New research informs treatment of sudden oak death, a killer of millions of trees

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Big Oak Tree. Credit: RegalShave from Pixabay

Sudden oak death is one of the most ecologically devastating forest diseases in North America and particularly California, where it has killed millions of oaks and tanoaks along the coast. The disease has altered species composition and impacted carbon pools and fire risk. To

curb the impact of this disease, scientists need to better understand the basic biology of the causal pathogen Phythophthora ramorum, including how well it sporulates on common plants.

Scientists at the University of California, Davis, set out to investigate the sporulation potential of this pathogen on common California plant species. "Quantifying sporulation potential of various hosts is essential to fully understand the role of community composition on transmission," explained first author Lisa Rosenthal. "It also helps us predict disease trajectories as forest composition and pathogen host range change in the future."

Rosenthal and her colleagues collected leaves from 13 common plant hosts in the Big Sur region and inoculated them with the causal pathogen. They found that most of the species produced spores, though there was a ride range, with bay laurel and tanoak producing significantly more sporangia than the other species. They also observed an inconsistent relationship between sporulation and lesion size, indicating that visual symptoms are not a reliable metric of sporulation potential.

"Our study is the first to investigate the sporulation capacity on a wide range of common coastal California native plant species and with a large enough sample size to statistically distinguish between species," Rosenthal said. "It largely confirms what was previously reported in observational field studies—that tanoak and bay laurel are the main drivers of sudden oak death infections—but also indicates that many other hosts are capable of producing spores."

By knowing what species are important for pathogen transmission, land managers can better mitigate sudden oak death spread and impact with more informed forest treatment plans.

More information: Lisa M. Rosenthal et al, Sporulation Potential of Phytophthora ramorum Differs Among Common California Plant Species in the Big Sur Region, *Plant Disease* (2020). DOI: 10.1094/PDIS-03-20-0485-RE

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