

COMPARATIVE GROWTH OF THREE LETTUCE LATUCA SATIVA CULTIVARS IN A SMALL-SCALE AQUAPONIC SYSTEM WITH TILAPIA OREOCHROMIS NILOTICUS

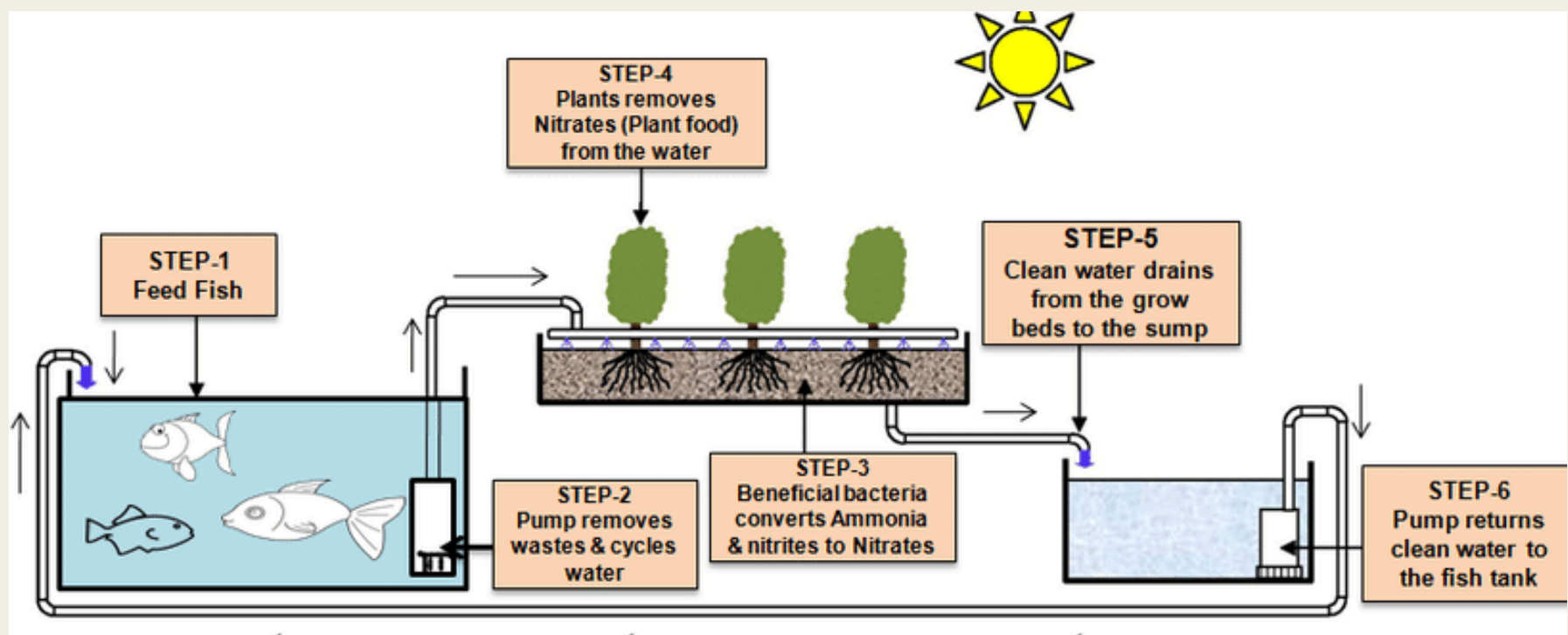
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ABSTRACT

Three lettuce cultivars were grown in a small-scale aquaponic system with tilapia, revealing cultivar-dependent differences in growth and chlorophyll content. ‘Rex’ showed the highest mean chlorophyll (SPAD) values among the three cultivars tested.

OBJECTIVE

- Evaluate the lettuce cultivars in an aquaponic system for healthy produce and increased yield.
- Assess the water quality and nutrient association between lettuce and tilapia



RESULTS

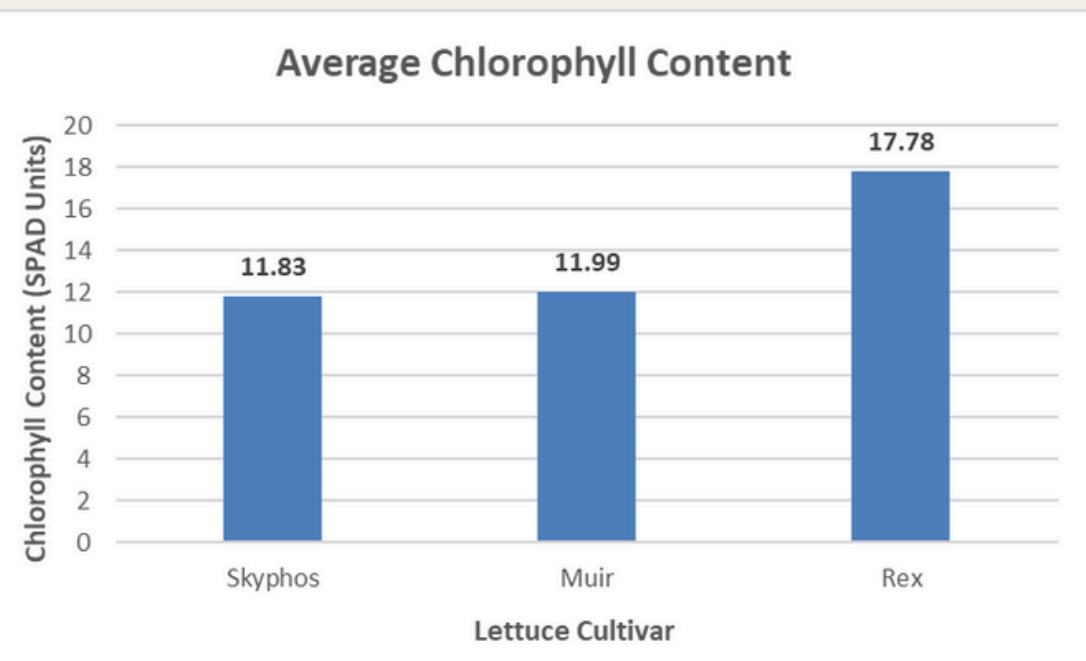
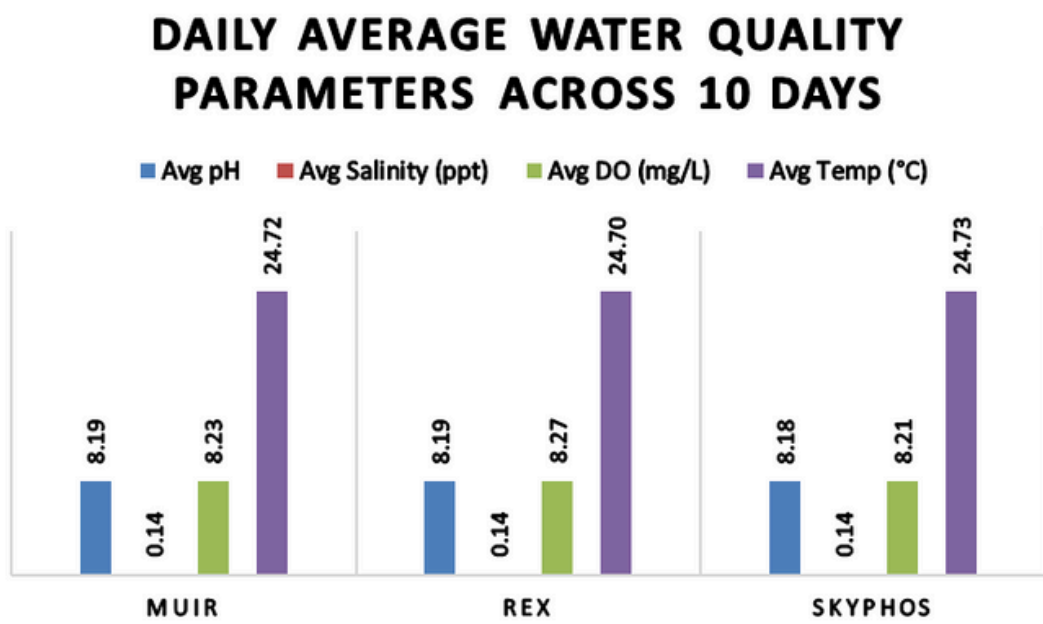


Figure 6: Variation in the chlorophyll content among three lettuce cultivars. ‘Rex’ cultivar of lettuce showed higher levels of CHL content suggesting the possible higher NO3 uptake.

Figure 7: Daily averages of water quality parameters for 10 days.



MATERIALS

- Nine 76 L tanks used in a recirculating aquaponics system
- Three lettuce cultivars-- Rex, Muir, and Skyphos-- were grown in separate tanks (n=3)
- Two tilapia housed per tank
- Maintained under 14:10 LED grow lights
- Plant height, leaf number, and chlorophyll content (via SPAD meter) were recorded
- Daily water quality measurements (pH, DO, temp, salinity)
- Weekly nutrient levels (ammonia, nitrate, nitrite, iron).

DISCUSSION

Fish aggression and low stocking density likely influenced nutrient availability, highlighting the importance of system design in small-scale setups. These results suggest that cultivar selection plays a significant role in optimizing lettuce production under aquaponic systems.

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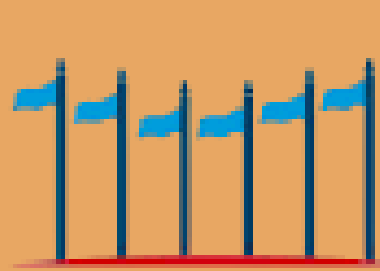
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