GROWTH AND PHYSIOLOGICAL PERFORMANCE OF SEA BASS FRY AND FINGERLINGS UNDER DIFFERENT SALINITIES

By

MOHAMED ELSAYED ELARABY ABDOU

B. Sc. Agric. Sc. (Horticulture), Ain Shams University, 1993

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This thesis for PhD Sc. degree has been approved by:

Dr. Ashraf Youssef Aldaker ……

Prof. of Fish Nutrition, Faculty of Aquaculture and Marine Fisheries, Alarish University

Dr. Mahmoud Mohamed Ali …….

Prof. of Animal Nutrition, Faculty of Agriculture, Ain Shams University

Dr. Mohamed Abdel-Baky Amer ……..……

Associate Professor of Fish Physiology, Faculty of Agriculture, Ain Shams University

Dr. Mohamed Fathy Mohamed Osman ……..……

Prof. Emeritus of Fish Nutrition, Faculty of Agriculture, Ain Shams University

Date of Examination: 16/ 01/ 2019

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Under the Supervision of:

Dr. Mohamed Fathy Mohamed Osman

Prof. Emeritus of Fish Nutrition, Department of Animal Production, Faculty of Agriculture, Ain Shams University, (Principle Supervisor)

Dr. Mohamed Abdel-Baky Amer

Associate Professor of Fish Physiology, Department of Animal Production, Faculty of Agriculture, Ain Shams University

Dr. Tarek Abo El-Mkarem Ali

Lecture of Fish Nutrition, Department of Animal Production, Faculty of Agriculture, Ain Shams University

ABSTRACT

Mohamed Elsayed Elaraby Abdou: Growth and physiological performance of sea bass fry and fingerlings under different salinities. Unpublished Ph.D. Thesis, Department of Animal Production, Faculty of Agriculture, Ain Shams University, 2019.

The present experimental work has been carried out in three Locations according to the stages of the experiments (2 experiments): -

- **The First experiment;**

- Pre-fattening stage in K21 Marine Hatchery belongs to General Authority for Fish Resources Development (GAFRD), Alexandria, Egypt.

- **The Second experiment;**

- Fattening stage to the table market size in Fresh Water System at Al-Keram Intensive Farm (private Sector) Albehera, Egypt.
- Fattening stage to the table market size in Brackish Water System at Al-Manzala Intensive farm belong to General Authority for Fish Resources Development (GAFRD) Al-Manzala, Egypt.

The objective of the present study is to contribute for achievement the food security from high value fish protein sources, that by investigate the effect use of different levels of salinity in fish growth performance, fish feed requirements and physiological nature, European Sea Bass *(Dicentrarchus labrax* L., 1758) as a high value fish species could be effect on aquaculture future investments opportunities in Egypt, especially in different levels of salinity to improve the economic issues from using different water resources.

1- The First experiment (Pre-fattening Stage):-

European Sea Bass (*Dicentrarchus labrax* L., 1758) fingerlings with initial average body weight around (1 ± 0.2) g/ fish were stocked in twelve fiberglass tanks (4m³ water each) at a rate of 100 fish/ tank (Two replicates were assigned for each treatment) for adaptation period for 15 days from 36 ppt. to reach each level of the experimental salinities (36, 17, 8, 4,

2, ≥1‰), respectively, and 167 days in the experimental salinities (36, 17, 8, 4, 2, ≥1‰) in the same tanks with the same stocking rate with initial average body weight 2 ± 0.3 g/ fish to investigate the effect of different salinity levels on growth performance, feed utilization and survival rate of Sea bass fingerlings.

The pre-fattening experimental fish groups were fed daily at a rate of 15% of sea bass biomass at weight (1–2.2g/fish) for 25 days, 10% at weight (2.2-3.84g/fish) for 15 days, 5% at weight (3.84-9.2g/fish) for 30 days, 4% at weight (9.2-12.7g/fish) for 15 days and 3% of fish biomass for fish weight 12.7g up to the end of the experiment about 45g as a maximum weight.

The daily allowances were divided into three meals at 8.00, 11:00 and 14:00 h. for six days a week. Fish were weighing every two weeks during the experimental period.

At the end of the pre-fattening experimental stage; the highest significant weight gain (42.1 g/fish) was obtained by third treatment at level of salinity 8ppt.

Fish groups at the level of salinity ≥1‰ showed the lowest significant weight gain (29.05g/fish) compared with the other five experimental treatments.

The average of the weight gain for the other treatments (36, 17, 4, and 2 ppt.) were (40.6, 37.5, 36.05, and 33.25 g/ fish), respectively.

The survival rate was 100% for all treatments during the experiment.

2- **The Second experiment Fattening stage:-**

Two concrete ponds were assigned in Al-Keram Fish Farm (1 and 2) for the fresh water treatment (≥700 ppm), and in the same time two concrete ponds (3 and 4) were assigned for brackish water treatment (16 ppt), where 600 fish/ pond in Al-Keram Fish Farm (24 fish/ m^3) and 6000 fish/ pond in El Manzala Fish Farm (24 fish/ m^3).

European Sea Bass (*Dicentrarchus labrax* L., 1758) fingerlings with initial average body weight ranged between 30-40 g/fish were

stocked in concrete ponds for 390 days to investigate the effect of different salinities on growth performance, feed utilization and survival rate of European Sea bass to reach fish table size 500g.

The fattening experimental fish groups were fed daily at a rate of 3% of fish biomass for fish weight between 30-70g/ fish and 2.5% of fish biomass for fish weight 70g up to the end of the experiment about 500g as a maximum weight.

The daily allowances were divided into three meals at 8.00, 11:00 and 14:00 h. for six days a week. Fish were weighing every four weeks during the experimental period.

At the end of the fattening experimental stage; - in fresh water system the average weight gain was (385.56 ±0.08g/fish). The total production from the two concrete tanks is 409.46 kg from 1062 fish, with average survival rate 88.5 %, the total amount of feed was 757.5 kg which mean that FCR was 1.85 kg feed/kg gain. And in brackish water system the average weight gain was obtained (455.05 ±0.08g/fish). The total production from the two concrete tanks estimated by 4800.25 kg from 10550 fish, with average survival rate 87.9 %, the total amount of feed was 7824.4 kg which mean that FCR was 1.63 kg feed/kg gain.

Key Words: European Sea Bass, Salinities.

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