

Culturing *Caulerpa sp.* with Varying Levels of Dissolved Oxygen

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Source: Google Maps



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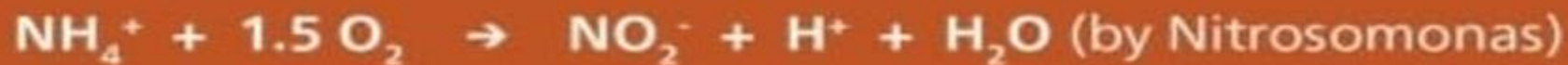
Caulerpa (Sea Grapes)

- Largest unicellular organism
 - Green tropical algae
 - Warm, shallow waters
 - *Caulerpa sp*

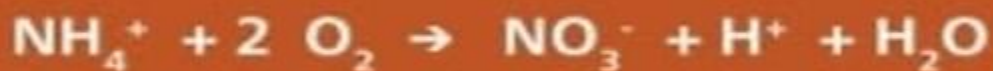


Dissolved Oxygen (DO)

Oxygen in water.



With the following total equation:



Rationale

- More information on culturing *Caulerpa* sp.
 - Health benefits
 - Consumable
 - Helpful for culturing fish



Source: <https://panlasangpinoy.com/seaweed-salad-recipe-ensaladang-lato/>

- **Question:** Does the level of dissolved oxygen affect the growth rate of cultured *Caulerpa sp.*?
- **Hypothesis:** We hypothesize that dissolved oxygen levels in water will affect the growth of the *Caulerpa sp.*
- **Objective:** Find the optimum level of dissolved oxygen for *Caulerpa sp.*

01 Method

Design: What system did we use to
grow the *caulerpa*?

Recirculating System

- Location: NMC CREES Center for Aquaculture
 - Limited Access



Fish Tank

- 4 ft high Concrete Tank
- 12 ft Diameter
- 2500 Gallons of water
- 13 *Siganus argenteus* (Forktail Rabbitfish)



Tank



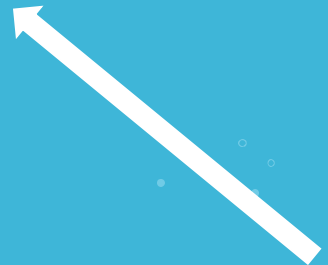
**Water Pump
System**



**Air Pump
System**



Caulerpa Buckets



Bucket #1

- Control Group
- No Water Pump, instead we use air pump to lift water into the bucket
- No Aeration provided to Bucket 1



Bucket #2

- Lowest Setting for Air Pump
- $\frac{1}{4}$ Open, valve setting



Bucket #3

- Middle Setting for the Air Pump
- $\frac{1}{2}$ Open, valve setting



Bucket #4

- $\frac{3}{4}$ Open, valve setting



Bucket #5

- Highest Setting on Air Pump
- 4/4 Open, valve setting



Consistency



Nets



**Starting
Amount**



Light

02 Method

Procedure: How did we measure growth?

Procedure

- Dry *Caulerpa* with paper towels
- Use a scale to weigh the Dry *Caulerpa* in grams
- Put back into designated bucket



Water Quality Parameters

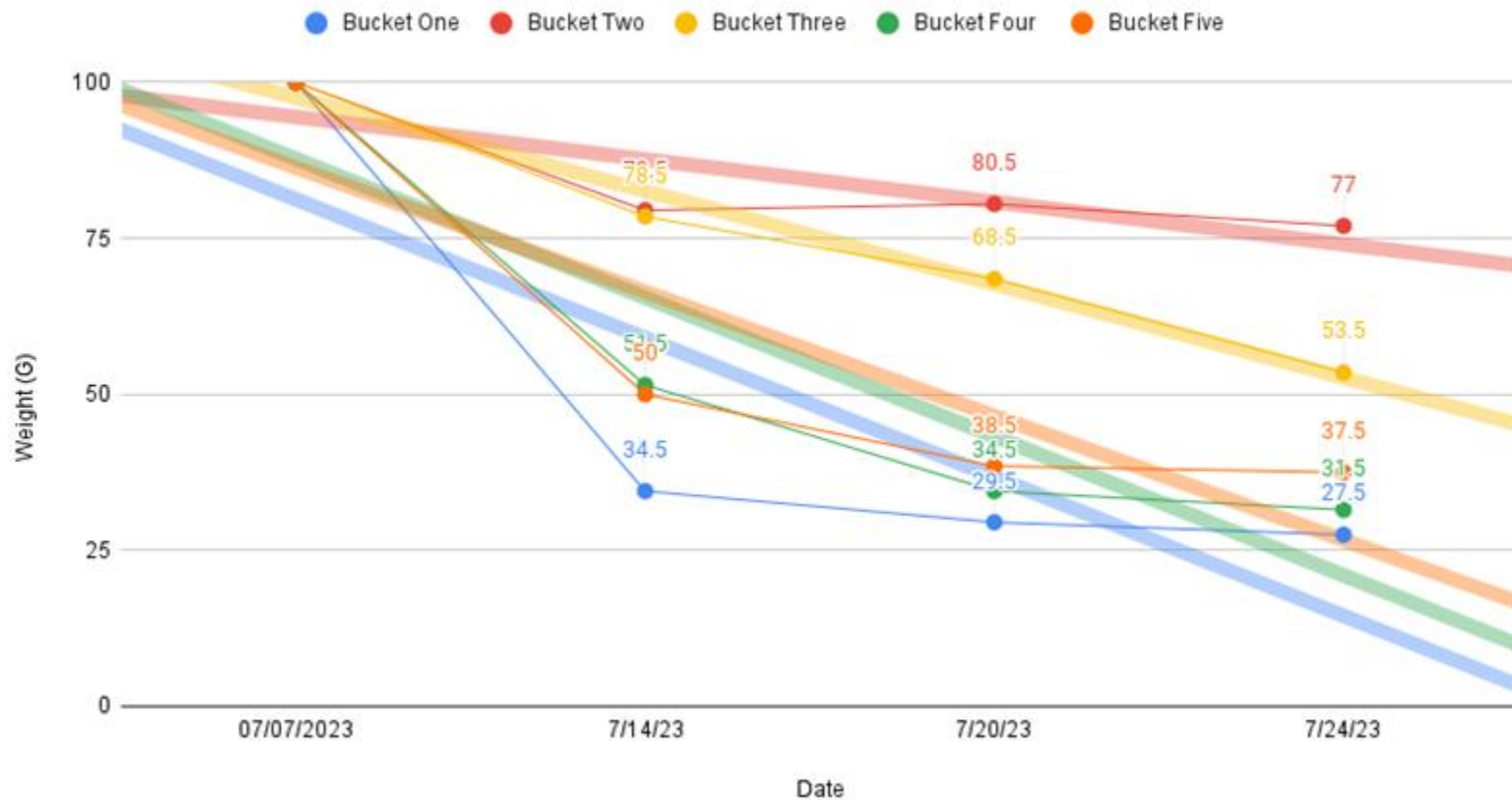
- Ammonia
- Nitrite
- Nitrate



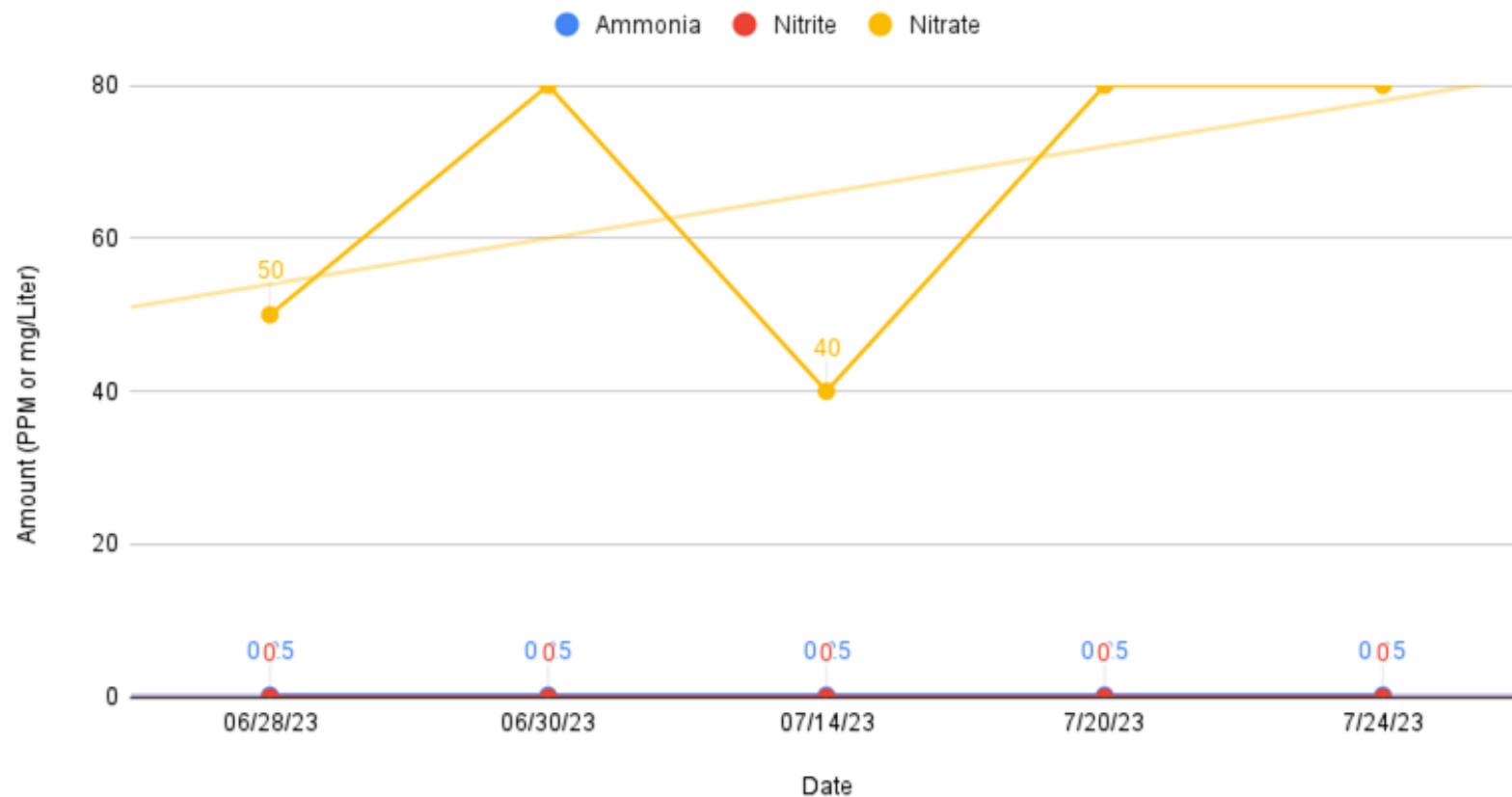
DO and Temperature



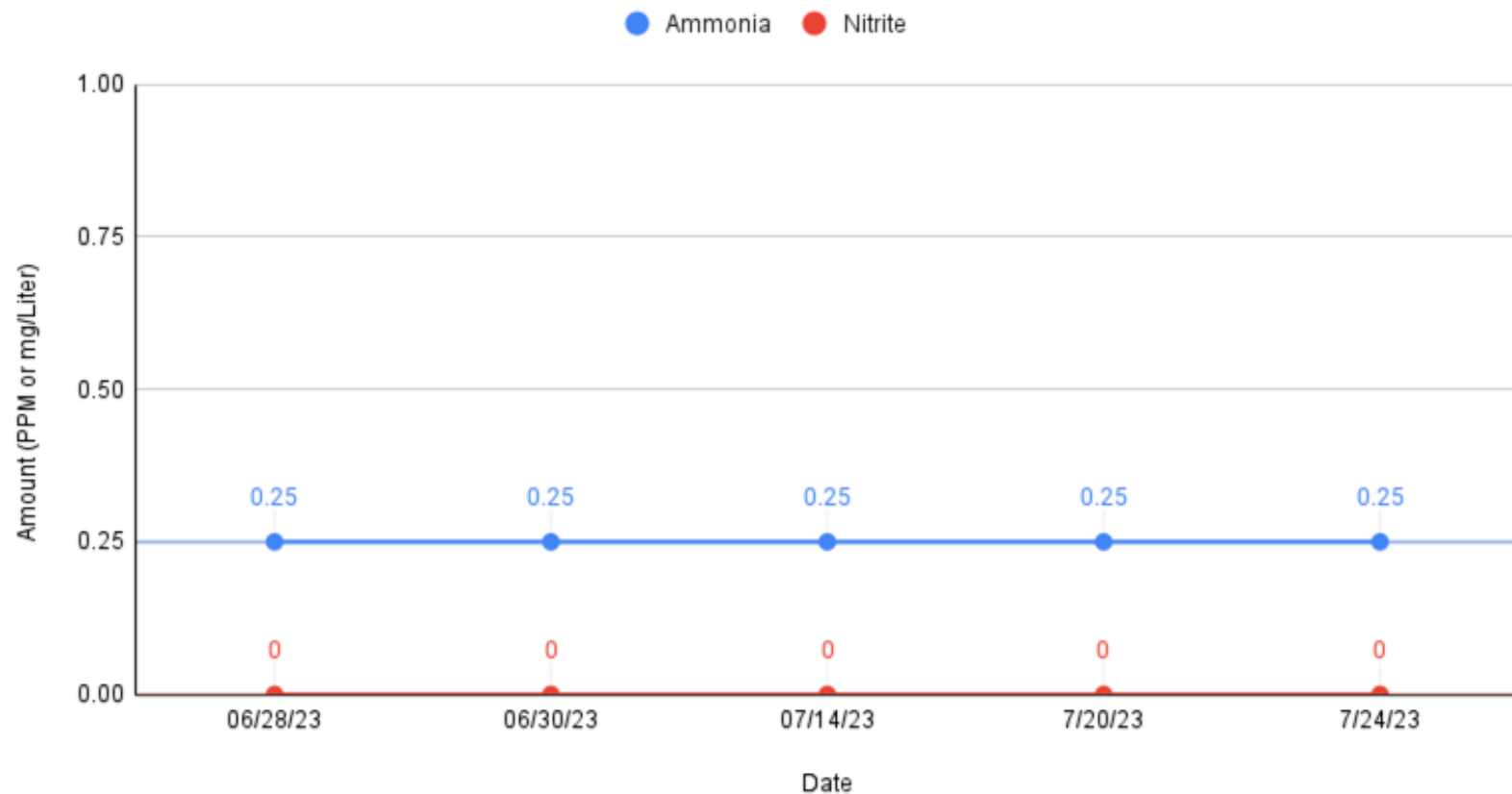
Caulerpa Growth



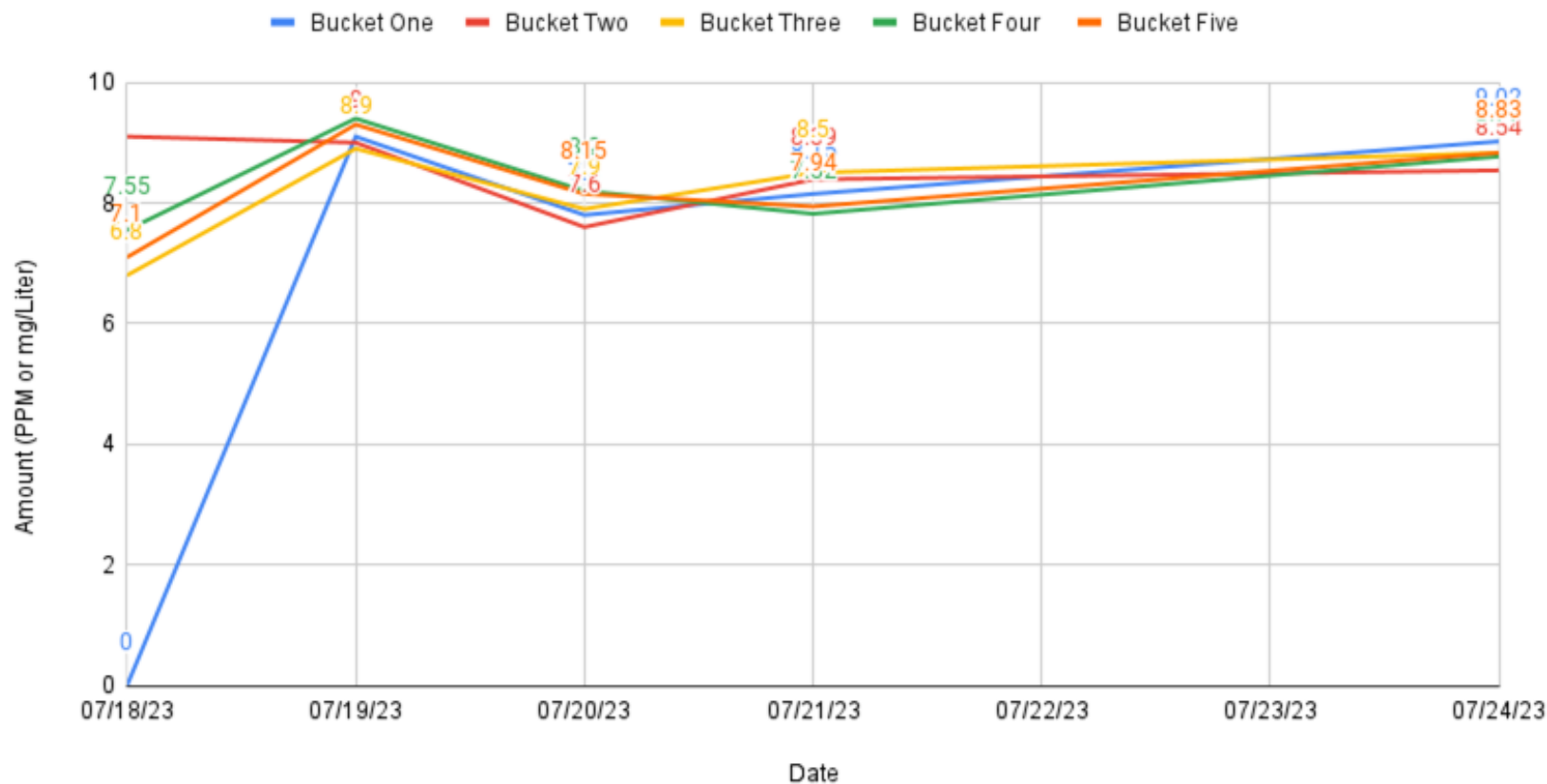
Water Quality Parameters of Fish Tank



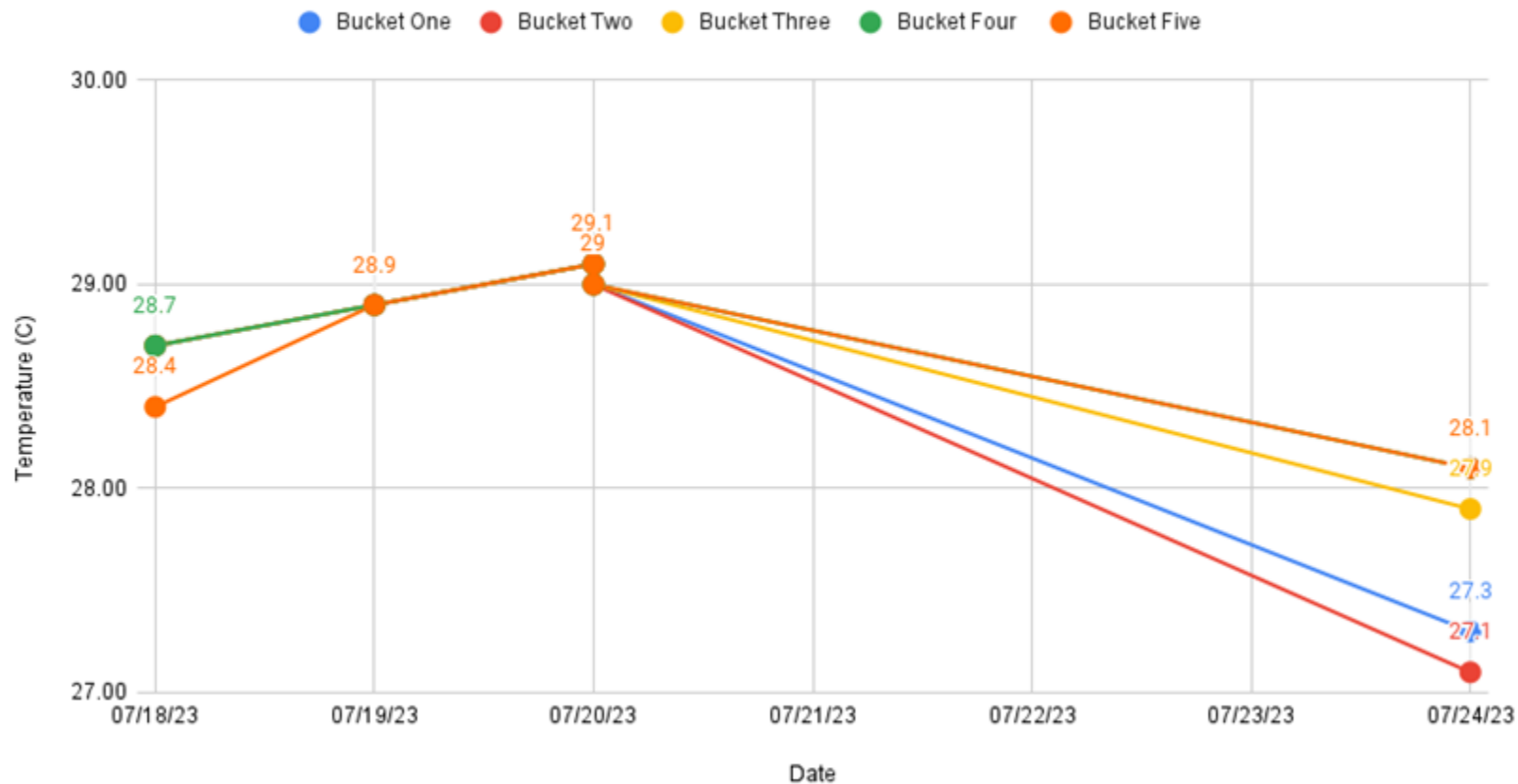
Water Quality Parameters of Fish Tank



Dissolved Oxygen (DO) Level of Buckets



Temperature of Buckets



**There was a difference
in the growth rate of the
*Caulerpa sp.***

Bucket #2 had the least amount of decline and maintained the highest weight out of all the buckets, therefore it has the optimum DO level.

Conclusions and Discussion

- 1/4 open, valve setting for an air pump (minimum aeration) would be the best setting for growing *Caulerpa sp.*
- Inconsistent DO levels may be because of the bacteria from the dead *Caulerpa sp.*

Implications

- Contributes information for culturing *Caulerpa sp.* On Saipan
 - Decrease reliance on imports
 - Profitable businesses

Acknowledgements

- The STEP-UP High School program is supported by the National Institute of Diabetes and Digestive and Kidney Diseases of the National Institutes of Health, Grant Number: R25DK78386-17.
- Dr. George Hui and Ms. Aneesa Golshan
- Local Coordinator: Asap Ogumoro



Thank You Team Aqua

Michael Ogo

Rovien Bo Maritita

Daniel Calvo

Thank You!

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