Analysis of Japanese Oak Wilt Spread Using Aerial Photography and GIS

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Abstract In Japan, Japanese oak wilt (JOW) has been known since the 1930s. In the decades directly following its initial discovery, JOW epidepmics were only a few years in duration and were confined to only a few areas on the Japan Sea (western) coast of Japan. However, in the last ten years epidemics have intensified and spread to the island's western coastal areas. The symbiotic ambrosia fungus *Raffaelea quercivora* is the causal agent of oak dieback, and is vectored by *Platypus quercivorus* (Murayama). This is the first example of an ambrosia beetle fungus that kills vigorous trees. We provide here an analysis of the historical distribution and spread of JOW previously recorded at the regional scale . Additionally of mortality caused by JOW at the stand scale level was investigated using aerial photographs. In this study, statistical analysis of spread of the oak diebacks was done conducted using a geographical information system (GIS) and rates of JOW spread were among different spatial scales. Results suggest that spread is the result of long, middle and short distance movement by adult beetles.