

## BUILDING A *CERATOCYSTIS* RESISTANCE PROGRAM FOR *METROSIDEROS* IN HAWAII

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The loss of ‘Ōhi‘a to *Ceratocystis* wilt is an unprecedented threat to the ecological integrity of native Hawaiian forests and to native Hawaiian culture. The genetic basis for disease resistance by ‘Ōhi‘a against rapid ‘Ōhi‘a death (ROD) is poorly understood, yet represents a centrally important piece of any long-term strategy for perpetuating ‘Ōhi‘a as a dominant component of Hawaii’s native forests. Specifically, because ROD is infecting and killing trees across Hawai‘i Island, with infection in some areas causing high rates of mortality, quantifying the presence and strength of resistance for various genotypes of Hawai‘i Island ‘Ōhi‘a is critical to anticipating long-term consequences of ROD for forest biodiversity and conservation in Hawaii, as well as informing restoration strategies including decisions about whether ‘Ōhi‘a should be considered for restoration, and if so what genotypes. Questions about resistance need to be addressed for ‘Ōhi‘a genotypes and species across the Hawaiian Islands, and so we have initiated an ‘Ōhi‘a ROD resistance program that is relying a variety of nursery and in-field methods, focusing on Hawai‘i Island genotypes and varieties initially, but if indicated, expanding to genotypes, varieties and other *Metrosideros* species on other Hawaiian Islands. Selections are being made based on morphological and geographic features. Molecular tools are being used to examine the genetic basis for and distribution of resistance. This work aligns with the State of Hawaii 2017–2019 ROD Strategic Response Plan ([www.ctahr.hawaii.edu/dl/rod/strategicresponseplanfinal.pdf](http://www.ctahr.hawaii.edu/dl/rod/strategicresponseplanfinal.pdf)) which identifies ROD resistance research as a priority investment. This research will lead to improved understanding of ‘Ōhi‘a disease resistance, identify the most resistant genotypes for propagation, and create a source of trees that will optimize the restoration of ROD impacted Hawaiian forests.

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