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## **ENVIRONMENTAL ASSESSMENT OF SOIL CHANGES OF ZHYTOMYR REGION**

The main objective of Agricultural and Environmental Sciences at the present stage of development of agricultural production is creating sustainable agro-ecosystem. In recent decades, a negative balance of humus and trace elements formed in Ukrainian Polissia due to a sharp reduction in application of organic and mineral fertilizers and crop rotation failure. There are also processes of decalcification and acidification of soils, which strengthen their mechanical and biological degradation. Soil agro-ecological condition significantly worsened because of contamination with radionuclides and heavy metals. Thus, soils become sometimes nonserviceable.

Also during the long-term reformation of the agricultural sector there was a gradual shift from collective to private-rental and private ownership of land. This period was marked by disregard for scientific technology, inefficient exploitation of such natural resource as soil fertility. Significant changes of Zhytomyr region soils occur under the influence of these factors.

Tilled farmlands in parts of the region have relatively high diversity in their indices. It has a very close relationship with the natural fertility of soil. Steppe is the most cultivated region (74 %); the transition zone occupies 47% of tilled lands; and Polissia - 29%. For example, 174.4 thousands hectares were limed for the period of 1986 – 1990; in 2001-2005 there were 5.2 thousands hectares limed; in 2006-2010 - 7.3 thousands hectares limed; in 2011 - 3.4 thousands hectares limed; and in 2012 - 3.7 thousands hectares limed.

It should be indicated that the lowest recorded humus content in soils of Korosten and Narodychi areas was 1.37% and 1.40%, respectively. It is 0.55% and 0.52% below the average absolute value of the regional index.

The gentle surface slopes of Zhytomyr region are characterized by the development of surface water erosion. This process is unnoticeable, especially in the early stages of its development. Microparticles and macroparticles that are formed by an active part of humus wash from the soil. As a result, soils lose a significant amount of waterproof units and therefore the formation of dust on the surface increases. Gradually, arable layer washes out and a lower horizon is exposed, and subsequently, soil color becomes lighter.

Speed of soil washing depends largely on how soil is used. Lack of proper organization of the territory, ignoring the technologies of soil cultivation can cause washing of soil. On steep land slopes linear erosion of soil along with surface erosion leads to the formation of gullies and ravines, thus, the area of arable land decreases.

Very effective measure to combat the degradation processes in soil is optimization of land usage. Reduction of arable land makes it possible to concentrate the available material, technical and human resources on soils that can ensure their

efficient use through obtaining better productivity of plantings. The ratio of accumulated organic matter (reaping and root remains) enters the soil and becomes material for the humus synthesis.

The main factor of soil fertility preservation is litter manure. Other types of manure have little influence on the formation of humus. All these activities are environmentally safe, which help restore growth of fertility and their rational use.