EFFECT OF DUCKWEED-INCORPORATED DIET ON THE GROWTH OF PHILIPPINE SILVERPERCH *Leiopotherapon plumbeus*

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Introduction

Background

The Philippine silverperch (*Leiopotherapon plumbeus*), locally known as *ayungin*, is an indigenous freshwater food fish species found in Laguna Lake. It is considered as a commercially important fish species and has a higher market value compared to other freshwater fish species. However, continuous decline of the species has been reported due to excessive fishing, habitat degradation, and predation by invasive alien species. Conservation efforts are carried out to save this species and, fortunately, it is found to have characteristics that are desirable for aquaculture (Aya et al., 2015). Considering its omnivorous nature and its aquaculture potential, the Philippine silverperch makes a suitable candidate for a feeding trial involving a partial replacement of commercial fish feed with duckweed of Family Lemnaceae.

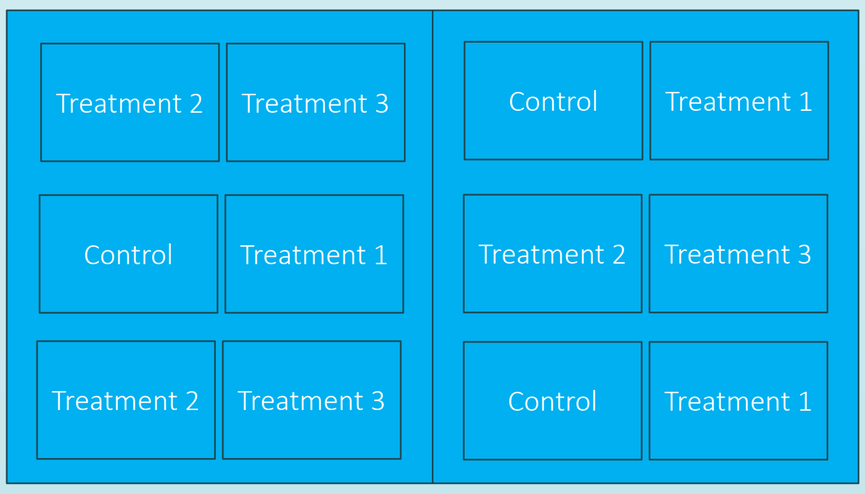
Aim

The general objective of this study was to determine the effect of duckweed-incorporated diets on the growth performance of *L. plumbeus* reared in concrete tanks.

The inclusion of dried duckweed of up to **50%** in the diet of Philippine silverperch was feasible without causing adverse effects on fish growth and should be considered in the grow-out culture of Philippine silverperch.

Materials and Methods

1 Pond Preparation and Set-up



2 Experimental Fish

- 25 fish/net



Photo from philstar.com

3 Feed Preparation and Feeding Management

- Dried duckweed + commercial feed

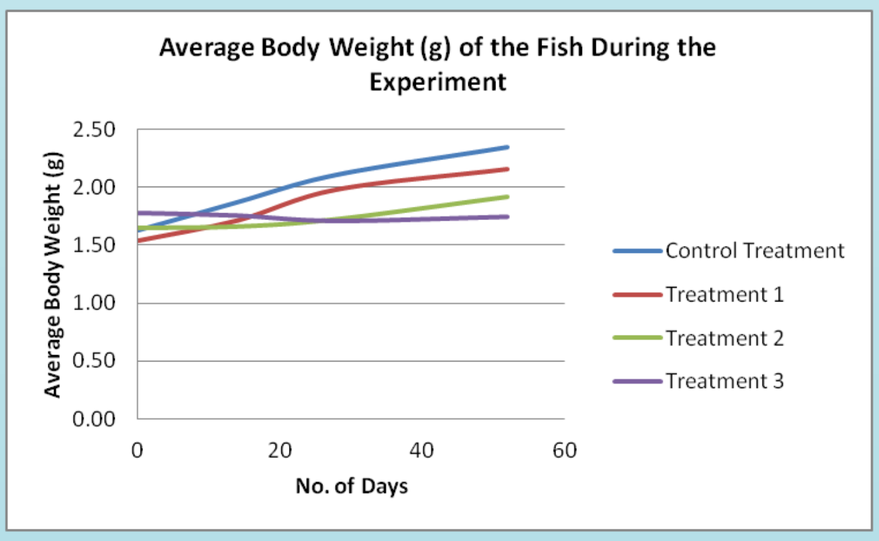
  Treatment 1: 25% duckweed
  Treatment 2: 50% duckweed
  Treatment 3: 75% duckweed
  Control: 0% duckweed

- Twice feeding daily for 52 days

4 Growth Parameters and Statistical Analysis

- Growth parameters ➔ ANOVA

Results and Discussion



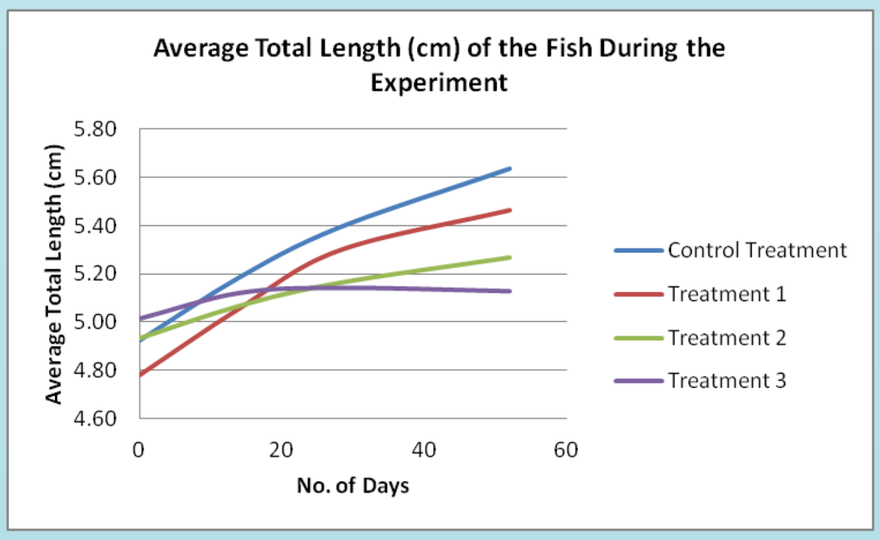


Figure 1. Mean body weight (g) (top) and mean total length (cm) (bottom) of fish during the experiment period (52 days).

Table 1. Growth parameters (mean ± SD) of fish fed with experimental diets for 52 days in concrete ponds. Note: Means between experimental diets group which share the same superscript were not significantly different (P>0.005; ANOVA; DMRT).

Growth Parameters	Experimental Diets			
	Control	Treatment 1	Treatment 2	Treatment 3
Initial weight (g)	1.63 ± 0.52	1.54 ± 0.32	1.65 ± 0.45	1.78 ± 0.70
Final weight (g)	2.34 ± 0.26	2.16 ± 0.24	1.92 ± 0.31	1.75 ± 0.59
Weight gain (g)	0.72 ± 0.32^{a}	0.62 ± 0.13^{ab}	0.27 ± 0.14^{bc}	-0.03 ± 0.11^{c}
Daily growth rate (g/day)	0.014 ± 0.006^{a}	0.012 ± 0.003^{ab}	0.005 ± 0.003^{bc}	-0.001 ± 0.002^{c}
Specific growth rate (%/day)	0.77 ± 0.46^{a}	0.68 ± 0.24^{a}	0.32 ± 0.23^{ab}	-0.01 ± 0.10^{b}
Initial total length (cm)	4.92 ± 0.53	4.78 ± 0.38	4.93 ± 0.49	5.02 ± 0.68
Final total length (cm)	5.64 ± 0.22	5.47 ± 0.14	5.27 ± 0.25	5.13 ± 0.53
Daily gain in length (cm/day)	0.71± 0.33^{a}	0.69 ± 0.24^{a}	0.34 ± 0.24^{ab}	0.11 ± 0.17^{b}
Survival rate (%)	100^{a}	100^{a}	98.67 ± 2.30^{a}	94.67 ± 2.30^{b}
Feed conversion ratio (FCR)	4.27 ± 3.64	3.68 ± 1.46	10.88 ± 7.09	127.97 ± 214.80
Condition factor (K)	1.31 ± 0.03	1.32 ± 0.07	1.31 ± 0.03	1.26 ± 0.06

- ✓ Significant difference in terms of weight gain, daily growth rate, specific growth rate and daily gain in length
- ✓ Increasing levels of inclusion of dried duckweed in the diet showed a negative growth performance of the fish (Fasakin et al., 2001)
- ✓ High survival rate
- ✓ High FCR value = low efficiency of the experimental diets
- ✓ Computation of the condition factor suggested a good well-being of the fish.

Acknowledgment

The authors thank the UPLB Limnological Station for providing the necessary facilities and technical support for this research.

References

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