

MINISTRY OF AGRICULTURE AND WATER RESOURCES
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DEPARTMENT OF ENGLISH LANGUAGE

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Let`s Learn English for Agriculture

Study-book for the intermediate students of agriculture

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This study-book is prepared for the teaching English for Specific Purposes (ESP) and dedicated to the education system of irrigation and melioration in Uzbekistan. It can be useful for the intermediate and advanced levels students of agriculture and natural sciences, for methodologists and trainers of English language, and for free researchers and learners as well.

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MANUAL IS PREPARED ACCORDING TO THE STANDARD CURRICULUM OF TEACHING ENGLISH FOR SPECIFIC PURPOSES RECOMMENDED BY THE MINISTRY OF HIGHER AND SPECIAL SECONDARY EDUCATION OF THE REPUBLIC OF UZBEKISTAN (2013).

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Mazkur o`quv qo`llanmasi suv xo`jaligi va melioratsiya ta`lim yo`nalishi bakalavriat o`quv rejasidagi I blok – Ijtimoiy-gumanitar fanlar sirasida Chet tili (ingliz) fani uchun tuzilgan hamda o`quv dasturi (Toshkent, 2013)da ko`rsatilgan mavzular yo`nalishi va talablariga muvofiqlashtirilgan. Unda qishloq va suv xo`jaligi bo`yicha mavzularni ingliz tilida kasbiy (ixtisosiy) o`rganish maqsad qilib olingan bo`lib, quyi o`rta, o`rta va yuqori darajadagi ingliz tili bilimdonlari uchun mo`ljallangan matnlar, mashq va topshiriqlar tizimdan iborat.

Это учебное пособие составлено по предмету «Иностранный язык» в 1-блоке учебного плана бакалавриата направлений сельского и водного хозяйства и соответствует тематическим направлениям и требованиям учебной программы (Ташкент, 2013). Основной целью данного пособия является профессиональное (специализированное) изучение английского языка по сельскому и водному хозяйствам и состоит из системы специализированных текстов, упражнений и заданий для знатоков английского языка ниже-среднего, среднего и выше-среднего уровней.

This manual is made on the subject "Foreign Language" in the first block of Teaching Plan on Bachelor`s Course of agricultural and water management trends, and also on thematic directions and requirements in Standard Curriculum (Tashkent, 2013). The main objective of the manual is a professional (specialised) learning of English language on agricultural and water management trends; it consists of a system of specialised texts, exercises and tasks for the learners of English language of pre-intermediate, intermediate and upper-intermediate levels.

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Unit 1

AGRICULTURE



SESSION 1

NATURE

⇒ **STARTER:** Look at the pictures below and share your ideas with your partner if possible.



Step 1. Answer the following questions:

- How do you understand the notions “thing”, “man”, “mankind”, “object”?
- Explain the meanings of the notions “made by man” and “not made by man”.
- Do you know original (etymological) meaning of the word “nature”?
- What kind of derivatives do you know made from “nature”?

Step 2. Read the following passages and tell your own understanding on the topic comparing with textual statements.

We usually use a word “nature” or other usages (wordcombinations, derivatives) made from “nature”. But do you know original meaning of this word or have you been introduced with some scientific interpretations of it. If you look for its definition in different dictionaries, you will see very wide explanations of it. Let`s introduce with some of them definitely.

What is nature? Science wants to understand nature. Therefore it is important,

how the word nature is defined: Nature is everything that was not made by man. The original meaning of this word deals with Middle English (denoting the physical power of a person): from Old French, from Latin *natura* 'birth, nature, quality', from *nat-* 'born', from the verb *nasci*.

So the definition of nature excludes all things that were introduced by mankind. All those human developments are summarized as culture. The definition of nature summarizes natural objects, e.g. stones, animals, plants.

It also reflects on **events in nature** like the wind, the rain, earthquakes, food.

Nature can be divided into a living and a not living (abiotic) part. The **living part** of nature consists of all life on earth: plants, animals, mushrooms, bacteria, humans.

The **abiotic part** of nature consists of all things, that were not made by man and are not living. You can count to it: the outer space, not living objects on earth (stones, water, air etc).

Concluding, it is important to generalize above-stated points:

Nature is:

- the physical world and everything in it (such as plants, animals, mountains, oceans, stars, etc.) that is not made by people
- the natural forces that control what happens in the world
- the way that a person or animal behaves : the character or personality of a person or animal.

Step 3. Match the words 1-10 related to the nature and explain your choices.

1. artificial

2. sort

3. synthetic

4. temperament

5. substance

Nature

- 6. habit
- 7. individuality
- 8. uniqueness
- 9. attribute
- 10. characteristic

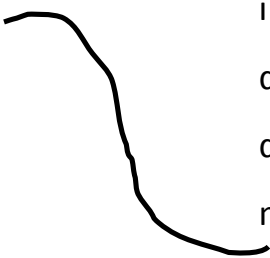
Step 4. Differ synonyms of “nature” from antonym ones and fill in the columns.

character, gap, environment, nothingness, personality, self, tone, void, individuality

Synonyms	Antonyms
<i>character</i>	<i>void</i>

Step 5. Pay your great attention to the definitions below and match with given notions.

type, kind, sort, description, character – are the synonyms of “nature” that mean a number of individuals thought of as a group because of a common quality or qualities.

nature		implies a group marked by agreement in all details belonging to a type as described or defined.
kind		may imply inherent, essential resemblance rather than obvious or superficial likenesses.
sort		implies a group marked by distinctive likenesses

	peculiar to the type.
description	may suggest strong and clearly marked similarity throughout the items included so that each is typical of the group.
character	often suggests some disparagement.
type	may suggest natural grouping.

Step 6. Learn wise-sayings and citations of great personalities and discuss them in the group.

- "Fortunately science, like that nature to which it belongs, is neither limited by time nor by space. It belongs to the world, and is of no country and no age. The more we know, the more we feel our ignorance; the more we feel how much remains unknown." – Humphry Davy (1778-1829), 30.11.1825
- "In all things of nature there is something of the marvelous." – Aristotle (B.C. 384–322)
- "It is in man's heart that the life of nature's spectacle exists; to see it, one must feel it." – Jean-Jacques Rousseau (1712-1778), *Emile*, 1762
- Nature answers only when she is questioned." – Jacob Henle (1809-1885)
- "Nature is painting for us, day after day, pictures of infinite beauty." – John Ruskin, (1819-1900)

HELP DESK

WHAT DO THESE WORDS MEAN?

abiotic part – a physical rather than biological part of nature; not derived from living organisms

nature – the phenomena of the physical world collectively, including plants, animals, the landscape, and other features and products of the earth, as opposed to humans or human creations

living part – a way or style of life; an income sufficient to live on or the means of earning it

event in nature – a thing that happens or takes place in nature

human – a person; relating to or concerning people

culture – the arts and other manifestations of human intellectual achievement regarded collectively

science – the intellectual and practical activity encompassing the systematic study of the structure and behavior of the physical and natural world through observation and experiment

mankind – human beings considered collectively; the human race

object – 1) a material thing that can be seen and touched. 2) a person or thing to which a specified action or feeling is directed

natural force – strength or energy as an attribute of physical action or movement by nature.

SESSION 2

HUMANITY

⇒ **STARTER:** Look at the pictures and answer the following questions:



- What notions come to your mind when you see pictures?
- What is the difference between the first and the second pictures?
- What notions do you know related to the pictures?

Step 1. Read the text. Find highlighted words and expressions in the text to the definitions below.

Humanity is the human race, which includes everyone on Earth. It's also a word for the qualities that make us human, such as the ability to love and have compassion, be creative, and not be a robot or alien.

The word humanity is from the Latin *humanitas* for "human nature, kindness." Humanity includes all the humans, but it can also refer to the kind feelings humans often have for each other. But when you talk about humanity, you could just be talking about people as a whole. When people do bad things, it tests your faith in humanity. When people ask for money to help feed starving

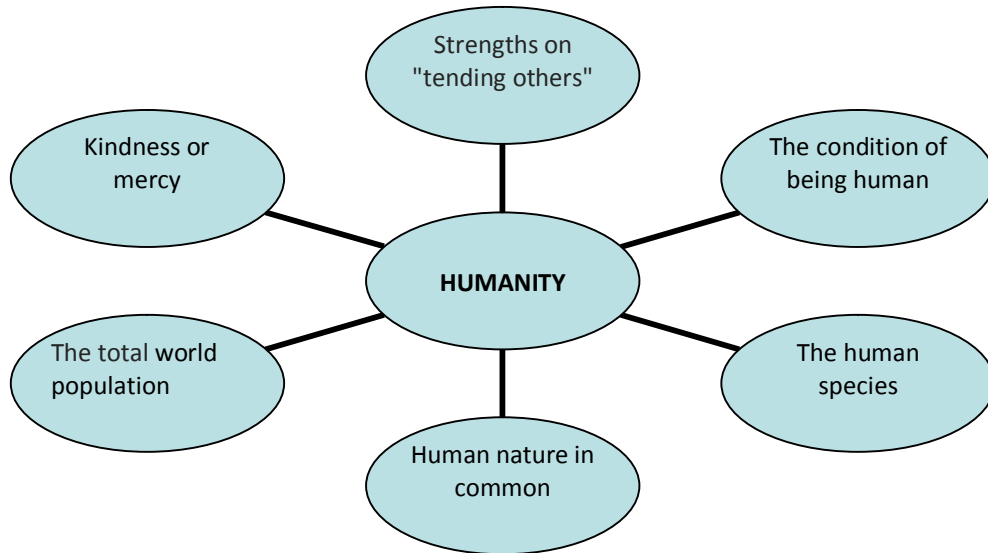
children, they're appealing to your sense of humanity. In the plural form (the humanities), it means the study of literature, philosophy, and the arts (the study of Ancient Greek and Roman language, literature, the study of Old English language etc).

1. A machine capable of carrying out a complex series of actions automatically, especially one programmable by a computer
2. Human beings collectively
3. Complete trust or confidence in someone or something
4. A faculty by which the body perceives an external stimulus; one of the faculties of sight, smell, hearing, taste, and touch
5. Sympathetic pity and concern for the sufferings or misfortunes of others

Step 2. Look at these picture and mind map made according to the picture and choose appropriate central theme for it. Add some more options here if necessary.

- a. Definition of "humanity".
- b. Humanity as historical being.
- c. Humanity – in examples.
- d. Differentiation of the meanings of "humanity" as a word.





Step 3. Match synonyms for “humanity”.	
	mankind
	animals
	humanness
Humanity	objectiveness
	activity
	manhood

Step 4. Try to differentiate synonym words and expressions to the different kind of meaning of a word “humanity” and fill in the columns.

Humane, antihumanity, man, kindness, human race, graciousness, humankind, benevolence, sympathy, mankind, unkindness, tenderness, humanness, goodwill, human form, kindness, human being, human species, mercy, human group, philanthropy, human sort, goodbreeding, overhumanity, people, refinement, inhumanity, population.

Humanity ₁	<i>human being</i>

Humanity ₂	<i>goodbreeding</i>

Step 5. Try to choose antonyms for “humanity” from the synonym ones given above. Underline negative forms making those antonyms and practice on making another derivatives with them.

Ex.: *humanity* – *antihumanity*...

Step 6. Match the translation forms for “humanity” with the languages they belong to.

Italian	humanity
German	humanidade
Uzbek	人类人类類
British English	humanité
Chinese	menschheit
Brazilian Portuguese	insoniyat
Russian	umanità
French	человечество

HELP DESK

WHAT DO THESE WORDS MEAN?

humanity – human beings collectively

human race – human beings in general; humankind

faith – complete trust or confidence in someone or something

ability – possession of the means or skill to do something

alien – belonging to a foreign country

compassion – sympathetic pity and concern for the sufferings or misfortunes of others

over humanity – out of human being

sense – a faculty by which the body perceives an external stimulus; one of the faculties of sight, smell, hearing, taste, and touch

good breeding – grown up well, clever



SESSION 3

ENVIRONMENT.

**INTERACTIONS BETWEEN ENVIRONMENT (NATURE) AND
HUMANITY**

➡ **STARTER:** Look at the pictures and answer the following questions:



- What can you see in the first picture?
- What is the meaning of the second picture?
- Does the third picture describe an interaction between nature and humanity?
- What is the environment? Which of the pictures show full image of the environment? Why?

Step 1. Read following text and choose the central title for it:

- Human as a part of environment
- Interrelations between environment and humanity
- Humanities and natural disciplines

Human beings live in the realm of nature, they are constantly surrounded by it and interact with it. The most intimate part of nature in relation to man is the biosphere, the thin envelope embracing the earth, its soil cover, and everything else that is alive. Our environment, although outside us, has within us not only its image, as something both actually and imaginatively reflected, but also its material energy and information channels and processes. If we lose nature's

	interact with them isolated from nature and reality.
	Nature depends on human being and activity as human is constantly aware of the influence of nature in the form of the air he breathes, the water he drinks, the food he eats, and the flow of energy and information.
	Nature and reality exist out of our consciousness and monitoring.
	Interaction between human and nature is intertransitory and mutual associated.

Step 3. Match the words 1-10 and their definition a-j.

1. Interact (v)	a. (of a person, animal, or plant) living, not dead
2. Alive (adv)	b. cease to be visible
3. Imaginatively (adv)	c. the surroundings or conditions in which a person, animal, or plant lives or operates
4. Organic (adj)	d. the strength and vitality required for sustained physical or mental activity
5. Principle (n)	e. Have an action and relation together with pair or more of things in any time and space
6. Energy (n)	f. the capacity to have an effect on the character, development, or behaviour of someone or something, or the effect itself
7. Disappear (v)	g. a thought or suggestion as to a possible course of action
8. Environment (n)	h. relating to or derived from living matter
9. Ideal (adj)	i. having or showing creativity or inventiveness
10. Influence (n)	j. a fundamental truth or proposition that serves as the foundation for a system of belief or behavior or for a chain of

	reasoning
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Step 4. Fill in the gaps using words from the box.

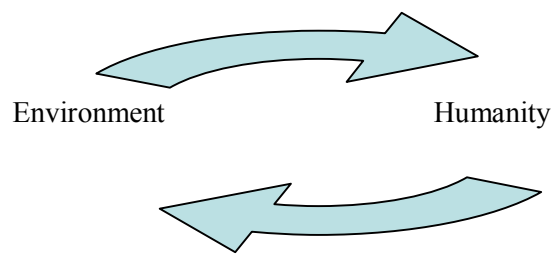
amount, primeval, society, dweller, incursions, species.

Ex. Man is not only a dweller in nature, he also transforms it.

1. Man is not only a ... in nature, he also transforms it.
2. From the very beginning of his existence, and with increasing intensity human society has adapted environing nature and made all kinds of ... into it.
3. An enormous ... of human labour has been spent on transforming nature.
4. Humanity converts nature's wealth into the means of the cultural, historical life of
5. Not only has man transferred various ... of plants and animals to different climatic conditions; he has also changed the shape and climate of his habitation and transformed plants and animals.

If we were to strip the geographical environment of the properties created by the labour of many generations, contemporary society would be unable to exist in such ... conditions.

Step 5. Learn the mind map here according to the text on the previous page. Give a title to it.



Step 6. Read the following questions and write three paragraphs using the map in Step 5.

- Do you agree with the statement that human beings live in the realm of environment?
- How do you fact interrelation and interaction of environment and humanity?
- What forms of human contacts with nature do you monitor in reality?

1. _____

_____ .

2. _____

_____ .

3. _____

_____ .

HELP DESK

WHAT DO THESE WORDS MEAN?

energy – the strength and vitality required for sustained physical or mental activity

influence – the capacity to have an effect on the character, development, or behavior of someone or something, or the effect itself

precipitation – the action or process of precipitating a substance from a solution

spaceman/spacewoman – (pl. spacemen or spacewomen) an astronaut

magnetic storm – a disturbance of the magnetic field of the earth (or other celestial body)

irradiation – 1) the process or fact of irradiating or being irradiated 2) the apparent extension of the edges of an illuminated object seen against a dark background

interact – act in such a way as to have an effect on each other

alive – 1) (of a person, animal, or plant) living, not dead 2) alert and active; animated

natural process – existing in or derived from nature action; not made or caused by humankind

SESSION 4

AGRICULTURE AS A NATURAL SCIENCE

➡ **STARTER:** Look at the picture and answer the following questions:



- What type of human~nature interactions do you comprehend from this illustration?
- What historical period is described here?
- What is the doing of a man in the picture?
- Is it dealt with planting, cultivating and harvesting? If yes, what method of cultivation is used in the picture? Is it used in nowadays?
-

Step 1. Regrouped into 3 groups, turn by turn tell the words based on agriculture.

Ex.: *cultivating...*

Step 2. Read the following passage carefully. Pay more attention to the new words.

Agriculture is the cultivation of animals, plants and other life forms for food, fiber,

biofuel and other products used to sustain human life. Agriculture is also called **farming** or **husbandry**. The study of agriculture is known as agricultural science.

The word *agriculture* is the English adaptation of Latin *agricultūra*, from *ager*, "a field", and *cultūra*, "cultivation". In the strict sense it means "tillage of the soil". Thus, a literal reading of the word yields "tillage of fields".

The history of agriculture dates back thousands of years, and its development has been defined by greatly different climates, cultures, and technologies. However, all farming generally relies on techniques to expand and maintain the lands that are suitable for raising domesticated species.

The major agricultural products can be broadly grouped into *foods*, *fibers*, *fuels*, and *raw materials*. In the 21st century, plants have been used to grow biofuels, biopharmaceuticals, bioplastics, and pharmaceuticals.

Specific foods include cereals, vegetables, fruits, and meat. **Fibers** include cotton, wool, hemp, silk and flax. **Raw materials** include lumber and bamboo. **Biofuels** include methane from biomass, ethanol, and biodiesel. Other useful materials are produced by plants, such as resins. Cut flowers, nursery plants, tropical fish and birds for the pet trade are some of the ornamental products.

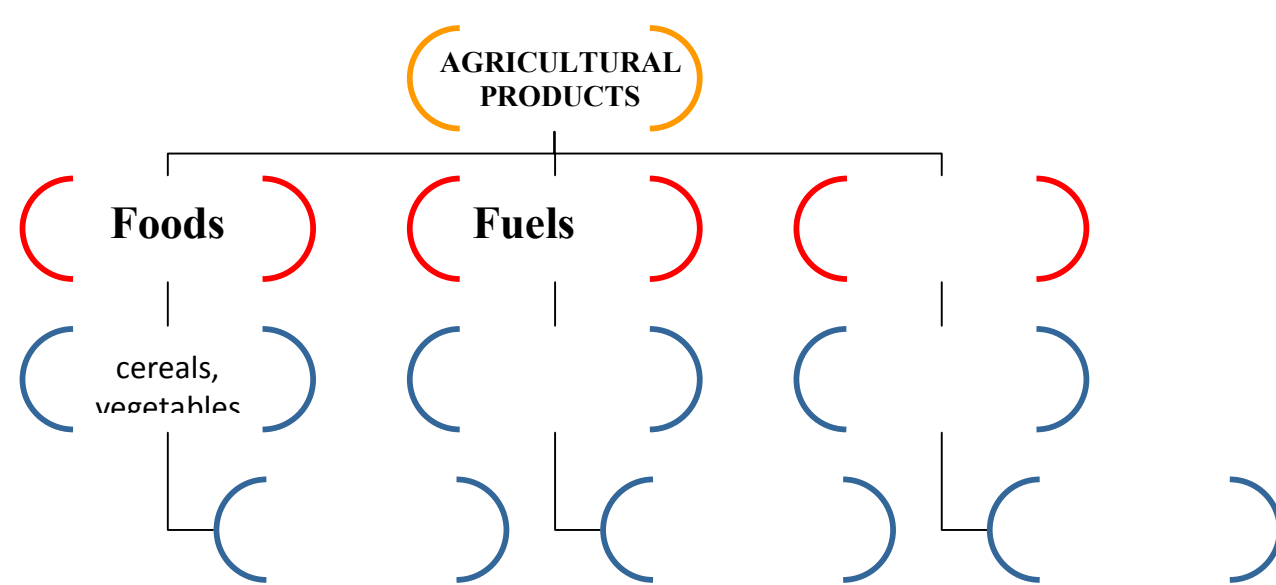
Step 3. Define the words which are the most suitable for the boxes below.

Cereals, wheat, kerosene, silk, flatulence, wool, blog, mohair, vegetables, jute, flax, fruits, methane, meat, mustard.

Foods	Fibers	Raw materials
<i>cereals</i>	<i>wheat</i>	<i>methane</i>

	<i>Farming and husbandry are opposite to agriculture.</i>
	The major agricultural products can be broadly grouped into <i>foods, fibers, fuels, and building materials.</i>
	Cereals, vegetables, fruits, and meat – are <i>specific food</i> , <i>fibers</i> include methane from biomass, ethanol, and biodiesel, and <i>raw materials</i> include lumber and bamboo.

Step 6. Complete the mind map according to the text on the previous page. Add some more options if necessary. Give your explanations in the lines.



HELP DESK

WHAT DO THESE WORDS MEAN?

raw materials – materials used in a production process, which are at a low level of completion compared to the final product or cost unit Examples include steel plate, wood, and chemicals.

fertilizer – a chemical or natural substance added to soil or land to increase its fertility

pesticide – a substance used for destroying insects or other organisms harmful to cultivated plants or to animals

manure – animal dung used for fertilizing land ■ any compost or artificial fertilizer

crop rotation – the system of growing a sequence of different crops on the same ground so as to maintain or increase its fertility

nutrient – a substance that provides nourishment essential for the maintenance of life and for growth

sustainable agriculture – able to be maintained at agriculture

pastoral – (of land) used for the keeping or grazing of sheep or cattle

tillage – the preparation of land for growing crops ■ land under cultivation

irrigation – the use of water pumped from boreholes or diverted from rivers to assist agriculture. This makes it possible to use otherwise uncultivable land, and to produce larger and more reliable crops on land already in use.

cultivation – the action of cultivating land, or the state of being cultivated

fungi – any of a group of unicellular, multicellular, or spore-producing organisms feeding on organic matter, including moulds, yeast, mushrooms, and toadstools

biofuel – a fuel derived immediately from living matter

fiber – a thread or filament from which a vegetable tissue, mineral substance, or textile is formed

SELF-CONTROL on UNIT 1 (total 15 points)

Step 1. VOCABULARY CHECK. These are the important words that you have studied in Unit 1. You should make sure that you know these words before you go on to Unit 2.

abiotic part	influence
ability	interact
alien	irrigation
alive	living part
biofuel-	magnetic storm
compassion	mankind-
crop rotation	manure
cultivation	nature
culture	natural processes
domesticated	object
energy	over humanity
events in nature	pastoral-
faith	pesticides
fertilizers	precipitation
fiber	range
fungi	raw materials
good breeding	science
human	sense
humanity	surplus
human race	sustainable agriculture
imaginatively	tillage
irradiation	

UNIT 2

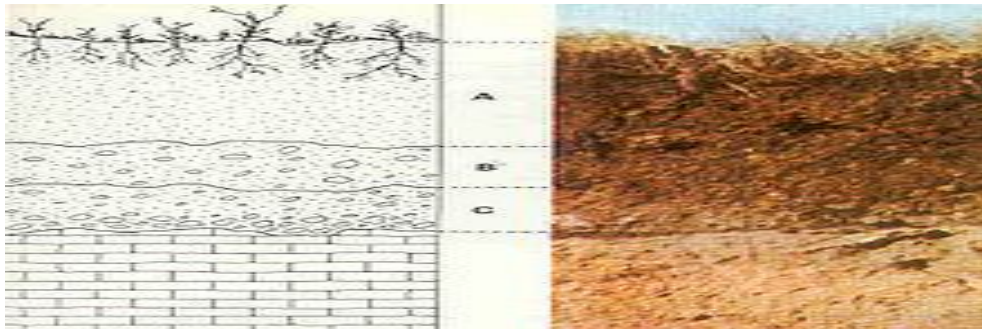
SOIL



SESSION 5

SOIL

⇒ **STARTER:** Look at the illustrations below. With a partner if possible, try to predict what is being discussed exactly.



Step 1. Discuss the pictures. Try to write all essential details and key words from these pictures.

Step 2. Read the text attentively. Look for the main idea.

- 1 It seems everybody knows what is the soil itself. However the scientific interpretation of the soil differs from its general meaning. Let`s look for its interpretation in agricultural science.
- 2 **Soil** is a natural body consisting of layers (soil horizons) that are composed of minerals. But those minerals differ from their parent materials in their texture, structure, consistency, color, chemical, biological and other

characteristics. It is known as the unconsolidated or loose covering of fine rock particles that covers the surface of the earth. Soil is commonly referred to as "earth" or "dirt" (technically, the term "dirt" should be restricted to displaced soil).

3 You can see a structure filled with pore spaces in soil forms. Soil can be thought of as a mixture of mineral and organic materials in the form of solids, gases and liquids. Accordingly, soils are often treated as a three-state system. Most soils have a density between 1 and 2 g/cm³.

4 Soil is composed of particles of broken rock (parent materials) which have been altered by physical, chemical and biological processes. Consequently, soil is altered from its original material by the interactions between the lithosphere, hydrosphere, atmosphere, and biosphere. Soil is influenced by some factors, such as the climate (temperature, precipitation), relief (slope), organisms (flora and fauna), parent materials (original minerals), and time.

Step 3. Which of the paragraphs deals with the given ideas?

Ideas	Paragraphs
According to the paragraph – soil is treated as many-stated thing and can be considered as a complex of solids, gases and water.	2
This paragraph says about the soil referred to the climate influence, also about typical usage of “soil” as a term.	
This part deals with the layers of earth.	
Paragraph introduces you with the novelty of the topic and leads to learn new information on it.	

Step 4. Try to define the words: *soil, earth, ground, basis, dirt* and match with appropriate definitions.

Soil	the planet on which we live; the world
Earth	a substance, such as mud or dust, that soils someone or something
Ground	the solid surface of the earth
Basis	the upper layer of earth in which plants grow, a black or dark brown material typically consisting of a mixture of organic remains
Dirt	underlying support or foundation for an idea, argument, or process

Step 5. Differ synonyms of “soil” from other words and fill in the columns.

Earth, water, dirt, personality, ground, earth, tone, void, basis, individuality, land, cultivating.

Soil – *earth,*

Step 6. Pay your great attention to the definitions below and match with given notions.

mixture (n)	a minute opening in a surface, especially the skin or integument of an organism, through which gases, liquids, or microscopic particles may pass
pore (n)	change in character or composition, typically in a comparatively small but significant way
organic (adj)	a feeling of reassurance and relaxation following release from anxiety or distress
alter (v)	a combination of different things in which the component elements are individually distinct
relief (n)	relating to or derived from living matter
consistency (n)	a sheet, quantity, or thickness of material, typically one of several, covering a surface or body
mineral (adj)	the way in which a substance holds together; thickness or viscosity
layer (n)	make (something) physically stronger or more solid
consolidate (v)	an organization or company which owns or controls a number of subsidiaries

HELP DESK

WHAT DO THESE WORDS MEAN?

soil horizon – soil layer

bedrock – solid rock underlying loose deposits such as soil or alluvium

glacial till – tillage relating to or denoting the presence or agency of ice, especially in the form of glaciers

loose rock material – missing mountain matter

weathering – the mechanical and chemical breakdown of rocks by the action of rain, snow, cold, etc

disintegration – the process of losing cohesion or strength

erosion – the process of eroding or being eroded by wind, water, or other natural agents

lithosphere – the rigid outer part of the earth, consisting of the crust and upper mantle

hydrosphere – all the waters on the earth's surface, such as lakes and seas, and sometimes including water over the earth's surface, such as clouds

atmosphere – the envelope of gases surrounding the earth or another planet

biosphere – the regions of the surface and atmosphere of the earth or another planet occupied by living organisms

displaced soil – take over the place, position, or role of soil

pore space – a continuous area or expanse which is free, available, or unoccupied

density – the degree of compactness of a substance

is an innate property of the soil that does not change with agricultural activities, soil structure can be improved or ... by the choice and timing of farming practices.

Step 2. Find the words to the definitions given below:

A strong magnetic silvery-grey metal	<i>iron</i>
The upper layer of earth, in which plants grow	
Introducing air into something	
A living thing that grows in the ground, having roots	
The liquid which forms the seas, lakes, rivers, and rain and is the basis of the fluids of living things	

Step 3. Do the following statements agree with the information in Reading Passage? In boxes 1-5 on your answer sheet write. Time – 10 min.

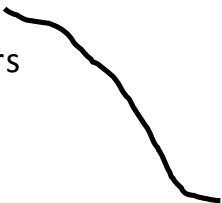
YES (Y) *if the statement agrees with the information*

NO (N) *if the statement contradicts the information*

NOT GIVEN (NG) *if there is no information on this passage*

	Water does not affect the soil structure.
	Animals, plants and other life forms for food, fiber, biofuel are considered as products used to sustain human life.
	Soil structure can be improved or destroyed by the choice and timing of farming practices.
	Soil structure can be broadly grouped into <i>foods, fibers, fuels</i> .
	Aggregates are made by the clumping of the soil textural components of sand, silt and clay.

Step 4. Match words 1-10 related to the soil and explain your choices.

hydromelioration		rock
horizons		animals
earth layers		plane
watering		lithosphere
particles	soil	gases

Step 5. Take part at the game: “*Past – Present – Future*”.

Re-grouped into three teams, you should fill up the table with columns “*Past – Present – Future*”. Remember what information did you know on soil structure before this session and write in column *Past*; summarize what you have learned during this class and write in column *Present*; conclude what information would you like to learn more in the future and write all predictions in column *Future*. Wins the team, which will write more information and details in the columns.

	I team	II team	III team
Past			
Present			
Future			

HELP DESK

WHAT DO THESE WORDS MEAN?

aggregate – a whole formed by combining several separate elements;
construction, installation

ped – the association of aggregates of sand, silt and clay into larger units

soil clod – a lump of earth or clay

aeration-solution – a process of searching ways of aeration or matters dealt with
aeration

precipitation – the action or process of precipitating a substance from a solution

clue – a piece of evidence or information used in the detection of a crime

soil evolution – the process of developing soil

innate property – natural possessions collectively

timing – the choice, judgement, or control of when something should be done

clay – a stiff, sticky fine-grained earth that can be moulded when wet, and is dried
and baked to make bricks, pottery, and ceramics

silica – a hard, unreactive, colorless compound which occurs as the mineral quartz
and as a principal constituent of sandstone and other rocks organic constituent

humus – a substance found in soil, formed from dead or dying leaves and other
plant material

SESSION 7	PHYSICAL PROPERTIES OF SOILS
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⇒ **STARTER:** Playing a game: “Seat-changing”.

Teacher sticks the pieces of papers on students` backs. It is one of wise-sayings of Thomas Fuller. Students must reorder the words for making the whole sentence by changing their seats (without knowing the stick-words stuck on their backs).

loves	a tree	plants	others
that	himself	beside	he

Step 2. Discuss the meaning and actuality of the saying in the class and write your own opinion in two paragraphs.

1. Meaning: _____

 _____.

2. Actuality: _____

 _____.

Step 3. Fill in the gaps using *to be* in appropriate forms of verbs and write down

full text in your notebook.

Let`s talk on physical state of soil. The physical properties of soils (be) are **texture, structure, density, porosity, consistency, temperature, colour** and **resistivity**.

Most of these ... (determine) the aeration of the soil and the ability of water to infiltrate and to be held in the soil.

Soil texture ... (be, determine) by the relative proportion of three kinds of soil particles. They are called soil "separates": sand, silt, and clay.

Do you know what are "**peds**"? Peds are larger soil structures and they ... (be, create) from the separates when iron oxides, carbonates, clay, and silica with the organic constituent humus, coat particles, and cause them to adhere into larger, relatively stable secondary structures.

The main measure of soil **density**, particularly bulk density ... (be) a soil compaction. So the soil **porosity** ... (consist) of the part of the soil volume occupied by air and water. **Consistency** ... (be) the ability of soil to stick together. **Soil temperature and colour** ... (be) self-defining. So according to these factors soils can be recognized and regrouped into classes. **Resistivity** may ... (refer) to the resistance to conduction of electric currents and ... (affect) the rate of corrosion of metal and concrete structures. The properties ... (may) vary through the depth of a soil profile.

Step 4. Choose the title for the text. Explain the reason of your choice.

- Soil – as an essential component of objective reality.
- Information on physical properties of soils
- Variation of soils properties
- Altering of physical properties of soils according to different living factors

Step 5. Do the following statements agree with the information in Reading Passage? In boxes 1-4 on your answer sheet write. Time – 10 min.

- TRUE (T) *if the statement agrees with the information*
 FALSE (F) *if the statement contradicts the information*
 NOT GIVEN (NG) *if there is no information on this passage*

	Soil texture is determined by the relative proportion of the three kinds of soil particles, called soil "separates": sand, silk, and clay.
	Consistency is the ability of soil to stick together, e.g. agglutinate or paste.
	Resistivity refers to the resistance to conduction of electric currents and affects the rate of corrosion of metal and concrete structures.
	Soil is defined according to its colour, temperature, consistency, structure and odor.

Step 6. Look for the specific information of the text.

Specific information	Paragraph
<i>Paragraph deals with the general information on soils properties; also the ability of water to infiltrate and to be held in the soil is remembered.</i>	1

HELP DESK

WHAT DO THESE WORDS MEAN?

physical properties of soils – natural features of soil

porosity – the state or condition of being porous

consistency – the state of being consistent; the thickness of a liquid or semi-liquid substance

colour – the property possessed by an object of producing different sensations on the eye as a result of the way it reflects or emits light

resistivity – a measure of the resisting power of a specified material to the flow of an electric current- of the immediate present; in progress

infiltrate – pass slowly into or through something

relative proportion – proportion existing only in comparison to smth else

kinds of soil particles – types of soil pieces

soil "separates" – soil allotments

sand – a loose granular substance, typically pale yellowish brown, resulting from the erosion of siliceous and other rocks and forming a major constituent of beaches, river beds, the seabed, and deserts

silt – fine sand, clay, or other material carried by running water and deposited as a sediment, especially in a channel or harbour

clay – a stiff, sticky fine-grained earth that can be moulded when wet (and is dried and baked to make bricks, pottery, and ceramics)

carbonates – a salt of the anion CO_3^{2-} , typically formed by reaction of carbon dioxide with bases

silica – a hard, unreactive, colorless compound which occurs as the mineral quartz and as a principal constituent of sandstone and other rocks

coat particles – skin pieces

bulk density – a great part of density

SESSION 8	THE MINERAL COMPONENTS OF SOIL
------------------	---------------------------------------

⇒ **STARTER:** Answer the following pre-reading questions:

- a) Can you tell about the structure of soil?
- b) What components do you consider the soil is made of?
- c) Do you differentiate organic soil from the mineral soil?

Step 1. Skim over the following text (quickly) and look for the words referring to the definitions given in the table:

Definition	Paragraph	Word
Ground, earth, land, country	1	<i>soil</i>
To receive something good	2	?
Related to the supposed ability of the human mind to sense things that can not be observed	3	?
One part of a system or whole	2,3	?
Ability of a living thing to act or function independently	3	?

- 1 When we talk about soil's texture we always mention it's mineral components of soil, sand, silt and clay. The mineral constituents of a loam soil might be 40% sand, 40% silt and the balance 20% clay by weight. Soil texture affects soil behavior, in particular its retention capacity for nutrients and water.
- 2 Sand and silt are the products of physical and chemical weathering; clay, on the other hand, is a product of chemical weathering, but often forms as a secondary mineral precipitated from dissolved minerals. It is considered as the

specific surface area of soil particles. The unbalanced ionic charges exchange capacity of soil, and hence its fertility.

3 Sand is least active, followed by silt; clay is the most active. Sand's greatest benefit to soil is that it resists compaction and increases porosity. Silt is mineralogically like sand but with its higher specific surface area it is more chemically active than sand. But it is the clay content, with its very high specific surface area and generally large number of negative charges, that gives a soil its high retention capacity for water and nutrients. Clay soils also resist wind and water erosion better than silty and sandy soils, as the particles are bonded to each other.

Step 2. Choose the title for the passage and explain the reason of your choice.

Title: _____

Reason of choice: _____.

Step 3. Put the headings to the paragraphs independently. Explain your choice.

Headings	Paragraphs
	1
	2
	3

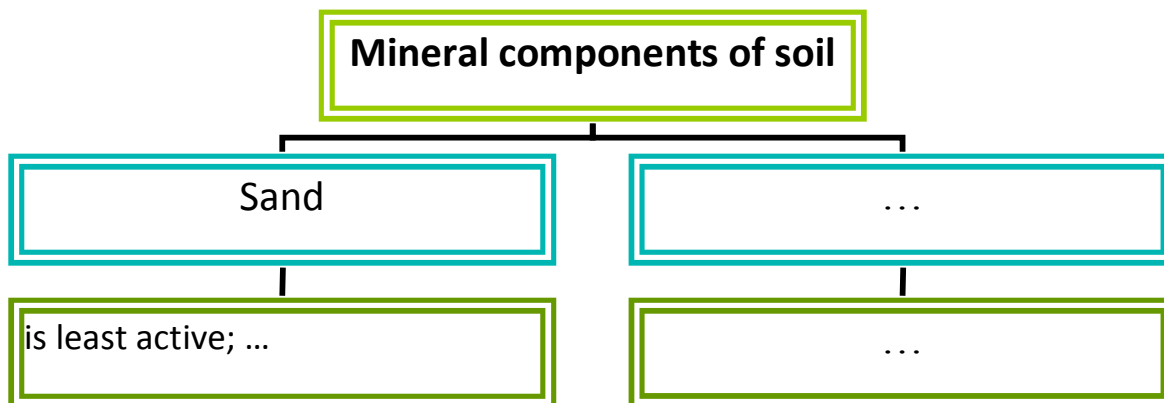
Step 4. Using NO MORE THAN FOUR WORDS from the passage, answer the following questions. Write your answers on the lines below.

1. What does affect the soil texture?
2. What do clay soils also resist better than silty and sandy soils, as the particles are bonded to each other?

3. Where is the clay often washed downward through the soil profile and accumulates?
4. What kind of soil components are classed as rock and gravel?
5. According to the text, how is called the soil rather than mineral soil?

1. _____.
2. _____.
3. _____.
4. _____.
5. _____.

Step 5. Complete the mind-map according to the text and fill in the columns.



Step 6. Compare the features and give explanation of each choice.

HELP DESK

WHAT DO THESE WORDS MEAN?

mineral constituents – mineral items

soil behaviour – soil condition

dissolved minerals – minerals, incorporated into a liquid so as to form a solution

chemically active – chemically moving about often or energetically

rock – the solid mineral material forming part of the surface of the earth and other similar planets, exposed on the surface or underlying the soil

primarily quartz particles – starter quartz pieces

optical microscope – a microscope using visible light, typically viewed directly by the eye

rock – the solid mineral material forming part of the surface of the earth and other similar planets, exposed on the surface or underlying the soil

gravel – a loose aggregation of small water-worn or pounded stones ■ a mixture of gravel with coarse sand, used for paths and roads and as an aggregate

gravelly sandy loam – a fertile soil of clay and sand containing humus

mineral fraction – mineral part/portion

organic matter – organic substance

SELF-CONTROL on UNIT 2 (total 15 points)

Step 1. VOCABULARY CHECK (5 points). These are the important words that you have studied in Unit 2. You should make sure that you know these words before you go on to Unit 3.

atmosphere	organic matter
bedrock	physical properties of soils
biosphere	pore spaces
carbonate	porosity
clay	primarily quartz particles
coat particle	resistivity
colour	sand
consistency	soil
content	soil behaviour
density	soil degradation
disintegration	soil "separates"
displaced soil	silt
dissolved mineral	temperature
gravel	
gravelly sandy loam	
hydrogen	
mineral constituent	
infiltrate	
kinds of soil particles	

Step 2. TRUE-FALSE ACTIVITY (4 points). Which of the following bits of information is given (G) or not given (NG) in Unit 1?

1. Soil consists of several kind of minerals which is the same consistency. _____
2. Soil is impact by abiotic and biotic part of nature . _____
3. Soil structure effects on planting and growing flora. _____
4. Temperature and color of soil related on structure of soil. _____

5. Clay soils stay against wind and water erosion more effectively than silt soils. _____

Step 3. COMPREHENSION TASK (3 points). Read and explain the meaning of the following proverbs and wise-sayings on gardening and planting. Underline metaphorical and specific usage of some expressions.

God gives every bird a worm, but he does not throw it in the nest

Swedish proverb

Keep a tree green in your heart and perhaps a singing bird will come

Chinese proverb

Though a tree grows so high, the falling leaves return to the root

Maylay proverb

He that plants thorns must never expect to gather roses

English proverb

The sluggard does not plow after the season, so he begs during the harvest and has nothing.

The Bible; Proverbs 20:4

UNIT 3

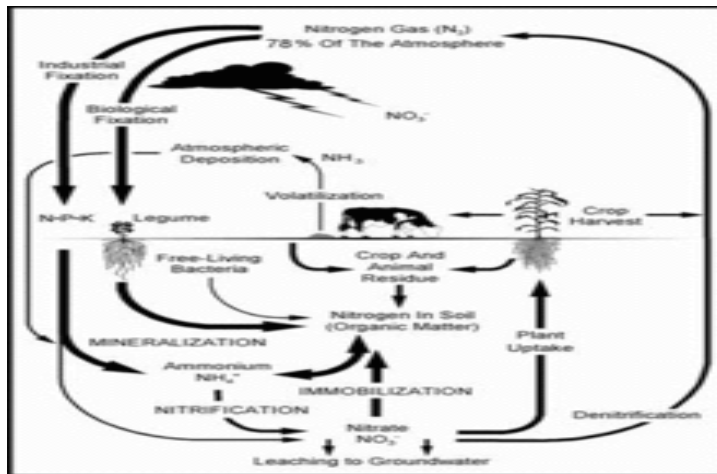
SOIL MELIORATION



SESSION 9

LEACHING AS AN AGRICULTURAL CONCERN

⇒ **STARTER:** Look at the illustration below. With a partner if possible, try to predict exactly what is being discussed.



Step 1. Pre-reading questions: Before reading the following text work with a partner, ask and answer the questions below. Base your answers on your possible knowledge of the topic.

- *What is leaching?*
- *What kind of leaching do you know?*
- *What is groundwater contamination?*
- *Are anthropogenic sources of nitrogen greater than from natural sources or not?*

Step 2. Read the Reading Passage attentively and translate it into Uzbek.

A Do you know what is leaching itself and how does it happen in nature?

In agriculture, **leaching** refers to the loss of plant nutrients from the soil, due

to rain and irrigation. Soil structure, crop planting, type and application rates of fertilizers, and other factors are taken into account to avoid excessive nutrient loss.

B Leaching may also refer to the practice of applying a small amount of excess irrigation, where the water has a high salt content. The drainage must also usually be employed, to carry away the excess water.

C It is important to know that leaching is an environmental concern, because it contributes to groundwater contamination. As water from rain, flooding, or other sources seeps into the ground, it can dissolve chemicals and carry them into the underground water supply. Of particular concern are excess fertilizer, improperly stored animal manure, and biocides (e.g. pesticides, fungicides, insecticides and herbicides).

Step 3. The reading passage has three sections A-C. Now underline the main ideas and key words in them.

Sections	Ideas	Key words
A	<i>Leaching refers to the loss of plant nutrients; ...</i>	<i>Leaching, agriculture, plant nutrients, soil structure, excessive nutrient...</i>
B		
C		

Step 4. Choose the most suitable headings for sections A-C from the list of headings.

1. Section A _____
2. Section B _____
3. Section C _____

List of headings
i. Application rates of fertilizers
ii. Leaching in agriculture
iii. Leaching referring to the practice
iv. Drainage
v. Biocides
vi. Environmental concern contributed to groundwater contamination.

Step 5. Pair-work. Make up the dialogue with your partner on leaching.

Step 6. According to the dialogue and discussions in the class make some notes on the topic, including characteristics, causes and results of leaching in the world and your area. Base your ideas on your own understanding.

Characteristics: _____

_____ .

Causes: _____

_____ .

Results: _____

_____ .

HELP DESK

WHAT DO THESE WORDS MEAN?

leaching – (with reference to a soluble chemical or mineral) drain away from soil, ash, or similar material by the action of percolating liquid, especially rainwater

groundwater contamination – pollution of water held underground in the soil or in pores and crevices in rock

fertilizer – a chemical or natural substance added to soil or land to increase its fertility

high salt content – salt that are held or included in the most part

salinity control – salt regulating

dump – a place where a particular kind of waste, especially dangerous waste, is left

landfill – disposal of waste material by burying it, especially as a method of filling in and reclaiming excavated pits

stored animal manure – animal fertilizer, kept for future use

biocide – a poisonous substance for killing living organisms

pesticide – a substance used for destroying insects or other organisms harmful to plants or animals

fungicide – a chemical that destroys fungus

insecticide – a substance used for killing insects

herbicide – a substance that is toxic to plants, used to destroy unwanted vegetation

SESSION 10

SOIL IMPROVEMENT: MELIORATION

⇒ **STARTER:** Look at the pictures below and answer the questions. Share your ideas with your group.



- What can you see in the first picture?
- What agricultural procedure is the machine in the picture used for?
- What kind of mechanized applications have you ever seen?
- What can you see in the second picture?
- What is the difference between the states of soils in the first and second pictures?
- Does the state and preparation of soil affect to the growth of plants?

Step 1. Read the Reading Passage attentively.

As the soil is the end product of nature which is the base of any growing in reality, its state and condition are the most essential matters for today. Unfortunately, many factors, like leaching, pollution, and improperly use of soils affects and reacts the soil and makes much many circumstances needing to be solved. So the salvation of the problems of soils or getting it better is called soil improvement or melioration. *Soil improvement* in its broadest sense is the alteration of any property of a soil to improve its engineering performance. So *melioration* in its broadest sense means “improving, changing and getting smth. better.”, and consequently, *soil melioration* is improving, getting better and remaking of soils, moreover, preparing it for further agricultural procedures. This

may be either a temporary process to permit the construction of a facility or may be a permanent measure to improve the performance of the completed facility.

Various Techniques of Soil Improvement:

1 *Surface Compaction* – construction of a new road, a runway, an embankment or any soft or loose site needs a compacted base for laying the structure.

2 *Drainage Methods* – certain methods are available to control the ground water and ensure a safe and economical construction scheme.

3 *Vibration Methods* – can be effectively used for rapid densification of saturated non-cohesive soils.

4 *Precompression and consolidation* – aim to consolidate the soil before construction.

5 *Grouting and Injection* – grouting is a process whereby stabilizers, either in the form of suspension or solution are injected into subsurface soil or rock for one or more applications.

6 *Chemical Stabilization* – has been widely used in the form of lime, cement, fly ash and the combination of the above is widely used in soil stabilization.

7 *Soil Reinforcement* – is in the form of a weak soil reinforced by high-strength thin horizontal membranes.

8 *Geotextiles and Geomembranes* – Geotextiles are porous fabrics manufactured from synthetic materials, which are primarily petroleum products and others, such as polyester, polyethylene, polypropylene and polyvinyl chloride, nylon, fiberglass and various mixtures of these.

9 *Other Methods* – include Thermal methods, Moisture barriers, Prewetting, addition or removal of soils, etc.

Step 2. Do the following statements agree with the information in Reading Passage? In boxes 1-4 on your answer sheet write. Time – 10 min.

- Yes (Y) *if the statement agrees with the information*
 No (N) *if the statement contradicts the information*
 NOT GIVEN (NG) *if there is no information on this passage*

Y	<i>Soil melioration</i> is the most actual part of agricultural procedures.
	<i>Surface Compaction</i> deals with the certain methods are available to control the ground water and ensure a safe and economical construction scheme.
	<i>Drainage Methods</i> – construction of a new road, a runway, an embankment or any soft or loose site needs a compacted base for laying the structure.
	Other melioration methods are used neither for agricultural preparation of soil, nor for irrigational procedures.

Step 3. Regrouping topic into several parts (paragraphs), choose the headings to each of them.

<i>Understanding of soil improvement</i>	<i>Paragraph 1</i>

Step 4. Choose the central title to the topic. Conclude with your ideas.

- Irrigation techniques
- Soil improvement or melioration of soil
- Soil improvement and melioration techniques
- Primary and secondary melioration techniques

HELP DESK

WHAT DO THESE WORDS MEAN?

soil improvement – procedure that makes soil better or is better than something else

melioration – the act or an instance of improving the soil or the state of being improved

vibration – an instance or the state of vibrating, i.d. move with small movements rapidly to and fro

consolidation – making stronger or more stable; combining things into a single unit

grouting – mortar or paste for filling crevices, especially between tiles; fill in crevices with grout

injection – an instance of injecting or being injected; introduce (something) under pressure into a passage, cavity, or solid material

reinforcement – 1) the action or process of reinforcing or strengthening 2) the process of encouraging or establishing a belief or pattern of behaviour

geotextile – any strong synthetic fabric used in civil engineering, as to retain an embankment

SESSION 11	TILLAGE
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⇒ **STARTER:** Look at the picture and share your ideas with the group.



Step 1. Name the pictures with the given words: mechanizing, draft-animal-powered method, using hand tools. Also write some definitions related to these pictures.

Mechanising – Picture ____ : _____
_____ .

Animal-powered method – Picture ____ : _____
_____ .

Using hand tools – Picture ____ : _____
_____ .

Step 2. Read the following passage carefully.

Tillage is also called as “cultivation” and closely connected with the plant-growing and harvesting. Tillage is the agricultural preparation of the soil by mechanical agitation of various types, such as *digging, stirring, and overturning*. We used to divide tillage methods into: human-powered, animal-powered or mechanized tilling methods.

Examples of **human-powered tilling methods** using hand tools include shoveling, picking, mattock work, hoeing, and raking.

Examples of **animal-powered or mechanized work** include ploughing (overturning with moldboards or chiseling with chisel shanks), rolling with cult packers or other rollers, harrowing, and cultivating with cultivator shanks (teeth).

Small-scale gardening and farming, for household food production or small business production, tends to use the smaller-scale methods above; consequently large-scale farming tends to use the larger-scale methods.

Tillage is often classified into two types, **primary and secondary**. There is no strict boundary between them. So the tillage that is deeper and more thorough is a primary tillage and the tillage that is shallower is a secondary tillage. Primary tillage such as ploughing tends to produce a rough surface finish, and secondary tillage tends to produce a smoother surface finish, such as that required to make a good seedbed for many crops.

Step 3. Do the following statements agree with the information in Reading Passage? In boxes 1-5 on your answer sheet write. Time – 10 min.

YES (Y) *if the statement agrees with the information*

NO (N) *if the statement contradicts the information*

NOT GIVEN (NG) *if there is no information on this passage*

	<i>Digging, stirring, and overturning</i> are the forms of tilling.
	Tillage is the agricultural preparation of the water by mechanical agitation of various types.
	Animal powered method is an ancient one and not used in nowadays.
	Tillage is often classified into three types, <i>primary, secondary and</i>

	<i>final.</i>
	Primary tillage tends to produce a smoother surface and secondary tillage tends to produce a rough surface finish.

Step 4. Find out the adjective + noun word combinations from the text.

Adj + n word combinations	Paragraphs
<i>agricultural preparation, ...</i>	1

Step 5. Fill the following statements using no more than 4 words from the text.

- Tillage is often classified into _____
_____.
- Small-scale gardening and farming, for household food production or small business production, tends to use _____
_____.
- Primary tillage tends to _____
_____.
- Secondary tillage tends to produce _____
_____.

Step 5. Talk with your partner about effects and advantages of tillage in agriculture. Write your own explanations and decisions in your note-book using tips mentioned in the reading tasks.

HELP DESK

WHAT DO THESE WORDS MEAN?

tillage – the preparation of land for growing crops ■ land under cultivation

row crop – plants in one line

harrowing – working with a harrow, an implement consisting of heavy frame set with teeth

roller – a cylinder that rotates about a central axis and is used in various machines and devices to move, flatten, or spread something

animal-powered – based on animals` force

raking – drawing together leaves or grass or smooth soil with a rake

hoeing – use a hoe (a long-handled gardening tool with a thin metal blade, used mainly for weeding) to turn earth or cut through weeds

mattock – an agricultural tool shaped like a pickaxe, with an adze and a chisel edge as the ends of the head

hand tool – a tool held in the hand and operated without electricity or other power

agitation – stirring or shaking a liquid briskly

soil – the upper layer of earth in which plants grow, a black or dark brown material typically consisting of a mixture of organic remains, clay, and rock particles

SESSION 12

FERTILIZER

⇒ **STARTER:** Look at the pictures and tell what are being described here.



Step 1. Read the passage carefully and note new words.

Fertilizer (or fertiliser) is any organic or inorganic material of natural or synthetic origin (other than liming materials) that is added to a soil to supply one or more plant nutrients essential to the growth of plants. Conservative estimates report 30 to 50% of crop yields are attributed to natural or synthetic commercial fertilizer.

Fertilizers come in various forms. The most typical form is *solid fertilizer* in granulated or powdered forms. The next most common form is *liquid fertilizer*; some advantages of liquid fertilizer are its immediate effect and wide coverage.

There are also *slow-release fertilizers* (various forms including fertilizer spikes, tabs, etc.) which reduce the problem of "burning" the plants due to excess nitrogen. Polymer coating of fertilizer ingredients gives tablets and spikes a 'true time-release' or 'staged nutrient release' (SNR) of fertilizer nutrients.

More recently, *organic fertilizer* is on the rise as people are resorting to environmental friendly (or 'green') products. Although organic fertilizers usually

contain a lower concentration of nutrients, this lower concentration avoids complication of nitrogen burn harming the plants. In addition, organic fertilizers such as compost and worm castings break down slowly into complex organic structures (humus) which build the soil's structure and moisture- and nutrient-retaining capabilities.

Step 2. Give the explanation of the following statements by your own words.

Fertilizer: _____

_____ .

Solid fertilizer: _____

_____ .

Liquid fertilizer: _____

_____ .

Slow-release fertilizers: _____

_____ .

Organic fertilizer: _____

_____ .

Step 3. Multiple choice.

1. Fertilizer added to the soil to ...

- a) cultivate the plant
- b) grow the plant
- c) pick the plant
- d) watering the plant

2. Choose the correct form of the fertilizer forms.

- a) solid fertilizer, organic fertilizer, slow-release fertilizers, carbon fertilizer
- b) liquid fertilizer, organic fertilizer, solid fertilizer, nutrient fertilizer
- c) organic fertilizer, slow-release fertilizers, liquid fertilizer, solid fertilizer

d) solid fertilizer, organic fertilizer, carbon fertilizer, nutrient fertilizer

3. Which fertilizer reduced the problem of burning

a) slow-release fertilizers

b) liquid fertilizer

c) carbon fertilizer

d) solid fertilizer

4. Organic fertilizers usually contain a lower concentration of nutrients, this lower concentration avoids

a) growing plants

b) harming plants

c) cultivate plants

d) watering plants

Step 4. Find out Participle II forms from the text, complete the table of their infinitive and past forms.

Paragraph 1	Infinitive	Past	Participle II
1	add	added	added

Step 5. Make some notes on the topic, including fertiliser`s definition and forms, also rising need (demand) for it in the world and in your area. Base your ideas on your own experience.

Definition: _____ .

Forms: _____ .

Demand: _____ .

HELP DESK

WHAT DO THESE WORDS MEAN?

fertilizer moisture – wet fertilizer

harm – physical injury, especially that which is deliberately inflicted

nutrient – a substance that provides nourishment essential for the maintenance of life and for growth

oxygen – a colourless, odourless reactive gas, the chemical element of atomic number 8 and the life-supporting component of the air (Symbol: O)

hydrogen – a colourless, odourless, highly flammable gas, the chemical element of atomic number 1 (Symbol: H)

carbon – the chemical element of atomic number 6, a non-metal which has two main forms (diamond and graphite) and which also occurs in impure form in charcoal, soot, and coal (Symbol: C)

liquid – a substance that flows freely but is of constant volume, having a consistency like that of water or oil

solid – firm and stable in shape; not liquid or fluid

SELF-CONTROL on UNIT 3 (total 15 points)

Step 1. VOCABULARY CHECK (5 points). These are the important words that you have studied in Unit 3. You should make sure that you know these words before you go on to Unit 4.

aeration	liquid
agents	loose rock material
aggregate	mattock
biological activity	nutrient
chemical condition	organic constituent humus
clay	oxygen
consistency	pesticide
content	raking
displaced soil	regolith
erosion	relative proportion
fertilizer	row crop
fertilizer moisture	salinity control
fungicide	size
hand tool	specific surface area
harm	stable secondary structures
harrowing	stored animal manure
herbicide	surface-water-gley
high salt content	temperature
hoeing	texture
human use	three-state system
insecticide	tillage
intensive tillage	weathering
iron oxides	
leaching	

Step 2. TRUE-FALSE ACTIVITY (5 points). Which of the following bits of information is given (G) or not given (NG) in Unit 1?

1. Leaching is not dealt with ground and not an environmental concern. _____
2. Mostly weak soils are treated and reinforced with high horizontal membranes. _____
3. Rolling, harrowing and cultivating by shank is called human powered tilling method. _____
4. The most effective fertilizer (organic or nonorganic matter) comes from the USA. _____
5. The most commonly used fertilizer are solid and liquid ones. _____

Step 3. COMPREHENSION TASK (5 points). Read and explain the meaning of the following proverbs and wise-sayings on gardening and planting. Underline metaphorical and specific usage of some expressions.

1. *To the one, who gives to the land, the land gives back three times more.*
2. *Body and Land are not two but one.*
3. *When you have land, you have the world.*
4. *Do me a favor in the rainy season and I'll payback in the dry season.*
5. *A hive of bees in May is worth a load of hay.*

UNIT 4

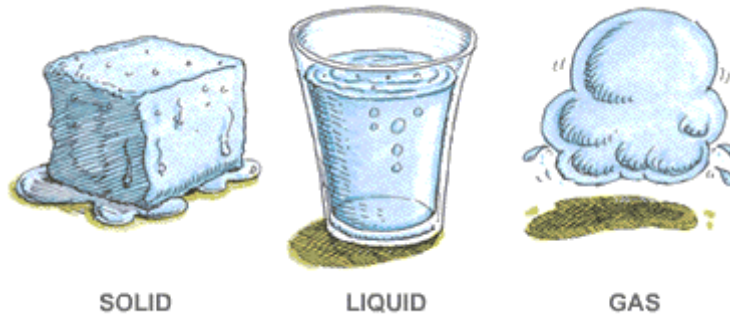
WATER AND APPLICATION OF WATER



SESSION 13

WATER

⇒ **STARTER:** Look at the pictures and share your ideas with the group.



Step 1. Answer the following questions and try to predict what is going to be discussed in the session.

- What do you see in the pictures?
- What forms (states) of water are described in them?
- What is the difference between the forms?

Step 2. Read the Reading Passage.

Water is the source of life and civilization. Without it nothing can survive in the world. Humanity can develop only on the base of water and everything in the nature is balanced because of the water. That's why it is considered as the most essential and needful element of all.

Water (H₂O) is the most abundant compound on Earth's surface, covering about 70 percent of the planet. Naturally, water exists in liquid, solid, and gaseous states. Usually we meet indynamic equilibrium between the liquid and gas states at standard temperature and pressure. At room temperature, it is

a tasteless and odorless liquid, nearly colorless with a hint of blue.

Perhaps, you have already observed that many substances dissolve in water and that's why it is commonly referred to as *the universal solvent*. Because of this, water in nature (or natural water as we call it) and in use is rarely pure. Analogically, some of its properties may vary slightly from those of the pure substance (However, there are also many compounds that are essentially, if not completely, insoluble in water).

Do you know water is the only unique substance found naturally in all three common states of matter? Yes, it is the three-stated element and *it is essential for all life on Earth*. Another interesting fact is that water usually makes up 55% to 78% of the human body. It says about necessity of it in the life and great demand of it for human being is growing day by day.

Step 3. Fill in the gap of the following statements and explain the meaning of the missing words.

In nature, ... exists in liquid solid, and gaseous states. It is in ... between the ... and gas states at standard temperature and pressure. At....., it..... and odorless liquid, nearly colorless with a

Many substances dissolve in water and it is commonly referred to as *the universal*... .

Step 4. Do the following statements agree with the information in Reading Passage?

- YES (Y) *if the statement agrees with the information*
- NO (N) *if the statement contradicts the information*
- NOT GIVEN (NG) *if there is no information on this passage*

The first decomposition of water into hydrogen and oxygen, by	
---	--

HELP DESK

WHAT DO THESE WORDS MEAN?

water – a colorless, transparent, odorless, liquid which forms the seas, lakes, rivers, and rain and is the basis of the fluids of living organisms

compound – a thing that is composed of two or more separate elements; a mixture

liquid – a substance that flows freely but is of constant volume, having a consistency like that of water or oil

tasteless – 1) lacking flavor 2) considered to be lacking in aesthetic judgment or to constitute inappropriate behavior

solvent – the liquid in which a solute is dissolved to form a solution ■ a liquid, typically one other than water, used for dissolving other substances ■ something that acts to weaken or dispel a particular attitude or situation

state of matter – a physical condition as regards internal or molecular form or structure

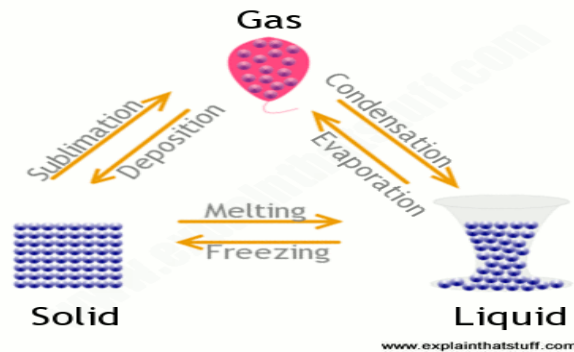
heavy water – water in which the hydrogen in the molecules is partly or wholly replaced by the isotope deuterium, used especially as a moderator in nuclear reactors

temperature scale – temperature condition

SESSION 14

WATER STRUCTURE

⇒ **STARTER:** Look at the picture and share your ideas with your group-mates.



Step 1. Answer the questions.

- What can you see in the picture?
- Have you ever heard about the types of the water?
- How can you explain heavy, liquid and light waters?

Step 2. Read the following text attentively.

As it was mentioned in the previous passage, water can be met in the three states (liquid, solid and gaseous). Today you are going to study the fourth state of water in the nature. Let`s study all the states in order.

The states of the water are also broadly categorized by phase of matter. The *liquid phase* of them is the most common among water's phases (within the Earth's atmosphere and surface) and it is interesting to sign that it is generally denoted by the word "water." The *solid phase* of water is known as ice and commonly takes hard, amalgamated crystals structure (such as ice cubes, or loosely accumulated granular crystals, like snow). The *gaseous phase* of water is

Step 3. Match the statements in the box A with the words in the box B.

A	B
composed of molecules that move freely among themselves but do not tend to separate like those of gases	nuclear
Having a grainy or granulated surface	deuterium
an isotope of hydrogen with one proton and one neutron in the nucleus having an atomic weight of 2.014.	gas
relatively great expansion and contraction with changes in pressure and temperature	granular
pertaining to or involving atomic weapons	solid
Firm or compact in substance	liquid

Step 4. List *adjective + noun* word combination from the text.

Word combinations	Paragraph

Step 5. Complete the sentences by your own understandings.

Solid water – _____

_____ .

Heavy water – _____

_____ .

Light water – _____

_____ .

HELP DESK

WHAT DO THESE WORDS MEAN?

liquid phase – a distinct period or stage in a process of change or forming part of liquid's development

solid phase – firm and stable in shape phase; not liquid or fluid

granular – resembling or consisting of small grains or particles

crystal – a piece of a homogeneous solid substance having a natural geometrically regular form with symmetrically arranged plane faces

ice cube – a small block of ice made in a freezer, especially for adding to drinks

amorphous – without a clearly defined shape or form

gaseous phase – relating to or having the characteristics of a gas

water vapor – water in the gaseous state, esp. when due to evaporation at a temperature below the boiling point

supercritical fluid – above a critical a substance that has no fixed shape and yields easily to external pressure; a gas or (especially) a liquid critical temperature

critical pressure – the pressure of a gas or vapour in its critical state

hydrothermal vent – an opening in the sea floor out of which heated mineral-rich water flows

volcanic plume – a long cloud of smoke or vapour resembling a feather as it spreads from its point of origin as a result of volcano

deuterium – a stable isotope of hydrogen with a mass approximately twice that of the usual isotope (Symbol: D)

heavy water – the water in which the hydrogen in the molecules is partly or wholly replaced by the isotope deuterium, used especially as a moderator in nuclear reactors

neutron – a subatomic particle of about the same mass as a proton but without an electric charge, present in all atomic nuclei except those of ordinary hydrogen

light water – the water containing the normal proportion (or less) of deuterium oxide, i.e. about 0.02 per cent, especially to distinguish it from heavy water

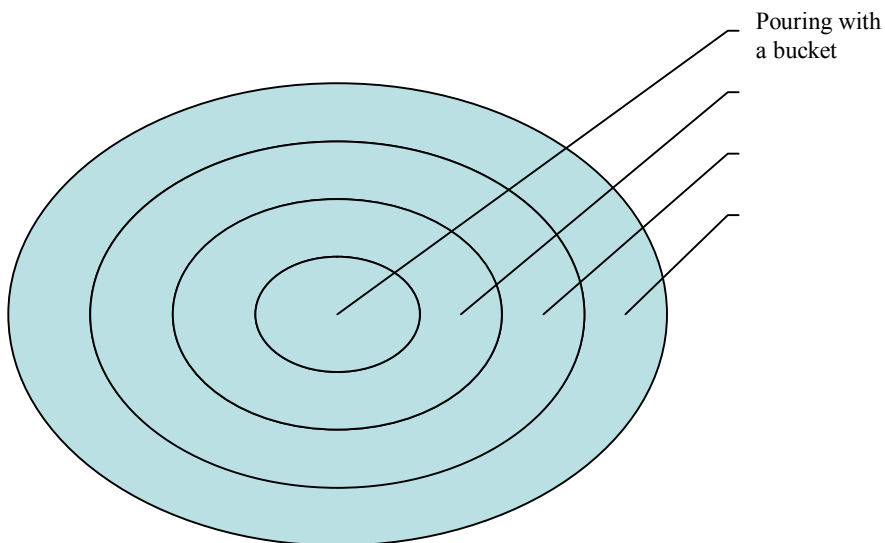
Step 3. Choose the title for the passage. Explain the reason of your choice.

Step 4. Put headings to the paragraphs.

Headings	Paragraphs
Water returning to the environment	
Ancient people and irrigation	
No very long surveying without irrigation	
Artificial application of water	
Irrigation throughout the world	

Step 5. Complete the mind-map according to the text and fill in the columns. Compare the features and give explanation of each choice.

History of Irrigation



HELP DESK

WHAT DO THESE WORDS MEAN?

irrigation – supplying water to land or crops by different means

fresh water – clean water

large-scale farming – involving large numbers or a large area of farm culture

river – a large natural stream of water flowing in a channel to the sea, a lake, or another river

lake – a large area of water surrounded by land

reservoir – a large natural or artificial lake used as a source of water supply

well – a shaft sunk into the ground to obtain water, oil, or gas

seed – a small object of flowering plant, capable of developing into another such plant

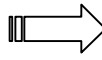
first plant – beginning crop

irrigation technique – watering technology

water source – water resource; a place, where a river or stream begins

SESSION 16

IRRIGATION: ARTIFICIAL APPLICATION OF WATER

 **STARTER:** Answer the following questions:

- What are the natural and artificial applications of water?
- How do you define the terms “usable”, “unusable”, and “reusable”, towards the water?
- What do you know about returning the water used by human to the environment?
- Describe the ways of losing water in use.

Step 1. Read the Reading Passage.

Water is an essential element for our being and surviving. When we use water in our home, or when an industry uses water, about 90 percent of the water used is eventually returned to the environment where it replenishes water sources (water goes back into a stream or down into the ground) and can be used for other purposes. But only about one-half of the water used for irrigation, is reusable. The rest is lost by evaporation into the air, evapotranspiration from plants, or is lost in transit, by a leaking pipe, for example.

We used to call irrigation as the artificial application of water to the land or soil, because natural sources of watering the plants (raining, snowing, flooding etc.) aren't irrigation means as themselves. It is used to assist in the growing of agricultural crops, maintenance of landscapes, and revegetation of disturbed soils in dry areas and during periods of inadequate rainfall. Additionally, irrigation also has a few other uses in crop production, which include protecting plants against frost, suppressing weed growing in grain fields and helping in

preventing soil consolidation. In contrast, agriculture that relies only on direct rainfall is referred to as rain-fed or dryland farming. Irrigation systems are also used for dust suppression, disposal of sewage, and in mining. Irrigation is often studied together with drainage, which is the natural or artificial removal of surface and sub-surface water.

Step 2. Do the following statements agree with the information in Reading Passage? In boxes 1-3 on your answer sheet write. Time – 5 min.

- YES (Y) *if the statement agrees with the information*
 NO (N) *if the statement contradicts the information*
 NOT GIVEN (NG) *if there is no information on this passage*

N	Irrigation is the natural application of water to the land or soil.
	Irrigation systems are also used for dust suppression, disposal of sewage, and in mining.
	Irrigation is seldom studied together with drainage, which is the natural or artificial removal of surface and sub-surface water.
	Water for irrigation is lost by leaking pipes.

Step 3. Find the words to the definitions.

Definitions	Words
a formal request for assistance, employment, admission to a school, etc.	<i>application</i>
preparing the land to grow crops.	
to continue living.	
the supplying of water to dry land.	

Step 4. Using NO MORE THAN THREE WORDS from the passage, answer the

following questions. Write your answers in the lines below.

1. What kind of application deals the irrigation with?

Irrigation deals with the artificial application of water.

2. Is irrigation the artificial application of water to the land or soil?

_____ .

3. Is drainage considered as the natural or artificial removal of surface and sub-surface water?

_____ .

Step 5. Write adverbs for the given adjectives and make up sentences using them.

Essential	<i>essentially</i>	<i>That blessed union has contributed so essentially to the prosperity of both countries.</i>
Artificial		
Natural		
Additional		
Eventual		

Step 6. Make some notes on the topic, including returning water to the environment (1), artificial application of water (2) and wide usage of irrigation in the world and in your area. Base your ideas on your own understanding and experience.

1. _____ .

2. _____ .

3. _____ .

HELP DESK

WHAT DO THESE WORDS MEAN?

reusable – an attribute for the things or actions which can be used more than once

leaking – be accidentally lost or admitted through a hole or crack in a container or covering

pipe – a tube used to convey water, gas, oil, or other fluid substances

transit – the carrying of people or things from one place to another

maintenance – the process of preserving a condition or situation or the state of being preserved

landscape – all the visible features of an area of land; a picture of an area of countryside

revegetation – production a new growth of vegetation on (disturbed or barren ground)

disturbed soil – having had the anormal pattern of soil or functioning disrupted

inadequate – lacking the quality or quantity required; insufficient for a purpose

rainfall – the fall of rain ■ the quantity of rain falling within a given area in a given time

soil consolidation – the act of solidification of soil or state of being consolidated of soil

dust suppression – the action of depressing (lowering) of moving soil (dust)

sewage – waste water and excrement conveyed in sewers

mining – the process or industry of obtaining coal or other minerals from a mine

sub-surface – the stratum or strata (layer of earth) below the earth's surface

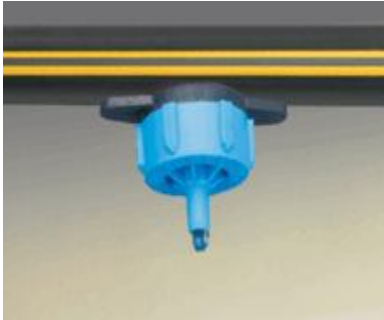
evaporation – turning from liquid into vapour

evapotranspiration – the process by which water is transferred from the land to the atmosphere by evaporation from the soil and other surfaces and by transpiration from plants

SESSION 17

TYPES OF IRRIGATION

➡ **STARTER:** Look at the pictures below and tell your understanding.



Step 1. Skimming the text quickly try to order passages and make the whole topic.

Do you know what is drip irrigation and how does it function? **Drip irrigation**, also known as *trickle irrigation*, functions as its name signs. The water in this system falls drop by drop just at the position of roots (water is delivered at or near the root zone of plants, drop by drop). It is important to manage this process properly that the method can be the most water-efficient method of irrigation.

It is known that various types of irrigation techniques (methods) differ in how the water obtained from the source distributed within the field. In general, the goal is to supply the entire field uniformly with water, so that each plant has the amount of water it needs, neither too much nor too little. The modern methods are efficient enough to achieve this goal. The irrigation techniques are commonly divided into drip irrigation, surface irrigation and localised irrigation.

<input type="checkbox"/>	In surface irrigation systems, water moves over and across the land by simple gravity flow in order to wet it and to infiltrate into the soil. Surface irrigation can be subdivided into <i>furrow, borderstrip or basin irrigation</i> . It is often called flood irrigation when the irrigation results in flooding or near flooding of the cultivated land. Historically, this has been the most common method of irrigating agricultural land.
<input type="checkbox"/>	Localized irrigation is a system where water is distributed under low pressure through a piped network, in a pre-determined pattern, and applied as a small discharge to each plant or adjacent to it. Drip irrigation, spray or micro-sprinkler irrigation and bubbler irrigation belong to this category of irrigation methods.

Step 2. Choose the title for the passage. Explain your choice.

Step 3. Match each topic in A with two items in B.

A	B
Drip irrigation	applied as a small discharge to each plant
	subdivided into <i>furrow, borderstrip or basin irrigation</i>
Surface irrigation	water is distributed under low pressure
	water falls drop by drop
Localized irrigation	trickle irrigation
	flood irrigation

Step 4. Fill in the gaps and complete the text with the words in the box.

Water	Types	Source
Plant	Efficient	Supply

Various ... of irrigation techniques differ in how the water obtained from the ... distributed within the field. In general, the goal is to ... the entire field uniformly with ..., so that each ... has the amount of water it needs, neither too much nor too little. The modern methods are ... enough to achieve this goal.

Step 5. Pay attention to the topic sentences and complete with controlling ideas.

4. The water in this system falls drop by drop just at the position of roots.

It deals with the drip irrigation technique.

5. In general, the goal is to supply the entire field uniformly with water, so that each plant has the amount of water it needs, neither too much nor too little.

6. It is often called **flood irrigation** when the irrigation results in flooding or near flooding of the cultivated land.

7. Drip irrigation, spray or micro-sprinkler irrigation and bubbler irrigation belong to this category of irrigation methods.

HELP DESK

WHAT DO THESE WORDS MEAN?

drip irrigation – watering grounds/plants/crops by the means of falling water drop by drop

trickle irrigation – the supply of a controlled restricted flow of water to a number of points in a cultivated area

position of root – placing of root

root zone – the part of a plant which attaches it to the ground or to a support, typically underground, conveying water and nourishment to the rest of the plant via numerous branches and fibers

water-efficient method – water-saving method

surface irrigation system – irrigating system below the earth's surface

flood irrigation – watering with an overflow of a large amount of water beyond its normal limits, especially over what is normally dry land

localized irrigation – local watering



SELF-CONTROL on UNIT 4 (total 15 points)

Step 1. VOCABULARY CHECK (5 points). These are the important words that you have studied in Unit 4. You should make sure that you know these words before you go on to Unit 5.

compound	localized irrigation
deuterium	neutrons
drip irrigation	position of root
evaporation	reservoir
evapotranspiration	river
first plant	root zone
fresh water	seed
floodwater harvesting	solid phase
granular	sprinkler or overhead irrigation
heavy water	surface irrigation system
hydrothermal vent	supercritical fluid
irrigation	temperature scale
irrigation technique	trickle irrigation
lake	volcanic plume
large-scale farming	water-efficient method
light water	water vapor
liquid phase	well

Step 2. TRUE-FALSE ACTIVITY (5 points). Which of the following bits of information is given (G) or not given (NG) in Unit 1?

1. Iceberg of the world considered one of the sources of water. _____
2. Before water component was divided into hydrogen and oxygen part. _____
3. Gaseous type of water is mostly can be crystal and takes hard. _____

4. Farming, fruits, vegetables and grains are not mostly dealt with irrigation. They are not essential. _____

5. Artificial application of water named as an irrigation means. _____

Step 3. COMPREHENSION TASK (5 points). Read and explain the meaning of the following proverbs and wise-sayings on gardening and planting. Underline metaphorical and specific usage of some expressions.

- 1. A hive of bees in May is worth a load of hay.*
- 2. A lawsuit is a fruit-tree planted in a lawyer's garden.*
- 3. A patent on seeds is a patent on freedom. If you have to pay for patented seeds, it's like being forced to buy your own freedom.*
- 4. A plant is like a self-willed man, out of whom we can obtain all which we desire, if we will only treat him his own way.*
- 5. Advances in medicine and agriculture have saved vastly more lives than have been lost in all the wars in history.*



UNIT 5

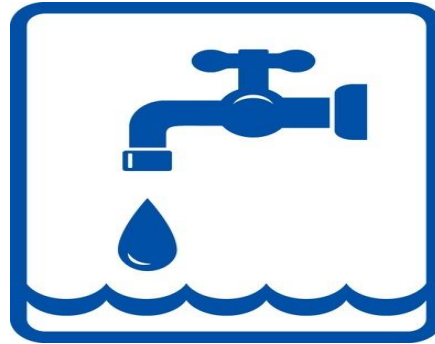
IRRIGATION TECHNIQUES



SESSION 18

SOURCES OF IRRIGATION WATER

⇒ **STARTER:** Look at the pictures below and tell your understanding.



Step 1. Read the following text attentively and explain which sources of irrigation are mostly effectively in using.

Let`s discuss the sources of irrigation today. Do you know what sources are there in the world irrigation system and in Uzbekistan as well? Specialists in irrigation divide them (the sources) into:

- Groundwater;
- Surface water;
- Non-conventional sources.

Each of them is divided into some intra-groups in itself. For learning irrigation it is useful and actual to study each source as it is.

So, the sources of irrigation water can be groundwater extracted from springs or by using wells, surface water withdrawn from rivers, lakes or reservoirs or non-conventional sources like treated wastewater, desalinated water or drainage water. A special form of irrigation using surface water is spate irrigation, also called floodwater harvesting. In case of the flood (spate) water is diverted to normally dry river beds (wades) using a network of dams, gates and channels and spread over large areas. Spate irrigation areas are in particular located in semi-

arid or arid, mountainous regions. It is actual to know that floodwater harvesting belongs to the accepted irrigation methods, but rainwater harvesting is usually not considered as a form of irrigation. Rainwater harvesting is the collection of runoff water from roofs or unused land and the concentration of this. Some of Ancient India's water systems were pulled by oxen.

Now it is time to speak on non-conventional sources of irrigation. it is known around 90% of wastewater produced globally remains untreated, causing widespread water pollution, especially in low-income countries. Consequently, agriculture in Uzbekistan also is using untreated wastewater as a source of irrigation water. Cities provide lucrative markets for fresh produce, so are attractive to farmers. There is often no alternative for farmers but to use water polluted with urban waste, including sewage, directly to water their crops. There can be significant health hazards related to using water loaded with pathogens in this way, especially if people eat raw vegetables that have been irrigated with the polluted water.

We can conclude here natural and artificial sources (or the types of irrigation sources classified above) of irrigation are the main actual subjects (let it say problems) for today which need to be solved as they closely connected with human being and preservation of environment.

Step 2. Explain the following water combinations.

- wastewater – all the throw away water we produce from our homes, schools, farms, hospitals, public places and so on.
- desalinated water –
- rainwater –
- floodwater –

Step 3. Determine the following words in a group of water sources.

treated wastewater, floodwater, reservoirs, lakes, drainage water, spate irrigation, springs, rivers, wells, desalinated water

Surface water	rivers,
Groundwater	
Non-conventional	

Step 4. Write down advantages and disadvantages of water sources.

<i>water sources</i>	<i>advantages</i>	<i>disadvantages</i>
Groundwater	used by nature	
Surface water		
Non-conventional		Can be used untreated water

Step 5. Find out from the text water sources which are used by nature or by human being.

By nature <i>river</i>	By human being <i>well</i>
----------------------------------	--------------------------------------

HELP DESK

WHAT DO THESE WORDS MEAN?

irrigation water source – watering resource

spate irrigation – using seasonal floods of rivers, streams, ponds and lakes to fill water storage canals

floodwater harvesting – the process or period of gathering in crops after flood

non-conventional source – unusual resource

desalinated water – water removed of salt

drainage water – the action or process of draining water

runoff (water) – is the flow of water that occurs when excess stormwater, meltwater, or other sources flows over the Earth`s surface

rainwater harvesting – crops which grow after rain

water pollution – dirtying of water

SESSION 19

SPRINKLER

⇒ **STARTER:** Look at the pictures below and tell your understanding.



Step 1. Read the passage carefully.

Sprinklers are the most essential devices of modern irrigation in the world, especially in Uzbekistan that are used not only for watering plants, but for dust suppression as well. We meet them in our gardens and fields, and we can monitor their mechanism and structure: *water is piped to one or more central locations within the field here* and distributed by overhead high-pressure sprinklers or guns. A system utilizing sprinklers, sprays, or guns mounted overhead on permanently installed risers. Higher pressure sprinklers that rotate are called *rotors* and are driven by a ball drive, gear drive, or impact mechanism. Rotors can be designed to rotate in a full or partial circle.

You can see another type of sprinklers, which are mounted on moving platforms connected to the water source by a *hose*. Automatically moving wheeled systems known as *traveling sprinklers* and they may irrigate areas such as small farms, sports fields, parks, pastures, and unattended cemeteries. This type of the system is known to most people as a "*water reel travelling irrigation sprinkler*" and they

are used extensively for dust suppression, irrigation, and land application of waste water. Other travelers use a flat rubber hose that is dragged along behind while the sprinkler platform is pulled by a cable. These cable-type travelers are definitely old technology and their use is limited in today's modern irrigation projects.

As it was mentioned above, sprinklers are very important and actual for today means which need to be developed in the future not only for plant-growing, irrigating and decorating, but also for keeping the fresh air and environment, for solving some ecological and human (biological) problems as well.

Step 2. Match the words in A with the words in B and complete the sentences.

Example: Automatically moving wheeled systems known as traveling sprinklers.

A	B
Water is piped to ...	traveling sprinklers
Automatically moving wheeled systems known as ...	the sprinkler is pulled across the field.
When the sprinkler arrives back at the reel ...	one or more central locations within the field
As the tubing is wound on the drum powered by the irrigation water or a small gas engine...	the system shuts off.

Step 3. Regroup sentences from the text in the given two types of sprinklers.

<i>Traveling sprinklers</i>	<i>Higher pressure sprinklers</i>
	may irrigate farms, parks, sport fields

Step 4. Find out gerunds from the text and explain the way of using them in this sentences and make your own sentence.

watering plants – after prepositions gerund is always used.

Watering is useful for growing plants well.

Step 5. Choose the synonyms or appropriate definitions from column B to the following words from column A.

Feature (n)	To find an original way to make an object or plan
Sprinkler (n)	Characteristic
Devise (v)	Put together with one or more other parties
Joined (adj)	Machine
Mounted (adj)	Construction, building
System (n)	Bunch, cluster
Truss (n)	Fixed or fitted

HELP DESK

WHAT DO THESE WORDS MEAN?

sprinkler (or overhead) irrigation – watering with a device (sprinkler) that releases water from overhead pipes through nozzles opened automatically by a rise in temperature

central locations – central areas

high-pressure sprinklers or guns – devices that spray water highly

industrial applications – things which is used in industry

moving platforms – platform which is in motion

waste water – unnecessary water

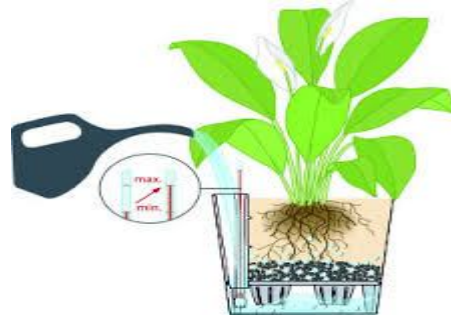
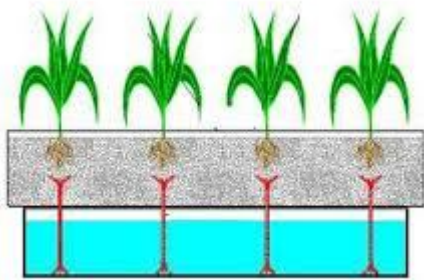
cable-type travelers – travelling sprinklers with a platform pulled by a cable

modern irrigation projects – modern watering enterprises

SESSION 20

SUB-IRRIGATION

⇒ **STARTER:** Look at the pictures below and tell your understanding.



Step 1. Read the passage carefully and fill in the gaps using Present forms of the verbs given in brackets.

1. Sub-irrigation ... (have, be) used for many years in field crops in areas with high water tables. It ... (be) a method of artificially raising the water table to allow the soil to be moistened from below the plants' root zone. Often those systems ... (be) located on permanent grasslands in lowlands or river valleys and combined with drainage infrastructure. A system of pumping stations, canals, weirs and gates ... (allow) it to increase or decrease the water level in a network of ditches and thereby control the water table.³
2. Sub-irrigation ... (be) also used in commercial greenhouse production, usually for potted plants. Water ... (be) delivered from below, absorbed upwards, and the excess collected for recycling. Typically, a solution of water and nutrients ... (flood) a container or ... (flow) through a trough for a short period of time, 10–20 minutes, and is then pumped back into a holding tank for reuse. Sub-irrigation in greenhouses ... (require) fairly

³ <http://en.wikipedia.org/wiki/Subirrigation>

sophisticated, expensive equipment and management. Advantages (be) water and nutrient conservation, and labor-saving through lowered system maintenance and automation. It ... (be) similar in principle and action to subsurface drip irrigation.

Step 2. Reorder the ideas given below according to the paragraphs and parts of the paragraphs.

Irrigating the land below. 1

Maintaining water and nutrients in the plants. ____

Using high balance of water. ____

Sub irrigation is similar to sub-surface drip irrigation. ____

Step 3. Find the single words in paragraph 1 which mean the following.

- i. territory, region
- ii. harvest
- iii. enlarge, intensify.....
- iv. hothouse , conservatory.....
- v. forever, usual.....

Step 4. Matching Sentence Halves: Refer to the text and match the halves of the given sentences together.

- 1. Subirrigation has been used... + b.....
- 2. A system of pumping stations, canals, weirs and gates ... +.....
- 3. Sub-irrigation is also used in commercial greenhouse production, usually ... +.....

4. Sub-irrigation in greenhouses ... +.....

- a) never in plants protection.
- b) for many years.
- c) completed by engineers.
- d) allows it to increase or decrease the water level in a network of ditches and thereby control the water table.
- e) requires fairly sophisticated, expensive equipment and management.
- f) only in fields.
- j) for potted plants.
- h) by containers full with water and nutrients.

Step 5. Find out from the text irrigation systems made by man or not made by man (by nature).



river

canals

HELP DESK

WHAT DO THESE WORDS MEAN?

permanent grassland – usual grassland

river valley – a low area of land between hills or mountains, typically with a river or stream flowing through it

drainage infrastructure – the action or process of draining basic physical and organizational structures and facilities (e.g. buildings, roads, power supplies) needed for the operation of a society or enterprise

pumping station – a mechanical device using suction or pressure to raise or move liquids, compress gases, or force air into inflatable objects such as tires

potted plant – plant which grows in a flower-pot; indoor plant

nutrient – a substance that provides nourishment essential for the maintenance of life and growth

automation – the use or introduction of automatic equipment in a manufacturing or other process or facility

subsurface – the stratum or strata below the earth's surface

SESSION 21

DRAINAGE

➡ **STARTER:**

1. What do you see in the picture?
2. Is it used in nowadays? What is it used for?
3. Can you explain advantages and disadvantages of it for human being?



Step 1. Read the following passage carefully.

Perhaps, there is not anybody who doesn't know anything about the drainage and draining. Because it is the popular way of ancient and present-day irrigation everywhere. So the **drainage** is considered as the natural or artificial removal of surface and [sub-surface water](#) from an area. Many agricultural soils need drainage to improve production or to manage water supplies.

The best time for this operation is always in [spring](#) or [summer](#), when the ground is dry. Main drains ought to be made in every part of the field where a cross-[cut](#) or open drain was formerly wanted; they ought to be cut four feet (1.2 m) deep, upon an average. This completely secures them from the possibility of being damaged by the treading of [horses](#) or [cattle](#), and being so far below the small drains, clears the water finely out of them. In every situation, pipe-turfs for the main drains, if they can be had, are preferable. Analogically, If good stiff [clay](#), a

single row of pipe-turf and if sandy, a double row.

It is clear from the above-stated method of draining that the expense will vary very much, according to the quantity of main drains needful for the field, also the distance of the small drains from each other, and the distance the turf is to be carried.

Step 2. Match the definition with the table A and B.

A	B
ridge	waste matter carried away in sewers or drains
dig	to make available for use; provide.
<u>plough</u>	to break up, turn over, or remove (earth or sand, for example), as with a shovel, spade, or snout, or with claws, paws or hands.
<u>cattle</u>	an agricultural implement with sharp blades, attached to a horse, tractor, etc., for cutting or turning over the earth
<u>sewerage</u>	a long narrow raised land formation with sloping sides esp. one formed by the meeting of two faces of a mountain or of a mountain buttress or spur
supply	any of various chiefly domesticated mammals of the genus <i>Bos</i> , including cows, steers, bulls, and oxen, often raised for meat and dairy products.

Step 3. Count the right way of making drainage according to the text.

1. *The best time of making drainage is in spring and summer.*
- 2.
- 3.
- 4.

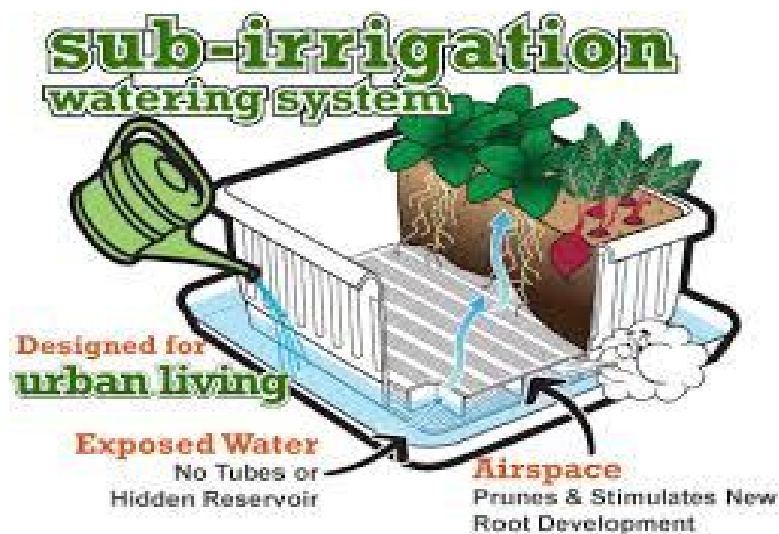
5.

Step 4. Find adverbs ending with *-ly* from the text and make up sentences.

Adverbs	Sentences
formerly	

Step 5. Find the antonyms to the given words from the text.

<i>surface</i>	
<i>natural</i>	
<i>become worse</i>	
<i>ancient</i>	<i>present-day</i>
<i>not fully</i>	



HELP DESK

WHAT DO THESE WORDS MEAN?

sow – plant (seed) by scattering it on or in the earth

plough – a large farming implement with one or more blades fixed in a frame, drawn over soil to turn it over and cut furrows in preparation for the planting

ridge – a long, narrow hilltop, mountain range, or watershed

sandy – covered in or consisting mostly of sand

clay – a stiff, sticky fine-grained earth that can be molded when wet, and is dried and baked to make bricks, pottery, and ceramics

cattle – 1) large ruminant animals with horns and cloven hoofs, domesticated for meat or milk, or as beasts of burden; cows and oxen 2) animals of a group related to domestic cattle, including yak, bison, and buffaloes

sub-surface water – the stratum or strata below the earth's surface

drain – 1) cause the water or other liquid in (something) to run out, leaving it empty or dry 2) deprive of strength or vitality

dig – break up and move earth with a tool or machine, or with hands, paws, snout, etc.

SELF-CONTROL on UNIT 5 (total 15 points)

Step 1. VOCABULARY CHECK (5 points). These are the important words that you have studied in Unit 5. You should make sure that you know these words before you go on to Unit 6.

artificially raising	modern irrigation projects
automation	nutrient
cattle	permanent grassland
central location	plough
clay	potted plant
commercial greenhouse	pumping station
dig	ridge
desalinated water	river valleys
drain	sandy
drainage infrastructure	seeds
drainage water	sub-surface
higher pressure	sub-surface water spate irrigation
high-pressure sprinkler or gun	treated wastewater
hydrothermal vents	waste water
industrial application	water pollution
liquid phase	

Step 2. TRUE-FALSE ACTIVITY (5 points). Which of the following bits of information is given (G) or not given (NG) in Unit 1?

1. Waste water, mostly called untreated water causes water pollution and harms the crops. _____
2. Sprinkler irrigation is always used by the help of rotors which are driven by ball drive, gear drive or impact mechanisms. _____
3. A number of farmers take use of sub-irrigation because of advantages of water and nutrient conservation and labor saving _____

4. The most effective fertilizer comes from the USA. _____
5. The most commonly used fertilizers are soil and liquid one . _____

Step 3. COMPREHENSION TASK (5 points). Read and explain the meaning of the following proverbs and wise-sayings on gardening and planting. Underline metaphorical and specific usage of some expressions.

1. Agriculture is the noblest of all alchemy; for it turns earth, and even manure, into gold, conferring upon its cultivator the additional reward of health.
2. Agriculture is our wisest pursuit, because it will in the end contribute most to real wealth, good morals, and happiness.
3. Agriculture is best, enterprise is acceptable, but avoid being on a fixed wage.
4. Agriculture for an honorable and highminded man, is the best of all occupations or arts by which men procure the means of living.
5. Agriculture engenders good sense, and good sense of an excellent kind.

UNIT 6

LET`S DISCUSS ECOLOGICAL PROBLEMS & HEALTH CARE



This discharge of dust and gas into the atmosphere returns to the Earth in the form of “acid rain” affects crop the quality of forests the amount of fish. To this we can add the rise of chemicals radioactivity noise and others types of pollution.

Economic, social technological and biological process has become so interdependent that modern produce on must seen as s complex economic system. It is wrong to see economy and ecology as diametrically opposed: such an approach inevitable leads to one extreme or the other.

Some progress has been already made in this direction more than 159 countries members of the UNO have set up environmental protection agencies. Numerous conferences have been held by these agencies to discuss questions of ecologically poor regions including the Aral Sea. The international organization “Green Pease” is also doing much to preserve the environment.

But these are only the initial steps and they must carry forward to protect nature, to save life on the planet not only for the sake of the presents but also for the future generations.

Step 2. Choose the words and word combinations concerning with the environment.

Harmful substances, education, university, nuclear power stations, newspaper, deforestation, teapot, mountains, wonderful, ozone depletion, plane, field, acid rains, global warming, society, conflict, natural, greenhouse effect, century, system industrial and nuclear waste.

ENVIRONMENTAL POLLUTION	Harmful substances

Step 3. Fill in the following cluster. What have you comprehended about the theme?



Step 4. Continue the following sentences with your own words.

1. Ecological problems are developed day by day because of improving civilization. That's why people are becoming careless towards nature.
2. Number of rivers and lakes are drying up, because.....
3. As a result of increasing environmental pollution.....
4. Acid rain damage.....
5. Protecting environment....
6. "Green Peace" is.....
7. Destruction of nature....
8. Several conferences are held on Ecological problems and Environmental pollution.....

HELP DESK

WHAT DO THESE WORDS MEAN?

acid rain – acidic rainfall by atmospheric pollution that it causes environmental harm, chiefly to forests and lakes; the main cause is that industrial burning of coal and other fossil fuels, the waste gases from which contain sulphur and nitrogen oxides which combine with atmospheric water to form acids

reduce – make smaller or less in amount, degree, or size

disease – a disorder of structure or function in a human, animal, or plant, especially one that produces specific symptoms or that affects a specific location and is not simply a direct result of physical injury

destruction – the action or process of causing so much damage to something that it no longer exists or cannot be repaired

pollution – the presence in or introduction of a substance into the environment which has harmful or poisonous effects

utilization – the ratio of the actual output of an operating system to its designed capacity

equilibrium – a state in which opposing forces or influences are balanced

ecological crises – ecologic depression

harmony – a pleasing quality when things are arranged together well

SESSION 23

AFFORESTATION

⇒ **STARTER:** Look at this picture and tell your opinion about this theme.



Step 1. Read the following passages.

We have an interesting topic with you today. It deals with the main and actual for today problem – deforestation. Firstly, for the defining deforestation from the forestation it is important to understand what forestation (or afforestation) it is. So we have different kind of phenomena: forestation/afforestation, deforestation, reforestation etc. Let`s define them definitely. *Forestation/afforestation* is the establishment of a forest or stand of trees in an area where there was no forest. *Reforestation* is the reestablishment of forest cover, either naturally (by natural seeding, coppice, or root suckers) or artificially (by direct seeding or planting). And *deforestation*, in its part, is disappearance of a forest or breaking/burning of trees in an area where there was forest.

Many governments and non-governmental organizations directly engage in and support programs of afforestation to create forests, increase carbon capture and sequestration, and help to improve biodiversity anthropogenically (In the UK, afforestation may mean converting the legal status of some land to "royal

1. biodiversity



2.



3.



4.



5.



6.



Step 3. Continue the sentence by your own understanding.

Forestation – planting trees where there are not any. Developing forests.

Reforestation

Gap dynamics

Degraded soil

Livestock

Deforestation

Step 4. What people should do for the preventing deforestation? Your opinion.

1. *Not to burn and cut the trees.*

2.

3.

4.

HELP DESK

WHAT DO THESE WORDS MEAN?

topsoil – the top layer of soil

over-harvesting – high degree of crops

livestock – farm animals regarded as an asset

overgraze – graze (grassland) so heavily that the vegetation is damaged and the ground becomes liable to erosion

environmental – the natural world and the impact of human activities regarded as unwelcome or harmful and needing to be dealt with and overcome

biodiversity – the variety of plant and animal lives in the world or in a particular habitat, a high level of which is usually considered to be important and desirable

carbon capture – the process of trapping carbon dioxide produced by burning fossil fuels or other chemical or biological process and storing it in such a way that it is unable to affect the atmosphere

reforestation – reestablishment of forest in an area where there used to be a forest naturally or artificially

SESSION 24

DESERTIFICATION

⇒ **STARTER:** Look at the pictures and tell what is being described here.



Step 1. Reading comprehension.

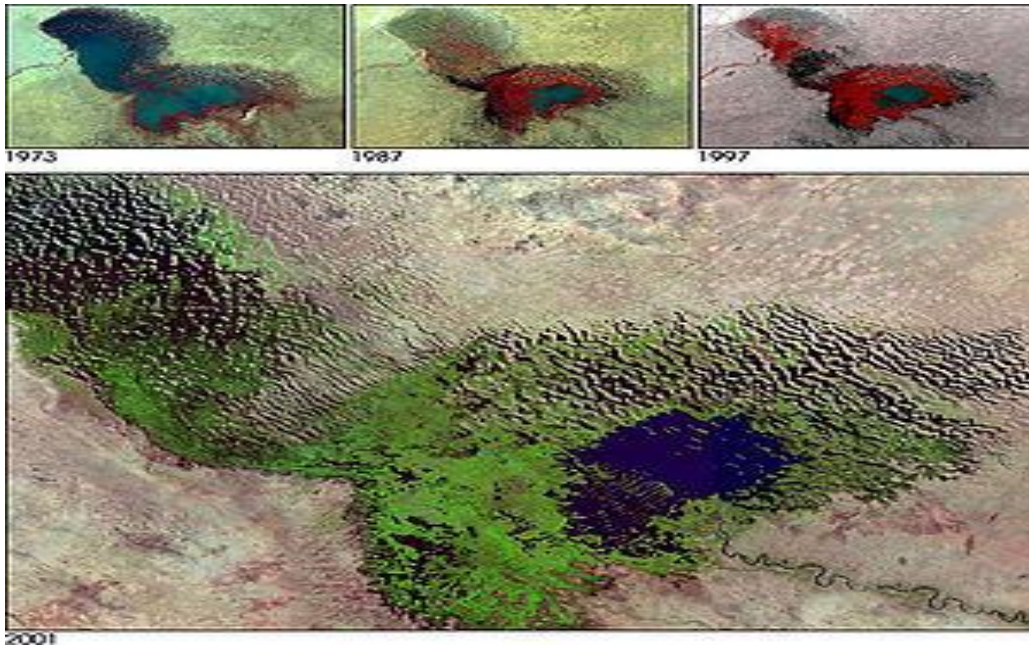
One of the main actual problems for today is a desertification and it is really complicated question which needs to be solved. Firstly, let`s discuss what is desertification itself and does it deal with another global problem – water.

Desertification is a type of land degradation in which a relatively dry land region becomes increasingly arid, typically losing its bodies of water as well as vegetation and wildlife. It is caused by a variety of factors, such as climate change and human activities. Desertification is a significant global ecological and environmental problem.

Areas affected

All we know that drylands occupy approximately 40–41% of Earth's land area and are place to more than 2 billion people. It has been estimated that some 10–20% of drylands are already degraded, the total area affected by desertification being between 6 and 12 million square kilometres, that about 1–6% of the inhabitants of drylands live in desertified areas, and that a billion people are under threat from further desertification.

The Sahara is currently expanding south at a rate of up to 48 kilometers per year.



Step 2. Take some notes on history of desertification.

History

Do you want to know about the history of desertification? The world's great deserts have been formed by natural processes interacting over long intervals of time. During most of these times, deserts have grown and shrunk independent of human activities. Paleodeserts are large [sand seas](#) now inactive because they are stabilized by vegetation, some extending beyond the present margins of core deserts, such as the [Sahara](#), the largest hot desert.

Desertification has played a significant role in human history, contributing to the collapse of several large empires, such as Carthage, Greece, and the Roman Empire, as well as causing displacement of local populations.

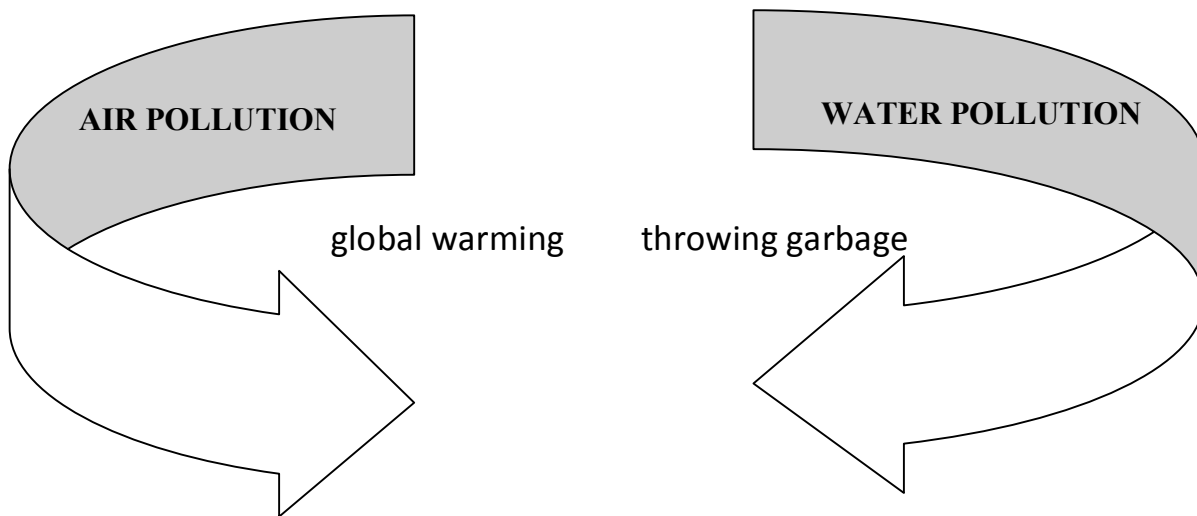
Step 3. Read the following statements and choose the correct words from the text.

1. Increasing of arid zones- *improving of dry land regions.*
2. Largest hot desert-
3. Large sand seas now none functional-
4. Several large empires which is connected with the history of desertification-

5. Desertification caused by...

Step 4. Reorder the examples of environmental pollutions in columns “Air Pollution” and “Water pollution”.

Throwing garbage, global warming, carbon dioxide, smelly, toxic chemicals, greenhouse gases, destruction of the ozone, untreated sewage, leaking oil and petroleum, smoke of cars.



Step 5. Regroup students into two groups. First group should be named Deforestation, and the second one is Desertification. Each group should tell as much information as they know. Wins the Group, which tells more information on their task.

Deforestation	Desertification
<i>Burning forests in fire</i>	<i>Enlarging arid zones</i>

HELP DESK

WHAT DO THESE WORDS MEAN?

wildlife – wild animals collectively; the native fauna (and sometimes flora) of a region

vegetation – plants considered collectively, especially those found in a particular area or habitat

environmental problem – the problem of the natural world and the impact of human activities

climate change – the change in global climate patterns apparent from the mid to late 20th century onwards, attributed largely to the increased levels of atmospheric carbon dioxide produced by the use of fossil

fuel – material such as coal, gas, or oil that is burned to produce heat or power

sand sea – sea which is covered with sand

dry land degradation – the condition or process of degrading or being degraded of a waterless land

SESSION 25

EROSION

⇒ **STARTER:** Look at the pictures and tell what is being described here.



Step 1. Read the following passage carefully

Erosion is the process by which soil and rock are removed from the Earth's surface by natural processes such as wind or water flow, and then transported and deposited in other locations.

While erosion is a natural process, human activities have dramatically increased (by 10-40 times) the rate at which erosion is occurring globally. Excessive erosion causes problems such as desertification, decreases in agricultural productivity due to land degradation, sedimentation of waterways, and ecological collapse due to loss of the nutrient rich upper soil layers. Water and wind erosion are now the two primary causes of land degradation; combined, they are responsible for 84% of degraded acreage, making excessive erosion one of the most significant global environmental problems we face today.

Industrial agriculture, deforestation, roads, anthropogenic climate change and urban sprawl are amongst the most significant human activities in regards to their effect on stimulating erosion. However, there are many available alternative land use practices that can curtail or limit erosion—such as terrace-building, no-till agriculture, and revegetation of denuded soils.

There are three primary types of erosion that occur as a direct result of rainfall—sheet erosion, rill erosion, and gully erosion. *Sheet erosion* is generally seen as the first and least severe stage in the soil erosion process, which is followed by *rill*

erosion, and finally *gully erosion* (the most severe of the three).

The impact of a falling raindrop creates a small crater in the soil, ejecting soil particles. The distance these soil particles travel (on level ground) can be as much as 2 feet vertically, and 5 feet horizontally. Once the rate of rain fall is faster than the rate of infiltration into the soil, surface runoff occurs and carries the loosened soil particles down slope.

Sheet erosion is the transport of loosened soil particles by surface runoff that is flowing downhill in thin sheets.

Rill erosion refers to the development of small, ephemeral concentrated flow paths, which function as both sediment source and sediment delivery systems for erosion on hill slopes. Generally, where water erosion rates on disturbed upland areas are greatest, rills are active. Flow depths in rills are typically on the order of a few centimeters or less and slopes may be quite steep. This means that rills exhibit very different hydraulic physics than water flowing through the deeper, wider channels of streams and rivers.

Gully erosion occurs when runoff water accumulates, and then rapidly flows in narrow channels during or immediately after heavy rains or melting snow, removing soil to a considerable depth.

Step 2. Match the definition of the word.

Erosion	<i>lasting a very short time</i>
Ephemeral	<i>a large rectangular piece of cotton or other fabric used as an article of bedding, commonly in pairs, with one below and one above the sleeper.</i>
Sheet	<i>the mechanical process of wearing or grinding something down (as by particles washing over it)</i>
Gully	<i>a small channel or gulley, such as one formed during soil erosion</i>
Rill	<i>the process of formation of sedimentary rocks</i>

Sedimentation	<i>A deep ditch or channel cut in the earth by running water after a prolonged downpour.</i>
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Step 3. Flow-chart completion. Choose the words from the text to complete the sentence.

Erosion is the process by which soil and rock are removed from the Earth's surface



Erosion is a natural process but ... have increased it 10-40 times



Sheet erosion is the transport of loosened soil particles by surface runoff that is flowing downhill in thin sheets



Sheet erosion occurs when ... faster than the rate of infiltration into the soil, surface runoff occurs and carries the loosened soil particles down slope.



Rill erosion refers to the development of small, ephemeral concentrated flow paths.



Rill erosion occurs when ... through the deeper, wider channels of streams and rivers



Gully erosion occurs when runoff water accumulates, and then rapidly flows in narrow channels

HELP DESK

WHAT DO THESE WORDS MEAN?

rill – a small stream ■ a shallow channel cut in the surface of soil or rocks by running water

ephemeral – lasting for a very short time

till – prepare and cultivate (land) for crops

terrace – 1) a level paved area next to a building; a patio 2) each of a series of flat areas made on a slope, used for cultivation

urban sprawl – the uncontrolled expansion of urban areas

road – a wide way leading from one place to another, especially one with a specially prepared surface which vehicles can use

ecological collapse – ecologic breakdown or failure

sedimentation – 1) the process of formation of sedimentary rocks 2) the deposition or production of sediment

SESSION 26	HEALTH CARE
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⇒ **STARTER:** Playing a game: “Seat-changing”. Teacher sticks the pieces of papers on students` backs. It is one of the wise-sayings of Navoi are still used every day on the streets of Uzbekistan and other parts of Central Asia.

to be honoured	speak	wish	you	if	if
less	you	to be healthy	less	eat	wish

Step 1. Teacher regroups students by the names: “Surgeons”, “Psychologists”, “Oculists” giving to the groups 3 paragraphs from the Reading Passage 1 and orders them to read it carefully (A). Participants must order them by numbering and make the whole topic (B).

A.

1. For much of recent Western history, health has been viewed in the physical sense only. That is, good health has been connected to the smooth mechanical operation of the body, while ill health has been attributed to a breakdown in this machine. Health in this sense has been defined as the absence of disease or illness and is seen in medical terms. According to this view, creating health for people means providing medical care to treat or prevent disease and illness. During this period, there was an emphasis on providing clean water, improved sanitation and housing.
2. The concept of health holds different meanings for different people and groups. These meanings of health have also changed over time. This change is no more evident than in Western society today, when notions of health and health promotion are being challenged and expanded in new ways.
3. In the late 1940s the World Health Organisation challenged this physically and medically oriented view of health. They stated that ‘health is a complete state of physical, mental and social well-being and is not merely the absence of disease’ (WHO, 1946). Health and the person were seen more holistically (mind/body/spirit) and not just in physical terms.

Step 2. Put headings to the paragraphs:

- *view in the physical sense*
- *concept of health*
- *challenge of the view of health*

Step 3. Try to work in group to do exercises, to have skimming carefully and speaking well in English, also thinking logically. Find the words to the definitions.

- a) an unhealthful condition caused by an infection or a long-term physical problem_(n)
- b) a general notion or idea_(n)
- c) related to the body_(adj)

Step 3. Read the story. Make your own story (real or imaginative) according to this in task 2.

1. "Once an old gentleman came to consult a doctor....."

"What do you **complain of**?" – asked the doctor.

"You see, doctor, my nervous system is in a bad state. I have a **heartache**, often **headache** and my sleep isn't good. Sometimes I cannot sleep all night long."

The doctor **examined** the **patient** very carefully and said: "Your **treatment** will be very simple, in other words it will be a **rest-cure**. You should go to a quiet place in the village for a month and have an active rest there: get up early, do morning exercises, have breakfast and go for a walk. You should walk much, go to the forest for fresh air, eat much fruit and vegetables and drink milk before going to bed. And you can smoke only one cigarette a day.

A month later the gentleman came to see the doctor again.

"How are you?" – asked the doctor.

"I am quite well now," – answered the patient – "I've done everything that you recommended me, doctor. I **strictly** followed all your orders. I walked much, ate

HELP DESK

WHAT DO THESE WORDS MEAN?

health – the state of being free from illness or injury

disease – a disorder of structure or function in a human, animal, or plant, especially one that produces specific symptoms or that affects a specific location and is not simply a direct result of physical injury

medical care – health service

sanitation – conditions relating to public health, especially the provision of clean drinking water and adequate sewage disposal

health promotion – the action to maintain the best possible health and quality of life of community members, both collectively and individually.

strictly – in a way that involves rigid enforcement or that demands obedience

rest-cure – a rest taken as part of a course of medical treatment, as for stress, anxiety, etc

treatment – medical care given to a patient for an illness or injury

headache – a continuous pain in the head

patient – a person receiving or registered to receive medical treatment

heartache – emotional anguish or grief, typically caused by the loss or absence of someone loved

SELF-CONTROL on UNIT 6 (total 15 points)

Step 1. VOCABULARY CHECK (5 points). These are the important words that you have studied in Unit 6.

acid rain	medical care
almond	oak
base level	overgraze
biodiversity	over-harvesting
boulder ephemeral	patient
carbon capture	pebble
climate change	permafrost
desertification	pollution
destruction	povert
disease	reduce
dry land degradation	reforestation
ecological crises	replant
ecological collapse	rest-cure
environmental	rill
environmental problem	sand sea
ephemeral	sanitation
equilibrium	slump
fuel	soil layer
flood	strictly
habitat destruction	terrace
harmony	till
headache	treatment

health	traction
health promotion	urban sprawl
heartache	utilization
landscape	vegetation
marginalization	wildlife
migration	

Step 2. TRUE-FALSE ACTIVITY (5 points). Which of the following bits of information is given (G) or not given (NG) in Unit 1?

1. 159 countries' members of the UNO have set up environmental protection agencies. _____
2. Forestation is the reestablishment of forest cover, either naturally. _____
3. Land degradation consists of desertification which is a significant global problem. _____
4. Erosion is an artificial process, human activities have dramatically increased the rate at which erosion is becoming global. _____
5. The concept of health holds different meanings for different people and groups, like students, workers etc. _____

Step 3. COMPREHENSION TASK (5 points). Read and explain the meaning of the following proverbs and wise-sayings on gardening and planting. Underline metaphorical and specific usage of some expressions.

1. As he who has health is young, so he who owes nothing is rich.
2. A man too busy to take care of his health is like a mechanic too busy to take care of his tools
3. A cool mouth and warm feet live long.
4. Health and cheerfulness mutually beget each other.
5. Health and understanding are the two great blessings of life.

- c) the natural or artificial removal of sub-surface water
- d) a, c.
- e) a,b,c

9. "In this system water falls drop by drop just at the position of roots." What is described here?

- a) raining
- b) snowing
- c) localized irrigation
- d) drip irrigation
- e) c,d

10. Give definitions to the word "nature".

- a) may imply inherent, essential resemblance rather than obvious or superficial likenesses.
- b) implies a group marked by agreement in all details belonging to a type as described or defined.
- c) implies a group marked by distinctive likenesses peculiar to the type.
- d) may suggest strong and clearly marked similarity throughout the items included so that each is typical of the group.
- e) b,c

11. Give an appropriate definition to the word "sort".

- a) may imply inherent, essential resemblance rather than obvious or superficial likenesses.
- b) implies a group marked by agreement in all details belonging to a type as described or defined.
- c) implies a group marked by distinctive likenesses peculiar to the type.
- d) may suggest strong and clearly marked similarity throughout the items included so that each is typical of the group.
- e) a,c

12. Give an appropriate word to the definition – "strength or energy as an attribute of physical action or movement by nature."

- a) plants
- b) watering
- c) natural forces
- d) artificial forces
- e) a,b

d) Any of a large number of natural and synthetic materials, including manure and nitrogen, phosphorus, and potassium compounds, spread on or worked into soil to increase its capacity to support plant growth.

e) NG

18. Choose an appropriate definition to the word “raw material”.

a) Supplying dry land with water by means of ditches etc.

b) The successive planting of different crops on the same land to improve soil fertility and help control insects and diseases.

c) An unprocessed natural product used in manufacture.

d) Any of a large number of natural and synthetic materials, including manure and nitrogen, phosphorus, and potassium compounds, spread on or worked into soil to increase its capacity to support plant growth.

e) NG

19. Choose an appropriate definition to the word “crop rotation”.

a) Supplying dry land with water by means of ditches etc.

b) The successive planting of different crops on the same land to improve soil fertility and help control insects and diseases.

c) An unprocessed natural product used in manufacture.

d) Any of a large number of natural and synthetic materials, including manure and nitrogen, phosphorus, and potassium compounds, spread on or worked into soil to increase its capacity to support plant growth.

e) NG

20. Read the following passage carefully and choose *True* argument (statement which agrees with the information in the passage).

Agriculture is the cultivation of animals, [plants](#) and other life forms for [food](#), [fiber](#), [biofuel](#) and other products used to sustain human life. Agriculture is also called farming or husbandry. The study of agriculture is known as [agricultural science](#).

The word *agriculture* is the English adaptation of Latin *agricultūra*, from *ager*, "a field", and *cultūra*, "[cultivation](#)". In the strict sense it means "[tillage](#) of the soil". Thus, a literal reading of the word yields "tillage of fields".

The [history of agriculture](#) dates back thousands of years, and its development has been defined by greatly different [climates](#), cultures, and technologies. However, all farming generally relies on techniques to expand and maintain the lands that are suitable for raising domesticated species.

The major agricultural products can be broadly grouped into *foods*, [fibers](#), [fuels](#), and [raw materials](#). In the 21st century, plants have been used to grow [biofuels](#), biopharmaceuticals, [bioplastics](#), and pharmaceuticals.

Specific foods include [cereals](#), [vegetables](#), [fruits](#), and [meat](#).

e) a,b,c

25. Sprinklers can also ... on moving platforms connected to the water source by a hose.

- a) be stopped
- b) be washed
- c) be looked
- d) be mounted
- e) NG

26. Automatically moving wheeled systems known as ...

- a) flooding sprinklers
- b) washing sprinklers
- c) pristine sprinklers
- d) traveling sprinklers
- e) NG

27. What areas may travelling sprinklers irrigate?

- a) small farms and sport fields
- b) parks and pastures
- c) unattended cemeteries
- d) a,b,c.
- e) a,c

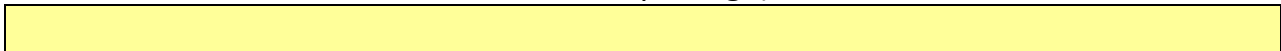
28. When the sprinkler arrives back at the reel the system...

- a) shuts in
- b) switches on
- c) breaks down
- d) shuts off
- e) a,d

29. This type of system is known to most people as a "water reel" traveling irrigation sprinkler. What is described here?

- a) Drip irrigation
- b) Localized irrigation
- c) Drainages
- d) Sprinklers
- e) NG

30. Read the following passage carefully and choose *False* argument (statement which contradicts the information in the passage).



- d) one or more central locations within the field.
- e) NG

33. Fill in the gaps choosing appropriate words below.

Various ... of irrigation techniques differ in how the water obtained from the ... distributed within the field.

- a) kinds, types
- b) groups, river
- c) shapes, shapes
- d) types, sources
- e) NG

34. Sprinklers can also be mounted on moving platforms connected to the water source by ...

- a) a paper
- b) air plains
- c) cars
- d) a hose
- e) NG

35. What are the rotors?

- a) Higher pressure sprinklers that rotate
- b) driven by a ball drive
- c) driven by a gear drive, or impact mechanism
- d) a,b,c
- e) c,d

36. By which parameters health has been viewed for much of recent Western history?

- a) in the physical and mental sense
- b) in the mental sense only
- c) in the social sense only
- d) in the physical sense only
- e) NG

37. As which phenomenon was health defined in physical sense?

- a) as the presence of disease or illness
- b) as complex unit of physical, mental and social well-being.
- c) as the absence of mental and spiritual well-being
- d) as the absence of disease or illness
- e) NG

38. Put heading to the paragraphs:

For much of recent Western history, health has been viewed in the physical sense only. That is, good health has been connected to the smooth mechanical operation of the body, while ill health has been attributed to a breakdown in this machine. Health in this sense has been defined as the absence of disease or illness and is seen in medical terms. According to this view, creating health for people means providing medical care to treat or prevent disease and illness. During this period, there was an emphasis on providing clean water, improved sanitation and housing.

- a) concept of health
- b) challenge of the view of health
- c) view in the mental sense
- d) view in the physical sense
- e) NG

39. Try to find the word to the definition: "a general notion or idea".

- a) problem
- b) unemployment
- c) disease
- d) concept
- e) NG

40. Read the following passage carefully and choose *False* arguments (statements which contradict the information in the passage).

Agriculture is the cultivation of animals, [plants](#) and other life forms for [food](#), [fiber](#), [biofuel](#) and other products used to sustain human life. Agriculture is also called farming or husbandry. The study of agriculture is known as [agricultural science](#). The word *agriculture* is the English adaptation of Latin *agricultūra*, from *ager*, "a field", and *cultūra*, "[cultivation](#)". In the strict sense it means "[tillage](#) of the soil". Thus, a literal reading of the word yields "tillage of fields".

The [history of agriculture](#) dates back thousands of years, and its development has been defined by greatly different [climates](#), cultures, and technologies. However, all farming generally relies on techniques to expand and maintain the lands that are suitable for raising domesticated species.

The major agricultural products can be broadly grouped into *foods*, [fibers](#), [fuels](#), and [raw materials](#). In the 21st century, plants have been used to grow [biofuels](#), biopharmaceuticals, [bioplastics](#), and pharmaceuticals.

Specific foods include [cereals](#), [vegetables](#), [fruits](#), and [meat](#). [Fibers](#) include cotton, wool, [hemp](#), [silk](#) and [flax](#). [Raw materials](#) include lumber and bamboo.

Other useful materials are produced by plants, such as [resins](#). Biofuels include [methane](#) from [biomass](#), [ethanol](#), and [biodiesel](#).

- d) dryland farming
- e) NG

49. Name the three broad areas which relate to people`s health.

- a) chemical, physical, historical
- b) philological, historical, philosophical
- c) physical, chemical, physiological
- d) physical, mental, social
- e) NG

50. Read the following passage carefully and choose *True* arguments (statements which agree with the information in the passage).

Agriculture is the cultivation of animals, [plants](#) and other life forms for [food](#), [fiber](#), [biofuel](#) and other products used to sustain human life. Agriculture is also called farming or husbandry. The study of agriculture is known as [agricultural science](#). The word *agriculture* is the English adaptation of Latin *agricultūra*, from *ager*, "a field", and *cultūra*, "[cultivation](#)". In the strict sense it means "[tillage](#) of the soil". Thus, a literal reading of the word yields "tillage of fields".

The [history of agriculture](#) dates back thousands of years, and its development has been defined by greatly different [climates](#), cultures, and technologies. However, all farming generally relies on techniques to expand and maintain the lands that are suitable for raising domesticated species.

The major agricultural products can be broadly grouped into *foods*, [fibers](#), [fuels](#), and [raw materials](#). In the 21st century, plants have been used to grow [biofuels](#), biopharmaceuticals, [bioplastics](#), and pharmaceuticals.

Specific foods include [cereals](#), [vegetables](#), [fruits](#), and [meat](#). [Fibers](#) include cotton, wool, [hemp](#), [silk](#) and [flax](#). [Raw materials](#) include lumber and bamboo.

Other useful materials are produced by plants, such as [resins](#). Biofuels include [methane](#) from [biomass](#), [ethanol](#), and [biodiesel](#). [Cut flowers](#), nursery plants, tropical fish and birds for the pet trade are some of the ornamental products.

- a) [Cereals](#), [vegetables](#), [fruits](#), and [meat](#) – are *foods*, [fibers](#) include [methane](#) from [biomass](#), [ethanol](#), and [biodiesel](#), and [raw materials](#) include lumber and bamboo.
- b) Animals, [plants](#) and other life forms for [food](#), [fiber](#), [biofuel](#) are considered as products used to sustain human life.
- c) *Farming* and *husbandry* are synonyms of "agriculture".
- d) *a,b,c*
- e) *a,c*

51. Put heading to the paragraph:

Irrigation has been around for as long as humans have been cultivating plants. Man's first invention after he learned how to grow plants from seeds was probably a bucket. Ancient people must have had strong backs from having to haul buckets full of water to pour on their first plants. Pouring water on fields is still a common irrigation method today—but other, more efficient and mechanized methods are also used.

- a) Water returning to the environment
- b) Artificial application of water
- c) Irrigation throughout the world
- d) Ancient people and irrigation
- e) NG

52. Try to find the word to the definition: “related to the body”.

- a) problem
- b) unemployment
- c) disease
- d) physical
- e) NG

53. Which of the following statements agree with the information in Reading Passage?

The concept of health holds different meanings for different people and groups. These meanings of health have also changed over time. This change is no more evident than in Western society today, when notions of health and health promotion are being challenged and expanded in new ways.

- a) the concept of health has not changed over time.
- b) the concept of health holds different meanings for different people and groups, like students, workers etc.
- c) the concept of health holds different meanings for unique individual person only.
- d) today notions of health and health promotion are being challenged and expanded in new ways.
- e) NG

54. Which of the following statements agree with the information in Reading Passage?

For much of recent Western history, health has been viewed in the physical sense only. That is, good health has been connected to the smooth mechanical operation of the body, while ill health has been attributed to a breakdown in this machine. Health in this sense has been defined as the absence of disease or illness and is seen in medical terms. According to this view, creating health for people means providing medical care to treat or prevent disease and illness. During this period, there was an emphasis on providing clean water, improved sanitation and housing.

- a) Health has been defined by World Health Organisation as the presence of disease or illness.
- b) Health has been viewed as the complex unit of physical, mental and social well-being.
- c) Health has been viewed as historical phenomenon.
- d) Health has been defined by World Health Organisation as the absence of disease or illness.
- e) NG

55. Choose the right variant for the following definition: "to continue living"

- a) irrigation
- b) piping
- c) removal
- d) survive
- e) NG

56. What kind of application deals the irrigation with?

- a) natural
- b) meliorative
- c) economic
- d) artificial
- e) NG

57. Which of the following statements agree with the information in Reading Passage?

The concept of health holds different meanings for different people and groups. These meanings of health have also changed over time. This change is no more evident than in Western society today, when notions of health and health promotion are being challenged and expanded in new ways.

- a) during this period there was an emphasis on providing spiritual improving of people.
- b) Health has been defined by World Health Organisation as the presence of disease or illness.
- c) Health has been viewed as the complex unit of physical, mental and social well-being.

- b) nutrient
- c) animal
- d) a,c
- e) NG

68. Choose an appropriate notion to the definition *“the system of growing a sequence of different crops on the same ground so as to maintain or increase its fertility”*.

- a) irrigation
- b) cultivation
- c) crop rotation
- d) melioration
- e) NG

69. Choose an appropriate notion to the definition “the preparation of land for growing crops and under cultivation”.

- a) irrigation
- b) crop rotation
- c) leaching
- d) tillage
- e) NG

70. Choose an appropriate definition to the word “manure”.

- a) the preparation of land for growing crops and under cultivation
- b) the action of cultivating land, or the state of being cultivated
- c) animal dung used for fertilizing land any compost or artificial fertilizer
- d) a,b
- e) a,b,c

71. Choose an appropriate definition to the word “pesticide”.

- a) a substance used for destroying insects or other organisms harmful to cultivated plants or to animals
- b) the action of cultivating land, or the state of being cultivated
- c) animal dung used for fertilizing land any compost or artificial fertilizer
- d) a,b
- e) a,b,c

72. Choose an appropriate definition to the word “fertiliser”.

- a) a substance used for destroying insects or other organisms harmful to cultivated plants or to animals
- b) a chemical or natural substance added to soil or land to increase
- c) animal dung used for fertilizing land any compost or artificial fertilizer

- d) biosphere
- e) NG

83. Find an appropriate notion to the definition “the envelope of gases surrounding the earth or another planet”.

- a) atmosphere
- b) lithosphere
- c) hydrosphere
- d) biosphere
- e) NG

84. Find an appropriate notion to the definition “the regions of the surface and atmosphere of the earth or another planet occupied by living organisms”.

- a) atmosphere
- b) lithosphere
- c) hydrosphere
- d) biosphere
- e) NG

85. Find an appropriate notion to the definition “a stiff, sticky fine-grained earth that can be moulded when wet, and is dried and baked to make bricks, pottery, and ceramics”.

- a) clay
- b) soil
- c) ground
- d) earth
- e) NG

86. Give definition to the notion “soil evolution”.

- a) the process of displacing soil
- b) the process of developing soil
- c) the process of leaching soil
- d) the process of separating soil
- e) NG

87. Choose appropriate forms in Uzbek for the phrase “physical properties of soil”.

- a) tuproqning kimyoviy xossalari
- b) tuproqning fiziologik xossalari
- c) tuproqning fizik xossalari
- d) tuproqning biologik xossalari
- e) NG

- a) soil condition
- b) soil degradation
- c) soil layer
- d) soil consolidation
- e) NG

93. Choose an appropriate definition to the word “pesticide”.

- a) a substance used for destroying insects or other organisms harmful to cultivated plants or to animals
- b) a chemical that destroys fungus
- c) a substance used for killing insects
- d) a substance that is toxic to plants, used to destroy unwanted vegetation
- e) NG

94. Choose an appropriate definition to the word “fungicide”.

- a) a substance used for destroying insects or other organisms harmful to cultivated plants or to animals
- b) a chemical that destroys fungus
- c) a substance used for killing insects
- d) a substance that is toxic to plants, used to destroy unwanted vegetation
- e) NG

95. Choose an appropriate definition to the word “insecticide”.

- a) a substance used for destroying insects or other organisms harmful to cultivated plants or to animals
- b) a chemical that destroys fungus
- c) a substance used for killing insects
- d) a substance that is toxic to plants, used to destroy unwanted vegetation
- e) NG

96. Choose an appropriate definition to the word “herbicide”.

- a) a substance used for destroying insects or other organisms harmful to cultivated plants or to animals
- b) a chemical that destroys fungus
- c) a substance used for killing insects
- d) a substance that is toxic to plants, used to destroy unwanted vegetation
- e) NG

97. Read the reading passage carefully and choose True argument.

Tillage is also called as “cultivation” and closely connected with the plant-growing and harvesting. Tillage is the agricultural preparation of the soil by mechanical agitation of various types, such as *digging, stirring, and overturning*.

We used to divide tillage methods into: human-powered, draft-animal-powered or mechanized tilling methods.

Examples of [human-powered](#) tilling methods using [hand tools](#) include [shoveling](#), [picking](#), [mattock](#) work, [hoeing](#), and [raking](#).

Examples of [draft-animal-powered](#) or [mechanized](#) work include [ploughing](#) (overturning with moldboards or chiseling with chisel shanks), rolling with [cult packers](#) or other [rollers](#), [harrowing](#), and cultivating with [cultivator](#) shanks (teeth). Small-scale gardening and farming, for household food production or [small business](#) production, tends to use the smaller-scale methods above; consequently large-scale farming tends to use the larger-scale methods.

Tillage is often classified into two types, primary and secondary. There is no strict boundary between them. So the tillage that is deeper and more thorough is a primary tillage and the tillage that is shallower is a secondary tillage. Primary tillage such as ploughing tends to produce a rough surface finish, and secondary tillage tends to produce a smoother surface finish, such as that required to make a good [seedbed](#) for many crops.

- a) Tillage is the [agricultural](#) preparation of the water by mechanical [agitation](#) of various types.
- b) Draft-animal powered method is an ancient one and not used in nowadays.
- c) Tillage is often classified into three types, *primary, secondary and final*.
- d) Primary tillage tends to produce a smoother surface and secondary tillage tends to produce a rough surface finish.
- e) NG

98. Read the reading passage carefully and choose True argument.

Tillage is also called as “cultivation” and closely connected with the plant-growing and harvesting. Tillage is the [agricultural](#) preparation of the [soil](#) by mechanical [agitation](#) of various types, such as *digging, stirring, and overturning*. We used to divide tillage methods into: human-powered, draft-animal-powered or mechanized tilling methods.

Examples of [human-powered](#) tilling methods using [hand tools](#) include [shoveling](#), [picking](#), [mattock](#) work, [hoeing](#), and [raking](#).

Examples of [draft-animal-powered](#) or [mechanized](#) work include [ploughing](#) (overturning with moldboards or chiseling with chisel shanks), rolling with [cult packers](#) or other [rollers](#), [harrowing](#), and cultivating with [cultivator](#) shanks (teeth). Small-scale gardening and farming, for household food production or [small business](#) production, tends to use the smaller-scale methods above; consequently large-scale farming tends to use the larger-scale methods.

Tillage is often classified into two types, primary and secondary. There is no strict boundary between them. So the tillage that is deeper and more thorough is a primary tillage and the tillage that is shallower is a secondary tillage. Primary tillage such as ploughing tends to produce a rough surface finish, and secondary

tillage tends to produce a smoother surface finish, such as that required to make a good [seedbed](#) for many crops.

- a) Tillage is the [agricultural](#) preparation of the water by mechanical [agitation](#) of various types.
- b) Draft-animal powered method is an ancient one and not used in nowadays.
- c) Tillage is often classified into two types: *primary, secondary*.
- d) Primary tillage tends to produce a smoother surface and secondary tillage tends to produce a rough surface finish.
- e) NG

99. Read the reading passage carefully and choose False argument(s).

Tillage is also called as “cultivation” and closely connected with the plant-growing and harvesting. Tillage is the [agricultural](#) preparation of the [soil](#) by mechanical [agitation](#) of various types, such as *digging, stirring, and overturning*. We used to divide tillage methods into: human-powered, draft-animal-powered or mechanized tilling methods.

Examples of [human-powered](#) tilling methods using [hand tools](#) include [shoveling](#), [picking](#), [mattock](#) work, [hoeing](#), and [raking](#).

Examples of [draft-animal-powered](#) or [mechanized](#) work include [ploughing](#) (overturning with moldboards or chiseling with chisel shanks), rolling with [cult packers](#) or other [rollers](#), [harrowing](#), and cultivating with [cultivator](#) shanks (teeth). Small-scale gardening and farming, for household food production or [small business](#) production, tends to use the smaller-scale methods above; consequently large-scale farming tends to use the larger-scale methods.

Tillage is often classified into two types, primary and secondary. There is no strict boundary between them. So the tillage that is deeper and more thorough is a primary tillage and the tillage that is shallower is a secondary tillage. Primary tillage such as ploughing tends to produce a rough surface finish, and secondary tillage tends to produce a smoother surface finish, such as that required to make a good [seedbed](#) for many crops.

- a) Tillage is the [agricultural](#) preparation of the water by mechanical [agitation](#) of various types.
- b) Draft-animal powered method is an ancient one and not used in nowadays.
- c) Tillage is often classified into two types, *primary, secondary*.
- d) Primary tillage tends to produce a smoother surface and secondary tillage tends to produce a rough surface finish.
- e) a,b,d

100. Read the reading passage carefully and choose False argument(s).

Tillage is also called as “cultivation” and closely connected with the plant-growing and harvesting. Tillage is the [agricultural](#) preparation of the [soil](#) by

mechanical [agitation](#) of various types, such as *digging, stirring, and overturning*. We used to divide tillage methods into: human-powered, draft-animal-powered or mechanized tilling methods.

Examples of [human-powered](#) tilling methods using [hand tools](#) include [shoveling](#), [picking](#), [mattock](#) work, [hoeing](#), and [raking](#).

Examples of [draft-animal-powered](#) or [mechanized](#) work include [ploughing](#) (overturning with moldboards or chiseling with chisel shanks), rolling with [cult packers](#) or other [rollers](#), [harrowing](#), and cultivating with [cultivator](#) shanks (teeth). Small-scale gardening and farming, for household food production or [small business](#) production, tends to use the smaller-scale methods above; consequently large-scale farming tends to use the larger-scale methods.

Tillage is often classified into two types, primary and secondary. There is no strict boundary between them. So the tillage that is deeper and more thorough is a primary tillage and the tillage that is shallower is a secondary tillage. Primary tillage such as ploughing tends to produce a rough surface finish, and secondary tillage tends to produce a smoother surface finish, such as that required to make a good [seedbed](#) for many crops.

- a) Tillage is the [agricultural](#) preparation of the water by mechanical [agitation](#) of various types.
- b) Draft-animal powered method is an ancient one and not used in nowadays.
- c) Tillage is often classified into three types, *primary, pre-secondary and secondary*.
- d) Primary tillage tends to produce a smoother surface and secondary tillage tends to produce a rough surface finish.
- e) a,b,c,d

POLYLINGUAL GLOSSARY

English	Uzbek	Russian
A		
Acid rain	<i>kislotali yomg'ir</i>	<i>кислотный дождь</i>
Agitation	<i>qorishma, aralashma</i>	<i>примесь</i>
Aggregate	<i>v. bir joyga to'planmoq, n. jami</i>	<i>собирать в одно целое; агрегатный</i>
Aeration	<i>gazlanish</i>	<i>проветривание</i>
Artificially raising	<i>sun'iy ko'tarilish</i>	<i>искусственный подъем</i>
Atmosphere	<i>atmosfera (havo qobig'i)</i>	<i>атмосфера</i>
Automation	<i>avtomatizatsiya, avtomatika</i>	<i>автоматизация</i>
B		
Base	<i>asos, tub, baza, tayanch (punkt)</i>	<i>основа, база, опора</i>
Bedrock	<i>asl, nasl</i>	<i>коренная подстилающая порода</i>
Biocide	<i>biotsid</i>	<i>биоцид</i>
Biofuel	<i>bio-yonilg'i</i>	<i>биотопливо</i>
Biodiversity	<i>bio-rang-baranglik</i>	<i>био-разнообразие</i>
Biological activity	<i>biologik harakat</i>	<i>биологическая деятельность; движение</i>
Biosphere	<i>biosfera</i>	<i>биосфера</i>
Boulder	<i>valun (tog' jinlarining bo'laklari, katta tosh)</i>	<i>валун</i>

Bulk	<i>kattalashtirish, oshirish, yuk, asosiy qism</i>	<i>увеличение; основная масса, большая часть чего-л.</i>
С		
Cable-type traveler	<i>kabelsimon yo`ldosh</i>	<i>кабель-путешественник</i>
Carbon	<i>uglerod</i>	<i>углерод</i>
Carbon capture	<i>uglerod saqlovchi</i>	<i>углерод-содержащий</i>
Carbonates	<i>karbonat</i>	<i>карбонат</i>
Center pivot irrigation	<i>markaziy sug'orish</i>	<i>центральное орошение</i>
Cattle	<i>hayvon, qoramol</i>	<i>животное</i>
Central location	<i>markaziy joylashuv</i>	<i>центральное расположение</i>
Chemically active	<i>kimyoviy faol</i>	<i>химически активный</i>
Chemical condition	<i>kimyoviy holat</i>	<i>химическое состояние</i>
Clay	<i>loy</i>	<i>грязь</i>
Climate change	<i>ob- havo o'zgarishi</i>	<i>изменение погоды</i>
Coat particles	<i>teri bo'laklari</i>	<i>частицы кожи</i>
Colour-commercial greenhouse	<i>tijoraviy oranjereya</i>	<i>коммерческий парник</i>
Consistency	<i>konsistensiya (suyuq eritma, suyuq jismlarda yumshoqliq, zichlik)</i>	<i>консистенция</i>
Crop rotation	<i>hosil aylanishi</i>	<i>севооборот</i>
Cultivation	<i>ekish, o'stirish</i>	<i>Сажать, выращивать</i>

D		
Density	<i>qalinlik, quyuqlik, zichlik</i>	<i>плотность</i>
Destroyed	<i>buzilgan</i>	<i>разрушенный</i>
Depth of a soil profile	<i>yon tomondan ko'rinadigan qumning chuqurligi</i>	<i>глубина почвенного профиля</i>
Defined	<i>aniqlangan</i>	<i>определенный</i>
Desalinated water	<i>sho'rlangan suv</i>	<i>засоленная вода</i>
Destruction	<i>buzilish</i>	<i>деструкция</i>
Dig	<i>kovlatmoq, qazmoq</i>	<i>копать</i>
Disease	<i>kasallik</i>	<i>болезнь</i>
Disintegration	<i>tarkibiy qismlarga ajratish</i>	<i>дезинтеграция</i>
Dissolved	<i>eritmoq, qormoq, bekor qilmoq, buzmoq</i>	<i>растворенный</i>
Displaced soil	<i>aralashma tuproq</i>	<i>перемещенные почвы</i>
Domesticated	<i>ekib o'stirmoq, yetishtirmoq (qo'lga o'rgatmoq)</i>	<i>прирученный</i>
Draft-animal-powered	<i>hayvon kuchiga asoslangan</i>	<i>на основе животного труда</i>
Drain	<i>v. drenaj qilmoq, zahni qochirmoq, quritmoq (tuproqni); zovur, drenaj nayi</i>	<i>осушать, отводить воду, осуществлять дренаж</i>
Drainage water	<i>drenaj suvi</i>	<i>дренажная вода</i>
Drainage infrastructure	<i>drenaj infratuzilmasi</i>	<i>дренажная инфраструктура</i>
Drip irrigation	<i>tomchilatib sug'orish</i>	<i>капельное орошение</i>

Dry land degradation	<i>quruq yer tanazzuli</i>	<i>деградация земли</i>
Dry river bed	<i>quruq daryo yo'li</i>	<i>сухое русло реки</i>
Dumps	<i>axlat uyumlari;</i> <i>axlatxona(lar)</i>	<i>свалка</i>
E		
Ecological collapse	<i>ekologik tanazzul</i>	<i>Экологический коллапс</i>
Ecological crises	<i>ekologik inqiroz</i>	<i>Экологический кризис</i>
Effect	<i>ta'sir ko'rsatmoq</i>	<i>эффект</i>
Electric motor	<i>elektro-motor, elektrik motor</i>	<i>Электрический мотор</i>
Environmental problem	<i>atrof-muhit muammosi</i>	<i>проблемы окружающей среды</i>
Ephemeral	<i>vaqtinchalik</i>	<i>временно</i>
Erosion	<i>yemirilish</i>	<i>размывание</i>
Evaporation	<i>bug'lanish</i>	<i>выпаривание</i>
Evapotranspiration	<i>bug'lanish</i>	<i>испарение</i>
Equilibrium	<i>muvozanat</i>	<i>равновесие</i>
F		
Fertilizer	<i>n. o'git, v. o'g'itlash</i>	<i>удобрение</i>
Fertilizer moisture	<i>o'g'it namligi</i>	<i>влажность удобрения</i>
First plant	<i>birinchi o'simlik</i>	<i>первый росток</i>
Flood	<i>suv toshqini</i>	<i>наводнение</i>
Floodwater harvesting	<i>suv toshqini hosili</i>	<i>после-потопная уборка урожая</i>
Form	<i>shakl</i>	<i>форма</i>
Fiber	<i>tola, ipak tolası</i>	<i>шёлковая пряда</i>

Fiber tillage	<i>yerdan olinadigan tola</i>	<i>прясть полученная с земли</i>
Fresh water	<i>toza suv</i>	<i>чистая вода</i>
Fungi	<i>zamburug'lar</i>	<i>грибы</i>
Fungicide	<i>fungitsid</i>	<i>фунгицид</i>
G		
Glacial till	<i>muzlagan yerni haydash</i>	<i>Обрабатывать замёршую землю</i>
Groundwater contamination	<i>yer osti suvining ifloslanishi</i>	<i>Загрязнение подземных вод</i>
Gravel	<i>shag'al</i>	<i>гравий</i>
Gravelly sandy loam	<i>shag'alli, tuproqli bo'lak</i>	<i>граверная супесь</i>
H		
Hand tools	<i>qo'l asboblari</i>	<i>ручные инструменты</i>
Harm	<i>zarar ko'rmoq</i>	<i>вред</i>
Harrowing	<i>molalamoq</i>	<i>боронование</i>
Herbicide	<i>gerbitsid</i>	<i>гербицид</i>
Higher pressure	<i>yuqori bosim</i>	<i>высокое давление</i>
High salt content	<i>sho'rlanish yuqori bo'lgan tarkib</i>	<i>высокое содержание соли</i>
High-pressure sprinklers	<i>yuqori bosimli purkachlar</i>	<i>разбрызгиватели высокого давления</i>
Hoeing	<i>chopish, yumshatish</i>	<i>техническая обработка земли</i>
Human use	<i>insonning ishlatishi, ekspluatatsiyasi</i>	<i>человеческая эксплуатация</i>

Hydrogen	<i>vodorod (gaz)</i>	<i>водород</i>
Hydrosphere	<i>gidrosfera</i>	<i>гидросфера</i>
Hydraulic systems	<i>gidravlik tizimlar</i>	<i>гидравлические системы</i>
I		
Industrial applications	<i>sanoatda qo'llash</i>	<i>промышленное применение</i>
Infiltrate	<i>suzgichdan o'tkazmoq</i>	<i>инфильтрат</i>
Insecticide	<i>hasharotlarga qarshi dori</i>	<i>инсектицид</i>
Intensive tillage	<i>kuchli yer haydash</i>	<i>интенсивная обработка почвы</i>
Irrigation	<i>sug'orish</i>	<i>орошение</i>
Irrigation systems	<i>sug'orish tizimlari</i>	<i>системы орошения</i>
Irrigation techniques	<i>sug'orish texnikasi</i>	<i>техника орошения</i>
Irrigation water sources	<i>sug'orish suv manbalari</i>	<i>источники водного орошения</i>
Iron oxides	<i>temir oksidi</i>	<i>оксид железа</i>
K		
Kinds of soil particles	<i>tuproq parchalari turlari</i>	<i>виды почвенных частиц</i>
L		
Lake	<i>ko'l</i>	<i>озеро</i>
Landfills	<i>axlatxona(lar)</i>	<i>полигоны</i>
Landscape	<i>manzara, landshaft</i>	<i>пейзаж, ландшафт</i>
Large-scale	<i>katta fermer xo'jaligi</i>	<i>крупномасштабное</i>

farming		сельское хозяйство
Leaching	sho`r yuvish	выщелачивание, вымывание солей
Livestock	qoramol	скот
Lithosphere	litosfera	литосфера
Liquid	Suyuqlik	ликвид (жидкость)
Level	daraja	уровень
Loam	kislородli yer	кислородная земля
Localized irrigation	mahalliy irrigatsiya	местная ирригация
Loose rock material	yo`qolgan to`g` materiali	сыпучие горные материалы
Lucrative irrigation	serdaromad sug`orish	доходное орошение
М		
Marginalization	ajratish, alohida qilish; minimallashtirish, cheklash	отбирать, выделять, разделять
Manure	chiqindi, go`ng	навоз
Mattock	motiga, dastaki so`ka (ketmonsimon asbob)	мотыга
Meander	egri-bugri joy	меандр, отклонение, уклон
Migrations	bir joydan ikkinchi joyga ko`chish	миграция
Mineral constituents	mineral unsurlar	минеральные компоненты
Mineralogical	minerologik	минералогический
Mineral fraction	mineral bo`laklar	минеральная фракция
Modern irrigation	zamonaviy sug`orish	современные

projects	loyihalari	ирригационные проекты
Moving platform	harakatlanadigan perron	движущая платформа
N		
Nutrients	vitamin, oziq moddalar	витамины, питательные вещества
Non-conventional sources	noodatiy manbalar	нетрадиционные источники
O		
Optical microscope	mikroskop	микроскоп
Organic constituent humus	organik unsurli go`ng, gumus	органически-составляющий гумус
Organic matter content	organik moddaning tarkibiy qismi	содержание органических веществ
Over-harvesting	yuqori darajali hosildorlik	высокий уровень плодотворности
Oxygen	kislorod	кислород
P		
Past soil evolution	oldingi tuproq evolutsiyasi	эволюция прошлой почвы
Pastoral	cho`ponlarcha, cho`ponlarga oid	пастораль
Pebble	shag'al, mayda tosh	гравий, мелкий камень
Permanent grasslands	doimiy o'tloq yer	постоянные пастбища
Permafrost	doimiy muzlagan	вечная мерзлота
Pesticide	pestitsid,	пестицид

	zararkunandalarga qarshi vosita	
Physical properties of soils	tuproqning tabiiy xususiyatlari	физические свойства почв
Plough	yer haydamoq	плуг
Pollution	zaharlanish	отравление
Pore spaces	g'ovaklar	поры
Porosity	g'ovaklashish	пористость
Position of roots	ildiz joylashishi	расположение корня
Potted plants	tuvakka o'sadigan o'simlik	комнатные растения
Primarily quartz particles	boshlang'ich kvarts parchalari	частицы первичного кварца
Pumping stations	nasos stansiyalari	насосные станции
Poverty	kambag'allik	бедность
R		
Raking	xaskashlamoq	сгребать, загребать (граблями)
Rangeland	Sfera, zona, yalanglik	пастбище
Rainwater harvesting	yog'ingarchilik hosili	после-дождевой сбор
Reduce	qisqarmoq	сокращение
Reforestation	o'rmonlashtirish	лесовозобновление, лесовосстановление
Relative proportion	nisbiy hissalar	относительная доля
Reservoir	sun'iy hovuz	искусственный бассейн
Resistivity	chidamli, bardosh	удельное

	beradigan	сопротивление
River	daryo	река
Ridge	tog' tizmasi, qirra	гряда гор
River valleys	daryo vodiylari	речные долины
Roads	yo'llar	дороги
Rock	qoyalar	склоны
Roller	rolik, g'ildirakcha	роликовый
Root zone	ildiz joyi	корневая зона
Row crop	qator o'simliklar	рыхлители
Runoff water	irmoqcha, buloq suvi, tezoqar suv	стоки воды
S		
Salinity control	sho'rlanish nazorati, sho`rlikni tekshirish	борьба с засолением
Sand	tuproq	песок
Sand seas	tuproqli dengiz	песочное море
Seed	urug'	семя
Sedimentation	loyqa, cho'kindi	седиментация
Several segments of pipe	kanalning ba`zi segmentlari	несколько сегментов каналов
Silica	kremnezvon, kvars	кремнезем
Silt	loyqa, balchiq	наносы
Sizes	o'lchamlar	размеры
Soill horizons	tuproq gorizonti	горизонты почвы
'Solid geology'	geologiya	геология
Soil volume	tuproq hajmi	объем почвы
Soil "separates"	tuproq ajratmalari	разделы почвы

Soil behavior	tuproq holati	состояние почвы
Soil degradation	tuproqning yomonlashuvi	поведение почвы
Soil layer	tuproq qobig'i	слой почвы
Spate irrigation	birdanniga oshirib sug'orish	резкое увеличение потока воды во время орошения
Sprinkler or overhead irrigation	yomg'irlatib sug'orish	дождевание, орошение способом дождевание
Specific surface area	maxsus yer maydoni yuzasi	площадь специальной земли
Stable secondary structures	barqaror boshlang'ich qism	стабильные вторичные структуры
Stored animal manure	jamlangan hayvon o'g'iti	запасенный навоз животных
Subsurface	yer-osti	подпочва
Surface-water-clay	suvli loy yuzasi	водно-поверхностная глина
T		
Temperature	harorat	температура
Terrace	pog'ona-pog'ona bo'lib turadigan tog' yonbag'irlari	терраса
Texture	tuzilish	текстура
Three-state system	uch bosqichli (aspektli) tizim	трех-видная система
Till	yerga ishlov bermoq, yer haydamoq	обработка земли
Tillage	yer haydash	обработка земли

Traction	yuk tortuvchi kuch	тяговая сила
Trickle irrigation	tomchilatib sug'orish	капельное орошение
Treated wastewater	qayta ishlangan chiqindi suv	переработанная вода
Topsoil	yuqori tuproq	пахотный слой почвы
U		
Unbalanced ionic charges	balanslashmagan ion zaryadlari	несбалансированные ионные заряды
Urban sprawl	shahargacha cho'zilmoq	продлевать до города
Utilization	qo'llash, foydalanish	использовать
V		
Vegetation	o'simlik dunyosi	растительный мир
W		
Waste water	chiqindi suv	отходная вода
Water soluble plant	suvda eriydigan o'simlik	растворимый в воде растение
Water sources	suv manbalari	источники воды
Water pollution	suv zaharlanishi	отравление воды
Water-efficient method	suvni tejovchi metod	метод экономии воды
Weathering	ob-havo ta'sirida o'zgarmoq	изменения из-за погоды
Wells	quduqlar	колодцы
Wheel line irrigation	yumalab bir chiziq bo'ylab sug'orish	орошение по окружной линии
Wildlife	yovvoyi dunyo	дикий мир

English-Uzbek GLOSSARY

5. **Acid rain** – kislotali yomg'ir
6. **Agitation** – qorishma, aralashma
7. **Aggregate** – v. bir joyga to'planmoq, n.jami
8. **Aeration** – gazlanish
9. **Artificially raising** – sun'iy ko'tarilish
10. **Atmosphere** – atmosfera (havo qobig'i)
11. **Automation** – avtomatizatsiya, avtomatika

12. **Base** – asos, tub, baza, tayanch (punkt)
13. **Bedrock** – asl nasl
14. **Biocides** – biologik yo'nilg'i
15. **Biofuel** – bio-yonilg'i
16. **Biodiversity** – bio-rang-baranglik
17. **Biological activity** – biologik harakat
18. **Biosphere** – biosfera
19. **Boulder** – valun (tog' jinlarining bo'laklari, katta tosh)
20. **Bulk** – kattalashtirish, oshirish, yuk, asosiy qism

21. **Cable-type traveler** – kablesimon yo'ldosh
22. **Carbon** – uglerod
23. **Carbon capture** – uglerod saqlovchi
24. **Carbonates** – karbonat
25. **Caution exchange capacity** – ehtiyotkorlik choralari
26. **Center pivot irrigation** – markaziy sug'orish
27. **Cattle** – hayvon, qoramol
28. **Central locations** – markaziy joylashuvlar

29. **Chemically active** – kimyoviy faol
30. **Chemical conditions** – kimyoviy holatlat
31. **Clay** – loy
32. **Climate change** – ob- havo o'zgarishi
33. **Coat particles** – teri bo'laklari
34. **Colour-commercial greenhouse** – tijoraviy oranjereya
35. **Consistency** – konsistensiya (suyuq eritma, suyuq jismlarda yumshoqliq, zichlik)
36. **Crop rotation** – hosil aylanishi
37. **Cultivation** – ekish, o'stirish

38. **Density** – qalinlik, quyuqlik, zichlik
39. **Destroyed** – buzilgan
40. **Depth of a soil profile** – yon tomondan ko'rinadigan qumning chuqurligi
41. **Defined** – aniqlangan
42. **Desalinated water** – sho'rlangan suv
43. **Destruction** – buzilish
44. **Dig** – kovlamoq, qazmoq
45. **Disease** – kasallik
46. **Disintegration** – tarkibiy qismlarga ajratish
47. **Dissolved** – eritmoq, qormoq, bekor qilmoq, buzmoq
48. **Displaced soil** – aralashma tuproq
49. **Domesticated** – ekib o'stirmoq, yetishtirmoq (qo'lga o'rgatmoq)
50. **Draft-animal-powered** – jonivor mehnatidan foydalanish
51. **Drain** – v. drenaj qilmoq, zaxni qochirmoq, quritmoq (tuproqni); zovur, drenaj nayi
52. **Drainage water** – drenaj suvi
53. **Drainage infrastructure** – drenaj infratuzilmasi

- 54. **Drip irrigation** – tomchilatib sug'orish
- 55. **Dry land degradation** – quruq yer tanazzuli
- 56. **Dry river bed** – quruq daryo yo'li
- 57. **Dumps** – axlat uyumlari; axlatxona(lar)

- 58. **Ecological collapse**— ekologik tanazzul
- 59. **Ecological crises** – ekologik inqiroz
- 60. **Effect** – ta'sir ko'rsatmoq
- 61. **Electric motor** - elektro-motor, elektrik motor
- 62. **Environmental problem** – atrof-muhit muammosi
- 63. **Ephemeral** – vaqtinchalik
- 64. **Erosion** – yemirilish
- 65. **Evaporation** – changlanish
- 66. **Evapotranspiration** – bug'lanish
- 67. **Equilibrium** – muvozanat

- 68. **Fertilizer** – n. o'git, v. o'g'itlash
- 69. **Fertilizer moisture** – nam o'g'it
- 70. **First plant** – birinchi o'simlik
- 71. **Flood** – suv toshqini
- 72. **Floodwater harvesting** – suv toshqini hosili
- 73. **Form** – shakl
- 74. **Fiber** – tola, ipak tolası
- 75. **Fiber tillage** – yerdan olinadigan tola
- 76. **Fresh water** – toza suv
- 77. **Fungi** – zamburug'lar
- 78. **Fungicides** - fungitsid

- 79. **Glacial till** – muzlagan yerni haydash
- 80. **Groundwater contamination** – yer osti suvining ifloslanishi
- 81. **Gravel** – shag'al
- 82. **Gravelly sandy loam** – shag'alli, tuproqli bo'lak

- 83. **Hand tools** – qo'l asboblari
- 84. **Harm** – zarar ko'rmoq
- 85. **Harrowing** – molalamoq
- 86. **Herbicides** – gerbitsid
- 87. **Higher pressure** – yuqori bosim
- 88. **High salt content** – sho'rlanish yuqori bo'lgan tarkib
- 89. **High-pressure sprinklers** – yuqori bosimli purkachlar
- 90. **Hoeing** – chopish, yumshatish
- 91. **Human use** – insonning ishlatishi, ekspluatatsiyasi
- 92. **Hydrogen** – vodorod (gaz)
- 93. **Hydrosphere** – gidrosfera
- 94. **Hydraulic systems** – gidravlik tizimlar

- 95. **Industrial applications** – sanoatda qo'llaniladigan vositalar
- 96. **Infiltrate** – suzgichdan o'tkazmoq
- 97. **Insecticides** – hasharotlarga qarshi dori
- 98. **Intensive tillage** – kuchli yer haydash
- 99. **Irrigation** – sug'orish
- 100. **Irrigation systems** – sug'orish tizimlari
- 101. **Irrigation techniques** – sug'orish texnikasi
- 102. **Irrigation water sources** – sug'orish suv manbalari
- 103. **Iron oxides** – temir oksidi

104. **Kinds of soil particles** – tuproq parchalari turlari
105. **Lake** – ko'l
106. **Landfills** – axlatxona(lar)
107. **Landscape** – manzara, landshaft
108. **Large-scale farming** – katta fermer xo'jaligi
109. **Leaching** – sho'r yuvish
110. **Livestock** – mavjudot (hayvon)
111. **Lithosphere** – litosfera
112. **Liquid** – suyuqlik
113. **Level** – daraja
114. **"Loam"** – kislorodli yer
115. **Localized irrigation** – mahalliy irrigatsiya
116. **Loose rock material** – yo'qolgan to'g' materiali
117. **Lucrative irrigation** – serdaromad sug'orish

118. **Marginalization** – ajratish, alohida qilish; minimallashtirish, cheklash
119. **Manure** – chiqindi , go'ng
120. **Mattock** – motiga, dastaki so'ka (ketmonsimon asbob)
121. **Meanders** – egri-bugri joylar
122. **Migrations** – bir joydan ikkinchi joyga ko'chish
123. **Mineral constituents** – mineral unsurlar
124. **Mineralogical** – minerologik
125. **Mineral fraction** – mineral bo'laklar
126. **Modern irrigation projects** – zamonaviy sug'orish loyihalari
127. **Moving platforms** – harakatlanadigan perron

128. **Nutrients** – vitaminlar

129. **Non-conventional sources** – noodatiy manbalar

130. **Optical microscope** – mikroskop
131. **Organic constituent humus** – organik unsurli go`ng, gumus
132. **Organic matter content** – organik moddaning tarkibiy qismi
133. **Over-harvesting** – yuqori darajali hosildorlik
134. **Oxygen** – kislorod

135. **Past soil evolution** – oldingi tuproq evolutsiyasi
136. **Pastoral** – cho`ponlarcha, cho`ponlarga oid
137. **Pebble** – shag'al, mayda tosh
138. **Permanent grasslands** – doimiy o'tloq yer
139. **Permafrost** – doimiy muzlagan
140. **Pesticides** – pestitsid, zararkunandalarga qarshi vosita
141. **Physical properties of soils** – tuproqning tabiiy xususiyatlari
142. **Plough** – yer haydamoq
143. **Pollution** – zaharlanish
144. **Pore spaces** – g'ovaklar
145. **Porosity** – g'ovaksimon
146. **Position of roots** – ildiz joylashishi
147. **Potted plants** – tuvakka o'sadigan o'simlik
148. **Primarily quartz particles** – boshlang'ich kvarts parchalari
149. **Pumping stations** – nasos stansiyalari
150. **Poverty** – kambag'allik

151. **Raking** – xaskashlardan tozalamoq
152. **Rangeland** – qator yer tobalari
153. **Rainwater harvesting** – yog'ingarchilik hosili

154. **Reduce** – qisqarmoq
155. **Reforestation** – oʻrmonlashtirish
156. **Relative proportion** – bir-biriga mos keladigan hissalar
157. **Reservoir** – sunʼiy hovuz
158. **Resistivity** – chidamli, bardosh beradigan
159. **River** – daryo
160. **Ridge** – togʻ tizmasi, qirra
161. **River valleys** – daryo vodiylari
162. **Roads** – yoʻllar
163. **Rock** – qoyalar
164. **Roller** – rolik, gʻildirakcha
165. **Root zone** – Ildiz joyi
166. **Row crop** – qator oʻsimliklar
- 167. Runoff water** – irmoqcha, buloq

168. **Salinity control** – shoʻrlanish nazorati
169. **Sand** – tuproq
170. **Sand seas** – tuproqli dengiz
171. **Seed** – urugʻ
172. **Sedimentation** – loyqa, choʻkindi
173. **Several segments of pipe** – kanalning baʼzi segmentlari
174. **Silica** – kremnezyon, kvars
175. **Silt** – loyqa, balchiq
176. **Sizes** – oʻlchamlar
177. **Soil horizons** – tuproq garizoni
178. **'Solid geology'** – geologiya
179. **Soil volume** – tuproq hajmi
180. **Soil "separates"** – tuproq ajratmalari

181. **Soil behavior** – tuproq holati
182. **Soil degradation** – tuproqning yomonlashuvi
183. **Soil layer** – tuproq qobig'i
184. **Spate irrigation** – birdanniga oshirib sug'orish
185. **Srinkler or overhead irrigation** – yomg'irlatib sug'orish
186. **Specific surface area** – maxsus yer maydoni yuzasi
187. **Stable secondary structures** – barqaror boshlang'ich qism
188. **Stored animal manure** – qayta tiklangan hayvon o'g'iti
189. **Subsurface** – yuza
190. **Surface-water-clay** – suvli loy yuzasi

191. **Temperature** – harorat
192. **Terrace** – pog'ona-pog'ona bo'lib turadigan tog' yonbag'irlari
193. **Texture** – tuzilish
194. **Three-state system** – uch bosqichli (aspektli) tizim
195. **Till** – yerga ishlov bermoq, yer haydamoq
196. **Tillage** – yer haydash
197. **Traction** – yuk tortuvchi kuch
198. **Trickle irrigation** – tomchilatib sug'orish
199. **Treated wastewater** – qayta ishlangan chiqindi suv
200. **Topsoil** – yuqori tuproq

201. **Unbalanced ionic charges** – balanslashmagan oin zaryadlari
202. **Urban sprawl** – shahargacha cho'zilmoq
203. **Utilization** – qo'llash, foydalanish

204. **Vegetation** – o'simlik dunyosi

- 205. **Waste water** – chiqindi suv
- 206. **Water** – soluble plant
- 207. **Water sources** – suv manbalari
- 208. **Water pollution** – suv zaharlanishi
- 209. **Water-efficient method** – samarali suv metodi
- 210. **Weathering** – ob-havo ta'sirida o'zgarmoq
- 211. **Wells** – quduqlar
- 212. **Wheel line irrigation** – yumalab bir chiziq bo'ylab sug'orish
- 213. **Wildlife** – yovvoyi dunyo

KEYS TO TESTS

1. B	35.D	69.D
2. D	36.D	70.C
3. D	37.D	71.A
4. D	38.A	72.B
5. D	39.D	73.A
6. D	40.D	74.C
7. D	41.D	75.A
8. D	42.D	76.E
9. E	43.D	77.E
10.A	44.D	78.D
11.D	45.D	79.C
12.C	46.D	80.A
13.C	47.D	81.B
14.D	48.D	82.C
15.A	49.D	83.A
16.C	50.D	84.D
17.A	51.D	85.A
18.D	52.D	86.B
19.B	53.B	87.C
20.C	54.D	88.A
21.D	55.D	89.A
22.D	56.D	90.B
23.D	57.D	91.C
24.D	58.D	92.A
25.D	59.C	93.A
26.D	60.D	94.B
27.D	61.D	95.C
28.D	62.C	96.D
29.D	63.A	97.E
30.A	64.C	98.C
31.D	65.B	99.E
32.D	66.D	100.E
33.D	67.B	
34.D	68.C	

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LINKS

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