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# Production of microalgal biomass, TAGs and PUFAs under simulated North temperate conditions

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## Aims:

To test if the production of microalgal biomass is feasible under North temperate conditions

- Low light intensities
- Low temperatures

To quantify

- Growth rates
- Biomass production
- TAG (triacylglycerol) content
- PUFA (poly-unsaturated fatty acids) content

## Methodology:

Three species of algae:

- *Navicula pelliculosa* (marine diatom)
- *Chlorella vulgaris* (green freshwater algae)
- *Scenedesmus dimorpha* (green freshwater algae)

Three temperatures:

- 11 °C
- 15 °C
- 19 °C

Two light intensities:

- 280  $\mu\text{mol m}^{-2} \text{s}^{-1}$
- 450  $\mu\text{mol m}^{-2} \text{s}^{-1}$

Measured parameters:

- Relative growth rate
- Biomass production
- TAG content
- PUFA content

## Conclusions:

Microalgal biomass production may be feasible under North temperate conditions, given

- The right species is chosen
- The purpose of the production

Outdoor production is feasible April – October (with diatoms)

Much longer production periods can be achieved in even unheated greenhouses

Light will never be a limiting factor for growth. Temperature will determine the potential growth season

The diatom used warrants interest for PUFA production, based on its PUFA profile and high biomass production rate at low temperatures

*Chlorella vulgaris* is a potential candidate for TAG production, also under these conditions, especially if combined with wastewater treatment

