Bio-monitoring and bio-indicators in the aspect of climate change

Completed by 1 years
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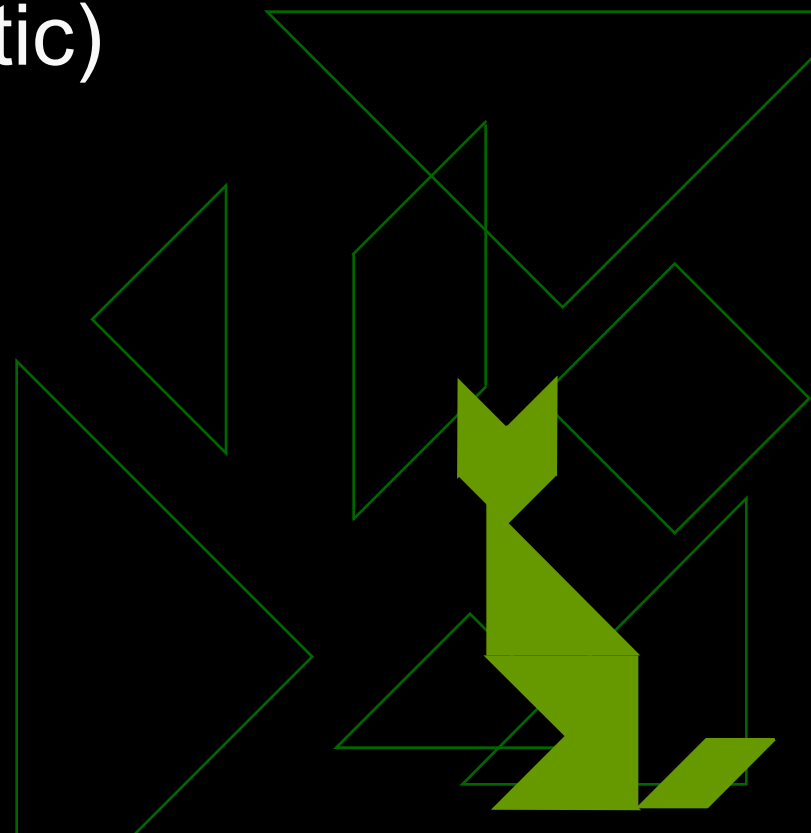
- Bioindication is an assessment of the state of the environment by the reactions of a living organism. This reaction allows us to evaluate the anthropogenic impact on the environment in terms of biological meaning.

- Plants and animals are used for bioindication. They have different resistance to anthropogenic influences. Plants are a good indicator of environmental changes caused by anthropogenic pollution. And animals, in turn, are interesting as an object physiologically close to humans. According to their reactions, the consequences of pollution can be foreseen not only for nature, but also for humans. Microbes, the fastest responding bioindicators and are therefore best suited for sanitary-medical experiments.

Bioindication Methods

- Botanical (phyto)
- Soil and zoological
- Biochemical (enzymatic)
- Microbiological



The bioindication method allows you to:

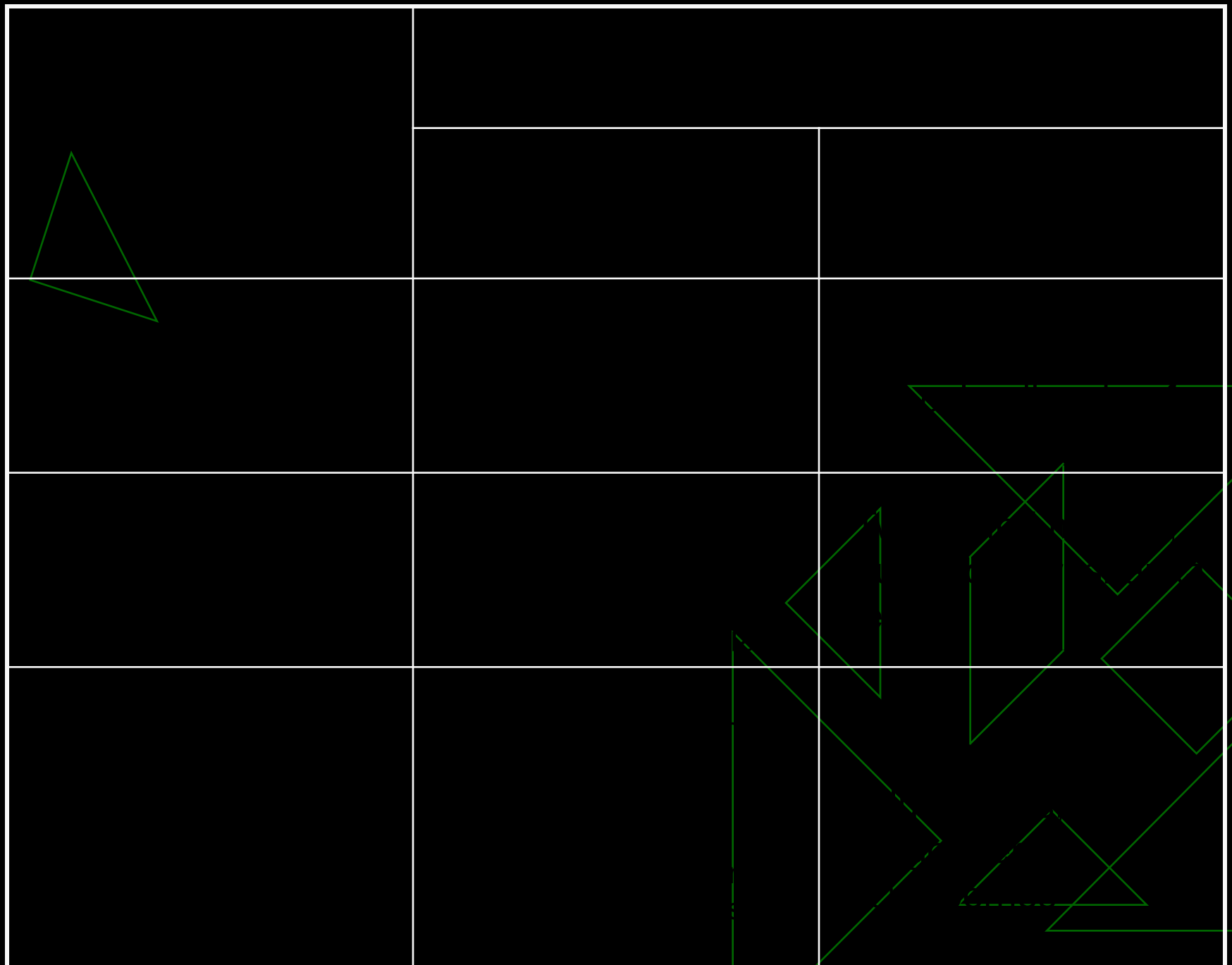
- Provide a continuous assessment of environmental conditions and identify the current state of the human environment.
To establish the reasons for the negative impact on the environment, natural objects, and predict damage.
Make a forecast of changes in the state of the environmental situation in the near and distant future

Types of bio-indicators

- botanical;
- zoological;
- microbiological;
- biochemical

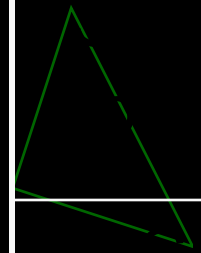
Soil fertility bioindicators

- The fertility of some soils can be high, others - low, however, in both cases it is determined by the nature of the soil formation process and soil formation factors.



Bio Indicators of Acid Soils

- Soil acidity is the most important environmental factor that determines the living conditions of soil organisms and higher plants, as well as the mobility of pollutants in the soil.



ASSESSMENT OF SALT SOIL CONTAMINATION OF SOIL ON LYPE LEAVES

- Linden is very sensitive to soil contamination with salts that come here with sand in the winter. An indicator of the reaction is marginal chlorosis on the leaves. Therefore, by the magnitude of the damage to the linden leaf blades, one can judge the degree of salinity of the lawns.

INDICATION OF THE CONDITION OF THE ENVIRONMENT BY THE FREQUENCIES OF THE MEETING OF WHITE CLOVER HAIRDRESSERS

- The influence of anthropogenic factors quite often affects the phenotypic structure of populations of plant and animal organisms. The frequency of occurrence of some hair dryers is a biological indicator of exposure, in particular, environmental pollution. In white clover, which is quite widespread, the shape of a gray-haired pattern on leaves can be used as an indicator of environmental pollution.

CRESS SALAD AS A TEST OBJECT FOR ASSESSING SOIL AND AIR POLLUTION

- Watercress is an annual vegetable plant that is very sensitive to pollution by heavy metals and motor vehicle emissions. Under the influence of pollutants, the roots and shoots of this plant can change, seed germination is disturbed. Due to the simplicity of cultivation and bioindication use, watercress can be a very convenient biomonitoring object.
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Phytoindication of the excessive content of certain chemical elements in the soil

- Plants can react very sensitively to the excess content of certain elements, in particular metals, in the soil. In this case, the color of the leaf blade may change, chlorosis and necrosis are observed. Therefore, evaluating the state of plants in a given territory, some conclusions can be drawn about soil contamination.

Таблица 2. Признаки избыточного содержания некоторых микроэлементов в почве

THANK YOU FOR THE ATTENTION!!!