

THE EFFECTS OF EGG CONTAMINATION ON GROWTH AND SURVIVAL  
RATE OF PINK SHOGUN, *Lingyilia walleyi* (FARME)

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A preliminary study on using Chironomus sp. as a  
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HAK MILIK  
PERPUSTAKAAN SULTANAH NUR ZAHIRAH UMT

**A PRELIMINARY STUDY ON USING *Chironomus* sp. AS A  
BIOREMEDIATION AGENT FOR TREATING POND – BASED ORGANIC  
WASTE**

**Nor Fazliyana Binti Mahtar @ Mohtar**

**This project report is submitted in partial fulfillment of the requirement of the  
degree of Bachelor of Science in Agrotechnology (Aquaculture)**

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## ABSTRACT

This study aims to utilize bloodworm (*Chironomus* sp.) as a bioremediation agent for treating pond-based organic waste. This experiment aims to determine the acceptability, consumption rate and the growth rate of *Chironomus* sp. on pond waste. This experiment was conducted with three treatments for 12 days which were growth of *Chironomus* sp. under organic free condition, degradation of pond waste by the autochthonous microbes and utilization of *Chironomus* sp. to enhance organic matter degradation in the pond waste. Results revealed that *Chironomus* sp. could consume  $0.64 \text{ mgC.g}^{-1}.\text{day}^{-1}.\text{ind}^{-1}$  of pond waste. Microbial community in the pond waste is playing a vital role in removing pond waste at 40.5 % of the organic waste by consuming  $1.61 \text{ mgC.g}^{-1}.\text{day}^{-1}$ . The presence of *Chironomus* sp. in the system can further improved 57.3 % the removal rate of organic carbon. The growth rate of *Chironomus* sp. in the pond waste was determined at  $1.36 \times 10^{-1} \text{ g C.day}^{-1}.\text{ind}^{-1}$  while the growth rate of *Chironomus* sp. in the organic free condition was determined at  $7.8 \times 10^{-2} \text{ g C.day}^{-1}.\text{ind}^{-1}$ . Overall, this experiment suggested that *Chironomus* sp. is a potential bioremediation agent for treating pond based organic waste.

## ABSTRAK

Kajian ini bertujuan untuk menggunakan cacing darah (*Chironomus* sp.) sebagai satu agen bioremediasi bagi merawat sisa organik di dalam kolam ternakan. Eksperimen ini bertujuan untuk menentukan kadar penerimaan, pemakanan, dan kadar hidup *Chironomus* sp. pada sisa organik. Eksperimen telah dijalankan dengan tiga rawatan iaitu pertumbuhan *Chironomus* sp. dalam keadaan bebas organik, pengurangan sisa organik oleh mikrob semulajadi dan penggunaan *Chironomus* sp. dalam meningkatkan pengurangan sisa organik di kolam selama 12 hari. Keputusan menunjukkan bahawa *Chironomus* sp. mampu merawat kolam dengan memakan sisa organik sebanyak  $0.64 \text{ mgC}\cdot\text{g}^{-1}\cdot\text{day}^{-1}\cdot\text{ind}^{-1}$ . Selain itu kehadiran bakteria pada kolam membantu dalam pengurangan karbon organik dalam kadar 40.5 % di mana ia telah memakan sebanyak  $1.61 \text{ mgC}\cdot\text{g}^{-1}\cdot\text{day}^{-1}$ . Dengan kehadiran *Chironomus* sp. kadar pengurangan karbon organik bertambah kepada 57.3 %. Kadar pertumbuhan *Chironomus* sp. dalam sisa organik ialah  $1.36 \text{ g C}\cdot\text{day}^{-1}\cdot\text{ind}^{-1}$  manakala dalam keadaan bebas organik adalah  $7.8 \times 10^{-2} \text{ g C}\cdot\text{day}^{-1}\cdot\text{ind}^{-1}$ . Secara keseluruhannya didapati *Chironomus* sp. adalah berpotensi sebagai agen bioremediasi untuk rawatan kolam.