

STUDY REGARDING GROWTH TECHNOLOGY RAINBOW TROUT

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Abstract

Diversified development of the national economy has provided new conditions of operation for the artificial breeding of trout, the development of new areas and by improving technology to increase as a result of amplifications scientific research. Among all species salmonids rainbow trout of is best suited for increasing intensive in trout consumer production. Artificial reproduction of trout have place in breeding stations and include: parking breeding ponds, hatchery station and basin for larval development. In trout farms specialized for, sapling growth oneself make in basin for breeding, in ponds for fish production consumption. Fish for consumption is increased in fattening ponds. Of all species of salmonid, rainbow trout possess o very fast and very good acclimatization, maybe survive in waters with temperatures slightly higher, slightly cloudy and with variable dissolved oxygen content.

Keywords: salmon breeding, breeders, sapling, roe, hatching

1. INTRODUCTION

Salmon breeding is the branch that deals with increasing fish in artificial conditions in some species of fish belonging to the family Salmonidae, being characterized by adapting the technology for artificial breeding of fish in water conditions with lowered temperature (20⁰C +) generally considered the cold water.

Diversified development of the national economy has provided new conditions of operation of the artificial breeding of trout, the development of new areas and by improving technology to increase as a result of amplification of scientific research.

The species most important in economic terms is a concern of salmon breeding are: *Salmo trutta fario* (native trout), *Salmo Gairdner irideus* (rainbow trout), *Salvelinus fontinalis* (trout), *Thymallus thymallus* (grayling), *Hucho Hucho* (huck). Some of these species are native species in water basins in Romania and others, that rainbow trout were acclimatized for improving the quality of the component ichthyofauna, in order to obtain higher production.

For consumption, in Romania is growing rainbow trout and indigene trout, other species grow to sapling stage, material that populates the mountain rivers, natural lakes and mountain lakes.

2. MATERIAL AND METHODS

Among all species salmonids rainbow trout of is best suited for increasing intensive in trout consumer production.

It is the only species of adult salmonids in a state that descends to the waters and hills.

Adjusts to warmer waters, are not demanding the oxygen content in water, easily gets used to the extra food and has a rapid body growth.

3. RESULTS AND DISCUSSION

Arrange trout is related to source water and land. Water should have a temperature of at least 3 ° C in winter and a maximum of 20 ° C in summer.

Rainbow trout can develop in water bodies such ponds, but deep vegetation water whose surface temperature does not exceed 25°C.

Growth of sapling in ponds with natural food, water temperature should not exceed 24 ° C, the temperature in artificial feeding pools youth must be between 12-16 ° C.

Water temperature determines appetite and feeding of salmonids having influence on the process of hatching at a temperature of 1-3 ° C embryonated spawn develop hard and at 15 ° C begin to suffer.

The amount of water is directly dependent on many factors among which the most important are: temperature, atmospheric pressure, amount of organic matter and vegetation development. Response to water pH between 6 and 8.

Mineral salt content is determined by the geological nature of the substrate for the development and permeability of rocks, granite or silicate waters are clean and have a high value in terms of fisheries.

Water flow is related to surface water being used. For Salmon breeding need at least 0.03 to 0.05 l / sec to 300-500 m² body of water or 1 / ha. Should be avoided waters rich in iron, sulfur, preferring the

wide open valleys, well-lit, ventilated with sandy or rocky bottom.

Artificial breeding station water must be filtered through natural filters, filter materials using as sand, gravel, coke, peat, sponge or cloth.

Providing breeding

Breeding of trout may be harvested from the wild during the winter or they can grow in salmonid farms.

Breeding that will be fished from the wild are identified from time settling areas of concentration. Salmonid large units can not be based solely on breeding caught from natural waters, they must be reared in ponds. After many observations and experiments that could determine the most appropriate age for breeding is 4-7 years, exceptionally using 10 to 12 years breeding, well developed.

Every three males one female shall ensure, to the number of breeding are required about 0.14 ha.

Breeding ponds where they park must have a rate of 1.5 l/sec/ha, to create conditions as close to natural. Held captive breeding should be fed, the daily ration should be 2% of their weight and about 2 months before breeding ratio will decrease by up to 5%. As more food is used spleen, fresh blood, rye, barley with granulated fodder made by some special recipes.

Artificial Reproduction

Artificial reproduction of trout occurs in breeding stations include: parking breeding ponds, hatchery pools for larval development.

Parking breeding ponds are small and elongated forms specific salmonid fish ponds to allow passage of current over the entire surface and total water exchange.

The power flow to ensure water changeover for 3 hours and storage capacity is dependent on the size of breeding.

Hatchery consists of thicker masonry to maintain a constant temperature inside, and its size depends on the ability embryonated egg production station or larvae.

From a technical standpoint, incubation of salmonid eggs obtained by artificial fecundation can develop either in the wild or in special equipment (incubators) placed in incubation chambers.

The types of incubators found in salmonid farms in Romania are: the current vertical incubator (Zug, Weiss, Californian), horizontal and mixed (incubator Wacek-Universal), with local modifications, incubators can be placed separately or shelf system. Basins for parking larvae can be oriented horizontally elongated shape having current or round or square, with tangential supply.

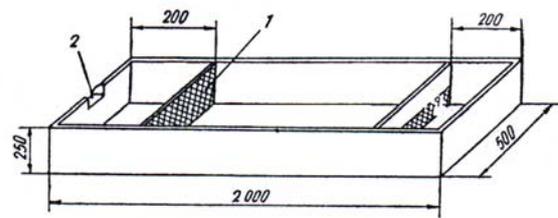


Figure1. Basin parking larvae

1. sieve; 2. Overflow

To avoid loading with organic matter or transmission of pathogens, each pool has a system of independent alimentation-evacuation.

Artificial reproductive technology

Artificial reproductive technology is broadly similar in all species of salmonid. Two weeks before breeding and fish breeding are separated by gender. Secondary sexual characters are highlighted by enlarged abdomen, rounded and soft to the female genital orifice prominent and congested. To collect roe is a easy massage of the abdomen. Over fish roe collected from 3-4 females are milked sperm from 1-3 males.

Incubation can occur in artificial breeding station in incubators, described above or can be left to incubate in the natural environment. Transport roe can be done in the first hours of incubation or embryonic period and no later than 5 days before hatching. Incubation of roe in artificial breeding stations is a long process so it is necessary to pay attention, by executing the following works:

- determination of oxygen in the water and flow capacity at certain intervals.
 - control of water circulation in the incubators and removing any bubbles or air pockets.
 - water registration temperature three times a day.
 - removing spawns daily of death
 - maintaining incubators in obscurity to keep spawns in conditions similar to those of nature
- Hatching does not occur in the same time in gradually in approximately a week, properly in general with an accumulation of cca. 50 degrees days.

The Obtain larvae robust and resistant requires the application of special growth conditions in the ponds for larvae parking:

- density exceeding 10 000 specimens/m² mountain trout, 30,000 rainbow trout specimens /m².
 - flow capacity of 1-3 l / minute;
 - the temperature will not fall below 10°C;
 - gradual exposure to dim light;
 - regular distribution of feed;
 - maintain strict cleanliness and hygiene conditions.
- Increased sapling

After a feeding period of 3-4 weeks parking in pools of larvae, the larvae pass into growth ponds. Here we maintain a density of 3000 specimen / m², and the density 4 at months of 1500 specimen. In basins density circulars may be two or three times higher.

Restocking mountain rivers with trout, rainbow trout and other salmonid can be done by larvae at an age, when crossing active feeding at 3-4 days after hatching to whitefish to 18 days and trout or after a period feeding in pond of 3-4 weeks.

The growth of specialized sapling trout hatcheries is to produce breeding in ponds for fish production or consumption.

Sapling growth in ponds can occur:

- landscaped ponds are in which used fertilizers and to distribute food artificial, this are an area of 50-500 m² and a stocking density of 10-40 sapling/m².

- natural ponds without fertilizers and feed artificial have an area of 2000 m² and a stocking density of 2-3 saplings /m².

- natural ponds artificially fattened, with an area of 500-2000 m² and a density of 5-10 saplings/m².

Increasing consumer of trout

Fish for consumption is increased in fattening ponds. The stocking density varies between 50-200 exemplar/m² in depending the quantity and quality feed distributed.

Artificial feed can be formed of fresh food or concentrates so:

Feeding larvae up to 2 weeks

At 3-4 days after hatching the larvae begin to feed actively. In the first week feed must be formed from microorganisms living. Later in aquatic insect larvae chopped, sifted through the fine sieve which may be the spleen, brain, etc.

Feeding larvae from 2 weeks to 4 weeks

At this age, herself distributes spleen with added 2-5% yeast. Failing which it can distribute livers beef or pork, from blood slaughterhouse, brain, kidney, heart, cheese from cows, plus the same amount of wet yeast.

Feeding sapling over 4 weeks

It is made with fresh fish, shrimp or fish meal and yeast added. As concentrated feed moistened flour is distributed to the larval stage and granule so as to feed fish higher. To determine the daily ration is taken into account weights and the index of variation of water temperature.

Fodder distribution is 10 times a day to sapling, 3-5 times daily at consumption trout and once in the winter months. To increase by 1kg, trout consumes about 8 kg slaughterhouse waste or 3kg granulated feed.

- consumption planning of feed on monday may be staggered thus: March 1%, April 4%, 7 May% June 13% July 16% August 18% September 17% October 14% November 10%.

4. CONCLUSIONS

Rainbow trout is the most suitable species for base intensive farming on in modern principles.

Rainbow trout breeding grow more easily than local breeding trouts and one can sort from trout for consumption.

Of all species of salmonid, rainbow trout possess o very fast and very good acclimatization, maybe survive in waters with temperatures slightly higher, slightly cloudy and with variable dissolved oxygen content.

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