

Plants with dormant seeds give rise to more species

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Seeds that sprout as soon as they're planted may be good news for a garden. But wild plants need to be more careful. In the wild, a plant whose seeds sprouted at the first warm spell or rainy day would risk disaster. More than just an insurance policy against late frosts or unexpected dry spells, it turns out that seed dormancy has long-term advantages too: Plants whose seeds put off sprouting until conditions are more certain give rise to more species, finds in a team of researchers working at the National Evolutionary Synthesis Center in North Carolina.

When they first emerge from the soil, plant seedlings are very vulnerable, said co-author Rafael Rubio de Casas of the Universidad of Granada in Spain. "They're like babies. They don't have protective thorns or woody tissue any of the other defenses that are more typical of adult plants yet."

The tiny embryos of many plants can lie huddled inside their seed coats in a state of suspended animation for years before finally springing to life. The oldest known was a date palm that sprouted from a 2000-year-old seed recovered from the ruins of a fortress in Israel.

Taking advantage of data compiled over more than forty years by University of Kentucky seed scientists Jerry and Carol Baskin, who were also co-authors on the study, researchers analyzed seed dormancy data for more than 14,000 species of trees, shrubs, vines and herbs from across the globe.

When the researchers mapped the data onto the seed plant family tree, they found that plants with the ability to regulate the timing of germination in response to environmental cues were more likely to spin off new species.

"Having the capacity to fine-tune their development to the environment seems to be crucial for diversification," de Casas said.

Seed dormancy may help [plants](#) colonize new environments by preventing new arrivals from sprouting under conditions or at times of year when the probability of seedling survival is low.

The strategy is as ancient as seeds themselves. "Our results suggest that even the earliest seeds had this ability," de Casas said.

Plants whose [seeds](#) have since lost the ability may be more prone to extinction under future climate change, especially if the timing of sprouting is no longer in tune with their environment, he added.

The study appears in the journal *New Phytologist*.

More information: Willis, C., et al. (2014). "The evolution of seed dormancy: Environmental cues, evolutionary hubs, and diversification of the seed plants." *New Phytologist*. [DOI: 10.1111/nph.12782](https://doi.org/10.1111/nph.12782)

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