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Рекомендовано до друку: методичною комісією кафедри іноземних мов  
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імені Юрія Федьковича

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**A647 Англійська мова для студентів-агрономів.** Посібник з вивчення англійської мови для біологічних факультетів університетів / Укл. Симака А.М., Мельничук Н.О. – Чернівці, 2023. – **178 с.**

Посібник має на меті створити мовну базу для розвитку навичок читання та перекладу наукової літератури з подальшою передачею змісту. Підібрані автентичні тексти і завдання складені за вимогами дійсної програми курсу «Англійська мова для професійного спілкування». Матеріал для вивчення сприятиме поглибленню знань студентів як з основного фаху, так і вмінь висловлюватися англійською мовою. Для старших курсів університетів спеціальності “Агрономія”, а також для слухачів реферативних груп і всіх тих, хто прагне вдосконалити набуті знання.

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## Анотація

Посібник складається з 20 розділів, що охоплюють основні напрямки спеціальності "Агрономія" навчально-наукового інституту біології, хімії та біоресурсів, а також додатків щодо правильного використання фразових дієслів, залежних прийменників, слів-зв'язків, а також термінологічного словника в кожному розділі. Тексти посібника подаються перефразованими, зі словниковими примітками. Різноманітні лексико-граматичні вправи сприяють засвоєнню фахової лексики та граматичних конструкцій, притаманних науковій літературі.

Посібник призначений для студентів навчально-наукового інституту біології, хімії та біоресурсів, слухачів реферативних груп, відповідає вимогам кредитно-модульної системи організації навчання у вищих навчальних закладах і рекомендується до використання у навчальному процесі.

## Introduction.

This manual is intended for students, teachers, researchers, and practitioners who are interested in the field of agronomy, which is the science and practice of crop production and soil management. Agronomy covers a wide range of topics, from botany and plant physiology to agroecology and agricultural economics. This manual aims to provide an overview of the main aspects of agronomy, as well as practical guidance on how to apply agronomic principles and practices in different contexts.

The manual has these sections:

- Botany: basic plant biology concepts, such as structure, function, growth, development, reproduction, and diversity.
- Soil: origin, formation, classification, and properties of soils, and soil quality and productivity factors.
- Soil cultivation: practices and tools for soil preparation and maintenance, such as tillage, mulching, cover cropping, crop rotation, intercropping, and agroforestry.
- Soil fertility: soil fertility concepts and indicators, such as soil organic matter, nutrient cycling, cation exchange capacity, pH, and salinity.
- Types of fertilizer: different fertilizers for agriculture, such as organic (e.g., animal manures), inorganic (e.g., urea), and biofertilizers (e.g., rhizobia).
- Agrochemicals: use and impact of agrochemicals in agriculture.
- Agrotechnical plant protection method: agrotechnical methods to protect plants from biotic (e.g., insects) and abiotic (e.g., drought) stresses.
- Seeds: importance and characteristics of seeds for crop production.
- Horticulture: cultivation of fruits, vegetables, flowers, and ornamental plants.
- Crop yield basic issues: crop yield factors, such as genetics, environment, management, and biotic and abiotic stresses, and crop yield measurement and estimation methods, such as yield components, yield gap analysis, and crop simulation models.
- Agricultural Quality Standards: agricultural quality standards concepts and criteria, such as food safety, quality attributes, grading systems, certification schemes, and traceability systems, and national and international standards and regulations for different agricultural products and markets.
- Agricultural landscapes: interactions and relationships between

agriculture and landscape ecology. • Chemistry in Agriculture: role and importance of chemistry in agriculture, covering topics such as soil chemistry, plant chemistry, fertilizer chemistry, pesticide chemistry, food chemistry, and biotechnology. • Climate change in agriculture: causes and consequences of climate change for agriculture, covering topics such as greenhouse gases, global warming, climate variability and extremes. • Irrigation & Drainage: principles and practices of irrigation and drainage for crop production, addressing issues such as water sources, water requirements, water delivery systems, irrigation methods, irrigation scheduling, irrigation efficiency, drainage systems, drainage methods, and drainage effects.

• Sustainable agriculture: definition and evaluation of sustainable agriculture, examining points such as sustainability indicators, sustainability assessment methods, sustainability trade-offs and synergies, sustainability transitions and innovations, and sustainability policies and programs for agriculture. • 10 golden rules for tree-planting: guidelines and recommendations for successful tree-planting in agricultural landscapes, exploring subjects such as site selection, species selection, planting material, planting time, planting method, planting density, planting arrangement, planting care, planting monitoring, and planting benefits.

1. *Read the text to practise and improve your reading skills. Pay attention to the words and phrases in bold.*

### Unit 1: **Botany. Introduction.**

The science of botany is concerned with the biology of plants, such as how they grow, function, and interact with their surroundings. It also covers how plants are classified and how they are affected by **disease**. Botany is the foundation for applied sciences like **agriculture, horticulture, and forestry**.

Plants have always been vital for human survival, as they provide food, shelter, clothing, medicine, decoration, tools, and even magic. Nowadays, we also know that green plants are **paramount** for all life on Earth, because they convert solar energy into chemical energy through photosynthesis. This process also produces oxygen, which is **indispensable** for many living beings. The oxygen in the atmosphere comes from billions of years of **photosynthesis** by green plants and **algae**.

As humans learned to cultivate plants, they became less **nomadic** and more settled. This led to the emergence of the first villages and civilizations that depended on reliable food sources from plants.

Botany has several subfields or approaches that are not mutually exclusive. These include **morphology, physiology**, ecology, and **systematics**.

The first botanist is considered to be Theophrastus, a Greek philosopher who was a student of Plato and Aristotle.

The term “botany” comes from the ancient Greek word botan, which means “**pasture**” or “**fodder**”. It encompasses all kinds of plants, from flowering plants to algae, fungi, and **vascular** plants like **ferns**. Trees are sometimes included in botany, but they are often studied separately.

Botany has many practical applications that we may not think of at first. For example, many medicines are derived from plant extracts; aspirin came from decaying tree **bark**

and penicillin came from mould. Botany is also important for understanding and mitigating the effects of climate change on plants, which are essential for **carbon sinks** and other functions. Botany graduates can work in various fields such as science communication, agriculture, weed control, soil science, landscape studies, conservation, and biology education.

2. *Translate the following words and text expressions into Ukrainian and learn them by heart.*

botany	/'botəni/	the scientific study of plants
disease	/di'zi:z/	(an) illness
agriculture	/'ægrɪkəltʃə/	(the science of) the cultivation of land
horticulture	/'hɔ:tɪkəltʃə/	the science and art of gardening
forestry	/'fɔ:r.ɪ.stri/	(the science of) growing and looking after forests
paramount	/'pær.ə.maʊnt/	more important than anything else
indispensable	/,ɪn.dɪ'spen.sə.bəl/	absolutely necessary
photosynthesis	/,fəʊ.təʊ'sɪn.θə.sɪs/	is the way that green plants make their food using sunlight
algae	/'æl.gi:/	very simple, usually small plants that grow in or near water and do not have ordinary leaves or roots
nomadic	/nəʊ'mæd.ɪk/	moving from one place to another rather than living in one place all of the time
morphology	/mɔ: 'fɒl.ə.dʒi/	the scientific study of the structure and form of animals and plants
physiology	/,fɪz.i'ɒl.ə.dʒi/	(the scientific study of) the way in which the bodies of living things work



systematics	/ˌsɪstɪ'mæɪtɪks/	the science of classification
pasture	/'pɑ:s.tʃər/	land with grass growing on it for farm animals to eat
fodder	/'fɒd.ər/	food that is given to cows, horses, and other farm animals
vascular	/'væskjʊlə /	(of animals or plants) relating to or containing veins
fern	/fɜ:n/	a kind of plant with no flowers and delicate feather-like leaves
bark	/bɑ:k/	the covering of the trunk and branches of a tree
carbon sink	/'kɑ:bən sɪŋk /	an area with many plants, such as a forest, that absorbs a lot of carbon dioxide

3. Read the text again and find synonyms for the synonymic chains:

- feed, food, rations, \_\_\_\_\_
- grassland, grass, grazing, \_\_\_\_\_
- principal, prime, chief, \_\_\_\_\_
- essential, necessary, needed, \_\_\_\_\_

4. a) Expand your vocabulary by becoming familiar with **photosynthesis** word family.

A **word family** is a group of words that may share a common root word with different prefixes and suffixes in morphology.

E.g.:

<b>photosynthesis</b>	ˌfəʊ.təʊ'sɪn.θə.sɪs	noun
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<b>photosynthesize</b>	,fəʊtəʊ'sɪnθɪ,saɪz	intransitive verb
<b>photosynthetic</b>	,fəʊ.təʊ sɪn 'θe.tɪk	adjective
<b>photosynthetically</b>	fəʊ.təʊ sɪn 'θet.ɪ.kəl.i	adverb

b) create your own word family following the above example. Look the words up.

		noun
		verb
		adjective
		adverb

5. Match the words (1-6) with the definitions (A-F).

<b>1 _ Physiology:</b> <b>2 _ Morphology</b> <b>3 _ Systematics</b> <b>4 _ Genetics</b> <b>5 _ Ecology</b> <b>6 _ Horticulture</b>	<b>A</b> The art or practice of garden cultivation and management <b>B</b> The study of plant growth and development <b>C</b> The study of genes and inheritance <b>D</b> The study of plant structures <b>E</b> The study of the naming and classification of plants <b>F</b> The study of relationships between plants and their environments
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6. Choose the correct answer for the sentence using the word from the box.

algae – carbon – nomadic – bark – vascular – indispensable – fern – fodder
----------------------------------------------------------------------------

A) There are \_\_\_\_\_ sinks such as plankton populations and forests. B) \_\_\_\_\_ is the tough material that covers the outside of a tree. C) \_\_\_\_\_ plants are also known

as tube plants. D) Something follows them through the \_\_\_\_\_ undergrowth. E) Herders are supplied with \_\_\_\_\_ for their livestock F) They are a somewhat \_\_\_\_\_ tribe and are found all over the colony. G) The old pond was covered in green \_\_\_\_\_. H) What we really need are some \_\_\_\_\_ or essential amino acids.

7. *With a partner, act out the roles below based on Task 1.*

Student A: You are a student learning about botany basics. Ask Student B about:

- a person to found botany
- green plants' role
- disciplines of botany
- areas botany is useful in

Student B: You are a Botany teacher. Answer Student A's questions.

USE LANGUAGE SUCH AS:

Excuse me.

Who was the founder of ...

Why were plants of paramount importance to ...

What areas is botany ...

8. *Use the conversation from Task 7 to fill out the student's notes.*

The founder of botany \_\_\_\_\_.

Plants were of paramount importance to \_\_\_\_\_.

Disciplines of botany are \_\_\_\_\_.

Botany is useful in \_\_\_\_\_.

9. *Write a post about your favourite plant on a group forum.*

## Tips

- It's nice to start by saying something that shows you have read other people's posts.
- In a group forum you can be quite informal.
- In informal writing you can sometimes miss out the beginning of a phrase: So cool to read about everyone's favourite plant ...
- Remember, in a forum you are part of a long conversation with a lot of other people so they might ask you questions.

### *10. Comment on the quotes about botany:*

Botany, the eldest daughter of medicine. — *Johann Hermann Baas*

Consider the lilies of the field, how they grow; they toil not, neither do they spin. —

*Bible*



1. *Read the text to practise and improve your reading skills. Pay attention to the words and phrases in bold.*

## Unit 2: **Soil. Introduction.**

**Soil** is the substance that transformed our world from a barren rock into a living oasis. It is often ignored or seen as '**dirt**', something to be avoided. But soil is vital for life on Earth, as it supports the plants and animals we depend on for food, oxygen and more.

Scientists investigate how soil is formed, what it consists of and why it is so crucial for life. They use special microphotography to show us the amazing microscopic world of soil, where countless creatures live and interact with the rock and organic **matter**. It is a complex and dynamic system that **sustains** all life on Earth.

They also examine how humans are threatening this precious resource and how new science is **seeking** to preserve it.

Soil is the material that covers most of the land surface of our planet. It is a loose material composed of both organic and inorganic matter. Soil provides plants and flowers with water, nutrients and structural support for growth.

Soil, like water and air, is one of the world's most important natural resources.

Most of our food relies on soil - it is where we find the plants and many of the animals that we eat, and it is home to billions of organisms. **Mulches** help soil keep moisture in summer, allow rain to **penetrate** the soil in winter, prevent **weeds** from growing and protect plant roots in winter. When soil fertility is not good, natural or manufactured materials can be added to provide the necessary plant nutrients. The main purpose of ploughing is to turn over the top layer of soil, bringing fresh nutrients to the surface

while burying weeds and **crop** remains to decompose. The grooves made by the **plough** are called furrows.

Soil Horizons- Five soil layers where soil exists. They are as follows: 1. Surface 2. **Topsoil** 3. **Subsoil** 4. Parent Material 5. Bedrock.

The different soil types. Clay soils are heavy, rich in nutrients, wet and cold in winter and dry and hard in summer. Sandy soils are light, dry, warm, low in nutrients and often acidic. **Silt** soils are **fertile**, light but hold moisture, and easily compacted. **Loams** are mixtures of clay, sand and silt that avoid the extremes of each type. **Peat** soils are very high in organic matter and moisture. Chalky soils are very alkaline and can be light or heavy.

Soils form very slowly, maybe only 1 cm of thickness in 500 years, so we can't just make new ones in our lifetime. Many of our soils are damaged and at risk.

It is important that we understand our soil and make sure it is there for future generations.

*2. Translate the following words and phrases into Ukrainian and learn them by heart.*

crop	
dirt	
fallow	
fertile	
fertility	
fertilizer	
foliage	
furrow	

infertile	
irrigate	
lime	
loam	
manure	
matter	
mud	
mud bath	
muddy	
mulch	
peat	
plough	
perlite	
silt	
sod	
soil	
subsoil	
topsoil	
weed	

to be devoid of something	
to be essential to life	
to burst	
to depend on	
to penetrate	
to rely on	
to seek	
to sustain	