Chapter 4

Current State of Fish Production on Carp Farms in Serbia

Stevan Čanak
State University of Novi Pazar, Serbia

Jonel Subić
Institute of Agricultural Economics, Serbia

Marko Jeločnik
Institute of Agricultural Economics, Serbia

ABSTRACT

In the Serbian fishing industry, carp breeding in pond is the most important activity. Analysis has shown that breeding may be organized in a two-level semi-intensive system, or in a fully intensive breeding system. Carp farms in Serbia cover any area of around 10,000 ha, with an annual restocking of young fish at around 8,600 ha. Species usually bred include carp, bighead carp, silver carp, grass carp, catfish, pike, and perch. By the level of production of edible fish in carp ponds, with an average production level of 5,000-7,000 tons of fish annually, Serbia takes an important place in Europe. In the chapter, the authors calculate several performance indicators of production for all carp farms, and the results show that by the production intensity Serbia is highly positioned in Europe.

INTRODUCTION

Serbia is continental country in which prevails continental and semi continental climate, along with mountain climate in hilly areas. Fishery in Serbia is divided on fishery on large rivers and aquaculture. Aquaculture refers to fish production in warm water ponds called carp ponds and production in cold water ponds called trout ponds.

On trout ponds there are rainbow trouts (*Oncorhynchus mykis)* bread in a total annual production of around 1.2 million kilograms.

In carp farms there are several fish types bread: common carp - *Cyprinus carpio* and accompanying fish species, such as bighead carp – *Hypophthalmichthys nobilis*, silver carp - *Hypophthalmichthys molitrix*, grass carp - *Ctenopharyngodon idellus*, wels – *Silurus glanis*, pike-perch – *Stizostedion*

lucioperka and northern pike – *Esox Lucius*. Total annual production in recent years on carp farms is around 12 million kilograms.

Ponds are also used for breeding other fish types: bream – *Abramis brama*, tench – *Tinca tinca*, crucian carp – *Carassius carrasius* and "wild" carp – *Cyprinus Carpio,* for the purpose of fish restocking in open waters (rivers and lakes).

Fishery takes an important role in Serbian agriculture generating 1-1.5% of total income. At the same time opportunities for development, as well as interconnection with other sectors of agriculture could provide significant contribution to agriculture in the near future.

In order to precisely describe carp fishery in certain country, apart from data on total production quantities per fish species and age categories, it is also necessary to analyze the fish breeding process. It is necessary to calculate some production parameters, which can be used to compare production over years, and with other countries in which the production is similarly organized.

In this paper there were analyzed basic characteristics of carp farms in Serbia, methods of fish breeding, as well as realized production in the period 2007-2013. There has also been made a comparison with major producers of the same fish species in the European continent.

TYPES OF CARP FARMS IN SERBIA AND SYSTEMS OF PRODUCTION

Carp breeding is done in many different ways worldwide, in different types of ponds according to its hydro-construction. In Serbia, it is possible to find several different types of carp ponds varying in size and characteristics.

Carp ponds can be divided in several ways, with two distinguished basic criterions, hydro-construction and technology. According to the first criterion, carp ponds can be compared by size, type and location of building, as well as according to the way of water supply (Hristić &

Bunjevac, 1996; Marković & Mitrović - Tutundžić, 2003; Čanak, 2012).

According to construction type majority of carp farms in Serbia are earthen farms. There exist also few cage farms, as well as one silo farm. According to the location where they were built criteria, the most common are the ponds surrounded by dams. There are also ponds on swamp grounds (fish farm in Živača, Ečka, etc.), as well as ponds with longitudinal dams (Sakule lake). According to their size, ponds are divided in the following way: ponds with the total surface below 10 ha have a share of 16.2% in total number of ponds but cover only 0.8% of total area under fish farms. Farms with the size of 10-50 ha cover 4.7% of total surfaces and participate with 33.8% in the number of carp farms. Fish farms ranging in size 50-150 ha cover 9.3% of total surface and have a share of 16.2% in total number of carp farms. Farms in the size 150-500 ha participate with 25.7% in total number of carp farms, as well as with 47.2% in total areas under farms. The biggest fish farms (over 500 ha) cover around 38% of total surfaces under farms and participate with 8.1% in total number of fish farms in Serbia. This means that large farms, with size of over 150 ha, cover over 85% of total surfaces under carp farms in Serbia (Čanak, 2012).

Water supply for carp ponds can provided from rivers, channels, and wells. The most of carp farms in Serbia are supplied with water by pumps and discharged by gravity.

According to the criterions of technology used and production models, the following divisions can be distinguished: according to completeness of production process, according to the length of breeding period (Hristić & Bunjevac, 1996), according to the breeding system (Marković, 2010), as well as according to stocking structure (Bohl, 1999).

Carp farms in Serbia are mostly semi-systematic (part of operation farms), what means that production starts by purchasing certain category of stocking fish (fry, advanced fry, fingerlings).

Related Content

A Model for Developing a Well-Prepared Agricultural Workforce in Arab Countries
Andrew C. Thoron (2023). *Agricultural Education for Development in the Arab Countries (pp. 1-27).*
www.irma-international.org/chapter/a-model-for-developing-a-well-prepared-agricultural-workforce-in-arab-countries/320275

Application of the Software System of Finite Element Analysis for the Simulation and Design Optimization of Solar Photovoltaic Thermal Modules
Vladimir Panchenko, Sergey Chirskiyand Valeriy Vladimirovich Kharchenko (2020). *Handbook of Research on Smart Computing for Renewable Energy and Agro-Engineering (pp. 106-131).*
www.irma-international.org/chapter/application-of-the-software-system-of-finite-element-analysis-for-the-simulation-and-design-optimization-of-solar-photovoltaic-thermal-modules/239101

Evolution of the Agricultural Producer Markets in the European Union
 (2023). *Implications of the COVID-19 Pandemic and the Russia-Ukraine Crisis on the Agricultural Sector (pp. 280-323).*
www.irma-international.org/chapter/evolution-of-the-agricultural-producer-markets-in-the-european-union/322541

The Risk Parity Approach Applied to Agricultural Commodities: A Different Approach to the Risk
Denis Veliu (2017). *Driving Agribusiness With Technology Innovations (pp. 222-257).*
www.irma-international.org/chapter/the-risk-parity-approach-applied-to-agricultural-commodities/180156

Economics of Farm Management
 (2018). *Agricultural Finance and Opportunities for Investment and Expansion (pp. 56-72).*
www.irma-international.org/chapter/economics-of-farm-management/201759