

# How Do Plants Drink?

Just like us, plants need water in order to survive. This experiment shows how a plant takes in water and distributes it to where it is needed most.

## Instructions

### You will need

- ✓ 2 sticks of celery (preferably with leaves still on)
- ✓ 2 empty glasses
- ✓ Blue artificial food colouring (ingredients usually say Brilliant Blue or E133)
- ✓ Water



1

Using a sharp knife (get a parent or teacher to help) cut roughly 2cm off the bottom of the celery sticks.



2

Fill one of the glasses roughly 1cm high with blue food colouring (that's a lot of colouring, so be careful not to spill it!) then add an extra 0.5cm of water to it. Fill the second glass with just 1.5cm of plain water.



3

Place the freshly chopped end of one of the celery sticks in the blue water, the other in the clear water and leave overnight.



4

In the morning the leaves of the celery in the blue water should have turned blue, and the Xylem (system of tubes that transport water around the plant) should all stand out in dark blue.



5

If your celery has no leaves you can see this effect by chopping off the top the celery stick and observing the blue dots that mark where Xylem have been cut.

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## Explanation

Plants have two systems for transporting substances inside themselves, one for the food they produce during photosynthesis and one for moving water and nutrients up from the soil.

Not only does water help transport nutrients and food around the plant but it is also very important when it comes to keeping plant cells healthy. Cells are full of water, which helps them to move things like minerals around from the inside to the outside, but also fills them up to give them structure (a bit like a water balloon). If a plant gets too dehydrated its cells start to lose water and collapse (imagine puncturing your balloon) and the whole plant appears to droop.



To make sure a plant gets enough water inside itself to stay healthy, it has to be able to draw up extra water from the soil. The way it does this is through a process called Transpiration.

Even though you can't see it, the leaves of a plant are constantly losing a tiny amount of water by evaporation. The water being drawn away from the leaf effectively pulls more water up through the plant to replace it, quite like when you suck liquid up through a straw. The water is carried through a large network of tubes called Xylem and these are what you see turning blue as the food dye is sucked up into the celery along with the water. Now you can see the journey that water has made through your celery!

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Eat Better Do Better



And remember it's not just plants that need to drink water to stay healthy, we do too.