is efficient and sustainable?
3. What challenges might arise when installing and maintaining an irrigation system?
4. How can you measure the effectiveness of an irrigation system for your field?
5. What innovations exist in irrigation systems to reduce water consumption?

➢ **ACTIVE VOCABULARY**

Exercise 2. Memorize the following words and phrases paying attention to their pronunciation.

ajust – /əˈdʒʌst/ – регулировка, настройка

blockage – /ˈblɔkɪdʒ/ – засорение, блокировка

clogging –/ˈklɔgɪŋ/ – забивка, закупорка

drip irrigation – /drɪp ɪrɪˈgeɪʃ(ə)n/ – капельное орошение

leveraging – /ˈlɛvaːrədʒɪŋ/ – использование рычагов, усиление

nozzle – /nɒzl/ – сопло, насадка

pump – /pʌmp/ – насос

rate – /rert/ – скорость, норма, ставка

elevation – /elɪ'veɪʃn/ – высота, возвышенность

evaporation –/ɪvæpə'reɪʃ(ə)n/ – испарение

evolve – /iˈvɑlv/ – развитие, эволюция

failure – /'feɪljə(r)/ – отказ, неисправность

frequency – /'friːkwənsi/ – частота

humidity – /hju:'mɪdɪti/ – влажность

implement – / im'plimənt/ – внедрение, реализация

incorporate – /in'kɔ:pəreɪt/ – включение, объединение

leak – /li:k/ – утечка

remote monitoring system – /rimout mɒnitərɪŋ sɪstəm/ – система дистанционного мониторинга

slope – /sloup/ – уклон, скат

sprinkler irrigation – /sprɪŋklər ɪrɪ'geɪʃ(ə)n/ – дождевое орошение

subsurface irrigation – /sʌbsɜ:fɪs ɪrɪ'geɪʃ(ə)n/ – подземное орошение

surface irrigation – /surfis ɪrɪ'geɪʃ(ə)n/ – поверхностное орошение

tear – /tɪə(r)/ – разрыв, трещина

thrive – /θraɪv/ – процветание, успех

Exercise 3. Find an antonym to the first word in every line.

Adjust: regulate, disarrange, fine-tune, adapt

Failure: breakdown, collapse, success, fiasco

Humidity: drought, moistness, dampness, wetness

Incorporate: integrate, merge, separate, combine

Frequency: recurrence, repetition, regularity, rarity

Exercise 4. Find a synonym to the first word in every line.

Remote monitoring system: direct observation, manual control, off-site control

Thrive: languish, bloom, decline, wilt

Leak: seal, containment, dripping, retention

Blockage: obstruction, clearance, opening, passage

Implement: neglect, ignore, abandon, enforce

Exercise 5. Fill in the gaps with the words from the box.

incorporate, failure, elevation, adjust, implement, clogging, nozzle, rate, leveraging, blockage

1. You need to _____ the water pressure before using the sprinkler irrigation system.
2. The _____ in the pipe caused a decrease in water flow.

3. Plants at higher _____ may require different irrigation methods due to lower temperatures.

4. A _____ in the remote monitoring system could lead to overwatering or underwatering.

5. We decided to _____ a new irrigation system to increase crop yields.

6. They plan to _____ drip irrigation into their existing farming practices.

7. Make sure the _____ is clean and free from debris to ensure even water distribution.

8. It's important to monitor the _____ of evaporation to avoid overwatering.

9. Regular maintenance is necessary to prevent _____ of the nozzles.

10. By _____ technology, farmers can optimize water usage and minimize waste.

Exercise 6. Make up your own sentences using the active vocabulary, e.g.:

1. **Tear**: If the hose has a tear, it needs to be repaired immediately to prevent water loss.
2. **Thrive**: Proper irrigation helps plants thrive and produce better yields.
3. **Surface irrigation**: Traditional surface irrigation involves flooding fields with water, which can be less efficient.

Exercise 7. Read the sentences, paying attention to the translation of the new words.

1. Regular maintenance is necessary to prevent clogging of the nozzles.
2. Drip irrigation helps conserve water by delivering it directly to the plant's roots.
3. In hot climates, evaporation can significantly reduce the amount of available water for plants.
4. Irrigation techniques are constantly evolving to meet changing environmental conditions.
5. Adjusting the frequency of watering based on rainfalls can improve efficiency.
6. High humidity levels can slow down the rate of evaporation from soil surfaces.
7. Detecting and fixing leaks promptly can save a significant amount of water.

8. Check that the pump is working properly to maintain consistent water pressure throughout the system.

9. Using sprinkler irrigation can help cover large areas evenly with water.

10. With subsurface irrigation, water is delivered below ground level, reducing evaporation losses.

➢ READING

Exercise 8. Read the text and do the tasks.

Growing crops successfully requires careful management of various factors, including irrigation systems. Properly designed and maintained irrigation systems ensure that crops receive adequate water at the right time, which is essential for healthy growth and high yields.

There are several types of irrigation systems available, each suited to different crop types, field sizes, and climatic conditions:

1. Surface irrigation: water is applied directly to the soil surface using gravity flow. This method includes flood, furrow, and border irrigation.

2. Sprinkler irrigation: similar to rain, water is distributed through sprinklers placed above the ground. this system can cover large areas efficiently but may require significant initial investment.

3. Drip irrigation: delivers water directly to plant roots via small emitters, reducing evaporation and runoff losses. Drip irrigation is particularly effective in arid regions and for high-value crops.

4. Subsurface irrigation: involves placing pipes or tubes below the soil's surface to deliver water directly to root zones. This minimizes water loss and maintains optimal soil moisture levels.

Designing an effective irrigation system involves considering multiple factors such as: soil type (different soils have varying water-holding capacities and drainage rates, affecting how much and how often water needs to be applied); crop requirements (each crop has specific water requirements based on its stage of

growth, type, and climate); climate conditions (rainfalls, temperature, humidity, and wind speed influence the frequency and amount of irrigation needed);
field topography (slopes and elevation changes affect water distribution and potential runoff issues).

Proper installation ensures that the irrigation system operates optimally from the start. Regular maintenance is critical to prevent clogging, leaks, and other malfunctions. Key maintenance activities include cleaning filters and nozzles regularly to avoid blockages; checking for leaks and repairing them promptly to minimize water waste; adjusting timers and sensors to match changing weather conditions and crop stages; inspecting pumps and motors for signs of wear and tear.

Modern irrigation systems often incorporate advanced technologies like sensors, automated controllers, and remote monitoring systems. These allow farmers to monitor soil moisture levels in real-time, automatically adjust water application based on weather forecasts and plant needs, receive alerts about system failures.

Efficient use of water resources is not only economically beneficial but also environmentally responsible. Strategies to improve efficiency include using drip or subsurface irrigation to reduce water loss due to evaporation, implementing precision agriculture techniques to apply water exactly where and when it's needed, recycling and reusing water whenever possible, utilizing rainwater harvesting systems to supplement traditional water sources.

Managing fields' irrigation systems effectively is vital for maximizing crop yield while minimizing environmental impact. By selecting the right irrigation method, planning carefully, maintaining equipment properly, and leveraging technology, farmers can ensure their crops thrive under optimal conditions. As agricultural practices continue to evolve, innovative solutions will play an increasingly important role in sustainable farming.

Exercise 9. Mark the following statements as true or false based on the text, correct the false ones.

1. Surface irrigation uses gravity to distribute water across the field.

2. Sprinkler irrigation cannot cover large areas efficiently.

3. Drip irrigation is suitable for arid regions because it reduces evaporation and runoff losses.

4. Subsurface irrigation places pipes or tubes above the soil's surface.

5. Soil type does not affect how much and how often water should be applied.

6. Modern irrigation systems do not incorporate advanced technologies like sensors and automated controllers.

7. Efficient use of water resources is both economically beneficial and environmentally responsible.

8. Recycling and reusing water is not a strategy to improve irrigation efficiency.

9. Maintaining irrigation systems properly helps maximize crop yield and minimize environmental impact.

10. Implementing precision agriculture techniques does not help apply water exactly where and when it's needed.

Exercise 10. Answer the following questions based on the text.

1. What are some key factors to consider when designing an effective irrigation system?

2. How does drip irrigation differ from surface irrigation?

3. Why is regular maintenance crucial for irrigation systems?

4. Name three strategies to improve irrigation efficiency mentioned in the text.

5. What technologies are often incorporated into modern irrigation systems to enhance performance?

6. Why is efficient use of water resources considered both economically beneficial and environmentally responsible?

7. What types of irrigation systems are most suitable for arid regions and high-value crops?

8. How do slopes and elevation changes in a field affect water distribution?

9. What steps should farmers take to ensure their crops thrive under optimal conditions?

10. According to the text, what role will innovative solutions play in future agricultural practices?

➢ **GRAMMAR FOCUS**

Exercise 11. Make up special questions to the sentences, e.g.:

Successfully growing crops require careful management of various factors, including irrigation systems.

What do successfully growing crops require?

1. Properly designed and maintained irrigation systems ensure that crops receive adequate water at the right time.
2. There are several types of irrigation systems available, each suited to different crop types, field sizes, and climatic conditions.
3. Surface irrigation methods include flood, furrow, and border irrigation, which rely on gravity flow.
4. Sprinkler irrigation distributes water through sprinklers placed above the ground, covering large areas efficiently.
5. Drip irrigation delivers water directly to plant roots, reducing evaporation and runoff losses.
6. Subsurface irrigation involves placing pipes or tubes below the soil's surface to deliver water directly to root zones.
7. Designing an effective irrigation system considers factors like soil type, crop requirements, and climate conditions.

Exercise 12. Transfer the following sentences from direct speech to indirect, e.g.:

The report mentions, "Subsurface irrigation minimizes water loss."

- The report mentions that subsurface irrigation minimizes water loss.

1. Scientists argue, "Climate conditions significantly affect irrigation schedules."
2. An expert notes, "Field topography influences water distribution."

3. Researchers suggest, "Advanced technologies can enhance irrigation efficiency."

4. A farmer says, "Timely adjustments to irrigation systems are necessary for optimal results."

5. Agricultural specialists recommend, "Precision agriculture techniques can optimize water usage."

➢ LISTENING

Why do plants need water? https://youtu.be/KUrHihEOhaw?feature=shared

Exercise 13. Listen to the audio. Answer the questions.

1. Why do plans need water?
2. What is one of the most important components of the growth?
3. What process helps the plants to convert light energy from the Sun into chemical energy?
4. Does photosynthesis require water, minerals and carbon-dioxide to create oxygen and energy?
5. What are the other functions of water mentioned in the audio?
6. Does water aid the plants absorption of nutrients through the roots?
7. Water is important for plants' growth and development at every stage, isn't it?

Exercise 14. Use the questions above as a plan to speak about the importance of water for plants.

➢ WRITING PRACTICE

Exercise 15. Write a summary to the text according to the plan.

➢ SPEAKING PRACTICE

Exercise 16. Debate on surface irrigation vs. drip irrigation.

Instructions: Form two teams for a debate. One group should defend the position that *surface irrigation* is the most effective method, while the other should argue that *drip irrigation* is preferable. Use arguments from the text and additional knowledge to support your position.

Unit 3.2 – Weed Control and Pest Management



➢ WARM-UP

Exercise 1. Discuss the following questions.

1. What weed control methods do you find most effective when growing crops?
2. Which major pests can cause damage to your crops, and what strategies do you employ to manage them?
3. How do you balance organic management techniques with chemical pest control products?
4. Have you implemented Integrated Pest Management (IPM) on your farm? If so, how does it work for you?
5. How do you minimize the impact of pesticides on beneficial organisms and surrounding ecosystems?

➢ ACTIVE VOCABULARY

Exercise 2. Memorize the following words and phrases paying attention to their pronunciation.

aphid – /ˈæfɪd/ – тля
bait – /beɪt/ – приманка
cover cropping – /ˈkʌvə ˈkrɒpɪŋ/ – покровное выращивание культур
debris – /dəˈbriː/ – обломки, мусор
disrupt – /dɪˈsrʌpt/ – нарушать, разрушать
eliminate – /ɪˈlɪmɪneɪt/ – устранять, уничтожать
judiciously – /juːˈdɪʃəslɪ/ – благоразумно, рассудительно
mulching – /mʌltʃɪŋ/ – мульчирование (поверхностное покрытие почвы мульчей для ее защиты и улучшения свойств)
netting – /nɛtɪŋ/ – сетка, сетчатая ткань

fungi – /'fʌngaɪ/ – грибы

germinating – /'dʒɜ:mɪneɪtɪŋ/ – прорастание

habitat – /hæbɪtæt/ – место обитания

hand-pulling – /'hænd'pʊlɪŋ/ – ручное удаление

hoeing – /hoʊɪŋ/ – рыхление почвы мотыгой

holistic – /hoʊ'lɪstɪk/ – целостный

insect – /'ɪnsekt/ – насекомое

insecticide – /ɪn'sektɪsaɪd/ – инсектицид (химические препараты предназначенные для уничтожения насекомых)

indispensable – /ˌɪndɪ'spensəbl/ – незаменимый

intervention – /ɨntə'venʃən/ – вмешательство

planting resistant varieties – /plɑ:ntɪŋ rɪ'zɪstənt væriətiz/ – посадка устойчивых сортов

residues – /rezɪdu:z/ – остатки

rodent – /roʊdənt/ – грызун

row covers – /raʊ kʌvərz/ – укрывной материал для грядок

sanitation practices – /sænɪ'teɪʃn præktɪsiz/ – санитарные методы

scouting – /skauʈiŋ/ – разведка, наблюдение

similarly – /similəli/ – аналогично, подобным образом

sustainable – /səsteɪnəbl/ – устойчивый

tilling – /tilŋ/ – вспашка, обработка земли

trap – /træp/ – ловушка

viability – /vaɪəbilɪti/ – жизнеспособность

Exercise 3. Match the synonyms.

1. aphid	a. plowing
2. fungi	b. sprout
3. bait	c. remove
4. disrupt	d. disturb
5. eliminate	e. lure
6. germinate	f. rubble
7. tilling	g. insect
8. debris	h. mushrooms

Exercise 4. Match the antonyms.

1. hand-pulling	a. inaction
2. similarly	b. recklessly
3. sustainable	c. differently
4. indispensable	d. dispensable

5. judiciously	e. wasteful
6. scouting	f. release
7. trap	g. ignoring
8. intervention	h. planting

Exercise 5. Fill in the gaps with the words from the box.

hoeing, fungus, bait, debris, disrupt, hand- pulling, cover cropping, eliminate, habitats, germinating

1. The farmer used _____ to protect his crops from pests.
2. _____ play a crucial role in decomposition processes.
3. Heavy rain can _____ the normal growth cycle of plants.
4. _____ is necessary for maintaining healthy soil structure.
5. It's important to _____ weeds before they spread throughout the field.
6. Seeds start _____ after being planted in moist soil.
7. The garden was full of _____, making it difficult to walk through.
8. Regular _____ helps break up soil clumps and control weeds.
9. Different animals have unique _____ that suit their needs.
10. _____ is a common method for removing unwanted plants by hand.

Exercise 6. Make up your own sentences using the active vocabulary, e.g.:

Mulching: Mulching helps retain moisture in the soil and suppresses weed growth.

1. Netting: "Netting can be used to protect fruit trees from birds and other pests."
2. Residues: "Crop residues left on the field can decompose and enrich the soil."

Exercise 7. Read the sentences, paying attention to the translation of the new words.

1. Regular hoeing keeps the soil loose and prevents weeds from taking root.
2. Using insecticides should be done judiciously to avoid harming beneficial insects.

3. It’s important to use water resources judiciously, especially in areas prone to drought.

4. Planting resistant varieties can reduce the need for chemical pesticides.

5. Rodent: "Rodents can cause extensive damage to stored grains and seeds."

6. Row covers provide protection against frost and pests without hindering sunlight.

7. Good sanitation practices in livestock facilities help prevent disease outbreaks.

8. Sustainable farming practices aim to meet current needs without compromising future generations' ability to do the same.

9. Tilling prepares the soil for planting by loosening and aerating it.

10. Ensuring seed viability is critical for successful crop establishment.

➢ READING

Exercise 8. Read the text and do the tasks.

In modern agriculture, managing weeds and pests is crucial for ensuring healthy crop growth and high yields. Effective weed control and pest management strategies not only protect plants from damage but also contribute to sustainable farming practices.

Weeds compete with crops for nutrients, sunlight, and water, leading to reduced crop productivity. Controlling weeds involves both preventive measures and active intervention. Crop rotation helps break weed cycles and reduces the buildup of weed populations. Cover cropping with plants like clover or rye can suppress weed growth by shading the soil and competing for resources. Mulching with organic materials like straw or wood chips can inhibit weed germination and growth. Tilling and hoeing disrupt weed seedlings and reduce competition early in the season. Hand-pulling larger weeds can be effective but labor-intensive. Herbicides can target specific weed species without harming crops. However, proper timing and application are essential to avoid damaging desired plants. Pre-emergent herbicides prevent weed seeds from germinating, while post-emergent ones kill existing weeds.

Pests, including insects, fungi, and rodents, can cause significant damage to crops if left unchecked. Integrated Pest Management (IPM) approaches combine multiple tactics for long-term success. Regular scouting for pests allows early detection and targeted interventions. Identifying pest species accurately helps select appropriate control methods. Planting resistant varieties can reduce susceptibility to certain pests. Sanitation practices, such as removing crop residues and debris, eliminate pest habitats. Introducing natural predators and parasites, like ladybugs for aphids, can keep pest populations in check. Using microbial agents, such as Bacillus thuringiensis, targets specific insect pests without harming beneficial organisms. Row covers and netting protect young plants from flying insects. Traps and baits can attract and capture pests, reducing their numbers. Insecticides and fungicides can be used judiciously when other methods fail. Careful selection and application minimize environmental impacts. Rotating pesticide classes prevents resistance development among pests. Adopting sustainable practices in weed control and pest management benefits both the environment and farm profitability.

Effective weed control and pest management are indispensable components of modern agriculture, contributing significantly to crop health, yield optimization, and sustainable farming practices. By implementing a combination of preventive measures, such as crop rotation and cover cropping, along with targeted interventions like hand-pulling, mulching, and strategic use of herbicides, farmers can successfully manage weed populations. Similarly, adopting integrated pest management techniques, including regular scouting, introducing natural predators, and using physical barriers, ensures that pests are kept under control without excessive reliance on chemical pesticides. These holistic approaches not only safeguard crops but also promote environmentally friendly agricultural systems, ultimately enhancing both ecological balance and economic viability.

Exercise 9. Mark the following statements as true or false based on the text, correct the false ones.

1. Crop rotation helps break weed cycles and reduces the buildup of weed populations.
2. Herbicides never cause any harm to crops when targeting specific weed species.
3. Cover cropping with plants like clover or rye can suppress weed growth by shading the soil and competing for resources.
4. Mulching with organic materials like straw or wood chips can inhibit weed germination and growth.
5. Tilling and hoeing are ineffective at disrupting weed seedlings early in the season.
6. Hand-pulling larger weeds can be effective but labor-intensive.
7. Sustainable practices in weed control and pest management have no impact on farm profitability.
8. Integrated Pest Management (IPM) combines multiple tactics for long-term success in controlling pests.
9. Sanitation practices do not affect pest habitats.
10. Insecticides and fungicides should always be used as the first line of defense against pests.

Exercise 10. Answer the following questions based on the text.

1. What are some preventive measures mentioned in the text for controlling weeds?
2. How does crop rotation help in breaking weed cycles?
3. What role do pre-emergent and post-emergent herbicides play in weed management?
4. What types of pests can cause significant damage to crops according to the text?
5. How can planting resistant varieties help in pest management?
6. What is the purpose of introducing natural predators and parasites in Integrated Pest Management (IPM)?
7. Why is it important to rotate pesticide classes in pest control?
8. How do row covers and netting protect young plants from pests?

9. What benefits does adopting sustainable practices in weed control and pest management bring to the environment and farm profitability?

10. According to the text, what are the key components of successful weed population management?

➢ GRAMMAR FOCUS

Exercise 11. Transfer the following sentences into passive voice, e.g.:

Crop rotation breaks weed cycles. – Weed cycles are broken by crop rotation.

1. Farmers implement sustainable practices to ensure crop health.
2. Cover cropping suppresses weed growth.
3. Mulching inhibited weed germination.
4. Herbicides target specific weed species.
5. Scouting detected pests early.
6. Ladybugs control aphid populations.
7. Microbial agents target specific insect pests.
8. Row covers protected young plants.
9. Pesticides minimize environmental impact when applied correctly.

Exercise 12. Complete the sentences with an appropriate modal verb (can, could, may, might, must).

1. To control weeds, farmers _____ use a combination of methods. can
2. Herbicides _____ be harmful if not applied properly.
3. Integrated Pest Management _____ include the introduction of natural predators.
4. Farmers _____ rotate crops to break weed cycles and maintain soil fertility.
5. Sustainable farming practices _____ improve both crop health and environmental conditions.
6. Proper sanitation _____ reduce pest habitats and prevent disease spread.
7. Early detection of pests _____ allow timely interventions.

8. Natural predators _____ help control pest populations without relying heavily on chemicals.

9. Applying pesticides _____ be avoided unless absolutely necessary.

10. Farmers _____ adopt new technologies to enhance weed and pest management.

➢ **LISTENING**

Managing weeds, pests and diseases

https://youtu.be/vSjhMfR4O7c?si=ODEhW1fb-WapayNZ

Exercise 13. Listen to the audio. Answer the questions.

1. What is the key to high yields and quality grains?
2. What can impact yields in a couple ways?
3. What is indirect and direct injury?
4. What do the farmers want to keep?
5. What else can also have an economic impact on field crops by reducing yield and grain quality?
6. What is the name of organism that is going to cause the disease?
7. What are the three factors that affect diseases?
8. What can help farmer recognize problems and identify common diseases and insects that cause harm to crops?
9. What has worked well for the past 30 years?
10. Are the weeds adapting quickly to these fairly simple weed management systems?
11. How many samples of weeds, insects and diseases are identified each year by Iowa State University Plant and Insect Diagnostic Clinic?
12. What is the purpose of the PIDC?

Exercise 14. Use the questions above as a plan and retell the audio.

➢ **WRITING PRACTICE**

Exercise 15. Comparative Analysis of Weed and Pest Control Methods.

Instructions: you need to conduct a comparative analysis of various weed and pest control methods described in the text. Your goal is to identify similarities and differences between these methods, as well as evaluate their effectiveness within the context of modern agriculture.

Essay Structure:

1. Introduction (briefly introduce the topic of comparison; identify the key weed and pest control methods you will examine).

2. Main Body:

Similarities: find common features between weed and pest control methods (both approaches may involve preventative measures and active intervention).

Differences: analyze the unique characteristics of each method; consider the specific tools and techniques employed in each approach.

Effectiveness: assess how effective these methods are under different conditions (e.g., climate, soil type, crop variety); provide practical examples.

3. Conclusion: summarize the findings of your analysis; onclude which method (or combination of methods) appears most promising for implementation in modern agriculture.

➢ **SPEAKING PRACTICE**

Exercise 16. Make up a plan and retell the text.

Exercise 17. Analyze infographics and speak about the effective weed management. Use the models for help:

The first thing I would like to consider is…

Nowadays the question (problem) of Ving is very important (actual)…

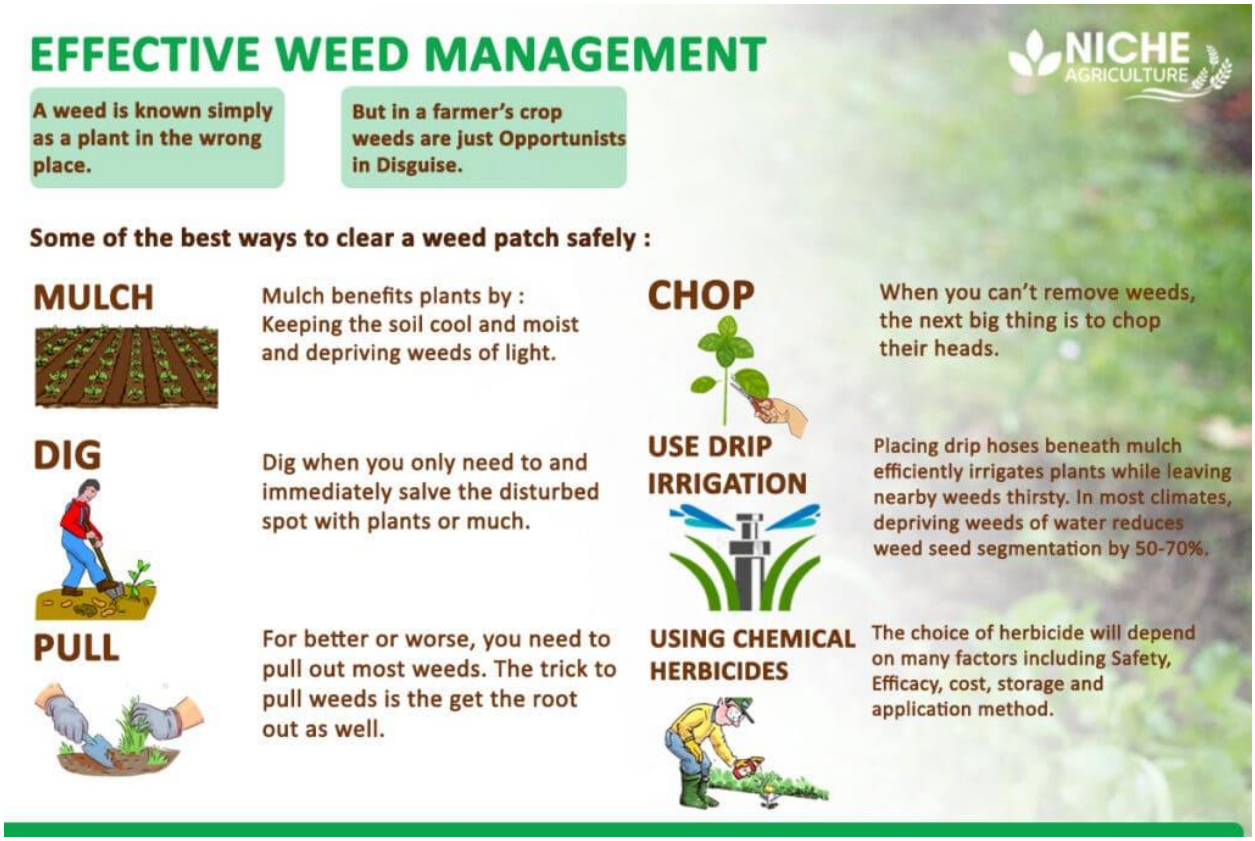
Firstly, ... / Secondly, ... / Finally, ...

What is more, …

I know from personal experience…

For example / For instance…

To sum up I'd like to say that…



Unit 3.3 – Crop Growth Monitoring

➢ **WARM-UP**

Exercise 1. Discuss the following questions.

1. What factors affect plant growth and how can they be controlled?
2. How do technologies help with plant growth monitoring?
3. What difficulties do farmers face when managing plant growth, and how can these difficulties be solved?
4. What advantages do farmers get from accurate plant growth monitoring?
5. How can environmentally friendly methods of plant management be implemented for long-term productivity?

➢ **ACTIVE VOCABULARY**

Exercise 2. Memorize the following words and phrases paying attention to their pronunciation.

capture – /ˈkæptʃə/ – захватывать, фиксироват

drought-resistant – /'draːt rɪ'zɪstənt/ – засухоустойчивый

mitigate – /mɪtəgeɪt/ – смягчить, уменьшить

moisture – /moɪstʃə/ – влага, сырость

observation – /ɒbzə'veɪʃ(ə)n/ – наблюдение

emergence – /ɪ'mɜːdʒəns/ – появление, возникновение
flowering – /'flaʊərɪŋ/ – цветение
flooding-tolerant – /'flʌdɪŋ 'tɒlərənt/ – устойчивый к затоплению
fruiting – /'fruːɪtɪŋ/ – плодоношение
germination – /ˌdʒɜːmɪ'neɪʃn/ – прорастание, всхожесть
harvest – /hɑrvɪst/ – урожай, сбор урожая
high-resolution – /haɪ rɪzə'luːʃ(ə)n/ – высокого разрешения
humidity – /hyu'mɪdɪti/ – влажность
identify – /aɪ'dentɪfaɪ/ – идентифицировать, распознавать
inputs – /'ɪnpʊts/ – входные данные, ресурсы
issue – /'ɪsjuː/ – проблема, вопрос
maturity – /mə'tʃʊrɪti/ – зрелость, спелость
measure – /meʒə/ – измерять, мера
outputs – /au'pʊts/ – выходные данные, результаты
precision agriculture – /prɪ'sɪʒ(ə)n 'ægrɪkʌltʃ(ə)r/ – точное земледелие
predict – /pri'dɪkt/ – предсказывать
relevant data – /reləvənt deɪtə/ – релевантные данные
satellite – /sætəlaɪt/ – спутник
schedule – /skedʒuːl/ – расписание, график
seedling – /siːdlɪŋ/ – саженец, росток
source – /soərs/ – источник
track – /træk/ – отслеживать, следить за чем-то
vegetation – /vedʒɪteɪʃ(ə)n/ – растительность
vigorous growth – /vɪgərəs groθ/ – энергичный рост
vital – /vaɪtl/ – жизненно важный, критический

Exercise 3. Match the synonyms.

1. flowering	a. moisture
2. humidity	b. bearing fruit
3. issue	c. assess
4. maturity	d. resources
5. fruiting	e. blooming
6. capture	f. seize
7. measure	g. problem
8. inputs	h. ripeness

Exercise 4. Match the antonyms.

1. predict	a. dryness
2. schedule	b. useless facts
3. vital	c. outputs
4. track	d. traditional farming
5. relevant data	e. disorder
6. precision agriculture	f. misplace
7. inputs	g. unimportant
8. moisture	h. guess

Exercise 5. Fill in the gaps with the words from the box.

precision agriculture, capture, measure, satellite, seedling, identify, humidity, flowering, high-resolution, germination

1. The new camera has a _____ lens, which allows us to see even the smallest details.
2. Farmers need to _____ carefully the amount of water their crops receive during dry seasons.
3. Scientists use _____ imagery to monitor changes in land cover and crop health.
4. One of the main goals of _____ is to optimize crop yields by using advanced technologies.
5. It's important to _____ potential problems early on to prevent major issues later.
6. After the _____, the plants will start to produce fruits.
7. The _____ stage is crucial for the overall health and development of the plant.
8. They were able to _____ successfully all the wild animals in the area for research purposes.
9. High levels of _____ can lead to mold growth and other problems in greenhouses.
10. With proper care, the _____ will grow into a strong and healthy plant.

Exercise 6. Read the sentences, paying attention to the translation of the new words.

1. Modern farming relies heavily on inputs such as fertilizers and irrigation systems.

2. The latest report addresses several environmental issues facing the agricultural industry.

3. At full maturity, the apples were sweet and juicy.

4. To ensure accuracy, they used specialized equipment to measure soil quality.

5. Implementing sustainable practices can help mitigate the negative impacts of climate change on crops.

6. Proper moisture management is essential for maintaining optimal growing conditions.

7. Continuous observation of weather patterns helps farmers make informed decisions about planting and harvesting.

8. The final outputs included both the quantity and quality of the harvested crops.

9. Creating a detailed schedule helps farmers stay organized and meet important deadlines.

10. Using historical data, they attempted to predict future weather patterns to plan accordingly.

➢ **READING**

Exercise 7. Read the text and do the tasks.

Crop growth monitoring is a critical aspect of modern agriculture, aimed at optimizing crop production and minimizing losses due to pests, diseases, and environmental factors. This process involves continuous observation and analysis of plant development stages, from seedling emergence to harvest.

Here are some key elements involved in crop growth monitoring. The first step in crop growth monitoring is collecting relevant data about the crops. This includes information such as soil conditions (soil moisture levels, nutrient content, and pH); weather data (temperature, rainfall, humidity, wind speed, and solar radiation); plant health (leaf color, size, and shape, presence of pests or diseases); growth stages (timing of germination, flowering, fruiting, and maturity).

Advanced remote sensing technologies play a vital role in crop monitoring. Satellite imagery, drones, and sensors provide detailed insights into crop health and

growth patterns. For example, high-resolution satellite images can track changes in vegetation indices over time, indicating stress or vigorous growth. Equipped with multispectral cameras, drones can capture detailed images of fields, helping identify areas needing attention. Ground-based sensors measure parameters like soil moisture, temperature, and light intensity, providing real-time updates. Precision agriculture integrates technology and data analytics to optimize inputs and outputs. It enables farmers to make informed decisions based on precise field data.

Artificial intelligence and machine learning algorithms analyze vast amounts of data collected from various sources to predict crop growth trends, potential risks, and optimal management strategies. They can identify anomalies and potential issues before they become major problems; recommend best practices for irrigation, fertilization, and pest control; forecast future crop yields based on current conditions and historical data.

With climate change becoming increasingly evident, crop growth monitoring has taken on added significance. Farmers need to adapt to changing weather conditions and extreme events. Monitoring tools help them track shifts in growing seasons and adjust planting schedules accordingly; implement drought-resistant or flood-tolerant crop varieties; develop resilient farming practices to mitigate the effects of climate variability.

Crop growth monitoring is an essential practice for modern agriculture, enabling farmers to maximize yields, reduce waste, and adapt to environmental challenges. Combining traditional knowledge with cutting-edge technologies, this approach ensures sustainable and profitable farming operations. As the global population continues to grow, efficient crop growth monitoring will remain a cornerstone of food security and agricultural progress.

Exercise 8. Mark the following statements as true or false based on the text, correct the false ones.

1. Crop growth monitoring involves tracking plant development stages from seedling emergence to harvest.

2. Remote sensing technologies, such as satellite imagery and drones, are used in crop monitoring.

3. Ground-based sensors cannot provide real-time updates on soil conditions.

4. Soil moisture levels and nutrient content are not considered in crop growth monitoring.

5. Precision agriculture utilizes data analytics to optimize inputs and outputs.

6. Drought-resistant and flood-tolerant crop varieties are not relevant to crop growth monitoring.

7. Artificial intelligence and machine learning algorithms help predict crop growth trends.

8. Climate change impacts crop growth, necessitating adaptive measures.

9. Monitoring tools cannot help farmers adjust planting schedules according to changing weather conditions.

10. Traditional knowledge is not combined with cutting-edge technologies in crop monitoring.

Exercise 9. Answer the following questions based on the text.

1. What is the primary goal of crop growth monitoring in modern agriculture?

2. List three types of data that are typically collected during crop growth monitoring.

3. How do remote sensing technologies contribute to crop monitoring?

4. Explain how precision agriculture utilizes technology and data analytics.

5. Describe one-way artificial intelligence and machine learning algorithms are used in crop growth prediction.

6. Why has crop growth monitoring become more important in the context of climate change?

7. Name two types of crop varieties that farmers might implement to respond to climate change.

8. Mention one benefit of combining traditional knowledge with modern technologies in crop monitoring.

9. Which stages of plant development are tracked in crop growth monitoring?

10. In what ways does crop growth monitoring support sustainable and profitable farming operations?

➢ **GRAMMAR FOCUS**

Exercise 10. Identify the verb tense used in each sentence and rewrite the sentence in the Present Perfect Tense, e.g.:

– *Crop growth monitoring **is** a critical aspect of modern agriculture. (Present Simple)*

– *Crop growth monitoring **has been** a critical aspect of modern agriculture. (Present Perfect)*

1. Advanced remote sensing technologies play a vital role in crop monitoring.
2. They can identify anomalies and potential issues before they become major problems.
3. Monitoring tools help them track shifts in growing seasons.
4. Efficient crop growth monitoring will remain a cornerstone of food security.
5.Precision agriculture integrates technology and data analytics to optimize inputs and outputs.

Exercise 11. Complete the conditional sentences using appropriate clauses from the text.

1. If farmers adapt to changing weather conditions, they _____.
2. Unless crop growth monitoring is efficient, _____.
3. Provided that remote sensing technologies are available, _____.
4. If artificial intelligence identifies anomalies early, _____.
5. In case climate change becomes more severe, _____.

Exercise 12. Combine two sentences into one, e.g.:

– *Tools help farmers. Farmers adjust planting schedules.*

– *Tools help farmers who adjust planting schedules.*

1. Crop growth monitoring involves observation. Observation is continuous.
2. Technologies provide insights. These insights are detailed.
3. Data is collected. This data is relevant.
4. Sensors measure soil moisture. Soil moisture is a parameter.
5. Drones are equipped with multispectral cameras. Multispectral cameras capture detailed images of fields.
6. Climate change affects crop growth. Crop growth is essential for food security.

➢ **LISTENING**

Precision agriculture. https://youtu.be/JE_iHdfCjV4?si=vqlhCq9cHyD0u65E

Exercise 13. Listen to the first 2 minutes of the audio and mark the statements as True or False. Correct the false ones.

1. Precision agriculture or precision farming is an old farming practice that uses technology to monitor and variations within fields.
2. Precision agriculture doesn't focuse on optimizing production by taking into account the unique needs of specific areas.
3. The goal is to increase yields, reduce waste and promote environmental sustainability.
4. Two most important tools in precision agriculture are GPS and GIS.
5. GPS is a global position system and GIS is a geographic information system.
6. GPS allows farmers to analyze special data related to soil properties, moisture levels and crop health.
7. GIS helps farmers accurately map their fields.
8. Remote sensing through satellites and drones provides real-time data on crop conditions.
9. Drones can't detect changes in plant health pinpointing areas that might require extra care.
10. The sensors track everything from soil moisture and temperature to nutrient levels.

Exercise 14. Listen to the second part of the audio and answer the questions.

1. What are the benefits of precision agriculture for farmers?
2. What can precision techniques be used for?
3. Is it cheap to implement these technologies?
4. Is the future of precision agriculture bright?
5. Could farms of future be fully automated with self-driving tractors?
6. Precision agriculture promises to play a key role in solving global challenges like food security and climate change, doesn't it?

➢ **WRITING PRACTICE**

Exercise 15. Write a summary to the text according to the plan.

➢ **SPEAKING PRACTICE**

Exercise 16. Role Play: "Crop Growth Monitoring Consultants".

Instructions:

1. Role Preparation:

- Divide into pairs or small groups. Each pair/group will act as consultants specializing in crop growth monitoring.
- Choose a client (this can be another student or teacher) to whom you will offer crop growth monitoring services.

2. Market Research:

- Study current crop growth monitoring methods, available technologies, and trends in the field.
- Identify your company's strengths and unique offerings.

3. Creating a Presentation:

- Prepare a brief presentation (3-5 minutes) in which you will tell the client about your services, including:
- Which monitoring methods you offer.
- How your approach contributes to increasing yield and sustainability in agriculture.
- Why the client should choose you over competitors.

4. Meeting Conduct:

- Schedule a meeting with the client and conduct your presentation.
- Be prepared to answer the client's questions and address any doubts or objections.

5. Feedback:

- After completing the role-play, discuss how the meeting went, what was successful, and what could be improved.
- Receive feedback from the client and other participants.

Module 4. Post-Harvest Operations

Unit 4.1 – Harvesting Techniques

➢ **WARM-UP**

Exercise 1. Discuss the following questions.

1. What are the main differences between manual and mechanical harvesting methods?
2. How does the choice of harvesting technique affect crop yield and quality?
3. What factors should be considered when selecting a harvesting method for a particular crop?
4. How can proper timing and ripeness assessment improve the effectiveness of harvesting?
5. What role does post-harvest management play in maintaining crop quality after harvesting?

➢ **ACTIVE VOCABULARY**

Exercise 2. Memorize the following words and phrases paying attention to their pronunciation.

aquatic harvesting – /æk'wətɪk 'hɑ:vəstɪŋ/ – водная уборка урожая
beneficial – /beni'fiʃəl/ – полезный
calibration – /kælɪ'breɪʃn/ – калибровка
cling – /klɪŋ/ – цепляться
combine harvester – /kəm'bain 'hɑ:vəstə/ – зерноуборочный комбайн
delicate – /'dɛlɪkət/ – деликатный
efficiently – /ɪ'fiʃntļi/ – эффективно
entail – /in'teɪl/ – включать
extend – /ik'stend/ – продлевать
gentle handling – /'dʒentl 'hændlɪŋ/ – бережное обращение
glut – /glʌt/ – избыток
grain – /greɪn/ – зерно
inclusion – /ɪn'klu:ʒn/ – включение
integrity – /ɪn'tegrəti/ – целостность
large-scale – /'lɑ:dʒ skeil/ – крупномасштабный
maintenance – /'meintənəns/ – сохранение, техническое обслуживание
manually – /'mænjuəli/ – вручную
regardless – /rɪ'gɑrdləs/ – независимо, не взирая на
ripeness – /'raɪpnəs/ – спелость
row – /'roʊ/ – ряд
shelf life – /ʃelf laɪf/ – срок годности
simultaneously – /sɪml'teiniəsli/ – одновременно
small-scale – /smɔ:l-skeɪl/ – мелкомасштабный
specimen – /spesimən/ – образец
straw – /'strɔ:/ – солома
strip harvesting – /strip 'hɑ:vestɪŋ/ – сплошная уборка
sugar beet – /ʃugə bi:t/ – сахарная свекла
thresh – /θreʃ/ – молотить
time-consuming – /taɪm-kən'sju:mɪŋ/ – трудоемкий
turnip – /'turnip/ – репа
uniform crops – /juni'fɔ:m krɒps/ – однородные культуры
uproot – /ʌ'pru:t/ – выкорчевывание
wheat – /wi:t/ – пшеница

Exercise 3. Match the synonyms.

1. gentle handling	a. careful treatment
2. extend	b. water-based gathering
3. entail	c. advantageous
4. delicate	d. fragile
5. beneficial	e. involve
6. aquatic harvesting	f. expand
7. efficiently	g. adhere
8. cling	h. productively

Exercise 4. Match the antonyms.

1. inclusion	a. exclusion
2. integrity	b. corruption
3. large-scale	c. small-scale
4. manually	d. automatically
5. glut	e. shortage
6. row	f. disorder
7. ripeness	g. unripeness
8. simultaneously	h. sequentially

Exercise 5. Fill in the gaps with the words from the box.

uprooting, beneficial, sugar beets, combine harvester, threshing, regardless, maintenance, integrity, strip, manual

1. The _____ effects of gentle handling during the harvesting process ensure better quality produce.
2. Proper calibration of the _____ ensures it operates efficiently and minimizes waste.
3. When _____, it's important to handle the grain with care to avoid damaging its shelf life.
4. _____ turnips require some effort as their roots tend to cling firmly to the soil.
5. Including a variety of specimens in your garden adds diversity and improves overall _____ of the ecosystem.
6. Regular _____ of farming equipment helps prevent breakdowns and ensures smooth operations.
7. _____ labor is sometimes necessary for tasks like weeding between rows of uniform crops.
8. Despite the initial investment, modern agricultural techniques often prove to be more cost-effective in the long run, _____ of whether they are used for small-scale or large-scale farming.

9. _____ harvesting allows farmers to target specific areas, preserving parts of the field for future use.
10. _____ require careful attention during growth to achieve optimal ripeness before harvest.

Exercise 6. Read the sentences, paying attention to the translation of the new words.

1. Ensuring proper inclusion of nutrients in the soil can lead to higher crop yields and improved glut.
2. Harvesting aquatic plants requires specialized equipment to ensure minimal damage to the surrounding environment.
3. Beneficial practices include rotating crops to maintain soil health and reduce pest infestations.
4. Clinging vines can be challenging to manage but provide valuable shade and support for other plants.
5. Modern combine harvesters can handle both grain and straw simultaneously, increasing efficiency.
6. Delicate fruits like berries need extra care when harvested to avoid bruising and extend their shelf life.
7. Maintaining good records of crop yields and input costs can help identify opportunities for improvement in future seasons.
8. Sorting grains by hand (manually) can be a time-consuming task but results in higher-quality end products.
9. The inclusion of diverse plant specimens in a garden promotes ecological integrity and supports pollinators.
10. Regardless of the weather conditions, regular maintenance of farming equipment is crucial for efficient operation throughout the season.

➢ **READING**

Exercise 7. Read the text and do the tasks.

Harvesting techniques refer to the methods and procedures employed to gather crops from the field once they have reached maturity. These techniques vary depending on the type of crop, its characteristics, and the scale of operation. Here are some common harvesting techniques used in agriculture.

Hand harvesting is a labor-intensive method suitable for small-scale farms or delicate crops that require gentle handling. Workers manually pick fruits, vegetables, or grains, often using simple tools like knives or scissors. This technique ensures minimal damage to the products and allows for selective harvesting of only ripe or ready-to-eat items. However, it is time-consuming and expensive compared to mechanized methods.

Mechanical harvesting involves the use of machines specifically designed to harvest crops efficiently. Combine harvesters, for example, are widely used for cereal crops like wheat, rice, and corn. These machines cut, thresh, and separate grain from straw in a single pass. Other mechanical harvesters include potato diggers, grape harvesters, and tomato pickers. While these machines increase productivity, they may cause some damage to crops, so careful calibration and maintenance are essential.

Selective harvesting refers to picking only those crops that have reached optimal maturity. This method is particularly beneficial for fruits and vegetables where taste, texture, and shelf life depend on ripeness. Workers or machines selectively harvest individual items, leaving others to mature further. This approach maximizes quality and extends the harvest period, reducing the risk of gluts in the market.

Strip harvesting entails removing entire rows or sections of crops simultaneously, regardless of their maturity level. This is commonly used for uniform crops like carrots, potatoes, or sugar beets. Machines uproot or cut the entire row, then sort and store the products. Although strip harvesting increases efficiency,

it may result in lower-quality yields due to the inclusion of immature or overripe specimens.

Subsurface harvesting targets root crops such as potatoes, carrots, and turnips. Specialized machinery lifts the tubers or roots out of the ground without damaging them. This technique is highly efficient for large-scale operations and minimizes labor costs. However, careful soil preparation and moisture control are required to prevent soil clinging to the harvested products.

Aquatic harvesting applies to crops grown in water, such as rice, which is often harvested using combine harvesters adapted for wetland conditions. Careful timing and techniques are crucial to avoid damaging the ecosystem and ensuring sustainable yields.

The choice of harvesting technique depends on numerous factors, including crop type, farm size, labor availability, and desired output quality. Balancing efficiency with crop integrity is key to successful harvesting operations. As technology advances, new and improved methods emerge, enhancing productivity and sustainability in agriculture.

Exercise 8. Mark the following statements as true or false based on the text, correct the false ones.

1. Hand harvesting is more suitable for small-scale farms and delicate crops.
2. Mechanical harvesting can increase productivity but may cause some damage to crops.
3. Hand harvesting is always faster than mechanical harvesting.
4. Selective harvesting helps maximize quality by picking only optimally matured crops.
5. Mechanical harvesting never causes any damage to crops.
6. Strip harvesting removes entire rows or sections of crops at once, potentially leading to mixed quality yields.
7. Selective harvesting results in shorter harvest periods.

8. Subsurface harvesting targets root crops and requires careful soil preparation to minimize damage.

9. Strip harvesting ensures all crops are perfectly ripe when harvested.

10. Subsurface harvesting does not require specialized machinery.

Exercise 9. Answer the following questions based on the text.

1. What are harvesting techniques?

2. What factors influence the choice of harvesting technique for a particular crop?

3. What is hand harvesting and what advantages does it have?

4. What are the disadvantages of mechanical harvesting compared to hand harvesting?

5. Which method is used for harvesting root crops such as potatoes and carrots?

6. For which crops is selective harvesting applied and why is it important?

7. Why is it important to properly adjust and maintain machines for mechanical harvesting?

8. In which cases can strip harvesting be applied, and what risks does it involve?

9. What precautions should be taken during aquatic harvesting?

10. What does the choice of a harvesting method depend on?

➢ **GRAMMAR FOCUS**

Exercise 10. Use the appropriate articles (a, an, or the) where necessary.

1. Hand harvesting is labor-intensive method suitable for small-scale farms.

2. Workers manually pick fruits, vegetables, or grains.

3. Combine harvesters are widely used for cereal crops like wheat, rice, and corn.

4. Mechanical harvesting involves use of machines specifically designed to harvest crops efficiently.

5. Subsurface harvesting targets root crops such as potatoes, carrots, and turnips.

6. Aquatic harvesting applies to crops grown in water, such as rice.

7. Selective harvesting refers to picking only those crops that have reached optimal maturity.

8. Strip harvesting entails removing entire rows or sections of crops simultaneously.

9. Careful soil preparation and moisture control are required for subsurface harvesting.

10. The choice of harvesting technique depends on numerous factors, including crop type and farm size.

Exercise 11. Correct the mistakes in the following sentences.

1. Combines harvester are widely uses for cereals crops.
2. Worker manual picks fruit, vegetable, or grain.
3. Mechanicals harvesting involved the use of machine.
3. Subsurfaces harvesting target roots crops.
5. The choise of harvest technics depended on numerouss factor.
6. Aquatics harvesting applie to crops growns in waters.
7. The choises of harvesting techniques dependend on nummerous factore.
8. New and improvved methode emerges as technologie advancees.
9. Stripes harvestings entail removings entire rows of cropps simultaneousely.
10. Mechancial harvesters increas productivitie significanteely.

➢ **LISTENING**

Modern agricultural machinery for harvesting

https://youtu.be/V1xdVF5IvkA?si=kfMHFkmdX9X42GX_

Exercise 12. Listen to the audio. Answer the questions.

1. What brings agriculture into the future?
2. What can you say about today's agricultural machinery?
3. What do self-driving tractors use to navigate fields with incredible precision?
4. Can self-driving tractors plant seeds, spray crops and harvest?
5. What are the benefits for farmers to use self-driving tractors?
6. Harvesters are taking crop collection to a whole new level, aren't they?
7. What can AI powered systems analyze?

➢ **WRITING PRACTICE**

Exercise 13. Choose one of the following topics and write an essay:

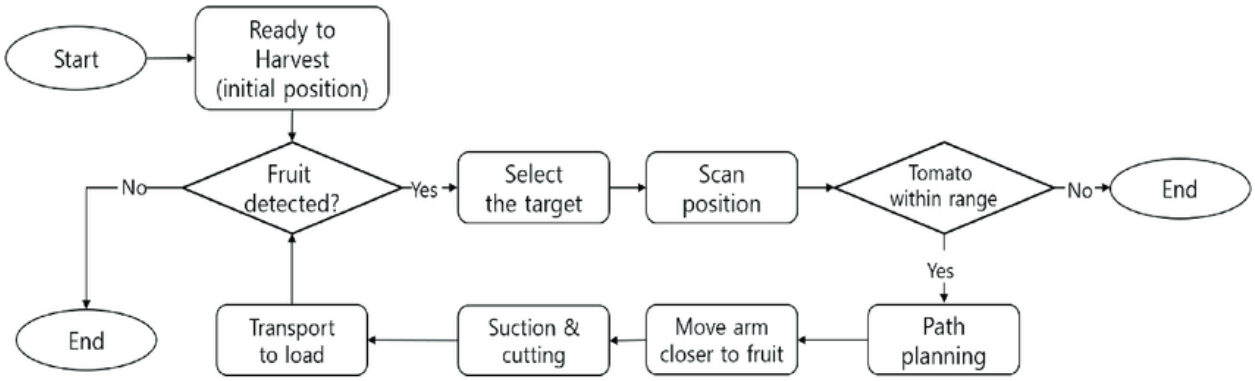
1. Mechanical vs Manual Harvesting: Compare and contrast the advantages and disadvantages of mechanical harvesting techniques with traditional manual methods in agriculture. Discuss the impact on crop yield, labor costs, and environmental sustainability.

2. Cultural Aspects of Traditional Harvesting Practices: Investigate the cultural significance of traditional harvesting practices in various societies. Discuss how these practices have evolved over time and their continued relevance today.

➢ **SPEAKING PRACTICE**

Exercise 14. Make up a plan and retell the text.

Exercise 15. Use the scheme to speak about the process of harvesting fruit.



Unit 4.2 – Storage Practices

➢ **WARM-UP**

Exercise 1. Discuss the following questions.

1. What are the key factors to consider when choosing a storage facility for post-harvest produce?
2. How can proper ventilation and temperature control help in maintaining the quality of stored crops?
3. What methods or technologies are used to prevent pests and diseases during storage?
4. How does packaging influence the shelf life and preservation of agricultural products?
5. What challenges do farmers face in implementing effective storage practices, especially in developing countries?

➢ **ACTIVE VOCABULARY**

Exercise 2. Memorize the following words and phrases paying attention to their pronunciation.

carbon dioxide – /'kɑːbən daɪ'ɒksaɪd/ – углекислый газ

competitiveness – /kɒmpə'tɪvnəs/ – конкурентоспособность

consumption – /kən'sʌmpʃən/ – потребление

contribute – /kən'trɪbjuːt/ – вносить вклад, способствовать

conversely – /ˈkɔnvɜrsli/ – наоборот, напротив

contamination – /kɒntæmɪˈneɪʃn/ – загрязнение, заражение

eliminate – /e'lɪmɪneɪt/ – устранять, уничтожать

enterprise – /ˈentrəpraɪz/ – предприятие, инициатива

excessive – /ɪkˈsesɪv/ – чрезмерный, избыточный

facility – /fəˈsɪlətɪ/ – удобство, возможность, учреждение

fluctuate – /ˈflʌktʃueɪt/ – колебаться, изменяться

formation – /fɔːr'meɪʃ(ə)n/ – формирование, образование

granary – /'grænəri/ – зернохранилище

gunny – /'gʌni/ – джутовый, мешковина

infestation – /ɪnfɛst'eɪʃn/ – нашествие вредителей, заражение паразитами

maintain – /meɪn'teɪn/ – поддерживать, сохранять

mold – /moʊld/ – плесень, форма

preserve – /pri'zɜrv/ – сохранять, консервировать

prolonged duration – /prə'lɒŋd dʒʊə'reɪʃ(ə)n/ – длительный период

reinforce – /reɪn'fɔːs/ – усиливать, укреплять

rodent – /roːdnt/ – грызун

spoilage – /'spoɪlɪdʒ/ – порча, гниение

subsequent – /sʌbsɪkwənt/ – последующий, следующий

supervision – /suːpə'vɪʒn/ – надзор, контроль

thorough – /'θʌrə/ – тщательный, основательный

value – /'vælju:/ – ценность, стоимость

warehouse – /weəhaʊs/ – склад, хранилище

Exercise 3. Find an antonym to the first word in every line.

Competitiveness: rivalry, aggressiveness, contestability, cooperation

Dehydrated: dried out, parched, hydrated, desiccated

Reserve: stockpile, backup, supply, release

Spoilage: preservation, decay, deterioration, rotting

Consumption: use, production, expenditure, utilization

Formation: structure, arrangement, dissolution, configuration

Infestation: plague, outbreak, swarm, absence

Maintain: neglect, sustain, preserve, uphold

Exercise 4. Fill in the gaps with the words from the box.

contribute, contamination, competitiveness, consumption, facility, carbon dioxide, warehouse, enterprise, eliminate, excessive

1. _____ is released into the atmosphere when fossil fuels are burned.
2. The company's _____ has increased due to recent technological advancements.
3. Reducing energy _____ is one way to lower your carbon footprint.
4. Volunteering helps you _____ to your local community.
5. The _____ serves as a central distribution point for all our products.
6. _____ of drinking water sources is a major health concern.
7. We need to _____ all errors before submitting the final report.
8. Starting your own _____ can be both challenging and rewarding.
9. _____ screen time can have negative effects on children's development.
10. The new _____ will provide better healthcare services to the community.

Exercise 5. Read the sentences, paying attention to the translation of the new words.

1. The formation of a new team required careful planning and selection.
2. The old granary was converted into a museum showcasing agricultural history.
3. Gunny sacks are often used to transport grains and other bulk items.
4. Regular inspections help prevent infestations by pests such as rodents.
5. It is essential to maintain good hygiene practices to avoid illness.
6. Mold growth in damp areas can cause respiratory problems.
7. Preservatives are added to food to preserve its freshness and extend shelf life.
8. Working long hours over a prolonged duration can lead to burnout.
9. Steel bars were used to reinforce the structure of the building.

10. Traps and baits are commonly used to control rodent populations.

➢ **READING**

Exercise 6. Read the text and do the tasks.

In small-scale farming, farmers typically reserve their harvested crops for personal consumption or distribute them locally within their communities. Conversely, large-scale agricultural operations focus predominantly on producing crops for commercial markets, rendering efficient storage solutions essential. Therefore, farmers must exercise diligence in storing their grains properly to maintain both their quality and quantity over prolonged durations. Establishing adequate storage facilities is crucial since inadequate space and subpar storage practices can result in substantial losses.

The storage process involves numerous challenges beyond simply providing physical space. Various external factors, including pests, rodents, and microbes like bacteria and fungi, can significantly impact the condition of stored grains. Additionally, environmental variables such as high humidity levels and fluctuating temperatures increase the risk of spoilage. Thus, applying appropriate pre-storage treatments is critical to safeguard the harvested crops.

To mitigate the threat of rodent infestations, farmers often employ pesticides. These chemicals effectively deter rodents from damaging stored grains. Excessive moisture promotes fungal growth, leading to mold formation and subsequent grain degradation. To counteract this, thorough sun-drying is recommended before storage, ensuring that the grains are sufficiently dehydrated to minimize the likelihood of fungal contamination.

Fumigation serves as another effective method for protecting stored grains. By introducing specific chemicals into the storage environment, farmers can eliminate harmful bacteria and other microorganisms, thereby preserving the quality of the stored products. After treatment, the grains should be carefully packed in robust containers, such as gunny bags, or placed in designated granaries before being transferred to secure warehouses.

Modern agriculture has seen the integration of advanced monitoring systems to enhance the efficiency and safety of crop storage. These systems use sensors to track temperature, humidity, and even carbon dioxide levels inside storage facilities. Real-time data analysis helps farmers identify potential issues early on, allowing for timely interventions to prevent losses. Such technologies contribute significantly to reducing waste and improving overall crop management.

Proper storage techniques have far-reaching economic implications. By minimizing post-harvest losses, farmers maximize their profits and ensure a consistent supply of high-quality products to the market. This stability not only benefits individual farmers but also contributes to regional and national food security. Investments in improved storage infrastructure and technologies can yield long-term returns by enhancing productivity and competitiveness in the agricultural sector.

The processes involved in harvesting and storing grains are fundamental components of successful crop production. Thorough supervision during these stages safeguards the yield while maintaining its nutritional value and market appeal. Efficient storage strategies directly support food security and reinforce the financial viability of agricultural enterprises.

Exercise 7. Mark the following statements as true or false based on the text, correct the false ones.

1. Small-scale farmers often store their crops for personal use or local distribution.
2. High temperatures and low humidity are the primary causes of grain spoilage.
3. Large-scale agricultural operations require efficient storage solutions due to their focus on commercial markets.
4. Pesticides are used to prevent rodent infestations in stored grains.
5. Modern monitoring systems rely mainly on visual inspections of storage facilities.
6. Sun-drying is recommended to minimize fungal contamination in stored grains.
7. Fumigation is primarily used to control insect pests in stored grains.

8. Investment in better storage infrastructure improves agricultural productivity and competitiveness.

9. Improper storage practices can lead to increased profits for farmers.

10. Advanced storage technologies decrease the overall efficiency of crop management.

Exercise 8. Answer the following questions based on the text.

1. What are the differences between crop storage in small-scale and large-scale agriculture?

2. Why is it so important for large agricultural enterprises to have effective product storage solutions?

3. Which external factors can negatively affect the quality of stored grains?

4. What is the main purpose of applying pre-storage treatments to grains before they are stored?

5. What method do farmers use to prevent grain infection with mold and fungi?

6. What role does fumigation play in protecting stored grain from bacteria and microorganisms?

7. How do modern monitoring systems help improve the storage conditions of agricultural products?

8. How does proper grain storage influence farmers' economic situation and regional food security?

9. What advantages do farmers gain from investing in improvements to storage infrastructure and technology?

10. Why is careful control over the process of harvesting and storing grain important for successful farming?

➢ **GRAMMAR FOCUS**

Exercise 9. Convert the following Active Voice sentences to Passive Voice.

1. Farmers often employ pesticides to mitigate the threat of rodent infestations.

2. Sun-drying ensures that the grains are sufficiently dehydrated.

3. Fumigation eliminates harmful bacteria and other microorganisms.

4. Sensors track temperature, humidity, and even carbon dioxide levels inside storage facilities.

5. Proper storage techniques minimize post-harvest losses.

Exercise 10. Fill in the blanks with an appropriate form of modal verbs:

can (3), must, should, need, may, ought to, be able to

1. These chemicals _____ deter rodents from damaging stored grains.

2. Farmers _____ exercise diligence in storing their grains properly to maintain both their quality and quantity over prolonged durations.

3. The grains _____ be carefully packed in robust containers.

4. Investments in improved storage infrastructure and technologies _____ yield long-term returns.

5. Farmers often _____ to employ pesticides to mitigate the threat of rodent infestations.

6. These chemicals _____ effectively deter rodents from damaging stored grains.

7. Excessive moisture _____ promote fungal growth, leading to mold formation and subsequent grain degradation.

8. Thorough sun-drying _____ be done before storage to minimize the likelihood of fungal contamination.

9. Fumigation _____ serve as another effective method for protecting stored grains.

Exercise 11. Combine the following pairs of sentences using relative pronouns, e.g.:

I bought a book yesterday. The book was very interesting.

- *Yesterday, I bought a book that was very interesting*.

1. The systems use sensors. They track temperature and humidity.

2. Pesticides are chemicals. They deter rodents.

3.Storage facilities are crucial. They prevent substantial losses.

4. Farmers employ pesticides. They mitigate the threat of infestations.

5. The process involves challenges. They go beyond providing physical space.

➢ LISTENING

How grain bins keep crops from spoiling

https://youtu.be/5GF6Q5Qd67E?si=Hja0dugcdNlt3puz

Exercise 12. Listen to the audio. Answer the questions.

1. How is called the giant silver structure?
2. How many tons of corn can this particular bin hold?
3. Why can grain get moldy and spoil?
4. Are grain bins designed to help dry things out?
5. Grain bins are extremely dangerous, aren't they?
6. What is there in the grain bin that forces hot air through tiny holes in the floor?
7. What helps the air to circulate?
8. Is an auger built into the floor or into the celling?

➢ WRITING PRACTICE

Exercise 13. Write a summary to the text according to the plan.

➢ SPEAKING PRACTICE

Exercise 14. Work in three groups and Discuss the following problems that arise during grain storage, including pests, humidity, and temperature fluctuations.

1. *Pests:*

- What types of pests commonly affect grain during storage?
- How do they influence the quality and quantity of grain?
- What pest control methods exist and how effective are they?

2. *Humidity:*

- Why is high humidity a problem when storing grain?
- How does it promote the growth of mold and bacteria?

- What methods are used to reduce humidity levels and maintain optimal storage conditions?

3. *Temperature:*

- How do changes in temperature affect the condition of grain?
- Can sudden temperature swings lead to grain spoilage?
- How can stable temperatures be maintained in storage facilities?

Unit 4.3 – Quality Assurance and Post-Harvest Handling

➢ WARM-UP

Exercise 1. Discuss the following questions.

1. What are the key aspects of quality control in post-harvest handling?
2. Which methods are used to prevent spoilage after harvest?
3. What challenges do small farmers face in ensuring quality during post-harvest handling?
4. What technologies are applied for monitoring the condition of products during storage and transportation?
5. How does staff training affect the quality of post-harvest operations?

➢ ACTIVE VOCABULARY

Exercise 2. Memorize the following words and phrases paying attention to their pronunciation.

adherence – /ədˈhɪərəns/ – приверженность, соблюдение

assurance /əˈʃʊərəns/ гарантия

post-harvest – /poʊst hɑrvɪst/ – послеуборочный

commodity – /kəˈmɒdəti/ – товар, сырьё

crate – /kreɪt/ – ящик, контейнер

debris – /ˈdebriː/ – обломки, мусор

disinfectant – /ˌdɪsɪnˈfektənt/ – дезинфицирующее средство

grading – /greɪdɪŋ/ – сортировка, классификация

handling – /ˈhændlɪŋ/ – обработка, обращение

immediately – /ɪˈmiːdiətli/ – немедленно, сразу же

marketability – /mɑːrkɪtəˈbɪlɪti/ – рыночная стоимость, способность продаваться

overripe – /oʊvəraɪp/ – перезрелый

paramount – /ˈpærəmaʊnt/ – первостепенный, важнейший

prevent – /prɪˈvent/ – предотвращать, предупреждать

processing – /ˈprəʊsesɪŋ/ – переработка, обработка 1

prime – /praɪm/ – главный, основной

reach – /riːtʃ/ – достигать, дотягиваться

requirement – /rɪˈkwaiərmənt/ – требование, необходимость

respiration rate – /respiˈreɪʃən reɪt/ – частота дыхания

senescence – /sɪˈnesəns/ – старение, увядание

sort – /sɔrt/ – сортировать, отбирать

unripe – /ʌnˈraɪp/ – незрелый

undergo – /ˌʌndəˈgəʊ/ – подвергаться, испытывать

underrate – /ˌʌndəreɪt/ – недооценивать

Exercise 3. Match the synonyms.

1. commodity	a. rubble
2. crate	b. manipulation
3. debris	c. good
4. grading	d. treatment
5. handling	e. container
6. overripe	f. stop
7. prevent	g. spoiled
8. processing	h. classification

Exercise 4. Match the antonyms.

1. prime	a. overrate
2. underrate	b. avoid
3. undergo	c. miss

4. unripe	d. disregard
5. sort	e. secondary
6. senescence	f. youthfulness
7. reach	g. mix
8. adherence	h. mature

Exercise 5. Fill in the gaps with the words from the box.

commodities, crate, debris, disinfectant, grading, handling, immediately, paramount, overripe, marketability

1. We use a strong _____ to ensure that all surfaces are free from germs.
2. After the storm, there was _____ scattered everywhere, making it difficult to walk through the streets.
3. The new design significantly improved the product's _____, leading to increased sales.
4. The teacher spent hours _____ the students' essays to provide detailed feedback.
5. They carefully packed the fragile items into a sturdy wooden _____.
6. Proper _____ of food is crucial to prevent contamination and maintain its quality.
7. Safety is of _____ importance when working with hazardous materials.
8. As soon as she received the news, she called her family _____.
9. Wheat is one of the most important agricultural _____ traded globally.
10. The bananas were _____ and had started to turn brown.

Exercise 6. Read the sentences, paying attention to the translation of the new words.

1. The company's strict adherence to safety protocols gives us assurance that all risks have been minimized.
2. The factory uses advanced technology for efficient processing of raw materials.
3. Monitoring the patient's respiration rate helps assess their respiratory function.
4. This location is prime real estate due to its proximity to the city center.
5. Regular exercise and a balanced diet can help prevent many health issues.

6. With hard work and determination, you can reach your goals.

7. Meeting the project deadline is a critical requirement for our team.

8. Don't underrate the importance of proper nutrition, it plays a vital role in maintaining good health.

9. Sorting the mail by zip code makes delivery more efficient.

10. Eating unripe fruit can sometimes cause stomach discomfort.

➢ READING

Exercise 7. Read the text and do the tasks.

Quality assurance and post-harvest handling are critical aspects of the agricultural industry, aimed at ensuring that crops reach consumers in optimal condition. Agricultural produce undergoes multiple stages after harvesting, and the way it is handled can significantly impact its quality, shelf life, and marketability. Quality assurance and effective post-harvest management are key to maximizing the value of agricultural commodities.

Quality assurance refers to the systematic approach taken to ensure that agricultural products meet specified standards throughout the entire production chain. This includes adherence to best practices in growing, harvesting, processing, packaging, transportation, and storage. Key objectives include maintaining nutritional value, minimizing losses due to spoilage, meeting regulatory requirements, enhancing consumer satisfaction.

Post-harvest activities begin immediately after the crop is harvested and continue until it reaches the end user. These practices involve a series of steps designed to preserve the quality and extend the shelf life of the product. Some common post-harvest practices include harvesting techniques, sorting and grading, cleaning and washing, cooling, packaging, transportation, storage conditions.

Harvesting should be done at the right stage of maturity to ensure optimal quality. Overripe or unripe fruits and vegetables may suffer from reduced shelf life and lower nutritional value. Mechanized harvesting equipment can be used to speed up the process, but care must be taken to avoid damage to the produce.

After harvesting, product is sorted and graded based on size, color, shape, and any visible defects. This step helps to separate high-quality products from those that might be less desirable, ensuring that only the best items reach the market.

Cleaning removes dirt, debris, and surface contaminants, reducing the risk of microbial contamination. Washing with clean water or approved disinfectants further enhances hygiene and extends shelf life.

Rapid cooling, such as hydro-cooling or forced-air cooling, slows down metabolic activity and reduces respiration rates, delaying senescence and extending the freshness of perishable product.

Proper packaging protects the product from mechanical damage, prevents moisture loss, and maintains the desired atmosphere. Different types of packaging materials, such as plastic, cartons, and crates, are chosen depending on the type of product and its intended destination.

Transportation plays a crucial role in maintaining the quality of agricultural products. Refrigerated trucks, controlled-atmosphere containers, and good logistics planning help to minimize transit times and ensure that the product arrives at its destination in prime condition.

Optimal storage conditions vary depending on the commodity. Temperature, humidity, and ventilation must be closely monitored to prevent spoilage and maintain freshness. For example, refrigerated storage is necessary for many fruits and vegetables, while grains and pulses require dry, well-ventilated environments.

Quality assurance and effective post-harvest handling are paramount for maintaining the integrity and marketability of agricultural products. Through strategic implementation of best practices in harvesting, sorting, cleaning, cooling, packaging, transportation, and storage, producers can minimize losses, extend shelf life, and deliver high-quality produce to consumers.

Exercise 8. Mark the following statements as true or false based on the text, correct the false ones.

1. Mechanical harvesting always causes significant damage to the produce.

2. Washing agricultural products with dirty water increases their shelf life.

3. Quality assurance and post-harvest handling are critical aspects of the agricultural industry.

4. Agricultural produce undergoes multiple stages after harvesting, which can significantly impact its quality, shelf life, and marketability.

5. Only temperature control is important during transportation of agricultural products.

6. Post-harvest activities include sorting and grading, cleaning and washing, cooling, packaging, transportation, and storage.

7. All agricultural products benefit from refrigerated storage.

8. Proper packaging protects the product from mechanical damage, prevents moisture loss, and maintains the desired atmosphere.

9. Temperature, humidity, and ventilation must be closely monitored during storage to prevent spoilage and maintain freshness.

10. The stage of maturity at which the crop is harvested has no effect on its quality

Exercise 9. Answer the following questions based on the text.

1. What are the two critical aspects of the agricultural industry mentioned in the text?

2. What three key impacts can improper handling have on agricultural produce after harvesting?

3. According to the text, what does quality assurance refer to in the context of agriculture?

4. List five common post-harvest practices discussed in the passage.

5. Why is it important to harvest crops at the right stage of maturity?

6. What is the purpose of sorting and grading agricultural products after harvest?

7. How does rapid cooling help in preserving the freshness of perishable products?

8. What role does proper packaging play in maintaining the quality of agricultural products?

9. Name three types of packaging materials mentioned in the text.

10. What storage conditions are required for grains and pulses?

➢ **GRAMMAR FOCUS**

Exercise 10. Transform the sentences from Passive Voice into Active Voice.

1. High-quality products are separated from those that might be less desirable.
2. The product is protected from mechanical damage by proper packaging.
3. Temperature, humidity, and ventilation must be closely monitored to prevent spoilage.
4. The quality and shelf life of the product are preserved by these practices.
5. Only the best items are ensured to reach the market.
6. The product is sorted and graded based on size, color, shape, and any visible defects.
7. Dirt, debris, and surface contaminants are washed away by clean water or approved disinfectants.
8. Metabolic activity is slowed down and respiration rates are reduced by rapid cooling methods, such as hydro-cooling or forced-air cooling.
9. Different types of packaging materials, such as plastic, cartons, and crates, are chosen depending on the type of product and its intended destination.
10. Routes and schedules are planned by logistics teams to minimize transit times and ensure that the product arrives at its destination in prime condition.

Exercise 11. Fill in the gaps with the suitable modal verbs (must, should, need, ought to).

1. Producers _____ follow best practices to ensure high-quality produce.
2. Fruits and vegetables _____ be stored in refrigerated conditions to maintain freshness.
3. Agricultural products _____ meet specified standards to enhance consumer satisfaction.
4. Farmers _____ take care not to damage the produce during harvesting.
5. Post-harvest activities _____ be implemented strategically to maximize the value of agricultural commodities.
6. Storage facilities _____ maintain optimal temperature and humidity levels.

7. Packaging materials _____ protect against external contaminants.

8. Transportation vehicles _____ to be equipped with climate control systems.

9. Regulatory bodies _____ enforce strict guidelines to ensure food safety.

10. Growers _____ use sustainable farming methods to preserve soil fertility and biodiversity.

➢ LISTENING

Quality assurance https://youtu.be/dh_zeE8jw_w?si=XZ-xjr5ej9ymz7j4

Exercise 12. Listen to the audio. Answer the questions.

Some words for help:

Canola – рапс

Ensure – гарантировать, обеспечивать

Batch – партия, серия, пакет

Traceability – отслеживание

Paddock – огороженный участок земли

1. What is the name of the process that ensure the high quality of seeds?
2. What is the QA system based on?
3. The QA tests include germination, moisture content and weed seed search, don't they?
4. What additional tests do thy apply?
5. What do these tests give the consumers?
6. What is the QA protocol for?
7. What follows after the product is tested, treated, packed and approved for sale?

➢ WRITING PRACTICE

Exercise 13. Write a case study.

Select a specific product (e.g., apples, potatoes, wheat) and write a case study detailing all the stages of post-harvest handling for that product. Include a discussion of key points such as the optimal time for harvest, methods of sorting and cleaning,

requirements for packaging and transportation, as well as storage conditions. Pay attention to specific issues characteristic of the product you have chosen.

➢ **SPEAKING PRACTICE**

Exercise 14. Make up a plan and retell the text.

Exercise 15. Analyze infographics and speak about better crop handling. Use the information for help:

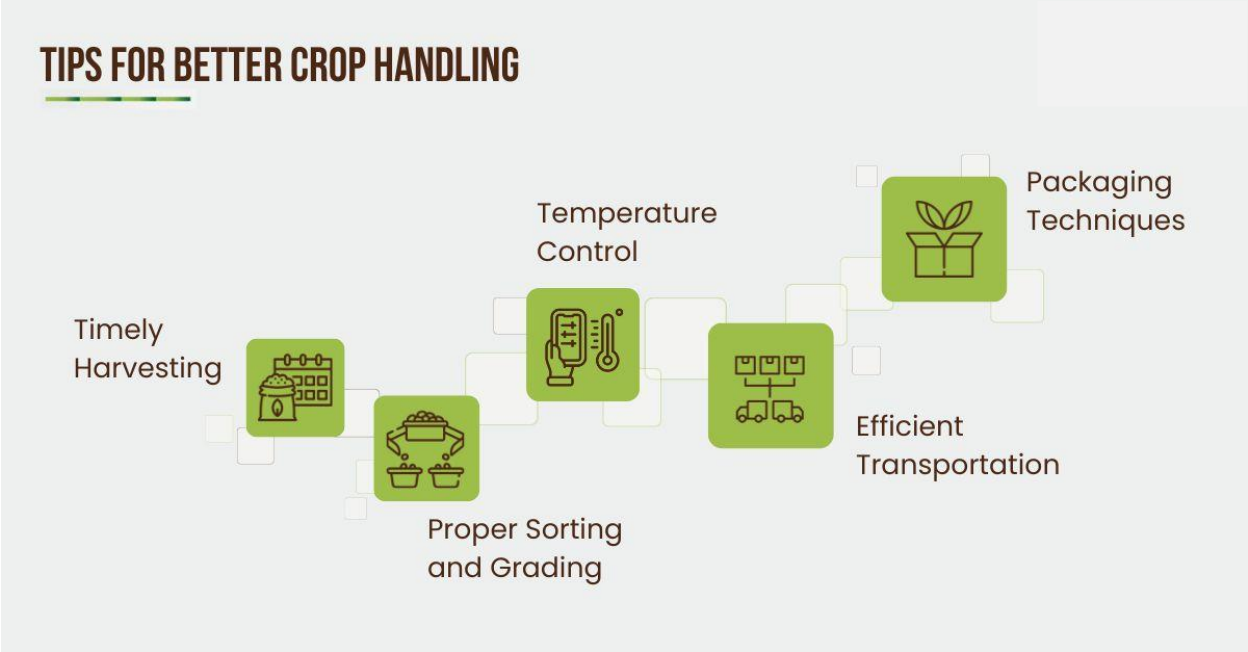
– Timing is crucial when it comes to harvesting. Crops harvested at their peak maturity have better flavor, nutritional value, and shelf life.

– Proper sorting and grading help in identifying and separating damaged or diseased produce from high-quality produce, ensuring that only the best products reach the market.

– Keeping produce at the right temperature during storage and transportation extends its shelf life and preserves its quality.

– Packaging materials and methods should be chosen based on the type of produce and its specific needs.

– Efficient transportation ensures crops are delivered to markets quickly and in good condition.



➢ **ADDITIONAL TASK**

Read the text and write a written translation for one of the text fragments.

Biotech Applications in Modern Farming

Biotechnology has revolutionized modern farming, offering innovative solutions to address various challenges faced by the agricultural sector. From genetic engineering to precision agriculture, biotech applications are transforming how we grow, manage, and distribute food. Here's a closer look at some key areas where biotechnology is making a significant impact:

Genetically Modified Organisms (GMOs) One of the most prominent applications of biotechnology in farming is the development of genetically modified organisms (GMOs). By introducing specific genes into plants, scientists can create crops that are resistant to pests, diseases, and environmental stresses. For instance, Bt cotton, engineered to express proteins toxic to certain insects, has significantly reduced pesticide usage, thereby lowering costs and increasing yields. Similarly, drought-resistant maize varieties have proven beneficial in regions prone to water scarcity.

Precision Agriculture Precision agriculture leverages data-driven technologies to optimize farm management. Sensors, drones, and GPS systems collect real-time information about soil conditions, plant health, and weather patterns. This data enables farmers to make informed decisions regarding irrigation, fertilization, and pest control. By applying resources precisely where needed, precision agriculture reduces waste, conserves resources, and improves overall productivity.

Biofertilizers and Biopesticides Biofertilizers are microorganisms that enrich the soil with nutrients, promoting plant growth without relying on synthetic chemicals. Rhizobium bacteria, for example, fix atmospheric nitrogen, making it available to leguminous plants. Biopesticides, derived from natural sources like fungi, bacteria, and viruses, offer eco-friendly alternatives to conventional pesticides. These biological agents target specific pests while causing minimal harm to beneficial insects and the environment.

Tissue Culture and Micropropagation Tissue culture involves growing plant tissues in a laboratory setting to produce disease-free clones. This technique is particularly useful for propagating rare or endangered species, as well as creating large quantities of uniform planting material. Micropropagation, a subset of tissue culture, allows for rapid multiplication of elite plant varieties, ensuring consistent quality and genetic purity.

Molecular Breeding and Marker-Assisted Selection Molecular breeding utilizes DNA markers to identify desirable traits in plants, enabling breeders to selectively crossbreed individuals with favorable characteristics. Marker-assisted selection (MAS) accelerates traditional breeding programs by pinpointing genes associated with traits like yield, disease resistance, and nutritional content. This method significantly shortens the time required to develop new crop varieties compared to conventional breeding techniques.

Biotechnology applications in modern farming hold immense potential for addressing global food security challenges. By harnessing the power of genetics, precision tools, and sustainable practices, farmers can increase yields, conserve resources, and mitigate environmental impacts. While ethical concerns and public perception remain topics of debate, continued research and responsible implementation of biotechnologies promise a brighter future for agriculture worldwide.

Module 5 – Revision

Final test

1. What is agriculture defined as?

a) The art of growing crops

b) The science and practice of cultivating land for growing crops and raising livestock

c) A method to manage resources

d) None of the above

2. Subsistence farming focuses on:

a) Producing crops for export

b) Using advanced technologies

c) Producing enough food to feed a family or small community

d) Selling surplus produce in markets

3. Organic farming avoids the use of:

a) Natural methods

b) Traditional tools

c) Synthetic fertilizers, pesticides, and genetically modified organisms (GMOs)

d) Water solutions

4. What natural factor determines which crops can be grown in a particular region?

a) Soil

b) Climate

c) Topography

d) Labor force

5. Which technological factor includes the use of fertilizers, pesticides, and irrigation systems?

a) Economic factors

b) Social factors

c) Modern agronomic techniques

d) Input prices

6. What social factor influences crop choices based on local customs and beliefs?

a) Environmental awareness

b) Cultural traditions

c) Government support

d) Market demand

7. Which of the following is NOT a category of crops?

a) Fruits and nuts

b) Sugar crops

c) Flowering crops

d) Oilseed crops

8. Legumes are beneficial in crop rotation systems because they:

a) Require less water than other crops

b) Fix nitrogen in the soil

c) Produce high amounts of oil

d) Are naturally resistant to pests

9. Which crop is important globally due to its widespread use in clothing and household items?

a) Jute

b) Hemp

c) Cotton

d) Flax

10. What are three key advantages of using manure in soil preparation?

a) Improves soil texture, increases water retention, and enhances microbial activity

b) Reduces environmental pollution, improves soil structure, and supports sustainable agriculture

c) Enriches the soil with organic matter, enhances soil structure, and promotes beneficial microbial activity

d) Provides quick nutrient absorption, prevents weed growth, and increases crop yields

11. Why should you use composted or aged manure rather than fresh manure?

a) Composted manure is cheaper

b) Fresh manure contains more nutrients

c) Composted manure reduces the risk of pathogens and weed seeds

d) Composted manure is easier to store

12. What is a potential disadvantage of excessive use of mineral fertilizers?

a) Decreased soil pH

b) Increased soil salinity levels

c) Reduced water-holding capacity

d) Lower crop yields

13. What are the three key steps involved in preparing the soil before seed sowing?

a) Tilling the soil, adding fertilizers, and moistening the soil

b) Removing weeds, tilling the soil, and adding compost

c) Tilling the soil, adding fertilizers, and moistening the soil

d) Tilling the soil, removing stones, and adding manure

14. According to general guidelines, how deep should larger seeds be planted?

a) Surface-sown

b) 0.5-1 cm deep

c) 2-3 cm deep

d) 10 cm deep

15. What is the recommended temperature range for promoting vigorous seedling growth?

a) 12-15°C

b) 18-25°C

c) 26-30°C

d) 8-12°C

16. Which type of irrigation system distributes water through sprinklers placed above the ground?

a) Surface irrigation

b) Sprinkler irrigation

c) Drip irrigation

d) Subsurface irrigation

17. What are two strategies to improve irrigation efficiency?

a) Using manual labor and traditional methods

b) Using drip or subsurface irrigation and implementing precision agriculture techniques

c) Ignoring leakage and focusing on quantity

d) Applying excess water to ensure saturation

18. What is one advantage of modern irrigation systems incorporating advanced technologies?

a) They are cheaper to install

b) They require less maintenance

c) They allow farmers to monitor soil moisture levels in real-time

d) They eliminate the need for regular inspections

19. What is one preventive measure mentioned in the text for controlling weeds?

a) Spraying herbicides indiscriminately

b) Cover cropping with plants like clover or rye

c) Ignoring weed growth until harvest

d) Waiting for weeds to mature before pulling them

20. Which technique is part of Integrated Pest Management (IPM)?

a) Indiscriminate use of broad-spectrum pesticides

b) Introducing natural predators and parasites

c) Avoiding any form of pest control

d) Not rotating crops

21. What is a benefit of adopting sustainable practices in weed control and pest management?

a) Higher costs for farmers

b) Increased dependence on chemicals

c) Enhanced environmental sustainability and farm profitability

d) Reduced crop yields

22. What are two types of data collected for crop growth monitoring?

a) Weather data and soil conditions

b) Plant health and growth stages

c) Weather data, soil conditions, plant health, and growth stages

d) Only soil moisture levels and nutrient content

23. What technology can track changes in vegetation indices over time?

a) Multispectral cameras

b) High-resolution satellite images

c) Ground-based sensors

d) Machine learning algorithms

24. How can artificial intelligence and machine learning algorithms assist in crop growth monitoring?

a) They can only predict future crop yields

b) They can only identify anomalies and potential issues

c) They can predict crop growth trends, identify anomalies, recommend best practices, and forecast future crop yields

d) They cannot assist in crop growth monitoring

25. What is a common method used for small-scale farms or delicate crops?

a) Mechanical harvesting

b) Hand harvesting

c) Strip harvesting

d) Subsurface harvesting

26. What type of harvester is widely used for cereal crops like wheat and rice?

a) Potato diggers

b) Grape harvesters

c) Tomato pickers

d) Combine harvesters

27. What technique involves removing entire rows or sections of crops simultaneously?

a) Selective harvesting

b) Strip harvesting

c) Subsurface harvesting

d) Aquatic harvesting

28. What is one challenge farmers face when storing their grains?

a) Lack of physical space

b) External factors like pests, rodents, and microbes

c) Low market demand for their crops

d) High production costs

29. What method is used to deter rodents from damaging stored grains?

a) Sun-drying

b) Fumigation

c) Use of pesticides

d) Advanced monitoring systems

30. What are modern monitoring systems used for in crop storage?

a) Tracking weather conditions outside the storage facility

b) Measuring soil moisture levels

c) Determining crop maturity

d) Tracking temperature, humidity, and CO_2 levels inside storage facilities

31. What is one objective of quality assurance in agriculture?

a) Maximizing crop yield

b) Ensuring high production volumes

c) Meeting regulatory requirements and enhancing consumer satisfaction

d) Speeding up the harvesting process

32. What is one of the common post-harvest practices mentioned in the text?

a) Irrigating the crops

b) Treating crops with chemicals

c) Sorting and grading the product based on quality

d) Heating the crops to prolong shelf life

33. What method is used to slow down metabolic activity and extend the shelf life of perishable products?

a) Chemical treatment

b) Rapid cooling, such as hydro-cooling or forced-air cooling

c) Increasing temperature

d) Delayed transportation

ПРИЛОЖЕНИЕ 1

Этапы реферирования

Реферирование – это анализ текста, который выполняется по определенному плану. Для начала необходимо выделить главную идею, описать основное содержание текста / статьи. Приведем пример плана реферирования и клишированные фразы, которые помогут при его написании.

1. Определите название текста / статьи.

- The headline of the text / article is … – Заголовок текста / статьи…
- The text / article under discussion is called… – Текст / статья, для обсуждения, называется…

2. Определите автора текста / статьи.

- The author of the text / article is… – Автор текста / статьи…

3. Определите, где и когда был опубликован текст / статья.

- The text / article I'm going to give a review of is taken from… – Текст, который я сейчас хочу проанализировать / Статья, которую я сейчас хочу проанализировать, взята из…
- The text / article was published in … – Статья была опубликована … / Текст был опубликован…

4. Определите основную идею текста / статьи.

- The topic of the text / article is… – Тема текста / статьи…
- The key issue of the text / article is… – Ключевым вопросом в тексте / статье является…
- The text / article under discussion is devoted to the problem… – Текст, который мы обсуждаем / Статья, которую мы обсуждаем, посвящена проблеме…
- The author in the text / article touches upon the problem of… – В тексте / статье автор затрагивает проблему….

5. Разделите текст / статью на несколько логических частей.

- The text / article under discussion may be divided into several logically connected parts. – Текст может быть разделен / статья может быть разделена на несколько логически взаимосвязанных частей.

6. Подробно опишите каждую из частей.

- In the first part of the text / article the author describes … – В первой части текста / статьи автор описывает …
- Further the author touches upon … – Далее автор затрагивает …

7. Изложите отношение автора к некоторым проблемам, выводы автора.

- The author asserts that… – Автор утверждает, что …
- The author resorts to … to underline… – Автор прибегает к …, чтобы подчеркнуть
- At the end of the text / article the author sums it all up by saying … – В конце текста / статьи автор подводит итог всего этого, говоря …

8. Изложите ваши выводы.

- As far as I am able to judge… – Насколько я могу судить…
- My own attitude to this text / article is… – Мое личное отношение к данному тексту / статье…
- I fully agree with… / I disagree with… – Я полностью согласен с… / Я не согласен с…

ПРИЛОЖЕНИЕ 2

Грамматический справочник

Неопределенный и определенный артикли

Артикль – это служебная часть речи, которая употребляется только перед существительными.

Неопределенный артикль употребляется перед исчисляемыми существительными в единственном числе, которые мы не выделяем из класса ему подобных. Упоминая предмет впервые, мы употребляем перед ним неопределенный артикль *a/an*. Упоминая этот же предмет второй раз, мы ставим перед ним определенный артикль *the*. Например: *This is a dog. The dog is his.*

Определенный артикль *the* выделяет предмет или предметы из класса ему подобных. Например: *The song I heard yesterday is very dramatic.*

Определенный артикль *the* употребляется как с исчисляемыми, так и с неисчисляемыми существительными, как с единственным, так и с множественным числом. Например: *The apples are fresh. The milk isn't tasty.*

Определенный артикль *the* употребляется:

1. когда известно о каком предмете идет речь (*Close the window.*)
2. когда речь идет о единственном в своем роде предмете или явлении (*the Sun, the Moon*)
3. когда перед существительным стоит прилагательное в превосходной степени (*the biggest mistake*)
4. перед порядковыми числительными (*the first day*)

Есть случаи, когда артикли не употребляются перед существительными. Если перед существительным стоит:

1. указательное или притяжательное местоимение
2. другое существительное в притяжательном падеже
3. количественное числительное
4. отрицание *no*

Порядок слов в английском предложении

В английском предложении прямой порядок слов, это значит, что на первом месте стоит подлежащее (существительное, местоимение, числительное), на втором сказуемое (глагол), на третьем месте дополнение, на четвертом месте обстоятельство. Схематически прямой порядок слов выглядит следующим образом:

1 Подлежащее	2 Сказуемое	3 Дополнение			4 Обстоятельство
-	-	косвенное без предлога	прямое	косвенное с предлогом	-
He /she /it	likes	-	dogs.	-	-
We / you / they	bring	us	flowers	-	to the room.
I	tell	-	this story	to my sister	every day.

Времена в Активном залоге

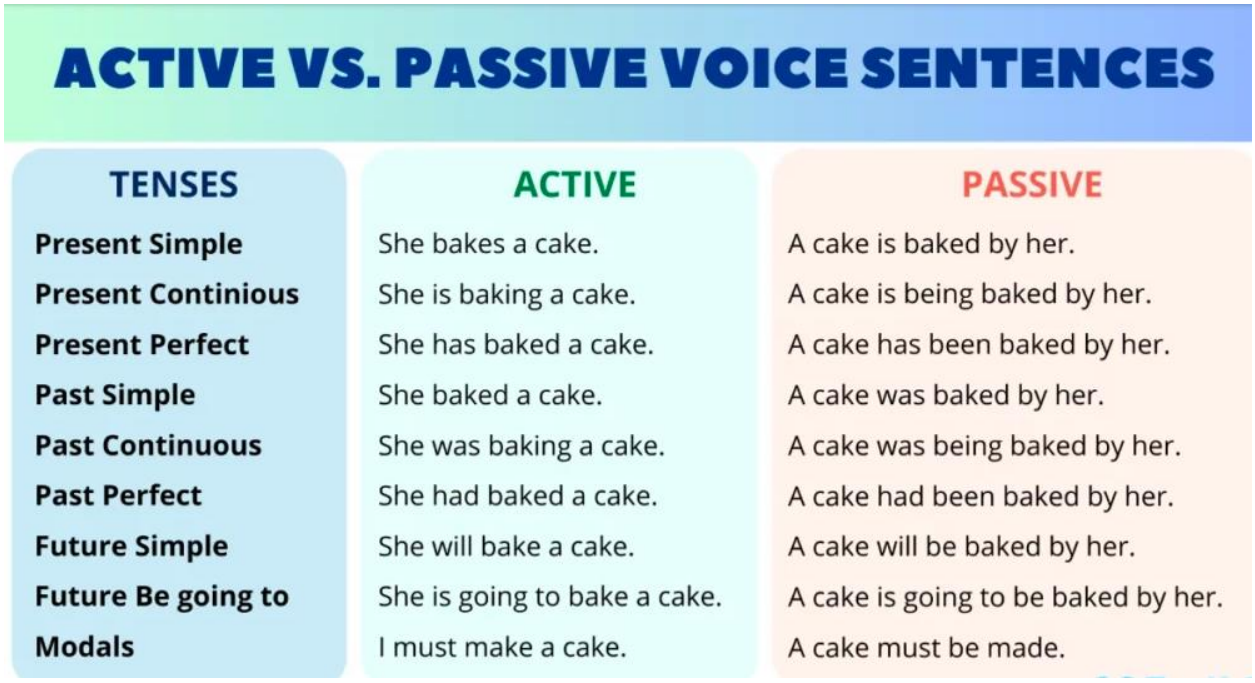
Залог (voice) — это одна из категорий английского глагола. Активный залог (active voice) в предложении указывает на то, что подлежащее совершает действие само.

	Simple	*Continuous*	*Perfect*	*Perfect Continuous*
Present	*I **do** it*	*I am doing it*	*I **have done** it*	*I **have been doing** it*
Past	*I **did** it*	*I was doing it*	*I **had done** it*	*I **had been doing** it*
Future	*I **will/shall do** it*	*I will/shall be doing it*	*I **will/shall have done** it*	*I **will/shall have been doing** it*
Future-in-the-Past	*I **would/should do** it*	*I would/should be doing it*	*I **would/should have done** it*	*I **would/should have been doing** it*

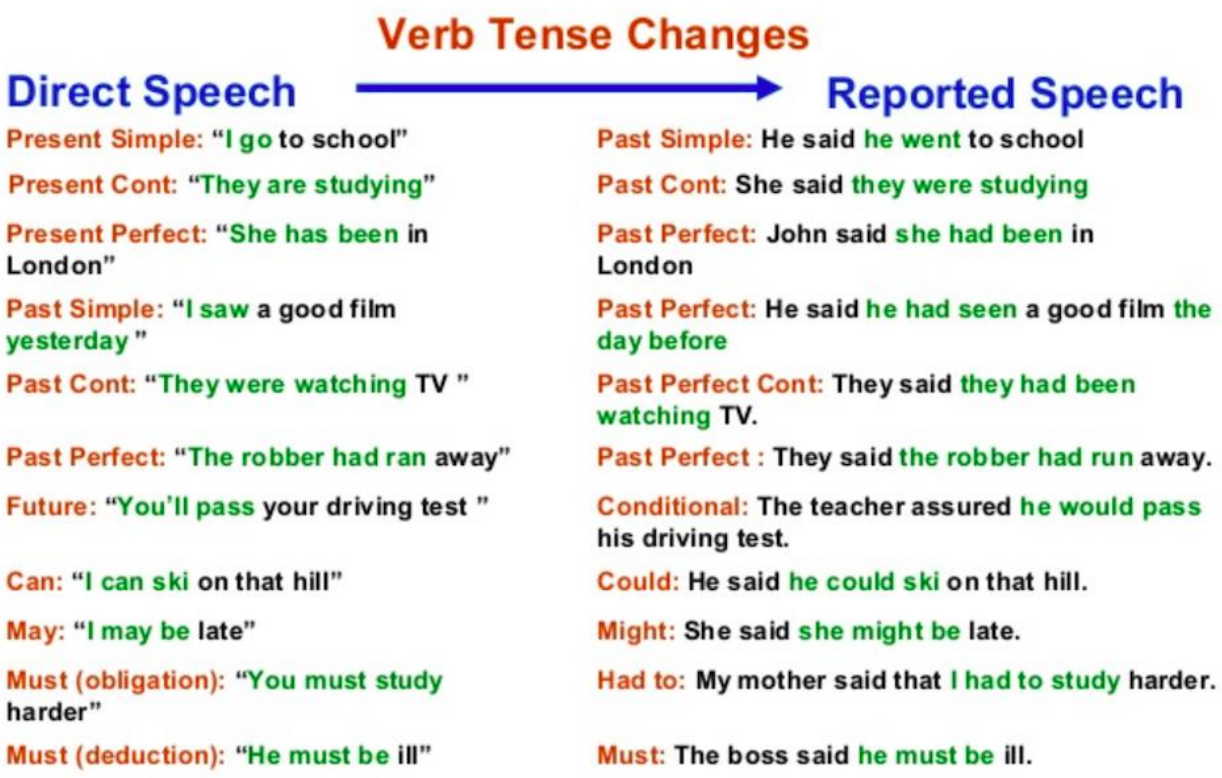
Времена в Пассивном залоге

Пассивный, или страдательный, залог (passive voice) говорит о том, что действие совершено над подлежащим. Пассивный залог (passive voice) образуется с помощью вспомогательного глагола to be в нужном времени и третьей формы основного глагола.

Хотя в страдательном залоге часто неважно, кем или чем совершено действие, это можно указать в предложении с помощью предлогов by и with. После by мы называем того человека или тот предмет, который совершил действие, а после with – инструмент или орудие.



Прямая и косвенная речь



ТИПЫ ВОПРОСОВ

Порядок слов в вопросительном предложении

Порядок слов в английском вопросительном предложении зависит от типа вопроса.

Общий вопрос относится ко всему предложению в целом, ответить на такой вопрос можно только да или нет. Общий вопрос образуется при помощи:

1. вспомогательного глагола (модальный глагол, глагол связка)
2. подлежащего
3. смыслового глагола
4. второстепенных членов предложения

Специальный вопрос относится к какому-нибудь члену предложения или их группе и требует конкретного ответа. Специальный вопрос образуется при помощи**:**

1. **вопросительного слова**
2. **вспомогательного глагола**
3. **подлежащего**
4. **смыслового глагола**
5. **дополнения**
6. **обстоятельства**

Альтернативный вопрос предполагает выбор из двух возможностей. Такой тип вопроса образуется при помощи:

1. **вспомогательного глагола**
2. **подлежащего**
3. **смыслового глагола + ___or___?**

Разделительный вопрос – это тип вопроса, который добавляется в конце утвердительного предложения, чтобы получить подтверждение сказанному собеседником. Если в повествовательной части вопроса содержится утверждение, то во второй части должно быть отрицание. Если в повествовательной части – отрицание, то во второй части – утверждение. Образуется при помощи**:**

1. **подлежащего**
2. **смыслового глагола**
3. **второстепенных членов предложения + краткого вопроса**

Вопрос к подлежащему – не употребляется вспомогательный глагол, вместо подлежащего употребляется вопросительное слово Who, сохраняется прямой порядок слов.

	Тип вопроса	**Пример**
1	Повествовательное предложение	You drink coffee every day at the cafe.
2	Общий вопрос	Do you drink coffee every day at the cafe?
3	Альтернативный вопрос	Do you drink coffee or tea every day?
4	Разделительный вопрос	You drink coffee every day, don’t you?
5	Вопрос к подлежащему	Who drinks coffee every day?
6	Специальный вопрос (к обстоятельству места)	Where do you drink every day?
7	Специальный вопрос (к обстоятельству времени)	When do you drink coffee at the cafe?

Вопросительные слова

What? – Что? Какой?
Who? – Кто?
Where? – Где?
Where ... from? – Откуда?
How? – Как?
How much / many? – Сколько?
Why? – Почему?
When? – Когда?

Относительные местоимения

Относительные местоимения / Relative pronouns – местоимения, которые используются для введения дополнительной, уточняющей информации. Относительные местоимения связывают придаточное предложение с главным.

Относительное местоимение **who** обозначает людей:
*The girl **who** lives next door is called Nastya.*

Местоимение **whose** отражает принадлежность одушевленным предметам:
*Tina is the girl **whose** father works in a bank.*

Which (который, которого) относится к неодушевленным предметам:
*The dog **which** you gave me ran away.*

Относительное местоимение **that** может относиться и к одушевленным, и к неодушевленным предметам:
*The shoes **that** I bought last week are very expensive.*

МОДАЛЬНЫЕ ГЛАГОЛЫ

Модальный глагол CAN

Can – мочь, уметь, обладать физической или умственной способностью, умением выполнять действие.
Переводится в сочетании с Indefinite Infinitive Active словом «может». Например:
I can swim. – Я могу (умею) плавать.
Сочетание **cannot but + Indefinite Infinitive** переводится «нельзя не», «не могу не». Например:
I cannot but agree with you. Нельзя не согласиться с вами.

Глагол **can** имеет форму прошедшего времени **could** и эквивалент (заменитель) **to be able to –** быть в состоянии, который может употребляться во всех временных формах. Например:
He will be able to come in time. – Он сможет приехать вовремя.

Модальный глагол MAY

May имеет следующие значения:
• **разрешение:** May I ask you a question? Можно (разрешите) задать вам вопрос?
Глагол **may** имеет форму прошедшего простого времени **might** и эквивалент (заменитель) **to be allowed to,** который может употребляться во всех временных формах в этом значении. Например:
He was allowed to stay here. – Ему разрешили остаться.
• **возможность:** The book may be read in a week. Эту книгу можно прочесть в течение одной недели.

• **предположение, сомнение, неуверенность.**
В этом значении чаще выступает слово **might,** которое выражает большую степень неуверенности.
He might get the tickets for the concert. Возможно, он купит билеты на концерт.
• **выражение упрека, замечания.** Употребляется только глагол **might.**
You might do it yourself. Вы могли бы сделать это сами.

Модальный глагол MUST

Must выражает необходимость, моральную обязанность и соответствует в русском языке словам «должен», «нужно», «надо». Например:
I must harry to catch the last train. – Я должен торопиться, чтобы успеть на последний поезд.
Наряду с глаголом **must** и взамен недостающих форм употребляется глагол **to have** с последующим инфинитивом с частицей **to.**
Mustn't означает «нельзя» и употребляется в отрицательном ответе на вопрос «можно?».
В значении вероятности, предположения **must** переводится на русский язык «должно быть», «вероятно». Например:
Having caught her glance, he realized that he must have done a mistake. – По ее взгляду он осознал, что, должно быть, совершил ошибку.

Модальный глагол OUGHT TO

Модальный глагол **Ought to** имеет значение, схожее с модальным глаголом **Should,** но употребляется значительно реже. Употребляется:
• для обозначения совета или морального долга, или обязательства. Например:
Don't forget about Mick's birthday, you ought to buy him a present. – Не забудь о дне рождении Мика, ты должен купить ему подарок.
• закономерного предположения. Например:
You have made such a long way, you ought to be exhausted. – Вы проделали такой большой путь, должно быть, вы измотаны.

Модальный глагол SHOULD

Модальный глагол **Should** имеет общее значение необязательной к исполнению рекомендации.
Чаще всего употребляется в советах и инструкциях. Например:
Kevin should invest his money. – Кевину стоит вкладывать свои деньги.

Модальный глагол WOULD

Модальный глагол **Would** имеет общее значение вежливого побуждения. Используется в вежливых просьбах, вежливом предложении чего-либо. Например: Would you open the window, please? – Не могли бы Вы открыть окно?

Модальный глагол NEED

Модальный глагол **Need** имеет значения «требоваться», «нуждаться». Употребляется только в форме настоящего времени, только в вопросительных или отрицательных предложениях, смысловая нагрузка которых указывает на необходимость совершения какого-либо действия или на его отсутствие.
Например: Need I wait you now? – Мне нужно сейчас тебя подождать? He needn't go there today. – Ему не нужно сегодня туда идти.

Типы условных предложений

Types of conditional sentences

Type	Function	Example
Zero conditional	Express a fact or habit	If you mix blue and yellow paint, it turns green.
First conditional	Express a realistic future consequence	If we work hard, we will be prepared.
Second conditional	Express an unlikely or impossible future consequence	If I were you, I would study more.
Third conditional	Express an unrealistic past consequence	If you had called me, I would have told you about it.

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