Comparison of Growth and Survival of Tilapia Fry Using Different Rearing Methods and Feedstock Approaches

By: David Nakao, Bradley “Kai” Fox, Clyde Tamaru, RuthEllen Klinger-Bowen, Kathy McGovern-Hopkins

Personal Introduction

David Nakao

- Mililani High School
- My Senior Project
- I had an interest in Aquaponics and was thinking of possible projects

Background

- Green water systems
  - static water system
  - Continuous aeration only
  - grows phytoplankton (green water)
  - traditionally used in aquaculture
- Aquaponic systems
  - is a recirculating system
  - have bio-filter that doubles as a growbed
  - used in growing both fish and plants

Feed

- Starter feed:
  - Commercially available
  - Readily available
  - high in protein, complete diet
  - Used in Standard operating procedure
  - Challenge
    - not sustainable?
    - made from other fish
    - 100% imported
- Moina:
  - Introduced into Hawaii
    - Can be grown locally and sustainably
  - Challenges
    - Has to be grown
    - Labor costs

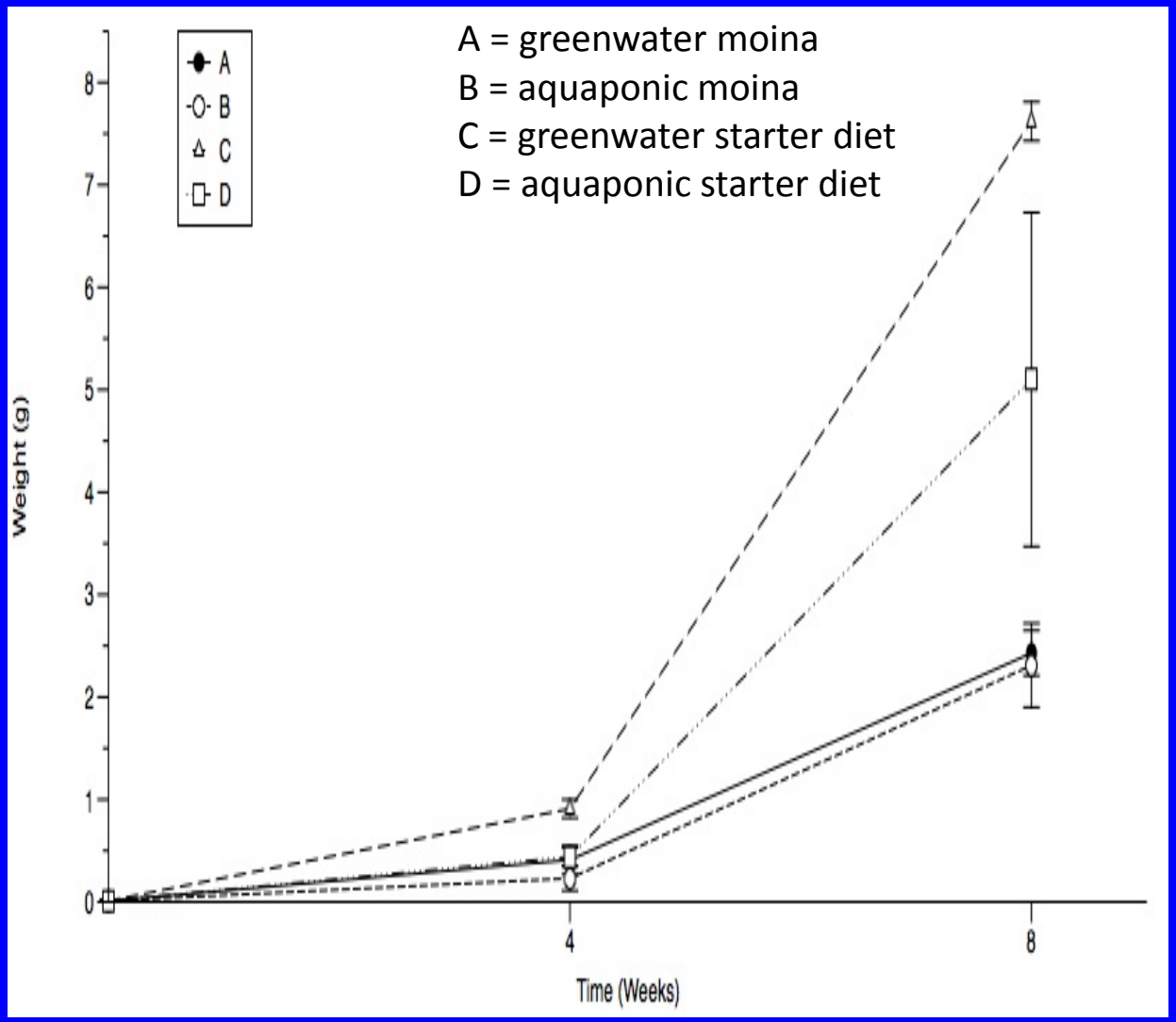
Hypothesis

- Research Questions
  - 1) Does the growing system and choice of feed affect the growth of Tilapia fry?
  - Null Hypothesis:
    - No difference in performance depending on growing system
    - No difference in performance depending on choice of feed

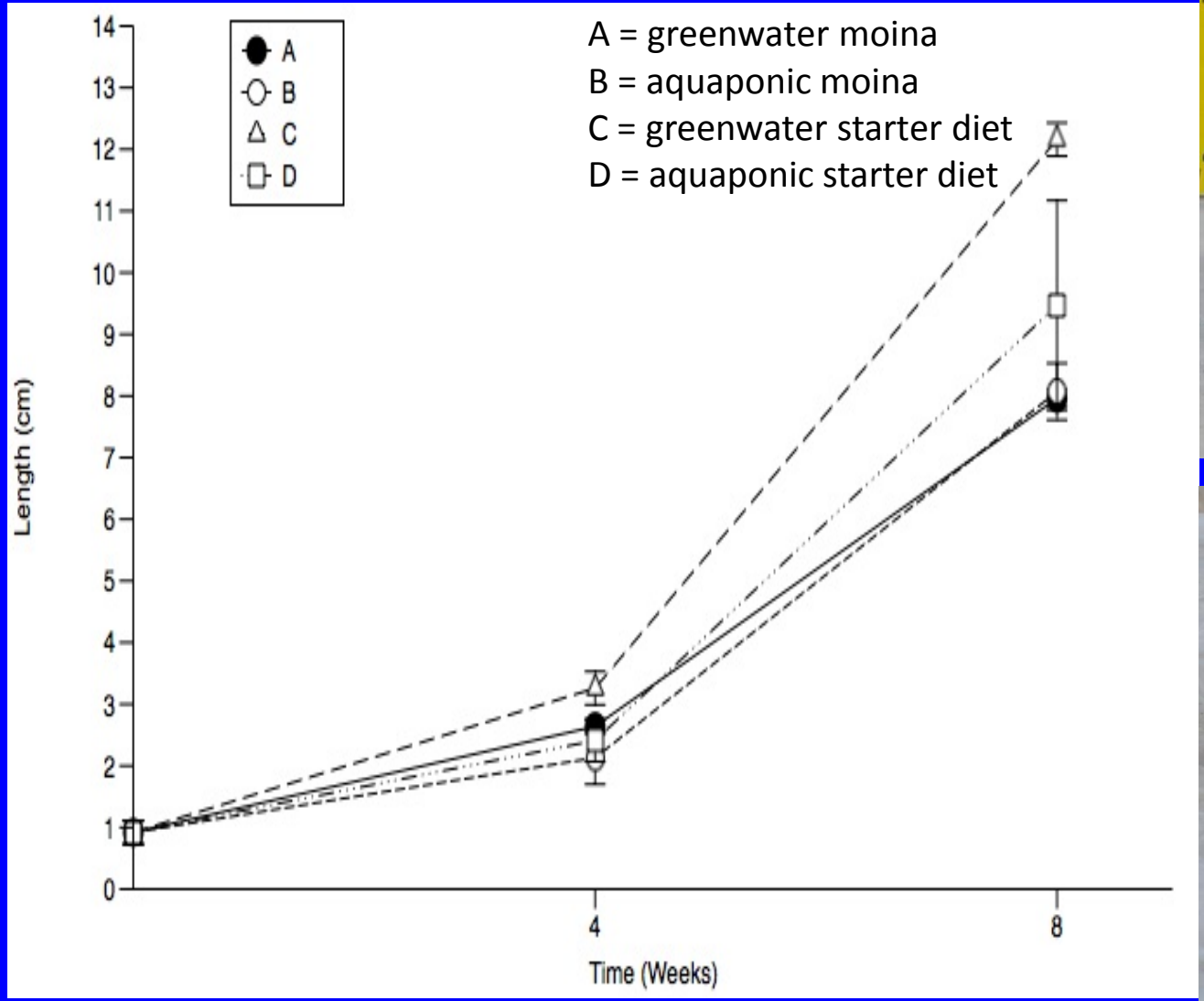
Methods

- Aquaculture Methods
  - Fish came from one source
  - Stocked into 40 gallon tanks (n= 3)
  - stocked 100 fish/tank
  - fed ad libitum
  - Weighed and measured
    - Monthly
- Aquaponic Methods
  - Same as above with the addition of growbed

Results: Change in body weight

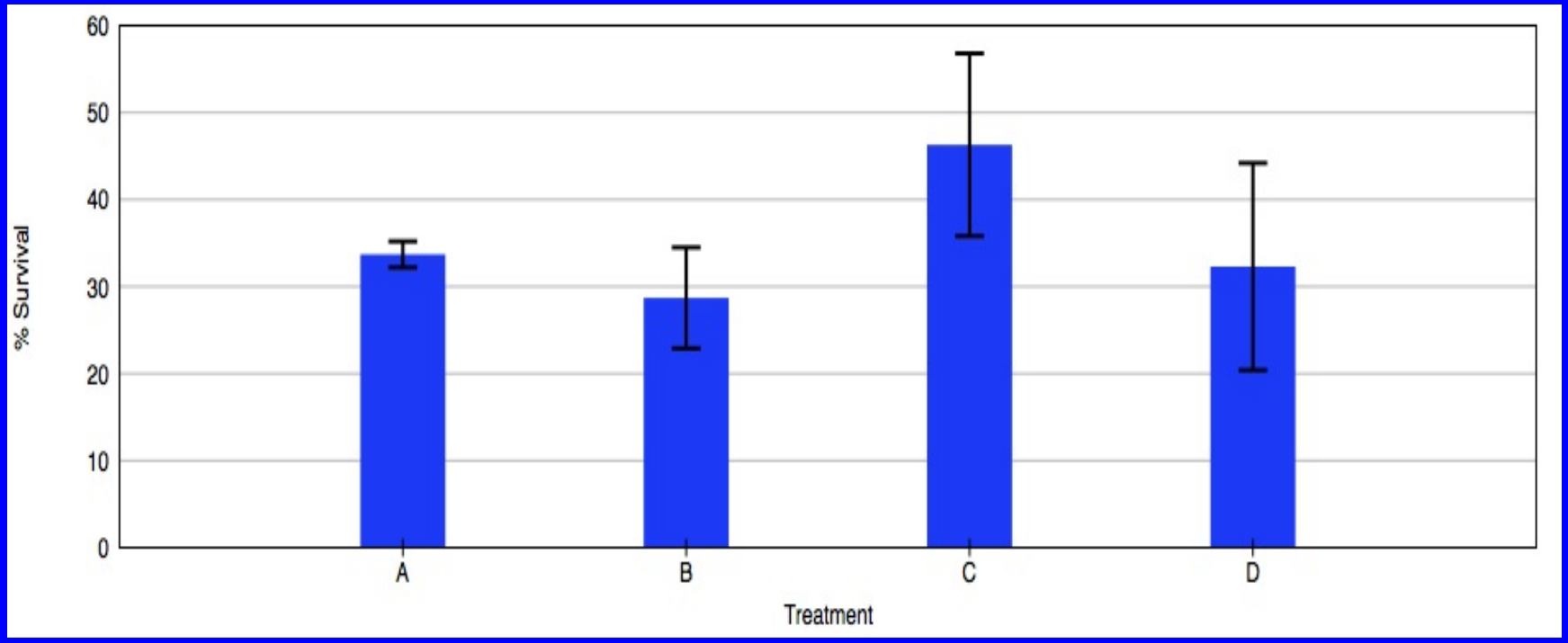


Results: Changes in Length



A = greenwater moina
B = aquaponic moina
C = greenwater starter diet
D = aquaponic starter diet

Results: Comparing Survival After Eight Weeks



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Summary

- Differences in body weight and length were obtained depending on the treatment
  - Use of the commercial starter diet resulted in the highest growth
    - Aquaculture greenwater system with starter diet resulted in highest growth
    - Aquaponic system with starter diet resulted in second best growth
- No statistical difference in survival between treatments

Conclusion

- Aquaculture system fed with starter feed grew the best.
  - Consistent with standard aquaculture practices
  - Fry are also consuming phytoplankton (greenwater)
- Aquaponic system fed starter diet grew second best
  - No phytoplankton as extra food
- Use of Moina as an alternative feed results in similar survival but slower growth

Acknowledgments

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