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## **ENVIRONMENTALLY STANDARDIZATION TECHNOLOGIES IN CROP PRODUCTION**

One of the reasons of agro-ecosystems' environmental degradation is utilization of imperfect technologies for growing crops or the individual process steps. We know that this can be the reason of soils' environmental deterioration, degradation in sanitary-hygienic indicators of agricultural products quality, pollution of natural waters with biogenous and toxic substances. Therefore, it is important, as early as at technology's development and approbation stages, to determine the potential environmental impacts, to establish degree of their danger, and to conduct environmental standardization of impact over agro-ecosystem. Namely environmental standardization of technology's influence by the degree of danger shows complete picture and provides the possibility to purposefully improve individual technological operations and thereby prevent possible degradation processes in agro-ecosystems. In our previous works we showed sequence of procedures for environmental expertise of agricultural technologies, which became the basis for the further development of scientific principles of environmental standardization of technologies for growing agricultural crops by their impact over the agrosystems' components condition.

Scientific fundamentals of environmental standardization of technology's impact over agro-ecosystem were developed based on previous works on environmental impact assessment of agricultural technologies. Organization features of comprehensive, scientifically based assessment, establishment of soil's condition compliance, products' quality, processes occurring in the components of agro-ecosystems, with environmental, health and hygiene, agrochemical and other regulations, were considered. According to the recommendations of international organizations, division of technologies into 4 classes was conducted. Range of indicators within these classes according to standards was established, quantitative parameters of which were determined by means of adaptation of existing standards, taking into account classical approaches to environmental standardization. Elaborated approaches to environmental standardization of technologies have passed approbation in conditions of the experimental farm of NUBREM of Ukraine «Agronomic Research Station», which is located on the right bank steppe of Ukraine (Kyiv region, Vasyilkiv district). Agronomic Research Station has the status of special resource area and is included in the State Register of Ukraine as the farm which has the right to produce baby food products. This imposes certain restrictions over technology, including those in the field of plant growing: they must guarantee receiving safe and good quality agricultural products. Namely for such conditions, environmental standardization of technologies' influence over agroecosystem and agricultural products quality, is especially important. In environmental standardization it is assumed that deviation from the standard less than by 10% is low-hazardous level, by 10-25% - moderately hazardous, and more than by 25% - dangerous. Based on this, the condition change of agro-ecosystem's components under the influence of agricultural technologies can be evaluated as follows: the optimum zone - decrease by <10%, the comfort zone - decrease by 10 - 25%, zone of pessimum - reduction by > 25%.

Environmental standardization is advisable to carry out using system of indicators that take into account the impact of technology over ecotoxicological, phytosanitary, agro- and hydrochemical and other conditions of agro-ecosystem, product quality, productivity of crops, etc.

According to international requirements, technologies (or individual elements of technologies), in terms of impact over agro-ecosystem's components, should be grouped as follows:

1 group - strong impact that leads to unsatisfactory state of agro-ecosystem's components or individual processes proceeding in them (deviation from the optimum towards deterioration exceeds 25%);

2 group – average impact, unsatisfactory state (deviation from the optimum towards deterioration exceeds 10%, but doesn't exceed 25%);

3 group – minor impact, normal state (deviation from the optimum towards deterioration does not exceed 10%);

4 group – impact is absent, optimal state (deviation from the optimum towards deterioration is not observed).

For consideration of all indicators, it is advisable to conduct comprehensive assessment and determine the degree of technology's perfection. For this purpose it is necessary to consider the indicator “environmental standardization”.

The obtained data indicate, that environmental standardization of agricultural crop growing technologies allows to objectively assess them and identify imperfect process operations, which, in turn, will enable development of specific recommendations on their improvement in order to obtain high agricultural productivity, quality crop production and environmental protection.