



# The summer solstice is the turning point when light and temperature affect the growth of trees

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The interaction between light and temperature is known to influence the seasonal growth of trees. Traditional studies on “light” primarily focus on day length, specifically short day (SD) or long day (LD) conditions. However, little research has been conducted on the process of transitioning between SD and LD conditions.

A recent study (Zohner et al. 2023) conducted by a group from ETH Zurich, as reported in *Science*, utilized four different data analysis methods—satellite remote sensing, long-term ground observations, flux tower measurements, and controlled experiments—to investigate the effects of a warming climate on vegetation growth before and after the summer solstice (June 21st). The study found that high temperatures promote leaf growth in trees before the summer solstice, while after the solstice, high temperatures accelerate leaf aging.

Given that the summer solstice has been found to impact vegetation growth, it raises the question of whether the winter solstice also affects tree growth. Based on the experiences of senior tree genetic breeders, it is observed that dormant buds before the winter solstice do not sprout and bloom, even when exposed to room temperature conditions.

Only after the winter solstice do the dormant buds bloom and become pollinated.

This prompts an intriguing and daring question: Does the summer solstice affect vegetative growth, while the winter solstice affects reproductive growth?

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## Reference

Zohner CM, Mirzaghali L, Renner SS, Mo LD, Rebindaine D, Bucher R, Palous D, Vitasse Y, Fu YH, Stocker BD, Crowther TW (2023) Effect of climate warming on the timing of autumn leaf senescence reverses after the summer solstice. *Science* 381(45):eadf5098. <https://doi.org/10.1126/science.adf5098>

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