

Abstract

of the habilitation thesis “**Contributions to Improving the Production Performance and Quality of Fish**” prepared by Associate Professor PhD NICOLAE Carmen Georgeta

The habilitation thesis “Contributions to Improving the Production Performance and Quality of Fish” elaborated by Associate Professor PhD NICOLAE Carmen Georgeta contains three chapters, which present the most important elements of her didactic, scientific and academic activity, during the 12 years that have passed since obtaining the scientific title of PhD.

The habilitation thesis is structured in accordance with the legislation in force and the Regulation regarding the organization process of obtaining the habilitation certificate of the University of Agronomic Sciences and Veterinary Medicine of Bucharest (UASVM Bucharest) approved by the Senate of the UASVM Bucharest on 4th of March 2015. Consequently, the habilitation thesis includes: keywords; scientific, professional and academic achievements; research activity; recognition and impact of the activity (professional prestige); evolution and development plan of professional career, scientific and academic; bibliographical references; an annex with a selection of scientific papers published on the thematic of habilitation thesis.

The topic approached in this paper reflects my professional, scientific and academic achievements in the general field of animal science and in the particular field of aquaculture, fish farming, fish and fishery products processing, environmental and biodiversity conservation.

The first chapter presents the didactic, professional and publicist activity of the author, who, after faculty graduation, was employed in 1996 as a junior teacher and now is Associate Professor at the Faculty of Animal Science, University of Agronomic Sciences and Veterinary Medicine of Bucharest. Throughout my university career, I have been able to elaborate, as author and co-author, over 150 ISI / BDI scientific papers, 10 books, and one patent in my areas of competence.

The second chapter presents the contributions to improve the performance of fish production through genetic improvement; to improve the quality of aquatic biodiversity by aquatic environment and fisheries resources study; to improve the management of fish and fishery products by the information technology use. Also, the results of the research in the areas of competence are presented, as well as the recognition and impact of the activity.

My concerns have been directed to morpho-productive characters study, assessing their genetic determinism, and developing a genetic improvement program for carp to maximize meat production. Throughout the research I worked with individuals belonging to three carp breeds,

Frasinet, Ineu and Ropsa, breeds appreciated by fish farmers, fishermen and consumers. In carp breeds researched, selection for maximizing meat production should include the live weight character.

Depending on the results obtained in the assessment of growth performance, the decisions can be made regarding the exploitation of the breed with the best performances, feed conditions, density and other environmental conditions. The shortening of carp production cycle from 3 years to 2 years has major economic implications. This action eliminates a winter, by saving labour for handling and maintenance of fish. It also saves surfaces covered and feed and in winter, the weight or the number of fish loss is eliminated.

At national level, I proposed the first official methodology to control the carp performance; it can be improved and adapted to other species of fish reared in aquaculture.

Other factors studied in improving fish production performance were: environmental factors; growth and breeding indicators; new technologies and exploitation systems; health status. As a result, we found that monitoring and control of environmental factors contribute to the wellbeing of individuals and food security. Also, the control of these factors has a positive impact on the entire biocoenosis by maintaining the integrity of the trophic network.

With regard to the introduction of new fish farming systems, I have caught my attention and I tested the aquaponics systems. An aquaponic system is a biointegrated system that correlates super intensive aquaculture from recirculating systems with a hydroponic culture that produces vegetables, flowers, medicinal plants, aromatic plants, etc. By testing the aquaponic systems under certain conditions, I found that they can be relatively cheap to achieve and can be an independent source of constant income and even a provider of new jobs in the community.

The study of the Black Sea ichthyofauna, developed in the subchapter on conservation and the quality of aquatic biodiversity, revealed the presence of ten pelagic species of commercial importance, all of them of small size: sprat (*Sprattus sprattus*); whiting (*Merlangius merlangus*); European anchovy (*Engraulis encrasicolus*); Mediterranean horse mackerel (*Trachurus mediterraneus ponticus*); knout goby (*Mesogobius batrachocephalus*); Round goby (*Neogobius melanostomus*); bluefish (*Pomatomus saltatrix*); flathead grey mullet (*Mugil cephalus*); red mullet (*Mullus barbatus ponticus*); big-scale sand smelt (*Atherina boyeri*) and three demersal species: Black Sea turbot (*Psetta maeotica*); Blackhand sole (*Pegusa nasuta*); European flounder (*Platichthys flesus*).

Regarding the quality management of fish and fishery products, as a follow-up of the studies performed, I can say that the implementation of the traceability information systems makes possible to increase the quality of products, in food safety conditions and environmental protection by avoiding fraudulent catches.

In the subchapter on recognition and the impact of didactic and scientific activity I can say that my papers were cited in 9 ISI-indexed papers and in 11 BDI indexed papers. Through the qualities recognized over time as researcher and careful evaluator, I have become an integral part of scientific or editorial committees, as well as a reviewer for 27 national and international scientific journals and scientific events, some ISI indexed. Also, the recognition of scientific research merits has been rewarded by awarding prizes and diplomas at national and international events.

In the last chapter are presented the directions of future development of my professional, scientific and academic career.

In the future, I will ensure that the scientific directions that I continue to develop are in agreement with the study discipline, with the educational programs, in order to increase the practical-applicative and interdisciplinary character of the research.

Key words: *aquatic environment, biodiversity, fish, fishery resources, genetic improvement, information system, production systems, quality, traceability*