

Plants have a weekend boost to productivity

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PLANTS in Europe photosynthesise more at the weekend, probably because there is less pollution in the air.

Photosynthesis is the chemical reaction that plants use to capture energy from the sun and convert carbon dioxide and water into sugar.

Liyin He at the Carnegie Institution for Science in California and her colleagues have now analysed satellite measurements to investigate whether air pollution affects photosynthesis. They looked at how much light is emitted by the green pigment chlorophyll in the leaves of plants across Europe between 2018 and 2021.

This corresponds to how much photosynthesis is occurring.

By comparing this data with satellite measurements of air pollution over the same period, the team found that photosynthesis rates increased when there were lower levels of aerosols, a type of pollution that includes dust as well as smoke from wildfires and human activity (*PNAS*, doi.org/k5s3).

When aerosol levels are high, more sunlight is blocked from reaching Earth's surface, which can hamper plants' photosynthesising capacity.

Aerosol pollution from vehicles can restrict photosynthesis in plants

The team found that more photosynthesis occurred at weekends across 64 per cent of Europe. "There's less traffic and industrial activities on the weekend," says He. "But during the weekdays, the air is dirtier, so we see a strong weekly cycle."

The team also found that aerosol pollution was lower in 2020 than in other years due to the covid-19 pandemic. As a result, plants were more productive all week long then.

The findings suggest that cutting aerosol levels, especially from transport or industrial processes, could allow plants to capture and store more carbon.

In fact, He and her colleagues calculate that an additional 41 million tonnes of CO₂ could be removed by plants from the atmosphere every year if aerosol pollution levels dropped to the levels seen at the height of the pandemic.

"Improving air quality is not only beneficial for people's health, but also very good for ecosystem productivity," says He. ■