

## Effect of nutrients on plant growth (floating culture)

### Student worksheet

---

#### Floating culture

Many plants, such as water lilies, float on water. This is sometimes called floating culture.

You can use the method outlined below to investigate the effects of nutrient deficiencies on the growth of duckweed plants.

#### Equipment and materials

- Ten healthy duckweed plants (*Lemna*) of similar size.
- Beaker, with plastic film to cover it
- Graph paper
- Complete-nutrient solution and nutrient-deficient solution (containing none of the nutrient you are investigating).

#### Method

Set up two experiments – one using the complete nutrient solution and the other using the nutrient-deficient solution. Follow the procedure below for both experiments.

1. Half fill the beaker with nutrient solution (complete or nutrient deficient).
2. Float the plants on the nutrient solution and cover the beaker with plastic film. Stand it on a piece of graph paper.
3. Monitor growth each week, estimate the area covered by the growing plant by counting the number of squares on the graph paper that are covered.
4. After four weeks, remove the plants and blot them dry. Measure their mass.
5. Place the plants in an oven at 80 – 90 °C to dry. Measure its mass every day until three readings are constant.
6. Record the dry mass of plant material.

#### Results and conclusions

Record your observation and measurements.

Describe the effect of the nutrient-deficiency you studied.

If other students investigated deficiencies of other nutrients, summarise their results and draw your own conclusions from these results.