Australian National University

Thermal acclimation of photosynthesis:
definitions, patterns and the role of light respiration

Friday 28 February 2014 1 – 2pm

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Slatyer seminar room R.N. Robertson Building (Bldg. 46), Linnaeus Way, ANU

While interest in photosynthetic thermal acclimation has been stimulated by climate warming, comparing results across studies requires using consistent terminology. A range of photosynthetic adjustments are seen in warming experiments, and the choice of which parameter is reported may underlie apparently contradictory results in papers using different indicators of photosynthetic acclimation. An analysis of 70 studies on 103 species shows that adjustments of the thermal optimum of photosynthesis and the photosynthetic rate at the growth temperature are more common than adjustments of other photosynthetic variables, and that some plant functional and photosynthetic types may have less plasticity in their ability to acclimate carbon gain to warming. Studies should also account for thermal acclimation of respiration in the light, as respiratory temperature acclimation can generate apparent acclimation of photosynthetic processes, even if photosynthesis is unaltered.

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