

**МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ**  
**МИКОЛАЇВСЬКИЙ НАЦІОНАЛЬНИЙ АГРАРНИЙ УНІВЕРСИТЕТ**

Факультет культури й виховання

Кафедра іноземних мов

# **АНГЛІЙСЬКА МОВА**

## **Методичні рекомендації**

та навчальний матеріал для самостійної роботи здобувачів  
ступеня вищої освіти «бакалавр» напряму підготовки  
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## ПЕРЕДМОВА

Процес оновлення змісту освіти, вихід її на новий якісний рівень потребує створення нових методичних напрацювань для підготовки фахівців різних галузей народного господарства, зокрема це стосується й фахівців аграрного профілю. Володіння англійською мовою професійного спрямування майбутніми аграріями є вимогою часу, а отже необхідним є створення сучасного посібника з англійської мови для студентів цього напрямку підготовки.

Методичні рекомендації та навчальний матеріал з англійської мови призначений для самостійної роботи здобувачів ступеня вищої освіти «бакалавр» напряму підготовки 6.090101 (201) „Агрономія” денної форми навчання.

Методичні рекомендації розроблені згідно з Типовою програмою Міністерства аграрної політики України, Департаменту аграрної освіти та науки, Науково-методичного центру аграрної освіти з «Англійської мови», програмою «English for Specific Purposes» на засадах компетентнісного, комунікативного та системного підходів за принципами доступності, зв'язку теорії з практикою, наступності і перспективності. Професійно спрямовані тексти є важливим джерелом спеціальної лексики з фаху, матеріалом для створення комунікативних ситуацій, анотування й

реферування. Граматичні вправи спрямовані на закріплення знань і контроль вироблення граматичних умінь і навичок.

Методичні рекомендації складаються з 8 розділів, кожен з яких містить фахові тексти, різноманітні вправи та завдання на знання фахової лексики.

Мета поданого навчального матеріалу – розвиток умінь та навичок фахової усної та письмової комунікації, засвоєння нових лексичних одиниць за професійним спрямуванням, повторення та закріплення граматичних конструкцій у поєднанні з фаховою лексикою. Дібрані тексти, вправи та тести допоможуть студентам розширити свій активний і пасивний словниковий запас з англійської мови в професійній сфері, удосконалити навички читання, перекладу та спілкування, що загалом сприятиме досягненню поставленої мети.

На опрацювання кожного розділу відводиться по 2 години аудиторної та 4 години самостійної роботи.

## ***UNIT 1. ORGANIC AGRICULTURE***

### **1. Memorize the words and word-combinations:**

sustainability over the long term – сталий розвиток, стійке ведення сільського господарства на довгий термін

medium-long-term effect – середній і тривалий вплив

a proactive approach – попереджуючий підхід

as opposed to – на відміну, на протизвагу, в порівнянні

to treat problems after they emerge – мати справу з проблемами після того, як вони виникають

to encourage soil fauna and flora – підтримувати, зберігати живі організми в ґрунті

to create more stable system – створювати більш стійку систему  
in turn – у свою чергу

retentive abilities – здатність зберігати, утримувати

to enhance – збільшувати, посилювати, підвищувати

is exposed to erosive forces – піддаватися ерозії

to prohibit – забороняти

a conversion – перетворення, перехід, зміна

a restorative measure – зміцнюють, що відновлюють заходи

to mitigate the greenhouse effect – пом'якшувати парниковий ефект

to sequester carbon – ізолювати, знищувати вуглець

favoring carbon storage – підходяще, зручне накопичення вуглецю

to favor – сприяти, допомагати, підтримувати,

interaction – взаємодія

vital – життєво важливий

derive – витяг, отримання, наявність

pollination – запилення

habitat – природне середовище

hidden cost – скритий внесок

## **2. Read and translate the text:**

### **SUSTAINABILITY OVER THE LONG TERM**

Many changes observed in the environment are long term, occurring slowly over time. Organic agriculture considers the medium-and long-term effect of agricultural interventions on the agro-ecosystem. It aims to produce food while establishing an ecological balance to prevent soil fertility or pest problems. Organic agriculture takes a proactive approach as opposed to treating problems after they emerge.

**Soil.** Soil building practices such as crop rotations, intercropping, symbiotic associations, cover crops, organic fertilizers and minimum tillage are central to organic practices. These encourage soil fauna and flora, improving soil formation and

structure and creating more stable systems. In turn, nutrient and energy cycling is increased and the retentive abilities of the soil for nutrients and water are enhanced, compensating for the non-use of mineral fertilizers. Such management techniques also play an important role in soil erosion control. The length of time that the soil is exposed to erosive forces is decreased, soil biodiversity is increased, and nutrient losses are reduced, helping to maintain and enhance soil productivity.

**Water.** In many agriculture areas, pollution of groundwater courses with synthetic fertilizers and pesticides is a major problem. As the use of these is prohibited in organic agriculture, they are replaced by organic fertilizers (e.g. compost, animal manure, green manure) and through the use of greater biodiversity, enhancing soil structure and water infiltration. Well managed organic systems with better nutrient retentive abilities, greatly reduce the risk of groundwater pollution. In some areas where pollution is a real problem, conversion to organic agriculture is highly encouraged as a restorative measure.

**Air.** Organic agriculture reduces non-renewable energy use by decreasing agrochemical needs. Well managed organic systems with better nutrient retentive abilities, greatly reduce the risk of groundwater pollution. Organic agriculture contributes to mitigating the greenhouse effect and global warming through its ability to sequester carbon in the soil. Many management practices



used by organic agriculture (e.g. minimum tillage, returning crop residues to the soil, the use of cover crops and rotations), increase return of carbon to the soil, raising productivity and favoring carbon storage.

### **3. Change Active Voice into Passive:**

to observe	to contribute
to consider	to mitigate
to improve	
to enhance	

### **4. Change Passive Voice into Active:**

is increased	is prohibited
is exposed	is encouraged
are enhanced	are replaced
are decreased	

### **5. Fill in the blanks:**

1. Organic agriculture considers\_\_\_\_\_term effect of the agricultural interventions on agro-ecosystem.
2. It aims to produce food\_\_\_\_\_ to prevent soil fertility or pest problems.
3. Organic agriculture takes\_\_\_\_\_to treating problems after they emerge.

4. Soil building practices such as \_\_\_\_\_ are central to organic practices.
5. These encourage soil \_\_\_\_\_ and creating more stable system.
6. In turn, nutrient and energy cycling is increased and \_\_\_\_\_ compensating for the non-use of mineral fertilizers.
7. The length of time that the soil is exposed to erosive forces is decreased \_\_\_\_\_ helping to maintain and enhance soil productivity.
8. In many agriculture areas, pollution of groundwater courses \_\_\_\_\_ is a major problem.
9. As the use of these is prohibited in organic agriculture, they are replaced \_\_\_\_\_ enhancing soil structure and water infiltration.
10. Well managed organic systems \_\_\_\_\_, greatly reduce the risk of groundwater pollution.
11. Organic agriculture contributes \_\_\_\_\_ through its ability to sequester carbon in the soil.
12. Many management practices used by organic agriculture \_\_\_\_\_, increase return of carbon to the soil, raising productivity and favoring carbon storage.

**6. Say if these sentences are true (T) or false (F).**

1. Organic agriculture considers a short-term effect of agricultural interventions on the agro-ecosystem.

2. It aims to produce food while establishing an ecological balance to prevent soil fertility or pest problems.
3. Soil building practices such as crop rotations, inter-cropping, symbiotic associations, cover crops, organic fertilizers and minimum tillage are central to organic practices.
4. Well managed organic systems with better nutrient retentive abilities, greatly enhance the risk of groundwater pollution.
5. Many management practices used by organic agriculture (e.g. minimum tillage, returning crop residues to the soil, the use of cover crops and rotations), increase return of carbon to the soil, raising productivity and favoring carbon storage.

**7. Make different questions on the text:**

1. Are many changes observed in the environment occurring slowly overtime?
2. Does it aim to produce food while establishing an ecological balance or disturbance to prevent soil fertility?
3. Organic agriculture takes a proactive approach as opposed to treating problems after they emerge, doesn't it?, etc.

**8. Answer the following questions.**

**9. Give the summary of the text in 10 and then in 5 sentences.**

**10. Discuss environmental benefits of organic agriculture, including soil, water, air in small groups.**

**11. Read the information on ecological services and name the most effective.**

**Ecological services.** The impact of organic agriculture on natural resources favors interactions within the agro-ecosystem that are vital for both agricultural production and nature conservation. Ecological services derived include soil forming and conditioning, soil stabilization, waste recycling, carbon sequestration, nutrients cycling, pollination and habitats. By opting for organic products, the consumer through his/her purchasing power promotes a less polluting agricultural system. Benefits of organic agriculture to the environment in terms of natural resource are increased.

**12. In the text find synonyms to the following words and phrases. Use them in the sentences of your own.**

- \* influence
- \* nature protection
- \* actual
- \* choosing
- \* buying abilities
- \* advantage

\* enhance

**13. Think and answer the following questions.**

1. What is the main idea of the article?
2. What do ecological services in organic agriculture include?
3. What benefits to the environment are increased?

**14. Compare ecological services of the USA with those of Ukraine.**

**UNIT 2. BIODIVERSITY**

**1. Memorize the words and word-combinations:**

custodian – сторож, охоронець

to prefer – віддавати перевагу

resistance – опірність

resilience – пружність, здатність швидко відновлюватися

frequent use – рідке використання

pollinators – обпилювачі

pest predators – хижі комахи

to favor – сприяти

hidden – скритий

**2. Read and translate the text:**

## **BIODIVERSITY.**

Farmers are both custodians and users of biodiversity at all levels. At the gene level, traditional and adapted seeds and breeds are preferred for their greater resistance to diseases and their resilience to climatic stress. At the species level, diverse combinations of plants and animals optimize nutrient and energy cycling for agricultural production. At the ecosystem level, the maintenance of natural areas within and around organic fields and absence of chemical inputs create suitable habitats for wildlife. The frequent use of under-utilized species (often as rotation crops to build soil fertility) reduces erosion of agro-biodiversity, creating a healthier gene pool - the basis for future adaptation. The provision of structures providing food and shelter, and the lack of pesticide use, attract new or re-colonizing species to the organic area (both permanent and migratory), including wild flora and fauna (e.g. birds) and organisms beneficial to the organic system such as pollinators and pest predators. The impact of organic agriculture on natural resources favors interactions within the agro-ecosystem, which are vital for both agricultural production and nature conservation. Ecological services derived include soil forming and conditioning, soil stabilization, waste recycling, carbon sequestration, nutrients cycling, predation, pollination and habitats. By opting for organic products, the consumer through his/her purchasing power promotes a less polluting agricultural

system. The hidden costs of agriculture to the environment in terms of natural resource degradation are reduced.

**3. Fill in the blanks:**

1. Farmers are both \_\_\_\_\_ of biodiversity at all levels.
2. At the gene level, \_\_\_\_\_ are preferred for their greater resistance to diseases and their resilience to climatic stress.
3. At the species level, \_\_\_\_\_ optimize nutrient and energy cycling for agricultural production.
4. At the ecosystem level, \_\_\_\_\_ and absences of chemical inputs create suitable habitats for wildlife.
5. The frequent use of under-utilized species \_\_\_\_\_ creating a healthier gene pool – the basis for future adaptation.
6. \_\_\_\_\_ attract new or re-colonizing species to the organic area, including wild flora and fauna and organisms beneficial to the organic system such as pollinators and pest predators.
7. The impact of organic agriculture on natural resources favors \_\_\_\_\_ and nature conservation.
8. Ecological services derived include \_\_\_\_\_.
9. By opting for organic products, the consumer \_\_\_\_\_ promotes a less polluting agricultural system.

**4. Find the false sentences and correct them using the information from the text.**

1. Farmers are both custodians and users of biodiversity at all levels.
2. At the gene level, traditional and adapted seeds and breeds are preferred for their smaller resistance to diseases and their resilience to climatic stress.
3. At the species level, diverse combinations of plants and animals minimize nutrient and energy cycling for agricultural production.
4. At the ecosystem level, the maintenance of natural areas within and around organic fields and absence of chemical inputs create suitable habitats for wildlife.
5. The frequent use of under-utilized species (often as rotation crops to build soil fertility) enhances erosion of agro-biodiversity, creating a healthier gene pool - the basis for future adaptation.
6. The impact of organic agriculture on natural resources favors interactions within the agro-ecosystem, which are vital for both agricultural production and nature conservation.
7. The hidden costs of agriculture to the environment in terms of natural resource degradation are enhanced.

**5. Give the Ukrainian equivalents for the following words and phrases.**

Custodians and users of biodiversity; preferred for their greater resistance; resilience to climatic stress; diverse combinations of plants and animals; maintenance of natural areas; chemical inputs;



suitable habitats for wildlife; frequent use of under-utilized species; healthier gene pool; recolonizing species; beneficial to the organic system; to favor; carbon sequestration; nutrients cycling; predation; pollination; purchasing power; in terms of natural resource degradation; hidden costs of agriculture to the environment.

**6. Answer the following questions.**

1. Who are farmers for the environment?
2. What seeds and breeds are preferred at the gene level and why?
3. What combinations of plants and animals optimize nutrient and energy cycling for agricultural production at the species level?
4. Does the maintenance of natural areas within and around organic fields and absence of chemical inputs create suitable habitats for wildlife or not at the ecosystem level?
5. The frequent use of under-utilized species (often as rotation crops to build soil fertility) reduces erosion of agro-biodiversity, creating a healthier gene pool – the basis for future adaptation, does it?
6. What species attract to the organic area and why?
7. What favors interactions within the agro-ecosystem?
8. What do ecological services include?
9. How do consumers promote a less polluting agricultural system?

10. Are the hidden costs of agriculture to the environment in terms of natural resource degradation reduced or enhanced?

**7. Fill in the table and speak on influences of organic and conventional farms on nature conservation, their advantages and disadvantages and ecological services:**

	Advantages	Disadvantages	Ecological services
Organic farms			
Conventional farms			

**8. Memorize the words and read the text and tell if organic farmers can produce enough food for everybody.**

ability – можливість

to access – отримувати

having to rely – змушені покладатися

external input – вклад ззовні

to substitute – змінити

land tenure – землекористування

constraint – примус, напруженість

simultaneously – одночасно

to outperform – робити краще ніж інший

circumstance – умови

**Food security.** Food security is not only a question of the ability to produce food, but also of the ability to access food. Global food production is more than enough to feed the global population; the problem is getting it to the people who need it. In marginalized areas, organic farmers can increase food production by managing local resources without having to rely on external inputs or food distribution systems over which they have little control and/or access. It is to be noted that although organic management of natural resources can substitute external agricultural inputs, land tenure remains a main constraint to the labor investments needed for organic agriculture. Organic farms grow a variety of crops and livestock in order to optimize competition for nutrients and space between species: this results in less chance of low production or yield failure in all of these simultaneously. This can have an important impact on local food security and resilience. In rain-fed systems, organic agriculture has demonstrated to outperform conventional agriculture a systems under environmental stress conditions. Under the right circumstances, the market returns from organic agriculture can contribute to local food security by increasing family in come.

**9. Say if these statements true (T) or false (F) according to the article. Correct the false ones.**

1. Food security is only a question of the ability to produce food.
2. Global food production is a problem to feed the global population.
3. In marginalized areas, organic farmers can increase food production only by managing local resources.
4. Land tenure remains a main advantage to the labor investments needed for organic agriculture.
5. Organic farms grow a variety of crops and livestock in order to minimize competition for nutrients and space between species.
6. Organic agriculture has demonstrated to outperform conventional agricultural systems under environmental stress conditions.
7. The market returns from organic agriculture can contribute to local food security by decreasing family income.

**10. Complete the following sentences using the information from the text.**

1. Food security is not only a question of the ability to produce food, but...
2. Global food production is more than enough to feed the global population; the problem is ...
3. In marginalized areas, organic farmers can increase food production by ...

4. It is to be noted that although organic management of natural resources can substitute external agricultural inputs, land tenure remains ...
5. Organic farms grow a variety of crops and livestock in order to...
6. This can have an important impact on ...
7. In rain-fed systems, organic agriculture has demonstrated ...
8. Under the right circumstances, the market returns from organic agriculture can contribute ...

**11. Give English equivalents for the following words and phrases.**

Забезпечення продуктами харчування; можливість отримувати їжу; виробництво продуктів харчування в усьому світі; на віддалених територіях; управління, розпорядження місцевими ресурсами; система розподілу продуктів харчування; основна перепона; різні сільськогосподарські культури і сільськогосподарські тварини; збільшити конкуренцію; важливий вплив; у відповідних умовах; вносити вклад; збільшувати дохід.

**12. Answer the following questions.**

1. Is food security only a question of the ability to produce food or not?
2. What are problems of global food production?

3. How can organic farmers increase food production in marginalized areas?
4. What remains a main constraint to the labor investments needed for organic agriculture?
5. What do organic farms grow in order to optimize competition for nutrients and space between species?
6. Can it have an important impact on local food security and resilience?
7. What has organic agriculture demonstrated in rain-fed systems?
8. What can the market returns from organic agriculture contribute under the right circumstances?

**13. Interview each other on food security and discuss it using the following plan:**

1. How to gain the ability to produce food to the people who need it.
2. The ways to access food.
3. Food production in marginalized areas.
4. Organic management of natural resources.
5. Market returns from organic agriculture.

## ***UNIT 3. THE ORGANIC CONNECTION***

### **1. Memorize the words and word-combinations:**

reverse the trend of negative threats – змінювати, анулювати  
негативну тенденцію

to derive livelihoods – отримувати засоби до життя

production-conservation challenge – завдання виробляти і  
зберігати

stewardship efforts – зусилля з управління

economic viability – економічна життєздатність

restore marginal and abandoned rural areas – відновлювати не  
рентабельно і необжиту сільську місцевість

to valorize – встановлювати державні ціни

to retain forest structures – зберігати ліси

under tree canopy – під навісом дерев

to harbor – дати притулок, притулок

land carrying-capacity – здатність відновлювати землю

temporal wetlands – тимчасове зволоження земель

### **2. Read and translate the text:**

## **THE ORGANIC CONNECTION**

Choices in agricultural management can enhance or threaten domesticated and wild biodiversity. Encouraging organic

agriculture within and around protected areas can reverse the trend of negative threats to biodiversity, while allowing local residents to derive livelihoods from their lands. Organic agriculture depends on ecosystem services delivered through proper management of biodiversity. It simultaneously delivers ecosystem services to wider environments, including non-marketable public goods such as environmental health and landscape connectivity. It can meet the production-conservation challenge head-on by:

- Promoting market-based incentives that compensate farmers for their environmental stewardship efforts, thus maintaining their economic viability.

- Restoring marginal and abandoned rural areas by valorizing underutilized plants and animals (such as in pastures) appreciated by organic consumers.

- Replacing degrading agricultural practices with approaches that prevent wildlife poisoning and detoxify environments.

- Reducing protected areas fragmentation by enhancing the habitat value of agricultural landscapes.

- Reversing deforestation by growing crops (coffee, cacao) under tree canopy, thus retaining forest structures that harbor endemic and migrant species.

- Enhancing land carrying-capacity for both wildlife and agricultural production by creating temporal wetlands (rice)



suitable for nesting and feeding of wetland-dependent or migrant species.

**3. Find the false sentences and correct them using the information from the text.**

1. Encouraging organic agriculture within and around protected areas can reverse the trend of positive approach to biodiversity.
2. Organic agriculture depends on ecosystem services delivered through proper management of biodiversity.
3. Promoting market-based incentives do not compensate farmers for their environmental stewardship efforts.
4. Marginal and abandoned rural areas can not be restored.
5. Degrading agricultural practices can be replaced.
6. Reducing protected areas fragmentation is enhanced.
7. Deforestation is reversed by growing crops.
8. Land carrying-capacity for both wildlife and agricultural production are not enhanced.

**4. Complete the following sentences using the information from the text.**

1. Choices in agricultural management can enhance or threaten\_\_\_\_\_
  - a) domesticated biodiversity;
  - b) wild biodiversity;

- c) both diversity.
2. Encouraging organic agriculture within and around protected areas can reverse\_\_\_\_\_
- a) the trend of positive threats to biodiversity;
- b) the trend of negative threats to biodiversity.
3. Organic agriculture depends on ecosystem services delivered through\_\_\_\_\_
- a) proper management of biodiversity;
- b) poor management of biodiversity.
4. It simultaneously delivers ecosystem services to wider environments, including\_\_\_\_\_
- a) marketable public goods;
- b) environmental health and landscape connectivity.
5. It can meet the production-conservation challenge head-on by\_\_\_\_\_
- a) replacing degrading agricultural practices;
- b) promoting market-based incentives;
- c) ruining marginal and abandoned rural areas.

**5. Find the Ukrainian equivalents to the following words and phrases.**

Organic connection; choices in agricultural management; encouraging organic agriculture; proper management of biodiversity; to deliver; environmental health; landscape

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connectivity; promoting market-based incentives; to maintain; under-utilized plants; to appreciate; to poison and detoxify environments; habitat value of agricultural landscapes; to reverse deforestation; to create temporal wetlands; wetland-dependent or migrant species.

**6. Answer the following questions:**

1. Can choices in agricultural management enhance or threaten domesticated and wild biodiversity? 2. Encouraging organic agriculture within and around protected areas can't reverse the trend of negative threats to biodiversity, can it?
2. What does organic agriculture depends on?
3. How does it simultaneously deliver ecosystem services to wider environments?
4. How is the economic viability maintained?
5. Can marginal and abandoned rural areas be restored?
6. What approaches can degrading agricultural practices be replaced with?
7. How can protected areas fragmentation be reduced by?
8. Can deforestation be reversed?
9. How can land carrying-capacity be enhanced?

**7. Speak on organic agriculture in protected areas in small groups on following situations:**

- 1) Safer alternatives to some natural products are needed.

- 2) Environmental, social and safety requirements in the food supply chain are growing worldwide.
- 3) Traditional and pioneers farmers, pastoralists and forest dwellers hold agro-ecological knowledge. 4) Collaboration between environmental and agricultural constituencies is emerging.
- 4) The challenge for conservationists and agriculturalists.

**8. Memorize the words and read the text and say how agriculture must provide food to growing world population**

poverty alleviation – зниження рівня бідності

forest dwellers – мешканці лісної місцевості

indigenous people – місцеве населення

**INTER-DEPENDENCE**

Agriculture must provide food to a growing world population, including today's 840 million hungry people. Protected areas can contribute to food security and poverty alleviation. Poor land use, careless agricultural management and wrong policy incentives damage natural habitats and accelerate the loss of plants, animals and ecological processes that serve as the foundation of agricultural productivity. Farmers, forest dwellers, including a large proportion of indigenous people, are the main inhabitants and users of protected areas, as well as of lands connecting these areas. They manage genes, species and ecosystems by their decisions on what to produce and how to

produce food. Protected areas today occupy 11 percent of Earth cover, in a landscape dominated by the agriculture sector; in fact, more than 40 percent of the land's surface is occupied by croplands and pastures. Despite this high interdependence between nature conservation and agriculture, community approaches to protected areas management touch on the periphery of agricultural activities.

**9. Complete the following statements:**

1. Agriculture must provide food to a growing world population, including...
2. Protected areas can contribute to ...
3. Poor land use, careless agricultural management and wrong policy incentives damage natural habitats and accelerate ...
4. .... are the main inhabitants and users of protected areas.
5. Protected areas today occupy ....
6. Despite this high interdependence between nature conservation and agriculture, community approaches to protected are as management touch on.....

**10. Write for true (T) and for false (F) next to the sentences below.**

1. Agriculture must provide food to a growing world population, including today's 840 million hungry people.

2. Protected areas can not contribute to food security and poverty alleviation
3. Poor land use, careless agricultural management and wrong policy incentives damage natural habitats and accelerate the loss of plants, animals and ecological processes that serve as the foundation of agricultural productivity.
4. Tourists are the main inhabitants and users of protected areas, as well as of lands connecting these areas.
5. Tourists manage genes, species and ecosystems by their decisions on what to produce and how to produce food.
6. Protected areas today occupy 11 percent of Earth cover, in a landscape dominated by the agriculture sector; in fact, more than 40 percent of the land's surface is occupied by croplands and pastures.
7. Despite this high interdependence between nature conservation and agriculture, community neglects to protect areas management touch on the periphery of agricultural activities.

**11. Make up a written story or an oral report on how protected areas can contribute to food security and poverty alleviation. Try to make it sound lively, interesting for the audience and questions provoking. Use the new words you learned from this unit and from the previous units.**

## ***UNIT 4. ENVIRONMENTALLY-FRIENDLY PRODUCTS***

### **1. Memorize the words and word-combinations:**

to exceed – перевищувати

enhancement – збільшення, посилення, поліпшення

stewardship – управління

requirements – вимоги

to indicate – показувати, вказувати, означати, свідчити

to reward – нагороджувати, винагороджувати

restoration ecology – відновлення екології

infancy – рання стадія розвитку

### **2. Read and translate the text:**

Market demand exceeds supply and the sector is governed by detailed standards and regulations. Safer alternatives to some natural products are needed. Develop organic standards for biodiversity and realistic on-farm habitat enhancement. Environmental stewardship is compensated by premium prices for environmentally-friendly products. Organic agriculture has been steadily growing and continues to grow. Environmental, social and safety requirements in the food supply chain are growing worldwide. Organic labels indicate the application of minimal standards and other quality labels allow synthetic input use. Promote labels that recognize and reward different levels of

stewardship. Traditional and pioneers farmers, pastoralists and forest dwellers hold agro-ecological knowledge. Empirical knowledge of interactions in the food chain improves farm productivity and maintains domesticated and wild diversity. The application of restoration ecology and landscape ecology is in its infancy. Develop the agro-ecological research agenda based on intensive local science (formal and informal).

**3. Find the words in the text to complete the following statements.**

1. Market demand exceeds supply and the sector is governed by \_\_\_\_\_ and regulations. 2. Develop organic standards for biodiversity and \_\_\_\_\_ enhancement.
2. Environmental stewardship is compensated by \_\_\_\_\_ for environmentally-friendly products.
3. \_\_\_\_\_ requirements in the food supply chain are growing worldwide.
4. Organic labels indicate the application of \_\_\_\_\_ standards and other quality labels allow synthetic input use.
5. Traditional and pioneers farmers, pastoralists and forest dwellers hold \_\_\_\_\_ knowledge.
6. Empirical knowledge of interactions in the food chain \_\_\_\_\_ farm productivity and maintains domesticated and wild diversity.



**4. Read the text and find sentences which are true to the text.**

**Correct the false ones.**

1. Market demand exceeds supply and the sector is governed by detailed standards and regulations.
2. Safer alternatives to some natural products are not needed.
3. Develop non-organic minimum standards for biodiversity and on farm habitat enhancement.
4. Environmental stewardship is compensated by high prices for environmentally-friendly products.
5. Organic agriculture has been steadily growing and continues to grow.
6. Environmental, social and safety requirements in the food supply chain are disappearing worldwide.
7. Promote labels that recognize and reward different levels of stewardship.
8. The application of restoration ecology and landscape ecology is developing very fast.
9. Develop the agro-ecological research agenda based on intensive local science.

**5. Find the synonyms in the text to the words and phrases below.**

to guide –

to be necessary –

improvement –

environmentally safe –

use –

to acknowledge –

to keep –

to enhance –

**6. Answer the following questions.**

1. Does market demand exceed supply?
2. What is the sector is governed by?
3. Are needed safer alternatives to some natural products or not?
4. What should be developed for biodiversity and realistic on-farm habitat enhancement?
5. Environmental stewardship is compensated by premium prices for environmentally – friendly products, isn't it?
6. What requirements in the food supply chain are growing worldwide?
7. What standards do organic labels indicate?
8. What improves farm productivity and maintains domesticated and wild diversity?

**7. Split into pairs and make up a dialogue between a professional organic expert and a young farmer who is eager to succeed in organic farming and production of environmentally-friendly products.**

**8. Memorize the words and read the text and say what should be done for building selfgenerating food systems and for connecting agro-ecosystems and natural areas.**

Collaboration – співпраця

constituency – виборці округу

to align – вибудовувати, вирівнювати, приєднуватися

to encourage – закликати, надихати

stakeholders – акціонери

negotiations – переговори

to devise – розробляти, придумувати

allocation – розподіл, розміщення

to hinder – перешкоджати, заважати

feasible – можливі, здійсненні, здійснимі

expansion – поширення, розширення

option – вибір, право вибору

Collaboration between environmental and agricultural constituencies is emerging. Non-productive farm-habitat enhancement is costly to many farmers. A new area for investment of conservation funds? Availability and access to land is a major constraint. Align agricultural and environmental policies and consider measures that encourage farmers for providing public goods (ecosystem services). The ecosystem approach and agro environmental measures are increasingly part of policy agenda. Establish a conducive political process based

on negotiation of different needs among stakeholders. Policies are devised by line ministries and integrated planning is hindered by sectoral resource allocations.

The challenge for conservationists and agriculturalists is to identify collaborative routes which are economically and socio-politically feasible. The expansion of organic agriculture and its integration into landscape planning represents a cost-efficient policy option for building self-generating food systems and for connecting agro-ecosystems and natural areas.

**9. Give the Ukrainian equivalents to the following words and phrases.**

Environmental and agricultural constituencies; farm-habitat enhancement; conservation funds; availability and access to land; agricultural and environmental policies; providing public goods; agro environmental measures; policy agenda; conducive political process; sectoral resource allocations; collaborative routes; cost-efficient policy

**10. Answer the following questions.**

1. Collaboration between environmental and agricultural constituencies is emerging, isn't it?

2. Is non-productive farm-habitat enhancement costly to many farmers? 3. What is a major constraint?
3. What can encourage farmers for providing public goods?
4. What are increasingly parts of policy agenda?
5. A conducive political process based on negotiation of different needs among stakeholders is to be established, isn't it?
6. What is the challenge for conservationists and agriculturalists?
7. What does the expansion of organic agriculture and its integration into landscape planning represent?

**11. Discuss in small groups what measures should be done for encouraging farmers for providing public goods and for connecting agro-ecosystems and natural areas.**

## **UNIT 5. ORGANIC CROP PRODUCTION SYSTEM**

### **1. Memorize the words and word-combinations:**

essential – необхідний, суттєвий

to maintain – підтримувати, утримувати, зберігати

sustainability – підтримка, підкріплення, стійкість, витривалість

requirement – вимога, необхідність

caution – обережність, передбачливість, застереження

to supplement – поповнювати, додавати  
tillage – обробка ґрунту, оброблена земля

## 2. Read and translate the text:

### **FERTILE SOIL**

**Fertile soil** is essential to successful organic crop productions systems. Synthetic fertilizer use is not allowed, therefore organic farmers must use various other means to replace nutrients and improve soil fertility. Organic soil management techniques build organic matter and humus, protect the soil from erosion, reduce nutrient loss, and maintain soil in a condition that supports diverse life-forms. Crop rotations are an essential component in fertility management, pest control and long-term sustainability. Soil testing is an important practice in managing an organic farm and is also a requirement of many organizations providing organic certification. Proper soil sampling and testing should be done every two or three years to provide the producer with a record of soil nutrient status. A soil test will include information on texture, pH, organic matter content, cation exchange capacity, salinity and electrical conductivity.

**Nutrient Requirements.** There are 17 essential nutrients required for plant growth. The essential macronutrients are nitrogen (N), phosphorus (P), potassium (K) and sulphur (S). Calcium (Ca) and magnesium (Mg) are considered secondary

nutrients. Micronutrients include iron (Fe), manganese (Mn), boron (B), molybdenum (Mo), copper (Cu), zinc (Zn), nickel (Ni) and chlorine (Cl). The remaining nutrients, carbon, hydrogen (H), and oxygen (O) compose more than 90% of the dry matter weight of the plant and are supplied from air and water. The soil often provides the majority of the nutrients, however, the remainder must be supplemented.

**Nutrient Loss.** Conserving nutrients is an important part of any farm operation. Nutrient loss may harm the environment, in addition to the loss of money, time and resources. For example, nutrients leaching into ground or surface water may cause excessive algae growth and oxygen depletion, harming natural flora and fauna. Nutrient run-off increases when certain factors exist: fine-textured (clay) soils with low infiltration rates, high rainfall and excessive tillage and crop residue incorporation. Nutrient loss can be reduced with effective use of catch crops, crop rotations and good manure management techniques.

**3. Find the Ukrainian equivalents of the following words and phrases:**

Fertile soil, nutrients, organic matter, nutrient loss, diverse life-forms, crop rotation, soil sampling, soil nutrient status, cation exchange capacity, salinity, electrical conductivity, nitrogen (N), phosphorus (P), potassium (K) and sulphur (S), calcium (Ca),

magnesium(Mg), (Fe), manganese (Mn), boron (B), molybdenum (Mo), copper (Cu), zinc (Zn), nickel (Ni), chlorine (Cl), carbon, hydrogen (H), and oxygen (O), conserving nutrients, to harm the environment, nutrients leaching, excessive algae growth, oxygen depletion, nutrient run-off, fine-textured (clay) soils, crop residue incorporation, catch crops, manure management techniques.

**4. Say if these sentences true or false. Correct the false sentences.**

1. Organic soil management help maintain soil in a good condition.
2. Organic soil management techniques build organic matter and humus, protect the soil from erosion, reduce nutrient loss.
3. Crop rotations are not essential component for soil fertility.
4. Proper soil sampling and testing should be done every year to provide the producer with a record of soil nutrient status.
5. Soil testing includes only information on texture.
6. There are a few essential nutrients required for plant growth.
7. Conserving nutrients is an important part of any farm operation.
8. Nutrient loss may harm the environment and can't be reduced.

**5. Complete the following statements:**

1. Organic soil management technique build ... .
2. Crop rotations are an essential component in ... .
3. Soil testing is an important practice in....



4. Proper soil sampling and testing should be done ... .
5. A soil test will include information on ... .
6. There are 17 essential macronutrients required for plant growth ...
7. The soil often provides the majority of....
8. Conserving nutrients is an important part of ... .
9. Nutrient loss may harm ... .
10. Nutrient loss can be reduced with ... .

**6. Answer the questions:**

1. What kind of soils essential to successful organic crop productions systems?
2. Synthetic fertilizer use is not allowed, is it?
3. What are organic soil management techniques used for?
4. Crop rotations are an essential component in fertility management, pest control and long-term sustainability, aren't they?
5. Is soil testing an important practice in managing an organic farm or not?
6. What will a soil test include?
7. What are 17 essential nutrients required for plant growth?
8. Is conserving nutrients an important part of any farm operation or not?
9. What may nutrient loss harm?
10. How can nutrient loss be reduced?

**7. Split into pairs and discuss what is essential to successful organic crop production system.**

**UNIT 6. BASIC PRINCIPLES OF CROP PRODUCTION**

**1. Memorize the words and word-combinations:**

nourishing substances, decaying organic matter, pests, insect

**2. Read and translate the text:**

All crops require nutrients (nourishing substances) and water to grow. Soil supplies most of the nutrients. It also stores the water that the crops need.

Crops differ, however, in the amount of nutrients and water they require for healthy growth. A farmer must therefore make sure that the soil and water resources meet the needs of each crop.

A farmer must also plan measures to control 165 pests, which could damage or ruin a crop. Most farmers plan their methods of soil and water management and of pest control well in advance of the growing season.

**Soil management.** Soil consists of mineral particles mixed with decaying organic (plant and animal) matter. Chemical reactions involving these substances produce most of the nutrients

that crops need. To be fertile, therefore, soil must consist of the right mixture of minerals, organic matter and helpful microbes. It must also have the proper amounts of air and water.

After deciding which crops to grow, farmers analyze their soil to learn if any nutrients are insufficient or lacking. To get an accurate analysis, most farmers send samples of the soil to a soil-testing laboratory. The test results help farmers plan a scientific fertilizer program for their crops.

The richest soil lies at and just below the surface. If this topsoil is not protected, it may be blown away by strong winds or washed away by heavy rains – a process called erosion. Effective soil management, therefore, also includes methods of soil conservation.

**Water management.** Crops cannot grow without water. In most cases, farmers rely entirely on rainfall for the necessary moisture. In extremely dry areas, however, farmers must irrigate their crops. Many farms often have too much water rather than too little. The problem is great on low-lying land and on land crossed by streams or rivers. Fields that tend to collect water must have a drainage system.

**Pest control.** Agronomists use the word “pests” in referring to weeds, plant diseases and insects that threaten crops. Most farmers control pests with chemicals called pesticides. Scientists have developed hundreds of pesticides for use on farms.

All pesticides must be used with extreme care. If they are used improperly, they may pollute the environment or the food supply and so endanger people's health.

Farmers also use other methods of pest control in addition to pesticides. For example, turning the soil with a plough or mechanical cultivator kills most weeds. However, special pesticides called herbicides control weeds more thoroughly than soil turning does. Some herbicides remain active in the soil for some time and so kill weed seedlings as they develop. Plant scientists have developed varieties of corn, wheat and other crops that are more resistant to diseases and insects than earlier varieties were.

### **3. Translate into English.**

Надавати поживні речовини; відповідати потребам; пошкодити або зруйнувати; суміш мінералів і органічних речовин; корисні мікроби; зразки ґрунту; верхній шар ґрунту; необхідне зволоження; низина; мають тенденцію до накопичення води; розроблені для боротьби з певними видами; з граничною обережністю; при неправильному використанні; на додаток до пестицидів; насіння бур'янів.

### **4. Define whether the following statements are true or false.**

#### **Correct the false ones.**

1. Plants can't grow without nutrients and water.
2. The amount of nutrients and water for healthy growth is different for every crop.
3. Chemical reactions involving mineral particles produce the nutrients that crops need.
4. The most fertile soil lies deep below the surface.
5. Farmers cannot always rely entirely on rainfall for the necessary moisture.
6. Even small amounts of pesticides pollute the environment and endanger people's health.
7. Some herbicides have a long lasting effect.
8. Pesticides using is not the most effective method of pest control.

**5. Insert prepositions where necessary.**

1. Crops differ ... the amount ... nutrients they require ... healthy growth.
2. Farmers plan their methods ... soil management well ... advance ... the growing season.
3. Soil consists ... mineral particles mixed ... organic matter.
4. The richest soil lies ... and just ... the surface.
5. Farmers often rely ... rainfall ... the necessary moisture.
6. The word "pests" is used ... referring ... weeds, plant diseases, and harmful insects.

7. Farmers also use other methods of pest control ... addition ... pesticides.
8. Scientists have developed varieties ... crops that are more resistant ... diseases and insects.

**6. Find the synonyms to the following words in the text.**

To need, to destroy, beforehand, substance, to contain, right, to include, concerning, ploughing.

**7. Answer the questions to the text.**

1. How and when should farmers plan their methods of soil and water management and of pest control?
2. How are the nutrients produced by the soil?
3. What does soil fertility mean?
4. What do farmers need to do before sowing their crops?
5. Why must the topsoil be protected?
6. When are irrigation and drainage systems used?
7. What does the word “pests” mean?
8. Why must pesticides be used with extreme care?

## ***UNIT 7. BASIC STAGES OF CROP PRODUCTION***

### ***1. Memorize the words and word-combinations:***

seedbed – грядка

to sprout – проростати

to take roots – пустити коріння

tillage – обробка ґрунту, оранка

to loosen – розпушувати

stalk – стебло

cover crop – покривна, запашна культура

harrow – борона

(seed)drill – сіялка

furrow – борозна

to uproot – виривати із корінням

to thresh – молотити

residues – залишки

ear – колос, початок

to mow – косити

bale – сніп

hay baler – сінний прес

silage – силос

airtight – герметичний

silo – силосна яма або башта

## 2. Read and translate the text:

### **BASIC STAGES OF CROP PRODUCTION**

Crop farming involves at least five separate operations: (1) preparing the soil, (2) planting, (3) cultivating, (4) harvesting and (5) processing and storage. Modern farm equipment can perform each of these operations easily and quickly.

**Preparing the Soil.** The main purpose of soil preparation is to make a seedbed – that is, an area of soil in which seeds can be planted and in which they will sprout, take roots and grow. Most farmers make the seedbed by a process called tillage. Tillage involves digging the soil and mixing it. Tillage loosens the soil, kills weeds and improves the circulation of the water and air in the soil. The chief tillage devices are ploughs.

At ploughing time, most farm fields are scattered with dead stalks, leaves, and other plant wastes from the preceding crop. Other fields may have a cover crop, such as alfalfa or grass. Plant wastes and cover crops help protect soil from erosion. They also enrich the soil with nutrients if they are ploughed under.

Soil that has been completely turned over in ploughing often remains stuck together in large chunks. Most farmers, therefore, also use a device called a harrow. A harrow has sharp teeth or disks that break the chunks of soil into smaller pieces. Many farmers attach a harrow to the back of a plough. Farmers may add fertilizer to the soil during ploughing and harrowing.



**Planting.** Nearly all the field crops grown on the farms are planted by machines called planters or drills. These machines cut furrows (narrow grooves) in the soil, drop seeds into each furrow and cover the seeds with soil – all in one operation. Some fertilizers and pesticides are applied to the soil during planting. Equipment to distribute the chemicals may be attached to the seed drill.

**Cultivating.** Herbicides applied before or during planting kill many kinds of weeds, but not all. Some weeds may develop with the crops. Farmers control such weeds with cultivators. These devices stir the soil between rows and so uproot and bury any weeds.

**Harvesting.** Farmers harvest their field crops with machines. They use combines to harvest most grains and seed crops, including barley, corn, rice, soybeans and wheat. A combine performs several tasks. First, it cuts the plant stalks. Then, it threshes the cuttings – that is, separates the grain or seeds from the straw and other residues. The combine returns the residues to the ground and collects the grain or seeds in a tank or bin. Some farmers harvest corn with special machines. The machines pick the ears from the stalks but do not remove the grain from the ears. Special machines are also used to harvest other field crops, including peanuts, potatoes and sugar beets. Some machines mow such crops as alfalfa and clover. The mowed crops are left on

the ground, where they dry and become hay. Machines called hay balers gather the hay and bind it into bales.

**Processing and Storage.** Crops raised to supply food for human beings are called food crops. Many food crops tend to spoil quickly, and so farmers ship these crops to the market as soon as possible after harvesting. Food grains, however, can be stored for months on farms that have the proper facilities. Before grain is stored, it must be dried. Most farms that store large amounts of grain have grain-drying equipment and large storage bins. Crops raised to supply feed for livestock are called fodder crops. Hay, silage, soybeans, and such grains as corn and sorghum are the principal feed crops. Corn, wheat and soybeans are used for both food and livestock feed. Hay must be kept dry until it is used, and so it is usually stored in barns. Unlike hay, silage must be kept moist. Most farmers store it in airtight constructions called silos.

### **3. Translate into English.**

Виконувати окремі операції; основна мета підготовки ґрунту; покращувати циркуляцію води і повітря; захищати ґрунт від ерозії; склеєна великими шматками; під час оранки і боронування; кидати насіння в борозни; обладнання для розподілу хімікатів; застосовувати до і під час посадки; обмолочувати обрізки; збирати сіно і пов'язувати в снопи;

мати тенденцію до швидкого псування; повинні зберігатися у вологому стані; обладнання для сушіння зерна.

**4. Match the words with their definitions.**

silage, hay, plough, barn, mow, tillage, ear

1. Machine for cutting furrows in the soil and turning it up;
2. Preparation of land for growing crops;
3. Seed-bearing head of a cereal plant;
4. Green moist fodder;
5. Large farm building for storing grain, etc.;
6. Cut down the grass, etc.;
7. Grass mown and dried for fodder.

**5. Answer the questions to the text.**

1. How many operations does crop farming involve? What are they?
2. What is the effect of tillage?
3. Are plant wastes helpful or harmful for soil?
4. How does a harrow work?
5. What kinds of machines plant the crops?
6. What tasks does a combine perform?
7. What other machines are used for harvesting?
8. What facilities must a farm have to store large amounts of grain?

9. How must hay and silage be stored?

**6. Talk in pairs (in groups) about crop production. Discuss the following:**

- soil and water management
- preparing the soil
- planting, cultivating and harvesting

## ***UNIT 8. THE IMPORTANCE OF PLANT PROTECTION AND PEST CONTROL MEASURES***

### **1. Memorize the words and word-combinations:**

to affect – діяти, впливати, впливати, вражати

appendix – відросток, додаток; pl. appendices

bacteriumи – бактерія; pl. bacteria

blight – скручування (хвороба рослин)

(to) cause – заподіювати, викликати; причина, привід

cell – клітина

cilia – жгутик, вії

to cure – лікувати

(to) damage – пошкоджувати, псувати, завдавати шкоди

(to) decay – гнити, псуватися; розпад, гниття

to detect – відкривати, знаходити  
to derive – відбуватися, отримувати, витягувати  
disease – хвороба  
drainage – дренаж, висушення  
duct – канал, проток  
fission – розщеплення, ділення  
fungus – грибок, пліснява; pl. fungi  
Fungicides фунгициди; fungus attack (ураження грибком).  
germ – зачаток, завязь; мікроб  
In germ (в зародку, в зародковому стані)  
to injure – пошкодити, зіпсувати, поранити  
locomotion – пересування  
measure – захід  
In some measure (часково); to take measures (вжити заходів).  
mildew [ˈmildju:] – пліснява, милдью  
to multiply – збільшувати, розмножувати  
nematode – нематода (нитчастий хробак)  
pathogen – патоген, патогенний (хвороботворний)  
мікроорганізм  
to penetrate – проникати всередину, пронизувати  
penetration – проникнення, проникність  
pest – паразит, шкідник, шкідливе комаха  
pulp – мякоть  
to reduce – знижувати, зменшувати, скорочувати

to resist – чинити опір; протистояти  
resistant (стійкий); to resist a disease (не піддаватися хворобі)  
to retard – затримувати, уповільнювати, відставати  
to secure – гарантувати, забезпечувати; охороняти  
(to) supply (with) – постачати, поставляти; запас, постачання  
tissue – тканина, текстура, будова  
vascular – судинний  
wilting – в'янення  
bordeaux mixture – бордоська рідина  
carbon – вуглець  
carbon dioxide – вуглекислий газ  
chloropicrin – хлорпікрин  
copper – мідь  
disulphide – дисульфід  
lime – вапно; удобрювати вапном, вапнувати  
sulphate – сульфат, сіль сірчаної кислоти  
sulphur – сірка

## **2. Read and translate the text:**

A decisive factor for securing yields is the protection of agricultural crops.

Day by day cultivated plants and supplies in **store rooms** are threatened by thousands of pests and disease pathogens. Every year millions of tons of produce are lost and plants and animals

retarded in growth and development or the products derived from these organisms are affected both quantitatively and qualitatively. Control of these pests and disease pathogens must become the greatest task for all scientists, technical engineers and farmers responsible for the production of agricultural products.

What is meant by a pest or disease pathogen? They are animal or plant organisms which damage either cultivated plants or the products derived there from. They directly or indirectly influence the health of man and domestic and useful animals.

**Bacteria as Disease Pathogens.** Bacteria, unlike higher organisms, consist of a single cell only. Some of the bacteria possess thread-like appendices, so-called cilia, for the purpose of locomotion. These cilia are fixed either at one end of the cell or are arranged over the whole surface of the cell. The size of the cells is microscopic, the pathogen thus being visible with the aid of a microscope only. Bacteria multiply by simple fission.

Bacterial diseases, so-called bacterioses, are usually caused by the penetration of bacteria into injured plant parts.

By excreting certain chemical agents bacteria break up cell unions, loosen them or kill part of the cells.

This is followed by decay of plant parts, the infected plant tissue turning into a soft pulpy mass. Such disease symptoms are termed “**wet rot**”.

Some bacteria penetrate deeper into the tissue reaching the water ducts within the plant and plant vessels and destroy this tissue. This leads to the blocking of the vascular system. The exhibited disease symptoms, known as “**vessel bacteriosis**”, lead to an interruption of the sap flow within the plant, followed by wilting and death. The infection of the plants with bacteria primarily takes place at plant wounds. Insects also act as carriers of bacteria.

store rooms – сховище; “wet rot” – мокра гниль; “vessel bacteriosis” – бактеріальний рак.

### **3. Read the text and find English equivalents to the following.**

Вирішальний фактор; загрожують; як кількісно, так і якісно; найбільше завдання; технологи; відповідальні за; впливають на здоров'я; на відміну від вищих організмів; для пересування; розміщуються по всій поверхні; виділяючи певні хімічні речовини; проникають глибше; зараження рослин.

### **4. Complete the sentences according to the text.**

1. Cultivated plants and supplies in store rooms ...
2. Control of pests and disease pathogens must become ...
3. Pests and disease pathogens directly or indirectly influence ...
4. Some of the bacteria possess ...



5. The size of the cells is ...
6. Bacterial diseases are usually caused by ...
7. By excreting certain chemical agents bacteria ...
8. This is followed by decay of ...
9. Vessel bacteriosis leads to ...

**5. Say if the sentences are true or false. Correct the false ones.**

1. The protection of agricultural crops is a decisive factor for securing yields.
2. Every year thousands of tons of produce are lost.
3. Disease pathogens are animal or plant organisms which damage either cultivated plants or the products derived therefrom.
4. Higher organisms consist of a single cell only.
5. Cilia are thread-like appendices.
6. The pathogen could be seen without a microscope.
7. Bacteria multiply by fission.
8. Bacteria don't penetrate deep into the tissue.
9. Insects also act as carriers of bacteria.

**6. Fill in prepositions where necessary.**

1. A decisive factor ... securing yields is the protection ... agricultural crops.

2. Cultivated plants are threatened ... thousands ... pests and disease pathogens.
3. Millions ... tons ... produce are lost and plants and animals are retarded ... growth and development.
4. They influence ... the health of man.
5. Bacteria consist ... a single cell only.
6. Some ... the bacteria possess thread-like appendices ... the purpose ... locomotion.
7. These cilia are fixed either ... one end ... the cell or are arranged ...  
the whole surface ... the cell.
8. The pathogen is visible ... the aid ... a microscope.
9. Bacteria multiply ... simple fission.

**7. Answer the questions to the text.**

1. Why are millions of tons of produce lost every year?
2. What measures must be taken to protect agricultural plants and supplies?
3. What is meant by a pest or disease pathogen?
4. Bacteria consist of a simple cell only, don't they?
5. What are cilia? How are they fixed?
6. How do bacteria multiply?
7. What are bacterial diseases usually caused by?
8. What is "wet rot"?

9. What leads to the blocking of the vascular system?
10. What does “vessel bacteriosis” lead to?
11. Where does the infection of the plants take place?

**8. Read and translate the text:**

**PLANT DISEASES**

**By disease in plants is meant** some disturbance in the normal life-processes which affects either a particular organ or the entire plant, and which sometimes leads to premature death. Cultivated plants are usually more **liable to disease** than wild plants.

The losses caused by plant diseases are sometimes enormous, and cultivation of certain crops in some countries had been abandoned in the past owing to the ravages of diseases.

**Storage losses** through disease may be severe. Diseases in plants may be **brought about** either through attack by some kind of parasite or by some autonomous, functional derangement.

Abnormal moisture conditions, peculiarities of soil, extremes of temperature, and many other factors cause **functional disturbances**.

Many different groups of organisms attack plants parasitically. Nematode worms of microscopic size often invade plants, and living parasitically therein, cause serious diseases **in roots, tubers, bulbs, stems,** and leaves.

Highly infectious diseases of the virus type are now recognized to be among the most serious that affect plants; they are often transmitted by insects.

The fungi include an immense number of forms parasitic on plants which are often extremely injurious.

The diseases **most to be feared** are those which are epidemic in character, i.e. those which develop almost simultaneously and universally throughout a crop.

by disease in plants is meant – під хворобою рослини мається на увазі; liable to disease – схильні до хвороби; storage losses – втрата при зберіганні; brought about – викликано; functional disturbances – функціональні порушення; root – корінь; tuber – клубень; bulb – луковиця; stem – стовбур, стеблю; most to be feared – найнебезпечніші

### **9. Answer the questions.**

1. What is meant by plant diseases?
2. Why had cultivation of certain crops in some countries been abandoned in the past?
3. What can cause plant diseases?
4. What plant diseases are most to be feared?

### **10. Add more information to the statements.**

1. Plant diseases affect either a particular organ or the entire plant.

2. The losses caused by plant diseases are sometimes enormous.
3. Diseases in plants may be caused either by some kind of parasite or by some functional derangement.
4. Many different groups of organisms attack plants parasitically.
5. Infectious diseases of the virus type are the most serious diseases that affect plants.

**11. Read and translate the text:**

**CONTROL OF PLANT DISEASES**

Plant diseases establish in such a manner that they are often well developed before they can be detected. By the time the disease is evident it is rarely possible to cure it.

The plant pathologists, therefore, **concentrate their efforts on the prevention of disease rather than its cure.**

The use of disease-resistant varieties is one of the most effective means of reducing disease in cultivated plants. It is also very important to destroy the sources of infection. Fire is the most effective way in this case.

**The elimination of host plants** plays an important part in the control of some diseases caused by **rust fungi**.

Efficient drainage of the soil helps in checking diseases which attack the tissues at ground level. Fungicides now play a very important part in the control of plant diseases.

They are often applied in liquid or powder form. Spray mixtures are used for the control of some diseases especially those that attack orchards. Copper sulphate, lime, sulphur and Bordeaux mixture are used to control some of the rots, blights and mildew diseases. Carbon disulphide and chloropicrin are used for treating soil against nematodes. By planting at a particular time some crops can be grown and mature before the disease germs become active.

- concentrate their efforts on the prevention of disease rather than its cure – роблять все для того, щоб уникнути хвороб, замість того, щоб лікувати її
- the elimination of host plants – знищення рослин-господарів
- rust fungi – грибки іржавники

**12. Complete the sentences according to the text.**

1. By the time the disease is evident ...
2. The plant pathologists concentrate their efforts on ...
3. Fire is the most effective way in ...
4. Efficient drainage of the soil helps in ...
5. Fungicides play an important part in ...
6. Spray mixtures are used for ...
7. Copper sulphate, lime, sulphur and Bordeaux mixture are used to ...

**13. Say if the sentences are true or false. Correct the false ones.**

1. Plant diseases establish in such a manner that they are often well developed before they can be detected.
2. It is always possible to cure a disease.
3. The use of disease-resistant varieties isn't an effective means of reducing disease in cultivated plants.
4. It is also very important to destroy the sources of infection.
5. Fungicides are applied only in liquid form.
6. Copper sulphate is used for treating soil against nematodes.
7. Some crops can be grown and mature before the disease germs become active provided (за умови) they are planted at a particular time.

**14. Answer the questions to the text.**

1. What do the plant pathologists concentrate their efforts on?
2. What is the most effective means of reducing disease in cultivated plants?
3. What is the best way of destroying the sources of infection?
4. What plays an important part in the control of some diseases caused by rust fungi?
5. What are spray-mixtures used for?
6. What is used to control some of the rots, blights and mildew diseases?

**15. Make up sentences.**

1. Bacteria, as, insects, of, act, carriers.
2. Oxygen, want, why, living, things, do, all?
3. Influence, man, disease, of, health, domestic, the, animals, and, pathogens.
4. Plants, pests, cultivated, damage.
5. Is, size, microscopic, the, cells, the, of.
6. Fission, bacteria, by, multiply, simple.

**16. Prove that**

- control of pests and disease pathogens must become the greatest task for all scientists, technical engineers and farmers responsible for the production of agricultural products;
- disease pathogens influence the health of man and domestic animals;
- bacteria destroy and kill plants;
- cultivated plants are more liable to disease than wild plants;
- it's better to prevent a disease rather than to cure it.

**17. Write 5-7 questions of all types to use them in the discussion on the topic "Plant Diseases" with your groupmates.**

**18. Speak on the topic "Plant Protection" according to the plan.**



1. The importance of plant protection in agriculture.
2. Disease pathogens.
3. Plant diseases.
4. Control of plant diseases

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