EVALUATION OF RECIRCULATING AQUACULTURE SYSTEM FOR THE REARING OF NILE TILAPIA (*Oreochromis niloticus*) FINGERLINGS USING PLASTIC CONTAINERS

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDIX TABLES

LIST OF APPENDIX FIGURES

ABSTRACT

CINENSE, ROXANNE H., Department of Agricultural and Biosystems Engineering, College of Engineering, Central Luzon State University, Science City of Munoz, Nueva Ecija, Philippines, **JUNE 2023, EVALUATION OF RECIRCULATING AQUACULTURE SYSTEM FOR THE REARING OF NILE TILAPIA (*Oreochromis niloticus*) FINGERLINGS USING PLASTIC CONTAINERS.**

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Recirculating Aquaculture System (RAS) farming was considered the future culture system. It offered several benefits and disadvantages compared to other production methods like ponds and raceways. This study evaluated a recirculating aquaculture system (RAS) which operated without electricity and utilizes a siphoning process.

The study aimed to evaluate the performance of the RAS in rearing tilapia fingerlings specifically focusing on growth, survival rates, water quality, and cost estimate. The study implemented a comparative approach with two treatments: RAS by siphon and usual RAS by pump. Three hundred sixty (360) Nile tilapia fingerlings were randomly allocated to three (3) replicates of each treatment. The experiment was conducted for one (1) month with regular monitoring.

The results revealed no significant differences in the two treatments' growth, survival rates, and water quality. These results suggested that both RAS systems provided favorable conditions for tilapia growth. The RAS by Siphon did not use electricity which offered an alternative system to usual RAS set-ups since it potentially reduced operational costs and improved sustainability. A cost analysis of RAS by siphon revealed higher

expenses than RAS by pump. However, the long-term effectiveness of RAS by siphon was emphasized because of its independence from using electricity.

This study did not attempt to replace the existing RAS by pump but rather help in addressing the financial limitations of the local fish farmers. The proposed RAS by siphon also aimed to offer a cost-effective alternative to accommodate farmers' budget constraints and provide a solution allowing more individuals to engage in fish farming without significant financial burden. The results highlighted the importance of considering the economic feasibility of aquaculture systems and exploring innovative approaches that can help overcome financial limitations in the industry.

Keywords: aquaculture, recirculating aquaculture system (RAS), siphon

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