



University of
New Hampshire
Innovation Scholars

Tetraselmis Algae Cultivation

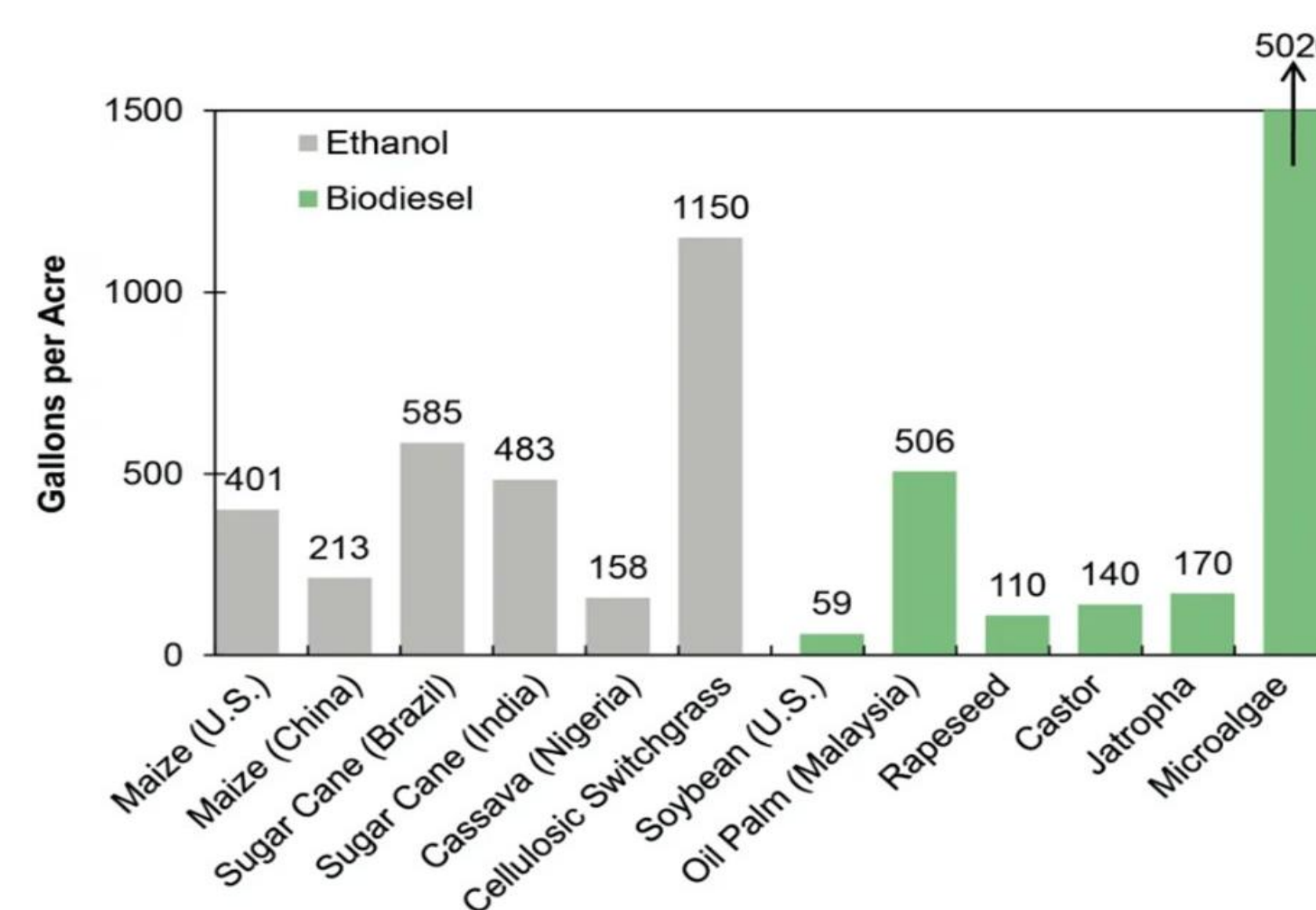
Isabella Falcone, Sean McLean, Joseph Zeitz

Advisors: Dr. Matthew Florence & Felix Devito

BACKGROUND

Tetraselmis Algae

- High lipid content allows for energy stores
- Short life span allows for rapid production
- High potential for biofuel yield (green energy source):

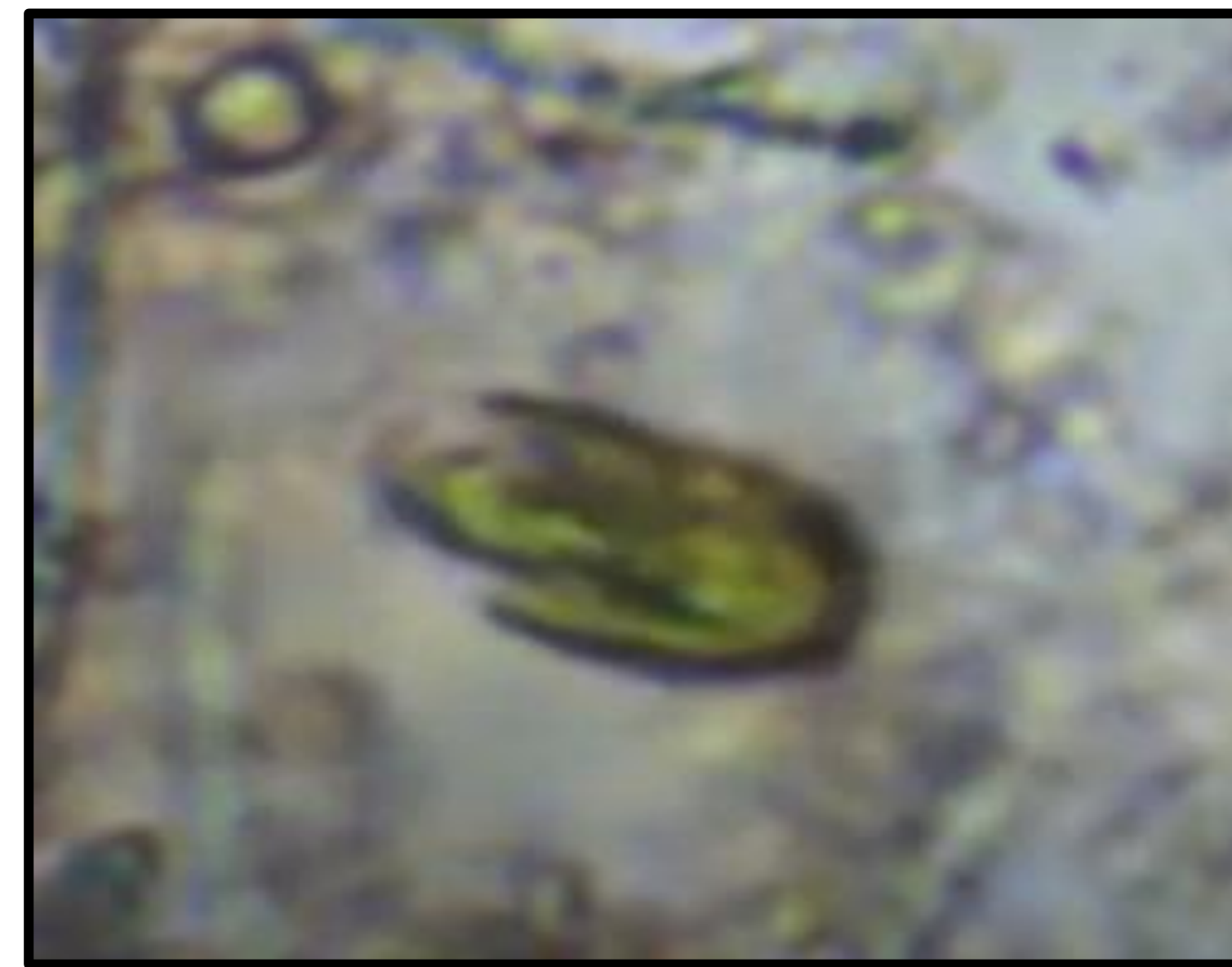


OBJECTIVE

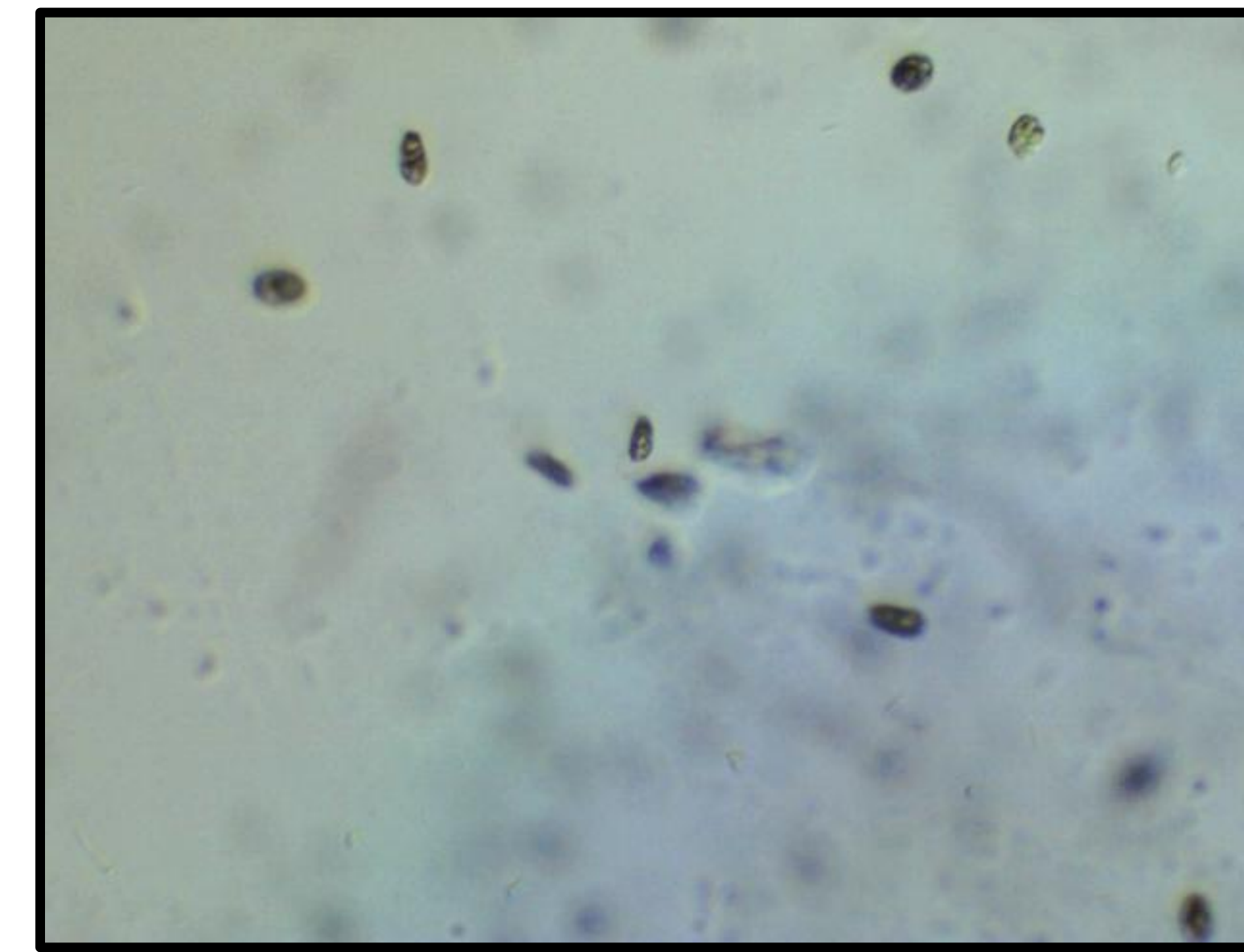
- Maximize algae growth yield
- Eventually burn the algae for biofuel
- Use biofuels and biodiesels as a source of green energy
- Green building design with Felix Devito

CONCLUSIONS

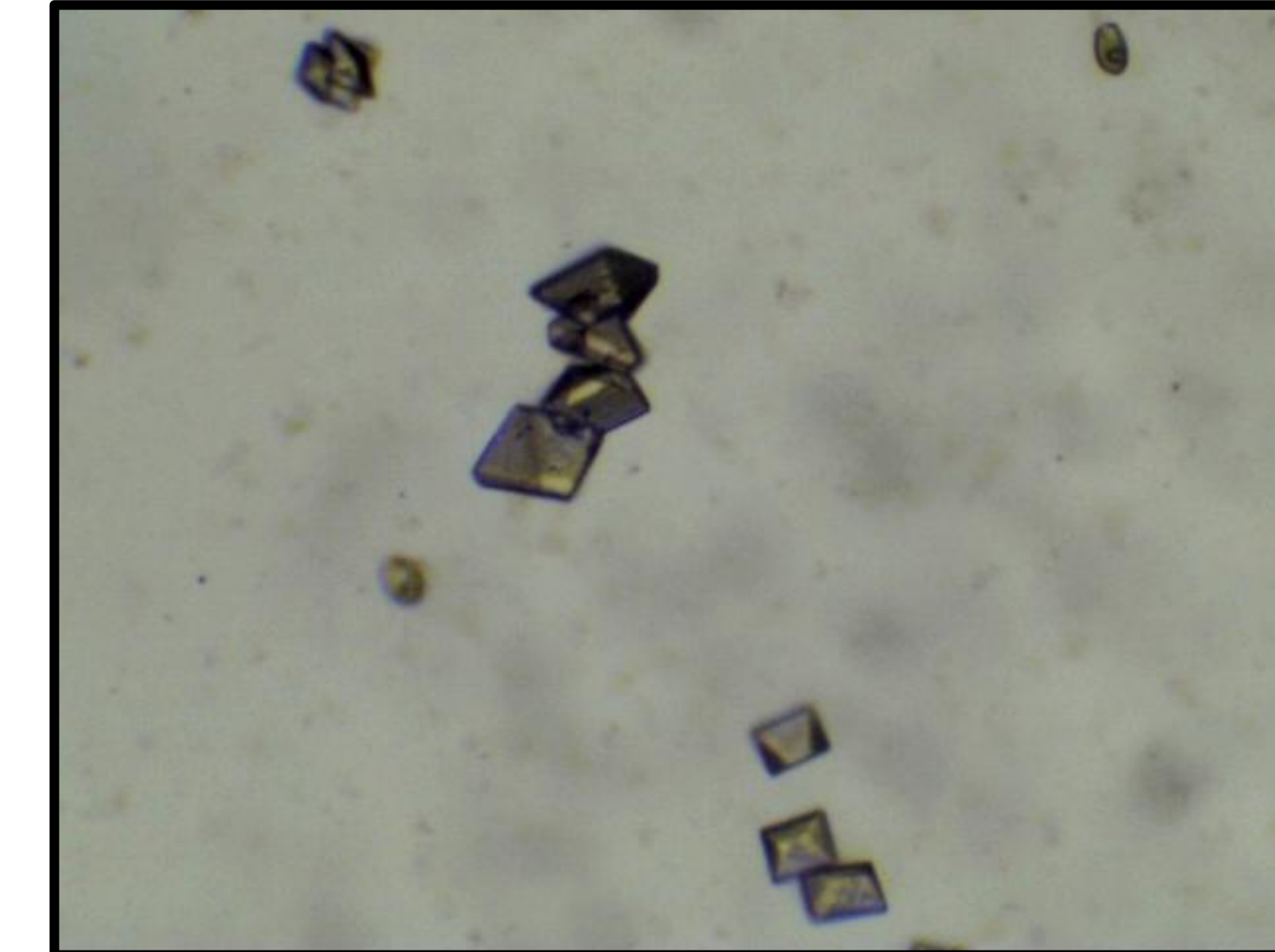
If tests were to be continued, one would want to figure out whether the fertilizer truly killed the algae, or if there were other adverse factors that were affecting the experiments what make and ultimately what makes Tetraselmis algae cultivation really increase.



Tetraselmis



Test 1
(4/11/25)

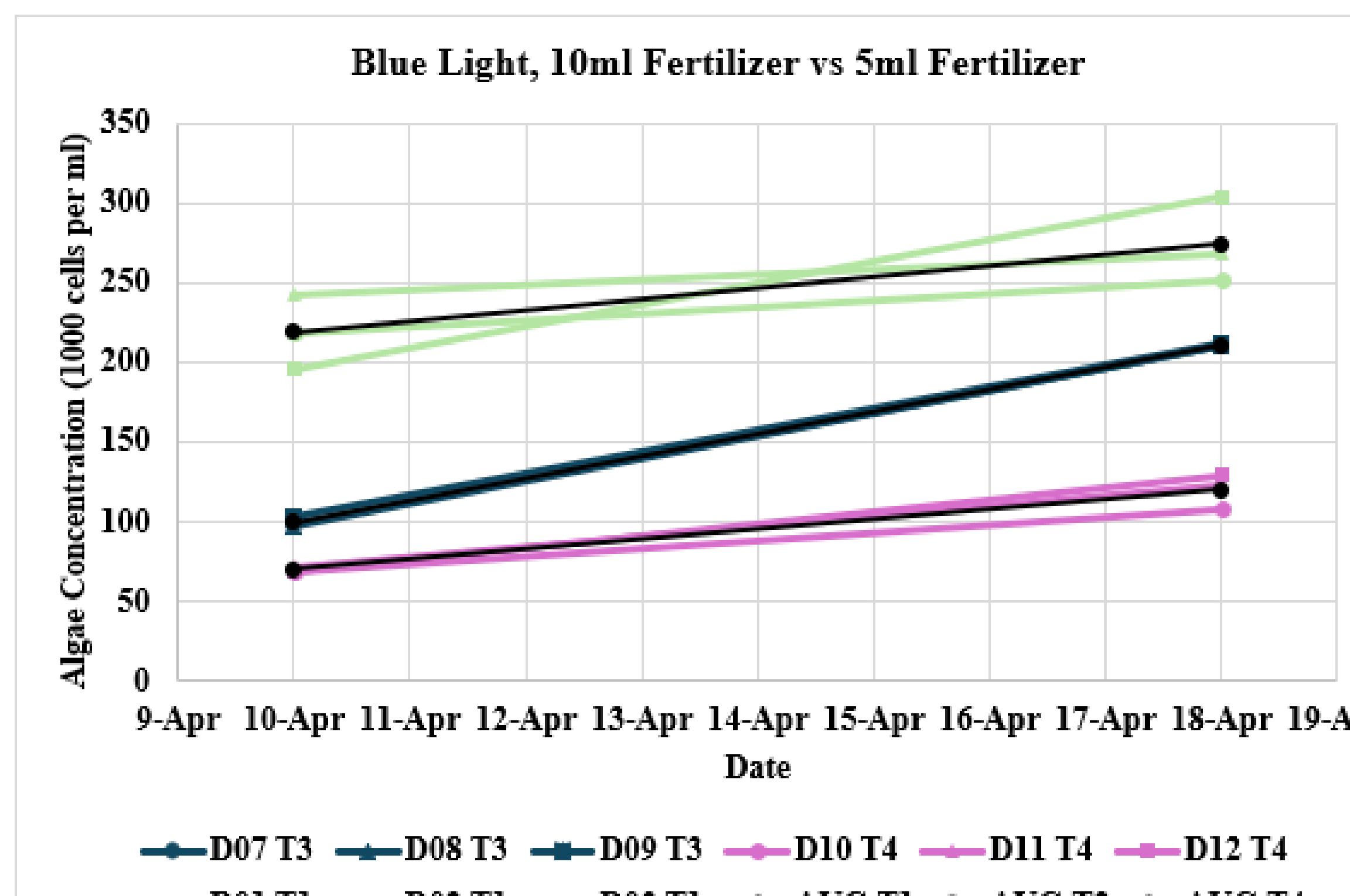
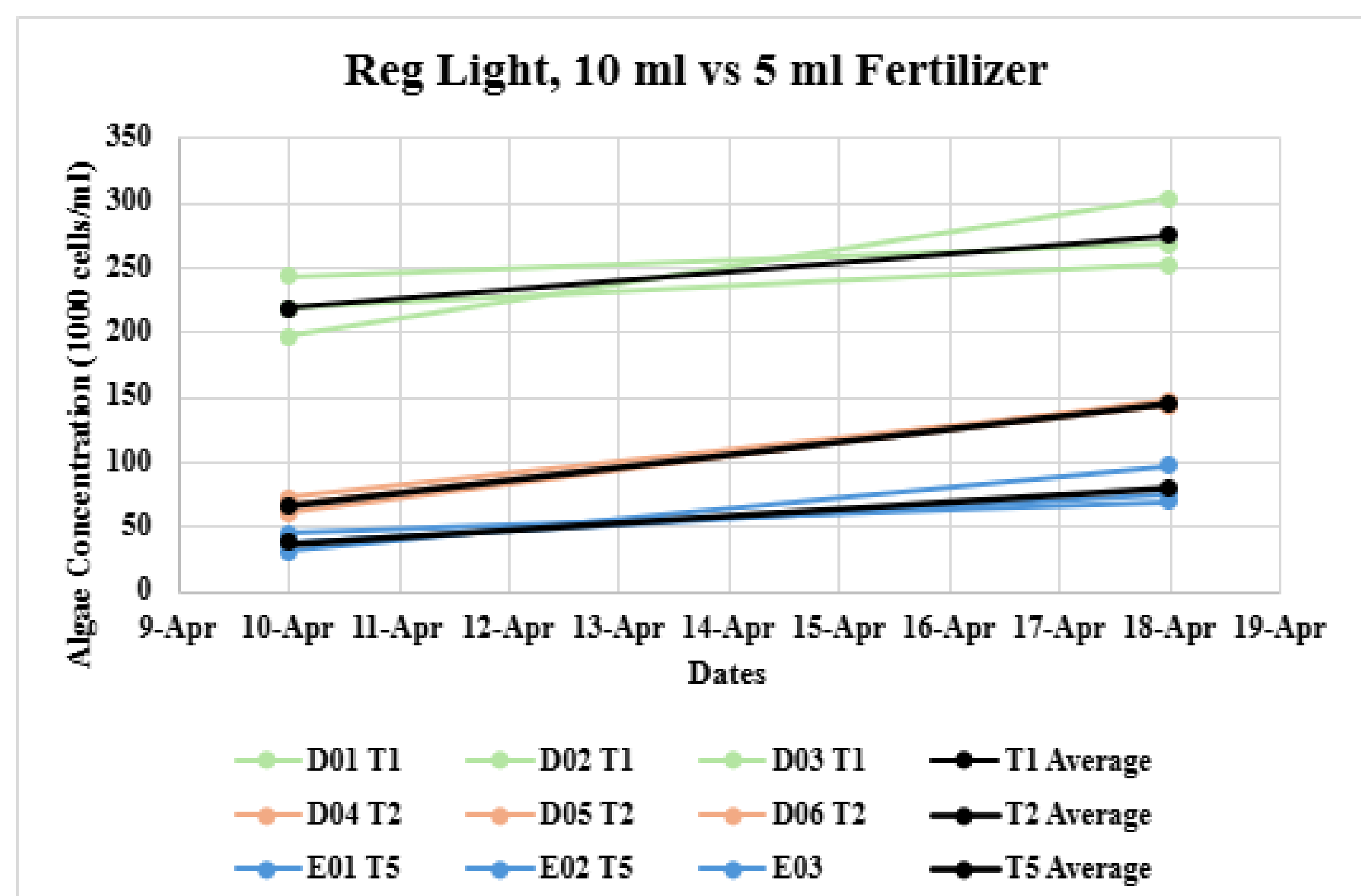
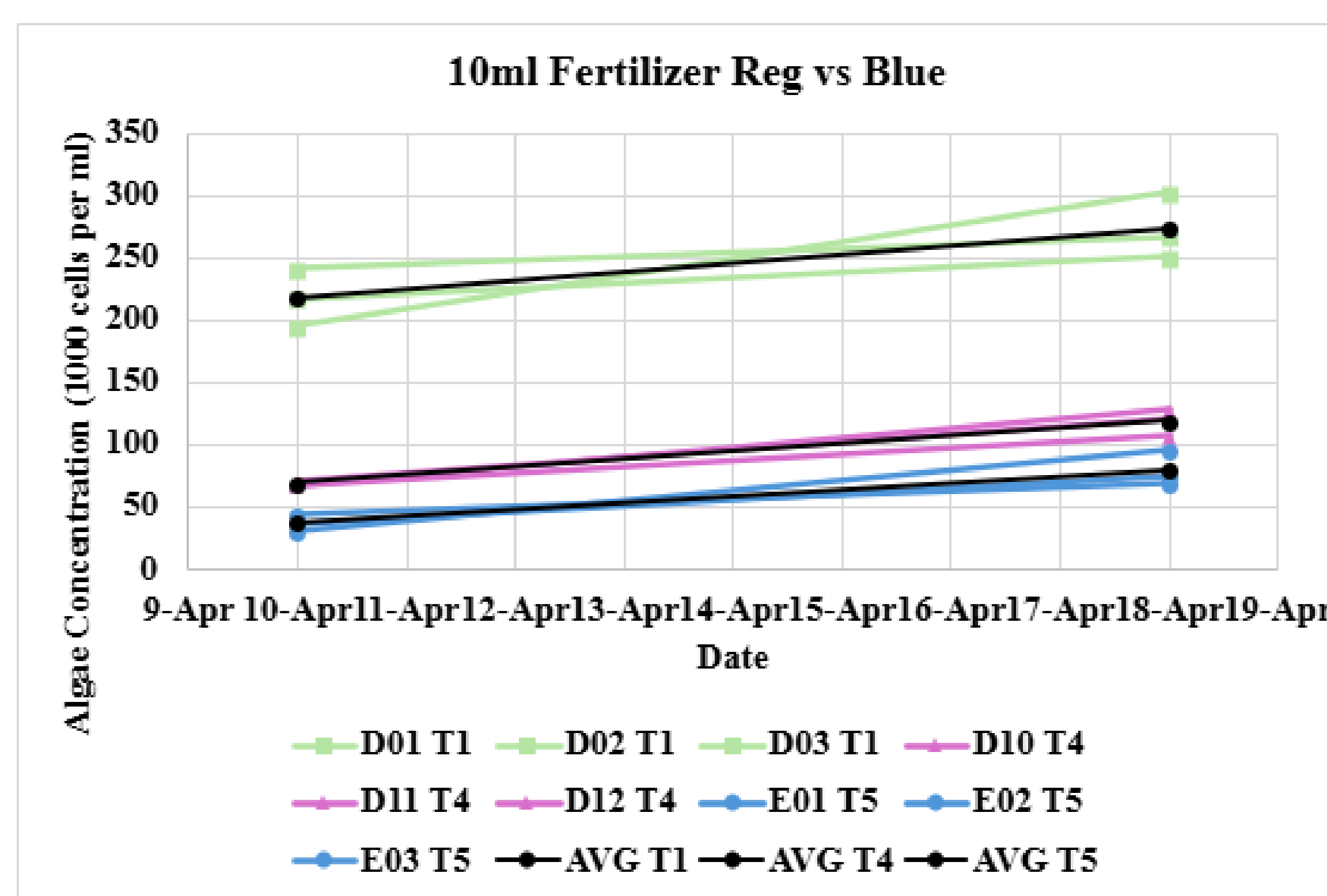
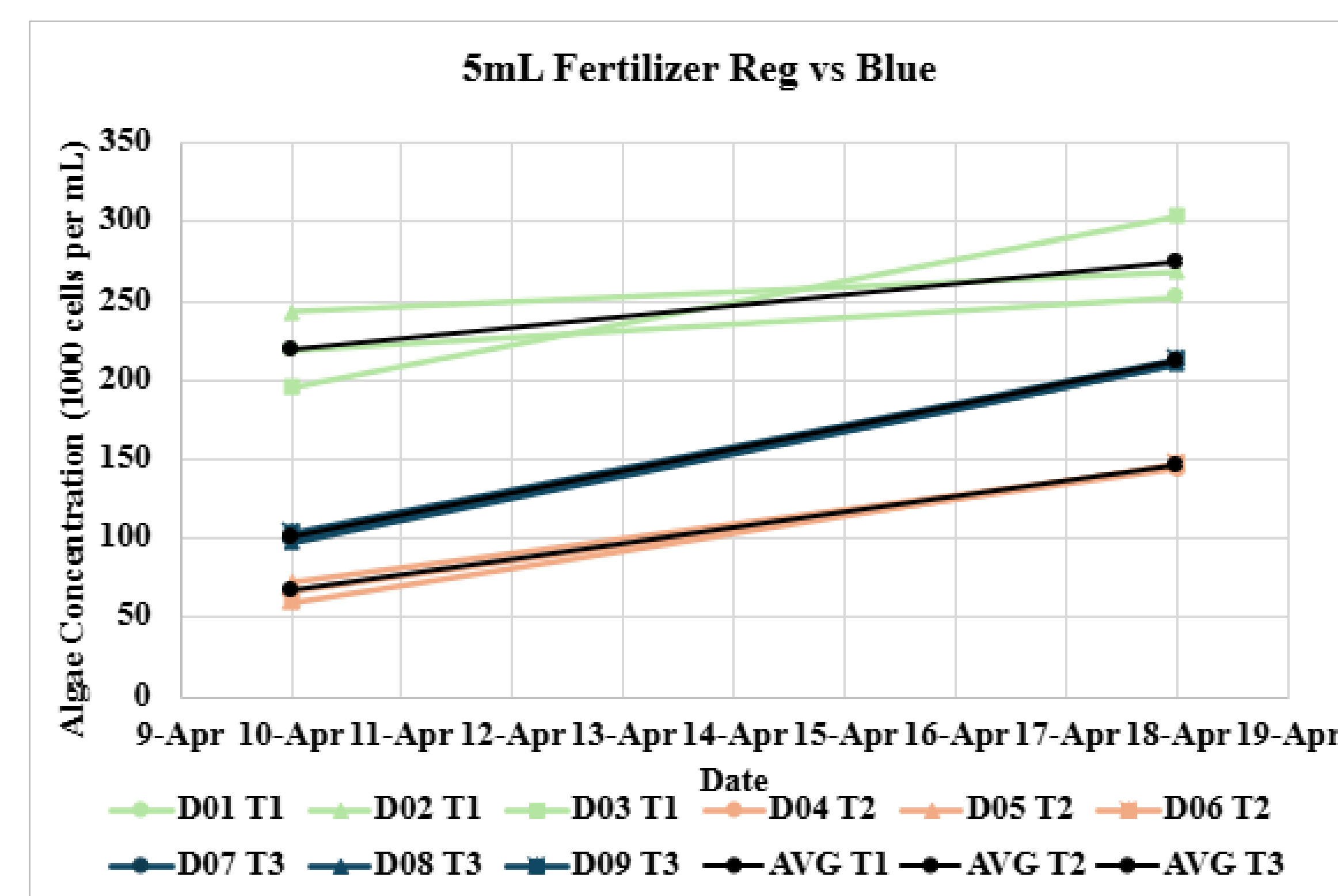


Test 5
(4/11/25)

METHODS

Five test tubes were set up, all following the standard of 35ml saltwater, 5ml of algae, and 0-10 ml of fertilizer. Test tubes 1, 2, and 5 were set up under a regular light; test tubes 3 and 4 were set up under a blue light. Tube 1 had no fertilizer. Tube 2 and 3 had 5 ml of fertilizer and tubes 4 and 5 had 10 ml of fertilizer. All test tubes were uncapped for passive CO₂ transport. Concentration data was gathered on Thursdays using a Flow Cytometer, and Fridays gathered photos and analyzed under the microscope.

DATA



RESULTS

A variety of tests were set up through the duration of Innovation Scholars, using different amounts of algae and fertilizer, hoping to increase algae production. Unfortunately, one test tube with unknown contents, thrived in its conditions. It had a base of 35 ml water, 2 ml algae, and we think that it had 5 ml of fertilizer. While, contrary to our initial thought that fertilizer would help double the algae growth rate, experiments with little fertilizer thrived and fertilizer seemed to kill.

SOURCE OF ERROR

- Ordered algae did not contain any algae
- Three-week delay to get new algae
- Samples mis/unlabeled due to tampering
- Some samples thrived; labels were misplaced so replication was impossible without experimentation and assumptions

ACKNOWLEDGEMENTS

“Biofuels Factsheet.” *Center for Sustainable Systems*, css.umich.edu/publications/factsheets/energy/biofuels-factsheet. Accessed 12 Apr. 2025.
Dr. Matthew Florence and Felix DeVito