# Susceptibilities of Various Growth Stages of Metrosideros polymorpha to Ceratocystis lukuohia Infection

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Metrosideros polymorpha (ohia lehua) is considered one of the world's best examples of a foundational tree species that is essential in maintaining the native forest's ecosystem. However, two novel species of the fungal genus Ceratocystis have spread rapidly in the native forests of Hawaii Island. This phenomenon, known as Rapid Ohia Death (ROD), is a prevalent killer of M. polymorpha, with reported mortality rates as high as 90%. This project investigates the susceptibilities of M. polymorpha seedlings to Ceratocystis lukuohia, the more aggressive of the two fungal pathogens that are responsible for the phenomenon. Material collection of semi-hardwood and succulent ohia tissue by humans may create wounds that leave the plant susceptible to ROD; although these younger wood tissue of seedlings have been suspected to be resistant to fungal infection because there is less sapwood tissue- the preferred tissue of the two Ceratocystis species- in these sections. M. polymorpha seedlings were inoculated by placing an inoculum disk on the cross sections of hardwood, semi-hardwood, and shoots, then dissected on a weekly basis post-inoculation. Discolored wood was then baited with carrot disks to confirm the presence of C. lukuohia. The results demonstrate that the younger wood tissues (suspected to be resistant to ROD) were viable for fungal colonization. Semi-hardwood and succulent tissue, although susceptible in all trials, were less favorable of a host than hardwood. Results suggest wounds made during material collection from M. polymorpha seedlings should be avoided or covered as much as possible to reduce the chance of infection in the mother plant. This work is crucial in aiding public outreach efforts to prevent the spread of ROD through human activities.

**Awards Won:**
Third Award of $1,000