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Экономический факультет

Кафедра иностранных языков

А.Д. Горева

Иностранный язык в профессиональной деятельности

МЕТОДИЧЕСКИЕ УКАЗАНИЯ
для выполнения лабораторно-практических занятий и
организации самостоятельной работы студентов,
специальности среднего профессионального
образования 35.02.01 Лесное и лесопарковое хозяйство

Вологда – Молочное
2024

УДК 44 (Англ) (071)
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М19

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Настоящие метдические указания по английскому языку предназначается для для аудиторной и самостоятельной работы студентов, обучающихся по специальности 35.02.01 – Лесное и лесопарковое хозяйство

Цель данного пособия – ознакомить студентов с лексикой их будущей профессии, а также с грамматическими явлениями, необходимыми для чтения оригинальных научных текстов. Тексты учебного пособия снабжены словарными списками и лексико-грамматическими упражнениями, формирующими способности обучающегося к коммуникации в устной и письменной формах на иностранном языке.

Рекомендовано методическим советом академии в качестве учебного пособия и печатается по решению редакционно-издательского совета ФГБОУ ВО Вологодская ГМХА.

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Introduction

Введение

Данное методическое указание предназначено для аудиторной и самостоятельной работы студентов пециальности среднего профессионального образования 35.02.01 Лесное и лесопарковое хозяйство

Пособие соответствует учебной программе и тематическому плану дисциплины «Иностранный язык».

Цель пособия – познакомить студентов с необходимым минимумом профессиональной терминологии, научить читать и переводить специальные тексты, а также строить высказывания с использованием лексики будущей профессии. Профессиональная направленность пособия обеспечивается заданиями, содержание которых способствует выходу тренируемых языковых и речевых единиц и явлений в соответствующие виды коммуникативной деятельности. Выполнение заданий пособия ведет к формированию как общекультурных, так и профессиональных компетенций: способность к коммуникации в устной и письменной формах на русском и иностранном языках для решения задач межличностного и межкультурного взаимодействия (ОК-5); способность к самоорганизации и самообразованию (ОК-7); способность воспринимать научно-техническую информацию, готовность изучать отечественный и зарубежный опыт по тематике исследования (ПК-12 или ПК-14).

При создании пособия материал подбирался не только с учетом профессиональных интересов учащихся, но и с точки зрения актуальности его содержания. В пособии использованы оригинальные тексты из современной англоязычной литературы по лесному делу, технологии лесозаготовки и деревообработки, адаптированные в соответствии с задачами пособия. Тексты пособия затрагивают следующие темы, соответствующие указанным направлениям подготовки: лес, лиственные и хвойные деревья, особенности роста деревьев, структура древесной клетки, влага в древесине, уход за молодыми древостоями, прореживание и подрезка деревьев, лесозаготовка, транспортировка древесного сырья, способы распиловки древесины и др.

Пособие состоит из введения и учебно-тематического раздела. Учебно-тематический раздел содержит 18 специальных текстов и 1 разговорную тему, работа над которыми осуществляется на аудиторных занятиях. Для оптимизации процесса изучения текстов каждый из них снабжен кратким словарем и упражнениями, целью которых являются усвоение лексики и грамматики текстов, контроль понимания содержания прочитанного, развитие

навыков чтения и устной речи. Есть также задания, цель которых – извлечь важную информацию, сделать собственные выводы. В пособии используются таблицы, схемы, творческие задания, которые не только помогают заинтересовать студентов в изучении иностранного языка, но и способствуют формированию мышления будущего специалиста.

Данное пособие может использоваться для самостоятельной работы студентов. Поскольку предлагаемые в пособии задания разнообразны и представлены в достаточном количестве, преподаватель, организующий самостоятельную работу студентов, может выбирать и распределять задания по своему усмотрению. Задания должны предлагаться студентам в порядке нарастания сложности. К примеру, относительно легко найти в тексте ответы на поставленные вопросы или сопоставить слова с соответствующими им определениями. Более сложными являются задания на сравнение, анализ информации, помещенной в схемах, таблицах, а также задания, в которых необходимо выразить свою точку зрения по какому-либо вопросу.

При работе с учебным пособием рекомендуется:

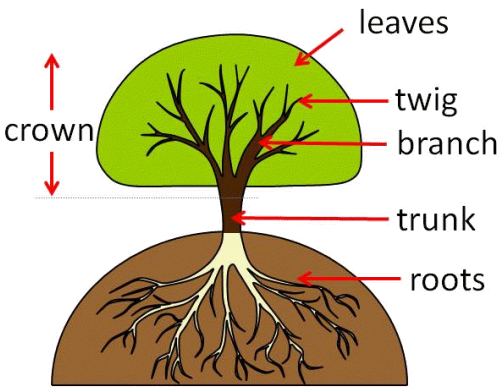
- уделять основное внимание усвоению базовых понятий и категорий;
- анализировать англоязычные тексты, раскрывающие особенности профессиональной терминологии;
- использовать научную и профессиональную терминологию в устных ответах и письменных работах (доклады, проекты, контрольные работы, эссе), что развивает необходимые навыки обращения с понятиями и категориями, способствует их усвоению;
- соотносить полученные знания с имеющимися знаниями из других областей науки, осуществлять межпредметную связь;
- обсуждать проблемные ситуации на иностранном языке.

Автор

How a tree lives

Как живет дерево

Trees are woody plants, growing with a single stem. They are the largest members of the plant world. Trees consist of three parts:



- the roots which hold the tree in place and take up from the soil water and mineral substances;
- the trunk or stem which supports the crown and supplies it with water and food from the roots;
- the crown. In this part the most important processes take place.

The materials upon which a tree feeds are derived from the soil and the air.

The roots of a tree absorb water from the soil and with it the necessary nutrition and elements of the soil. In the leaves the food necessary for the trees' growth is manufactured. The raw food materials which reach the tree through the roots and the leaves are digested in the leaves. They are then sent to all living parts of the roots, stem and crown where they are either used at once or stored away for later use.

Trees grow from the top and in diameter; the side growth is also called secondary growth. Wood has layers of growth which appear as circles around the centre.

Like all other plants and like animals trees breathe. The breathing is done through the leaves and the bark.

Do you know these words?

(Знаете ли вы эти слова?)

woody	[ˈwʊdi]	*древесный*
single	[ˈsɪŋgl]	*одиночный, единственный*
stem	[stem]	*ствол, стебель*
root	[ruːt]	*корень*
substance	[ˈsʌbstəns]	*вещество*
trunk	[trʌŋk]	*ствол*
to support	[səˈpɔːt]	*поддерживать*
crown	[kraʊn]	*крона*
to supply	[səˈplaɪ]	*обеспечивать*
soil	[sɔɪl]	*почва*
to absorb	[əbˈzɔːb]	*поглощать*

nutrition	[njʊˈtrɪʃn]	*питание*
to manufacture	[ˌmænjuˈfæktʃə]	*производить*
raw	[rɔː]	*сырой, необработанный*
to digest	[daɪˈdʒest]	*усваивать*
secondary	[ˈsekənderi]	*вторичный*
layer	[ˈleɪə]	*слой*
to breathe	[briːð]	*дышать*
bark	[bɑːk]	*кора*

1. Answer these questions:

(Ответьте на эти вопросы):

1. What kind of plant is a tree?
2. What parts does a tree consist of?
3. What is the function of the roots?
4. What does the trunk do?
5. How does a tree get necessary nutrition?
6. Where are the raw food materials digested?
7. Are all nutrients used at once?
8. How do trees breathe?
9. In what directions does a tree grow?

2. Match the words from the columns to make word combinations from the text.

(*Соедините слова из колонок, чтобы образовать словосочетания из текста).*

1. to absorb	a. plants
2. mineral	b. stem
3. secondary	c. substances
4. woody	d. the crown
5. food	e. water
6. to support	f. materials
7. single	g. growth

3. Define the part of speech of the following derivatives, try to guess their meaning, check their translation in a dictionary.

(Определите, какой частью речи являются следующие однокоренные слова, попытайтесь догадаться, как они переводятся на русский язык, проверьте перевод в словаре).

1. to grow – growth

2. wood – woody
3. to supply – supply
4. to support – support
5. to absorb – absorption
6. to digest – digestion

4. Find the English equivalents for the following word combinations in the text.

(Найдите в тексте английские эквиваленты следующих словосочетаний).

1. *древесные растения*
2. *крупнейшие представители растительного мира*
3. *удерживать дерево на месте*
4. *поддерживать крону*
5. *поглощать воду из почвы*
6. *пища, необходимая для роста деревьев*
7. *запасать для дальнейшего использования*
8. *вторичный рост*

5. Match the words with their definitions.

(Подберите к словам соответствующие определения).

1. to absorb	a. the stick-like central part of a plant that grows above the ground and from which leaves and flowers grow
2. to store away	b. the part of a plant that grows down into the earth to get water and food and holds the plant firm in the ground
3. stem	c. to take something in, especially gradually
4. to digest	d. to chemically change food into smaller forms that the body can absorb and use
5. root	e. the head of foliage of a tree
6. crown	f. to hold something firmly or bear its weight, to stop it from falling
7. to support	g. to keep, set aside, or accumulate for future use

For your self-study

(Задания для самостоятельной работы)

6. Complete the sentences choosing the best alternative.

(Заполните пропуски в предложениях, выбрав наиболее подходящий вариант).

1. Trees are woody … .
   a. roots
   b. plants
   c. animals
2. Stem … the crown.
   a. supports
   b. breathes
   c. reaches
3. The … of a tree absorb water from the soil.
   a. leaves
   b. roots
   c. branches
4. Trees … through the leaves and the bark.
   a. breathe
   b. grow
   c. consist
5. The raw food materials are digested in the … .
   a. roots
   b. leaves
   c. stem

7. Fill in the blanks using the given words.

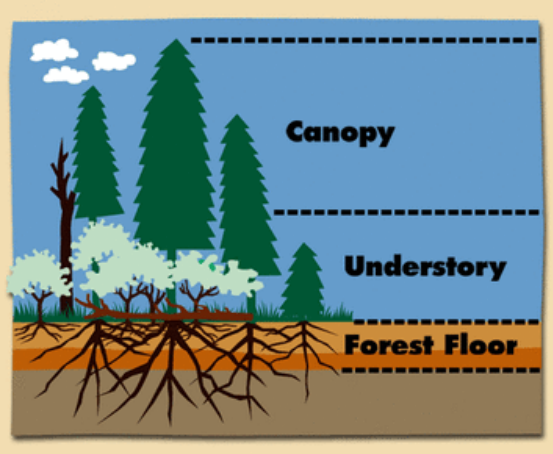
(Заполните пропуски, используя данные слова).

stems	secondary	absorb	
single	plant	supports	trunk

1. Trees are woody plants, growing with a ... stem.
2. Trees are the largest members of the ... world.
3. The branches of a tree grow out of the ... .
4. Most plants consist of ... , roots, and leaves.
5. Plants ... water and nutrients through their roots.
6. The tree trunk ... the crown.
7. The side growth is also called … growth.

What is a forest?

Что такое лес?



Forests to a non-specialist seem to be nothing but a collection of trees. The closer they are examined, the more they differ. Furthermore, their difference may be expressed in a number of ways. Some scientists write: “A plant association mainly of trees or other woody vegetation occupying an area of land is a forest”. Others say that a collection of trees becomes a forest only when it has sufficient density and covers a large enough area to develop local climatic and ecological conditions that are different from those outside. There must be some changes in temperature, moisture, light and wind as well as in the character of upper soil layer. With these changes comes a different vegetation under the trees and different animal life in the forest. In technical language a specialist says that a forest ‘biocenosis’ has been set up. Originally ‘forest’ meant simply wild or uncultivated land.

A forest of trees of similar age and composition is called a ‘stand’. Every stand has a more or less regular upper layer of green crowns, called ‘the forest canopy’ under which there may be an open space except for the stems of the forest trees or more or less occupied with lower canopies. They are called understories and are typical of tropical forests but may be in the forests of the temperate zone too.

Very often a single understorey consists of saplings which are coming in to replace the falling stand of veterans above. Where the forest is open or thin there may be ground cover of grass. The nature of this cover is very different. In dense forests the ground under the trees – the forest floor – may have no living vegetation and be covered with dead leaves and branches.

The species composition of the forest is one of the most important features. The stand may be composed of a single species making a pure forest or several species are associated to form a mixed forest. Perfectly pure forests over large areas occur not often however. It was observed that species do not do well when planted in pure stands, especially upon usual forest soils. The reason is that they make very heavy demands upon

soil plant food (nutrients). Such pure stands may do well in youth, but as they become older, their growth becomes very slow and the trees die.

Stands are classified according to age classes of which they are composed. Even-aged stand is one in which all the trees are of one age. Uneven-aged stand, on the other hand, theoretically has trees of every age, from seedlings to old veterans.

Do you know these words?
(Знаете ли вы эти слова?)

woody	[ˈwʊdi]	*древесный*
vegetation	[ˌvedʒəˈteɪʃn]	*растительность*
sufficient	[səˈfɪʃnt]	*достаточный*
density	[ˈdɛnsɪti]	*плотность*
moisture	[ˈmɔɪstʃə]	*влага, влажность*
biocenosis	[ˌbaɪəsiːˈnəʊsɪs]	*биоценоз*
uncultivated	[ʌnˈkʌltɪveɪtɪd]	*необработанный*
stand	[stænd]	*древостой*
forest canopy	[ˈfɔrɪst ˈkænəpɪ]	*лесной полог*
temperate	[ˈtempərət]	*умеренный*
understorey	[ˈʌndəstɔːrɪ]	*подлесок*
dense	[dens]	*густой, плотный*
forest floor	[ˈfɔrɪst flɔː]	*лесная почва, лесная подстилка*
species	[ˈspiːʃiːz]	*вид*
pure forest	[pjʊə ˈfɔrɪst]	*чистый древостой*
mixed forest	[mɪkst ˈfɔrɪst]	*смешанный лес*
to make heavy demands upon smth.	[meɪk ˈhevi dɪˈmɑːndz əˈpɒn]	*предъявлять высокие требования к чему-либо*
even-aged stand	[ˈiːvən eɪdʒd stænd]	*одновозрастный древостой*
uneven-age stand	[ʌnˈiːvn eɪdʒd stænd]	*разновозрастный древостой*

1. Answer these questions:
(Ответьте на эти вопросы):

1. When does a collection of trees become a forest?
2. What is a stand?
3. What layers are there in a stand?
4. In what case does a single understorey consist of saplings?
5. What kind of ground cover does an open or thin forest have?

6. What kind of ground cover is common to dense forests?
7. How do pure and mixed forests differ?
8. Which forest type is more common: a pure forest of a mixed one?
9. Do the species planted in pure stands grow well? Why or why not?
10. What age classes are stands divided into?
11. What term is used for a stand in which all the trees are of the same age?
12. What kinds of trees does an uneven-aged stand include?

2. Mark the sentences true (T) or false (F).
(Определите, верно или неверно утверждение).
1. All scientists agree that a forest is nothing but a collection of trees.
2. A collection of trees becomes a forest when a forest 'biocenoze' has been set up.
3. The upper layer of green crowns is called 'the forest understory'.
4. The ground in the forest is always covered with grass.
5. Perfectly pure forests over large areas are not so common.
6. Trees in pure stands grow slowly as they become older.
7. Uneven-aged stands may have trees of different age, from seedlings to old veterans.

3. Explain the meaning of the following terms in English.
(Объясните значение следующих терминов по-английски).

1. forest	5. seedling
2. biocenoze	6. pure forest
3. understory	7. even-aged forest
4. forest canopy	8. stand

4. Find the English equivalents for the following word combinations in the text.
(Найдите в тексте английские эквиваленты следующих словосочетаний).
1. *растительное сообщество*
2. *древесная растительность*
3. *достаточная плотность*
4. *необработанная земля*
5. *чистый лес*
6. *смешанный лес*
7. *лесной полог*

8. *зона умеренного климата*
9. *густой лес*
10. *разновозрастный лес*
11. *одновозрастный лес*
12. *молодые деревья*

5. Match the words from the columns to make word combinations from the text.

(*Соедините слова из колонок, чтобы образовать словосочетания из текста).*

1. woody	a. land
2. uncultivated	b. association
3. temperate	c. forest
4. mixed	d. vegetation
5. plant	e. classes
6. age	f. zone

6. Complete the sentences choosing the best alternative.

(Заполните пропуски в предложениях, выбрав наиболее подходящий вариант).

1. A collection of trees becomes a forest only when it has sufficient … .
   a. *moisture*
   b. *density*
   c. *vegetation*
2. A single understory consists of … .
   a. *saplings*
   b. *mature trees*
   c. *old veterans*
3. Understories are typical of … .
   a. *tropical forests only*
   b. *forests of the temperate zone only*
   c. *both tropical forests and forests of the temperate zone*
4. The forest floor of a dense forest is usually covered with … .
   a. *dead leaves and branches*
   b. *different kinds of vegetation*
   c. *grass*
5. The stand composed of … is called a mixed forest.
   a. *a single species*
   b. *two species*

c. a number of different species

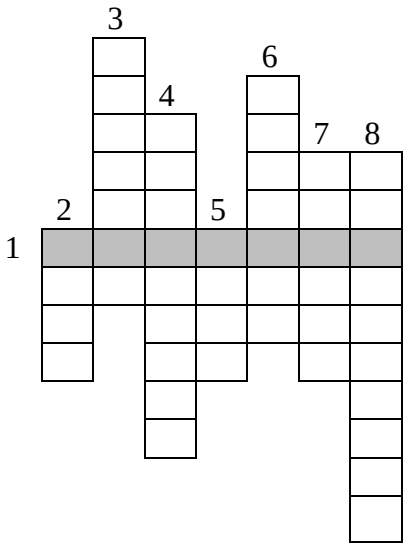
6. Trees in pure stands … as they become older.
   a. grow well
   b. grow slowly
   c. die

For your self-study

(Задания для самостоятельной работы)

7. Guess the crossword puzzle.

(Разгадайте кроссворд).



1. a young tree
2. the top layer of the earth's surface in which plants can grow
3. a tree which, because of its great age, size or condition is of exceptional cultural, landscape or nature conservation value
4. having temperatures that are not too hot or too cold
5. a usually green, flattened, lateral structure functioning as a principal organ of photosynthesis and transpiration in most plants
6. a group of closely related organisms that are very similar to each other and can produce fertile offsprings
7. the highest layer of branches in a forest or on a tree
8. plants that cover a particular area

8. Define the part of speech of the words in italics. Translate the sentences into Russian.

(Определите, какой частью речи являются слова, выделенные курсивом. Переведите предложения на русский язык).

1. They *plant* trees as part of their environmental strategy.
2. Resin is obtained from certain *plants* and is often used in medicine.
3. Extensively managed forests are naturally regrowing *stands* with reduced or minimum human intervention.
4. All of the seats on the bus were taken so we had to *stand*.
5. Forests *cover* 30% of the Earth's land surface.

6. There are different types of land *cover*, such as forest, grass land, agricultural land, etc.
7. Several species are associated to *form* a mixed forest.
8. This stand has a rectangular *form*.

A tree

Дерево

In botany, a tree is a perennial plant with an elongated stem, or trunk, supporting branches and leaves in most species.

A tree typically has many secondary branches supported by the trunk. This trunk typically contains woody tissue for strength, and vascular tissue to carry materials from one part of the tree to another. For most trees it is surrounded by a layer of bark which serves as a protective barrier. Below the ground, the roots branch and spread out widely; they serve to anchor the tree and extract moisture and nutrients from the soil. Above ground, the branches divide into smaller branches and shoots. The shoots typically bear leaves, which capture light energy and convert it into sugars by photosynthesis, providing the food for the tree's growth and development. Flowers and fruit may also be present, but some trees, such as conifers, instead have pollen cones and seed cones; others produce spores instead.

Trees tend to be long-lived, some reaching several thousand years old. Trees have been in existence on the Earth for 370 million years. Trees include a variety of plant species that have a woody trunk and branches as a way to tower above other plants to compete for sunlight.

Trees play a significant role in reducing erosion and moderating the climate. They remove carbon dioxide from the atmosphere and store large quantities of carbon in their tissues. Trees and forests provide a habitat for many species of animals and plants. Tropical rainforests are one of the most biodiverse habitats in the world. Trees provide shade and shelter, timber for construction, fuel for cooking and heating, and fruit for food as well as having many other uses. In parts of the world, forests are shrinking as trees are cleared to increase the amount of land available for agriculture.

Do you know these words?
(Знаете ли вы эти слова?)

perennial	[pəˈreniəl]	*многолетний*
stem	[stem]	*стебель*
trunk	[trʌŋk]	*ствол*
species	[ˈspiːʃiːz]	*вид*
woody	[ˈwʊdi]	*древесный*
tissue	[ˈtɪʃuː]	*ткань*
vascular	[ˈvæskjʊlə]	*сосудистый*
layer	[ˈleɪə]	*слой*
bark	[bɑːk]	*кора*
to anchor	[ˈæŋkə]	*поддерживать*
moisture	[ˈmɔɪstʃə]	*влага*
nutrients	[ˈnjuːtriənts]	*питательные вещества*
shoot	[ʃuːt]	*побег, росток*
to capture	[ˈkæptʃə]	*улавливать*
to convert	[kənˈvɜːt]	*превращать*
conifer	[ˈkɒnɪfə]	*хвойное дерево*
pollen	[ˈpɒlən]	*пыльца*
cone	[kəʊn]	*шишка*
existence	[ɪgˈzɪstəns]	*существование*
to compete	[kəmˈpiːt]	*конкурировать*
to reduce	[rɪˈdjuːs]	*уменьшать*
to moderate	[ˈmɒdəreɪt]	*смягчать*
habitat	[ˈhæbɪtæt]	*среда обитания*
biodiverse	[ˌbaɪəʊdaɪˈvɜːs]	*биологически разнообразный*
shelter	[ˈʃeltə]	*приют, укрытие*
timber	[ˈtɪmbə]	*древесина*
fuel	[ˈfjuːəl]	*топливо*
to shrink	[ʃrɪŋk]	*уменьшаться*
available	[əˈveɪləbl]	*имеющийся, доступный*

1. Answer these questions:
(Ответьте на эти вопросы):

1. What does the woody tissue of the trunk provide?
2. What function does the vascular tissue of the trunk perform?
3. What is the trunk surrounded by?
4. What helps trees compete for sunlight?
5. What function do the roots of the tree perform?

6. What process taking place in the leaves provides the food for the tree's growth and development?
7. What substance do trees take from the atmosphere?
8. Why are trees important for people and animals?
9. Why are forests shrinking?

2. Mark the sentences true (T) or false (F).
(Определите, верно или неверно утверждение).
1. The trunk distinguishes trees from other plants.
2. Vascular tissue in the trunk makes the wood stronger.
3. A very important biochemical process, photosynthesis, takes place inside the leaves.
4. All trees have flowers and fruit.
5. Trees are long-lived organisms.
6. Forest areas in the world decrease each year.
7. The bark serves to carry materials from one part of the tree to the other.

3. Match the words with their definitions.
(Подберите к словам соответствующие определения).

1. tissue	a.	a tree's central superstructure
2. photosynthesis	b.	a group of biological cells that perform a similar function
3. erosion	c.	a woody structural member connected to but not part of the central trunk of a tree
4. branch	d.	a plant that lives for more than two years
5. nutrients	e.	forests characterized by high rainfall
6. trunk	f.	the outermost layers of stems and roots of woody plants
7. perennial	g.	processes (such as water flow or wind) which remove soil and rock from one location, then transport it to another location where it is deposited
8. bark	h.	the substances that an organism utilizes to survive and grow
9. rainforests	i.	a process used by plants and other organisms to convert light energy into chemical energy that can be later released to fuel the organisms' activities

4. Find the English equivalents for the following word combinations in the text.

(Найдите в тексте английские эквиваленты следующих словосочетаний).

1. *многолетнее растение*
2. *служить защитным барьером*
3. *улавливать световую энергию*
4. *возвышаться над другими растениями*
5. *конкурировать за солнечный свет*
6. *смягчать климат*
7. *накапливать большие количества углерода в тканях*
8. *извлекать влагу и питательные вещества из почвы*
9. *обеспечивать пищу для роста и развития дерева*
10. *тропические ливневые леса*
11. *древесный ствол*

For your self-study

(Задания для самостоятельной работы)

5. Fill in the blanks using the given words.

(Заполните пропуски, используя данные слова).

timber	pollen	nutrients	moisture
habitat	trunk	biodiverse	

1. Plants grow faster in soil rich in … .
2. The preservation of … natural forests is very important because plant communities consisting of many species generally take up more carbon from the atmosphere than communities consisting of just one or a few species.
3. This oak tree has a massive … .
4. Natural resources such as … require mechanisms that promote sustainable exploitation.
5. Due to such characteristics there is always oxygen balance and optimal air … in wooden houses.
6. If you are allergic to animals, dust or … , an air purifier can help relieve symptoms.
7. Forests may also provide … for wildlife.

6. Turn the sentences passive.

(Преобразуйте эти предложения в предложения в страдательном залоге).

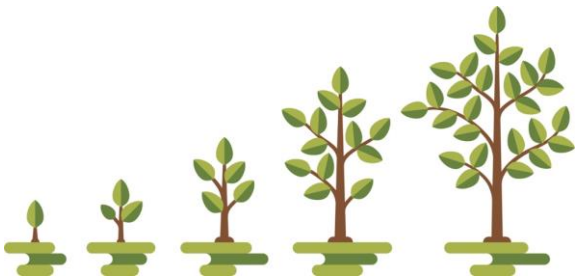
Model: The trunk supports many secondary branches of the tree.

Many secondary branches of the tree are supported by the trunk.

1. The roots extract moisture and nutrients from the soil.
2. The leaves provide the food for the tree's growth and development.
3. Trees reduce soil erosion.
4. A layer of bark surrounds the tree trunk.
5. Forests provide a habitat for many species of animals and plants.

Tree growth

Рост дерева



The newly born tree emerges above the ground. Its shoot begins to grow up and its roots down. The root has important work to do, it provides water for the young seedling. As soon as the little root of a seedling penetrates the ground, the tree is permanently anchored to the place, where, unless it is transplanted, it has to stay all its life. From now on the tree has to depend on the nutrients available in that particular place and to develop under climatic conditions found there, which cannot be changed.

Besides the root and stem tips, another important growing region is soon established in the seedling. It is called the cambium layer and is found between the wood and the bark. It makes the tree grow in girth. The cambium consists of a single layer of cells that retain their capacity to divide throughout the life of the tree. This single layer of cells has a peculiar property in that it gives origin both to the wood and to the bark. In the spring, when the cambium layer becomes active, it begins to split off rows of wood cells to the inside and rows of bark cells to the outside. Generally speaking, the bark part of the tree is much thinner than the woody part, or the stem. Bark continuously sloughs off, while the wood accumulates. In the soft inner bark, are formed sieve tubes, through which manufactured sugar dissolved in water flows from the foliage to storage tissues in stem and root.

The wood formed in the spring consists of light-colored, thin-walled cells, toward the end of the season smaller cells are formed, their walls are heavier and darker and thus summer wood is formed. This alternation of spring wood and summer wood causes the concentric structure of the tree trunk known as annual rings, they are seen clearly on the cross section of a tree, one can determine fairly closely its age.

Do you know these words?
(Знаете ли вы эти слова?)

to emerge	[ɪˈməːdʒ]	*возникать, появляться*
to provide	[prəˈvaɪd]	*предоставлять, обеспечивать*
seedling	[ˈsiːdlɪŋ]	*сеянец*
to penetrate	[ˈpenətreɪt]	*проникать*
permanently	[ˈpəːmənəntli]	*постоянно*
to anchor	[ˈæŋkə]	*закреплять*
tip	[tɪp]	*кончик, верхушка*
cambium	[ˈkæmbiːəm]	*камбий*
girth	[gəːθ]	*обхват*
to retain	[rɪˈteɪn]	*сохранять*
capacity	[kəˈpæsɪtɪ]	*способность*
throughout	[θruːˈaʊt]	*в течение*
peculiar	[pɪˈkjuːlɪə]	*особый*
to give origin	[gɪv ˈɔːrɪdʒɪn]	*давать начало*
to slough off	[slaʊ ɔf]	*слущиваться, отслаиваться*
to accumulate	[əˈkjuːmjʊleɪt]	*накапливать*
sieve tube	[sɪv tjuːb]	*ситовидная трубка*
foliage	[ˈfəʊlɪɪdʒ]	*листва*
alternation	[ɔːltəˈneɪʃn]	*чередование, смена*
annual ring	[ˈænjʊəl rɪŋ]	*годичное кольцо*
cross section	[krɔs sekʃn]	*поперечный срез*

1. Answer these questions:
(Ответьте на эти вопросы):

1. What functions of the root are mentioned in the text?
2. In what direction do the tree roots grow?
3. What layer is found between the wood and the bark?
4. What layer in a tree provides its growth in girth?
5. What happens to the cambium layer in spring?
6. In what part of a tree can we see the tubes transporting sugar?

7. What is the difference between spring wood and summer wood?
8. What causes the concentric structure of the tree trunk known as annual rings?
9. Where can annual rings be seen clearly?

2. Mark the sentences true (T) or false (F).

(Определите, верно или неверно утверждение).

1. The root of the tree can grow up and down.
2. The only function of the tree roots is anchoring the tree to the ground.
3. The cambium layer becomes active in the spring.
4. The wood cells formed in spring are smaller than those formed in summer.
5. One can determine fairly closely the age of the tree by counting the annual rings.

3. Find the English equivalents for the following word combinations in the text.

(Найдите в тексте английские эквиваленты следующих словосочетаний).

1. *область роста*
2. *концентрическая структура древесного ствола*
3. *обеспечивать водой*
4. *проникать в почву*
5. *накопительная ткань*
6. *сахар, растворённый в воде*
7. *чётко видеть*
8. *поперечный срез дерева*
9. *довольно точно определить возраст дерева*
10. *сохранять способность к делению на протяжении всей жизни дерева*
11. *обладать особым свойством*
12. *быть гораздо тоньше, чем древесная часть*

4. Match the words from the columns to make word combinations from the text.

(*Соедините слова из колонок, чтобы образовать словосочетания из текста).*

1. cambium	a. cells
2. storage	b. layer
3. thin-walled	c. section

4.	summer	d.	structure
5.	concentric	e.	wood
6.	cross	f.	tissues

5. Match the words with their definitions.
(Подберите к словам соответствующие определения).

1.	to emerge	a.	to move something, or to be moved, from one place to another
2.	seedling	b.	to make something stay in one position by fastening it firmly
3.	to penetrate	c.	the leaves of a plant, collectively; leafage
4.	to anchor	d.	the tough exterior covering of a woody root or stem
5.	to transplant	e.	to pass into or through
6.	cambium	f.	a young tree before it becomes a sapling
7.	bark	g.	a thin formative layer between the xylem and phloem of most vascular plants that gives rise to new cells and is responsible for secondary growth
8.	foliage	h.	to come out into view

For your self-study

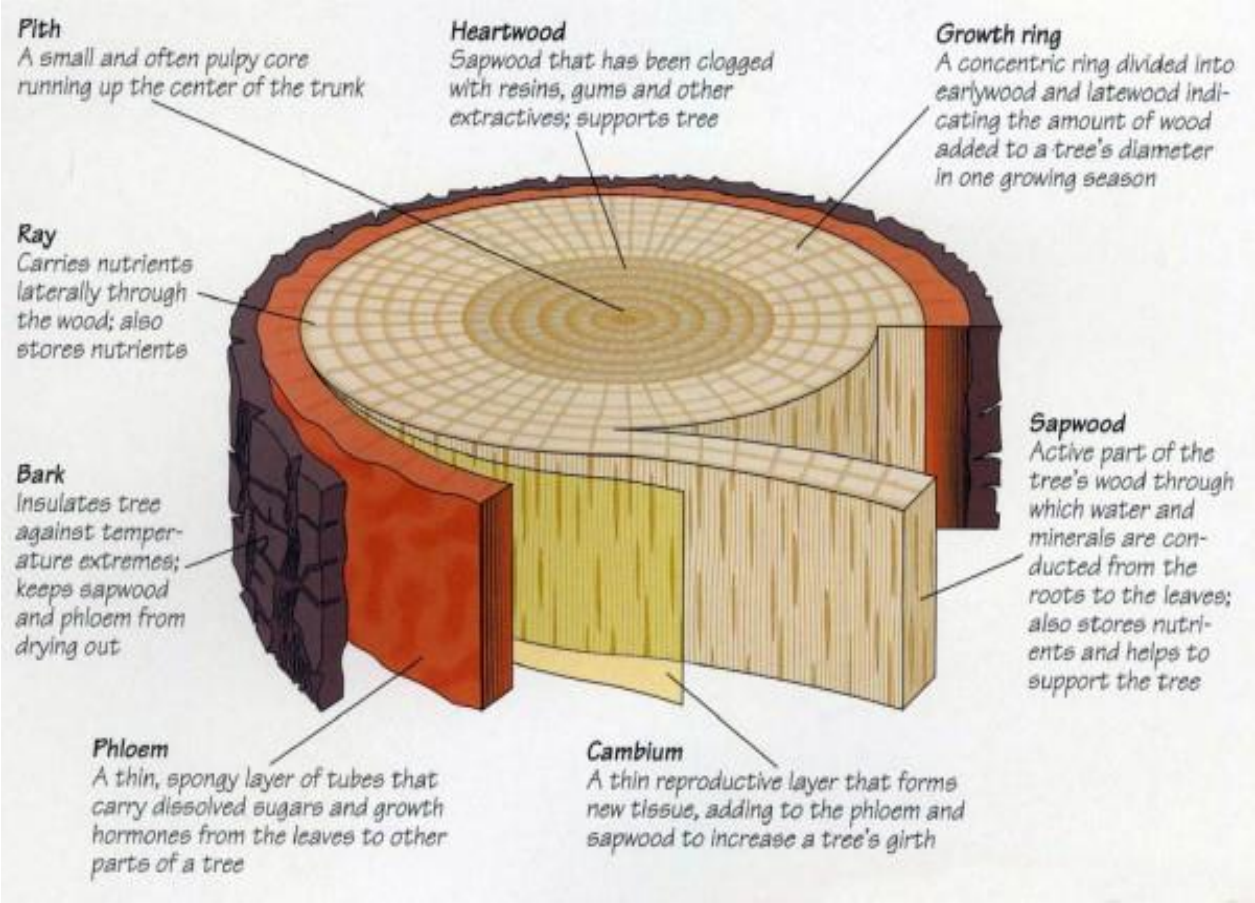
(Задания для самостоятельной работы)

6. Put the verbs into the proper columns according to the reading rules of the word end.
(Распределите глаголы в колонки в соответствии с правилами чтения окончания ***–ed****).*

[t]	[d]	[ɪd]

Splitted, dissolved, anchored, emerged, established, transplanted, penetrated, developed, manufactured, called, provided, changed, accumulated.

7. Study the picture of wood layers and fill in the gaps in the text given below.
(Изучите изображение древесных слоёв и заполните пропуски в тексте, данном ниже).



There are many different species of trees and they are either hardwoods or softwoods but the one thing they have in common is the woods layers.

The first layer of the tree is the _____[1] and it is essentially the centre of the tree which is developed in the first year, it is also where the impurities and deposits are stored as the tree grows.

Each _____[2] is made per year which shows the trees growth and age. Once a tree is cut down you can count the _____[3] to determine a tree's age.

The _____[4] are the vertical lines in a trees trunk that pass from the pith to the bark. They are cellular tubes used to transport sugars and food throughout the tree and the waste is left behind in the pith.

The _____[5] lies between the outer bark and inner bark of a tree. It is the part that is used to produce the new cells of a tree and essentially being the cause of its growth and it also helps to make a protective cork under the bark.

The _____[6] is the most easily identifiable part of the trunk as it lies on the outside and is the only part you usually see. It is the wood layer that offers the most protection from weather, insects and fungus and it also helps to keep things in such as moisture and food.

The _____[7] is a wood layer that transports food from the leaves to the other parts of the plant. It is a complex tissue consisting of many tubes.

The older dense inner part of a tree trunk, yielding the hardest timber is called _____[8].

The younger softer living or physiologically active outer portion of wood is called _____[9].

Forest management

Лесопользование

The scientific study of forest species and their interaction with the environment is referred to as forest ecology, while the management of forests is often referred to as forestry. Forestry is the art of growing rotational crops of timber trees in forests. It may be defined as the management of forests to insure maximum benefit. While the continuous production of timber products is generally the main objective, secondary benefits such as recreation, wildlife protection, and watershed maintenance are almost always involved. Forest management has changed considerably over the last few centuries, with rapid changes culminating in a practice now referred to as sustainable forest management. Foresters who practice sustainable forest management focus on the integration of ecological, social and economic values.

The concept of forest management has acquired a broader content than it used to have and now relates more to caring for the forest environment as an integrated totality. The actions and methods employed in wood production are nowadays designed to ensure that the requirements of the natural environment are taken into consideration during all stages of the forest's growth. Likewise in forest regeneration, the alternatives now chosen have the farthest-reaching effects on both wood production and environmental protection. Regeneration is an inseparable aspect of sustainable use of forests.

Do you know these words?
(Знаете ли вы эти слова?)

interaction	[ˌɪntərˈækʃn]	*взаимодействие*
environment	[ɪnˈvaɪrənmənt]	*окружающая среда*
management	[ˈmænɪdʒmənt]	*управление*
forest management	[ˈfɔːrɪst ˈmænɪdʒmənt]	*лесопользование*
forestry	[ˈfɔːrɪstri]	*лесное хозяйство, лесоводство*
rotational crops	[rəʊˈteɪʃənəl krɒps]	*чередующиеся культуры*
to define	[dɪˈfaɪn]	*давать определение*
to insure	[ɪnˈʃʊə]	*гарантировать*
benefit	[ˈbenɪfɪt]	*прибыль*
recreation	[rekrɪˈeɪʃn]	*отдых*
wildlife	[ˈwaɪldlaɪf]	*живая природа*
watershed maintenance	[ˈwɔːtəʃed ˈmeɪntənəns]	*охрана водосборных бассейнов*
to culminate	[ˈkʌlmɪneɪt]	*достигать высшей точки*
sustainable	[səˈsteɪnəbl]	*экологически рациональный*
to focus on smth.	[ˈfəʊkəs ɔn]	*сосредоточиться на чём-либо*
value	[ˈvæljuː]	*ценность*
integrated totality	[ˈɪntɪgreɪtɪd təʊˈtælɪtɪ]	*единая совокупность*
to take into consideration	[teɪk ˈɪntʊ kənsɪdəˈreɪʃn]	*принимать во внимание*
regeneration	[rɪdʒenəˈreɪʃn]	*восстановление*
inseparable	[ɪnˈsepərəbl]	*неотделимый*

1. Answer these questions:
(Ответьте на эти вопросы):

1. What is forestry?
2. What is the difference between forestry and forest ecology?
3. What is the main objective of forest management?
4. What do foresters who practice sustainable forest management focus on?
5. What is the difference between the content of forest management concept now and in the past?

6. What should be considered when wood production methods are chosen?
7. What is an integral part of sustainable use of forests?

2. Match the words with their definitions.

(Подберите к словам соответствующие определения).

1.	sustainable	a.	uninterrupted in time
2.	ecology	b.	animals and plants that grow independently of people, usually in natural conditions
3.	wildlife	c.	causing little or no damage to the environment and therefore able to continue for a long time
4.	regeneration	d.	something people do to relax and have fun
5.	continuous	e.	growing again
6.	benefit	f.	something that produces good and helpful results or effects
7.	recreation	g.	the relationships between the air, land, water, animals, plants, etc. usually of a particular area, or the scientific study of this

3. Match the words from the columns to make word combinations from the text.

(*Соедините слова из колонок, чтобы образовать словосочетания из текста).*

1.	wildlife	a.	maintenance
2.	continuous	b.	values
3.	watershed	c.	production
4.	sustainable	d.	management
5.	economic	e.	protection
6.	rapid	f.	changes
7.	forest	g.	use

4. Find the odd word in each row.

(Найдите лишнее слово в каждом ряду).

1. designed, produced, referred, defined
2. regenerated, related, employed, integrated
3. practiced, acquired, involved, changed

5. Define the part of speech of the following derivatives, try to guess their meaning, check their translation in a dictionary.

(Определите, какой частью речи являются следующие однокоренные слова, попытайтесь догадаться, как они переводятся на русский язык, проверьте перевод в словаре).

1. to environ – environment – environmental – environmentalist
2. to sustain – sustainable – sustainability
3. to protect – protective – protection
4. to produce – product - production
5. ecology – ecological – ecologist
6. science – scientific – scientist
7. to maintain – maintenance

6. Mark the sentences true (T) or false (F).

(Определите, верно или неверно утверждение).

1. Forestry studies forest species and their interaction with the environment.
2. The principal objective of forest management is the continuous production of timber.
3. Sustainable forest management is a new practice that focuses on the integration of ecological, social and economic values.
4. Nowadays forest management is more concerned with wood production than with environmental protection.
5. Regeneration is an important part of sustainable forest management.

7. Find the English equivalents for the following word combinations.

(Найдите в тексте английские эквиваленты следующих словосочетаний).

1. *непрерывное производство древесины*
2. *обеспечивать максимальную прибыль*
3. *более обширное содержание*
4. *принимать во внимание потребности природной среды*
5. *неотъемлемый аспект*
6. *возобновление леса*
7. *защита окружающей среды*
8. *экологически рациональное лесоводство*
9. *оказывать долгосрочное воздействие*
10. *защита живой природы*

For your self-study

(Задания для самостоятельной работы)

8. Fill in the blanks using the given words.

(Заполните пропуски, используя данные слова).

timber	environment	management
sustainable	wildlife	

1. Their work involves restoring and recreating … habitats across the country.
2. These forests are managed to obtain traditional forest products such as firewood, fibre for paper, and … .
3. As a result of growing … awareness, management of forests for multiple use is becoming more common.
4. Since 1953 the volume of standing trees in the United States have increased by 90% due to … forest management.
5. Forest … nowadays focuses not only on timber production, it takes much care of forest environment.

9. Turn the sentences passive.

(Преобразуйте эти предложения в предложения в страдательном залоге).

Model: We define forestry as the management of forests to insure maximum benefit.

Forestry is defined as the management of forests to insure maximum benefit.

1. Foresters should take the requirements of the natural environment into consideration.
2. People grow rotational crops of timber trees in forests.
3. Forest management almost always involves recreation, wildlife protection, and watershed maintenance.
4. We employ environmentally safe methods of wood production.
5. People now choose the alternatives having the farthest-reaching effects on both wood production and environmental protection.

Broadleaves

Широколиственные деревья

The broadleaves, or hardwood trees, are the leading feature in the British landscape of woods and hedgerows. In the past they were the country's main source of building material, fencing and fuel. Today, when there are other sources of heat and power, and steel and concrete play so large a part in building, the hardwood timbers of these attractive trees are less important to the British economy. But there is still a very substantial trade in good sound oak, beech, ash, sycamore and elm, for the better classes of furniture making and the joinery, while poplar is used in matches, and willow for cricket bats. To a growing extent, the country's needs of timber in bulk are nowadays met by the conifers.

Most forest planting today is done with these conifers. But the landscape, shade and shelter values of the broadleaves are so great that they are always likely to play the larger part in hedgerows, as street trees. Most of them are natives, and these are firmly established in old natural or semi-natural woodlands throughout the British Isles. Our broadleaved trees form part of the vast natural broadleaved forest of Northern Europe. The key feature of all these woods and trees is, as the name implies, the broad leaf, which is shed each autumn as the colder weather approaches. Every leaf holds in its tissue a remarkable substance called chlorophyll, which gives it its green colour. In sunlight and in the presence of sufficient moisture and mineral salts, this chlorophyll 'fixes' some of the carbon dioxide gas that is always present in the air. Once fixed, the carbon dioxide is transformed by intricate chemical processes into sugars, and eventually into all the other complex materials that make up the tree's substance — wood, roots, flowers and seeds as well as the leaves themselves.

Do you know these words?

(Знаете ли вы эти слова?)

feature	[ˈfiːtʃə]	*черта*
hedgerow	[ˈhedʒrəʊ]	*живая изгородь*
source	[sɔːs]	*источник*

fencing	[ˈfensɪŋ]	*забор, ограждение*
fuel	[ˈfjuːəl]	*топливо*
heat	[hiːt]	*тепло*
concrete	[ˈkɒŋkriːt]	*бетон*
substantial trade	[səbˈstænʃəl treɪd]	*значительный объём торговли*
sound	[saʊnd]	*крепкий*
oak	[əʊk]	*дуб*
beech	[biːtʃ]	*бук*
ash	[æʃ]	*ясень*
sycamore	[ˈsɪkəmɔː]	*платан*
elm	[elm]	*вяз*
poplar	[ˈpɒplə]	*тополь*
willow	[ˈwɪləʊ]	*ива*
bat	[bæt]	*бита*
in bulk	[ɪn bʌlk]	*оптом, партиями*
value	[ˈvæljuː]	*ценность*
native	[ˈneɪtɪv]	*исконный обитатель*
to establish	[ɪˈstæblɪʃ]	*устанавливать, создавать*
woodland	[ˈwʊdlənd]	*лесной массив*
throughout	[θruːˈaʊt]	*на всей площади*
vast	[vɑːst]	*обширный*
to shed	[ʃed]	*ронять*
remarkable	[rɪˈmɑːkəbəl]	*замечательный*
substance	[ˈsʌbstəns]	*вещество*
sufficient	[səˈfɪʃənt]	*достаточный*
moisture	[ˈmɔɪstʃə]	*влага*
carbon dioxide gas	[ˈkɑːbən dʌɪˈɒksaɪd gæs]	*углекислый газ*
intricate	[ˈɪntrɪkət]	*сложный*
eventually	[ɪˈventʃuəli]	*в конечном итоге*

1. Answer these questions.

(Ответьте на эти вопросы).

1. What is the difference between the use of the broadleaves in Britain in the past and nowadays?
2. What trees are mostly used in Britain as a source of timber?
3. What trees are native for the British Isles?
4. What is the key feature of broadleaved trees?

5. What substance gives the leaves their green colour?
6. What function does chlorophyll perform?
7. What is carbon dioxide transformed into after being ‘fixed’ by chlorophyll?

2. Match the letters and combination of letters with corresponding transcription signs.

(*Соедините буквы и сочетания букв с соответствующими транскрипционными знаками).*

ash	[aɪ]	conif**e**r
b**ee**ch	[æ]	sh**e**lter
elm	[iː]	tr**a**de
intric**a**te	[e]	l**ea**f
f**ea**ture	[eɪ]	d**i**oxide
Isles	[əu]	broadl**ea**ves
oak	[ə]	k**ey**

3. Match the words from the columns to make word combinations from the text.

(*Соедините слова из колонок, чтобы образовать словосочетания из текста).*

1. building	a. trees
2. hardwood	b. moisture
3. street	c. material
4. substantial	d. dioxide
5. key	e. trade
6. sufficient	f. timber
7. carbon	g. feature

4. Mark the sentences true (T) or false (F).

(Определите, верно или неверно утверждение).

1. Nowadays hardwood trees are the main source of building material, fencing and fuel.
2. Softwood trees are mostly used for making the better classes of furniture.
3. In Britain coniferous trees are used for bulk timber production.
4. In Britain broadleaved trees are often used as street trees.

5. Coniferous trees shed their leaves each autumn as the colder weather approaches.
6. Chlorophyll is the substance held in the tissue of leaves.
7. Chlorophyll is needed to make up the tree's substance.

5. Find the odd word in each row.

(Найдите лишнее слово в каждом ряду).

1. beech, sycamore, spruce, elm
2. steel, timber, concrete, trade
3. roots, flowers, leaves, seeds
4. remarkable, sufficient, sound, approach
5. broadleaved, fixed, established, transformed

6. Define the part of speech of the following derivatives, try to guess their meaning, check their translation in a dictionary.

(Определите, какой частью речи являются следующие однокоренные слова, попытайтесь догадаться, как они переводятся на русский язык, проверьте перевод в словаре).

1. to lead – leader – leading
2. to build – building
3. to fence – fence – fencing
4. to attract – attractive
5. to plant – planting – plantation
6. nature – natural
7. approach – to approach
8. moist – moisture

7. Match the words with their definitions.

(Подберите к словам соответствующие определения).

1. natives	a. large movable objects in a room, such as tables and chairs
2. furniture	b. an extensive area of land regarded as being visually distinct
3. joiner	c. a skilled worker in wood who puts doors, stairs etc. into buildings
4. carbon dioxide	d. original inhabitants or lifelong residents of a place
5. leaf	e. a usually green, flattened, lateral structure attached to a stem and functioning as principal

organ of photosynthesis and transpiration in most plants

6. landscape
f. a colourless, odourless, incombustible gas, that is formed during respiration, combustion, and organic decomposition, is an essential component in photosynthesis

8. Fill in the blanks using the given words.
(Заполните пропуски, используя данные слова).

hedgerows	chlorophyll	broadleaves
timber	carbon dioxide	

1. The book's main section is devoted to the three main types of trees: conifers, temperate … , and tropicals.
2. Hedges used to separate a road from adjoining fields or one field from another are known as … .
3. Research has shown that over the past 50 years, humans have changed ecosystems more rapidly and extensively than in any comparable period of time in human history, largely in order to meet rapidly growing demands for food, fresh water, … , fibre and fuel.
4. In spring … content in coniferous species is higher than in other trees.
5. Growing plants can absorb some of the extra … .

For your self-study

(Задания для самостоятельной работы)

9. Complete the sentences choosing the best alternative.
(Заполните пропуски в предложениях, выбрав наиболее подходящий вариант).

1. Broadleaved trees are also called … trees.
   a. *hardwood*
   b. *softwood*
   c. *deciduous*
2. In today's British economy broadleaved trees are … coniferous trees.
   a. *less important than*
   b. *more important than*
   c. *as important as*

3. Oak, beech, sycamore and elm are used for… .
   a. *furniture making*
   b. *joinery*
   c. *cricket bats*
4. The country's needs for timber in bulk are nowadays met by the … .
   a. *broadleaved trees*
   b. *coniferous trees*
   c. *hardwood trees*
5. The substance giving the leaves their green colour is called … .
   a. *carbon*
   b. *chlorophyll*
   c. *oxygen*
6. Carbon dioxide is transformed by intricate chemical processes into
   a. *water*
   b. *mineral salts*
   c. *sugars*

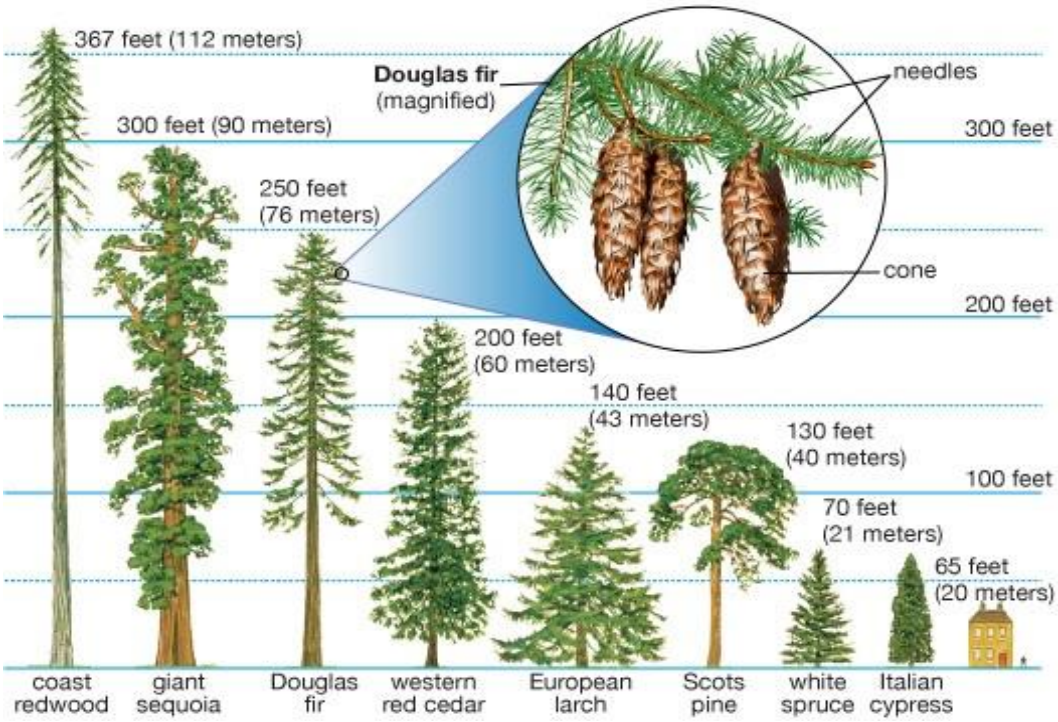
10. Find the English equivalents for the following word combinations in the text.

(Найдите в тексте английские эквиваленты следующих словосочетаний).

1. *другие источники тепла и энергии*
2. *потребности страны в большом объёме древесины*
3. *на всей территории Британских островов*
4. *ключевая особенность*
5. *в присутствии достаточного количества влаги*
6. *сложные химические процессы*
7. *удивительное вещество*
8. *прочно закрепиться*

Conifers

Хвойные деревья



Conifers, or softwood trees, form a distinct group, which has become very important in the world's economy, because they grow fast on poor soils even under harsh climates, and yield timbers that are very suitable for industry. They are now being planted on a growing scale in most countries as a source of wealth. Distinctive characters of the conifers include: narrow, needle-like or scale-like leaves; foliage usually evergreen; scaly buds; regular almost geometrical, branching habit; resinous fragrance of foliage, buds, bark and timber; male and female flowers always borne separately, though usually on the same tree; flowers always wind-pollinated, and therefore catlike, lacking showy petals or nectar, fruit in the form of a woody cone.

Most conifers flower in spring, their cones may ripen during the following autumn, the following spring, or in some species eighteen months after pollination. In natural forests conifers grow readily from seed, unaided by man. In cultivation they are raised in nurseries nearly always from a seed, since most kinds are very hard to grow from cutting. The timber of conifers is always called softwood, though in a few species it is quite hard. On the whole, however, it is softer and easier to work than the hardwood yielded by broadleaved trees. Today the great bulk of timber used in house building, fencing, packing cases and boxes of all

kinds is softwood. For paper making, which uses about half of the output of wood in the main timber-growing countries, softwood is more suitable than hardwood because, amongst other features, its fibres are substantially longer. Softwood is very suitable for the manufacture of most kinds of artificial board, an expanding industry that gives us wood chipboard, hardboard, arid insulation board.

Do you know these words?

(Знаете ли вы эти слова?)

conifer	[ˈkɒnɪfə]	*хвойное дерево*
distinct	[dɪsˈtɪŋkt]	*особый, отдельный*
harsh	[hɑːʃ]	*суровый*
suitable	[ˈsuːtəbəl]	*подходящий, необходимый*
on a growing scale	[ɒn ə ˈgrəʊɪŋ skeɪl]	*в растущем масштабе*
wealth	[welθ]	*богатство, благосостояние*
scale-like	[skeɪl laɪk]	*чешуевидный*
scaly	[ˈskeɪli]	*чешуйчатый*
bud	[bʌd]	*почка*
regular	[ˈregjʊlə]	*правильный*
branching habit	[ˈbrɑːntʃɪŋ ˈhæbɪt]	*форма ветвления*
resinous	[ˈrezɪnəs]	*смолистый*
fragrance	[ˈfreɪgrəns]	*запах, аромат*
male	[meɪl]	*мужской*
female	[ˈfiːmeɪl]	*женский*
to pollinate	[ˈpɔlɪneɪt]	*опылять*
catlike	[ˈkætlaɪk]	*мягкий*
to lack	[læk]	*отсутствовать*
showy	[ˈʃəʊɪ]	*яркий*
petal	[petl]	*лепесток*
cone	[kəʊn]	*шишка*
readily	[ˈredɪlɪ]	*быстро*
unaided	[ˈʌnˈeɪdɪd]	*без помощи*
nursery	[ˈnɜːsərɪ]	*питомник*
cutting	[ˈkʌtɪŋ]	*черенок*
bulk	[bʌlk]	*объём*
output	[ˈaʊtpʊt]	*объём выпуска*
amongst	[əˈmʌŋst]	*среди*
substantially	[səbˈstænʃəlɪ]	*значительно*

chipboard	[ˈʧɪpbɔːd]	*древесностружечная плита*
hardboard	[ˈhɑːdbɔːd]	*высокоплотная древесноволокнистая плита*
insulation board	[ɪnsjʊˈleɪʃn bɔːd]	*изоляционная плита*

1. Answer these questions.
(Ответьте на эти вопросы).
1. Why are conifers so important in the world economy?
2. What are the distinctive features of conifers?
3. When do most conifers flower?
4. Where do people raise conifers?
5. Where is softwood used?
6. Why is softwood more suitable for paper-making than hardwood?
7. What kinds of artificial board are manufactured from softwood?

2. Match the letters and combination of letters with corresponding transcription signs.
(*Соедините буквы и сочетания букв с соответствующими транскрипционными знаками)*.

s**ee**d	[aɪ]	m**a**n
r**i**pen	[æ]	r**e**sinous
gr**ow**	[iː]	k**i**nds
exp**a**nd	[e]	p**e**tal
fr**a**grance	[eɪ]	sc**a**ly
r**e**gular	[əu]	pap**e**r
conif**er**	[ə]	tr**ee**

3. Form the comparative degree of the following adjectives.
(*Образуйте сравнительную степень следующих прилагательных)*.
Soft, easy, great, suitable, long, important, poor, showy, hard.

4. Match the words from the columns to make word combinations from the text.
(*Соедините слова из колонок, чтобы образовать словосочетания из текста).*

1. paper	a. board
2. poor	b. habit

3.	timber-growing	c.	fragrance
4.	artificial	d.	making
5.	broadleaved	e.	leaves
6.	needle-like	f.	trees
7.	branching	g.	soils
8.	resinous	h.	countries
9.	wind-pollinated	i.	flowers

5. Mark the sentences true (T) or false (F).

(Определите, верно или неверно утверждение).

1. Conifers grow successfully even on poor soils.
2. Conifers grow even under harsh climates.
3. Conifers are less important in the world's economy than hardwoods.
4. Male and female flowers are always borne separately, on different trees.
5. Foliage, bark, buds and timber of conifers have a distinct resinous smell.
6. Flowers of conifers usually have showy petals.
7. The timber of conifers is called softwood because it is always softer than that of hardwoods.
8. The fibres in softwoods are substantially longer than those in hardwoods, that's why softwood is more suitable for paper-making.

6. Match the words with their definitions.

(Подберите к словам соответствующие определения).

1.	fragrance	a.	one of the soft, colourful parts of a flower
2.	bud	b.	a bush or tree that produces cones and that usually has leaves that are green all year
3.	petal	c.	a pleasant and usually sweet smell
4.	showy	d.	having parts that are arranged in an even or balanced way
5.	cone	e.	a small part that grows on a plant and develops into a flower, leaf, or new branch
6.	conifer	f.	a hard and dry part that is the fruit of a pine tree or other evergreen plant and contains many seeds
7.	regular	g.	having an appearance that attracts attention
8.	to pollinate	h.	to give a plant pollen from another plant of the same kind so that seeds will be produced

7. Fill in the blanks using the given words.
(Заполните пропуски, используя данные слова).

chipboard	cones	nursery
conifer	hardboard	resinous

1. … is a tree with needle-like leaves, some of them are evergreen and others are deciduous.
2. It has sticky leaves and … smell.
3. Substitute trees were found in a tree … in Germany.
4. … is a material made by gluing wood chips together with an adhesive under high pressure.
5. Softwoods come from coniferous trees which produce … and have leaves like needles.
6. … is similar to particleboard but it is much stronger and harder because it is made out of wood fibres that have been highly compressed.

For your self-study

(Задания для самостоятельной работы)

8. Complete the sentences choosing the best alternative.
(Заполните пропуски в предложениях, выбрав наиболее подходящий вариант).

1. The timber of conifers is always called … .
   a. hardwood
   b. softwood
   c. heartwood
2. Softwood is more suitable for … than hardwood because its fibres are substantially longer.
   a. paper making
   b. furniture making
   c. joinery
3. Conifers are very important for the world's economy because … .
   a. they grow fast on poor soils under harsh climates
   b. they yield timbers that are very suitable for the industry
   c. they yield hard timber
4. In …conifers grow readily from seed, unaided by man.

a. *natural forests*
b. *plantation forests*
c. *nurseries*

5. Softwood is widely used in … manufacture.
   a. *wood chipboard*
   b. *hardboard*
   c. *arid insulation board*
6. The cones of coniferous trees may ripen … .
   a. *during the following autumn*
   b. *during the following spring*
   c. *twenty months after pollination*

9. Find the English equivalents for the following word combinations in the text.

(Найдите в тексте английские эквиваленты следующих словосочетаний).

1. *образовывать отдельную группу*
2. *быстро расти на бедных почвах и в суровом климате*
3. *отличительные черты*
4. *листья в виде иголок или чешуек*
5. *смолистый запах*
6. *ветроопыляемые цветы*
7. *твёрдая древесина, которую дают лиственные деревья*
8. *огромный объём древесины*
9. *основные страны, производящие древесину*
10. *расширяющаяся отрасль*

Hardwood and softwood

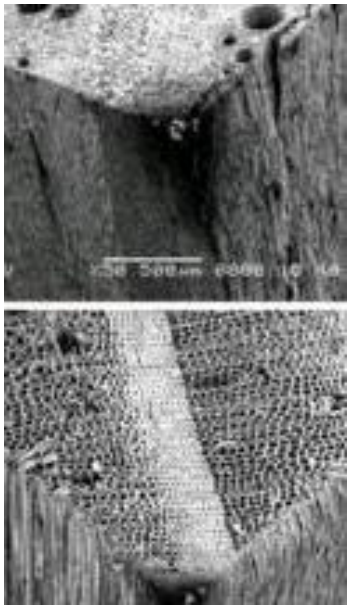
Твердая и мягкая древесина

Softwood is a generic term used in woodworking and the lumber industries for wood from conifers (needle-bearing trees from the order Pinales). Softwood-producing trees include pine, spruce, cedar, fir, larch, Douglas fir, hemlock, cypress, redwood and yew.

Softwood Tree

Hardwood Tree

Contrary to the name, softwood trees can often be harder than hardwood trees. Douglas fir, a softwood, is harder and stronger than many hardwoods, while balsa, technically a hardwood, is much softer than even most softwoods.



Presence of pores in hardwoods (oak, top) and the absence of pores in softwoods (pine, bottom).

The difference between softwood and hardwood is found in the microscopic structure of the wood. Softwood contains only two types of cells, longitudinal wood fibers (or tracheids) and transverse ray cells. Softwoods lack vessel elements for water transport that hardwoods have; these vessels manifest in hardwoods as pores. In softwood water transport within the tree is via the tracheids only. Some softwoods, such as pine, spruce, larch, and Douglas fir, have resin canals, which provide transport of resin as a defense against injury.

The term hardwood designates wood from broad-leaved (mostly deciduous, but not necessarily, in the case of tropical trees) or angiosperm trees. Hardwood contrasts with softwood, which comes from conifer trees. Most hardwoods have thicker cell walls than softwoods. On average, hardwood is of higher density and hardness than softwood, but there is considerable variation in actual wood hardness in both groups, with a large amount of overlap; some hardwoods (e.g. balsa) are softer than most softwoods, while yew is an example of a hard softwood. Hardwoods often have darker coloured wood, while softwoods are invariably light in colour. Hardwoods have broad leaves and enclosed nuts or seeds such as acorns. They often grow in subtropical regions like Africa and also in Europe and other regions such as Asia. The dominant feature separating hardwoods from softwoods is the presence of pores, or vessels. These are continuous pipes running the length of the tree and serve as conduits for water and nutrients in the outer layers of wood in a growing tree.

Do you know these words?
(Знаете ли вы эти слова?)
generic [dʒɪˈnɛrɪk] *общий*

order Pinales	[ˈɔːdə]	*порядок Сосновые*
pine	[paɪn]	*сосна*
spruce	[spruːs]	*ель*
cedar	[ˈsiːdə]	*кедр*
fir	[fɜː]	*ель, пихта*
larch	[lɑːtʃ]	*лиственница*
Douglas-fir	[ˈdəgləs fɜː]	*дугласова пихта(дугласия)*
hemlock	[ˈhɛmlɒk]	*тсуга*
cypress	[ˈsaɪprəs]	*кипарис*
redwood	[ˈrɛdwʊd]	*красное дерево*
yew	[juː]	*тис*
balsa	[ˈbɔːlsə]	*пробковое дерево, бальза*
tracheid	[trə´kiːɪd]	*трахеида*
resin	[ˈrezɪn]	*смола*
to designate	[ˈdezɪgneɪt]	*обозначать*
deciduous	[dɪˈsɪdjʊəs]	*лиственный*
angiosperm	[ˈandʒɪə(ʊ)spəːm]	*покрытосеменной*
overlap	[ˌəʊvəˈlæp]	*накладка*
enclosed	[ɪnˈkləʊzd]	*закрытый*

1. Answer these questions:

(Ответьте на эти вопросы):

1. What softwood species do you know?
2. What is the structural difference between softwoods and hardwoods?
3. What trees have resin canals?
4. What trees have thicker cell walls?
5. Are hardwoods always harder than softwoods? Can you give any examples of hardwoods which are softer than most softwoods?
6. Do hardwoods and softwoods differ in colour of their wood? What trees have lighter coloured wood?
7. What are vessels?
8. What is their function in a tree?

2. Read the text 'Hardwood & Softwood' again and complete the table.

(Прочитайте текст «Лиственные и хвойные деревья» снова и заполните таблицу).

Features	*Hardwoods*	*Softwoods*
leaves		

colour		
density		
microstructure		

3. Say if the sentences characterize softwoods or hardwoods.

(Скажите, о хвойных или лиственных деревьях говорится в этих предложениях).

1. These trees have broad leaves.
2. These trees have needle-like leaves.
3. The wood of these trees has vessels serving as conduits.
4. These trees bear cones.
5. In these trees cells are closed and cannot function as conduits.
6. In these trees the cells have openings to other cells.

4. Match the words with their definitions.

(Подберите к словам соответствующие определения).

1. resin	a. a small opening on the surface of a plant
2. tracheids	b. an elongated cell that serve to transport water and mineral salts
3. pore	c. a yellow or brown sticky flammable substance, insoluble in water, exuded by some trees and other plants (notably fir and pine)
4. acorn	d. a plant having its seeds enclosed in an ovary (*завязь*)
5. angiosperm	e. the fruit of an oak, consisting of a single-seeded, thick-walled nut set in a woody, cuplike base

5. Complete the sentences choosing the best alternative.

(Заполните пропуски в предложениях, используя наиболее подходящий вариант).

1. … trees have broad leaves.
   a. softwood
   b. hardwood
   c. coniferous
2. Some softwood species have resin … which provide transport of resin as a defense against injury.
   a. tracheids
   b. vessels
   c. canals

3. The dominant feature separating hardwoods from softwoods is the presence of … .
    a. pores
    b. ray cells
    c. *longitudinal wood fibers*
4. … are continuous pipes running the length of the tree and serving as conduits for water and nutrients.
    a. resins
    b. fibers
    c. vessels
5. The cells in hardwoods are the nutrient … .
    a. rays
    b. conduits
    c. fibers

6 . Complete the sentences choosing the proper form of the given verb.
(Заполните пропуски в предложениях, выбрав соответствующую форму данного глагола).

1. The term ‘softwood’ (*is/are*) used for wood from conifers.
2. Softwood and hardwood (*differs/differ*) in their microscopic structure.
3. Softwood trees (*contains/contain*) two types of cells: tracheids and ray cells.
4. Vessels (*is/are*) not present in softwoods.
5. Softwoods (*transports/transport*) water within the tree via the tracheids only.
6. Resin canals (*provides/provide*) transport of resin.
7. Hardwoods (*has/have*) broad leaves, while softwoods (*is/are*) conifers and (*has/have*) needle-like leaves.
8. The essential difference between the wood from hardwoods and softwoods (*is/are*) the presence of vessels in hardwoods.
9. The open cell structure of softwoods (*makes/make*) them generally more receptive than hardwoods to preservative treatments to enhance durability.

7. Plural forms of nouns end with [s], [z], [iz]. Group the given nouns into appropriate columns.
(Формы множественного числа существительных заканчиваются звуками [s], [z], [iz]. Распределите данные существительные по соответствующим колонкам.)

[s]	[z]	[iz]

Trees, industries, conifers, needles, larches, cypresses, hardwoods, pores, fibers, tracheids, leaves, nuts, seeds, acorns, groups.

8. Match the words from the columns to make word combinations from the text.

(*Соедините слова из колонок, чтобы образовать словосочетания из текста).*

1. softwood	a. trees
2. wood	b. hardness
3. needle-bearing	c. species
4. water	d. variation
5. needle-like	e. leaves
6. dominant	f. transport
7. considerable	g. feature

For your self-study

(Задания для самостоятельной работы)

9. Find the English equivalents for the following word combinations.

(Найдите в тексте английские эквиваленты следующих словосочетаний).

1. *продольные древесные волокна*
2. *транспортировать через трахеиды*
3. *защита от повреждений*
4. *проявляться в виде пор*
5. *покрытосеменные деревья*
6. *доминирующая черта*
7. *поперечные лучевые клетки*

10. Organize a discussion in small groups on different characteristics of softwoods and hardwoods using this comparison chart.

(Организуйте в малых группах обсуждение различных характеристик хвойных и лиственных деревьев, используя эту сравнительную таблицу).

Example:

A : Are hardwoods and softwoods used in different ways?

B : Yes, they are. Hardwoods are more likely to be used in high-quality furniture, while softwoods are mostly found in building components.

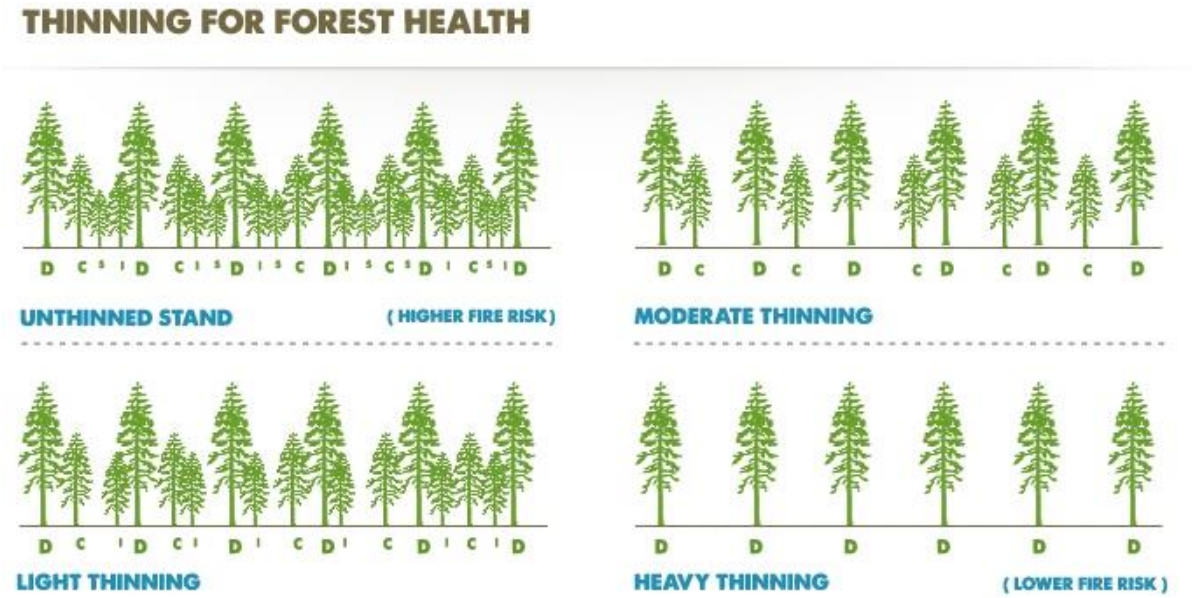
A : Which wood type is more expensive?

B : Hardwood is typically more expensive compared to softwood.

	Hardwood	**Softwood**
Definition	Comes from angiosperm trees that are not monocots; trees are usually broad-leaved. Has vessel elements that transport water throughout the wood; under a microscope, these elements appear as pores.	Comes from gymnosperm trees which usually have needles and cones. Medullary rays and tracheids transport water and produce sap. When viewed under a microscope, softwoods have no visible pores because of tracheids.
Uses	Hardwoods are more likely to be found in high-quality furniture, decks, flooring, and construction that needs to last.	About 80% of all timber comes from softwood. Softwoods have a wide range of applications and are found in building components (e.g., windows, doors), furniture, medium-density fiberboard (MDF), paper, Christmas trees, and much more.
Examples	Examples of hardwood trees include alder, balsa, beech, hickory, mahogany, maple, oak, teak, and walnut.	Examples of softwood trees are cedar, Douglas fir, juniper, pine, redwood, spruce, and yew.
Density	Most hardwoods have a higher density than most softwoods.	Most softwoods have a lower density than most hardwoods.
Cost	Hardwood is typically more expensive than softwood.	Softwood is typically less expensive compared to hardwood.
Growth	Hardwood has a slower growth rate.	Softwood has a faster rate of growth.
Shedding of leaves	Hardwoods shed their leaves over a period of time in autumn and winter.	Softwoods tend to keep their needles throughout the year.
Fire resistance	More	Poor

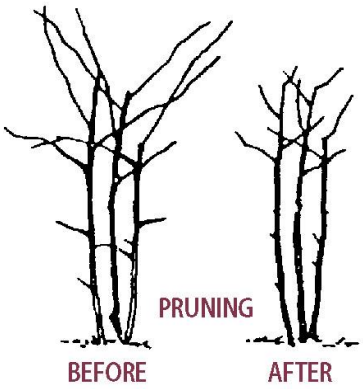
Thinning and pruning

Выборочная рубка и обрезка



The purpose of thinning is to control the amount and distribution of available growing space, to replicate the forest's natural development and ensure an even age structure. Removing trees whose growth has been stunted or which are diseased or otherwise of poor quality gives the others more room in which to grow. Depending on growing conditions and species, a stand is usually thinned 1-3 times during a rotation.

The first thinning is done 30-35 years after regeneration, when the trees are 12-14 metres tall, and reduces the number per hectare to around 1,000. First thinnings ought to be carried out considerably more often than at present. Neglecting them decisively reduces the profitability of wood production. Second and subsequent thinnings cut the density to 450-550 per hectare and these trees are allowed to grow on until the area in question is due for regeneration.



Ecological thinning is where the primary aim of forest thinning is to increase growth of selected trees, favoring development of wildlife habitat rather than focusing on increased timber yields.

Pruning, as a silvicultural practice, refers to the removal of the lower branches of the young trees so clear knot-free wood can subsequently grow over the branch stubs. Clear knot-free lumber has a higher value. Pruning in landscaping and gardening is the practice of removing diseased, non-productive, or otherwise unwanted portions from a plant.

Do you know these words?
(Знаете ли вы эти слова?)

thinning	[ˈθɪnɪŋ]	*выборочная рубка*
amount	[əˈmaʊnt]	*количество*
distribution	[dɪstrɪˈbjuːʃən]	*распределение*
available	[əˈveɪləbəl]	*имеющийся*
to replicate	[ˈreplɪkeɪt]	*повторить, воспроизвести*
to ensure	[ɪnˈʃʊə]	*обеспечивать*
even	[ˈiːvn]	*однородный*
stunted	[ˈstʌntɪd]	*замедленный*
diseased	[dɪˈziːzd]	*поражённый болезнью*
room	[ruːm]	*пространство*
rotation	[rəʊˈteɪʃən]	*оборот, смена культур*
regeneration	[rɪdʒɛnəˈreɪʃn]	*восстановление, обновление*
considerably	[kənˈsɪdərəbli]	*значительно*
to neglect	[nɪˈglekt]	*пренебрегать*
decisively	[dɪˈsaɪsɪvli]	*решительно*
profitability	[prɒfɪtəˈbɪlɪtɪ]	*рентабельность*
subsequent	[ˈsʌbsɪkwənt]	*последующий*
density	[ˈdensɪtɪ]	*плотность*
due for smth.	[djuː fɔː]	*подлежащий чему-либо*
primary	[ˈpraɪmərɪ]	*главный, основной*
to favor	[ˈfeɪvə]	*благоприятствовать*
wildlife	[ˈwaɪldlaɪf]	*дикие животные*
habitat	[ˈhæbɪtæt]	*среда обитания*
pruning	[ˈpruːnɪŋ]	*обрезка*
knot	[nɔt]	*сучок*

1. Answer these questions:
(Ответьте на эти вопросы):

1. What is the purpose of thinning?
2. What trees can be removed to give the others more room?
3. How often is a stand thinned?
4. When is the first thinning done?
5. What is the number of trees per hectare after the first thinning?
6. What does neglecting first thinnings lead to?
7. What is the primary aim of ecological thinning?
8. What is the purpose of pruning in silviculture?

2. Mark the sentences true (T) or false (F).
(Определите, верно или неверно утверждение).
1. Trees of good quality are not normally removed during thinning.
2. Thinning gives additional space to remaining trees.
3. The first thinning reduces the number of trees to 500 ones per hectare.
4. A stand is usually thinned 5 times during a rotation.
5. Ecological thinning mostly focuses on increased timber yields.
6. In silviculture and in gardening trees are pruned for different purposes.
7. The presence of knots in lumber decreases its value.

3. Put the verbs into the proper columns according to the reading rules of the word end.
(Распределите глаголы в колонки в соответствии с правилами чтения окончания ***–ed****).*

[t]	[d]	[ɪd]

Stunted, thinned, carried, allowed, selected, increased, focused, removed, developed, reduced, controlled, replicated, ensured, neglected, regenerated, referred.

4. Find the odd word in each row.
(Найдите лишнее слово в каждом ряду).
1. planting, thinning, neglecting, pruning
2. focused, removed, referred, increased
3. subsequently, considerably, decisively, profitability
4. silvicultural, ecological, removal, poor

5. Define the part of speech of the following derivatives, try to guess their meaning, check their translation in a dictionary.
(Определите, какой частью речи являются следующие однокоренные слова, попытайтесь догадаться, как они переводятся на русский язык, проверьте перевод в словаре).
1. profit – profitable – profitability
2. subsequent – subsequently
3. to decide – decision – decisive – decisively
4. to regenerate – regenerative – regeneration
5. to distribute – distribution
6. to rotate – rotation
7. primary - primarily

6. Complete the sentences choosing the best alternative.

(Заполните пропуски в предложениях, используя наиболее подходящий вариант).

1. The purpose of … is to increase timber yields.
    a. thinning
    b. ecological thinning
    c. pruning
2. Thinning is done to … .
    a. get clear knot-free lumber having high value
    b. remove diseased trees
    c. make the stand more profitable
3. Neglecting first thinning leads to … .
    a. increased space for trees to grow
    b. economic losses
    c. *increased timber yields*
4. … is a practice used in silviculture, landscaping and gardening.
    a. thinning
    b. ecological thinning
    c. pruning
5. Trees whose growth has been stunted or which are diseased or otherwise of poor quality are … .
    a. thinned
    b. removed
    c. pruned

7. Match the words with their definitions.

(Подберите к словам соответствующие определения).

1. thinning	a. the care and cultivation of forest trees
2. pruning	b. leaving undone or unattended to especially through carelessness
3. silviculture	c. removal of some plants to make the room for the growth of others
4. neglecting	d. ability of a company to use its resources to generate revenues in excess of its expenses
5. profitability	e. selective removal of parts of a plant

For your self-study

(Задания для самостоятельной работы)

8. Fill in the blanks using the given words.

(Заполните пропуски, используя данные слова).

density	timber	yield
thinning	stands	

1. Densities of the stands, the time and intensity of the first thinning are among the most important factors concerning stand yield and … quality.
2. It has been found out that early thinning at age 4-15 years leads to greater stability of stands and is a precondition of higher … level.
3. The author stresses the necessity to grow forest with spacely and evenly distributed trees and carry out intensive … at early age in order to grow stable and productive stands.
4. It is especially important to extend investigations in stands where the initial … is 1,000 – 8,000 trees/ha.
5. Early thinnings are aimed at regular distribution of trees, formation of optimal spacial structure of … eliminating gaps in them.

9. Translate the sentences paying attention to the chains of nouns.

(Переведите предложения, обращая внимание на особенности перевода цепочек существительных).

1. It's a common practice to thin when the green spruce crown is two-thirds of tree height.
2. During thinning, we can increase the wood quality by prudent stem selection.
3. How many thinnings and how hard the thinnings should be depends on the site quality, species and stand management goals.
4. After thinning the stand gets more light, nutrient turnover increases, and available water and nutrients are distributed to fewer trees.
5. It is very important to reduce stem and root damage during thinning.
6. In all intensively thinned spruce stands an insignificant height increment decrease was observed in the first year after thinning.
7. We have no other choice but to remove poor quality trees.

Managing young stands

Управление молодыми древостоями

1. Selecting crop trees

The first step in managing young stands for sawlogs is to select and mark your crop trees. Any species that is well adapted to site and stand conditions can be managed for sawlog production.

2. Releasing the stand

Releasing means thinning a stand to give crop trees room to grow by removing trees that would compete with crop trees for water, nutrients and sunlight. Through natural competition, vigorous trees suppress smaller trees, causing them to die before they are large enough to harvest for sawlogs. Thinning allows larger, more valuable trees to grow to a commercial size in less time. Thinning also promotes the overall health of the stand by removing defective or diseased trees. Stands are released in an initial thinning and again every 10 to 15 years until they are of marketable size. Care must be taken not to thin too much. Some competition with other trees is needed to encourage the growth of tall, straight, unforked stems, and to inhibit the growth of lower branches. If too many trees are removed, new branches may sprout along the stems of the remaining trees, reducing commercial value. Trees removed during thinnings can often be used for fuelwood, poles and other wood products.

3. Harvesting sawlogs

Once your trees have reached commercial size, they can be sold as sawlogs. The length of time it takes to reach commercial size depends on the species of trees, the site conditions and the market.

Do you know these words?

(Знаете ли вы эти слова?)

to manage	['mændʒ]	*управлять, контролировать*
stand	[stænd]	*древостой*
to select	[sɪˈlekt]	*выбирать, отбирать*
to mark	[mɑːk]	*помечать, клеймить*
crop tree	[krɒp triː]	*дерево для рубки*

sawlog	[ˈsɔːlɒg]	*бревно на распил*
to compete	[kəmˈpiːt]	*конкурировать*
vigorous	[ˈvɪgərəs]	*сильный, жизнеспособный*
to suppress	[səˈpres]	*подавлять*
to harvest trees	[ˈhɑːvɪst triːz]	*валить деревья*
valuable	[ˈvæljuəbl]	*ценный*
commercial	[kəˈməːʃəl]	*коммерческий, торговый*
overall	[ˌəʊvərˈɔːl]	*полный, общий*
marketable	[ˈmɑːkɪtəbəl]	*товарный*
unforked	[ʌnˈfɔːkt]	*нераздвоенный*
to inhibit	[ɪnˈhɪbɪt]	*замедлять*
fuelwood	[ˈfjuːəlwʊd]	*дрова*

1. Answer these questions*:*
(Ответьте на эти вопросы):

1. What is the first step in managing young stands?
2. What does the term ‘releasing’ mean?
3. What can be done when the trees have reached commercial size?
4. What gives crop trees room to grow?
5. What happens if too many trees are removed?
6. Where are the trees removed during thinning used?
7. How often are the stands released?

2. Match the words from the columns to make word combinations from the text.

(*Соедините слова из колонок, чтобы образовать словосочетания из текста).*

1. sawlog	a. production
2. natural	b. branches
3. marketable	c. trees
4. lower	d. thinning
5. remaining	e. size
6. initial	f. competition

3. Find the odd word in each row.

(Найдите лишнее слово в каждом ряду).

1. adapted, selected, harvested, reached
2. needed, thinned, removed, managed

3. released, encouraged, inhibited, logged

4. Match the words with their definitions.

(Подберите к словам соответствующие определения).

1. sawlog	a. reducing the number of trees in a stand
2. thinning	b. to prevent or slow down the activity or occurrence of something
3. crop tree	c. to send out new growth
4. competition	d. a log of suitable size for sawing into lumber
5. to suppress	e. active demand by two or more organisms for some environmental resource in short supply
6. to inhibit	f. to inhibit the growth or development of something
7. marketable	g. fit to be offered for sale in a market
8. to sprout	e. a tree of a commercially desirable species, with the potential to grow straight and tall

5. Mark the sentences true (T) or false (F).

(Определите, верно или неверно утверждение).

1. Competition between trees for water, nutrients and sunlight promotes their rapid growth.
2. Removing too many trees can result in reducing the commercial value of the remaining trees.
3. Releasing gives crop trees additional room to grow.
4. Thinning promotes the growth of defective and diseased trees.
5. Thinnings are done every 5 years.
6. One should be careful not to thin too much.
7. Thinnings inhibit the growth of lower branches.

6. Translate the sentences, define the part of speech of the words in italics.

(Переведите предложения, определите, какой частью речи являются слова, выделенные курсивом).

1. Select gap in the *stand* into which you want the tree to fall.
2. As a sign of politeness you should *stand* up when she comes in.
3. My mother asked me to *water* the flowers every day.
4. The *water* in the mountain lake was cold and clear.
5. Deforestation may be a *cause* of serious environmental problems.
6. Too intensive thinning may *cause* lower commercial value of the remaining trees.

7. Our product is the best on the *market*.
8. My company will *market* a new product this year.
9. I invited an expert to *value* my coin collection.
10. Experts estimate the *value* of this painting at one million dollars.

For your self-study

(Задания для самостоятельной работы)

7. Fill in the gaps using the following words:

(Заполните пропуски, используя следующие слова).

diameter	timber	stands
thinning	deforestation	

1. We needed a new load of … to finish building the house.
2. It has been found out that ... improves the composition of forests.
3. The studies have shown that stands thinned out early may have two and more times greater ... than unthinned ones.
4. It is necessary to grow forest with spacely and evenly distributed trees and carry out intensive thinning at early age in order to grow stable and productive ... .
5. Elimination of forests - … - is not a recent phenomenon, it is as old as the human occupation of the earth and one of the key processes in the history of our transformation of its surface.

8. Find the English equivalents for the following word combinations in the text.

(Найдите в тексте английские эквиваленты следующих словосочетаний)

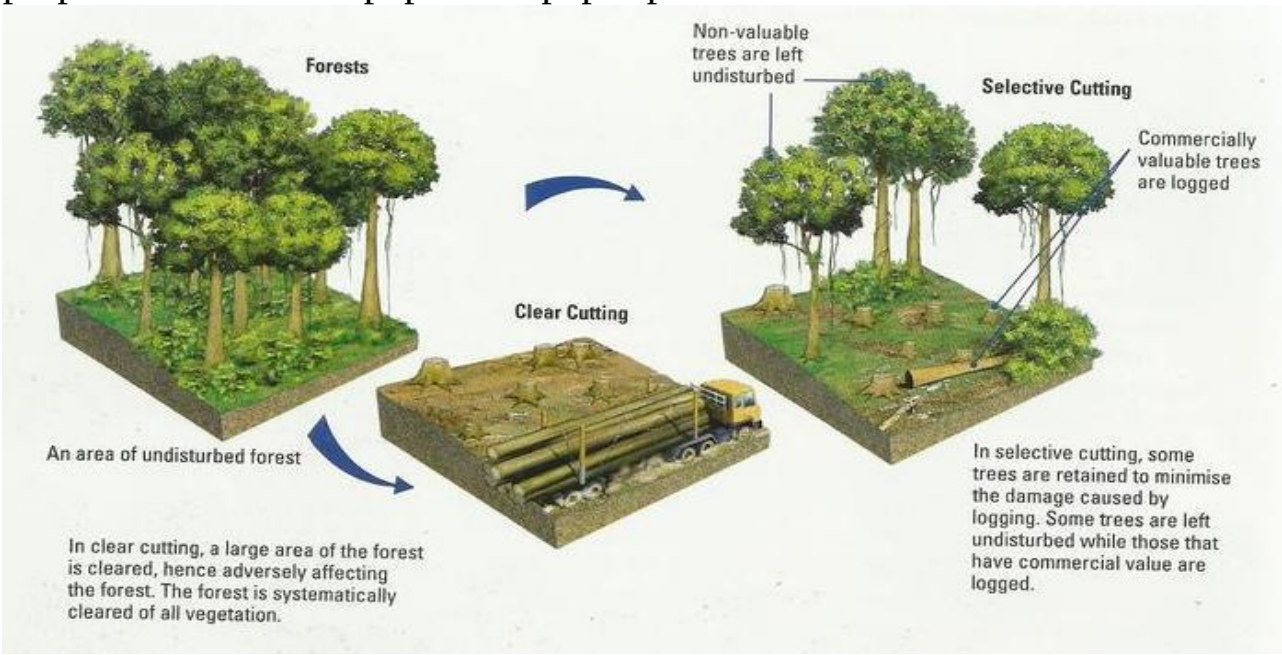
1. *естественная конкуренция*
2. *способствовать общему оздоровлению древостоя*
3. *снижать коммерческую ценность*
4. *использовать в качестве дров*
5. *выбрать и пометить деревья для основной заготовки*
6. *подавлять деревья меньшего размера*
7. *давать основным деревьям пространство для роста*
8. *удалять больные деревья и деревья с дефектами*
9. *первоначальная выборочная рубка*

10. *замедлить рост нижних ветвей*
11. *вырастать до товарного размера за меньшее время*
12. *неразветвлённые стволы*

Logging

Лесозаготовка

Logging, or commercial logging, involves cutting trees for sale as timber or pulp. The timber is used to build homes, furniture, etc and the pulp is used to make paper and paper products.



There are two general forms of logging: selective logging and clear-cutting.

Selective logging is selective because loggers choose only wood that is highly valued.

Clear-cutting is not selective. Loggers are interested in all types of wood and therefore cut all the trees down, thus clearing the forest.

You may be wondering if selective logging is better for the forest than clear-cutting?

You think it would be, but actually selective logging can be very damaging to the surrounding trees which are not selected for logging. What happens is that the heavy equipment used to cut the selected trees often damages the surrounding trees. It is estimated that 40% die from just one tree that is selectively logged. That's a lot of damage!

What logging practice is worse, selective logging or clear-cutting?

It depends on who you ask. According to NASA, clear cutting is much more damaging to a tropical rain forest because when all the trees are removed, the soil loses its nutrients and becomes barren.

However, in some cases, it is better to clear-cut a forest than selectively log it. With selective logging, the largest trees are taken which means a loss in the seed source. The trees remaining often shade seedlings (small plants) that need sunlight to grow and eventually become trees. Clear-cutting is better when the soil already contains seeds. With clear-cutting, all of the seedlings are exposed to an equal and uniform amount of light. This equal amount of sunlight helps the young plants to grow and eventually become trees.

NASA (The National Aeronautics and Space Administration) – НАСА (Национальное управление по воздухоплаванию и исследованию космического пространства)

Do you know these words?

(Знаете ли вы эти слова?)

logging	[ˈlɔgɪŋ]	*лесозаготовка*
pulp	[pʌlp]	*целлюлоза, древесная масса*
furniture	[ˈfɜːnɪʧə]	*мебель*
selective logging	[sɪˈlektɪv ˈlɔgɪŋ]	*выборочная рубка*
logger	[ˈlɔgə]	*лесозаготовитель*
clear-cutting	[klɪə ˈkʌtɪŋ]	*сплошная вырубка*
damage	[ˈdæmɪʤ]	*вред, ущерб*
equipment	[ɪˈkwɪpmənt]	*оборудование*
barren	[ˈbærən]	*пустой, бесплодный*
seed	[siːd]	*семя*
seedling	[ˈsiːdlɪŋ]	*сеянец*
eventually	[ɪˈvenʧəlɪ]	*впоследствии*
to expose to smth.	[ɪkˈspəʊz tuː]	*подвергать чему-либо*

1. Answer these questions.

(Ответьте на эти вопросы).

1. What is logging?
2. What are timber and pulp used for?
3. What are the general forms of logging?
4. What is the difference between selective logging and clear-cutting?
5. Which form of logging is better for the forest?

6. Why can selective logging be very damaging to the surrounding trees which are not selected for logging?

2. Match the words from the columns to make word combinations from the text.

(*Соедините слова из колонок, чтобы образовать словосочетания из текста).*

1. selective	a. products
2. surrounding	b. logging
3. heavy	c. source
4. paper	d. trees
5. barren	e. soil
6. seed	f. amount
7. equal	g. equipment

3. Match the following sentences with corresponding logging types.

(Соедините следующие предложения с соответствующими типами лесозаготовки).

1. Selective logging	a. It may be very harmful to the remaining trees.
2. Clear-cutting	b. It means cutting the best trees.
	c. This form of logging causes a loss in the seed source.
	d. This form of logging in a tropical rain forest causes the nutrient loss in the soil.
	e. As a result of this form of logging the soil becomes barren.

4. Mark the sentences true (T) or false (F).

(Определите, верно или неверно утверждение).

1. Selective logging means cutting down all the trees.
2. Clear cutting is partial forest removal.
3. Selective logging doesn't damage the remaining trees.
4. Selective logging may cause a loss in the seed source.
5. It is always better to clear-cut a forest than selectively log it.
6. After selective logging all of the seedlings receive an equal amount of light.

5. Define the part of speech of the following derivatives, try to guess their meaning, check their translation in a dictionary.

(Определите, какой частью речи являются следующие однокоренные слова, попытайтесь догадаться, как они переводятся на русский язык, проверьте перевод в словаре).

1. log - to log – logger - logging
2. damage – to damage – damaging
3. to cut – cutting
4. to select – selective
5. to equip - equipment

6. Fill in the blanks using the given words.

(Заполните пропуски, используя данные слова).

logging	pulp	selective
seedling	clear-cutting	damage

1. Primary forests account for 36 percent of total forest area but are being lost or modified at a rate of 6 million hectares a year through deforestation or … logging.
2. However, as living organisms, trees have ways of protecting themselves and recovering from … .
3. Activities such as … and mining deplete our natural resources.
4. These pictures show the sites where … of old-age spruce-pine forest has been brought into practice.
5. … is a moist mixture of cellulose fibres.
6. The development of the … starts with germination of the seed.

For your self-study

(Задания для самостоятельной работы)

7. Find the English equivalents for the following word combinations in the text.

(Найдите в тексте английские эквиваленты следующих словосочетаний).

1. *сплошная вырубка*
2. *выборочная рубка*
3. *древесина, которая высоко ценится*
4. *причинять большой вред окружающим деревьям*
5. *тяжёлая техника*

6. *терять питательные вещества*
7. *затенять сеянцы*
8. *получать равное количество света*

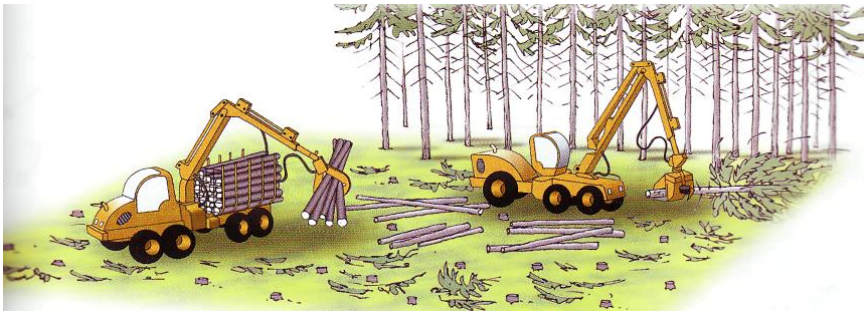
8. Translate the sentences. Mind different meanings of the verbs 'to be', 'to have', 'to do'.

(Переведите предложения, помня о разных значениях глаголов to be, to have, to do).

1. Wood kept constantly dry does not decay.
2. It has been estimated that about half the world's consumption of wood is burnt as fuel.
3. Does this area have a big age variation?
4. The science of forestry has elements that belong to the biological, physical, social, political and managerial sciences.
5. Pure stands may do well in youth, but as they become older, their growth becomes very slow and the tree dies.

Logging and wood supply

Лесозаготовка и запас древесины



In Sweden there is a strong tradition of wood procurement from forest owners by the industry – more than half of the annual industrial supply originates from private wood-lot owners. More than 70 percent of the yearly wood volume procured originates from final felling, with the rest coming from thinning operations. Besides wood, forest biomass for energy purposes is produced, mainly originating from tops and branches. The production system from logging of round wood to delivery at mill can be divided into components:

– *Planning*. Forest stands suitable for harvesting are chosen. Operations in each stand are carefully planned with consideration to natural and cultural features. In many cases, the yield of various forest products is forecast.

– *Harvesting*. Harvesting is almost totally mechanized. Trees are cut with a single-grip harvester. This machine incorporates high-tech

solutions for felling, processing and measuring both length and diameter, thus optimizing the wood revenue.

– *Terrain transport*. A forwarder loads the round wood assortments (normally 6–10). The wood is then hauled to a landing at roadside, where each assortment is piled individually. The forwarder capacity is up to 20 tons per load, and the average distance from stump to roadside is relatively short (about 400 meters) due to a dense network of forest roads.

– *Secondary haulage*. A timber truck picks up the wood at roadside and continues to the industrial site, typically a sawmill or a pulp and paper plant. The average hauling distance is around 100 km. Trains are used for longer distance transportation, with the trucks being transloaded at railway terminals.

Biomass for energy purposes is normally chipped at the landing point and delivered directly to the customer – often a combined heat and power plant.

Do you know these words?

(Знаете ли вы эти слова?)

wood supply	[wʊd səˈplaɪ]	*поставки древесины*
to procure	[prəˈkjʊə]	*закупать*
to originate from	[əˈrɪdʒɪneɪt frəm]	*поступать из*
final felling	[ˈfaɪnəl ˈfelɪŋ]	*сплошная рубка/рубка главного пользования*
delivery	[dɪˈlɪvəri]	*поставка*
mill/ sawmill	[mɪl]/[ˈsɔːmɪl]	*лесопильный завод*
stand	[stænd]	*древостой*
harvesting	[ˈhɑːvɪstɪŋ]	*лесосечные работы*
single-grip harvester	[ˈsɪŋgl grɪp ˈhɑːvɪstə]	*однозахватный харвестер/ валочно-сучкорезно-раскряжёвочная машина*
solution	[səˈluːʃn]	*решение*
felling	[ˈfelɪŋ]	*валка, рубка*
processing	[ˈprəʊsesɪŋ]	*переработка*
measuring	[ˈmeʒərɪŋ]	*измерение*
revenue	[ˈrevənjuː]	*доход, выручка*
forwarder	[ˈfɔːwədə]	*форвардер* (*самозагружающийся трактор для трелёвки лесоматериалов в полностью*

		погруженном положении)
terrain	[təˈreɪn]	*местность*
stump	[stʌmp]	*пень*
landing point	[ˈlændɪŋ pɔɪnt]	*место выгрузки*
haulage	[ˈhɔːlɪdʒ]	*транспортировка*
to pile	[paɪl]	*складывать, сваливать в кучу, штабелевать*
capacity	[kəˈpæsɪti]	*вместимость*
load	[ləʊd]	*загрузка*
truck	[trʌk]	*грузовик*
pulp and paper plant	[pʌlp ənd ˈpeɪpə plɑːnt]	*целлюлозно-бумажный комбинат*
to transload	[tranˈsləʊd]	*перегружать (из одного транспортного средства на другое)*
customer	[ˈkʌstəmə]	*заказчик*
heat and power plant	[hiːt ənd ˈpaʊə plɑːnt]	*ТЭЦ (теплоэлектроцентраль)*

1. Answer these questions

(Ответьте на эти вопросы).

1. What is used to produce forest biomass for energy purposes?
2. What are the components of the wood production system?
3. Why is it important to carefully plan harvesting operations in each stand?
4. What machinery is used for cutting trees?
5. How can a single-grip harvester optimize the wood revenue?
6. What operation is a forwarder used for?
7. What is the capacity of a forwarder?
8. What machines are used for secondary haulage?
9. Where is biomass for energy purposes delivered to?

2. Find the odd word in each row.

(Найдите лишнее слово в каждом ряду).

1. forwarder, truck, harvester, owner
2. felling, originating, processing, hauling
3. combined, delivered, procured, divided
4. processed, mechanized, picked, used
5. hauled, chipped, planned, piled

6. loaded, optimized, transloaded, originated

3. Say what letter should be added to make two words .
(Скажите, какую букву следует добавить, чтобы получились два слова).

mil _ oad	pul _ aper
forwarde _ oadside	haulag _ nergy
stan _ ivide	stum _ urpose
custome _ ound	biomas _ olution

4. Match the words from the columns to make word combinations from the text.
(*Соедините слова из колонок, чтобы образовать словосочетания из текста).*

1. forest	a. solutions
2. energy	b. biomass
3. single-grip	c. distance
4. high-tech	d. point
5. timber	e. purposes
6. hauling	f. harvester
7. railway	g. truck
8. landing	h. terminals

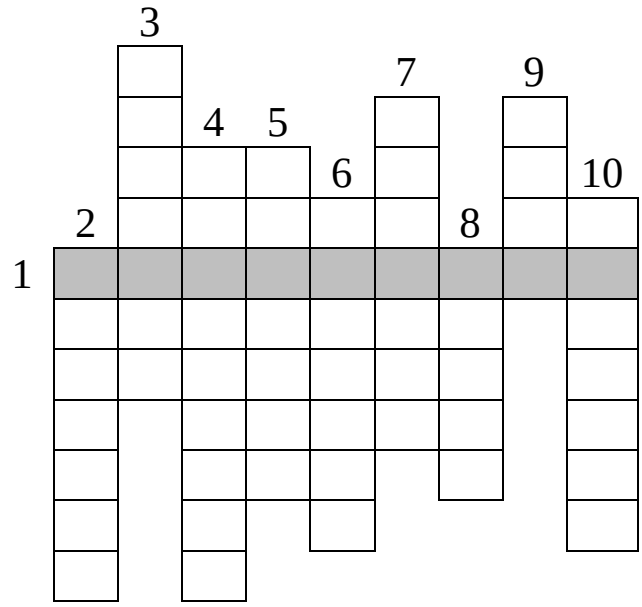
5. Find the English equivalents for the following word combinations in the text.
(Найдите в тексте английские эквиваленты следующих словосочетаний).

1. *однозахватный харвестер*
2. *частные владельцы лесных участков*
3. *целлюлозно-бумажный комбинат*
4. *заготовка круглого леса*
5. *древостои, подходящие для лесосечных работ*
6. *оптимизировать выручку от древесины*
7. *складывать в отдельные кучи*
8. *быть полностью механизированным*
9. *доставлять непосредственно потребителю*
10. *годовой объём закупок древесины*

6. Mark the sentences true (T) or false (F).
(Определите, верно или неверно утверждение).

1. All the annual industrial supply of wood in Sweden comes from private wood-lot owners.
2. Forest biomass for energy purposes mostly comes from tree trunks.
3. Trees are cut with a forwarder.
4. A single-grip harvester is used for felling, processing and measuring both length and diameter of trees.
5. Trunks and trains are used for long distance transportation.
6. Biomass for energy purposes is normally chipped at the logging site.

7. Guess the crossword puzzle.
(Разгадайте кроссворд).



1. a portable, multi-functional mechanized felling machine used in the forest industry
2. the business of transporting goods by road
3. plant or animal material such as forestry by-products or agricultural waste, that is used as a fuel or energy source
4. a forestry vehicle that carries big felled logs from the stump to a roadside landing
5. money that a company receives from people
6. to bring or transport to the proper place or recipient
7. to define the size of something
8. a large motor vehicle for carrying goods and materials
9. to put things somewhere so that they form a pile
10. to prepare raw materials in factories before they are used or sold

8. Complete the sentences choosing the best alternative.

(Заполните пропуски в предложениях, используя наиболее подходящий вариант).

1. … incorporates solutions for felling, processing and measuring both length and diameter of trees.
   - *a. a timber truck*
   - *b. a single-grip harvester*
   - *c. forwarder*

2. … for energy purposes originates from tops and branches.
   - *a. round wood*
   - *b. biomass*
   - *c. timber*

3. More than half of the annual industrial supply of wood in Sweden comes from … .
   - *b. final felling*
   - *c. thinning operations*
   - d. *private wood-lot owners*

4. The forwarder capacity is up to … per load.
   - *b. 20 tons*
   - *c. 40 tons*
   - *d. 100 tons*

5. … are used for longer distance transportation.
   - *a. trucks*
   - *b. trains*
   - *c. forwarders*

9. Fill in the blanks using the given words.

(Заполните пропуски, используя данные слова).

felling	haulage	forwarder	thinning
sawmill	harvesters	biomass	

1. A harvester is typically employed together with a … that hauls the log to a roadside.
2. … are routinely available for cutting trees up to 900 mm in diameter.
3. Wood residues from felling and processing make up more than half of the total … removed from forests.

4. The enterprise has not developed any program for transition from large scale final felling to narrow strip or gradual (multi-step) felling.
5. The company specializes in the production of heavy … trailers.
6. … workers were trained to convert sawdust waste to briquettes, a cheap alternative to wood fuel, to be sold in local markets.
7. Tractors are bought not for clear cutting but for … and therefore, smaller machinery is needed.

For your self-study

(Задания для самостоятельной работы)

10. Fill in the blanks using the verbs in the Passive Voice, translate the sentences into Russian .

(Заполните пропуски, используя глаголы в страдательном залоге, переведите предложения на русский язык).

1. Forest biomass … … from tops and branches. (*to produce*)
2. Operations in each stand … … with consideration to natural and cultural features. (*to plan*)
3. Trees … … with a single-grip harvester. (*to cut*)
4. The round wood assortments … … with a forwarder. (*to load*)
5. At roadside each assortment … … individually. (*to pile*)
6. Trains … … for longer distance transportation. (*to use*)
7. Trucks … … at railway terminals. (*to transload*)
8. Biomass for energy purposes … … at the landing point. (*to chip*)

11. Translate the sentences paying attention to the functions of the Infinitive.

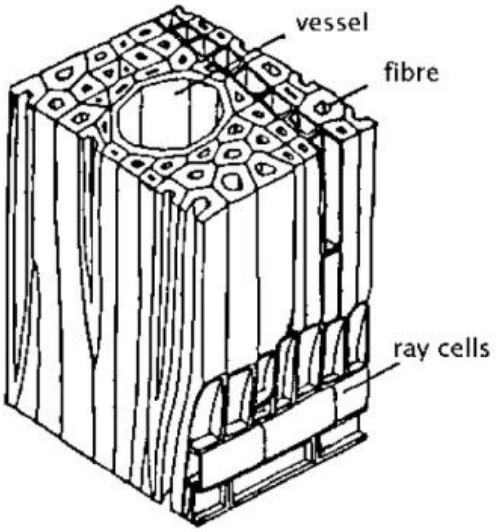
(Переведите предложения, обращая внимание на функции инфинитива).

1. It is possible to forecast the yield of various forest products.
2. A forwarder is used to load the round wood assortment.
3. To preserve natural and cultural features of forest stands harvesting operations are carefully planned.
4. Forest biomass is often used to supply combined heat and power plants with fuel.
5. A timber truck picks up the wood at roadside to deliver it to a mill.
6. The wood is hauled to a landing at roadside to pile each assortment individually.

7. A single-grip harvester is used in harvesting operations to optimize the wood revenue.

Cell structure and grain

Структура клетки и рисунок древесины



All the cells that constitute wood material are formed in the narrow cambium layer, which separates the wood from the bark. The walls of these cells are made up of a network of complex chains of cellulose molecules, which are called microfibrils. When the formation of the cell wall is complete, lignin gradually extends through the cell walls, acting as a bonding agent that "glues" the cells together. The newly formed cells on the inner side of the cambium become one of the following types of wood tissue: cells, fibers, and in hardwoods, vessels.

Each of these tissue types performs one or more of the following specific functions: vessels occur in hardwood timber only and conduct water and dissolved mineral salts from the roots to the leaves. These transmitted fluids provide the basic "raw materials" for photosynthesis. Cells store food materials and water, and in softwood species also perform the same conduit function as the vessels do in hardwoods. Fiber is a collection of cells and provides mechanical strength of wood.

Most of the cells are vertical in the tree trunk and together form fibers which are elongated particles with the long axis parallel to the longitudinal axis of the trunk (and the lengths of timber when sawn). These fibers form the "grain" of the timber.

Other cells are laid down radially. They go from the centre of the tree outwards to the bark, much like spokes in a wheel. The rays hold the other fibers together, transfer shear in the growing tree, and ultimately affect shrinkage and other properties of sawn wood.

Apart from extractives, there are three main chemical components of wood: cellulose, hemicelluloses and lignin. Cellulose constitutes about 40-45% of wood and is a long chain molecule (one dimensional)

generally oriented parallel to the long axis of the cell. Hemicelluloses represents about 15-30% of hardwoods and about 20% of softwoods. It is a derivation of cellulose that is a two dimensional (planar) organic molecule. Lignin comprises 22-30% and is an amorphous substance (like a gel).

Do you know these words?
(Знаете ли вы эти слова?)

to constitute	[ˈkɒnstɪtjuːt]	*составлять*
microfibril	[ˈmʌɪkrəʊˈfʌɪbrɪl]	*микрофибрилла*
lignin	[ˈlɪgnɪn]	*лигнин*
to extend	[ɪkˈstɛnd]	*распространяться*
bonding agent	[ˈbɒndɪŋ ˈeɪdʒ(ə)nt]	*связующее вещество*
to glue	[gluː]	*склеивать*
inner	[ˈɪnə]	*внутренний*
to occur	[əˈkəː]	*встречаться*
to dissolve	[dɪˈzɒlv]	*растворять*
to transmit	[tranzˈmɪt]	*передавать*
raw material	[rɔː məˈtɪərɪəl]	*сырьевой материал*
conduit	[ˈkɒndjʊɪt]	*трубопровод*
strength	[strɛŋθ]	*прочность*
elongated	[ˈiːlɒŋgeɪtɪd]	*удлиненный, продолговатый*
axis	[ˈæksɪs]	*ось*
to lay down	[leɪ daʊn]	*класть, располагать*
spoke	[spəʊk]	*спица*
to transfer shear	[trænsˈfɜː ʃɪə]	*передавать сдвиг*
shrinkage	[ˈʃrɪŋkɪdʒ]	*усыхание, уменьшение в объеме*
extractive	[ɪkˈstraktɪv]	*экстрактивное вещество*
hemicelluloses	[hemɪˈseljuləʊsɪz]	*гемицеллюлоза*
planar	[ˈpleɪnə]	*плоский*
to comprise	[kəmˈpraɪz]	*составлять*

1. Answer these questions:
(Ответьте на эти вопросы):

1. In what layer are wood cells formed?
2. What are cell walls made of?
3. What substance “glues” the cells together?
4. What are the types of wood tissue?
5. What is the function performed by vessels?

6. What stores food materials and water?
7. What is fiber?
8. How are most of the cells oriented in the trunk?
9. What provides mechanical strength of wood?
10. What is the role of ray cells in a tree?
11. What are the main chemical components of wood?
12. What is hemicellulose?
13. What kind of substance is lignin?

2. Match the words from the columns to make word combinations from the text.

(*Соедините слова из колонок, чтобы образовать словосочетания из текста).*

1. wood	a. water
2. cambium	b. tissue
3. cell	c. substance
4. to conduct	d. materials
5. amorphous	e. layer
6. conduit	f. agent
7. raw	g. salts
8. mineral	h. function
9. softwood	i. wall
10. bonding	j. species

3. Complete the sentences choosing the best alternative.

(Заполните пропуски в предложениях, выбрав наиболее подходящий вариант).

1. All wood cells are formed … .
   a. in vessels
   b. in the bark
   c. in the cambium layer
2. The substance acting as a bonding agent that “glues” the cells together is … .
   a. cellulose
   b. lignin
   c. hemicelluloses
3. … serve to conduct water and dissolved mineral salts from the roots to the leaves.
   a. fibers

b. cells
c. vessels

4. Most of the cells are arranged … in the tree trunk.
   a. vertically
   b. horisontally
   c. radially
5. The cells laid down radially and going from the centre of a tree outwards to the bark are called … .
   a. spokes
   b. fibers
   c. rays
6. Cellulose represents about … of wood.
   a. 20%
   b. 22-30%
   c. 40-45%
7. Lignin is an … substance.
   a. hard
   b. amorphous
   c. simple

4. Put the verbs into the proper columns according to the reading rules of the word end.

(Распределите глаголы в колонки в соответствии с правилами чтения окончания ***–ed****).*

[t]	**[d]**	**[ɪd]**

Formed, called, dissolved, checked, transmitted, elongated, finished, oriented, liked, provided, conducted, separated, occurred, affected, extended, glued, performed, represented, comprised, cooked.

5. Mark the sentences true (T) or false (F).

(Определите, верно или неверно утверждение).

1. Lignin is a hard substance providing the mechanical strength of wood.
2. Vessels occurring in softwood timber conduct water and dissolved mineral salts from the roots to the leaves.
3. Wood cells can be placed vertically or radially in the trunk.
4. The main chemical components of wood are cellulose and lignin.
5. Hemicelluloses is a two dimensional organic molecule.
6. Fiber is a collection of cells.

7. Rays resemble spokes in a wheel.
8. Lignin constitutes about 40% of wood.

6. Fill in the blanks using the proper forms of the given verbs.
Grammar: Passive Voice
(Заполните пропуски, используя соответствующие формы данных глаголов в страдательном залоге).

to hold	to perform	to lay down	to form
to glue	to make up	~~to conduct~~	

Example: Water and dissolved mineral salts … … from the roots to the leaves.
to conduct → Water and dissolved mineral salts <u>are conducted</u> from the roots to the leaves.
1. The wood fibers … … by the rays.
2. The cells that constitute wood material … … in the narrow cambium layer.
3. The cells … … together by a bonding agent known as lignin.
4. The cell walls … … of a network of complex chains of cellulose molecules.
5. Most cells … … vertically in the tree trunk.
6. Conduit function … … by vessels.

7. Find the English equivalents for the following word combinations.
(Найдите в тексте английские эквиваленты следующих словосочетаний).
1. *формироваться в узком слое камбия*
2. *сложные цепочки молекул целлюлозы*
3. *вновь образованные клетки*
4. *проводить воду и растворенные минеральные соли*
5. *основные сырьевые материалы для фотосинтеза*
6. *хвойные породы*
7. *придавать древесине механическую прочность*
8. *формировать структуру (рисунок) древесины*
9. *длинноцепочечная молекула*
10. *двухмерная молекула*
11. *аморфное вещество*

For your self-study

(Задания для самостоятельной работы)

8. Fill in the blanks using the following words:

fiber	cambium	grain	rays
lignin	microfibrils	cellulose	

1. Later in the season the … becomes firmer.
2. The precise composition of the wood will vary according to the type and species but the most important constituents are cellulose, hemicelluloses and … .
3. These results demonstrate the effectiveness of this technology in releasing the … and hemicelluloses found in the biomass.
4. This paper is made from both cotton and wood … .
5. In higher plants … are made of cellulose, they are extremely long, relative to their width (about 10nm in diameter).
6. The way in which the lines of fiber run in wood is called … .
7. … allow the radial transmission of sap in a tree.

9. Match the words with their definitions.

(Подберите к словам соответствующие определения).

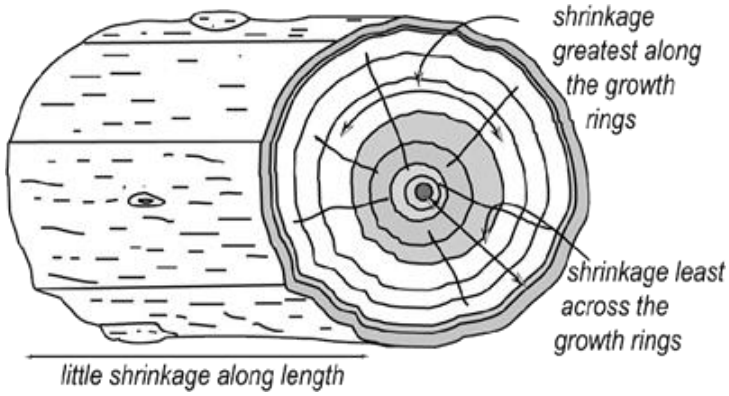
1. cambium	a. an extremely small, submicroscopic cellular fiber, the fundamental structural unit of the cell wall
2. lignin	b. a carbohydrate, the chief constituent of the cell walls of plants
3. cellulose	c. a water transporting element in a plant
4. fiber	d. a tissue consisting of cells, that divide rapidly to form new layers of tissue, it is most active in woody plants where it lies between the bark and wood of the stem.
5. vessel	e. one of the elongated thick-walled cells that give strength and support to plant tissue.
6. microfibril	f. a conducting tube in the xylem of a vascular plant.
7. conduit	g. the arrangement, direction of pattern of the

fibrous tissue in wood.

8. grain — h. any group of polysaccharides, intermediate in complexity between sugar and cellulose, that hydrolyse to monosaccharides more readily than cellulose.
9. ray — i. one of the chief constituents of wood that binds to cellulose fibers and hardens and strengthens the cell walls of plants.
10. hemicelluloses — j. any strand of tissue that runs radially through the vascular tissue of some higher plants.

Moisture in timber

Влага в лесоматериале



Timber can be classified according to its moisture content:

Unseasoned or "green" timber has a moisture content higher than the fiber saturation point (~25% mc). In unseasoned timber, all of the bound water is present, and at least some of the free water is still in the wood. Unseasoned timber can "feel" wet to touch, and if very green will ooze out water as a nail is driven in.

Seasoned timber has had the moisture content reduced to 15% mc or less, and will generally lose very little further moisture if used in a protected environment, such as under cover or indoors. Some shrinkage has taken place in the transition from unseasoned to seasoned timber.

Partially seasoned timber has a moisture content of between 25% and 15%. Some shrinkage has taken place, but further shrinkage will result from additional moisture loss. Partially seasoned timber can come from unseasoned timber that has partly dried, or from seasoned timber used in a moist environment so that it has taken up moisture and increased in moisture content above 15% mc.

Partially seasoned timber is often unseasoned timber that has partly dried since processing and is also sold as "unseasoned". The process of

removing moisture from timber or drying timber is known as “seasoning”.

Changes in moisture content.

Moisture can move between the atmosphere and the timber where an appropriate moisture gradient exists between the wood and the environment in which it is placed. Moisture movement out of the wood into the atmosphere happens where the atmosphere is relatively dry and/or the wood contains a lot of moisture. It is the process of continued seasoning. Typically, this may happen if unseasoned timber is used in framing that is protected from the weather (such as in a house frame), or if seasoned timber is used in an air-conditioned environment.

Where the wood has already been dried (seasoned timber) and it is used in an environment that has a lot of atmospheric moisture, then the moisture will follow the reverse path the cells will take up moisture from the atmosphere. This movement is the reverse of seasoning. Examples of its use may occur when the timber is used unprotected in a temperate climate, or if used as part of an indoor swimming pool enclosure.

Equilibrium moisture content.

Timber loses or gains moisture to be in equilibrium with the atmospheric moisture in its immediate environment. When the timber and its environment have moisture contents that are in equilibrium, then the moisture content in the timber in this state is known as the equilibrium moisture content, or emc. No moisture will move in or out of the timber where the moisture in the timber is in equilibrium with the moisture in the atmosphere.

Do you know these words?

(Знаете ли вы эти слова?)

free water	[fri: ˈwɔːtə]	*свободная (несвязанная) вода, гравитационная влага*
to ooze out	[ˈuːz ˈaʊt]	*сочиться*
to take up	[teɪk ʌp]	*вбирать в себя, поглощать*
to process	[ˈprəʊses]	*обрабатывать, перерабатывать*
gradient	[ˈgreɪdɪənt]	*градиент*
reverse of smth.	[rɪˈvəːs]	*противоположность чего-либо*
path	[pɑːθ]	*путь*
enclosure	[ɪnˈkləʊʒə]	*ограждение*
moisture	[ˈmɔɪstʃə]	*влага*
content	[ˈkɔntent]	*содержание*

equilibrium	[i:kwɪˈlɪbrɪəm]	*равновесие, равновесный*
immediate	[ɪˈmi:dɪət]	*ближайший, непосредственный*

1. Answer these questions:

(Ответьте на эти вопросы):

1. How is timber classified according to its moisture content?
2. What is the moisture content of unseasoned, seasoned and partially seasoned timber?
3. Where can partially seasoned timber come from?
4. What is ‘seasoning’?
5. What happens if the atmosphere is relatively dry and the wood contains a lot of moisture?
6. Where will the wood cells take up moisture from the atmosphere?
7. What is the equilibrium moisture content?

2. *Mark the sentences true (T) or false (F).*

(Определите, верно или неверно утверждение).

1. ‘Green’ timber is the other term for seasoned timber.
2. Partially seasoned timber has lower moisture content than ‘green’ timber.
3. The process of taking up moisture from the atmosphere by wood cells is known as ‘seasoning’.
4. The wood cells take up moisture from the atmosphere when the timber is used unprotected in a temperate climate.
5. The abbreviation ‘emc’ is used to denote equilibrium moisture content.

3. Match the synonyms from the columns.

(Соедините синонимы из колонок).

1. moisture	a. balance
2. temperature	b. contraction
3. equilibrium	c. partly
4. to season	d. to happen
5. saturation	e. moderate
6. partially	f. soaking
7. reverse	g. opposite
8. to occur	h. to dry
9. shrinkage	i. humidity

4. Match the words with their definitions.

(Подберите к словам соответствующие определения).

1. shrinkage	a. the process of making wood ready for use by slowly drying it
2. seasoning	b. the act or result of making something very wet
3. environment	c. the process of becoming smaller in size
4. equilibrium	d. the surrounding conditions
5. saturation	e. something that is opposite to something else
6. enclosure	f. an area that is surrounded by a wall
7. reverse	g. a state in which opposing forces or actions are balanced
8. to ooze out	h. to release a liquid in drops or small quantities

5. Match the words having the opposite meaning.

(Соедините слова, имеющие противоположное значение).

1. seasoned	a. to swell
2. to lose	b. ‘green’
3. partially	c. imbalance
4. moisture	d. identical
5. indoors	e. completely
6. equilibrium	f. to gain
7. wet	g. outdoors
8. reverse	h. dry
9. to shrink	i. dryness

6. Fill in the blanks using the given words.

(Заполните пропуски, используя данные слова).

loss(2)	green	shrinkage
temperate	timber(2)	moisture

1. Chemical analyses are used to determine the … content of the materials.
2. The … of the Aral Sea caused serious environmental problems.
3. Climate change, … of biodiversity, deforestation are among the global problems.
4. The costs of deforestation are generally not borne by companies clearing the land for agriculture or by companies logging and selling the … .

5. Most forest … now takes place in the tropics, while most net gains in forest area occur in the … and boreal zones.
6. Sawn … shipped in a … or moist condition should be pre-dipped in an effective fungicidal or insecticidal solution.

7. Translate the sentences paying attention to the chains of nouns.
(Переведите предложения, обращая внимание на особенности перевода цепочек существительных).
1. The fiber saturation point for most woods averages about 30 percent, but may vary in different species.
2. Depending on the species and type of wood, the moisture content of living wood ranges from approximately 30 percent to more than 250 percent.
3. The equilibrium moisture content represents a balance point where the wood is neither gaining nor losing moisture and is in equilibrium with the environment.
4. Weight, shrinkage, strength, and other properties depend upon the moisture content of wood.
5. Wood is dimensionally stable when the moisture content is above the fiber saturation point.
6. Two primary factors affect the weight of wood products: wood density and moisture content.
7. In most species the moisture content of the sapwood is higher than that of the heartwood.

8. Find the English equivalents for the following word combinations.
(Найдите в тексте английские эквиваленты следующих словосочетаний).
1. *частично просушенная древесина*
2. *процесс длительной сушки*
3. *дополнительная потеря влаги*
4. *равновесное содержание влаги*
5. *точка насыщения волокна*
6. *гравитационная влага*
7. *влажный на ощупь*
8. *градиент влажности*
9. *помещение с кондиционером*
10. *большое количество атмосферной влаги*
11. *ближайшее окружение*

For your self-study

(Задания для самостоятельной работы)

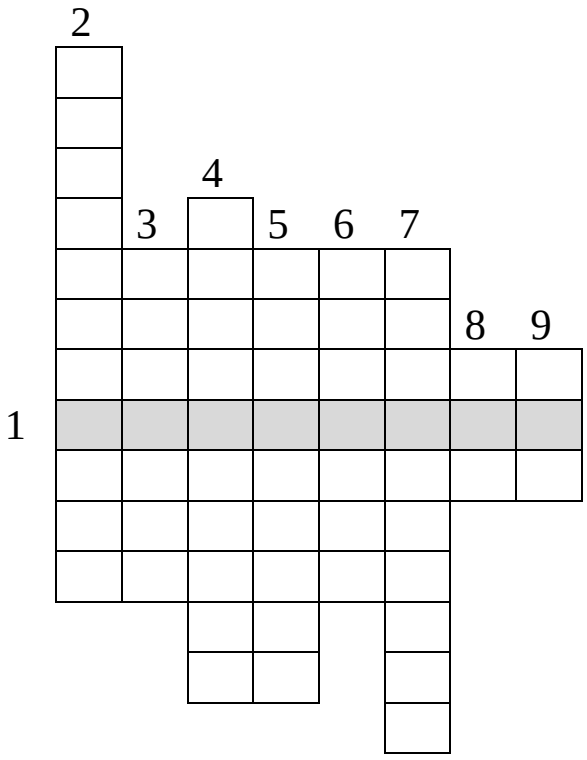
9. Join the halves to make sentences.

(Соедините части, чтобы получились предложения).

1. To be in an equilibrium with the atmospheric moisture in its immediate environment	a. is between 25% and 15%.
2. In the process of seasoning	b. timber loses or gaines moisture.
3. The moisture content of partially seasoned timber	c. according to its moisture content.
4. Some of the free water is present	d. moisture is removed from timber.
5. Timber can be classified	e. is unseasoned timber.

10.Guess the crossword puzzle.

(Разгадайте кроссворд).

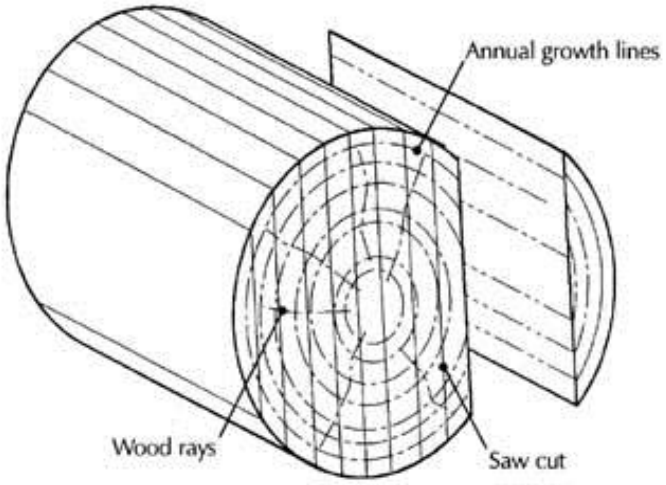


1. liquid diffused or condensed in relatively small quantity
2. the conditions that surround someone or something
3. inside a building
4. a condition in which all acting influences are cancelled by others, resulting in a stable, balanced, or unchanged system
5. the process of removing moisture from timber
6. something contained
7. the act or result of supplying so much of something that no more is wanted
8. having no or very little water or liquid
9. soaked with water or another liquid, not dry

Plain sawn lumber

Пиломатериал тангенциальной распиловки

Have you ever wondered what the difference is between plain sawn lumber and quarter sawn? Have you wondered why the prices at your local lumber yard are higher for quarter sawn?

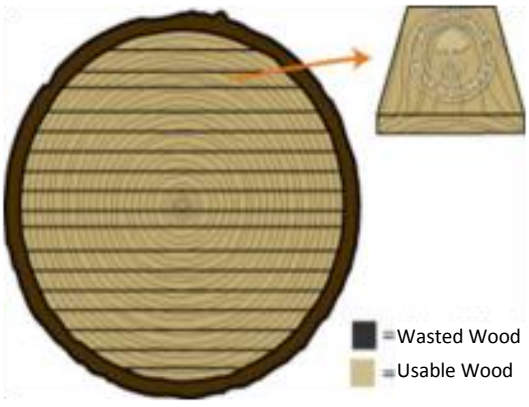


Have you ever wondered which one you should use for the project you want to build? Well here is some explanation and information that will hopefully clear things up and maybe help you decide on materials for your next project.

First off, what is the difference between plain sawn and quartered lumber? The difference is the way they are sawed from the log. This difference caused by sawing technique will affect the lumber's appearance, properties, and final use.

Plain sawing

Plain sawn lumber is the most common form of lumber for one main reason, production efficiency! The fact is that it is much faster to plain saw lumber and it creates less waste. With money being the driving force behind everything in this world, the aim is to get the most out of your raw materials in the fastest possible time.



When the log is rolled onto the carriage it is positioned and secured for cutting to begin. A slab is cut off first, then the boards are cut one after another until just before the pith is reached. The log is then rolled so that the opposite face is positioned for the next series of cuts. Sometimes the logs are sawed completely into boards, but most of the time there will be a piece of "blocking" left from the center, this is called "boxing the heart". After the log is sawed down to the specific blocking thickness, it is then rolled 90 degrees and more boards are sawed.

The board will show a terrific grain pattern when plain sawn. The annual rings of growth will be anywhere from almost parallel with the face of the board to about 60-70 degrees perpendicular to the face.

This is the simplest, fastest, and most efficient way to saw a log into boards. I have cut 18-inch diameter logs this way in 45 seconds.

Do you know these words?
(Знаете ли вы эти слова?)

lumber	[ˈlʌmbə]	*пиломатериал*
plain sawing	[pleɪn ˈsɔːɪŋ]	*тангенциальная распиловка*
quarter sawing	[ˈkwɔːtə ˈsɔːɪŋ]	*радиальная распиловка*
lumber yard	[ˈlʌmbə jaːd]	*склад пиломатериалов*
hopefully	[ˈhəupfəlɪ]	*надеюсь*
to clear up	[ˈklɪə ʌp]	*выяснить*
log	[lɔg]	*бревно*
appearance	[əˈpɪərəns]	*внешний вид*
property	[ˈprɔpətɪ]	*свойство*
waste	[ˈweɪst]	*отходы*
driving force	[ˈdraɪvɪŋ fɔːs]	*движущая сила*
raw	[rɔː]	*сырьевой*
carriage	[ˈkærɪdʒ]	*тележка лесопильной рамы*
to secure	[sɪˈkjuə]	*закрепить*
slab	[slæb]	*горбыль*
pith	[pɪθ]	*сердцевина*
face	[feɪs]	*торец, поперечный срез бревна*
to box the heart	[bɔks ðə haːt]	*распиливать бревно с выделением сердцевинного бруса*
sequence	[ˈsiːkwəns]	*последовательность*
terrific	[təˈrɪfɪk]	*потрясающий*
grain	[greɪn]	*текстура, волокно*
pattern	[ˈpætn]	*рисунок*
efficient	[ɪˈfɪʃnt]	*эффективный*

1. Answer these questions:
(Ответьте на эти вопросы).

1. What forms of lumber do you know?
2. Which form of lumber is the most common?
3. Which type of cutting creates less waste?
4. Which type of cutting saves time and money?

5. What is done with the log before cutting it?
6. What part of the log is cut off first?
7. What does the term "boxing the heart" mean?
8. What kind of a grain pattern can you see on a plain sawn board?

2. Match the words with their definitions.

(Подберите к словам соответствующие определения).

1.	efficient	a.	the natural direction and pattern of lines which you can see in wood or material
2.	grain	b.	a part of the trunk or a large branch of a tree that has fallen or been cut off
3.	slab	c.	capable of producing desired results without wasting materials, time, or energy
4.	lumber	d.	an outer piece of timber sawn from a log
5.	log	e.	the soft spongy substance in the center of the stems of many plants and trees
6.	saw	f.	an unusable or unwanted substance or material
7.	waste	g.	timber sawed into boards, planks, or other structural members of standard or specified length
8.	pith	h.	tool for cutting consisting of a toothed blade

3. Supply the missing forms of adjectives.

(Вставьте пропущенные формы прилагательных).

1.	fast	--------	the fastest
2.	--------	more common	--------
3.	high	higher	--------
4.	--------	--------	the most efficient
5.	simple	--------	--------

4. Match the synonyms from the columns.

(Соедините синонимы из колонок).

1.	to secure	a.	usual
2.	terrific	b.	to cut
3.	common	c.	to fix
4.	production	d.	stunning

5.	to saw	e. design
6.	property	f. characteristic
7.	pattern	g. manufacture

5. Match the words from the columns to make word combinations from the text.

(*Соедините слова из колонок, чтобы образовать словосочетания из текста).*

1.	to saw	a. board
2.	to roll	b. lumber
3.	to quarter	c. log
4.	to use	d. slab
5.	to cut off	e. technique
6.	to create	f. wastes

6. Mark the sentences true (T) or false (F).

(Определите, верно или неверно утверждение).

1. The difference between plain sawn and quartered lumber is in the way they are sawed from the log.
2. Plain sawn and quartered lumber have different appearance, properties and final use.
3. It is much faster to produce quartered lumber.
4. While producing plain sawn lumber you create less waste.
5. It is important to secure the log before cutting.
6. Quarter sawn lumber is the most popular form of lumber.
7. The prices for quarter sawn lumber are usually higher.
8. “Boxing the heart” means cutting off a slab.
9. The annual rings of growth on a plain sawn board look like parallel lines.
10. Plain sawing is the simplest, fastest, and most efficient way to saw a log into boards.

7. Find the English equivalents for the following word combinations in the text.

(Найдите в тексте английские эквиваленты следующих словосочетаний).

1. *наиболее эффективный способ*
2. *влиять на свойства пиломатериалов*

3. *технология распиловки*
4. *самая распространённая форма пиломатериалов*
5. *закатить на тележку*
6. *распиливать бревно на доски*
7. *производить меньше отходов*
8. *следующая серия распилов*
9. *поперечный срез доски*
10. *эффективность производства*

For your self-study

(Задания для самостоятельной работы)

8. Translate the sentences into Russian.

(Переведите предложения на русский язык).

1. The trees were stripped of their bark and sawn into planks.
2. This kind of wood does not saw easily.
3. We shall have to saw the old tree down.
4. Could you saw the branches into equal lengths of wood?
5. The lumber was lifted by crane and dropped into the truck.
6. The company has a large storehouse filled with lumber for manufacturing its line of furniture.
7. Thousands of trees have been logged in this area.
8. This sawing technique is quite efficient in reducing waste.
9. He sawed off the branch he was sitting on.

9. Read this short text. What new facts about plain sawn lumber did you find in it?

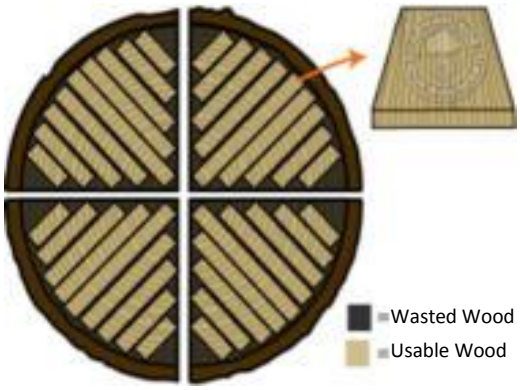
(Прочитайте этот короткий текст. Какие новые факты о пиломатериалах тангенциальной распиловки вы в нём нашли?)

Plain sawn lumber is also often called flat sawn lumber. It is cut so that the log runs through the mill in one piece, and each slice is parallel through the log. Many people seek out plain sawn lumber because of the way it looks. It has loops and growth swirls found in the grain patterns that gives it a very attractive look. Plain sawn lumber is easier to find and less expensive than quarter sawn or rift sawn lumber.

Some disadvantages of plain sawn lumber are that it can twist, cup, or bow as the wood dries and ages. It also tends to absorb more moisture from the air than quarter sawn or rift sawn lumber, which can result in more unwanted movement of the wood.

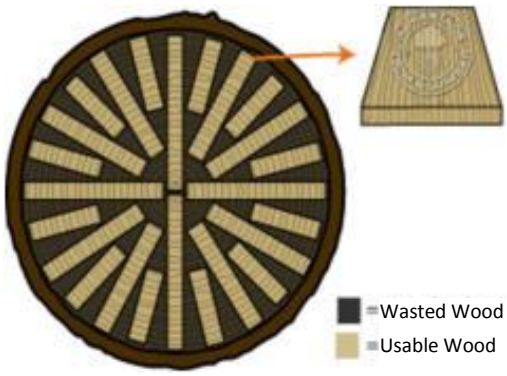
Quarter sawn lumber

Пиломатериал радиальной распиловки



Quarter sawn lumber is perhaps most famous from oak. The ray flecks that are revealed when quarter sawn, are a prize for many furniture craftsmen. Besides oak there are a handful of other species that display a unique appearance when quarter sawn. These unique features are usually only displayed on a quarter sawn board.

But in a production environment, beauty is cast aside for greater yield from a log and more production in less time. This is the main reason why you pay more money for quarter sawn lumber. If it takes longer to saw a log and produce less board footage while creating more waste the company will have to charge more money to make up what they lost in production.



The secondary reason for higher prices is because craftsmen like us will pay more for this lumber, so that we can take advantage of its character and better properties.

There is more than one way to quarter saw a log. I will just quickly explain one technique, because all the details of sawing logs to lumber can fill a book or two.

This is the most common way of quarter sawing that I have seen. The first step of this method is to quarter the log. Then each individual quartered section is placed on the carriage in a position so that the annual rings of growth are as close to 90 degrees perpendicular to the face of the boards as possible.

The grain on the face of a quarter sawn board will be tight, straight, parallel lines running the length of the board. And if the rings are very close to 90 degrees from the face, then the famous ray flecks of quartered oak will be proudly displayed along the face of the board.

One other technique involves re-adjusting the quartered section after each board is sawn. This way they are taking a board then a small

wedge shaped slab, then another board and so on. This way the rings are always 90 degrees to the face. But there is a tremendous amount of waste created.

Do you know these words?
(Знаете ли вы эти слова?)

fleck	[flek]	*пятно, крапинка, блик*
to reveal	[rɪˈviːl]	*открывать, показывать*
craftsman	[ˈkraːftsmən]	*мастер*
handful	[ˈhændful]	*горсть, пригоршня*
species	[ˈspiːʃiːz]	*биологический вид, порода*
unique	[juːˈniːk]	*уникальный*
feature	[ˈfiːtʃə]	*особенность, черта*
to display	[dɪˈspleɪ]	*проявлять, обнаруживать*
to cast aside	[kaːst əˈsaɪd]	*отбрасывать в сторону*
reason	[ˈriːzn]	*причина, основание*
footage	[ˈfutɪdʒ]	*метраж*
to charge	[tʃaːdʒ]	*назначать цену*
to make up	[meɪk ʌp]	*компенсировать*
secondary	[ˈsekəndərɪ]	*второстепенный*
perpendicular	[ˌpəːp(ə)nˈdɪkjʊlə]	*перпендикулярный*
to re-adjust	[rɪəˈdʒʌst]	*заново приспосабливать*
wedge	[wedʒ]	*клин*
tremendous	[trɪˈmendəs]	*огромный*
amount	[ə´maunt]	*количество*

1. Answer these questions:
(Ответьте на эти вопросы):

1. What tree species are most commonly quarter sawn?
2. Why are quarter sawn boards more expensive than plain sawn?
3. Why are quarter sawn boards so popular among furniture craftsmen?
4. What is the most common way of quarter sawing?
5. What can you see on the face of a quarter sawn board?
6. What is the disadvantage of the quarter sawing technique involving re-adjusting the quartered section after each board is sawn?

2. Match the words with their definitions.

(Подберите к словам соответствующие определения).

1. to adjust	a. moveable things like tables, chairs and sofas that are used to make a house or building a comfortable place to live
2. tight	b. very special or unusual
3. carriage	c. a length measured in feet
4. yield	d. a person who is very skilled at doing something or a person who makes beautiful objects by hand
5. furniture	e. a way of doing something by using special knowledge or skill
6. wedge	f. a frame for carrying a heavy object
7. unique	g. a piece of wood or metal with one pointed end and one thicker end that is used to split something
8. craftsman	h. the amount produced
9. footage	i. having close or compacted texture
10. technique	j. to bring to a proper position

3. Match the antonyms from the columns.

(Соедините антонимы из колонок).

1. tight	a. short
2. straight	b. low
3. long	c. loose
4. high	d. big
5. close	e. far
6. small	f. curved

4. Put the verbs into the proper columns according to the reading rules of the word end.

(Распределите глаголы в колонки в соответствии с правилами чтения окончания ***–ed****).*

[t]	**[d]**	**[ɪd]**

Revealed, displayed, created, quartered, placed, involved, positioned, shaped, faced, produced.

5. Mark the sentences true (T) or false (F).
(Определите, верно или неверно утверждение).

1. The unique appearance of oak is displayed when it is quarter sawn.
2. Quarter sawing is a more wasteful technique than plain sawing.
3. Quarter sawn lumber is, as a rule, cheaper than plain sawn lumber.
4. If you look at the face of a quarter sawn board you'll see parallel lines running the length of the board.
5. The most common way of quarter sawing gives lumber in which annual rings are always perpendicular to the face of the board.
6. Quarter sawn lumber is valued by furniture craftsmen for its attractive appearance.
7. Only oak displays a unique appearance when quarter sawn.
8. Plain sawing takes more time than quarter sawing.

6. Fill in the blanks using the following words:
(Заполните пропуски, используя следующие слова).

technique	face	flecks
degrees	carriage	quarter

1. Craftsmen value the character and better properties of … sawn lumber.
2. The ray … are revealed on quarter sawn lumber.
3. This … involves re-adjusting the quartered section after each board is sawn.
4. The grain on the … of a quarter sawn board are tight, straight, parallel lines.
5. The annual rings should be very close to 90 … from the face.
6. Each quartered section is placed on the … .

For your self-study

(Задания для самостоятельной работы)

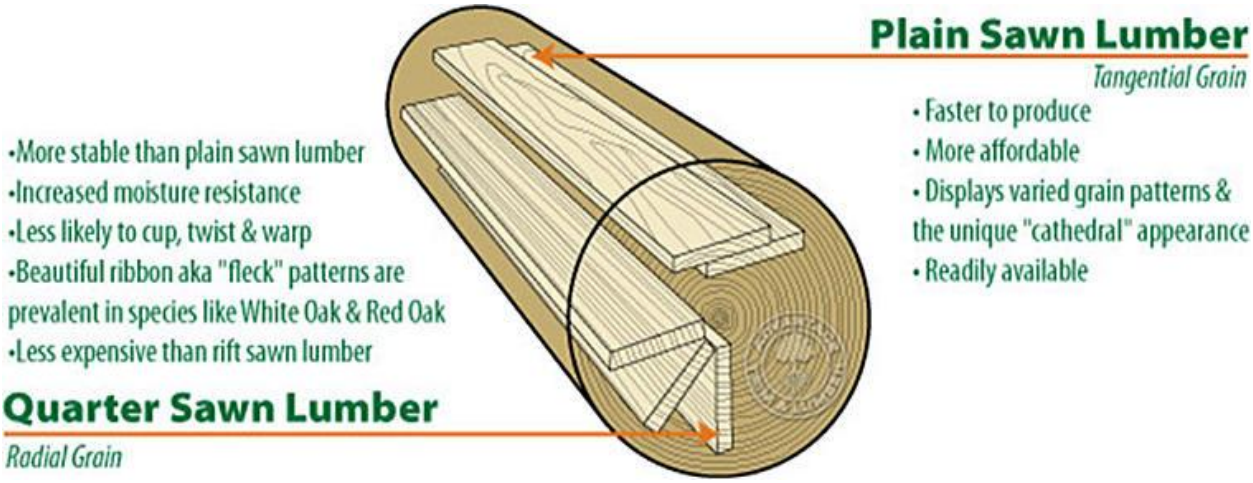
7. Find the English equivalents for the following word combinations in the text.
(Найдите в тексте английские эквиваленты следующих словосочетаний).

1. столяр-краснодеревщик

2. *уникальные черты*
3. *занимать больше времени*
4. *производить меньшее количество досок*
5. *создавать больше отходов*
6. *распиловка бревен*
7. *годичные кольца*
8. *рисунок на торцевом срезе доски*
9. *небольшой горбыль в форме клина*
10. *огромное количество отходов*

8. Look at the chart and write out the advantages of each type of lumber.

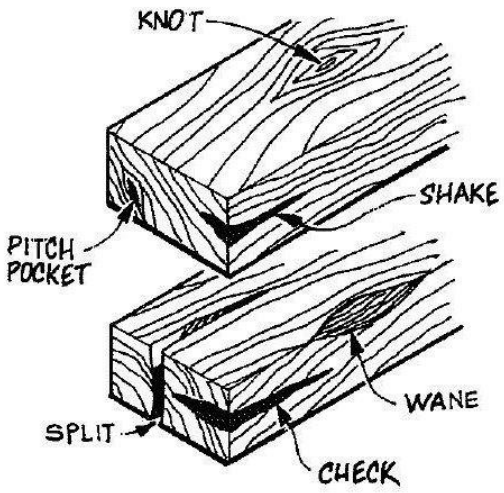
(Посмотрите на схему и выпишите преимущества каждого типа пиломатериалов).



Raw materials

Сырьевые материалы

The trees from which lumber is produced are classified as hardwoods or softwoods. Although the woods of many hardwoods are hard, and the woods of many softwoods are soft, that is not the defining characteristic. Most hardwood trees have leaves, which they shed in the fall. Hardwood trees include oaks, maples, and birches, but they also include balsa, which has one of the softest and lightest of all the woods. Softwood trees, on the other hand, have needles instead of leaves. They remain green throughout the year and are sometimes called evergreens. Softwood trees include pines, firs, hemlocks, spruces, and redwoods.



Both hardwood and softwood lumber pieces are graded according to the number and size of defects in the wood. Defects include knots, holes, pitch pockets, splits, and missing pieces on the edges or corners, called wanes. These defects primarily affect the appearance, but may also affect the strength of the piece. The higher grades are called select grades. Hardwoods may also be graded as firsts or seconds, which are even higher than select. These grades have very few defects and are used for trim, molding, and finish woodwork where appearance is important. The higher the grade, the fewer the number of defects. The lower grades are called common grades and are used for general construction where the wood will be covered or where defects will not be objectionable. Common grades are designated by a number.

Do you know these words?

(Знаете ли вы эти слова?)

raw materials	[rɔː məˈtɪərɪəlz]	*сырьевые материалы*
lumber	[ˈlʌmbə]	*пиломатериал*
oak	[əʊk]	*дуб*
maple	[meɪpl]	*клён*
birch	[bɜːʧ]	*берёза*
balsa	[ˈbɔːlsə]	*бальза*
throughout	[θruːˈaʊt]	*в течение, на протяжении*

evergreen	[ˈevəgriːn]	*вечнозелёный*
pine	[paɪn]	*сосна*
fir	[fɜː]	*ель, пихта*
hemlock	[ˈhemlɔk]	*болиголов, тсуга*
spruce	[spruːs]	*ель*
redwood	[ˈredwʊd]	*красное дерево, секвойя*
to grade	[greɪd]	*сортировать*
grade	[greɪd]	*сорт*
select grade	[sɪˈlekt greɪd]	*высший сорт*
knot	[nɔt]	*сучок*
hole	[həʊl]	*отверстие*
pitch pocket	[pɪʧ ˈpɔkɪt]	*засмолок, смоляной карман*
split	[splɪt]	*трещина, раскол*
wane	[weɪn]	*обзол*

1. Answer these questions.
(Ответьте на эти вопросы).

1. What kind of wood does balsa have? Are these characteristics common for hardwood species?
2. What is the other name for softwood trees?
3. How are lumber pieces graded?
4. What defects can be found in the wood?
5. What do defects in the wood affect primarily: the appearance or the strength of the piece?
6. What grades are used if the appearance of wood is important?
7. Where is the wood of the lower grades used?

2. Form nouns using the given verbs. Translate these verbs and nouns into Russian.
(Образуйте существительные, используя данные глаголы. Переведите эти глаголы и существительные на русский язык).
Model: *to produce → production*
To construct, to select, to classify, to object, to define.

3. Mark the sentences true (T) or false (F).
(Определите, верно или неверно утверждение).
1. Trees are classified into hardwoods and softwoods according to their wood density.

2. Hardwood trees have needles instead of leaves.
3. Softwood trees normally shed their leaves in the fall.
4. Pines and spruces are softwood tree species.
5. Lumber is graded according to the number and size of defects in the wood.
6. The lower the grade, the fewer the number of defects.

4. Find the odd word in each row.
(Найдите лишнее слово в каждом ряду).
1. oak, maple, balsa, hemlock
2. birch, pine, spruce, redwood
3. knots, trims, splits, wanes
4. softest, lightest, higher, lowest

5. Match the words with their definitions.
(Подберите к словам соответствующие определения).

1. lumber	a. trees having foliage that remains green and functional through more than one growing season
2. to shed	b. an opening in something
3. evergreens	c. timber sawed into boards or planks
4. to grade	d. a defect in lumber characterized by bark or a lack of wood at a corner or edge
5. knot	e. to separate things into groups or classes according to a particular quality
6. hole	f. a narrow break, tear, or crack
7. pitch pocket	g. a cavity in lumber that contains or has contained resin
8. split	h. the inner end of the woody branch enclosed in a plant stem or a section of this in sawed lumber
9. wane	i. to eject or lose as part of the normal process of life

6. Fill in the blanks using the given words.
(Заполните пропуски, используя данные слова).

redwoods evergreen knots

lumber spruce

1. This technology is well suited to the rapid processing of small logs into … .
2. Wind was identified as the most harmful agent for the … forests.
3. I advise you to visit the famous National Park to look at the giant … , the largest trees on Earth.
4. As the continuity of wood fibers is broken by … , they form a source of weakness.
5. As … conifers keep their leaves throughout the year, photosynthesis can start anytime when it gets warmer.

7. Complete the sentences choosing the best alternative.

(Заполните пропуски в предложениях, используя наиболее подходящий вариант).

1. Hardwoods shed their leaves … .
    a. *throughout the year*
    b. *in autumn*
    c. *in the fall*
2. Softwood trees have … instead of leaves.
    a. *cones*
    b. *needles*
    c. *branches*
3. Pines, firs, hemlock, spruces, and redwoods are … trees.
    a. *softwood*
    b. *hardwood*
    c. *evergreen*
4. Lumber pieces are graded according to … of defects in the wood.
    a. *the number*
    b. *the size*
    c. *the kinds*
5. Wood defects affect … of the piece.
    a. *the use*
    b. *the strength*
    c. *the appearance*
6. The higher grades are called … grades.
    a. *common*
    b. *select*
    c. *general*

For your self-study

(Задания для самостоятельной работы)

8. Find the English equivalents for the following word combinations in the text.

(Найдите в тексте английские эквиваленты следующих словосочетаний).

1. *один из самых мягких и самых лёгких видов древесины*
2. *использовать для основного строительства*
3. *иметь иголки вместо листьев*
4. *оставаться зелёными в течение всего года*
5. *влиять на прочность куска древесины*
6. *недостающие кусочки на краях или углах*
7. *иметь небольшое количество дефектов*
8. *обозначаться номером*
9. *сортировать в соответствии с количеством и размером дефектов древесины*
10. *влиять на внешний вид*
11. *определяющая характеристика*

9. Translate the sentences. Mind different meanings of the verbs 'to be', 'to have', 'to do'.

(Переведите предложения, помня о разных значениях глаголов to be, to have, to do).

1. Various softwoods produce harder lumber than do some hardwoods.
2. Forests have a beneficial effect on climate, stream flow and erosion.
3. If a log has been cut smoothly, close examination will reveal in many trees faint lines running out radially towards the bark.
4. Does the trunk mostly consist of dead cells?
5. Trees do not usually grow continuously throughout the year but mostly have spurts of active expansion followed by periods of rest.
6. After the trees have been grown and tended to maturity the forest manager decides how they are to be harvested.

Timber production stages

Стадии производства лесоматериалов

Stage One: Felling

The first stage of preparing the timber for commercial use is called ‘felling’ - the process of downing individual trees. In this case, the person cutting the tree is called the ‘feller’ - while the harvesting machine is referred to as a ‘feller buncher’.

A forestry worker will determine when and which trees should be cut down, depending on when they reach their economically ‘mature’ stages. Trees can range from 40 to 150 years old before they stop growing vigorously and are ready to be cut down. The differences in age at felling can depend on the tree species. For example, conifers grow at a much quicker rate than broad-leaved species. Environmental factors, such as soil nutrients, can also affect their growth.

Felling is normally carried out in winter, because the trees usually have less moisture content in them, compared to summer months, where they can have more than fifty percent water content.

Finally, felled trees should be replaced with saplings so that the forest has a chance to grow once again, providing a sustainable resource for future generations.

Stage Two: Storing/ Transporting

Next, the logs are stored in a clearing or in the forest until they are needed at the sawmill. This also allows some of the ‘free’ water content to evaporate, reducing the weight of the log, which will result in lowering the cost of transporting and handling.

The trees are usually cut into smaller lengths on-site and then picked up by a timber lorry, which transports the timber to a processing site, such as a sawmill, paper mill, pallet, fencing or construction producer.

Stage Three: On Site

At the chosen site, the logs are debarked and bucked, or cut to the required length. Then they are cut into boards, using equipment such as circular saws and bandsaws. This is called ‘conversion’. The first stage of conversion is a process called ‘breaking down’ - which means rough sawing. The second stage is called ‘re-sawing’ and refers to more precise cutting and finishing, such as planing and further machining.

The ends of each log are trimmed to ensure they are straight and cut into boards. Large circular saws are then used to further-process the boards, removing the curved edges. Each processed piece of wood now looks like a board.

Stage Four: Seasoning

Seasoning of natural wood is the process of removing excess moisture content. When a tree is felled, it still contains a large proportion of moisture – usually between forty to fifty per cent water content.

Water is held inside a tree in two ways:

1. Free Water: Water that is held in the vessels and cells in order to distribute nutrients inside the tree.
2. Cell water: Also known as ‘bound’ water, is an essential part of the tree’s cell walls.

During the seasoning process, a tree loses its free water and a high proportion of its cell water and as a result, is less likely to warp or deform.

Wood that has not been seasoned and still has a high water content is called ‘green wood’ and can be more difficult to work with because it has a tendency to change shape.

Stage Five: Preparing for Market

After turning trees into timber through saw milling, covered in stage three – also referred to as primary processing, the market value of timber can be further increased through manufacturing sawn timber products – called secondary processing. This involves the wood being made (either by man or machine) into a more refined product, such as a door, window or furniture, made to the specific size and dimensions.

At this stage any preferred treatments to timber such as fire or rot resistance is added. Treated timber in sawn form is used either directly in construction or to prepare construction components, such as timber frame panels. Planed joinery components, on the other hand, are usually treated after assembly.

Finally, once all modifications are made, the timber is ready to be shipped to market.

Do you know these words?

(Знаете ли вы эти слова?)

felling	[ˈfelɪŋ]	*валка леса*
feller	[ˈfɛlə]	*вальщик*
feller buncher	[ˈfɛlə bʌntʃə]	*валочно-пакетирующая машина*
mature	[məˈtʃʊə]	*зрелый, развитый*
vigorously	[ˈvɪgərəsli]	*сильно, энергично*
tree species	[triː ˈspiːʃiːz]	*древесные породы*
rate	[reɪt]	*скорость*
sapling	[ˈsæplɪŋ]	*молодое деревце*
sustainable	[səˈsteɪnəbəl]	*устойчивый*
clearing	[ˈklɪərɪŋ]	*расчищенный участок*
to evaporate	[ɪˈvæpəreɪt]	*испаряться*
pallet	[ˈpælət]	*поддон, паллет*
fencing	[ˈfensɪŋ]	*забор, изгородь*
to debark	[diːˈbɑːk]	*окорять, удалять кору*
to buck	[bʌk]	*раскряжевывать бревно (производить поперечную распиловку)*
circular saw	[ˈsəːkjʊlə sɔː]	*циркулярная пила*
bandsaw	[ˈbændsɔː]	*ленточная пила*
conversion	[kənˈvəːʃən]	*переработка*
rough	[rʌf]	*грубый, неровный*
precise	[prɪˈsaɪs]	*точный*
to plane	[pleɪn]	*строгать, выравнивать*
to machine	[məˈʃiːn]	*обрабатывать на станке*
to trim	[trɪm]	*подрезать, торцевать (доски)*
curved	[kəːvd]	*кривой, изогнутый*
edge	[edʒ]	*край, кромка*
to season	[ˈsiːzən]	*сушить*
excess	[ɪkˈses]	*излишний*
bound	[baʊnd]	*связанный*
to warp	[wɔːp]	*искривляться, скручиваться*
refined	[rɪˈfaɪnd]	*утонченный, изысканный*
dimension	[dɪˈmɛnʃən]	*измерение*
to treat	[triːt]	*обрабатывать*

rot	[rɒt]	*гниль*
joinery	[ˈdʒɔɪnəri]	*столярные изделия*
assembly	[əˈsembli]	*сборка*
to ship	[ʃɪp]	*перевозить*

1. Answer these questions.
(Ответьте на эти вопросы).
1. What is the first stage in preparing timber for commercial use?
2. What factors do the differences in age at felling depend on?
3. What trees grow faster: conifers or broadleaved trees?
4. What environmental factors affect the growth of trees?
5. Why is felling normally carried out in winter?
6. Why is it important to replace felled trees with saplings?
7. Where are logs stored after felling?
8. What equipment is used to cut the logs into boards?
9. What are the two stages of ‘conversion’?
10. What is seasoning?
11. Why is it more difficult to work with ‘green wood’?
12. What treatments are used to prepare timber for market?

2. Translate the noun chains.
(Переведите цепочки существительных).
Forestry worker, tree species, soil nutrients, summer months, water content, timber lorry, paper mill, cell water, cell walls, timber products, fire resistance.

3. Mark the sentences true (T) or false (F).
(Определите, верно или неверно утверждение).
1. The person cutting trees is called ‘feller buncher’.
2. Different tree species are felled at different age.
3. Broadleaved species grow faster than conifers.
4. Trees are mostly cut in autumn.
5. It is necessary to plant new trees to replace felled ones.
6. Storing the logs in a clearing or in the forest leads to reduction in their weight.
7. Circular saws and bandsaws are commonly used for debarking the logs.
8. The second stage of ‘conversion’ involves precise cutting and finishing.

9. Wood loses all its water as a result of seasoning.
10. ‘Green wood’ contains much water.

4. Put the verbs into the proper columns according to the reading rules of the word end.

(Распределите глаголы в колонки в соответствии с правилами чтения окончания ***–ed****).*

[t]	**[d]**	**[ıd]**

Felled, replaced, stored, needed, picked, debarked, bucked, required, trimmed, used, processed, seasoned, transported, distributed, deformed, refined, added, treated, planed, shipped.

5. Define the part of speech of the following derivatives, try to guess their meaning, check their translation in a dictionary.

(Определите, какой частью речи являются следующие однокоренные слова, попытайтесь догадаться, как они переводятся на русский язык, проверьте перевод в словаре).

1. to fell – feller
2. vigorous - vigorously
3. to environ – environment – environmental
4. nutrition – nutrient – nutritive
5. moist – moisture
6. to sustain – sustainable
7. to clear – clearing
8. to saw – saw
9. to machine – machine
10. to resist – resistant – resistance
11. to treat – treatment

6. Find the odd word in each row.

(Найдите лишнее слово в каждом ряду).

1. processing, sapling, felling, seasoning
2. planed, trimmed, debarked, deformed
3. machining, downing, felling, cutting
4. timber, quicker, water, feller
5. conifer, summer, smaller, paper
6. rate, stage, case, have

7. Match the words from the columns to make word combinations from the text.

(*Соедините слова из колонок, чтобы образовать словосочетания из текста).*

1. harvesting	a. resource
2. tree	b. saw
3. environmental	c. factors
4. moisture	d. machine
5. sustainable	e. timber
6. circular	f. content
7. fire	g. species
8. treated	h. resistance

8. Complete the sentences choosing the best alternative.

(Заполните пропуски в предложениях, используя наиболее подходящий вариант).

1. The differences in age at felling can depend on … .
    a. *the moisture content of the trees*
    b. *the tree species*
    c. *the amount of nutrients in the soil where the trees grow*
2. Trees are commonly felled in … , because they have little moisture in them at this time of the year.
    a. *summer*
    b. *autumn*
    c. *winter*
3. When the logs are stored in a clearing or in the forest after felling some of the ‘free’ water content evaporates, and the weight of the logs … .
    a. *increases*
    b. *decreases*
    c. *remains the same*
4. Debarking means … .
    a. *cutting the logs into smaller lengths on-site*
    b. *removing limbs from trees*
    c. *clearing the logs from their bark*
5. Re-sawing refers to … .
    a. *rough sawing*
    b. *more precise cutting and finishing*
    c. *planing and further machining*

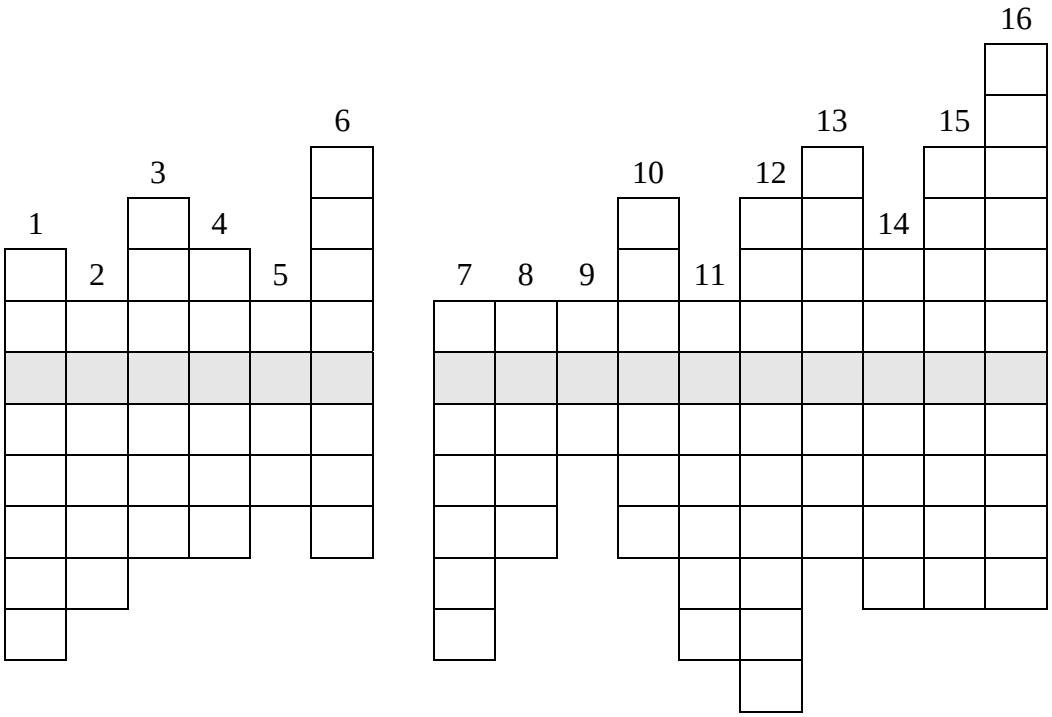
6. During seasoning a tree loses its… .
    a. *free water*
    b. *cell water*
    c. *free water and a high proportion of its cell water*
7. Manufacturing sawn timber products is referred to as ….
    a. *primary processing*
    b. *secondary processing*
    c. *treatment*

9. Find the English equivalents for the following word combinations in the text.

(Найдите в тексте английские эквиваленты следующих словосочетаний).

1. *зависеть от породы деревьев*
2. *факторы окружающей среды*
3. *заменять молодыми деревьями*
4. *приводить к снижению затрат на транспортировку*
5. *широколиственные породы*
6. *устойчивый ресурс для будущих поколений*
7. *хранить на расчищенном участке*
8. *уменьшать вес бревна*
9. *целлюлозно-бумажная фабрика*
10. *распиливать на доски*
11. *дальнейшая обработка на станке*
12. *удалять кривые края*
13. *обработанный кусок древесины*
14. *распределять питательные вещества внутри дерева*
15. *в ходе процесса сушки*
16. *рыночная стоимость древесины*
17. *обработанная древесина*
18. *изготавливать в соответствии с определенными параметрами*

10. Guess the crossword puzzle and find out the hidden words.
(Разгадайте кроссворд и определите спрятанные слова).



1. a substance that provides nourishment essential for the maintenance of life and for growth.
2. a season that is the most suitable for felling trees.
3. a mill or factory where logs are sawed to make boards.
4. to remove the hard outer covering from a tree.
5. to cut, to cause to fall.
6. a tract of land within a wood or other overgrown area from which trees and other obstructions have been removed.
7. a group of living organisms consisting of similar individuals capable of exchanging genes and interbreeding.
8. wood that has been recently cut and therefore has not had an opportunity to dry by evaporation of internal moisture.
9. to undergo decomposition, decay.
10. an endless saw consisting of a toothed metal band that is driven around two wheels.
11. cutting felled and limbered trees into lengths.
12. producing goods by treating natural substances.
13. a liquid such as water in the form of very small drops, either in the air, in the substance, or on a surface.
14. the wooden components of a building, such as stairs, doors, and door and window frames, viewed collectively.

15. the process of adjusting the moisture content of wood to make it more suitable for use as timber.
16. using methods that do not harm the environment so that natural resources are still available in the future.

For your self-study

(Задания для самостоятельной работы)

11. Fill in the blanks using the given words.

(Заполните пропуски, используя данные слова).

boards	warp	vessels
saplings	moisture	conifers

1. … grow at a much quicker rate than broad-leaved species.
2. Trees usually have less … content in winter, compared to summer months.
3. Felled trees should be replaced with … so that the forest has a chance to grow once again.
4. After debarking the logs are cut into … using equipment such as circular saws and bandsaws.
5. Free water is held in the … and cells in order to distribute nutrients inside the tree.
6. After seasoning wood is less likely to … or deform.

12. Turn the sentences passive.

(Преобразуйте эти предложения в предложения в страдательном залоге).

Model: The trunk supports many secondary branches of the tree.

Many secondary branches of the tree are supported by the trunk.

1. Environmental factors, such as soil nutrients, can affect the growth of trees.
2. Workers cut the logs to the required length.
3. They used large circular saws to further process the boards.
4. People use machines to make wood into more refined products such as doors, windows and furniture.
5. We use various treatments to make wood more resistant to rot and fire.

My future profession

Моя будущая профессия

A profession is an occupation that requires specialized advanced education. There are many interesting and useful professions, and it is really not an easy task to choose the right one. I think profession should be chosen according to your wants, interests and abilities.

I opted for a job connected with forestry and wood production. After I graduate from the academy I'll deal with logging and wood processing. My future profession involves being outdoors, it is demanding and responsible. It is important to note, that logging, statistically, is one of the most dangerous careers. There is a variety of forestry careers engaged in outdoor work to manage forests, grow trees and harvest timber products. Logging workers plan, organize, and perform operations to cultivate, conserve and exploit natural and plantation forests. Experts in this field work in and with one of the greatest gifts – our most valuable renewable and sustainable resource – our forests. Our charge is to harvest our timber resources to provide healthy forests, provide products for our daily lives, and enhance environmental balance. During harvesting practices we should always bear in mind the principles of sustainable forestry.

Before entering into a training program, one should consider the qualities and personality traits that are needed in the profession. There is necessarily a physical element to the job, as you will be responsible for large swaths of land, ranging in weather conditions. Fast analytical and critical thinking skills are a must when the rare dire situation is upon you, such as forest fires or missing persons. Likewise, management and speaking skills should be perfect, as you may have other people working with you.

Professionals in the logging industry are some of the most hardworking and innovative people. Today's logging professionals have the great opportunity to enhance the health and beauty of the forest for future generations.

Do you know these words?
(Знаете ли вы эти слова?)

occupation	[ɒkjʊˈpeɪʃən]	*занятие, род деятельности*
advanced	[ədˈvɑːnst]	*углублённый*
to opt for smth.	[ɒpt fə]	*выбирать что-либо*
demanding	[dɪˈmɑːndɪŋ]	*сложный, тяжёлый*
to conserve	[kənˈsɜːv]	*сохранять*
plantation forests	[plænˈteɪʃən ˈfɒrɪsts]	*лесонасаждения*
renewable	[rɪˈnjuːəbl]	*возобновляемый*
sustainable	[səˈsteɪnəbl]	*устойчивый, экологичный, рациональный*
to enhance	[ɪnˈhɑːns]	*укреплять, поддерживать*
harvesting practice	[ˈhɑːvɪstɪŋˈpræktɪs]	*лесозаготовительная практика*
to bear in mind	[bɛə ɪn maɪnd]	*помнить*
swath	[swɔːθ]	*полоса*
dire	[ˈdaɪə]	*страшный, ужасный*
innovative person	[ˈɪnəveɪtɪv pɜːsn]	*новатор*

1. Answer these questions.
(Ответьте на эти вопросы).

1. What is a profession?
2. What profession did you choose?
3. Why did you choose this profession?
4. What does the work of a logging professional consist in?
5. What are logging professionals responsible for?
6. What principles should loggers bear in mind?
7. Do you think that your future profession is prestigious?
8. Do you think it will be still prestigious and well-paid by the time you graduate?
9. How difficult is to find a good work in your field?

2. Find the English equivalents for the following word combinations in the text.
(Найдите в тексте английские эквиваленты следующих словосочетаний).

1. *поддерживать экологический баланс*

2. *профессиональные лесозаготовители*
3. *сохранять здоровье и красоту леса для будущих поколений*
4. *профессия, требующая отдачи*
5. *работа на свежем воздухе*
6. *возделывать, сохранять и использовать естественные и искусственные леса*
7. *выбирать профессию в соответствии со своими желаниями, интересами и способностями*
8. *работа, связанная с производством древесины*

3. Point out the most important factors in choosing a job (3-4 factors) and explain your choice.

(Укажите наиболее важные факторы в выборе работы (3-4 фактора) и объясните свой выбор).

1. work which is useful to society
2. good salary or wages
3. opportunities to meet different people
4. opportunities to travel
5. flexible hours
6. interesting and not boring work
7. high security of employment
8. good pension scheme
9. responsibility of your own
10. the chance of promotion, good career prospects
11. good working conditions
12. friendly colleagues and considerate management
13. long holidays

For your self-study

(Задания для самостоятельной работы)

4. Answer these questions.

(Ответьте на эти вопросы).

1. Is career an important part of your life?
2. What's your idea of an ideal job?
3. Can you give any examples of good jobs? Why do you consider them to be good?
4. What business are your parents in?
5. How long have your parents been in their professions?

6. Do you think their present careers are the right ones for them?
7. Would you continue working even if you won or inherited a large sum of money?

5. Here's the list of topics offered in an educational program for those who wish to enter the forestry profession. Choose five topics from the list and explain their importance for the work of an expert in foresry.
(Перед Вами список тем, предлагаемых в образовательной программе для тех, кто желает получить профессию, связанную с лесным хозяйством. Выберите пять тем из списка и объясните их значение для работы специалиста лесной отрасли.).

Model: *Forest measurement is the basis for estimating timber volume and future incomes from wood.*

- Introduction to Forestry
- Forest Biology / Ecology
- Forest Management
- Forest Fire Control
- Forest Insects and Diseases
- Forest Measurements
- Forest Products
- Forest Recreation
- General Botany
- Harvesting / Primary Manufacturing
- Land Surveying
- Wildlife Management
- Urban Forestry
- Entomology
- Ecosystems
- Environmental Economics
- Forest Biometrics
- Forest Management
- Geology
- Natural Resource Policy
- Recreational Land Management
- Soil Science

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