To the Issue of Econometric Modeling in Fish-Farming Technologies

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Abstract. *The subject of this article refers to the direction of intelligent computer-integrated technologies and decision support systems for the optimal control of fish-breeding technological processes, created on the basis of modern information technology with the use of basic principles of inductive modeling techniques and application of systems analysis as well. Given the system predictive econometric model, that links the predictive integrated efficiency of aquaculture with other relevant indicators on all fisheries technological cycle after stocking of ponds to the realization of fish.*

Keywords

econometric modeling, fish-farming, inductive modeling, aquaculture, indicators

From the available literature sources, it is known that intensive technologies of industrial cultivation of aquatic living resources (ALR), including fish – is a system combination of manufacturing operations, methods and techniques focused on maximum utilization of the physiological properties of fish under the given climatic conditions throughout the vegetation period of its development. Such technologies are above all things aimed at the efficient use of water biological resources as well as the most cultivated ALR during of the entire ontogenesis at the expressed astatic of variety of environmental factors [1]. Apparently, the production in this case is clearly prevails over issues of economic type.

On the other hand, purely economic benefits should not prevail over the protection of the natural environment, compliance of the hydro-chemical and hydro-biological indicators in optimal water, that is, comfortable ranges of parameters for ALR.

From the standpoint of system-economical production of ALR, it is necessary conditions of productivity in open continental waters, is not only compliance with specific technologies aquaculture. To such technologies is important to enroll sanitation, integrated land reclamation of “water-bed” [1, 2] and so on.

A particular direction of optimal maintaining of water exchange is the modern automated process control systems (APCS). One of the priority tasks that should be resolved within the APCS is support of both hydro-chemical and hydro-biological indicators in optimal, that is comfortable range of water indicators, such as aquatic living resources in fattening ponds [3, 4].

A special place in cost price of modern intensive aquaculture technologies, including industrial fish-farming in open water, is the most costly part - feeding of fish and costly balanced feed. Therefore, the intensification of technology is important and relevant.

The main system criterion in the outlined direction of research, in our opinion, it would serve the some economic prototype that would to maximize the income (profitability) from the sale of live fish and fish-products, provided at the same time the undeniable compliance with its high quality at the moment of the maximum peak of selling.

It is clear that the problem, which has been put here, should include the tasks of system marketing as a subset of a more general class of system information-analytical research (SIAR) [5, 6].

Hence, from the foregoing, logically faces the task of system econometric forecasting of growing aquatic biological resources profitability at the moment of their future realization under current real or in some way given conditions. In this case, it is clear that besides biological and other parameters it would be worth still involve certain other factors that are described in the available literature.

Therefore, without claiming for completeness and highest relevance, the primary basis for further information and econometric studies in this direction would look like follow.

I. The natural indicators:
- yield of larvae or fry of fish from one female;
- planting fish density per one hectare of pond of all age categories;
- mass ratio grown fish to planted for growing;
- average weight of fish been grown of all age categories;
- yield from wintering yearling fish and older age groups;
- gross production of fish;
- fish productivity of fattening ponds and other water bodies in fish farm;
- the fish production per employee;
- natural food base of fish: phytoplankton and zooplankton, zoobenthos;
- the industrial returning of fish when of fish stocking of natural water bodies.

II. Current values of economic indicators:
- the specific cost of fixed assets in 1 quintal of marketable fish;
- unit cost of growing in 1 quintal of marketable fish without feed;
- the share the cost of feed on 1 quintal of cultivation of marketable fish;
- current prime price of 1 quintal of marketable fish;
- current cash sales revenue of possible of fish mass (options);
- the current selling price of 1 quintal of marketable fish;
- current a net profit from the sale of fish including taxes;
- current profitability of fish farming and fisheries;
- current breeding efficiency.

III. The predicted value of economic indicators at the moment of future product sales:
- the forecasted cost of fixed assets in 1 quintal marketable fish;
- the forecasted specific cost of growing on 1 quintal marketable fish without of feed;
- the forecasted specific cost of feed on 1 quintal of cultivation of marketable fish;
- forecasted prime price of 1 quintal of marketable fish;
- forecasted selling price of 1 quintal of marketable fish;
- reasonable forecasted sales volume;
- forecasted a net profit from the sale of fish including taxes;
- forecasted profitability of fish farming;
- forecasted sales revenue of possible of fish mass (options);
- forecasted breeding efficiency.

IV. The current factors of environmental conditions of water biological resources:
- chromaticity of water and water clarity;
- dissolved oxygen, mg / L;
- pH value of water;
- alkalinity, mg eq. / L;
- the total salinity and others.

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