Motivation
Outdoor high-rate algal pond facilities have significant long-term potential for cost-effective biofuel feedstock production if problems associated with culture contamination can be overcome. One approach is to cultivate two or more symbiotic strains of high yielding algae to increase system robustness and potentially protect against contamination and algal pond crash. Saline agricultural drainage water is a promising growth medium for future algal biomass facilities.

Technological Challenges
Many advances toward the optimization of algae lipid production have been achieved through studying environmental stressors such as pH, salinity, light, temperature and available nutrients. Engineered algal pond raceways are the most prone to contamination by lower lipid potential algae strains. There are over 300,000 strains of algae to potentially investigate to find suitable candidates that might provide crop protection.

Research
This study examined pH, biomass accumulation and lipid productivity of *Scenedesmus quadricauda* grown at increased salinity concentrations (from 0 to 0.30 M NaCl) and under biodiverse conditions (cultivated with and without *Chlorella vulgaris*).
Species diversification showed evidence of faster biomass growth rates, superior lipid production and increased ability to adjust to a CO2-limited environment.

References

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