THE EFFECT OF DIFFERENT FARMING TECHNOLOGIES ON MORPHOLOGICAL PATTERN AND ORGANOLEPTIC ANALYSIS OF RAINBOW TROUT (ONCORHYNCHUS MYKISS WALBAUM, 1792)

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INTRODUCTION

Macroscopic morphological analysis is the tool used in order to evaluate fish health state. It also enables making fast and easy comparison of the health state of the fish obtained from different breeding technologies. The aim of the study was to find whether there is correlation between macroscopic and organoleptic evaluation of trout subjected to single use of water (OS) and multiple use (RS).

MATERIAL AND METHODS

Rainbow trout (Oncorhynchus mykiss Walbaum, 1792) from 6 fish farms had been evaluated macroscopically and in organoleptic way for three years: 1-3 - fishing farms with the single water use (OS) and 4-6 - fishing farms of high circulation level with the use of objects with recirculation aquaculture system (RS). The study was conducted during the spring and autumn on trout of 350-500 g (S) and 501-850 g (B), n=20. The fish was caught in May and June (480 fish) and in September and November (480 fish). External (skin with scales, eyes, gills and fins) and internal macroscopic examination and organoleptic analysis (AO) were performed. Experts panel evaluated: colour, aroma, texture, juiciness, flavour and overall subjective assessment using a 9-point hedonic scale. Rating was calculated based on discriminants reflecting their weight proportion.

RESULTS

Skin was occasionally scratched. The gills were pale (S5 - 9/20, B5 - 2/20) with necrotic foci (S5 - 4/20, B5 - 2/20) in fish from one farm. A few trout (S2 - 6, B2 - 3, S3 and B3 - 3) showed gills congestion. Congestion of the liver, spleen and kidney in several cases (more often trout B-OS, autumn) was noted. There were petechiae in the liver and spleen in several fish (more often - RS). Steatosis simplex in the liver occurred in 28 trout (more often B-RS, autumn) – Fig. 5, 6. Parenchymal degeneration of the liver was noted occasionally. Median for all AO discriminants and in overall assessments was about 8. All trials with OS and RS received a very high acceptability.

Friedman test showed that the macroscopic lesions were not significant for OS and RS fish, and coming from a particular fish farm. Statistical significance was more often noted in fish B than S.

OS, S: Fig. 1, 5, 10; OS, B: Fig. 2;
RS, S: Fig. 3; RS, B: Fig. 4, 6.

SUMMARIZED

Macroscopic morphological evaluation allows quick diagnose of the trout health and combined with organoleptic evaluation it makes it possible to determine the quality of the fish. Both estimates indicate that the tested farming technologies lead to high quality product.

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