ONWRDS

GreenLight GreenPaper

Fall 2022

Calculated carbon sequestration of an at-home algae bioreactor and researched **4** carbon capture solutions

Created by GreenLight Solutions:

Madison Harris | Paige Holmes | Ethan Sheard | Oceane Ingram | Bryce Campbell

Project Partner: ONWRDS | Spencer Steliga | Tania Da Silva

Visit GLSolutions.org to learn more & donate. Contact info@GLSolutions.org to get involved.

@GreenLightSolutionsFoundation *@GreenLightSolutions* *@GreenLightSolutionsFoundation* *@GLSFoundation*

ONWRDS came to GreenLight because they wanted to integrate carbon capture into their business model; ultimately, to minimize their impact on climate change. More specifically, ONWRDS was interested in exploring algae, which has the potential to sequester significant amounts of carbon dioxide at a relatively fast rate. While these features of algae technology are impressive, algae isn't currently accessible to the average consumer. Because of this, ONWRDS hoped to create an at-home algae bioreactor. ONWRDS tasked our team with determining the carbon capture potential of an at-home algae bioreactor, and whether or not this type of device could count as a carbon offset.

Recommended Solutions

Our first objective was to calculate how much carbon could be captured from the bioreactor by generating quantitative and qualitative calculations. The second objective was to explore **4** carbon capture alternatives to the device. Options included large scale algae, houseplants, composting, and forestry.

Our research recommends that ONWRDS diversifies their carbon capture portfolio. If the company intends to officially offset their emissions, forestry is the best option. However, we recognize that carbon offsets through forestry are not accessible to most consumers. Therefore, to fulfill their vision of spreading awareness and educating consumers about carbon emissions and algae technology, the company should also utilize the more accessible option - the at-home bioreactor device.

Project Benefits

Benefits to the Project Partner

- Gained insight on the carbon capture potential of the at-home algae bioreactor.
- Received additional information about alternative carbon capture ventures.
- Compare and contrast carbon capture options through our cost benefit analysis report and our cost-benefit analysis matrix.

Benefits to Solutioneers

- We expanded our knowledge of carbon sequestration methods and technologies.
- We gained real-world experience conducting research and creating a formal cost-benefit analysis research report for the Project Partner.
- We developed our presentational skills through the Solutioneer Showcase.

Benefits to the Community

- Education and awareness of algae carbon sequestration
- If carbon capture methods are implemented, sequestration of greenhouse gasses and improved air quality