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BARTLETT TREE RESEARCH LABORATORIES

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To whom it may concern;

The Mediterranean oak borer (MOB), *Xyleborus monographus*, is a fairly new invasive pest from Europe which has been reported on various oak species on the west coast. This species has been collected in traps in Oregon and recently found in an Oregon white oak (*Q. garryana*); however, the extent of the invasion in Oregon is unclear.

Management efficacy studies are limited as fewer chemical options are available for examination in Europe where the pest is native. This species is an ambrosia beetle which means that rather than feeding on wood directly, this pest will introduce fungal symbionts into woody tissue and then eat the growing fungal material inside the excavated galleries of the infested tree. These fungi are often pathogenic and will contribute to the decline of tree vitality.

The primary methods of control for borer beetles are topical contact treatments to the outer bark or injections with systemic products that are distributed within the vascular system of the plant. As this beetle does not feed on wood directly, it would need to contact the topical treatment or consume a sufficient amount of treated woody tissue during the initial boring process for control to occur. The challenge for topical treatments is that this beetle tends to initiate infestations in the upper canopy which will make thorough coverage critical and repeated applications will be necessary to ensure sufficient residual efficacy. Ideally, the injections are the most reduced risk option to limit non-target exposure and to provide longer term control from a single management intervention.

Previous invasive borers, including the Polyphagous Shothole Borer, *Euwallacea* sp., have been effectively managed with injections of emamectin benzoate. It is reasonable to assume that this treatment will similarly manage MOB; however, there is no published evidence to support that assumption. Similar to MOB, other borers vector vascular fungal diseases and in these cases the pathogens are managed with a fungicidal injection. Fungicidal injections in tandem with insecticide injections have been shown to control pest complexes such as we are seeing with MOB. Considering the lack of alternative treatment options, we recommend this approach with reasonable expectations this will provide therapeutic remediation even after early insect attack and fungal colonization.

The recommendation from our lab at this time is to make the insecticidal injections on a preventative basis for trees which are not already infested or in decline but are in proximity to known MOB locations. For trees that are infested, we recommend the insecticidal injection followed by a fungicidal injection. Depending on the severity of damage to the vascular system from insect colonization, product distribution may not be uniform. In such instances some sections of the tree where the infestation is more severe may continue to decline. The insecticidal product is generally persistent for 2-3 years while the fungicidal product is effective for approximately one to two years. Unfortunately, it is unclear how often these treatments will be necessary for this pest complex and may vary with different hosts and growing conditions.

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