

# Algae prevention in duckweed production

## Context

**Lemna minor** is seen as a high potential **source of protein**, but the best way of producing it is not fully determined yet. When growing Duckweed, previous teams have encountered problems with an **unwanted algae developping**. Our team's goal is to find a way to grow duckweed without proliferation of algae before enhancing **production** to a **larger scale**, therefore guaranteeing a more reliable end product.



## Hypothesis

We have selected a variety of **modalities** on which to intervene to find the best working system. Amongst them, two main ideas showed :

### Introduction of a third organism

Find a predator for the algae but not for duckweed, for example a **shrimp**.

Then we thought of a species of **fish**, but we abandoned the idea as most fish feed on Duckweed given the high protein content.

### To change an abiotic factor in the environment:

- Daylight exposition
- Nutrient supply
- Temperature
- Salinity
- pH
- Oxygen content
- Water source

## The protocol

- Take **samples of duckweed** (5-10 pieces) in a separate tray, allowing **algae** growth. We can then use the samples to **identify the algae**.
- All along the process, we keep **healthy plants** to set new experiments.
- **Many experiments** on different criteria will be conducted at the same time to **optimize the number of results and the reliability** of each experiment.
- At all times, a **control tray** with no modified criteria allows us to **compare** the effectiveness of each applied variation.
- For several weeks, we report on excel the evolution of lentil weight and speed of growth, as well as the presence or not of algae.

## Results and analysis

As our project barely started, we haven't collected a lot of informations yet. In the end, we look forward to **identify the algae** and its source to prevent it from entering the growing system. Amongst the growing modalities we will experiment with, some will influence the **growth** of the algae and **limit the negative effect** on production. We expect to find at least **one criteria** leading to the absence of algae, while maintaining or **enhancing the yield** of Duckweed. As we may find several possibilities, we will rely on **sample** observations to determine the most **efficient** one.