

## EXPERIMENT 4.1

### Studying the effectiveness of phytoremediation in controlling water pollution

#### Problem statement

Are phytoremediation plants effective in controlling water pollution?

#### Hypothesis

The roots of common water hyacinth can absorb ammonia present in lake water.

#### Variables

- Manipulated variable: The presence of water hyacinths
- Responding variable: Reading of ammonia level at the end of the experiment
- Constant variable: Volume of lake water

**Materials:** *Eichhornia crassipes* (water hyacinths), 10 litres of lake water, 100 ml of 10% ammonium chloride solution, tap water and ammonia test kit

**Apparatus:** Two glass containers with a 5-litre capacity

#### Procedure

- 1 Dirt and mud are removed from the water hyacinths.
- 2 Two glass containers are filled with 5 litres of lake water. The containers are labelled *A* and *B*.
- 3 Pour 50 ml of 10% ammonium chloride solution into each container.
- 4 The initial readings of ammonia in both containers using the ammonia test kit are recorded.
- 5 Place six water hyacinths from step 1 into container *A*.
- 6 Both glass containers are left at room temperature.
- 7 The final readings of ammonia in containers *A*

and *B* are recorded after seven days using the ammonia test kit.

- 8 The readings of ammonia are recorded in a table.



#### Bio Bytes

The API Ammonia Test Kit is a mercury-free, salicylate test for freshwater and saltwater fish, and measures ammonia levels from 0 to 8 ppm.

#### Results

Glass container	Reading of ammonia in the lake water (ppm)	
	Beginning of the experiment	End of the experiment
<i>A</i>		
<i>B</i>		

Ammonia reading can be obtained by looking at a colour chart. Compare the colour obtained from the water sample in containers *A* and *B* against the colour chart.

#### Discussion

The container that contains water hyacinths will record a lower reading of ammonia after 7 days.

#### Conclusion

The roots of common water hyacinths can absorb ammonia found in lake water.