

**RESEARCHES REGARDING THE GROWTH OF
HYPOPTHALMICHTHYS MOLITRIX AND
CTENOPHARYNGODON IDELLA JUVENILES IN AN
INTENSIVE SYSTEM**

**CERCETĂRI PRIVIND CREȘTEREA PUIETULUI DE
HYPOPTHALMICHTHYS MOLITRIX ȘI
CTENOPHARYNGODON IDELLA ÎN SISTEM INTENSIV**

ANI ALINA RODICA, BARBU A., NEGRILĂ D.

Faculty of Animal Sciences and Biotechnologies, Cluj-Napoca, România

*The intensive net cage system is based on the superior capitalization of the accumulation lakes or other different basins through the use of different types and dimensions, stationary or floating net cages, depending on categories like age, species and destination. This study is about the use of net cage intensive system type in the growth of juveniles *Ctenopharyngodon idella* and *Hypophthalmichthys molitrix* species. From the experimental point of view, the objectives were represented by the construction of a net cage mini-system and the surveillance of the biological material inside this system. The experiment was unfolded on the length of 38 days at the Mărtinești Fish Farm from Cluj County. A net cage system designed and conceived by the research collective was populated with 4000 juveniles fish from each species. At the beginning of this experiment the juveniles fish had a medium weight of 2 grams/sample. At the end of this experiment the fish had a medium weight of 9 grams.*

Key words: net cage, intensive system, *Ctenopharyngodon idella*, *Hypophthalmichthys molitrix*.

Introduction

At present conditions, when the “protein starvation” expression becomes more and more used all over the world, the aquaculture, respectively fish meat production acquires new values. Because the fact that the fish provides products with a high level of biological value, at a very low price and minimum costs of energy, in the last decade aquaculture has without any discussion the impress of introduction and development of intensive technology net cage type in fish growth and exploitation. The extending of this intensive technology type to a world scale is due to the following advantages:

1. the system is adaptable, depending on water level and species;

2. acquisition and implementation of this system requires a relatively low cost;
3. eliminates water supply and evacuation equipment;
4. due to the location, the system represents a permanently and adequate water debit;
5. reevaluates the flora and the aquatic fauna of the lake, where the system is located;
6. entire system can be misplaced
7. the growth and exploitation of a higher number of species.

The reason why we selected this subject for our research is because these days only few data are known regarding the growth in single-crop system of the *Ctenopharyngodon idella* and *Hypophthalmichthys molitrix* species and the advantageousness of their growth in net cage systems.

Materials and Methods

The experiment took place between 18.07.2007 and 25.08.2007 and was unfolded on the length of 38 days with a number of 4000 samples of *Ctenopharyngodon idella* and *Hypophthalmichthys molitrix* juveniles fish. The intensive net cage system type was located as part of Mărtinești Fish Farm from Mărtinești, Cluj county. The initial weight of the fish from these two species was 2 grams/sample at the age of 21 days. At the end of this experiment the average body weight of *Ctenopharyngodon idella* and *Hypophthalmichthys molitrix* species was 9 grams/fish.

The intensive net cage system was created of synthetic material in order to allow assemblage and transportation and for a better stability were used sustain materials.

The net cage system was located in one of the development lakes from the farm, near the water supply, in order to assure a better dose of 8 mg of oxygen/liter (table 2), and an optimum water temperature of 22°C . The intensive net cage system characteristics can be remarked in table 1 and also in image number 1.

Table 1

The net cage system characteristics

Area	8 m ²
Depth	1.2 m
Shape	Circular
Used material	Synthetically net
Supporting	Plastic pipes and pieces of wood
Tissue assemblage	Special fibre
Location	Bottom of the lake



Fig. 1. The net cage

Table 2

Water characteristics

Oxygen quantity	8 mg/l
Water temperature	22°C
pH	7.6

Ctenopharyngodon idella and *Hypophthalmichthys molitrix* fish were fed 6 times per day, at different hours mentioned in table number 3, and the food quantity was administrated depending on the observations made by the research collective.

Table 3

The feeding schedule

Hour of feeding	Amount (%)
7 ⁰⁰	5
9 ⁰⁰	10
11 ⁰⁰	20
13 ⁰⁰	30
15 ⁰⁰	20
17 ⁰⁰	15
19 ⁰⁰	10

Results and Discussions

Regarding the weight and daily body weight gain, the results are presented in table number 4. It shows that when we started this experiment, at the age of 21 days, the *Ctenopharyngodon idella* and *Hypophthalmichthys molitrix* fish weight was 2 grams per fish. After 38 days of growth, at the end of the experiment, at the age of 58 days the weight registered on both two species was 9 grams per fish, with a daily average increase of 0.1842 grams per fish.

Table 4

Species	<i>Ctenopharyngodon idella</i>	<i>Hypophthalmichthys molitrix</i>
Number of fish	4000	4000
Growth density m ²	0.001	0.001
Initial body weight (g)	2	2
Final body weight (g)	9	9
Daily average body weight gain (g)	0.1842	0.1842
Minimum weight (g)	8	8
Maximum weight (g)	10	10
Mortality %	1.55	1.9

Fish mortality had been observed only in the last 7 days of the experiment, when water circulation was difficult because of the accretion of organic substances. We can observe a 1.5% mortality for *Ctenopharyngodon idella* fish, 62 individuals and a 1.9% mortality, 76 individuals, for *Hypophthalmichthys molitrix* fish.

At the end of this experiment, the research collective set forth the construction of a net cage from a material which can allow a constant and permanent circular flow of water and the location of this net cage should be with at least 30 cm above the bottom of the lake. Due to this results, the research collective wish to repeat this experiment in order to confirm these results.

Conclusions

- The *Ctenopharyngodon idella* and *Hypophthalmichthys molitrix* species could be intensively grown if the intensively net cage system can assure the exactly flow of water.
- Analyzing the breeding dynamics of this two species, we can make the conclusion that there is a grown equability of weight if we use an intensively net cage system
- The intensive net cage system is advantageous if we take in consideration the fact that we can grow a higher density of fish and we can revalue in the same time the natural food of the lake where this intensive system is located.
- Due to the small number of employees needed, easy control of the food and physical and chemical parameters of the water, this system is supposed to be economically profitable.

Bibliography

1. **Cristea V., Grecu I., Ceapa C.** (2002) – *Ingineria sistemelor recirculante din acvacultură*, Ed. Didactică și Pedagogică, R.A., București.
2. **Bud I., Diaconescu Ș., Mudure M.** (2004) – *Creșterea crapului și a altor specii de pești*, Ed Ceres, București.
3. **Ani Alina R., Sabadoș Lavinia M., Rus Claudia E.** (2003) - *Studiu privind diversificarea creșterii și exploatării peștilor în viviere flotabile*, USAMV, Cluj-Napoca.
4. **Hegheduș Cristina., Man C.** (2005) – *Studiul unor însușiri fizico-chimice ale apei din exploatații piscicole din Județul Cluj*, Cercetări proprii, Cluj-Napoca.
5. **Masser M.P., Rakocy J., Losordo T.M.** (1999) – *Sisteme de producție în bazine de acvacultură cu recirculație*, S.R.A.C. Publication nr.452.
6. **Mery A.Y.E.** (2005) – *La acvacultura en America Latina Volumen 1*, Instituto de Fomento Pesquero Santiago, Chile.
7. **Oprea L., Georgescu R.** (2000) – *Nutriția și alimentația peștilor*, Ed. Tehnică, București.
8. **Herrera-Vera R.F., Galaviz-Rojas J.L., Roman F. D.** (1980) – *Control biológico del liro acuatico eichhornia crassipes mediante la Carpa Herbivore Ctenopharyngodon idella (Pisces Cyprinidae) en estanques controlados*, Universidad Național Autonoma de Mexico.