

# Plants convert energy at lightning speed

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A new way of measuring how much light a plant can tolerate could be useful in growing crops resilient to a changing climate, according to scientists from Queen Mary University of London.

"This is the first time we have been able to quantify a plant's ability to protect itself against high light intensity," said Professor Alexander Ruban, co-author of the study and Head of the Cell and Molecular Biology Division at Queen Mary's School of Biological and Chemical Science.

Professor Ruban added: "A changing climate will lead to fluctuations in temperature, humidity, drought and light. Knowing the limits of how much sunlight a crop can happily tolerate could be valuable information for farmers or people who breed new plants."

Publishing in the journal *Philosophical Transactions of the Royal Society B* today (Monday 3 March) the scientists demonstrate a novel method that enables them to relate the photoprotective capacity of a plant to the intensity of environmental light by measuring the fluorescence of the pigment chlorophyll, which is responsible for absorbing sunlight.

Co-author Erica Belgio, also at Queen Mary's School of Biological and Chemical Science said: "The plants we used to measure the light varied in their capacity to protect themselves against high levels of intensity. We exposed them to gradually increasing levels of light, from the sunlight more common on a rainy day to the light you would find at noon on summer's day in the south of France and recorded the responses."

The researchers found the plants grown without the ability to respond quickly to high light intensity had a reduced capacity to protect themselves from damage.

"The photosynthetic apparatus in the [plants](#) is like the retina in human eyes – it is sensitive to how much [light](#) can be soaked up," commented Professor Ruban.

Provided by Queen Mary, University of London

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