

Scientists discover why flowers bloom earlier in a warming climate

March 31 2015



Arabidopsis flower water droplet reflection

Scientists at the John Innes Centre have discovered why the first buds of spring come increasingly earlier as the climate changes.

Dr Steven Penfield at the JIC found that plants have an ideal temperature for [seed](#) set and flower at a particular time of year to make sure their seed develops just as the weather has warmed to this '[sweet](#)

[spot](#)' temperature.

Dr Penfield, working with Dr Vicki Springthorpe at the University of York, found the sweet spot for the model plant *Arabidopsis thaliana* is between 14-15°C. Seeds that develop in temperatures lower than 14°C will almost always remain dormant and fail to germinate. This allows the mother plant to produce seeds with different growth strategies, increasing the chances that some of her progeny will successfully complete another generation.

As the climate changes the sweet spot for seeds comes earlier in the year, so first flowers bloom correspondingly earlier too.

The research which received funding from the Biotechnology and Biological Research Council (BBSRC) and is published in eLife today, used computer models to understand the growth strategy of *Arabidopsis thaliana*. The underlying principle of a very sensitive temperature sweet spot is likely to apply to many [flowering plants](#). This would mean that certain plants have different flowering times due to different but equally narrow temperature sensitivity windows.

Dr Penfield said: "We found that setting seed at the correct temperature is vital to ensure normal germination. It seems that plants aim to flower not at a particular time of year, but when the optimal [temperature](#) for seed set is approaching. If the climate warms [plants](#) are clever enough to recognise this and adjust their flowering time accordingly and it feels like spring comes earlier in the year."

Provided by John Innes Centre

Citation: Scientists discover why flowers bloom earlier in a warming climate (2015, March 31) retrieved 26 April 2024 from

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