

The Experience of Growing Artemia in Our Republic Using Intensive Technologies

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Abstract: This article presents information about the experience of artificial cultivation of Artemia in the Chimbai district of our republic and about research works on artificial cultivation of Artemia using intensive methods tested by scientists of the University of Canto, Vietnam.

Keywords: Arthropoda, Crustacea, Brachiopoda, Anostrasa, Artemiidae, halophilic, predator,

Systematically, Artemia belongs to the type – arthropods (Arthropoda), the class – crustaceans (Crustacea), the subclass – gill-legged crustaceans (Brachiopoda), the order - gill-legs (Anostrasa), the family – Artemiaceae (Artemiidae).

The halophilic artemia crustacean is distributed all over the world from marine reservoirs to ultrahaline continental lakes. The salinity range of the artemia habitat is wide and ranges from 10 to 340 g/l. But since this crustacean does not have any anatomical protective mechanism against predators, its mass development is observed only in those reservoirs in which predators cannot survive (i.e. at a salinity of 70 g/l and above).

As salinity in the Aral Sea increased, the structure of the zooplankton community underwent significant changes, which led to a change of dominant species and a sharp drop in biodiversity. As a result, artemia was observed in the Aral Sea in 1999. However, since 2000, artemia has become a permanent and dominant component of plankton, accounting for more than 99% of the total zooplankton biomass.

For the purposes of aquaculture, artemia is used at different stages of development. The nutritional value of artemia at different stages of development is different. Decapsulated artemia and nauplia cysts have the best nutritional characteristics immediately after hatching.

There are many variables besides the population size that affect its potential in terms of production of products in demand by the market. Quality, availability, impurities, discharge, storage conditions, nutritional value, cyst size – these are just a few of the most important factors determining the demand for Artemia cysts on the market.

For example, the size of the cysts of the Aral Artemia is close to the size that is considered commercially acceptable (cysts with a diameter of less than 0.250 mm are in the greatest demand). The most popular cysts on the world market have a diameter of 0.220-0.230 mm, while Iranian cysts, which have a larger diameter and are less commercially observable, have a size of 0.260-0.287 mm.[1; – R. 442-454]. Chinese cysts have a size of 0.233-0.280 mm.[4; – P. 77-78]

The percentage of hatching of artemia cysts is the main parameter determining their commercial value and the possibility of sale on the global aquaculture market. One of the important biochemical properties of Artemia as a starter feed is the presence of polyunsaturated fatty acids, which are important for use in marine or freshwater aquaculture by percentage. [2; -p. 27-63]

The special value of Artemia lies in the fact that its cysts can remain viable for a long time, and at any time it is possible to obtain a large amount of the original live feed in a naupliar or decapsulated form.

It is believed that the quality of artemia Aral cysts meets the basic requirements for the nutrition of fish and shrimp in aquaculture with a number of key indicators, such as size, fertility percentage, fatty acid content. Recently, our republic has been working on the production of feed using Artemia for poultry farming.

The growth of consumer demand and the high commercial potential of CIST led to an increase in anthropogenic pressure on stocks. Under these conditions, the tasks of determining the total reserves of cysts and justifying the amount that can be obtained are important to prevent a reduction in the Artemia population.

Artificial cultivation of Artemia today requires a lot of attention, which makes it possible to rationally use and preserve natural resources, create jobs on the territory of the republic and provide additional income. Also in aquaculture, artemia cysts are considered the initial protein feed for fish and shrimp.

In our republic, a scientific experiment on the organization of Artemia production in artificial pools using intensive technologies was carried out in the Chimbaysky district. An exchange of experience was carried out with scientists from the University of Canto in Vietnam. The applied practical and theoretical methods are studied.



Figure 1. The process of introduction of newborn artemia nauplii into the pool after 24 hours. For acclimatization and experimental tests, the Vietnamese SFB (vin chau) species was brought. Nauplia derived from the cysts of this species were introduced into the pond on September 17, 2022 (Fig. 1).

Temperature 24°C, salinity 50 ppt, oxygen content 10.2 g/l. Good nutrition, mobility and activity of Artemia naupliuses were observed. Ten days later, the mating of Artemis began. Egg sacs of artemia aged from twelve to fourteen days were examined under a microscope. It was found that cysts in females in the egg sac on

average about 43-86 cysts. (Fig. 2)



Figure 2. The appearance of cysts on the ovaries of the female.

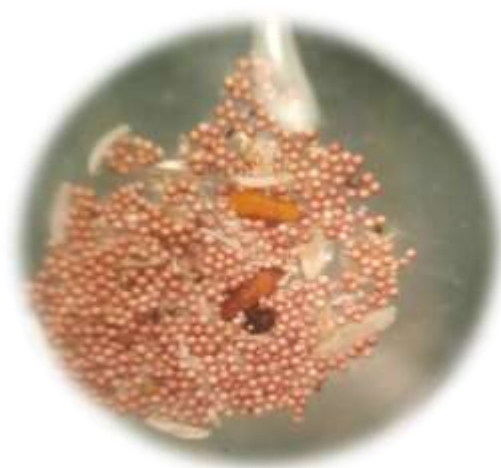
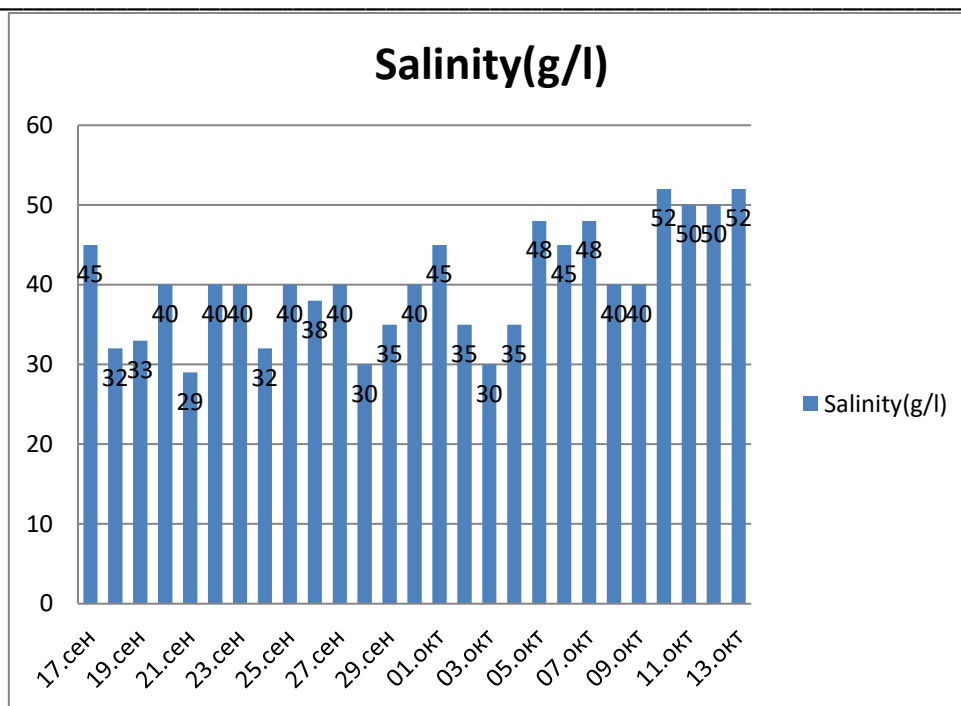
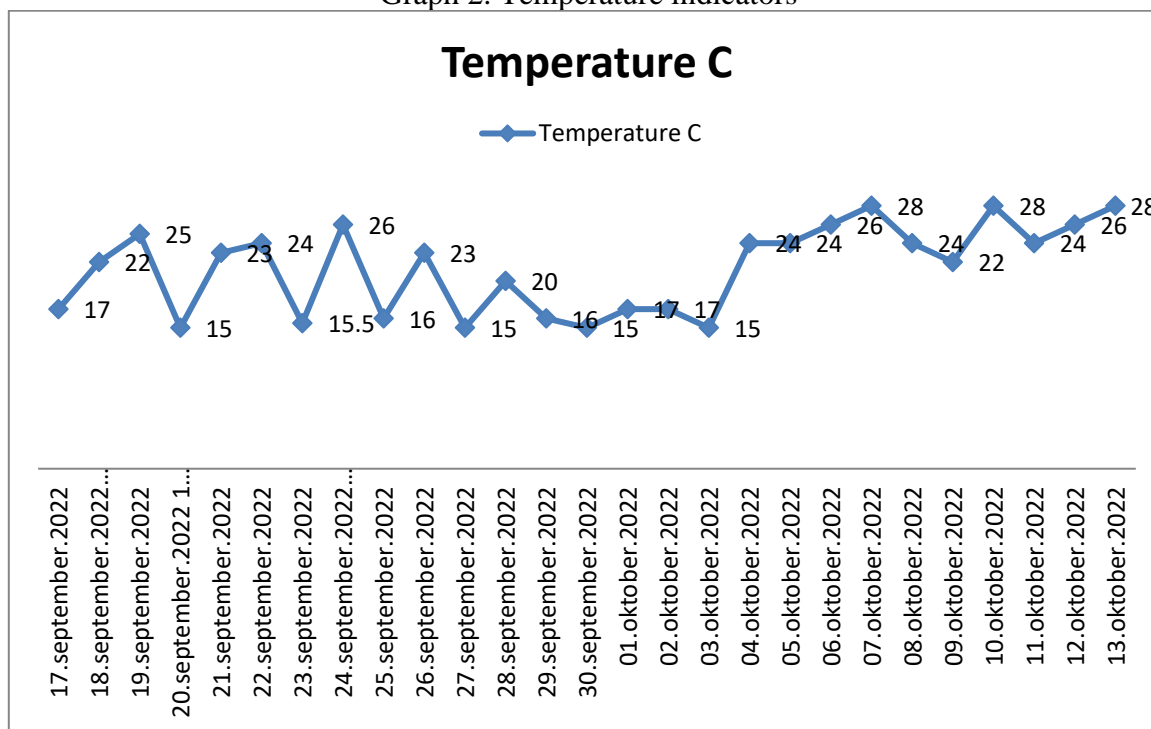


Figure 3. View of cysts in a microscope obtained at the end of the experiment in the Chimbaysky district



Graph 1. Salinity indicators

Graph 2. Temperature indicators



According to the results

- ✓ And the most basic parameters affecting Artemia, a temperature of at least 15°C, a maximum of 28°C was observed;
- ✓ Salinity minimum 29, maximum 52 ppt;

The sizes of the obtained cysts were determined as follows: average-226.3 microns, maximum-255 microns, minimum-200 microns. (100 cysts were measured for determination.)

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