

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

**СОЦІАЛЬНО-ГУМАНІТАРНИЙ ФАКУЛЬТЕТ**

**Кафедра філології, педагогіки та методики викладання**

**МЕТОДИЧНІ РЕКОМЕНДАЦІЇ  
ЗДИСЦИПЛІНИ  
«ІНОЗЕМНА МОВА ЗА ПРОФЕСІЙНИМ СПРЯМУВАННЯМ»**

**для здобувачів першого (бакалаврського) рівня вищої освіти  
спеціальності Н4 «Лісове господарство»**

Біла Церква  
2026

УДК: 811.111:630\*2(072)

Затверджено науково-методичною  
комісією Білоцерківського НАУ  
(Протокол № 7 від 20.02.2026р.)

Розробник: **К.І. Велика**, асистент кафедри філології, педагогіки та методики викладання Білоцерківського національного аграрного університету.

Велика К.І. Методичні рекомендації з дисципліни «Іноземна мова за професійним спрямуванням» для здобувачів першого (бакалаврського) рівня вищої освіти спеціальності Н4 «Лісове господарство». Біла Церква: БНАУ, 2026. 90 с.

Методичні рекомендації містять зміст, вступну частину, завдання для аудиторної і самостійної роботи, модульні контрольні роботи, граматичні правила у вигляді таблиць, навчальні англомовні відео. Методичні рекомендації рекомендовано для здобувачів першого (бакалаврського) рівня вищої освіти (галузі знань – Н «Сільське, лісове, рибне господарство та ветеринарна медицина»).

Рецензент: **Біліченко А.М.**, кандидат педагогічних наук, доцент, Білоцерківський НАУ.

## ВСТУП

Сучасна підготовка фахівців у галузі лісового господарства орієнтована на формування професійних кадрів, здатних ефективно вирішувати спеціалізовані завдання аграрної сфери в національному та міжнародному професійному середовищі. Реалізація стратегічних завдань галузі потребує фахівців із ґрунтовними професійними знаннями, сформованими практичними вміннями та здатністю застосовувати сучасні технології лісового господарства.

Важливою складовою професійної підготовки є володіння іноземною мовою як засобом фахового спілкування, що забезпечує інтеграцію у світовий науково-професійний простір та обмін досвідом із зарубіжними спеціалістами. Відповідно до рекомендацій Комітету Ради Європи з питань освіти, випускники закладів вищої освіти мають досягати рівня володіння іноземною мовою не нижче B2+.

Згідно зі Стандартом вищої освіти України першого (бакалаврського) рівня за галуззю знань Н «Сільське, лісове, рибне господарство та ветеринарна медицина», дисципліна «Іноземна мова за професійним спрямуванням» спрямована на формування загальної компетентності ЗК 05 — здатності до усного й письмового спілкування іноземною мовою та досягнення програмного результату навчання РН 1.

Методичні рекомендації з дисципліни «Іноземна мова за професійним спрямуванням» розроблено з метою забезпечення ефективної організації навчального процесу та підвищення якості підготовки здобувачів вищої освіти спеціальності Н4 «Лісове господарство». Вони визначають структуру, зміст і послідовність опрацювання навчального матеріалу, містять практичні завдання, вправи та професійно орієнтовані англійські тексти, спрямовані на розвиток іншомовної комунікативної компетентності.

Використання методичних рекомендацій сприяє формуванню практичних навичок усного та письмового мовлення, читання, перекладу, анотування й аналізу фахових текстів, а також розвитку вмінь самостійної роботи здобувачів освіти. Матеріали посібника можуть бути використані під час аудиторних занять і в процесі самостійної підготовки студентів.

### 3MICT

BCTYII	3
Unit 1 MEETING FOR THE FIRST TIME	5
Unit 2 UNIVERSITY INTERVIEW	9
Unit 3 SOCIALIZING	12
Unit 4 MY MAJOR IS FORESTRY	15
Unit 5 FORESTRY DEGREE PROGRAM	18
Unit 6 THERE ARE A WIDE RANGE OF DIVERSE CAREER OPPORTUNITIES AVAILABLE TO YOU IN THE FORESTRY & ARBORICULTURE SECTOR	22
Unit 7 JOB RESPONSIBILITIES OF A FORESTER. FORESTER'S DAILY ROUTINE	24
Unit 8 JOB REQUIREMENTS FOR A FORESTER	29
Unit 9 TALK ABOUT OTHER PEOPLE'S OCCUPATIONS. OFFICE WORK	32
Unit 10 THE FOREST	36
Unit 11 FOREST TYPES	39
Unit 12 FORESTS AND THEIR FUNCTION. ECOSYSTEM BIODIVERSITY	42
Unit 13 DEFORESTATION AND ENVIRONMENTAL ISSUES	45
Unit 14 SILVICULTURE. BE ENVIRONMENTALLY FRIENDLY!	48
Unit 15 FOREST ISSUES AND THREATS	52
Unit 16 WEATHER AND CLIMATE	55
Unit 17 PLANT STRUCTURE AND GROWTH	60
Unit 18 IMPORTANS OF PLANTS	63
Unit 19 DENDROLOGY. TREE GROWTH 1	68
Unit 20 TREE GROWTH 2	72
Unit 21 TREE MEASUREMENTS. INVENTORY 1.	75
Unit 22 TREE MEASUREMENTS. INVENTORY 2.	79
Unit 23 PESTS AND DISEASES	82
QUIZ 1	83
QUIZ 2	85
СПИСОК ЛІТЕРАТУРИ	89

## Unit 1

### Discussion: MEETING FOR THE FIRST TIME

Get ready!

Introduce yourself to us.

A: Hello. My name is \_\_\_\_\_. I am \_\_\_\_ years old. I am a first year student in \_\_\_\_\_ faculty. And you?

B: Hi. I'm \_\_\_\_\_. I am \_\_\_\_ years old. I am a future \_\_\_\_\_. I am from \_\_\_\_\_.

Read the dialogue how to introduce people, then introduce someone to the group mates.

- **Student 1:** This is Mary, Steve! We are in the same group.
- **Student 2:** Hello, Mary. Glad to see you at our dormitory.
  
- **Steve:** This is my group mate Frank.
- **Steve's supervisor:** How do you do, Frank?

Introduce other people.

A: \_\_\_\_\_, this is my group mate \_\_\_\_\_.

B: Nice to meet you.

C: Nice to meet you too.

Before telling your personal information, work on word meaning matching:

- |                             |                    |
|-----------------------------|--------------------|
| 1. identity                 | діяльність         |
| 2. identify                 | підпис             |
| 3. id (identification card) | відділ / кафедра   |
| 4. date of birth            | реєстраційна карта |
| 5. place of birth           | дата народження    |
| 6. nationality              | чоловік            |
| 7. husband                  | ідентифікувати     |
| 8. wife                     | національність     |
| 9. department               | дружина            |
| 10. registration form       | місце народження   |
| 11. signature               | посвідчення особи  |
| 12. occupation              | визначати особу    |

**Fill in your student ID card.**

<b>Name</b>	
<b>Date of birth</b>	
<b>Nationality</b>	
<b>Occupation</b>	

**Now ask your partner to give his / her personal information.**

- What is your name?
- What is your date of birth?
- What is your nationality?
- What is your occupation?

**Look through the personal information of the university students and answer the questions below:**

### Registration form

<b>BILA TSERKVA NATIONAL AGRARIAN UNIVERSITY</b>	<b>BILA TSERKVA NATIONAL AGRARIAN UNIVERSITY</b>
<b>Extramural department</b>	<b>Extramural department</b>
<b>Miss Christine _____ Yakovenko</b> (first name) (last name)	<b>Mr Robert _____ Yakovenko</b> (first name) (last name)
<b>Address</b> <b>Street:</b> 10 Turchaninova Street <b>City:</b> Bila Tserkva <b>State:</b> Ukraine <b>Zip code:</b> 09100	<b>Address</b> <b>Street:</b> 7 Soborna Street 88 <b>City:</b> Bila Tserkva_ <b>State:</b> Ukraine <b>Zip code:</b> 09100
<b>Telephone number: 0967045484</b> <b>Sex:</b> ___M___ <input type="checkbox"/> <input type="checkbox"/> F	<b>Telephone number: 0977045682</b> <b>Sex:</b> ___ <input type="checkbox"/> M___ <input type="checkbox"/> F
<b>Occupation:</b> Waitress	<b>Occupation:</b> Salesman
<b>Place of birth:</b> Bila Tserkva, Ukraine <b>Course:</b> English 4	<b>Place of birth:</b> Bila Tserkva, Ukraine <b>Course:</b> English 2
<b>Signature:</b>	<b>Signature:</b>

**Now answer the following questions:**

- What's Christine's last name? \_\_\_\_\_
- What's Christine's telephone number? \_\_\_\_\_
- What's Robert's address? \_\_\_\_\_
- Where's Robert from? \_\_\_\_\_
- What year student is Christine? \_\_\_\_\_

**Read the dialogue and make up your own.**

**At the university coffee shop**

**Christine:** Hi, Frank. How are you?

**Frank:** Ok. And you?

**Christine:** I'm fine. Are those photos yours? Can I see them?

**Frank:** Yes, of course. Sit down.

**Christine:** Who's that?

**Frank:** My cousin Nikola.

**Christine:** That's an unusual name. How do you spell it?

**Frank:** N-i-k-o-l-a. And that's his wife, Olha.

**Christine:** Oh, he's married. How old is he?

**Frank:** He is thirty-five. Are you married?

**Christine:** No, I'm not. Are you?

**Frank:** No. Do you have a boyfriend?

**Christine:** No.

**Mark the statements as true or false.**

1. Christine is married.
2. Olha is married.
3. Nikola is twenty-five.

**Ask about marital status. Read the example.**

**Frank:** Are you married?

**Christine:** No, I'm not. Are you?

**Frank:** No. Do you have a boyfriend?

**Christine:** No.

A: Are you married?

B: \_\_\_\_\_. Are you?

A: \_\_\_\_\_ Do you have a boyfriend / girl friend?

B: \_\_\_\_\_

Read the personal information about these people and fill in: is, isn't, are or aren't.

<b>Name</b>	Anita	Nikola	Clara	Helen	Oleg	Juki
<b>Age</b>	19	25	19	25	24	25
<b>Occupation</b>	Student	Forester	Student	Forest engineer	Land surveyor	Forest engineer
<b>Nationality</b>	Brazilian	Greek	German	Brazilian	Ukrainian	Japanese

*E.g.: Juki isn't a doctor, he is a forest engineer.*

Oleg \_\_\_\_\_ an architect, he \_\_\_\_\_ a land surveyor.

Anita and Clara \_\_\_ fifteen, they \_\_\_\_\_ nineteen.

Helen and Juki \_\_\_ students, they \_\_\_\_\_ forest engineers.

Juki \_\_\_ forty. he \_\_\_\_\_ twenty-five.

Anita and Clara \_\_\_\_\_ teachers, they \_\_\_\_\_ students.

Anita and Helen \_\_\_\_\_ French, they \_\_\_ Brazilian.

Nikola \_\_\_\_\_ English, he \_\_\_\_\_ Greek.

Helen and Juki \_\_\_ twenty, they \_\_\_ twenty-five.

Clara \_\_\_ Japanese, she \_\_\_ German and Oleg \_\_\_\_\_ Brazilian, he \_\_\_\_\_ Ukrainian.

Nikola \_\_\_\_\_ a land surveyor, he \_\_\_\_\_ a forester.

**Fill in the correct form of to be.**

1. Oleg isn't Greek. He \_\_\_ Ukrainian. 2. Zik isn't Egyptian. He \_is\_\_\_ Turkish. 3. Pablo and Anna aren't Argentinians. They \_\_\_\_\_ Italians. 4. Clare isn't French. She \_\_\_ British. 5. Gunter isn't Polish. He \_\_\_\_\_ German. 6. Stefano and Roberto aren't Canadians. They \_\_\_\_\_ Brazilians. 7. Juki isn't Chinese. He \_\_\_ Japanese.

**Watch the video how to ask and answer about nationality and then do the same with your partner. Ask and answer about your nationality.**

*Eg.: – What nationality are you? – I am .....*

**Watch the video and name the lady's nationality and country she is from.**

**Play a game with nationalities and countries. Start your question with:**

*Eg.: – Are you Turkish? – No, I am not.*

*– Are you Canadian? – Yes, I am.*

## Unit 2

### Discussion: UNIVERSITY INTERVIEW

#### Get ready!

Today we are going to discuss how to present ourselves during the interview.

- Do you know how to start your presentation?
- What would you say to a university adviser?
- What information would you mention?

**Before telling your personal information, work on word meaning matching:**

- |                    |                            |           |
|--------------------|----------------------------|-----------|
| 1. major           | A. їхати                   | цивільним |
| 2. foreign         | транспорт                  |           |
| 3. language        | B. неодружений             |           |
| 4. to be married   | C. іноземний               |           |
| 5. to be single    | D. семестр                 |           |
| 6. take a course   | E. мова                    |           |
| 7. to be going to  | F. спеціалізація           |           |
| 8. term / semester | G. одружений               |           |
| 9. go by           | H. вивчати курс            |           |
|                    | (дисципліну)               |           |
|                    | I. мати намір щось зробити |           |

#### Read the presentation of a university student Frank.

Hello! My name's Frank. I am from Tetiiv, which is not far from Kyiv, the capital of Ukraine, but I'm a student at Bila Tserkva National Agrarian University. I'm studying Forestry, English and French. I also speak Chinese a little bit, so I can speak three languages. I'm enjoying these courses a lot, but it's very hard work.

I live in the dormitory that is a part of the university with about fifty five other students. The courses started two years ago, so I'm in my second year. At the end of this term, I'm going to work as a forestry intern in France and I already know my employer.

**Match the questions and the answers that are connected with the previous exercise about a university student Frank.**

**Word order:** subject + verb + object + adverbial modifier

- Where are you come from? a) Because \_\_\_\_\_ need \_\_\_ for my job.
- Are you married? b) It \_\_\_ about 20 kilometers.
- What do you do? c) Yes, I \_\_\_ married.
- How far is it from Teiiv to Bila Tserkva? d) I \_\_\_\_\_ Tetiiv.
- How do you come to the university? e) I \_\_\_ a student.
- Why are you learning Forestry, English and French? f) \_\_\_\_\_ by bus.

**1. You are a university adviser, ask Frank his personal information. Use you and your in the questions.**

*E.g.:*

**Adviser:** *Why have you decided to become a forester?*

**Frank:** *I like working with nature.*

a. What university \_\_\_\_\_ go to?

I go to BNAU.

b. What faculty \_\_\_\_\_ in?

I am in the faculty of agrobiotechnology.

c. What course \_\_\_\_\_ taking?

I am taking a course of Forestry, English, French and German.

d. How many languages \_\_\_\_\_ speak?

I speak four languages.

e. \_\_\_\_\_ it easy to \_\_\_\_\_ the course?

It's really hard work.

f. Where \_\_\_\_\_ live?

I live in the dormitory.

g. When \_\_\_\_\_ start courses?

I started two years ago.

h. What \_\_\_\_\_ going to do after the course?

I'm going to work as an intern.

**2. Ask a university adviser about Frank. Use such personal pronouns like he / his.**

*E.g.:*

**Student:** *What's his main major?*

**Adviser:** *His main major is forestry.*

a. Where \_\_\_\_\_ form?

He is from Ukraine.

b. When \_\_\_\_\_ come to Bila Tserkva?

Two years ago.

c. \_\_\_\_\_ have a job?

Yes, a part-time job.

d. What \_\_\_\_\_ wife's name?

Her name is Julia.

e. What \_\_\_\_\_ her job?

She's a veterinarian.

**Explain the difference between sentences. What tense forms are used in these sentences?**

- *What languages does he speak?*
- *What course is he taking?*
- *When did he start his courses?*

**Work in pairs. Ask each other similar questions and write down your answers using the Present Simple Tense (to describe general truth, rules, statements, permanent situations and habits), the Present Continuous Tense (to describe temporary situations or actions in progress at present) or the Past Simple (to describe the past event).**

**Using Frank's presentation, retell about yourself. Use the following questions as a plan for your presentation:**

- What is your name? \_\_\_\_\_  
Where are you from? \_\_\_\_\_  
How old are you? \_\_\_\_\_  
What university do you go to \_\_\_\_\_  
What is your main major? \_\_\_\_\_  
What faculty are you in? \_\_\_\_\_  
What year student are you? \_\_\_\_\_  
What courses do you take? \_\_\_\_\_  
What foreign languages do you speak? \_\_\_\_\_  
What are you going to do after graduation \_\_\_\_\_

## Unit 3

### Discussion: **SOCIALIZING**

#### Get ready!

1. How is your student life going?
2. Have you already acquainted with your supervisor, group mates, and university locations?
3. Have you made any new friends?
4. What would you like to get to know about your university?
5. Have you found any favourite study spot?
6. What is new for you?

**Let's get to know what you can find in or around the university campus. Ask somebody in the class using the pattern and word box.**

**+ There is / are + object + location**

**- There is / are not + object + location**

**? Is / are there + object + location**

**Yes, there is / are**

**No, there is / are not**

#### Word box

assembly hall, lecture hall, library, laboratory, student canteen, cafeteria, conference hall, classroom, dean's office, rector's office, forestry department, teacher's lounge, cloakroom, water closet, student council.

A: Excuse me, is there a / an \_\_\_\_\_ near here?

B: Yes / No, \_\_\_\_\_

A: And is there a / an \_\_\_\_\_ ?

B: Yes / No, \_\_\_\_\_

#### Fill in the spaces with there is / are.

Bila Tserkva National Agrarian University is conveniently located at 8 Soborna Square and students can get almost everything they need near the Bila Tserkva National Agrarian University campus. There \_\_\_\_\_ a post office in Oleksanriiskyi Boulevard and there \_\_\_\_\_ banks in Yaroslav Mudryi Street and Druzhba Street. There \_\_\_\_\_ a bookstore at the corner of Volodymyr Street and Gagarin Street and there \_\_\_\_\_ also one in Yaroslav Mudryi Street. There \_\_\_\_\_ two pharmacies and a supermarket in Yaroslav Mudryi Street. There \_\_\_\_\_ many restaurants, coffee shops and cinemas near the campus too.

**Before reading, work on word meaning matching:**

1. scientist	набувати навиків
2. train students	закон
3. research institute	освіта
4. negotiation	стажування
5. establishment	Земельний кодекс України
6. study	джерело
7. bachelor degree	підприємство
8. internship	ступінь бакалавра
9. enterprise	вчитися
10. development	перемовини
11. resource	кафедра
12. education	науково-дослідний інститут
13. Land Code of Ukraine	розвиток
14. law	науковець
15. acquire skills	навчати студентів
16. department	заклад

**Read and translate the following text.**

**Studying at the Bila Tserkva National Agrarian University**

Bila Tserkva National Agrarian University is a leading regional research and educational center. It is a dynamically developing higher education institution with six faculties, as well as a Department of Health and Physical Recreation and a Center for Pre-university Training. The university offers education in agrobiotechnology, veterinary medicine, biotechnology, ecology, law, linguistics, and postgraduate and extension programs.

The university includes five research institutes, thirteen research laboratories, several educational and research institutes, eight colleges, and production enterprises. The academic staff comprises academicians, professors, doctors of sciences, and honored scientists of Ukraine.

The university has strong material resources, including ten academic buildings, modern equipment, an information center, and a library with several reading halls. Students and teaching staff have free Internet access and access to international information systems.

Research at the university focuses on advanced technologies in agriculture, food production, veterinary medicine, law, and social sciences. In the near future, the university aims to obtain the status of a National Research University with international recognition, which will promote innovation and further development in professional education.

**Watch the video and answer the following statements as true or false:**

1. \_\_\_\_ BNAU is a dynamically developing higher educational establishment that trains well-qualified specialists.
2. \_\_\_ There are 6 faculties with 3 campuses and 10 buildings.
3. \_\_\_\_ The students being in the faculty of agrobiotechnology are trained for the economy sector and veterinary medicine.
4. \_\_\_ The practical training is conducted in the experimental fields, botanical gardens and on the forest research farms of the Kyiv university of technology and design.
5. \_\_\_ BNAU is a big family in which you will find support and conditions for studying and professional development.

**Read, play and listen to the following dialogue:**

**Student 1:** Hey are you ok? You seem lost.

**Student 2:** Oh, hi. It's actually my first day.

**Student 1:** Ah, I see. Are you a first year student?

**Student 2:** Yep. How long have you been going to BNAU?

**Student 1:** I'm in my **final year**. What are you studying?

**Student 2:** I'm studying forestry. What about you?

**Student 1:** I'm studying land management.

**Student 2:** Oh, cool! How are you finding it?

**Student 1:** Emh., It's ok. We have to complete 3 **placements** in 3 years.

**Student 2:** What's the placement?

**Student 1:** It's an **internship**, so I get to work in a real **work environment**.

**Student 2:** That's a really good **opportunity**.

**Student 1:** Doesn't your course have any placement year?

**Student 2:** No, there was an option, but I didn't go for it.

**Student 1:** Ah, I see. Anyway, it was nice meeting you.

**Using this dialogue, make up your own with your partner.**

## Unit 4

### Discussion: MY MAJOR IS FORESTRY

#### Get ready!

1. What is the main role of forestry?
2. What is sustainable forestry?

#### Learn the forestry types:

Agroforestry	Energy forestry	Forest management
--------------	-----------------	-------------------

Complete these sentences using the forestry types from the previous exercise.

1. \_\_\_\_\_ refers to any planned human intervention in a forest ecosystem to achieve specific goals and objectives, which can typically be grouped as environmental, economic, and social. Forest management can include anything from low intensity to high intensity interventions using different practices, tools, and techniques.

2. \_\_\_\_\_ is the intentional integration of trees and shrubs into crop and animal farming systems to create environmental, economic, and social benefits.

3. \_\_\_\_\_ is a form of forestry in which a fast-growing species of tree or woody shrub is grown specifically to provide biomass or biofuel for heating or power generation.

#### Before getting to know about forestry, learn some vocabulary:

forestry / silvics – лісництво	telegraph post – телеграфний стовп
conservation – збереження	railway sleeper – залізнична шпала
exploitation – використання	props for mines – опори для шахт
timber – деревина	sustainable – сталий
construction material – будівничий матеріал	nursery – розсадник

#### Read the text and translate it into Ukrainian.

### Forestry

**Forestry** plays an important part in our life, especially in protecting the environment as it is engaged in rationally planned **exploitation** and **preservation** of forests both for raw materials. Forests are an important part of the biosphere.

**Timber**, the most widespread **construction material**, has become a universal material of great importance. It is used for **telegraph posts**, railway **sleepers**, **props** for mines, manufacture of furniture, tools, musical instruments, etc.

Future forestry engineers will be engaged in growing, **conservation** and rational utilization of forests that is why they have to know a lot about **silvics** or **silviculture**, artificial and natural regeneration of forests, forest tree **nurseries**, forest estimation (mensuration), entomology, plant pathology, fire control, forest conservation, forest regulation, etc.

**Find the meaning of the following terms:**

1. **Nursery**
2. **Construction material**
3. **Conservation**
4. **Timber**
5. **Silviculture (Forestry)**

**A.** A place where plants are grown for transplanting, for use as stock for budding and grafting, or for sale. Commercial nurseries produce and distribute woody and herbaceous plants, including ornamental trees, shrubs, and bulb crops.

**B.** The practice of controlling the growth, composition / structure, and quality of forests to meet values and needs, specifically timber production.

**C.** A large, oblong piece of wood or other material, used especially for construction.

**D.** An article, material, or supply brought to the construction site by the Contractor or a subcontractor for incorporation into the building or work. The term also includes an item brought to the site preassembled from articles, materials, or supplies.

**E.** It is a plan for avoiding the unnecessary use of natural materials such as wood, water, or fuel.

**Complete these sentences using the word bank.**

<b>resource management</b>	<b>agroforestry</b>	<b>energy forestry</b>	<b>biomass</b>	<b>biofuel</b>
----------------------------	---------------------	------------------------	----------------	----------------

1. Students will identify and manage species suitable for the production of \_\_\_\_\_ and \_\_\_\_\_.
2. \_\_\_\_\_ students focus on agriculture in relation to woodlands.

3. Forestry major specialize in one of three areas. The three tracks are: agroforestry, energy forestry and \_\_\_\_\_.

4. The \_\_\_\_\_ study course begins with dendrology.

**Read the dialogue between a student and an academic adviser. Try to play the same situation with your group mate.**

**Student:** I can't decide which specialization is right for me.

**Adviser:** Let's consider the options: agroforestry, energy forestry and resource management.

**Student:** Right. I know that I am definitely not interested in energy forestry.

**Adviser:** How do you know that?

**Student:** I took an intro to biofuel course last year, and I had a hard time with chemistry.

**Adviser:** Okay. What about agroforestry?

**Student:** Well, I am interested in farming, but I am not sure there are many job opportunities in agroforestry.

## Unit 5

### Discussion: FORESTRY DEGREE PROGRAM

#### Get ready?

1. What courses are familiar for you from the suggested?

biology	botany	chemistry	climatology
genetics	soil science	dendrology	forest economics
forest pathology	forest mensuration	forest hydrology	forest management
fires and fuels	insect control	mathematics	conservation

2. What courses are you taking this year?

3. Which scientific fields are useful for forestry students?

4. What should forestry students study in your opinion?

**Complete these sentences using the university courses from the previous exercise.**

1. This science is called \_\_\_\_\_ which is concerned with the measurement of forest trees – standing or cut, and with the estimation of the growth and the future yields .from forest stands.

2. \_\_\_\_\_ is the scientific field concerned with the study of climate and weather.

3. \_\_\_\_\_ is the scientific field focused on soil formation, ecology and classification.

4. \_\_\_\_\_ is the scientific field concerned with production, consumption and finance.

5. A forestry student studied \_\_\_\_\_ because he was interested in forest stewardship and land use.

6. \_\_\_\_\_ studies the distribution, storage, movement, and quality of water and the hydrological processes in forest-dominated ecosystems.

**Different universities suggest different core curriculums for forestry students. Here is one example of the University of the Highlands and Islands, Inverness, United Kingdom. You may get to know about it after reading. Try to compare it with your university program and name the differences.**

#### Before reading, work on word meaning matching:

- |                      |                     |
|----------------------|---------------------|
| 1. biodiversity      | A. міський          |
| 2. natural resources | B. лісовий ландшафт |
| 3. hands-on learning | C. зберігання       |
| 4. fieldwork         | D. добробут         |

- |                        |                       |
|------------------------|-----------------------|
| 5. fostering           | E. відновлюючий       |
| 6. urban               | F. біорізноманіття    |
| 7. rural               | G. природні ресурси   |
| 8. forestry management | H. робити внесок      |
| 9. conservation        | I. сільський          |
| 10. recreational       | J. вимога             |
| 11. well-being         | K. практичне навчання |
| 12. requirement        | L. польові роботи     |
| 13. tree scape         | M. лісоводство        |
| 14. contribute         | N. виховувати         |

**Read the webpage advertisement and translate it.**

**THE UNIVERSITY OF THE HIGHLANDS AND ISLANDS,  
INVERNESS, UNITED KINGDOM**

**BSc (Hons) Forestry and Treescapes Management**

<b>DEGREE TYPE</b> BSc	<b>APPLICATION DEADLINE</b> Request application deadline
<b>DURATION</b> 4 up to 8 years	<b>EARLIEST START DATE</b> Sep 2026
<b>LANGUAGES</b> English	<b>TUITION FEES</b> GBP 16,950 / per year
<b>PACE</b> Full time, Part time	<b>STUDY FORMAT</b> On-Campus

**About:** The BSc (Hons) Forestry and Treescapes Management program focuses on developing skills in managing trees and forests. This degree aims to prepare students for work in the forestry sector, emphasizing biodiversity, sustainability, and resource management. You'll engage in hands-on learning through projects and field studies, fostering an understanding of ecological principles and the importance of treescapes in urban and rural settings.

**Career Outcomes:** Graduates can pursue several career paths, including roles in forestry management, conservation, and environmental consulting. Others may work as urban forest managers, arborists, or environmental educators, contributing to sustainable practices and the protection of natural resources.

**Introduction**

If you're looking for a rewarding career, where you can provide professional advice to the land-based forestry sector and help secure our forests for future

generations to enjoy, then this course is for you. Being involved in the forestry sector is one of the best ways of helping the fight against climate change, while working in environments that provide recreational and well-being spaces for all. Our BSc (Hons) Forestry and Treescapes Management is a highly practical course that will give you all the skills and knowledge you need to become a successful forest manager, environmental manager or arboriculturist / urban forester.

This innovative new work-based degree allows you to continue working full/part-time within the forestry/environmental sector while undertaking a full-time degree alongside your role, using work-based learning to fulfil the credit and learning requirements. If you're not currently working within the sector, you will study scenarios provided by the course team to recreate situations that may be experienced in a work setting.

A significant proportion of your course will be fieldwork-based projects where you will become experienced in the practical aspects of forest management and arboriculture. When you graduate you will have a technical management qualification and be experienced in all aspects of sustainable and current management of forests, trees and wider environment.

**Answer the following questions:**

1. What is the main focus of this program?
2. What is special about this course?
3. What are possible career paths for graduates?

**Make up sentences about your current studies at the university using Present Continuous. Follow the scheme of its formation: S + am / is / are + V + ing.**

Eg.: – *What are you studying now? – As a first year student, I am studying forestry.*

**Read and translate the dialogue between two students then make up your own using phrases from today's class.**

- Hello, Clara! How are you doing?
- Hello, Mark. Everything is good? And you?
- No **complaints**. Thank you.
- Glad to hear it. You look busy.
- I have to do a lot of work.
- Excuse my **curiosity**. What are you doing?
- I'm preparing for **soil science** class?
- Do you like it?
- It's great. We're testing soil **samples** this afternoon.
- I'm looking forward to having this class next semester.

- If you want you can join us.
- It would be great. I'll come.
- Then see you soon.
- Okay, bye.

## Unit 6

### **Discussion: THERE ARE A WIDE RANGE OF DIVERSE CAREER OPPORTUNITIES AVAILABLE TO YOU IN THE FORESTRY & ARBORICULTURE SECTOR**

**Get ready!**

**Read this quote and say what you think about it in the context of your specialty, whether you agree or disagree. You can comment it adding your thoughts:**

*“The true meaning of life is to plant trees, under whose shade you do not expect to sit”.*

*Nelson Henderson*

**Before reading, work on word meaning matching:**

- |                  |                         |
|------------------|-------------------------|
| 1. habitats      | ерозія                  |
| 2. woodlands     | арборист                |
| 3. erosion       | дика природа            |
| 4. flood         | повінь                  |
| 5. wildlife      | побудова                |
| 6. timber        | деревина                |
| 7. construction  | арбористика             |
| 8. harvesting    | мешканець дикої природи |
| 9. arboriculture | збирання врожаю         |
| 10. arborist     | лісові угіддя           |

**Read and translate the text.**

### **Introduction to Forestry & Arboriculture**

Trees don't only bring pleasure to millions of us – they provide a broad range of career options to help manage habitats and fight climate change.

Woodlands and forests enhance and support our lives. Trees absorb and store carbon dioxide, provide wood, moderate climate, help regulate our supply of fresh water, prevent erosion and flooding, provide a wide range of habitats for people and wildlife, and bring huge pleasure and wellbeing to millions.

Forestry and timber also play a major role in developing a low carbon economy: planting new trees offsets emissions and helps lock-up carbon in construction. Each nation has their own tree-planting strategy and target to help achieve their net zero goals.

Careers tend to split into two main areas. Forestry is the science and practice of planting, managing and harvesting forests for wood and timber, while arboriculture involves cultivating and managing trees in urban environments, like parks, community spaces and private properties. While there's some overlap in skills, foresters tend to manage forests and timber on a larger scale while arborists look after trees in smaller green spaces. Both options offer diverse, challenging career opportunities.

- The area of woodland in the United Kingdom is estimated to be 3.2 million hectares
- The UK has a tree-planting target of 30,000 hectares a year by 2024 – the equivalent of at least 90 million trees
- 69% of the UK population visited woodland in 2021
- In the Republic of Ireland, the area of forest is estimated to be 770,020 ha or 11% of the total land area of Ireland - over 50% of this is in public ownership, mainly through Coillte.

**Answer the following questions:**

1. What is the function of woodlands and forests?
2. What role do the forestry and timber play in the development of low carbon economy?
3. What are two main career options working with trees?

**Let's learn some things you need for your job.**

<b>gloves</b> <b>helmet</b> <b>heavy boots</b> <b>uniform</b>	<b>hand saw</b> <b>hatchet</b> <b>measuring tape</b> <b>axe</b>
--	--

**Answer my questions about the forester's job.**

T. What does a forester use in her / his job?

S. A forester \_\_\_\_\_

T. What does a forester wear to work in the forest?

S. A. A forester \_\_\_\_\_

**Make up 6 sentences about your profession using the words from the box.**

## Unit 7

### Discussion: **JOB RESPONSIBILITIES OF A FORESTER.** **FORESTER'S DAILY ROUTINE**

#### Get ready!

- Where do you see yourself in 5 years?
- What career opportunities do you have?
- Why have you chosen this specialty?

#### Before reading, work on word meaning matching:

1. agroforester	грунт
2. agriculture	стійкість
3. crop	виснажений
4. yield	вид
5. shrub	захист
6. herb	поживна речовина
7. species	культура
8. exhausted	трав'яниста культура
9. nutrient	чагарник
10. soil	відновлення
11. sustainability	сільське господарство
12. restoration	агролісництво
13. protection	. врожайність

#### Find your career option. Read and translate the texts.

A career as an agroforester	A career as a forestry worker	A career as a tree surgeon
Agroforesters plan and plant land to have a mix of agriculture and forest for improved crop yields and promote a healthier environment. The idea behind agroforestry is to use trees and shrubs to complement the plants being grown in agricultural practice. For example, some crops	Forest Workers carry out a range of practical tasks to plant, maintain and harvest wood from forested areas. They prepare new areas for planting trees by removing shrubs, draining the ground, and putting up fences around the site. After this, they plant and care for young trees, by	Tree Surgeons carry out tree work including planting, cutting down, maintenance and hazard assessments, sometimes with heavy equipment. Ground workers make sure a site is safe by keeping people and vehicles away, and assist tree surgeons by passing tools, refuelling

<p>grow better when in the shade, such as leafy greens and some herbs.</p> <p>An agroforester will plant crops that work well together in a natural environment, and that will benefit ecology in an area, such as trees providing habitats for animal species. Crops and trees or shrubs can also be planted to repair where the soil may have become exhausted of nutrients due to over-farming. As the effects of climate change increase and soils experience change or damage, this is expected to be a major area in which agroforesters will work in the future.</p> <p><b>Skills</b> /</p> <p><b>Knowledge:</b></p> <ul style="list-style-type: none"> <li>• Practical skills in agriculture, forestry, land use and ecology.</li> <li>• A broad knowledge base covering climate change, sustainability, land management, etc.</li> <li>• To develop strategies and plan resources in a complex environment.</li> <li>• Research and analysis skills to build an evidence base.</li> <li>• Excellent report writing and</li> </ul>	<p>spraying pesticides, clearing weeds, and pruning to encourage healthy growth. Trees are then felled when they are ready.</p> <p>Duties also include helping to fight forest fires, conservation work and enhancing public access – forest workers play an important part in protecting ecological habitats and enhancing the future landscape.</p> <p><b>Skills</b> /</p> <p><b>Knowledge:</b></p> <ul style="list-style-type: none"> <li>• Physical skills such as mobility and co-ordination, and a good level of fitness.</li> <li>• Practical skills to use hand tools and machinery such as chainsaws.</li> <li>• To follow strict safety policies and procedures.</li> <li>• Maths and number skills, for counting and measuring.</li> <li>• To carry out basic tasks on a computer or hand-held device.</li> </ul> <p><b>Day to Day:</b></p> <ul style="list-style-type: none"> <li>• Conduct forest surveys, assessing tree volumes and density.</li> <li>• Carry out tree safety inspections, marking and measuring trees to be cut down.</li> </ul>	<p>chainsaws and clearing away dead branches and debris.</p> <p>Tree surgery is often performed to improve the health of a tree, to improve its appearance or for safety reasons. A tree surgeon will have knowledge of trees as living organisms and understand when, how and why specialist care is needed.</p> <p><b>Skills</b> /</p> <p><b>Knowledge:</b></p> <ul style="list-style-type: none"> <li>• Strong knowledge of trees and shrubs, including growth, nutrition, pests and diseases.</li> <li>• Physical skills like movement and co-ordination, and a reasonable level of fitness.</li> <li>• Knowledge of public safety and security.</li> <li>• To use, repair and maintain machines and tools.</li> <li>• To keep up to date with legislation on tree protection and health and safety issues.</li> <li>• To be able to carry out basic tasks on a computer or hand-held device.</li> <li>• You'll need training to work with different types of hand</li> </ul>
--	--	---

<p>presentation skills, being able to present information to different audiences.</p> <ul style="list-style-type: none"> <li>• To be a competent user of IT and GIS systems.</li> </ul> <p><b>Day to Day:</b></p> <ul style="list-style-type: none"> <li>• Conduct research on plants and animals, collecting data and samples.</li> <li>• Analyse samples and data collected in the field in a laboratory.</li> <li>• Estimate plant and wildlife populations and create plans for restoration and protection.</li> <li>• Carry out practical work, planting trees and shrubs to the benefit of the rest of the farming system.</li> </ul> <p><b>Working Environment</b></p> <p>Your work will be divided between the office / laboratory and out in the field.</p>	<ul style="list-style-type: none"> <li>• Groundwork to clear sites and undergrowth for planting.</li> <li>• Plant new tree seedlings, cutting back shrubs and other ground cover to promote the healthy growth of young trees.</li> <li>• Digging or installing better drainage systems.</li> <li>• Use tools to thin out dense wooded areas and fell trees to improve access.</li> <li>• Harvest trees, removing branches and cutting felled trees into specific lengths.</li> <li>• Identify and protect the forest against pests and diseases.</li> <li>• Clear footpaths and trails, maintain car parks and public areas and erect fences and gates.</li> </ul> <p><b>Working Environment</b></p> <p>You will spend time working outside in all weathers – a uniform and protective clothing will be provided. This will include heavy boots, gloves, masks, goggles and harnesses.</p>	<p>and power tools including chainsaws, hedge cutters, mechanical shredders and trimmers.</p> <p><b>Day to Day:</b></p> <ul style="list-style-type: none"> <li>• Plant trees and plants.</li> <li>• Identify hazards posed by trees.</li> <li>• Assess tree health and treatment.</li> <li>• Climb trees to cut back or remove branches.</li> <li>• Cut down and remove trees and stumps.</li> <li>• Cut logs and branches.</li> <li>• Service equipment like chainsaws and chippers.</li> <li>• Produce tree survey reports for clients.</li> <li>• Deal with clients and complete administrative tasks.</li> </ul> <p><b>Working Environment</b></p> <p>Most of the work will be outdoors in all weathers. The work can be very noisy, and you may be exposed to sawdust and fumes from tools, pesticides and fertilisers. You'll wear protective clothing such as helmets, ear protectors and chainsaw protective boots, trousers and gloves. You'll also use</p>
--	---	--

		<p>specialist rope access and positioning systems.</p> <p>Tree surgery work is physically demanding, involving climbing each day, sometimes for many hours.</p> <p>There may be a lot of travel between jobs and occasional periods may be spent working away from home.</p>
--	--	--

**Complete these sentences with the name of an appropriate forestry profession.**

1. An \_\_\_\_\_ must be a competent user of IT and GIS systems.
2. A \_\_\_\_\_ wears protective clothing such as helmets, ear protectors and chainsaw protective boots, trousers and gloves. \_\_\_\_ also uses specialist rope access and positioning systems.
3. A \_\_\_\_\_ identifies and protects the forest against pests and diseases.

**Translate the following word combinations:** climate change, working environment, day to day, to carry out practical work, crop yields, to be flexible and adaptable, analysis skills to build an evidence base, exhausted of nutrients due to over-farming, to obtain funding for use in conservation or restoration activities, hazard assessments, power tools including chainsaws, hedge cutters, mechanical shredders and trimmers, goggles and harnesses.

**Come back to the text and find examples of the Future Simple. Read these sentences up loud.**

<b>Future Simple</b>	+ S + will + V - S + will + not + V ? Will + S + V	<i>Eg.: You will become professional foresters after profound training</i>
----------------------	--	--

**Read the forestry students' answers about a forester's job. Which statements do you agree or disagree with? What does a forester do?**

- A forester harvests and sells timber while ensuring that forest resources are used sustainably.
- He plants and nurtures trees so that forests can be renewed for future generations.

□ He guards forests and protects the environment by maintaining ecological balance.

□ Foresters protect forests from poachers, preventing illegal activities that threaten wildlife and natural habitats.

**Before watching the video about a forester's daily routine, learn some vocabulary:**

logging – лісозаготівля	research - дослідження
firefighting – боротьба з пожежами	budget – бюджет
supervise – керувати	cycle - цикл
internship - стажування	science – наука
average – середній	competitor – суперник
planting - висаджування	degree – науковий ступінь
agriculture – с./г.	curriculum – навчальний план
experience – досвід	outdoors – надворі
	mapping – складання карт

**After watching the video, mark the statements as true or falls.**

1. \_\_\_\_\_ A daily routine of a forester depends on the season of the year.
2. \_\_\_\_\_ An advanced forester spends 50 % of the time in the office and 50 % in the forest
3. \_\_\_ The more advanced your degree is the more time you spend outdoors.
4. \_\_\_\_\_ The lower your degree is the more time you spend indoors.
5. \_\_\_\_\_ An advanced forester does online mapping, GIS work, budgeting, proposal meetings.

## Unit 8

### Discussion: **JOB REQUIREMENTS FOR A FORESTER**

**Get ready!**

**Imagine you have a job and you work as a forester. I am going to ask you about it using a word box:**

earn	salary	safe	high	low	satisfied	protect
------	--------	------	------	-----	-----------	---------

T. Do you have a job?

S. Yes, \_\_\_\_\_

T. What is your job?

A. You \_\_\_\_\_.

T. Do you like your job?

S. Yes, \_\_\_\_\_

T. What is most favourite part in your job?

S. It is \_\_\_\_\_

T. Are you satisfied with your salary?

S. Yes, \_\_\_\_\_

T. Is your salary high or low?

S. Yes / No \_\_\_\_\_

T. Do foresters earn a lot in Ukraine?

S. Yes / No, \_\_\_\_\_

T. Is your work safe?

S. It \_\_\_\_\_

T. What do you do to protect yourself?

S. \_\_\_\_\_

**Ask your group mates.**

S1. Does he / she have a job?

S2. Yes / No, I \_\_\_\_\_

S3. What is his / her job?

S4. He / she \_\_\_\_\_

S5. What does he do at work?

S6. He / she \_\_\_\_\_

S7. What does he do to stay safe at work?

S.8 He / she \_\_\_\_\_

**Before getting to know about your future work conditions, work on word meaning matching:**

- |                         |                         |
|-------------------------|-------------------------|
| 1. Assure               | постачання              |
| 2. commodity production | пов'язаний              |
| 3. sustain              | підтримувати            |
| 4. provide              | інкубатор               |
| 5. bountiful            | надавати, забезпечувати |
| 6. hatchery             | навколишнє середовище   |
| 7. supply               | товарне виробництво     |
| 8. environment          | багатий                 |
| 9. associated           | запивняти               |

**Read and translate the text.**

### **Agriculture and forestry careers in the USA**

Careers in Agriculture and Forestry make up one of the largest industries and sources of long-term employment in the country, providing jobs for millions of Americans. These careers supply us with a multitude of food products and alternative energies, among many other important resources for sustaining our country and contribution to the world economy. In addition, these careers - particularly those associated with Forestry - conserve our natural resources and assure we have bountiful supplies of land to utilize in the future. Many of the careers in the Agriculture and Forestry industry are considered "Green Careers," meaning that the careers are involved in preserving or protecting our environmental resources.

### **Employment conditions**

Many careers in Agriculture and Forestry will place workers in food production environments, including farms, hatcheries, and nurseries. In addition, some careers may place employees in wild environments that are involved in commodity production, including forests, rivers, mountains, and natural other areas.

It is recommended that those seeking a career in Agriculture and Forestry enjoy working outdoors and/or working with animals. The ability to work independently in potentially isolating environments is also a good trait to possess, as certain careers requiring fieldwork may place employees away from their homes and families for extended periods of time. It's also important to know that some of these jobs are physically demanding and can be dangerous, depending on what kind of heavy equipment you're required to use and what weather conditions you're required to work in. A version to hard labor is not recommended for those wishing to break into the Agriculture and Forestry industry.

**Answer about the following statements if they are false or true.**

- A. \_\_\_\_\_ Agricultural professions play an important role in the economy of the USA.
- B. \_\_\_\_\_ Agricultural professions provide different social services.
- C. \_\_\_\_\_ Certain careers requiring fieldwork may place employees away from their homes and families for extended periods of time.

**Work on the forestry terminology. Fill in the word combinations with the needed letters.**

- 1. A \_\_ icul \_\_ r l profe \_\_ i \_\_ s.
- 2. H \_\_ d l b r.
- 3. Po \_\_ entia \_\_ y i \_\_ lat \_\_ ng enviro \_\_ ents.
- 4. \_\_ o \_\_ stry i du \_\_ \_\_ y.
- 5. P \_\_ y \_\_ ica \_\_ \_\_ y \_\_ em \_\_ n \_\_ ng and can be d \_\_ ng \_\_ o \_\_ s.
- 6. H \_\_ vy e \_\_ ipm \_\_ nt.

## Unit 9

### Discussion: TALK ABOUT OTHER PEOPLE'S OCCUPATIONS. OFFICE WORK

Get ready!

Find out how to ask and answer about somebody's occupation.

What do you do?	I'm (+ job) e.g. <b>a</b> forester / <b>an</b> arborist / <b>a</b> land surveyor / <b>a</b> tree surgeon.
What's your job?	I work in (+ place or general) e.g. a forestry company / forestry industry.
What do you do for a living?	I work for (+ name of company) e.g. Jon works for The Forestry Company (TFC).

Read the dialogue then ask your group mates in the same way.

**Oleg:** *What does your supervisor do?*

**Maria:** He is a forestry technician.

**A:** What does your \_\_\_\_\_ do?

**B:** He / she is a / an \_\_\_\_\_ .

Use the correct verb form. *E.g.: Peter is an architect.*

Valentyn \_\_\_ a forest manager. Look at Elena and Rose. They \_\_\_\_\_ forest engineers. I \_\_\_ an arborist. Vlad \_\_\_ a landscape designer. Look at Ivan and Petro. They \_\_\_\_\_ forestry firefighters. Frank\_\_\_ a forest researcher.

Find the Ukrainian translation of the following agricultural professions.

a mechanical engineer	харчовий технолог
a veterinarian	лісник
an agronomist	ветеринар
a breeder / a zoo engineer	агроном
a food technologist	зоотехнік
a agroforester	інженер-механік

Complete the following sentences with the names of professions using the previous exercise. Don't forget the article a / an before the profession in singular.

1. An expert in the science of soil management and crop production is \_\_\_\_\_.
2. A person who deals with agricultural machines is \_\_\_\_\_.
3. A person whose job is to treat sick animals is \_\_\_\_\_.
4. A specialist in sustainable land and livestock management who practices an integrated method of farming is \_\_\_\_\_.
5. A person who deals with meat or milk preservation and processing is \_\_\_\_\_.
6. A person who deals with farm animal breeding is \_\_\_\_\_.

**Read about an administrative officer's working day at the forestry office completing the sentences with the correct verb form.**

### **The administrative officer's work at the forestry office**

Allan \_\_\_\_\_ (to work) as an administrative officer for a forestry agency PSS, which \_\_\_\_\_ (to grow) the nation's forests for everyone. The office of agency \_\_\_\_\_ (to be situated) just opposite the Society of Ukrainian Forests where his boss \_\_\_\_\_ (to have) a meeting today.

This is how Allan \_\_\_\_\_ (to spend) his day:

He \_\_\_\_\_ (to work) at a computer most of the time reporting to the finance manager.

He \_\_\_\_\_ (deal) with a variety of colleagues within PSS because the administrative officer \_\_\_\_\_ (to be) primarily responsible for ensuring timesheet data (collated, processed and submitted to agency in good time for weekly payroll) for agency employees that \_\_\_\_\_ (work) in PSS.

Allan also \_\_\_\_\_ (to be) involved in financial transaction processing, support head of PSS in preparation of reports, presentations and correspondence, as well as support other colleagues with preparation of documents and reports, project delivery. He \_\_\_\_\_ (assist) in organizing events and networking activities.

**Listen to the recorder about work duties at the office. Are these sentences true or false?**

1. Jani is new in the department \_\_\_\_\_.
2. Luciana has short, dark, hair \_\_\_\_\_.
3. The guy on the phone is called Ian \_\_\_\_\_.
4. Maria is responsible for the new orders \_\_\_\_\_.
5. Yuki should write everything down \_\_\_\_\_.
6. Sebastian works in communications \_\_\_\_\_.

**Answer the following questions:**

1. What are working hours for most office jobs in our country?
2. What are job responsibilities for office workers?

3. What are forester's office work responsibilities?

**Read and translate the text.**

### **Office work for a forester**

A forester's office work involves extensive planning, data analysis, reporting, and administration, focusing on developing and implementing sustainable forest management plans, managing budgets, ensuring legal compliance, handling permits, coordinating with **stakeholders (loggers, landowners, public)**, analyzing environmental data (health, **pests**, wildlife), and preparing reports that are crucial for balancing timber production with conservation goals.

#### **Key Office Tasks:**

Planning & Strategy: Developing short-term and long-term forest management plans, timber **harvest** plans, and **reforestation** strategies.

Data Management & Analysis: Analyzing forest inventory data, growth patterns, health assessments, and environmental impacts using GPS and surveying tools.

Budget & Contracts: Monitoring budgets, obtaining quotes for projects and negotiating contracts for harvesting and land **leasing**.

Permitting & Compliance: Issuing permits, ensuring compliance with environmental laws, and managing issues like **unlawful dumping**.

Coordination & Communication: Liaising with government agencies, private landowners, loggers, scientists, and the public, often involving meetings and presentations.

Wildlife & Habitat: Planning and implementing projects for wildlife habitat conservation, invasive species control, and ecosystem monitoring.

#### **Tools Used:**

- Data analysis software.
- GIS/GPS mapping tools.
- Word processing and spreadsheets.
- Specialized forestry software for modeling and inventory.

#### **Why it's important:**

Office work implements field data into actionable plans, ensuring forests are managed sustainably, legally, and efficiently for recreation and wildlife forestry or timber use.

#### **Complete these sentences:**

1. A forester's office work involves \_\_\_\_\_.
2. The key office tasks for a forester are \_\_\_\_\_.
3. The main forester's tools at the office are \_\_\_\_\_.
4. Office work implements \_\_\_\_\_.

**Find the meaning of the following words:**

- |                     |   |
|---------------------|---|
| A. logger           | 1. the time of year when the crops are gathered in on a farm, etc.; the act of cutting and gathering crops  |
| B. stakeholder      | 2. ordinary people in society in general  |
| C. landowner        | 3. the act of using or letting somebody use something, especially property or equipment, in exchange for rent or a regular payment synonym rental |
| D. public           | 4. an instrument such as a hammer, screwdriver, saw, etc. that you hold in your hand and use for making things, repairing things, etc.            |
| E. harvest          | 5. a person whose job is cutting down trees for their wood  |
| F. tool             | 6. a person who owns land, especially a large amount of land  |
| G. unlawful dumping | 7. a person or group of people who own a share in a business.   |
| H. leasing          | 8. the criminal act of intentionally disposing of unwanted items at any place outside   |
| I. pest             | 9. the process of replanting an area with trees   |
| J. reforestation    | 10. an insect or animal that destroys plants, food, etc.  |

## Unit 10

### Discussion: **THE FOREST**

#### Get ready!

1. What for does the humanity need forests?
2. What is the main role of forests on the planet Earth?

#### Before reading, learn some vocabulary:

lumbering – вирубка лісу	spendthrift – марнотрат
depletion – зменшення	perpetuation – увічнення
resource – джерело	surplus – надмірне
dominion – власність	expansion – поширення
preserve – оберігати	familiarize – ознайомлювати
timberland – лісове угіддя	squander – марнотратство

#### Read and translate the text.

### The forest

Our forests, with their billions of trees, are the backbone of agriculture, the skeleton of lumbering, and the heart of industry. Even now, in spite of their depletion, they are the cream of our natural resources. They furnish wood for the nation, pasture for thousands of cattle and sheep, and water supply for countless cities and farms. They are the dominions of wild life.

Millions of birds, game animals, and fish live in the forests and the forest streams. The time is coming when our forests will be the greatest playgrounds. It is necessary that we preserve, protect, and expand our timberlands. By so doing we shall provide for the needs of future generations.

The forest is one of the most faithful friends of man. It provides him with materials to build homes. It furnishes fuel. It aids agriculture by preventing floods and storing the surplus rainfall in the soil for the use of farm crops. It supplies the foundation for all our railroads. It is the producer of fertile soils. It gives employment to millions of workmen. It is a resource which bountifully repays kind treatment. It is the best organized feature of the plant world. The forest is not merely a collection of different kinds of trees. It is a permanent asset which will yield large returns over long periods when properly managed.

Our forest fortune has been thoughtlessly squandered by successive generations of spendthrifts. Fortunately, it is not too late to rebuild it through cooperative effort.

The work has been well begun, but it is a work of years, and it is to the youth of the country that we must look for its continuous expansion and perpetuation. A part of our effort must be directed toward familiarizing them with the needs and rewards of an intelligent forestry policy.

**1. Translate the following word combinations:** the backbone of agriculture, the dominions of wild life, the skeleton of lumbering, our natural resources, game animals, to expand our timberlands, the needs of future generations, to prevent floods, the surplus rainfall in the soil for the use of farm crops, to give employment to millions of workmen, a permanent asset, an intelligent forestry policy, water supply, fertile soils.

**Find the modal verbs of obligation in the text. Name the modal verbs of obligation that you know.**

**Must / mustn't**

**We must save the forest for the future generations.  
We mustn't spoil the fertile soil.**

**Put in 'mustn't' or 'don't / doesn't have to'**

1) We have a lot of work tomorrow. You _____ be late.
2) You ____ tell anyone what I just told you. It's our forest management plan.
3) The arboretum is free of charge. You _____ pay to get in.
4) Forestry students _____ miss classes. Then they aren't able to pass the examination test.
5) Ben's a millionaire. He _____ go to work.
6) I _____ do the washing because a hotel maid does it for me.
7) We _____ rush. We've got plenty of time.
8) You _____ smoke in the forest it can be the cause of forest fire.
9) You can borrow my new uniform, but you _____ get it dirty.
10) We _____ miss the train, because it's the last one tonight.
11) She _____ do this work today, because she can do it tomorrow.
12) I _____ clean the floor today because I cleaned it yesterday.
13) We _____ forget to lock all the doors before we leave.
14) We _____ stay in a hotel in London; we can stay with our supervisor.

15) I \_\_\_\_\_ spend too much money today, as I've only got a little left.

16) They \_\_\_\_\_ get up early today, because it's Sunday.

17) I \_\_\_\_\_ eat too much cake or I'll get fat!.

18) We \_\_\_\_\_ be late for the exam.

19) You \_\_\_\_\_ prepare the report now. I'll do it later.

20) He \_\_\_\_\_ cook tonight because he's going to a restaurant.

## Unit 11

### Discussion: FOREST TYPES

#### Get ready!

1. Are forests all over the world the same?
2. Does the climate influence the forest type?
3. Does each type of forest have different characteristics?

#### Before article reading, work on term matching with their definitions.

species	A. an area of land that is permanently frozen below the surface
recycled	B. the part of the year during which rainfall and temperature allow plants to grow
permafrost	C. a set of animals or plants in which the members have similar characteristics to each other and can breed with each other
growing season	D. rain, or the amount of rain that falls
Coniferous	E. A deciduous tree loses its leaves in autumn and grows new ones in the spring
Deciduous	F. a tree producing cones, and having leaves that do not fall off in the winter
rainfall	G. having been used before and then put through a process so that it can form a new product

#### Read and translate the text.

### The different types of forests

Forests cover about 30% of the Earth's land and are home to over 80% of terrestrial species. More than 60,000 tree species exist, and forests are classified by factors such as climate, location, and rainfall. There are three main forest types: boreal, temperate, and tropical.

**Boreal forests** are found in cold northern regions and have long winters, permafrost, and short growing seasons. Coniferous trees dominate these forests, which are important carbon stores. Rising temperatures threaten boreal forests by melting permafrost and killing trees.

**Temperate forests** occur in mid-latitudes and experience four seasons. They have nutrient-rich soils and support diverse plant and animal life. The three types are deciduous forests, coniferous forests, and temperate rainforests, which differ in climate, tree types, and rainfall.

**Tropical forests** are located near the equator and have warm, wet, and stable conditions. Although they cover less than 10% of the Earth, they host over half of all species. Their soils are poor because nutrients are quickly recycled. Tropical forests are highly threatened by human activities such as logging and agriculture.

There are five types of tropical forests: rainforests, moist forests, dry forests, cloud forests, and mangroves. Each has unique features and supports rich biodiversity. Protecting these forests is essential for conserving global ecosystems.

Each type of forest has different characteristics and together host millions of amazing species. These ecosystems are extremely interesting, and the work being done in these areas is vital for the protection of each of these unique forest types.

**Translate the following word combinations from the text:** vital for the protection, unique forest types, threatened by human activities, nutrient-rich soils, to support diverse plant and animal life, terrestrial species, logging and agriculture.

<b>Passive Voice</b>	Present	Past	Future	Future in the Past
Indefinite	am / is / are + V 3	was / were + V3	will be + V3	would be + V3
Continuous	am / is / are + being + V 3	was / were + being + V3	_____	_____
Perfect	have / has + been + V 3	had + been + V 3	will have + been + V3	would have + been + V3

**Complete the following sentences using the Passive Voice.**

1. Tropical forests \_\_\_\_\_ (to locate) near the equator and have warm, wet, and stable conditions.
2. Boreal forests \_\_\_\_\_ (to find) in cold northern regions and have long winters, permafrost, and short growing seasons.
3. Forests \_\_\_\_\_ (to classify) by factors such as climate, location, and rainfall.
4. Tropical forests \_\_\_\_ highly \_\_\_\_\_ (to threat) by human activities such as logging and agriculture.
5. These ecosystems are extremely interesting, and the work \_\_\_\_\_ (to do) in these areas is vital for the protection of each of these unique forest types.

**Read more examples of the Passive Voice. Using the table, comment on the tense form of the Passive Voice.**

1. A Certified Species Map must be supplied along with all EEF Form 1 and Form 2 applications. The certified species map must include all point feature locations and relevant 118 annotations on the Certified species map legend in relation to eligible operations to be carried out under the scheme e.g.

2. The installation of silt traps/appropriate blocking of existing forest drains (location and number of silt traps/location and number of sites where drain blocking has been/is to be initiated).

3. Any relevant notes or remarks should be recorded on the Certified Species Map to aid the assessment of the application and its suitability for grant aid. If the area submitted for approval has received grant aid in the past the Contract Number for the area must be noted on the Certified Species Map.

## Unit 12

### Discussion: **FORESTS AND THEIR FUNCTION. ECOSYSTEM BIODIVERSITY**

#### Get ready!

1. What is the main function of the forest?
2. What does the forest biodiversity consist of?

#### Work on the forestry terminology finding its Ukrainian equivalent:

biological diversity	загроза
human activity	вирубка лісів
disturbance	поживна речовина
consequence	органічна матерія
decomposition	біологічна різноманітність
organic matter	наслідок
threat	розкладання
nutrient	порушення
deforestation	освоєння с.г. земель
conversion of agricultural land	людська діяльність

#### Read and translate the text.

#### **Forest Ecosystem: Structure and Functioning**

The forest performs a great number of functions both as a natural formation and as a product of skillful human activity. The three main functions performed by a forest ecosystem are protective, productive and social. Forest structure is both a product and drivers of ecosystem processes and biological diversity. It has become apparent in recent years that changes in forest structure as a result of management or disturbances have undesirable consequences for other components of forest ecosystem.

Forest ecosystem consists of organisms (plants, animals and micro-organisms) and their habitats (the soil and air). The functioning of forest ecosystems is characterized by energy and nutrient flow and cycling, biomass production and the decomposition of dead organic matter.

Forest ecosystems are characterized by long time frames, unique structure and function, multiple services, useful products and many stake holders. Human activities are part of the ecosystem dynamics and human perception of forests is changing. In recent years, human activity has changed the structure and functioning of forest ecosystems in most regions of the world. While the most visible threats to forests worldwide are deforestation and conversion of agricultural

land. These systems are also increasingly exposed to atmospheric nutrient decomposition and climate change.

**Mark the statements as true or false.**

1. \_\_\_\_ Forest ecosystem consists of biotic (living organisms) and abiotic components (non-living organisms).
2. \_\_\_\_ The forest ecosystem has protective, productive and social functions.
3. \_\_\_\_ Forest ecosystems are formed by short-term frames.
4. human activity has changed the structure and functioning of forest ecosystems

**Translate the following expressions:** biotic and abiotic components of ecosystem, a consequence of interactions and interchanges, mitigation of climate change, water filtration and water retention, changes in species composition, atmospheric deposition, a significant role in C sequestration, the abundance of organic C in the soil, soil fertility, soil properties, the growth and structure of soil biota, the foliage of coniferous trees.

**Come back to the text and find the sentences in the Present Perfect and transform them into the Past Perfect.**

<b>Past Perfect</b>	+ S + had + Ved / III	<i>The students had worked in the nursery.</i>
	- S + had + not + Ved / III	<i>The students hadn't worked in the nursery.</i>
	? Had + S + Ved / III	<i>Had the students worked in the nursery?</i>

**Read the text abstract filling the appropriate words in the spaces:**  
nutrient, consequence, ecosystem, composition, unit, mitigation.

Ecosystem is the basic \_\_\_\_\_ of the ecology, several essential but invisible services flow through the functions of ecosystems that human use. In a strict sense the term ecosystem services include all services to humans that are generated as a \_\_\_\_\_ of interactions and interchanges between biotic and abiotic components of ecosystem. Some examples of this are \_\_\_\_\_ of climate change by green plants, removal of toxic metals from soil, cycling of nutrients and soil formation.

Interaction among plant soil hydrology and microbes regulates \_\_\_\_\_ cycling and other processes in ecosystems. These interactions vary in time and space, greatly complicating \_\_\_\_\_ scale assessment of nutrient loss from the

soil following disturbance, effect atmospheric deposition and climate change, and responses to changes in species \_\_\_\_\_.

**There are 2 text abstracts that you need to work with. Choose one of them, read and then make up a plan of it for retelling your group mates about the soil or the plant function in the forest ecosystem.**

1. Soil is the largest pool of terrestrial organic carbon in the biosphere, storing more C than is contained in plants and the atmosphere combined, and plays a significant role in C sequestration. The abundance of organic C in the soil affects and is affected by plant production and its role as a key control of soil fertility and agriculture production has been recognized for more than a century. The forest floor development is the energy source for heterotrophic organisms, a reservoir for mineral nutrients and influences forest hydrology and ground vegetation. The pattern and control of Soil Organic Carbon (SOC) storage are critical for our understanding of the biosphere, given the importance of SOC for ecosystem processes one aspect of the organic carbon pool that remains poorly understood is its vertical distribution in the soil and accompanying relationships with climate and vegetation nutrient dynamics.

2. The dominant tree species have fundamental effects on biological and chemical soil properties. Some tree species may slow down the cycling the nutrients where as others may improve soil fertility. The soil pH base saturation microbial C and N mineralization may also vary with dominant tree species.

Plants allocate a considerable portion, often more than 50% of their photosynthetic to the below-ground portion. It has been estimated that about 60% of this energy is allocated to root production, while the rest is liberated into the soil as rhizodeposition, a collective term describing the total carbon entering the soils via root. Since microbial growth in soil is C- limited it is widely believed that rhizodeposition is a key process influencing the growth and structure of soil biota, decomposition rate and nutrient availability of soils. Approximately one-fourth of the carbon assimilated by the foliage of coniferous trees is utilized by their symbiotic association, mycorrhizal fungi.

**Work on the following terminology filling in the missed letters.**

- R\_\_i\_\_od\_\_posit\_\_on
- A\_\_ocated
- L\_\_be\_\_ate\_\_
- S\_\_il\_\_b\_\_ta
- Fol\_\_g\_\_ of c\_\_nifer\_\_s tr\_\_s
- Gr\_\_nd ve\_\_et\_\_tion
- En\_\_rg\_\_s\_\_r\_\_e
- \_\_eterotro\_\_ic or\_\_ani\_\_s

## Unit 13

# Discussion:                      **DEFORESTATION**                      **AND** **ENVIRONMENTAL ISSUES**

### Get ready!

1. What forest threats do you know?
2. What makes the wild forests disappear?
3. What is the cause of natural disasters?

### Work on forestry vocabulary:

deforestation – вирубка лісів impact – вплив extinct – вимирати cattle – велика рогата худоба estimate – оцінювати recreate – відновлювати disaster – катаклізм, природне лихо recover – відновлювати	irreversibly – незворотній destruction – руйнування acknowledge crop – с.г. культура enabling – давати можливим invasive – насильницький, загарбницький increase – збільшувати flood – повінь
--	---

### Read, translate and fill in the appropriate words in the spaces:

cattle, land, plantations, biodiversity, demand, extinct, deforestation,  
agriculture

### Deforestation

Deforestation can result in serious negative impacts for forest \_\_\_\_\_. The UN Food and Agriculture Organization (FAO) estimated that 13 million hectares of forest are lost each year to \_\_\_\_\_. While it would take 1000 years for some tropical forests to recreate their biodiversity, others have been irreversibly damaged, as species become \_\_\_ after the destruction of their habitat.

\_\_\_\_\_ is generally acknowledged as the main driver of deforestation, as forests are cleared to make space for crops or \_\_\_\_\_ farms. In comparison, only a small proportion of global deforestation is caused directly from the forest sector through the establishment of \_\_\_\_\_ and overexploitation of timber.

Certification and the PEFC label on a product creates additional \_\_\_\_\_ for forest products by building consumer trust in them, which ultimately increases the value of forests. Creating additional value and demand for forest products is one of the best ways to keep forests standing, as it prevents them from being cleared for alternative \_\_\_\_\_ uses such as agriculture.

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

### **Natural disasters and disturbances**

Natural disturbances are interacting with climate change to further increase forest degradation.

Climate change is enabling invasive plant and insect species to gain advantage over native species. Until now, winter freezes have limited most forest pests, but rising temperatures will increase their negative impacts on forests. While destructive insects take advantage of forests weakened by drought, invasive plant species will be able to increase and spread due to their tolerance of harsh conditions.

Fire is a natural part of forest ecosystems and several species of trees have found ways to protect their seeds from it. However, with increasing temperatures favouring more intense wildfires, many forests will not be able to recover. Besides fire, flooding and hurricane-force winds have intensified and have been responsible for forest degradation.

Sustainable forest management can contribute towards strengthening the resilience of forests, enabling them to adapt to climate change impacts as well as natural disasters and disturbances. PEFC-certified forests are managed in compliance with international requirements and regularly monitored by third party, independent auditors. This ensures that forest management activities keep the forests healthy and do not lead to forest degradation, a common pre-condition of forests then converted for alternative land use.

**Translate the following phrases and word combinations:** sustainable forest management, forest degradation, to gain advantage over native species, negative impacts on forests, forest ecosystems, in compliance with international requirements, most forest pests, a common pre-condition of forests.

### **Translate the following:**

1. Зміна клімату дозволяє інвазивним видам рослин і комах отримати перевагу над місцевими видами.
2. У той час як руйнівні комахи користуються перевагами лісів, ослаблених посухою, інвазивні види рослин зможуть збільшуватися та поширюватися завдяки своїй стійкості до суворих умов.
3. Стале лісове господарство може сприяти зміцненню стійкості лісів, дозволяючи їм адаптуватися до впливу зміни клімату, а також стихійних лих та збурень.

### **Prefix definition:**

Prefix means a group of letters that is added at the beginning of a word to form a new word.

Prefixes are also used to create opposite words or antonyms. Few prefixes are as follows: mis-, in-, dis-, ir- , im- , il-, un-, - pre

**Find the prefixes in the following words:**

disadvantage	degradation
deforestation	disturbance
pre-condition	disaster
destructive	illegible
resilience	increase

## Unit 14

# Discussion: **SILVICULTURE.** **BE ENVIRONMENTALLY FRIENDLY!**

### Get ready!

1. What do you know about silviculture?
2. What does it mean?
3. What is the role of silviculture?

**Read and translate the text completing it with the necessary word combination from the word box:**

forest ecosystems, scientific approaches, sustainable timber , silviculturists, forest resources, branch of forestry

### Silviculture

Silviculture is a specialized \_\_\_\_\_ focused on the establishment, management, and conservation of \_\_\_\_\_. This field encompasses the protection and restoration of forests, often emphasizing \_\_\_\_\_ production while also considering wildlife habitats, recreation, and ecological health. \_\_\_\_\_ employ various techniques to manage tree growth, protect against diseases, and ensure the quality and diversity of \_\_\_\_\_. The practice has evolved significantly over centuries, with early methods based on practical experience now complemented by \_\_\_\_\_ that incorporate ecological principles.

**Work on the forestry terminology. Complete the missed letters.**

1. F\_re\_t eco\_\_ste\_s
2. T\_\_ber p\_oduc\_\_on
3. Tr\_\_grow\_\_
4. S\_\_entifi\_a\_\_roa\_\_es
5. R\_stora\_\_o\_\_of fo\_\_sts
6. \_\_on\_erva\_\_on of for\_\_t res\_\_rces

**Read the dialogue about forest conservation and make up your own.**

**Student 1:** At the previous class we discussed biodiversity. But what does it have in common with forest conservation?

**Lecturer:** You see, a forest's biodiversity includes **water resources**, soils, plant species, and animal populations. That is why it must be conserved.

**Student 1:** Who is responsible for it in forestry?

**Lecturer:** The forest managers minimize **erosion** and protect **waterways**; avoid the use of chemical pesticides; properly **dispose** of waste; **conserve** native tree species and maintain genetic diversity on their land.

**Student 1:** What else do they do?

**Lecturer:** They protect areas where **logging** is **prohibited** (including forestland that is steeply sloped, provides habitat for critical wildlife species, and / or serves as a culturally or spiritually significant function in the local community); and take other steps to ensure the **integrity** of the forest.

**Student 2:** I've heard that researchers have found that UNESCO World Heritage Sites and other protected areas benefited from having FSC / Rainforest Alliance Certified forestry businesses as neighbours. And separate studies in Africa and Asia found that certified **enterprises** did a better job than their noncertified peers of protecting great **apes** and other **mammals**.

**Student 1:** Oh, usual, you are a bookworm.

**Read the text and complete the spaces with the appropriate words.**

### Soil

Soil is the 1. \_\_\_\_\_ of the Earth on which land plants grow. It is a natural 2. \_\_\_\_\_ that supports plant life. Soil plays a very important role in the life of the world and mankind. It is a highly organized physical, chemical and 3. \_\_\_\_\_. Soil is a mixture of rock, organic materials, living forms, air and water. All of us depend on it. As a supporter of vegetable life, the soil provides food for animals and people. The growth and development of 4. \_\_\_\_\_ depend on the 5. \_\_\_\_\_, continuous supply of water, heat, light and air. No soil is perfectly fertile. If we want to have high yields of crops we must have a fertile soil. If the soil is poor we must apply fertilizers.

**biological complex  
particles  
agricultural crops  
fertility of the soil  
surface layer  
resource**

**Before article reading, work on term matching.**

a) substances that pollute the environment, especially gases from vehicles and poisonous chemicals

1. pollution \_\_\_\_\_

b) a solid, powder, liquid, or gas with particular properties

2. dismantle \_\_\_\_\_

c) the presence in or introduction into the environment of a substance which has harmful or poisonous effects

d) to stop functioning by gradually reducing its power or purpose.

e) the quality of being fertile; productiveness

f) to keep safe from harm or injury

g) the surroundings or conditions in which a person, animal, or plant lives or operates

h) produce and discharge (something, especially gas or radiation)

i) a chemical or natural substance added to soil or land to increase its fertility

j) Individual manual labour is often replaced by mechanized mass production, and craftsmen are replaced by assembly lines.

3. protect\_\_\_\_\_

4. fertility\_\_\_\_\_

5. industrialization\_\_\_\_\_

6. substance\_\_\_\_\_

7. emit\_\_\_\_\_

8. pollutants\_\_\_\_\_

9. fertilizer\_\_\_\_\_

10. environment \_\_\_\_\_

### Learn some new vocabulary:

protect – захищати
preserve – зберігати
pollution – забруднення
damage – пошкодження
harmful – шкідливий
power plants – електростанція
substance – речовина
disaster – природне лихо, катаклізм
increase – збільшуватися
urgent – нагальний
prevent – попереджати

### Read and translate the text

#### Nature protection

Protecting nature is an important responsibility of every citizen of Ukraine. Our aim is to preserve the land for future generations. Industrialization and poor technologies have caused serious air, water, and soil pollution. Harmful substances from factories, power plants, and vehicles damage the biological balance.

Chemicals used in agriculture pollute rivers and oceans, and the Chernobyl disaster has created long-term radiation problems.

Scientific and technological progress has greatly increased human impact on the biosphere, making urgent environmental measures necessary. Pollution must be reduced, and modern, eco-friendly technologies should be introduced. Scientists play a key role in finding effective ways to protect the environment and restore damaged ecosystems.

International organizations such as the UN Environmental Programme work to prevent pollution, recycle waste, protect soil, and improve environmental health. However, real success depends on the actions of every individual. Ukraine must educate its citizens to be environmentally responsible and encourage everyone to care about nature on a daily basis.

**Answer the following questions:**

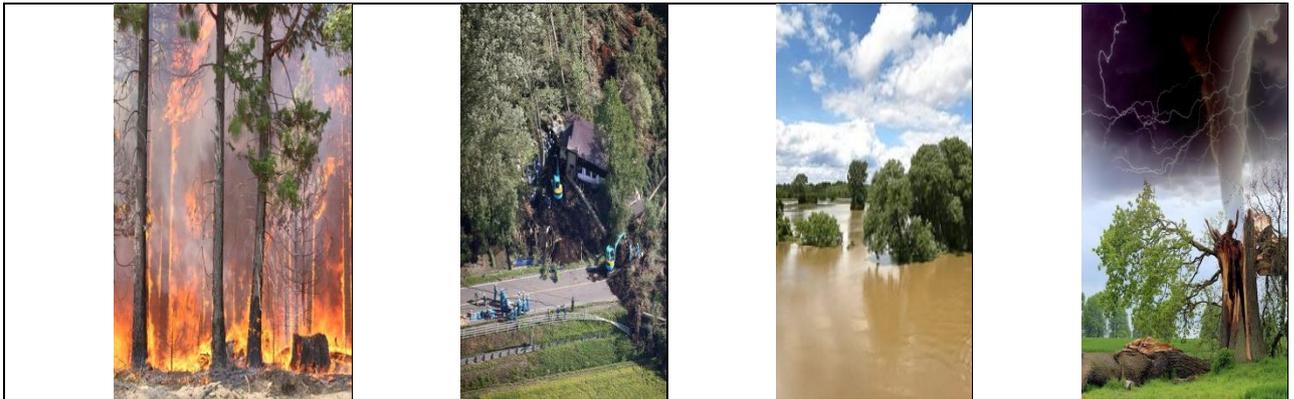
- Why is it important to protect the environment?
- How can a forester prevent the environment from harm?

## Unit 15

### Discussion: FOREST ISSUES AND THREATS

#### Get ready!

1. What problems do forests face?
2. Can you identify the problems shown in the pictures?



3. In what ways are wild animals threatened by man?

#### Read this quote, then underline the correct word.

Wildlife is in 'catastrophic **decline** / **decrease** due to human **destruction** / **ruining**, scientists warn.

**Wildlife populations** / **inhabitants** have fallen by more than two-thirds in less than 50 years, according to a major report by the **conservation** / **afforestation** group WWF. The report says this "catastrophic decline" shows no **sign** / **feature** of slowing. And it warns that nature is being **destroyed** / **broken** by humans at a rate never seen before.

**Wildlife** / **wild nature** is "in freefall" as we **burn** / **smoke** forests, over-fish our seas and destroy **wild** / **savage** areas, says Tanya Steele, chief executive at WWF. "We are wrecking our world – the one **place** / **spot** we call home – risking our health, security and survival here on Earth. Now nature is sending us a desperate SOS and time is **finishing out** / **running out**."

#### Learn some vocabulary:

restoration – відновлення	awareness – обізнаність
fire protection – протипожежний захист	innovations – інновації
extinguishing agents – вогнегасні речовини	firebreaks – протипожежні смуги
weather forecasting – прогноз погоди	fire ignition – загорання вогню
	rapid response – швидке реагування
	humidity – волога

**Read the article, translate it and find the titles for each paragraph.**

- A. The forest restoration after fires.
- B. The necessity of forest fire protection and prevention methods.
- C. Timely fire detection and monitoring.

## **Fire protection**

### **1.**

In today's world fire protection is considered to be of great importance for forest ecosystems. Thus, it requires complex approaches. The main aspects include rapid response, prevention, monitoring and post-fire regeneration. Due to climate change, anthropological impact and increased forest fire frequency modern measures are adapted to new challenges. Forest fire prevention is the basic element of fire safety aimed at avoiding fires. Such preventive measures include forest clearing, creating of firebreaks, raising of public awareness of fire safety, and restricting of vehicle entry and fire burning during fire danger periods.

### **2.**

This article points out the necessity of timely fire monitoring and detection using new technologies that enable recognition of fire ignition and estimation of the situation. It is important to use satellite data, video surveillance systems to pinpoint areas of fire ignition and analyze the forest fire extent. Drones are also used for patrolling large territories, fire detection in hard to-reach areas, and weather forecasting (temperature, humidity, wind) in order to identify fire risk zones. The issues of rapid response to forest fires and their timely extinguishing, both manually and with the use of technology, were considered.

### **3.**

It has been proven that forest restoration after fires is an important component of ecological balance. There is a need to analyze the ecosystem state and apply corrective measures. Considerable attention should be paid to the protection of biodiversity, especially to the protection of rare species of flora and fauna that may be affected by fires. The issues of implementing innovations to improve the efficiency of fire protection are covered: the use of algorithms for analyzing weather data and forecasting fires, the use of mobile applications and automated response systems. Fire protection of forest ecosystems today is a combination of modern technologies, effective management, social responsibility and adaptation to climate change. An integrated approach and rapid response help to minimize damage and ensure the sustainability of forest ecosystems in the future.

### Questioning:

1. According to the first paragraph, the forest fire preventative measures are:
  - A. forest clearing and creating of firebreaks
  - B. deforestation
  - C. afforestation
  - D. raising of public awareness of fire safety and restricting of vehicle entry and fire burning
  
2. What does the article point out?
  - A. a new research about flooding
  - B. tools needed for fire extinguishing
  - C. hard to-reach areas
  
3. The research has proven that:
  - A. fire protection of forest ecosystems today is a combination of modern technologies, effective management, social responsibility and adaptation to climate change.
  - B. an integrated approach and rapid response don't help to minimize damage and ensure the sustainability of forest ecosystems.
  - C. forest restoration after fires is an important component of ecological balance.

## Unit 16

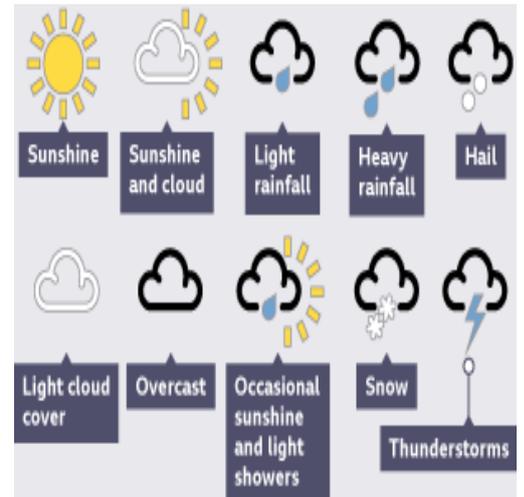
### Discussion: WEATHER AND CLIMATE

#### Get ready!

1. How does the climate affect forestry?
2. How can the weather help and harm crops?
3. What is the difference between the climate and weather?

**Before article reading, work on term matching with their definitions.**

- |                        |  |
|------------------------|--|
| 1. climate             | A. the amount of water in the soil                           |
| 2. humidity            | B. a prediction of future weather conditions                 |
| 3. mulch               | C. weather conditions in a particular area                   |
| 4. long-range forecast | D. the amount of water in the air                            |
| 5. soil moisture       | E. a material that is spread on the ground to protect plants |



#### Read and translate the text.

### Weather and climate

Weather and climate are not independent. The confusion comes from weather and climate being intimately connected to each other, and this confusion is often highlighted in discussions about our changing climate. The averages of daily weather are used to monitor climate. Changes in climate lead to changes in weather patterns including extremes. An easy way to remember the difference is that climate is what you expect, like a hot summer, and weather is what you get, like a cool day in August. Our communities and farms are affected by short term weather events. Their long-term sustainability is affected by climate and climate variability attributed to natural processes and human activities.

Weather is the behavior of atmosphere at any given moment. It is what we observe on a daily or weekly basis and includes, but is not limited to, sunshine, rain, cloud cover, wind, hail, snow, sleet, freezing rain, blizzards, ice storms, and thunderstorms. We generally think about the weather and how it affects our lives

and activities. Weather can change from minute-to-minute, hour-to-hour, day-to-day, and season-to-season.

Climate is the long-term aggregation of weather that occurs in an area and the extent to which those conditions vary over long time intervals. When scientists talk about climate, they are looking at patterns of precipitation, temperature, humidity, sunshine, wind speed, fog, frost, and other variables, such as soil temperature and moisture that occur over a long period in a particular place.

The concept of climate has broadened and evolved in recent decades in response to the increased understanding of the underlying processes that determine climate and its variability. Earth's climate starts with the sun, the sole energy source for our planet. Climate is influenced by interactions involving the sun, ocean, atmosphere, clouds, ice, land, and living organisms. Often, this is thought of as the "climate system." Climate varies by region as a result of local differences in these interactions.

### Mark the following statements as true or false:

1. \_\_\_\_\_ Weather refers to the average conditions in a place over many years (usually at least 30 years, to account for the range of natural variations from one year to the next). For example, the weather in Minneapolis is cold and snowy in the winter, while Miami's weather is hot and humid.

2. \_\_\_\_\_ Climate is a specific event or condition that happens over a period of hours or days. For example, a thunderstorm, a snowstorm, and today's temperature all describe the climate. Climate is highly variable day to day, and from one year to the next.

3. \_\_\_\_\_ When scientists talk about global climate change, they're talking a pattern of changes happening around the world over many years. One of the most important trends that scientists look at is the average temperature of the Earth, which has been increasing for many years.

### Learn some vocabulary:

hail – град	sapling – саджанець дерева
sleet – мокрий сніг	fertilizer – добриво
blizzard – хуртовина	forecast – прогноз погоди
precipitation – опади	surface – поверхня
droplet – крапля	evaporate – випаровуватися
vapor – пара	maple – клен
oak – дуб	beech – бук
poplar – тополя	linden – липа
birch – береза	perennial – багаторічний

**Complete these sentences using the word box:**

hardiness zone	temperature	last frost	precipitation
----------------	-------------	------------	---------------

\_\_\_\_\_ – all forms of water particles that fall from the atmosphere and reach the ground. These include rain, snow, sleet, and hail. It does not include fog or dew, as those are not falling; nor does it include virga, water droplets or ice that form in clouds but evaporate before reaching the ground.

The USDA plant \_\_\_\_\_ map is the standard by which gardeners and growers can determine which perennial plants are most likely to thrive at a location.

Record-breaking global \_\_\_\_\_s during summer have become the norm, primarily due to human-induced climate change and changes in land cover and land use.

The \_\_\_\_\_ date is crucial for gardeners and farmers as it indicates when it is generally safe to plant tender crops outdoors without the risk of frost damage.

**Read and translate the following dialogue:**

**University supervisor:** I've heard you're an experienced urban forester. Could you give us any planting advice? You see, we've bought some **saplings** of **coniferous** trees for planting on The International Day of Forests, but we have no idea what to do with them.

**Urban forester:** Of course, with pleasure. Where would you like to **plant** them **out**?

**University supervisor:** Just near our university campus.

**Urban forester:** How many trees are there?

**University supervisor:** There are 3 birches, 2 maples, 2 poplars and 5 lindens. Most of them are **broadleaved** trees.

**Urban forester:** While choosing the place remember about the tree distance and favourable **weather conditions**. It's better to plant tree saplings until after the **last frost finishing**, and the distance between trees shouldn't be less than 3 meters. Don't forget about any **fertilizer** and water.

**University supervisor:** Is it the **favourable time** for tree planting now?

**Urban forester:** A local **long-range forecast** will help you determine when to plant.

**University supervisor:** I appreciate your help.

**Urban forester:** I'm always ready to help you.

**Using the example from the previous dialogue, make up your own. You may use the key words and The Present Perfect for your conversation. Find example sentences with The Present Perfect in previous exercise and read them up loud.**

<b>Present Perfect</b>	S + have / has + V ed / 3	+ We have sown seeds before the first frost. - We have not sown seeds before the first frost. ? Have you sown seeds before the first frost?
------------------------	---------------------------	---

**Fill in the spaces with the appropriate words.**

### **Water cycle**

Earth's water is always in movement, and the \_\_\_\_\_ also known as the hydrologic cycle, describes the continuous movement of \_\_\_\_\_ on, above, and below the \_\_\_\_\_ of the Earth.

Since the water cycle is truly a "cycle," there is no beginning or end. When the sun heats the oceans, liquid water from the ocean's surface \_\_\_\_\_ into water vapour in the air. The sun \_\_\_\_\_ this air so that it rises through the \_\_\_\_\_ and is carried along by wind currents. As this water vapour rises, it cools down again, condensing into \_\_\_\_\_ of liquid water (or crystals of solid ice). Collections of these droplets are called \_\_\_\_\_.

- **droplets**
- **surface**
- **water**
- **water cycle**
- **evaporates**
- **heats**
- **atmosphere**

**Read and translate the text abstract, then underline the correct word.**

### **Climate change**

Differences of **climate** / **weather** have largely influenced tree **growth** / **increase** and types in the country. The distribution of tree **families** / **relatives** is changing all the time. It shifts just as the climate and other conditions change. Trees constantly strive among **themselves** / **ourselves** for control of different localities. For a time one species will **predominate** / **look down on**. Then other varieties will appear and **displace** / **exgange** the ones already established. The **distribution** / **propogation** of trees changes very remarkably from one century to another. For **sample** / **example**, in some sections, the red and black oaks are replacing the white oaks.

Some trees are light-lovers. They **require / demand** much more sunlight than others that do well under **heavy / hard** shade. Oak trees require plenty of light; maples or beeches **thrive / prosper** on little light.

## Unit 17

### Discussion: **PLANT STRUCTURE AND GROWTH**

Get ready!

- What are the parts of the plant?
- Give the definition for the following words: **stem, root, leaf, flower, cone.**

Read the information about plants and tell us what you know about them.

#### Information to know

#### Plant parts

The most logical starting point for a scientific study of ornamental plants is their macroscopic anatomy (what we can see with the unaided eye). Members of the higher plants are made up of roots, stems, leaves, and flowers or cones. Flowers are the reproductive structures of the Angiospermopsida as cones are for the Coniferopsida. As previously noted, these two Classes are commonly referred to simply as the flowering plants and the conifers.

#### Words to remember:

dormant – сплячий	cotyledon – сім'ядоля
dormancy – стан спокою	maturity – стиглість
germinate – проростати	seed vigor – сила проростання
germination – проростання	seedling – розсада
embryo – зародок	pericarp – оплодень
coat – оболонка	angiosperm – покритонасінні
sprout – пускати пагін	location - розташування
gymnosperm – голонасінні	seed – насіння
hybrid – гібрид	bud – брунька
	sow – сіяти

Read and translate the information about seeds.

#### Seeds

The **Gymnosperms** and **Angiosperms** are seed-bearing plants. A seed is a miniature plant. It develops through the sexual reproduction process and is initially

**dormant.** It awaits the provision of proper environmental conditions that permit it to **germinate**. The miniature plant is termed an **embryo**. It is enclosed by a **seed coat** if it has two **cotyledons**, or by a **pericarp** if it has only one cotyledon. As noted previously, plants that produce one or two cotyledons are termed **monocots or dicots**, respectively. Cotyledons supply nutrients to the embryo until it can begin photosynthesizing to allow its further development.

**Read the advertisement and complete spaces with the needed words from the box.**

A cold-weather \_\_\_\_\_ that is bred for superior seed \_\_\_\_\_. Seedlings survive in temperatures down to 37° F.

\_\_\_\_\_: Soak seeds in water overnight to remove hard \_\_\_\_\_ and end \_\_\_\_\_. Place in 70° F soil to \_\_\_\_\_.

**Location:** \_\_\_\_\_ in a place that gets enough sun.

**Sowing method:** Use a pen or similar shaped object to prepare holes 0.5 cm deep, 2 cm apart. Drop one \_\_\_\_\_ per hole. Cover with soil and water it.

**Days to \_\_\_\_\_** 7-14

**Days to \_\_\_\_\_:** 58

**Harvest:** Cut buds before they flower.

**Price:** \$ 10 /100 g. packet\*

**Match the words with their definitions.**

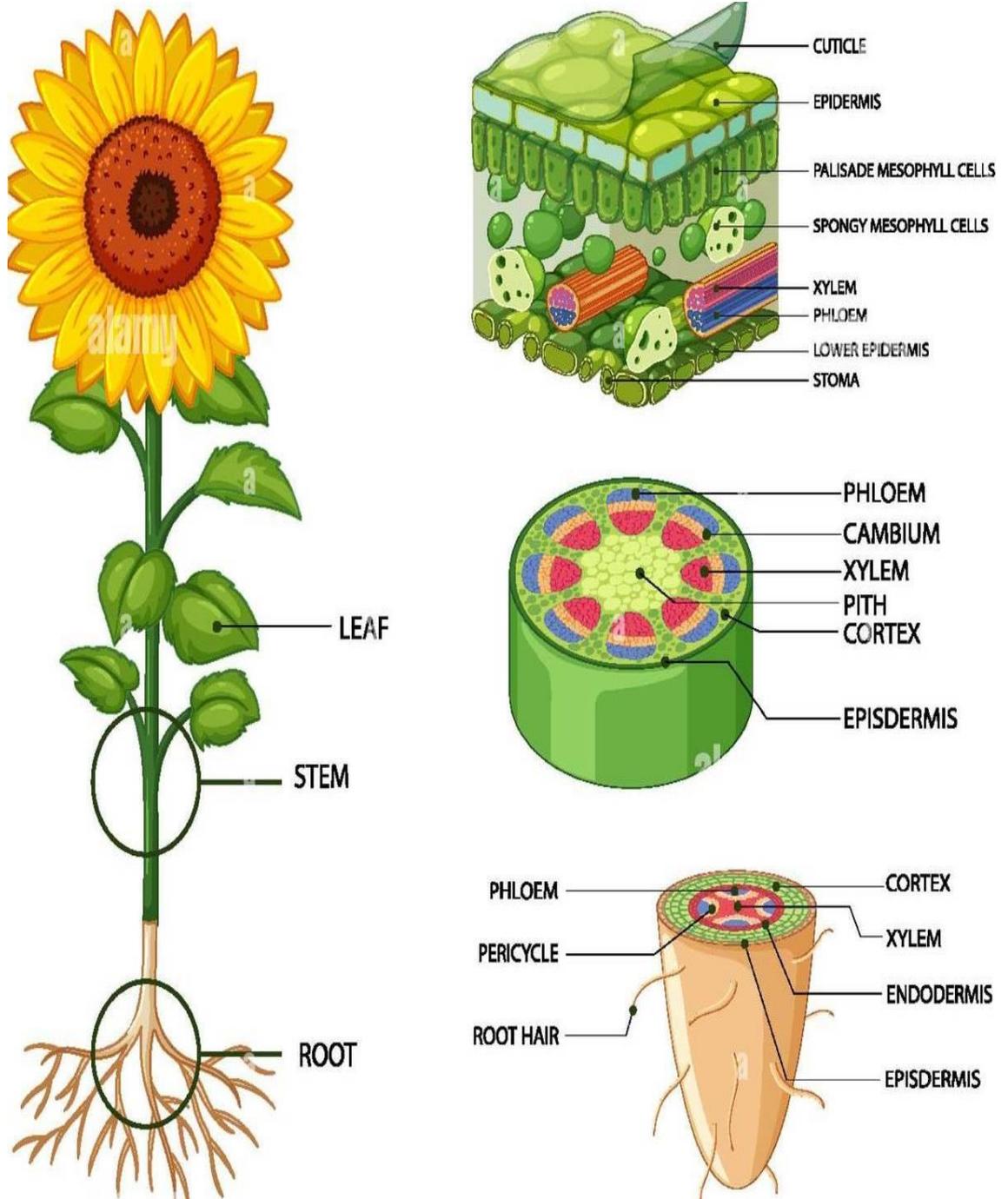
- |               |   |
|---------------|---|
| 1. hard coat  | A. the firm outer layer of a seed           |
| 2. germinate  | B. to sprout from a seed                    |
| 3. seedling   | C. to plant seeds                           |
| 4. seed vigor | D. made by parents of different breeds      |
| 5. hybrid     | E. a young plant                            |
| 6. sow        | F. the strength and survivability of a seed |

**Make up a dialogue with a partner using useful phrases:** *I'd like to buy some seeds. What tree breed are you interested in? I only need ...*

<p><b>Conversationalist 1:</b> You are a forester selling tree seeds in the nursery. Talk to your partner about:</p> <ul style="list-style-type: none"> <li>• seed varieties</li> <li>• discounts</li> <li>• total price</li> </ul>	<p><b>Conversationalist 2:</b> You are buying tree seeds. Answer your partner's questions.</p>
---	--

## Plant anatomy

Work with a dictionary finding the Ukrainian equivalents.



## Unit 18

### Discussion: IMPORTANS OF PLANTS

#### Get ready!

1. Why are plants an important part of our environment?
2. What do plants give for humanity?
3. How do plants grow?

#### Before article reading, work on term matching with their definitions.

- |                   |  |
|-------------------|--|
| 1. reproduction   | a single living plant, animal, virus, etc.   |
| 2. embryo         | a piece of equipment that helps you to do something  |
| 3. organism       | the main substance in the cell walls of plants, also used in making paper, artificial threads and cloth, and plastics  |
| 4. aid            | the process by which a plant uses carbon dioxide from the air, water from the ground, and the energy from the light of the sun to produce its own food and oxygen: |
| 5. cellulose      | the process of having babies, producing young, or producing new plants   |
| 6. microscope     | an animal that is developing either in its mother's womb or in an egg, or a plant that is developing in a seed   |
| 7. photosynthesis | an area, often covered with sand or rocks, where there is very little rain and not many plants:  |
| 8. desert         | the smallest basic unit of a plant or animal   |
| 9. cell           | a device that uses lenses to make very small objects look larger, so that they can be scientifically examined and studied  |

#### Fill in the text with the appropriate words from the table:

#### Importance of plants

We see a lot of different plants around us: grass, trees, flowers. They grow in almost all the parts of the world: on the tops of the mountains, in the seas and

oceans, in some \_\_\_\_\_ and Polar Regions. There are more than 350,000 species (kinds) of plants. Plants vary in size, structure, form, \_\_\_\_\_ and their usefulness to man. Some plants are tiny. We can only see them with the \_\_\_\_\_ of a \_\_\_\_\_.

Plants are complex \_\_\_\_\_ that are made up of many types of cells. Plant \_\_\_\_\_ have thick walls that consist of a material called \_\_\_\_\_. All plants develop from a tiny form of the plant called an \_\_\_\_\_. Plants also obtain food in ways different from those of most other organisms. Almost all kinds of plants stay in one place for their entire lives. Most plants make their own food from air, sunlight, and water by a process called \_\_\_\_\_.

**Complete the sentences using the word box.**

plants                      weeds                      environment                      habitat

1. Why are plants such an important part of our \_\_\_\_\_?
2. Plants are all around us, from trees to flowers, to fruits and vegetables and even \_\_\_\_\_.
3. In some habitats, such as woodlands and rainforests, the plants are what make the \_\_\_\_\_.
4. In some habitats, such as an urban habitat, \_\_\_\_\_ fit in around everything else.

**Remember some vocabulary:**

respiration – дихання	stomata – продихи
transpiration – виділення пари, випаровування	storage – зберігання
manufacture – виробництво	juvenile – молодецький
chlorophyll – хлорофіл	mature – зрілий
simultaneously – одночасно	translocation – переміщення
	vapor – пара

**Read and translate the text.**

**Plant development**

A green plant is comparable to a machine that operates nonstop. However, unlike a machine that would perform a single function or programmed series of functions, the plant “machine” performs different functions simultaneously. At different times and under varying environmental conditions, certain plant processes increase and others decrease.

The physiological processes of the higher plants are numerous, but three stand out: photosynthesis, respiration, and transpiration.

It is in the leaves where the important processes of photosynthesis, respiration, and transpiration occur most actively. Photosynthesis is the process by which food in the form of sugar is manufactured from water and carbon dioxide in the presence of the green pigment, chlorophyll, and light. Respiration is the process that permits living cells to transform organic material into energy. Oxygen and enzyme catalysts oxidize sugar to carbon dioxide and water, releasing energy simultaneously. Transpiration is the process by which a plant loses water vapor through the stomata in the leaves. Translocation is the process of moving organic solutes from their place of production to their place of use or storage.

The growth potential of a plant is determined by its genetic heritage and its environment. The genetic heritage is predetermined, but a grower can exercise some control over environmental factors such as the soil, atmosphere, water, light, and temperature. The specific response of the plant to environmental change is sometimes related to whether the plant is in its juvenile or its mature stage.

Members of the higher plants (the Division Tracheophyta) have roots, stems, and leaves, and may have cones (Class Coniferopsida) or flowers (Class Angiospermopsida).

The formation of roots, stems, leaves, cones, and flowers in the higher plants is attributable to the ability of plant cells to differentiate and assume assorted roles for the growth and development of the plant. Plant cells may be meristematic, parenchyma, collenchyma, or sclerenchyma in type. All contain similar materials but differ in the comparative amounts of those materials. They also appear in differing numbers, depending on the tissue or organ they comprise.

**Translate the following word combinations:** higher plants, roots, stems, and leaves, different functions, cones or flowers depending on the tissue or organ, the formation of roots, stems, leaves, cones, and flowers, the growth potential of a plant, environmental conditions, plant processes.

**Answer the following questions:**

- What do you know about plant growth and development?
- What are the stages of plant development?
- What are the main conditions for good plant growth?

## Plant problems

**Discussion:**

- What are some signs that plants are failing?
- What are some ways to save failing plants?

### Words to remember:

stippled – плямистий
stunted – низькорослий
wilting – зівялий
browning – побуріння, потемніння листя
advisor – радник
on-site – на місці, локальний
biotic – біотичний
abiotic – абіотичний

### Read and translate the advertisement from the webpage.

We are professional advisors with broad expertise in identifying and diagnosing plant-related issues. Our services are open to the public.

How we can help: we offer technical support in many forms, from guidance on plant selection to on-site inspections and laboratory-based diagnostics.

Contact us if your plants show signs such as stippling, poor growth, wilting, or browning. For smaller sets of plants, we analyze symptom patterns, while for more widespread issues, we evaluate the overall field pattern. After collecting this information, we are often able to deliver an accurate diagnosis using our symptomology keys.

If a symptomology key does not lead to a clear diagnosis, we rely on laboratory testing. These analyses help determine whether symptoms are caused by biotic or abiotic factors.

If you would like professional advice or wish to schedule a field or crop diagnosis, please call 456-567-321 or send an email to [bnau@extension.ua.edu](mailto:bnau@extension.ua.edu).

### Match the words (1 – 5) with the definitions (A – E).

1. abiotic	A. to change color
2. brown	B. non-living
3. field pattern	C. a sign that indicates disease
4. symptomology key	D. a tool used to diagnose diseases
5. symptom	E. a sign of disease that occurs throughout an area

### Fill in the appropriate word.

- \_\_\_\_\_ leaves are covered with spots.
- A \_\_\_\_\_ plant will be much smaller than others.
- Many plant problems have \_\_\_\_\_ causes.
- The plants started to \_\_\_\_\_ in the heat.

5. Researchers are analyzing the \_\_\_\_\_.

**Make up a dialogue with your partner using the suggested instruction and useful phrases:** *What's the problem with your tree? I noticed the tops of some trees were ... And what happened next?*

**Conversationalist 1:** You are a forestry advisor. Ask your partner about:

- crop problems
- symptoms
- changes

**Conversationalist 2:** You are a tree buyer. Answer your partner questions.

## Unit 19

### Discussion: DENDROLOGY. TREE GROWTH 1

#### Get ready!

1. What do you know about dendrology?
2. What does it study?
3. Why do foresters study dendrology?

## You should know!

#### Definition:

Dendrology is a “study of trees or woody plants”. **Woody** plants mean trees, **shrubs**, **lianas** or **vines** and sometimes undershrubs that have woody structural system. Idzajtich 2019 define the dendrology, as “*Dendrology, is the scientific study of morphological characteristics of woody plants, their relationship, biological characteristics, ecological requirements, variability, distribution and economic importance*”.

Dendrology is an important and necessary discipline for the foresters that provide a convenient method of identification and communication by learning basic knowledge of identification, naming, habits and characteristic botanical features of trees. The properly identified **specimens** can be arranged systematically in **herbarium**. A dendrologist studies the various aspects of trees like type of leaf, arrangement of leaf, **scars** of leaf, presence or absence of **petiole**, type of **inflorescence**, flower, fruit/cone, types of bark, **blaze**, branches, **twigs**, wood and suitability of growth and reproduction for correct identification of any woody plant species.

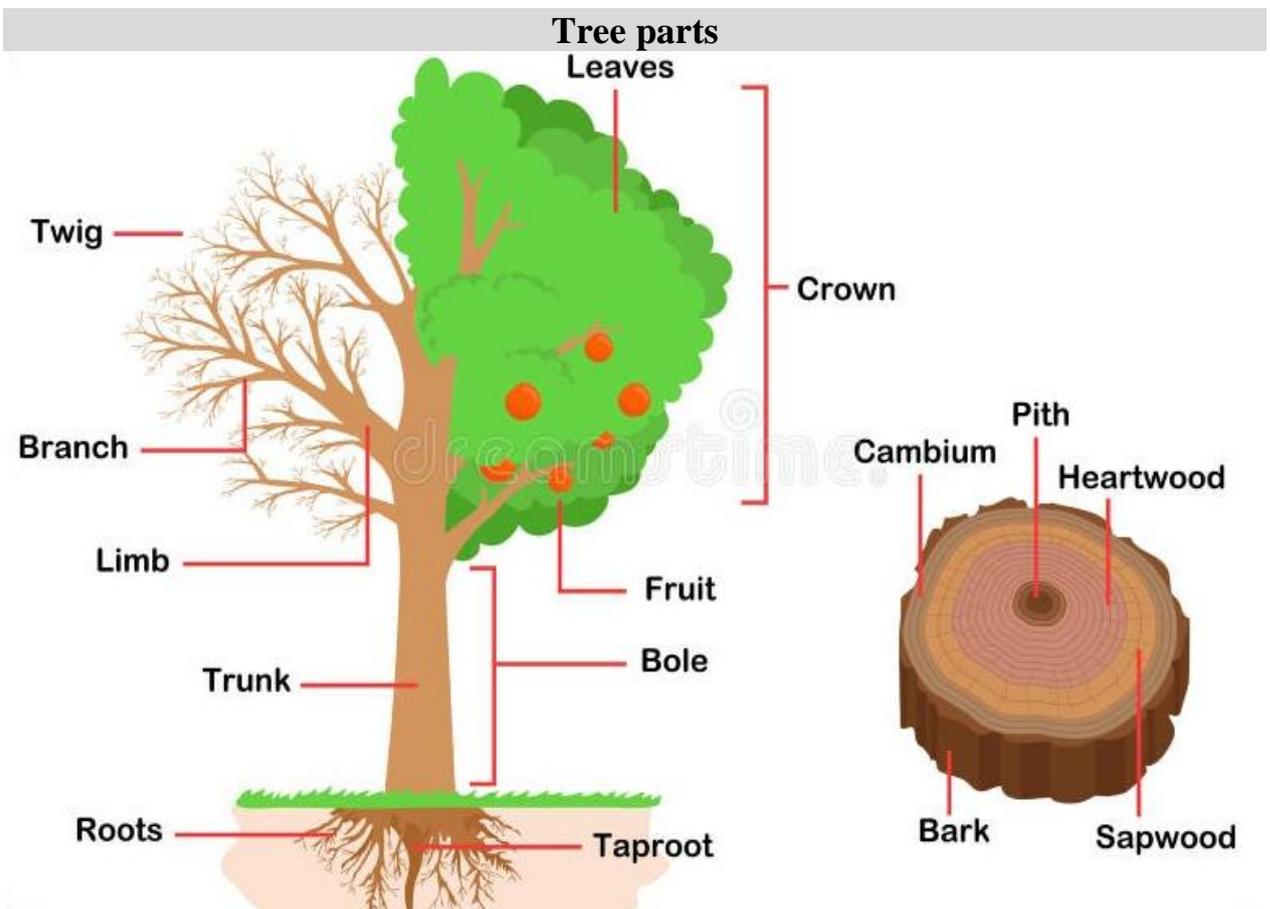
#### Work on the forestry terminology finding the word meanings.

- |                  |  |
|------------------|--|
| 1. blaze         | A. a collection of dried plants  |
| 2. twig          | B. an animal, plant, etc. used as an example of its type, especially for scientific study              |
| 3. inflorescence | C. any climbing plant with long, thin stems  |
| 4. petiole       | D. a woody plant that grows in tropical forests  |
| 5. scar          | E. a large plant that is smaller than a tree and that has several stems of wood coming from the ground |
| 6. herbarium     | F. the thin part at the base of a leaf that  |

- |              |  |
|--------------|--|
| 7. specimens | supports it and joins it to the stem of a plant  |
| 8. vine      | G. a large plant that is smaller than a tree and that has several stems of wood coming from the ground           |
| 9. liana     | H. the arrangement or cluster of flowers on a plant's stem or main axis  |
| 10. shrub    | I. a very bright show of lights or colour; a show of something that is impressive or likely to attract attention |
|              | J. a small, very thin branch that grows out of a larger branch on a bush or tree                                 |

**Puzzle 3 riddles about one plant. WHAT IS IT?**

- I reach for the sky, but I'm not trying to fly. I stand still in the wind, with my hands wide open.
- With rings I grow older, but not wiser or bolder. My history is long, written without a song.
- I provide a canopy, under which you rest. I'm home to the birds, providing a nest for them.



**Work with a dictionary finding the Ukrainian equivalents.**

## Read and translate the text.

### How trees grow

The trees of the forest grow by forming new layers of wood directly under the bark. Trees are held upright in the soil by means of roots which reach to a depth of many feet where the soil is loose and porous. These roots are the supports of the tree.

They hold it rigidly in position. They also supply the tree with food. Through delicate hairs on the roots, they absorb soil moisture and plant food from the earth and pass them along to the tree. The body of the tree acts as a passage way through which the food and drink are conveyed to the top or crown. The crown is the place where the food is digested and the regeneration of trees effected.

The leaves contain a material known as chlorophyll, which, in the presence of light and heat, changes mineral substances into plant food. Chlorophyll gives the leaves their green color. The cells of the plant that are rich in chlorophyll have the power to convert carbonic-acid gas into carbon and oxygen. These cells combine the carbon and the soil water into chemical mixtures which are partially digested when they reach the crown of the tree. The water, containing salts, which is gathered by the roots, is brought up to the leaves. Here it combines with the carbonic-acid gas taken from the air. Under the action of chlorophyll and sunlight these substances are split up, the carbon, oxygen and hydrogen being combined into plant food. It is either used immediately or stored away for future emergency.

**Translate the words combinations:** layers of wood, under the bark, the soil water, hairs on the roots, to absorb soil moisture, in the presence of light and heat, the cells of the plant, to convert carbonic-acid gas into carbon and oxygen, chemical mixtures, the crown of the tree, under the action of chlorophyll and sunlight, for future emergency.

### Answer the following questions:

1. How do the trees grow?
2. How do the trees get food?
3. What are the tree parts?

### Form word combinations:

passage	on the roots
split	moisture
soil	way
chemical	up
soil	of the tree
crown	mixture

hairs	water
-------	-------

**Find the translation of the following words:**

посівне ложе	seedlings
вимочувати	locust
проростання	grow
рости, вирощувати	cultivation
сіяти	hardwood
біла акація	hard-coated
тверда оболонка	sprouting
насіння	soak
тверда деревина	seedbed
культивування	sow
саджанці	seeds

**First read the description of tree planting and then describe the process of tree planting using the Imperative Mood. Eg.:**

- + *Add watery fertilizer before planting!*
- *Don't forget to water the tree sapling!*

Some farmers and land owners are now interested in setting out **hardwood** forests for commercial purposes. If they do not wish to purchase their **seedlings** from a reliable nursery-man, they can **grow** them from carefully selected seed planted in well-prepared **seedbeds**. The popular practice is **to sow** the seed in drills about 2 to 3 feet apart so that horses may be used for **cultivation**. The **seeds** are sown to a depth of 2 to 3 times their thickness. They are placed close enough in the drill so that from 12 to 15 seedlings to the linear foot result. In order to hasten the **sprouting** of the seeds, some planters **soak** them in cold water for several days before sowing. In the case of such **hard-coated** seed as the black **locust** or honey locust, it is best to soak them in hot water before planting.

## Unit 20

### Discussion: TREE GROWTH 2

#### Get ready!

#### Discussion:

- You have studied wood science, haven't you?
- Do you remember the main parts of a tree trunk in its cross section?
- What two main groups are the forest trees divided into?
- What kind of wood do they have?

#### Find Ukrainian equivalents for these English words:

1. trunk	A. голонасінні
2. xylem	B. пробкове дерево
3. cambium	C. ядро́ва дере́вина
4. gymnosperms	D. ксилема
5. stump	E. паренхіма
6. accumulation	F. накопичення
7. angiosperms	G. пені́
8. parenchyma	H. покрито́насінні
9. balsa	I. стовбу́р
10. heartwood	J. камбі́й

**Let's see how well you know the tree structure. Mark the following statements as true or false:**

1. Approximately in the centre of the trunk cross section there is a narrow sheath of tissue called the vascular cambium \_\_\_\_.
2. The term "growth ring" is preferred over "annual ring" \_\_\_\_.
3. Growth rings are invisible with the naked eye \_\_\_\_.
4. Earlywood cells are produced by the cambium early in the growth period and are typically less dense than the latewood cells \_\_\_\_.
5. The heartwood is the portion of the xylem that stores food produced in photosynthesis and conducts water and dissolved nutrients to the crown of a tree \_\_\_\_.
6. Examination of a block of wood with the aid of low magnification reveals two distinct systems of cells \_\_\_\_.
7. The wood of gymnosperm trees consists of vessels, tracheids, fibres, and parenchyma in various proportions \_\_\_\_.

### Read and translate the text.

After the first year, trees grow by increasing the thickness of the older buds. Increase in height and density of crown cover is due to the development of the younger twigs. New growth on the tree is spread evenly between the wood and bark over the entire body of the plant. This process of wood production resembles a factory enterprise in which three layers of material are engaged.

In the first two of these delicate tissues the wood is actually made. The inner side of the middle layer produces new wood while the outer side grows bark. The third layer is responsible for the production of the tough, outer bark. Year after year new layers of wood are formed around the first layers. This first layer finally develops into heartwood, which, so far as growth is concerned, is dead material. Its cells are blocked up and prevent the flow of sap. It aids in supporting the tree. The living sapwood surrounds the heartwood. Each year one ring of this sapwood develops. This process of growth may continue until the annual layers amount to 50 or 100, or more, according to the life of the tree.

### Make up questions for the statements with the underline parts.

1. Trees grow by increasing the thickness of the older buds.
2. New growth on the tree is spread evenly between the wood and bark over the entire body of the plant.
3. The inner side of the middle layer produces new wood while the outer side grows bark.
4. The living sapwood surrounds the heartwood.
5. Each year one ring of this sapwood develops.

**Learn the following words and word-combinations, then make up sentences with them:** growth ring, earlywood, gymnosperm, sapwood and heartwood, the transverse or cross section, cell types of wood, softwoods, hardwoods, angiosperm.

### Read and translate the text abstract, then underline the correct word.

#### Tree breathing

Trees **breathe / inhale** somewhat like human beings. They take in oxygen and give off carbonic-acid gas. The air enters the tree through the leaves and small **holes / openings** in the bark, which are easily **seen / visible** in such trees as the cherry and birch. Trees breathe constantly, but they **digest / eat** and assimilate **food / substances** only during the day and in the presence of **light / the sun**. In the process of digestion and assimilation they give off oxygen in abundance, but they **retain / keep** most of the carbonic acid gas, which is a plant food, and whatever part of it is not used immediately is **stored / kept** up by the tree and used for its

growth and development. Trees also give off their excess **moisture / humidity** through the leaves and bark. Otherwise they would become waterlogged during periods when the water is rising rapidly from the **roots / bottom**.

## Unit 21

### Discussion: TREE MEASUREMENTS. INVENTORY 1.

Get ready!

Learn the vocabulary:

density – густина, щільність
measure – вимірювати
basal area – площа основи
stump – пень
crowdedness – скупченість
angle gauge – кутомір
measuring tape – мірна стрічка
increment borer – віковий бур
tree stand – лісонасадження
prism – призма

Fill in the spaces with the needed words: land, outermost, rings, stem, growth, management, stand.

### Tree Age

Tree age, particularly when combined with DBH, provides a measure that reflects \_\_\_\_\_ productivity and is useful in making forest \_\_\_\_\_ recommendations. Tree age can be known based on history and previous \_\_\_\_\_ uses, or it can be determined by counting tree \_\_\_\_\_ using an increment borer. A borer has a hollow center that is penetrated (screwed) into a tree (normally at DBH height) to the center (or pith) of the \_\_\_\_\_ from which a core of wood is extracted, and then the \_\_\_\_\_ rings are counted to estimate tree age. The \_\_\_\_\_ rings reflect the most recent growth.

Read and translate, then underline the correct word.

### Trees per acre (TPA)

In addition to BA per ac, trees per ac (TPA) is another important **stand / afforestation** parameter that is often needed to make **choise / decisions**. TPA is the total **count / amount** of all standing trees on a per-acre **basis / base**. For example, if there are 200 trees on a 2-acre stand, TPA of the stand is 100, which was **derived / counted** as (200 trees / 2 ac = 100 TPA).

Because it is not practical to **measure / calculate** all the trees in a forest, **estimates / evaluate** of BA per acre and TPA are made **via / through** plot

samples. To ensure the **sample / example** represents the target **population / generation**, multiple plots are often taken and evenly spaced across the forest. There are two common **methods / ideas** of plot samples in forest measurements: fixed radius plot and variable radius plot.

**Match the pictures with the tree types.**

Cherry	
Birch	
Locust	
Spruce	
Hemlock	
White pine	

Poplar	
Willow	

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

One can tell the age of a tree by counting the number of annual rings. Sometimes, because of the interruption of normal growth, two false rings may be produced instead of a single true ring.

However, such blemishes are easy for the trained eye to recognize. Heartwood does not occur in all varieties of trees. In some cases, where both heartwood and sapwood appear, it is difficult to distinguish between them as their colors are so nearly alike. Because it takes up so much moisture and plant food, sapwood rots much more quickly than heartwood. The sapwood really acts as a pipe line to carry water from the roots to the top of the tree. In some of our largest trees the moisture is raised as high as 300 feet or more through the sapwood.

Strange though it may seem, trees fight with each other for a place in the sunlight. Sprightly trees that shoot skyward at a swift pace are the ones that develop into the monarchs of the forest. They excel their mates in growth because at all times they are exposed to plenty of light. The less fortunate trees, that are stockier and sturdy, and less speedy in their climb toward the sky, are killed out in large numbers each year. The weaker, spindly trees of the forest, which are slow growers, often are smothered out by the more vigorous trees.

Some trees are able to grow in the shade. They develop near or under the large trees of the forest. When the giants of the woodland die, these smaller trees, which previously were shaded, develop rapidly as a result of their freedom from suppression. In many cases they grow almost as large and high as the huge trees that they replace. In our eastern forests the hemlock often follows the white pine in this way. Spruce trees may live for many years in dense shade. Then finally, when they have access to plenty of light they may develop into sturdy trees. A tree that is a pigmy in one locality may rank as a giant in another region due to different conditions of growth and climate. For example, the canoe birch at its northern limit is a runt. It never grows higher than a few feet above the ground. Under the most favorable conditions in Florida, where this species thrives, such trees often tower to a height of 125 feet.

**Answer the following questions:**

1. How is the tree age identified?
2. What is the difference between sapwood and heartwood?
3. Do trees grow in shade?

**Mark the statements as true or false.**

1. Softwoods are included in the class called angiosperms.
2. Annual rings change in size over time.
3. Over a certain period of time sapwood is substituted with heartwood.
4. A new bark is developed from the outer side of the cambium.

**Watch the video, then mark the statements as true or false.**

1. Foresters measure the crowdedness of the forest or in other words the stand density \_\_\_\_.
2. The stand density is not important for photosynthesis and tree growth \_\_\_\_\_.
3. If we measure the area of all stumps on an acre we will have the number of square feet. The number of square feet is called basal area \_\_\_\_\_.
4. To measure the basal area you will need a measuring tape\_\_\_\_\_.

**Answer the following questions.**

1. How do foresters measure the crowdedness of the forest?
2. What is the stand density?
3. How can we measure the stand density?
4. What do we call the basal area?
5. What tool do we need to measure the basal are?

## Unit 22

### Discussion: TREE MEASUREMENTS. INVENTORY 2.

#### Get ready!

1. Do you know how to measure the tree height and wood volume?
2. What tools of tree measurements do you know?

#### Learn some vocabulary:

height – висота	fabric tape – тканиннастрічка
wood volume – об'єм деревени	circumference – окружність
calculate – підраховувати	Biltmore stick – палиця Білтмора
equal – рівний, дорівнювати	cross-sectional – поперечний розріз
mature – зрілий	equation – рівняння
site – ділянка	cut – різати, розріз
	square – квадратний

#### Read and translate the text.

##### Diameter at breast height (DBH)

Diameter at breast height (DBH) is an important tree measurement in forestry. DBH is the diameter of a tree measured outside of the bark at breast height (4.5 feet above the ground, on the uphill side of the tree). DBH is useful to characterize stand structure and estimate wood volume. DBH is also closely correlated with tree value. DBH is usually measured with a fabric or metal diameter tape that is wrapped around the circumference or with a Biltmore stick held 25 inches from the observer's eye at breast height on the edge of the trunk and recorded in inches.

##### Basal area (BA)

Basal area (BA) is commonly quantified at the tree and stand levels. At the tree level, BA is the cross-sectional area of a tree stem at breast height in square feet. To calculate BA of a standing tree, use the following equation:

$$BA \text{ (sq. ft.)} = 0.005454 \times [\text{DBH (in.)}]^2$$

For example, the basal area of a 10-inch DBH tree is  $0.005454 \times 10^2 = 0.5454$  (sq. ft.), whereas a tree measuring 20 in DBH would have over two square feet of BA, derived as  $(0.005454 \times 20^2 = 2.181 \text{ sq. ft.})$ . Notice that a 14-inch DBH tree is equal to about 1 sq. ft. of BA.

At the stand level, BA is the sum of tree BA from all trees on a per-acre basis, commonly referred to as BA per acre (per ac.). For simplicity's sake, think

of an acre of forest where all the trees have been cut at DBH so only 4.5-foot high stumps remain. Let's look at two examples:

- Stand 1: Given there are two hundred 4 in DBH trees in a 1-acre stand, the BA per ac is equal to 17.4 sq. ft/ac, derived as  $(200 \times [.005454 \times 4^2])$  sq. ft/1 ac =  $200 \times .087$  sq. ft /1 ac = 17.4 sq. ft/ac).

- Stand 2: Given there are fifty 8 in DBH trees in a 1-acre stand, the BA per acre is equal to 17.5 sq. ft/ac, derived as  $(50 \times [.005454 \times 8^2])$  sq. ft/1 ac =  $50 \times .349$  sq. ft/1 ac = 17.5 sq. ft/ac).

From the above examples, similar amount of BA per ac was found in both stands; stand 2 has a fewer number of trees per acre but the trees are larger than stand 1. Therefore, younger stands and more mature stands may measure the same BA per ac, but the more mature stands achieve this with a fewer number of trees per ac.

In forest management, BA per ac measures the crowding of trees, which aids in quantifying forest stocking and determining when thinning is needed. For instance, as a very general guide, southern hardwood stands that approach 100 to 120 sq. ft. of BA per ac should be evaluated for the need of thinning. This varies according to the average stand DBH, species of trees and the forest site quality.

Site quality includes the collective factors that determine the potential productivity of a forest area and includes attributes such as soil fertility, soil depth and water availability.

### **Answer the following questions:**

1. What is a diameter at breast height?
2. How is the diameter at breast height measured?
3. What tools are needed for diameter measuring?
4. What is a basal area?
5. How is the basal area measured?

**Watch the video, you may need the following word meanings for its understanding.**

crowdedness of a forest – щільність лісу
photosynthesis – фотосинтез
stand density – щільність засадження
basal area – площа основи дерева
stump – пень
prism – призма
angle gauge – кутомір
increment borer – інкрементний бур
measuring tape – рулетка
merit hipstometer – гіпсометр Мерріта
hipometer – гіпометр

scale – масштаб circumference – окружність
---

**Mark the statements as true or false:**

1. Foresters use an angle gauge to measure the basal area.
2. The number of square feet is called a basal area.
3. Measuring the basal area with an angle gauge, foresters count the amount of trees that are in and then multiply it by 20
4. A prism is used to count stamps in the forest.
5. Measuring the basal area with a prism, foresters count the amount of trees with the part of the stem which is off set to left touching the standing part of the tree.

**Answer the following questions:**

1. What tools do foresters use to measure the basal area?
2. How to measure the basal area using the angle gauge?
3. How to measure the basal area using the prism?

## Unit 23

### Discussion: PESTS AND DISEASES

- How can you protect your garden from pests and insects?
- What do you know about harmful pests and insects?
- Do you know how to detect them in the garden or park?

#### Words to remember:

diseases – хвороба
identification – визначення
protection – захист
safeguard – охорона
assess – оцінювати
quarantine – карантин
expand – поширювати
invasive – інвазивний
health – здоров'я

### Protection from pests and insects

To protect American farms and forests from harmful plant pests and foreign animal diseases, PPQ has created a system of safeguards that begins overseas in other countries, continues through U.S. ports of entry, and extends across the Nation. It's called the Safeguarding Continuum. All along the continuum, PPQ experts assess risks associated with pests that hitchhike on and in the agricultural products we import and take action to protect U.S. agriculture and natural resources while keeping international trade and travel moving.

Pest identification when inspectors detect pests in cargo, PPQ's identification programs must put a name to them to determine how to regulate the shipment. Our identifiers determine whether the pests are "quarantine significant" under our regulations, which means they could pose a threat to U.S. plant health; whether the cargo can be allowed to enter the United States; and which, if any, mitigation measures are required. In FY 2020, our National Identification Services oversaw the processing and identification of more than 128,000 pests; about 60,000 were quarantine significant. During the second half of FY 2020, PPQ increased its use of digital imaging technology to identify pests, in part to protect staff health by reducing the number of people present in our pest identification laboratories during the COVID-19 pandemic. We will continue to expand our use of this technology to identify pests faster when cargo is on hold pending an urgent identification. PPQ and CBP also continued the Cargo Release Authority program to reduce the pests that CBP must submit to PPQ for identification, speeding the

inspection process for shipments with no quarantine pests. Through the program, PPQ provides training and job aids that allow CBP agriculture specialists to recognize frequently intercepted, easily identifiable, low-risk organisms and release the cargo if the organism is not a quarantine significant pest.

Supporting Specialty Crops PPQ works with State and Tribal partners, universities, and industry to develop and carry out programs to protect U.S. fruits and vegetables, tree nuts, and nursery crops from damage and trade disruptions due to invasive pests. Our efforts directly protect U.S. specialty crop production valued at \$9.5 billion in 2017. Indirectly, PPQ protects specialty crop production nationwide worth more than \$21 billion and export markets valued at \$8.9 billion in 2017.

**Translate the following word combinations:** plant health, detect pests, reduce the number, supporting specialty, identify pests, reduce the pests, due to invasive pests, due to invasive pests, export markets, provide training and job aids, assess risks, agricultural products, protect fruits and vegetables, tree nuts, and nursery crops.

## QUIZ 1

**What is the main tool for a forester?**

- a. fork
- b. stapler
- c. increment borer
- d. theodolite
- e. tripod

**What do forestry students study?**

- a. land estimation
- b. agronomy
- c. silviculture

**Click the best synonym for objective:**

- a. sculpture
- b. complaint
- c. something thrown
- d. goal

**Click the best synonym for pond:**

- a. generous person
- b. small lake
- c. makeup for the lips
- d. face cream

**Click the best synonym for forestry:**

- a. sugar
- b. silviculture
- c. event
- d. weight

**Click the best synonym for hypothesis:**

- a. theory
- b. effective discipline
- c. division
- d. technology

**Click the best synonym for permanent:**

- a. never changing
- b. too soon
- c. very dry
- d. previous

**Click the best synonym for artificial:**

- a. successful
- b. incredible
- c. not natural
- d. not helpful

**Click the best synonym for soil:**

- a. dirt
- b. leaf
- c. bean
- d. corn

**Fill in a correct word.**

### **Forest types**

An evergreen forest is a forest containing entirely or mainly of evergreen trees that retain green foliage all year round. The \_\_\_\_\_ in an evergreen forest have broad leaves that release excess water through transpiration.

- a. insects
- b. mammals
- c. trees

### **QUIZ 2**

**Match the words with their definitions.**

- 1 \_ hard coat
- 2 \_ germinate
- 3 \_seedling

A to sprout from a seed

B a very young plant that has grown from a seed

C the firm outer layer of a seed

**Match the words with their definitions.**

- 1\_ seed vigor
- 2\_ hybrid
- 3 \_sow

A to plant seeds

B made by parents of different breed

C the strength and survivability

**Choose the appropriate word.**

The trees were not ready for cutting as the wood was still\_\_\_\_\_ .

- a. unripe
- b. unprepared
- c.unsteady
- d. undeveloped

**Choose the appropriate word.**

\_\_\_\_\_ grow only in hot and dry climate.

- a. palm trees
- b. linden trees
- c. poplar trees
- d. olive trees

**Which tense form is used in the sentence?**

The discovery has been chosen twice to flight.

- a. The Past Simple Active
- b. The Past Simple Passive
- c. The Present Perfect Passive

**Which tense form is used in the sentence?**

The spacecraft takes its name after ships named Discovery.

- a. The Past Continuous Active
- b. The Present Perfect Active
- c. The Present Simple Active

**Which tense form is used in the sentence?**

Public databases are created.

- a. The Present Simple Passive
- b. The Present Perfect Passive

- c. The Present Perfect Active

**Fill in a correct word.**

### Forest types

Depending upon the \_\_\_\_\_ developed with the age of forests, soil found in those forests, the density of trees and history of the geological region, forests are divided into following main types: tropical forest and subtropical forest, plantations, boreal forest, temperate forest, seasonal forest.

- a. circle
- b. leaves
- c. species

**Fill in a correct word.**

### Forest types

Forests where a majority of the trees lose their \_\_\_\_\_ at the end of the typical growing season are called seasonal forests. A forest in which there is no complete, seasonal loss of leaves is called evergreen forest.

- a. foliage
- b. trunk
- c. crown

**Which tense form is used in the sentence?**

The San Francisco museum has introduced earth and space sciences.

- a. The Present Simple Active
- b. The Present Perfect Active
- c. The Present Perfect Passive

**Click the best synonym for evaluate:**

- a. award
- b. assess
- c. indicate
- d. impress

**Choose the appropriate word.**

It is difficult to grow good vegetables in the poor\_\_\_\_\_ of this area.

- a. crust
- b. dirt
- c. soil

## СПИСОК ЛІТЕРАТУРИ

1. Велика К., Цвид-Гром О. Методичні рекомендації з дисципліни «Іноземна мова за професійним спрямуванням» для здобувачів першого (бакалаврського) рівня вищої освіти спеціальності – 193 «Геодезія та землеустрій». Біла Церква: БНАУ, 2022. 92 с.
2. Гагіна Н., Лось О. English for Forestry : методичні вказівки з англійської мови професійного спрямування для самостійної роботи студентів спеціальності 205 «Лісове господарство». Чернігів: ЧНТУ. 2017, 83 с.
3. Лозінська Т., Ситник О., Велика К. Огляд і аналіз основних аспектів протипожежного захисту лісових екосистем в умовах сьогодення. Агробіологія № 2. БНАУ, 2024. С. 144–153. <https://doi.org/10.33245/2310-9270-2024-191-2-144-153>; <http://rep.btsau.edu.ua/handle/BNAU/13455>.
4. Поліщук А. Англійська мова для майбутніх спеціалістів лісового і садово-паркового господарства. НУБІП, 2016. 325 с.
5. Туріцина О. Англійська мова для студентів спеціальності «Лісове господарство» ОС «Бакалавр» : навчально-методичний посібник. Київ: Експодрук, 2023, 163с.
6. A career in forestry : веб-сайт. <https://www.youtube.com/watch?v=YIuyytMTknA&t=286s>.
7. At university: meeting a new student. Dialogue : веб-сайт. URL: <https://www.youtube.com/watch?v=L-ukNzu2yuw>.
8. Bargali S. Forest Ecosystem: Structure and Functioning. URL: [https://www.researchgate.net/publication/332072520\\_Forest\\_Ecosystem\\_Structure\\_and\\_Functioning](https://www.researchgate.net/publication/332072520_Forest_Ecosystem_Structure_and_Functioning).
9. Bila Tserkva National Agrarian University : веб-сайт. URL: <https://www.youtube.com/watch?v=NaTRmYYCgYE>.
10. British Council. The International Day of Forests : веб-сайт. URL: <https://learnenglish.britishcouncil.org/general-english/video-zone/international-day-forests>.
11. Chapter 1. The green plant : веб-сайт. URL: <https://www.thefreelibrary.com/Chapter+1+The+green+plant.-a0185248927>.
12. Cool tools that foresters use – Part 1 : веб-сайт. URL: <https://www.youtube.com/watch?v=-CDXKA2NruM&t=255s>.
13. Cool tools that foresters use – Part 2 : веб-сайт. URL: <https://www.youtube.com/watch?v=lFeZ5C-UvL4&t=91s>.
14. EBSCO. Silviculture : веб-сайт. URL: <https://www.ebsco.com/research-starters/forestry/silviculture>.
15. Evans V., Dooley J., Styles N. Career Paths: Natural Resources I – Forestry. Express publishing, 2018. 107 p.

16. Forestry careers. Exploring green jobs in forestry : веб-сайт. URL: <https://forestrycareers.com>.
17. Forestry Standards and Procedures Manual. Forest Service Department of Agriculture, Food and the Marine. URL: [https://forestryervices.ie/wp-content/uploads/2019/05/Forestry\\_Standards\\_and\\_Procedures\\_Manual\\_2015.pdf](https://forestryervices.ie/wp-content/uploads/2019/05/Forestry_Standards_and_Procedures_Manual_2015.pdf).
18. Hibberd B. Forestry Commission. Handbook 6 – Forestry Practice, (11th edition). London: HMSO, 1991. p. 239.
19. Hibberd B. Forestry Commission. Handbook 3 – Farm Woodland Practice. London: HMSO, 1988. p. 108.
20. Kaushal S., Rajput B. E - Reading Manual on Dendrology. Banda University of Agriculture and Technology. URL: <https://buat.edu.in/wp-content/uploads/2024/10/Dendrology-e-manual-2024.pdf>.
21. Mercker D., Yang Sh. A simple guide to common forest measurements : веб-сайт. URL: <https://utia.tennessee.edu/publications/wp-content/uploads/sites/269/2023/10/W1117.pdf>.
22. O’Sullivan N., Libbin J. Career paths : Agriculture. Express Publishing, 2011.
23. Pack Ch. The School Book of Forestry : веб-сайт. URL: <https://gutenberg.org/cache/epub/11587/pg11587-images.html>
24. PEFC. Threats to forests : веб-сайт. URL: <https://pefc.org/what-we-do/why-forests-are-important/threats-to-forests>.
25. Real English. What is your nationality? : веб-сайт. URL: <https://www.youtube.com/watch?v=qtpKmC1y8WE>.
26. Tomlinson P., Knapp M. What is the Difference between Weather and Climate? : веб-сайт. URL: [https://bookstore.ksre.ksu.edu/pubs/what-is-the-difference-between-weather-and-climate\\_MF3197.pdf](https://bookstore.ksre.ksu.edu/pubs/what-is-the-difference-between-weather-and-climate_MF3197.pdf).
27. University of the Highlands and Islands. BSc (Hons) Forestry and Treescapes Management. Inverness, United Kingdom : веб-сайт. URL: <https://www.educations.com/institutions/university-of-the-highlands-and-islands/b-sc-hons-forestry-and-treescapes-management>.
28. Wilkinson E. The different types of forest : веб-сайт. URL: <https://www.opwall.com/article/the-different-types-of-forest/>.
29. Who's who in the office : веб-сайт. URL: <https://learnenglish.britishcouncil.org/skills/listening/pre-intermediate-a2/whos-who-in-theOffice>.

