

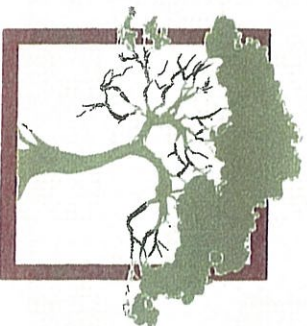
**RAPID
'ŌHI'A
DEATH**

A NEWLY IDENTIFIED DISEASE

A newly identified disease has killed thousands of acres of mature 'ōhi'a trees (*Metrosideros polymorpha*) in forests and residential areas of the Puna and Hilo Districts of Hawai'i Island. Landowners have observed that when previously healthy-looking trees began to exhibit symptoms they typically die within a matter of weeks. Tests conducted by the USDA Agriculture Research Service have determined that the causal agent is the vascular wilt fungus *Ceratocystis fimbriata* (a.k.a. Rapid 'Ōhi'a Death, ROD).

Although *Ceratocystis fimbriata* has been present in Hawai'i as a pathogen of sweet potato for decades, this is the first record of any *Ceratocystis* species affecting 'ōhi'a. It is not yet known whether this widespread occurrence of 'ōhi'a mortality results from the introduction of an exotic strain of the fungus or whether this constitutes a new host of an existing strain. This disease has the potential to kill 'ōhi'a trees statewide.

As of 2014, approximately 6,000 acres from Kalapana to Hilo on Hawai'i Island has been affected with stand showing greater than 50% mortality. The disease has not yet been reported on any other Hawaiian Islands. Trees within a given stand appear to die in a haphazard pattern; the disease does not appear to radiate out from already infected or dead trees. Within two to three years nearly 100% of trees in a stand succumb to the disease, while other trees in the forest are not affected by the disease.



FOR MORE INFORMATION AND UPDATES ON
RAPID 'ŌHI'A DEATH RESEARCH PLEASE VISIT:

www.ohiawilt.org

IF YOU SUSPECT ROD IN YOUR AREA PLEASE
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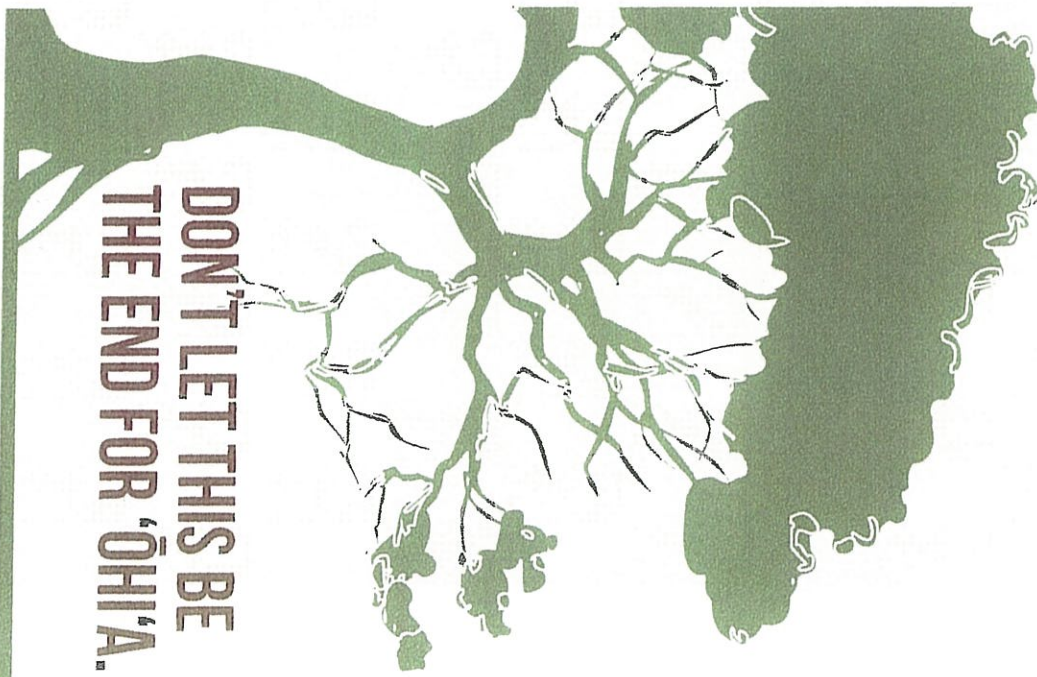
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DEPARTMENT OF LAND AND NATURAL RESOURCES, DIVISION OF FORESTRY AND WILDLIFE



RAPID 'ŌHI'A DEATH



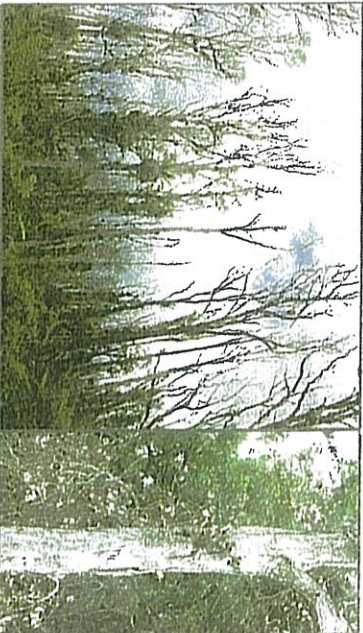
DON'T LET THIS BE
THE END FOR 'ŌHI'A.

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DEPARTMENT OF LAND AND NATURAL RESOURCES, DIVISION OF FORESTRY AND WILDLIFE

**RAPID
'ŌHI'A
DEATH**

QUARANTINE IN EFFECT | RESTRICTING THE MOVEMENT OF 'ŌHI'A PLANTS AND PLANT PARTS INTER-ISLAND

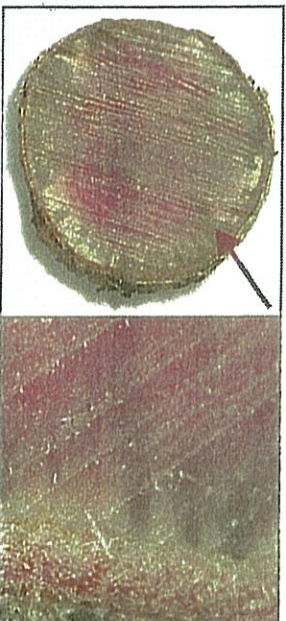
The State Board of Agriculture approved an interim rule that restricts the movement of 'ōhi'a plants and plant parts including flowers, leaves, seeds, stems, twigs, cuttings, logs, mulch green waste, untreated wood, and frass (sawdust from boring beetles) from Hawai'i Island to other islands except by permit issued by the Department of Agriculture for research, commercial and private use including non-profit. Beginning in January 2016 the quarantine will also restrict the movement of soil.



SYMPTOMS OF THE DISEASE

- Crowns of infected trees turn yellowish (chlorotic) and subsequently brown within days to weeks; dead leaves remain on branches for some time.
- In some instances, leaves of single branches or limbs turn brown before the rest of the crown becomes brown.
- Within two or three weeks all the branches in the crown of an infected tree show symptoms.
- *Ceratocystis* manifests itself as dark, nearly black staining in the sapwood along the outer margin of the trunks of affected trees.
- The stain is often radially distributed through the wood.

STAINING OF SAPWOOD



METHODS OF TRANSMISSION

It is not yet known how the disease spreads from tree to tree or from forest stand to forest stand. In other *Ceratocystis* plant hosts such as sweet potato, cacao, mango, and eucalyptus, the fungus is moved by insects, soil, water, infected cuttings, pruning wounds, or tools. These modes of transmission may also be involved in infections of 'ōhi'a trees and stands. *Ceratocystis* has been found in soils under infected stands in Hawai'i, and contaminated soil may transmit the disease.

HOW YOU CAN HELP

- Landowners who suspect ROD infection outside of Hilo and Puna (known infected areas) are encouraged to contact Drs. Friday, Hughes, or Keith (see back) with locations of infected areas.
- Do not transport the wood of affected 'ōhi'a trees to other areas. The pathogen can remain viable for more than a year in dead wood.
- Tools used for cutting infected trees should be cleaned with Lysol® or 70% rubbing alcohol solution. A freshly prepared solution of 10% chlorine bleach can be used as long as tools are oiled afterwards, as chlorine bleach will corrode tools.
- Vehicles used off-road in affected forest areas should be thoroughly cleaned to prevent taking contaminated soil to healthy forests.
- Shoes and clothing used in infected areas should be cleaned, especially before use in a healthy forest.



Left: insect hole in an infected tree. It is not known if insects help spread the disease or just seek out diseased trees. Right: infected sapwood of 'ōhi'a. The wood from this tree has a fruity odor, like over-ripe bananas.

