

WAYS OF SUSTAINABLE AND EXISTENCE AND UTILIZATION IN SUMY REGION

Ukraine soil fund occupies 603, 5 thousands km², it is about 6% of European territory. There are four natural zones in Ukraine: broad-leaved-forest (Polissya), Forest-step, Step and Mediterranean. The territory is characterized by abundant of biological resources but poor condition of them and urgent measures are necessary for their protection. Natural resources of Ukraine is a property not only our state but mankind on the whole.

Ukrainian soil fund includes following categories:

1. agricultural soils;
2. forests and timberlands;
3. soils under buildings;
4. soils covered with water;
5. boggy soils;
6. other kinds of soils (chart 1).

Chart 1.

Main categories of Ukrainian soil fund

Soil category	Area, thousand hectares	Percentage to the total area
<i>Total</i>	60354,8	100,0
Agricultural soils	42985	71,2
Forests and timberlands	10475,9	17,4
Soils under buildings	2458,3	4,1
Soils covered with water	2421,1	4,0
Boggy soils	957,1	1,6
Other kinds of soils	1056,6	1,7

Agricultural soils occupy about 43 ml ha while only 10,5 ml ha are under forests . Agricultural practice involves 71% of soil fund, 55% of it is under arable soils (tillage) and 12,9 is under pastures and meadows.

Specific feature of soil utilization in Ukraine is high level of agricultural intensity. Proportion of ploughed land is very large: more than 65%. It is the largest percentage in Europe. It is explained by the favorable climatic and soil conditions for every agricultural branch and high population density. About 8% of world chernozems concentrate in Ukraine. More than 46% arable soils (19 ml ha) are high-fertile with the humus content 3-7%.

The development of intensive agricultural utilization in the 20-th century, erosion process, forest ecosystems destruction negatively influenced on the soil quality. Modern soil utilization in Ukraine is characterized by negative humus and biogenic elements

balance. To take into consideration the degumification process the energy losses in soil cultivation practice exceed more than three times its restoration (renewal) by fertilizers application. Annual humus deficiency in Ukraine is 110 kg/ha. Annual soil losses reach 600 ml tones (20 ml tones humus). The main part of humus is lost as a result of water and wind erosion. The high level of tillage land (especially of slopes), a lack of forestation, marshlands and wet meadows drying assist in this process. All these reasons make the problem of soil fertility stabilization more complicated.

All negative reasons determined the soil conditions in Ukraine are possible to classify in following way:

1. high level of tillage
2. losses of soil fertility (degumification, decreasing of nutrients (N, P, K, Ca, Mg, microelements)
3. agricultural lands pollution with pesticides and fertilizers
4. water and wind erosion

In spite of the negative things in soil utilization, mentioned above, Ukraine has high resources potential for optimal economy organization of all soil categories utilization.

One of the research directions of our staff is elaboration of modern technology of main agricultural crops cultivation. The basis of this technology is increasing of total yield and effective arable land utilization (increasing of production per unit of area) without expanding areas under crops.

Ukraine is a owner of 35% biological diversity of Europe (this characteristic is highest among European countries, except France). The quantity of species is about 70000. Flora consists of 25000 species, fauna includes more than 45000 species. Inventory of 1990-2005 revealed the necessity of plant species and community protection. 511 plant species were included in Red Book of Ukraine. About 3500 plant communities of Ukraine are the national property of the country and 127 plant communities need protection and were included in Green Book of Ukraine. The preservation on biodiversity is a oblige condition of sustainable development of our planet.

For stabilization of ecological condition in Ukraine it is necessary: 1. To use bioresources in optimal ecological regime. 2. To expand the areas with natural vegetation to optimal level (the correlation with tillage land 1:1. In most European countries this correlation displaces in the side of natural vegetation. As for protection areas they are 4,5% of the total Ukraine territory. The percentage of protection areas in the world is 8, 5%, in Europe – 10,5%, in Austria – 25%, Germany – 25%, Switzerland – 19%. The law of Ukraine, adopted by Supreme Soviet, “About State Program of national ecological net formation for 2000-2015 years” will assists in solving this problem. The most important task, concerning the ecological net expanding, is increasing areas under natural-protection fund.

Basic idea of econet is integral preservation of biological diversity. According to this strategy, the integral European ecological net will have been created to 2015. It must unite by the system of ecological corridors areas especially valuable in ecological sense for stimulating the terms of species settling and migration providing the survival and renewal of populations, preservation and protection of their dwelling.

In Ukraine for last 10 years considerable work has been conducted by Ministry of Ecology and Natural Resources. A large contribution was brought by the specialists of National Institute of Botany named after M.G. Holodnyi. The collective of our University specialists participate in this part of the work.

The project of region econet of Polissya eastern part is possible to be considered as an example. The key territories of this econet are: Desnyanskyi corridor and two National Parks: “Desnyansko-Starogutskyi” and “Mezenskyi”.

During creation of ecological net including its cores and corridors the problem of functioning estimation is appeared. We suppose the autotrophic block of ecosystem as primary must be evaluated at first. Conception of monitoring of autotrophic block of ecological net is devoted in SNAU in the form of phytopopulation monitoring under head of doctor of biology sciences, Professor Y.A. Zlobin.

Phytopopulation monitoring is periodic control of characteristics of plant associations and their components – populations – the basic autotrophic block of any ecosystem, which making to possible of heterotrophic block existence. Description of the phytocenosis state and its elements can give full information and may consider as the indicator of the ecosystem in the whole. The research of the growth processes, characteristics of reproduction, vitality and age-dependent structures of populations are important.

Another example of phytopopulation monitoring are projects of typical forest stands renewal in National Nature Park and elaboration of optimal meadows utilization as a main vegetation type of our zone ecocorridors.

Phytopopulation monitoring of the meadow vegetation with high level of dynamic is characterized by some peculiarities. The purposes of monitoring is determination of strict criterias of the meadow state under farming using condition, the main form of it are grazing and haymaking. In order to prevent meadow over utilization the characteristics of degradation beginning were determined. The change of floristic composition of the plant community and the population structure of its components are the main signs of the meadow degradation. The population of some species of Poaceae and Fabaceae have been investigated by our biologist. The essential influences of the meadow farming using on the growth, reproduction and demography, the vitality state of the population individuals have been studied.

The specialties in the field of agriculture and environment realize complication of progressive development problem of agriculture in the conditions of bioresources and biodiversity protection. We would like to take part in the field of ecologization of agricultural technologies with European colleagues. On the other side it is important to provide the functioning of Ukrainian econet as a part of European net.