

THE MINISTRY OF AGRARIAN POLICY AND FOOD OF UKRAINE
ZHYTOMYR NATIONAL AGROECOLOGICAL UNIVERSITY

E.F. Malinovsky

S.V. Vashchenko

T.V. Les

L.M. Lytnyova

L.I. Nesik

GEODESY AND LAND SURVEY

TEXT BOOK

English for Students
of the Faculty of Geodesy and Land Management

Zhytomyr

2012

УДК 528=111
ББК 26.12
Г3 35

Reviewers:

Trophymenko P.I. – Candidate of Sciences (Agriculture), Associate Professor,
Chair of Geodesy and Land Management;

Lytnyova T.V. – Candidate of Sciences (Education), Senior Lecturer, Chair of
Foreign Languages, Zhytomyr I. Franko State University

Г 35 Geodesy and land survey: text book / E.F. Malinovsky, S.V. Vashenko,
T.V. Les [et. al.]. - Zhytomyr, 2012. - 88 p.

*Recommended by the Academic Council of Zhytomyr National Agroecological
University as of May 23rd, 2012*

©E.F. Malinovsky, S.V. Vashchenko,
T.V. Les, L.M. Lytnyova, L.I. Nesik 2012

Contents

Preface	4
Lesson 1 - Soil	5
Lesson 2 - Weathering and Soil Composition	8
Lesson 3 - Soil Profile.....	11
Lesson 4 - Types of Soil	14
Lesson 5 - Geodesy	17
Lesson 6 - History of Geodesy.....	20
Lesson 7 - Figure of the Earth.....	23
Lesson 8 - Astronomic Position Determination.....	26
Lesson 9 - Astronomic Coordinates	29
Lesson 10 - Triangulation	32
Lesson 11 - Types of Maps.....	35
Lesson 12 - History of Cartography	39
Lesson 13 - Technological Changes in Cartography	42
Lesson 14 - General vs Thematic Cartography	45
Lesson 15 - Map purpose and information selection	48
Lesson 16 - Surveying	51
Lesson 17 - History of Surveying (Part 1).....	55
Lesson 18 - History of Surveying (Part 2).....	59
Lesson 19 - Surveying Techniques	63
Lesson 20 - Surveying Equipment	67
Lesson 21 - Surveyor	71
Lesson 22 - Surveying as a Career	74
Lesson 23 - Location.....	78
Lesson 24 - Geographic Information is a Tool for Decision	81
Lesson 25 - The Mercator Projection	84

ПЕРЕДМОВА

Навчальний посібник “Geodesy and Land Survey” є першою частиною комплексу, який складається з 2-х навчальних посібників, призначених для студентів 1-2 курсів. Посібник складається з 25 уроків, що містять оригінальні та адаптовані тексти для опрацювання на кожному уроці. Кожен урок супроводжується лексичними та граматичними вправами. Крім того, посібник містить додаткові оригінальні тексти для самостійного опрацювання.

Метою посібника є ознайомлення та оволодіння студентами лексичним матеріалом за спеціальністю, удосконалення та розвиток мовленнєвих навичок. Матеріал посібника є інформативним, доступним для опрацювання з точки зору як граматики, так і лексики

Lesson №1- Soil

1. Learn new vocabulary:

soil – ґрунт

a layer – шар

a surface – поверхня

a root – корінь

weathered – вивітрений

rock – гірська порода

decayed – перегнили

to interact – взаємодіяти

to break down into – ламатись на

moss – торф

to create – створювати

thin – тонкий

to attract – приваблювати

to continue – продовжувати

to support – підтримувати

2. Find antonymic pairs from among the words:

poor, surface, decayed, break down, depth, florid, combine, thin, death, to continue, thick, give up, more, formation, destruction, life, less, rich.

3. Brainstorming:

1. Name 5 things which can decay.
2. Name 3 objects which have a surface.
3. Name 5 things which can be broken down into pieces.
4. Name 4 things you can create with your hands and imagination.
5. Name 3 situations when you have to interact with other people.

4. Discuss:

1. «Money is the root of all evil.»
2. «He is as strong as a rock and as weak as a man.»
3. «Who continually gives, he continually has!»

5. Look through the text, find the English equivalents to the word combinations and write them down:

тонкий шар

поверхня Землі

вивітрена гірська порода

рештки рослин і тварин

відбуватись впродовж якогось періоду

ламатись на шматки

змішуватись з

з часом

приваблювати

згнилі рештки

повністю сформований

6. Read and translate the text «Soil».

Soil

Soil is a thin layer of material on the Earth's surface in which plants have their roots. It is made up of many things, such as weathered rock and decayed plant and animal matter. Soil is formed over a long period of time.

Soil formation takes place when many things interact, such as air, water, plant life, animal life, rocks, and chemicals.

The formation of soil happens over a very long period of time. It can take 1000 years or more. Soil is formed from the weathering of rocks and minerals. The surface rocks break down into smaller pieces through a process of weathering and is then mixed with moss and organic matter. Over time this creates a thin layer of soil. Plants help the development of the soil. How? The plants attract animals, and when the animals die, their bodies decay. Decaying matter makes the soil thick and rich. This continues until the soil is fully formed. The soil then supports many different plants.

7. Put all types of questions:

1. Soil is formed over a long period of time.
2. The surface rocks break down into smaller pieces.
3. Plant helps the development of soil.

8. Agree or disagree:

1. Soil is a thick layer of material on the Earth's surface.
2. Soil is made of many things.
3. Soil is formed over a short period of time.
4. Soil formation takes place when only 2 things interact.
5. Decaying matter makes soil thick and rich.

Lesson №2- Weathering and soil Composition

1. Learn new vocabulary:

to be made of – складатись з

to stay – залишатися

the same – такий самий

to change – змінювати

for instance – наприклад

hard – твердий

soft – м'який

location – місце знаходження

consist of – складатися з

to vary – відрізнятися

appear – виявлятися

pebble – галька

gravel – гравій

sand – пісок

clay – глина

living matter - жива матерія –

the amount of – кількість

to be linked with – бути пов'язаним з

to affect – впливати

wet – вологий

wetland – болотиста місцевість

therefore – таким чином

2. Write down the opposite to:

to stay –

hard –

to consist of –

vary –

appear –

wet –

3. Find synonymic pairs from among the words:

to vary, soft, to differ, to be made of, to affect, number, mild, to consist of, amount, to be connected, to influence, to be linked.

4. Brainstorming:

1. Name 3 things which can be weathered.

2. Name 3 organic and 3 inorganic materials.

3. Name all possible states of water.

(state – стан)

5. Discuss:

1. «Time goes, you say? Ah, no! Alas, time stays, we go.»

2. «Each of us in our daily life makes choices that have a significant impact on the environment.»

6. Look through the text, find the English equivalents to the word combinations:

процес розпаду

залишатися однаковим

складається з

наприклад

суміш з
в основному
може виявлятися
жива матерія
кількість води
тісно пов'язана
можливо
склад ґрунту

7. Read and translate the text «Weathering and Soil Composition».

Weathering and Soil Composition

Weathering is the process of breaking down rocks. There are two different types of weathering. Physical weathering and chemical weathering.

In physical weathering it breaks down the rocks, but what it's made of stays the same. In chemical weathering it still breaks the rocks, but it may change what it's made of. For instance, a hard material may change to a soft material after chemical weathering.

Soils are a mixture of different things: rocks, minerals, and dead, decaying plants and animals. Soil can be very different from one location to another, but generally consist of organic and inorganic materials, water, and air. The inorganic materials are the rocks that have been broken down into smaller pieces. The size of the pieces varies. It may appear as pebbles, gravel, or as small as particles of sand or clay. The organic material is decaying living matter. This could be plants or animals that have died and decay until they become part of the soil. The amount of water in the soil is closely linked with the climate and other characteristics of the region. The amount of water in the soil is one thing that can affect the amount of air. Very wet soil like you would find in a wetland probably has very little air. The composition of the soil affects the plants and therefore the animals that can live there.

8. Put all types of questions:

1. A hard material may change to a soft material after chemical weathering.
2. Soil consists of organic and inorganic materials.
3. The amount of water in the soil is closely connected with the climate.

9. Agree or disagree:

1. Weathering is the process of forming the rocks.
2. There are many types of weathering.
3. Soil can be different from one location to another.
4. Very wet soil has very little air.
5. The amount of water in the soil can affect the amount of air.

10. Retell the text.

LESSON 3 - SOIL PROFILE

1. Learn new vocabulary:

a profile – розріз

to wonder – цікавитися

to refer to – відноситись до

upper – верхній

it is commonly known – загальновідомо

to plow – орати

to till – обробляти

include – містити

litter – сміття

a twig – гілка

to prevent – запобігати

moisture – волога

to hold – затримувати

to provide – забезпечувати

nutrients – поживні речовини

leaching – вилугування (хім.)

2. Give the opposite to:

Horizontal –

To answer –

Upper –

Near –

Known –

To fall –

Rich soil –

Life –

Below –

Present –

To differ –

3. Find synonymic pairs and write them down:

Upper, to wonder, near, top, wood, close to, to be interested in, forest, a branch, therefore, a twig, that's why, ground, to affect, soil, to influence.

4. Brain storming.

1. Name 3 things you can find in the upper layer of soil.
2. Name 3 objects which can't be plowed or tilled.
3. Name 3 things the plants need to grow.
4. What can look different in different areas?

5. Discuss:

"The one who doesn't change is dead."

"Be glad of life. It gives you a chance to live!"

6. Look through the text and find the English equivalents to the word combinations:

Стосуватися чогось -

Верхній шар -

Найближче до поверхні -

Опавше листя -

Запобігати ерозії -

Відомий як -

Звичайно -

Містити деякі елементи -

По причині (із-за) вилуговування -

Складатися з -

Виглядати по-різному -

Бути нижче горизонту -

Тверда порода -

7. Read and translate the text Soil Profile.

Soil Profile refers to the layers of soil horizon A, B and C. If you are wondering what horizon A is, here is your answer: horizon A refers to the upper layer of soil, nearest to the surface. It is commonly known as topsoil. In the woods or other areas that have not been plowed or tilled, this layer would probably include organic litter, such as fallen leaves and twigs. The litter helps to prevent erosion, holds moisture, and decays to form a very rich soil known as humus. Horizon A provides plants with nutrients they need for a great life.

The layer below horizon A, of course, has to be horizon B. Litter is not presented in horizon B and therefore there is much less humus. Horizon B does contain some elements from horizon A because of the process of leaching. Leaching resembles what happens in a coffee pot as the water drips through the coffee grounds. Leaching may also bring some minerals from horizon B down to horizon C.

If horizon B is below horizon A, then horizon C must be below horizon B. Horizon C consists mostly of weathered big rocks. This solid rock, as you discovered in soil formation, gave rise to the horizons above it.

Soil profiles look different in different areas of the world. They are affected by climate and other things.

8. Put all types of questions:

1. Leaching may bring some minerals from horizon B.
2. Horizon C consists of big rocks.
3. They are affected by climate and other things.

9. Retell the text.