

Restraining dormancy release: climate warming delays leaf unfolding of pecan in southeastern China

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Abstract

Pecan (*Carya illinoensis*), native to North America, is an important economic crop in southeastern China. Climate changes in recent decades are accelerating uneven warming in different seasons and districts, but their effects on pecan plantation remain unclear. Aiming to assess the effect of temperature on dormancy release and ontogenetic growth of pecan seedlings, we conducted several climate chamber experiments and summarized the experimental results with the process-based models. Our models showed reasonable accuracy in predicting natural leaf unfolding. Therefore, we applied the models in projecting the timing of leaf unfolding in the period 2021-2100 under different warming scenarios. In general, an advancing trend of leaf unfolding was projected for most of the areas under all scenarios, but in the southern location, the insufficient dormancy release was expected to postpone leaf unfolding under stronger warming scenarios. Our results suggest that global warming may restrain dormancy release, leading to the delaying trend of pecan leaf unfolding in southern districts.