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GENERAL ASPECTS OF THE INFLUENCE ON ABIOTIC AND BIOTIC FACTORS OF AQUATIC ECOSYSTEMS OF THE MODERN TECHNOLOGIES ELEMENTS USE

ЗАГАЛЬНІ АСПЕКТИ ВПЛИВУ ВИКОРИСТАННЯ ЕЛЕМЕНТІВ СУЧАСНИХ ТЕХНОЛОГІЙ НА АБІОТИЧНІ ТА БІОТИЧНІ ФАКТОРИ ВОДНИХ ЕКОСИСТЕМ

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Abstract. *The article considered the main positive and negative aspects of the modern technological processes use impact on the biotic and abiotic components of aquatic ecosystems. It has been established those modern technologies in aquaculture and fish farming are the most favorable for the process of adaptation of hydrobionts to new conditions, reduction of their physiological stress and other negative environmental factors.*

Key words: *intensive technologies, aquaculture, fish farming, water ecosystems*

Анотація. *У статті було розглянуто основні позитивні й негативні аспекти впливу від використання сучасних технологічних процесів на біотичні та абіотичні компоненти водних екосистем. Встановлено, що сучасні технології в аквакультурі та рибництві є найбільш сприятливими для процесу адаптації гідробіонтів до нових умов, зменшення їх фізіологічного стресу та інших негативних факторів оточуючого середовища.*

Ключові слова: *інтенсивні технології, аквакультура, рибництво, водні екосисеми*

The improvement of technological processes is quite fast, they are adapted to each industry, fish farming is no exception. In modern conditions, the cultivation and breeding of hydrobionts has a tendency to optimize classical methods, to acquire various integrated forms with innovative technological elements. However, we note that no technology will be effective if abiotic and biotic factors are not optimal for the ecosystem and for hydrobionts. In addition, at the beginning of the operation of the farm, a technological map must be correctly formed, compliance and harmonization of ecology and biology of hydrobionts, climatic parameters, «genetic center», breeding stock, industrial, reserve and other groups [10, 13, 15].

Abiotic factors involve the analysis of temperature parameters of the environment, the number of sunlight's, pH acidity. In turn, biotic factors include the analysis of trophic organisms and the relationship between producers and competitors. That is, inanimate chemical and physical elements of the environment that affect living organisms (hydrobionts) and the functioning of the aquatic ecosystem as a whole. Undoubtedly, each of the factors is individual under certain conditions, abiotic affects the body of fish while supporting the main processes, first of all, reproduction and reproduction.

Thus, we note that all these factors affect different organisms in different ways. Collectively, they represent a single response system that stabilizes the body into one living system. For example, if the temperature is not favorable, the concentration of oxygen does not meet the needs of hydrobionts, then their development is inhibited at first, and then, in general, there may be death, «crowd-out» of the weak by natural selection [10, 11].

In turn, biotic components also form an aquatic ecosystem, they present the following aspects:

• consumers, that is, heterotrophs that depend on «producer representatives» (sometimes other consumers) in trophic relations (digestion, consumption of feed elements, redistribution as on a ladder by levels);

• producers, i.e., autotrophs, which convert the energy of photosynthesis (the transfer of sunlight, water and carbon dioxide into energy) into a fodder resource;

• decomposers (elements can be synthesized several times, receiving energy). They break down chemicals into simpler forms that can be used more than once in a chain of transformations.

At the same time, the biotic factor affects the population of another organism, a certain environment, this applies not only to hydrobionts and the aquatic ecosystem. At the same time, each of the biotic factors requires certain energy for the processes. It will be appropriate for this topic to outline the issue of anthropogenicity, which means an effect or an object that is the result of human activity. The concept is practiced in the context of pollution, which is formed as a result of human activity, studying the state of the environment.

The impact (load) on the environment depends on the system used by fish farmers, it can be organic production of fish farming products. In the literary sources and in our works [1-9, 12, 14, 16] there is enough information on the outlined topic to make an impression and draw a conclusion about the need to optimize and harmonize technological elements in fish farming from the point of view of the «environmental nature of the industry».

Let's emphasize the fact that there are authors who note in their works that there are several types of environmental impact indicators: firstly, they are «means» based on the production methods of a farmer - fish farmer, and secondly, «on the basis of impact», i.e., the impact of the used methods of fish farming organization with reduced pressure on the environment [10, 15].

The impact of fisheries on the environment includes various factors from soil to water, air, diversity, while the environmental problems associated with agriculture (fisheries) are also climate transformations, there are genetic engineering, irrigation problems, pollutants, etc. Experts emphasize that all measures should be planned carefully, not only the cost of production, but also possible risks from the implementation of intensification measures should be analyzed.

In their works, the authors tentatively divide the impact of fishing activity on the environment into aspects of problems associated with the availability of fish for catching, for example, overfishing, sustainable fishing and fisheries management; aspects of problems related to the impact of fishing on other elements of the environment, for example, the deterioration of the aquatic environment due to technogenic stress. Each of the processes is important and must be controlled by sampling and analysis in laboratories, conducting complex scientific research works, experiments, monitoring, etc.

In modern conditions, the use of elements of technologies without protection, without the effect of «environmentalism» leads to negative effects on the environment. Such results of impacts on the environment, caused by the use of modern non-ecological technologies, occur as a result of: the complex impact of many technologies where their implementation is optimized only for production volumes, and not taking into account environmental friendliness. The ways in which energy is transformed with the help of technological manipulations, energy-saving technologies, the environmental consequences will not be rational.

Conclusions.

Technologies can create a certain «order» in production only by optimizing elements and protecting the environment. The impact of agriculture on the environment depends on a wide range of agricultural methods, methods, and technologies used in fish farming. Thus, modern technologies in aquaculture and fish farming are the most favorable for the process of adaptation of hydrobionts to new conditions, reduction of their physiological stress and other negative environmental factors.

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