TOXICITY OF REDUCED METHYL BROMIDE RATES TO QUARANTINE INSECTS ASSOCIATED WITH NEW ZEALAND EXPORT LOGS

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A major and growing sector of New Zealand's economy is the exportation of pine (*Pinus radiata*) logs, from which a significant proportion are fumigated with methyl bromide before shipment, to meet the importing country's phytosanitary requirements. While New Zealand's forest export sector is investigating a range of disinfestation options, current exports are at risk from any loss of or reduction in the ability to use methyl bromide as a phytosanitary treatment. Continued access to methyl bromide, which is recognized internationally as an ozone-depleting substance, can be better justified if fumigation rates are rationalized and new fumigation schedules, with lower treatment rates are developed. In this study we evaluated the toxicity of different rates of methyl bromide to various life stages of three quarantine insect pests which may be found in association with New Zealand export logs: burnt pine longhorn beetle (*Arhopalus ferus*) (Coleoptera: Cerambycidae), golden-haired bark beetle *Hylurgus ligniperda,* and the closely related black pine bark beetle *Hylastes ater* (Coleoptera: Curculionidae: Scolytinae). A range of different methyl bromide rates (0-88 g/m^3), along with a four-hour treatment duration and two different fumigation temperatures (10 and 20^{o}C) were tested. Results indicate that reduced methyl bromide rates may provide control of insects potentially found in association with logs exported from New Zealand, but that tolerance to methyl bromide varies depending on insect species, life stage and fumigation temperature. Further work will include studies of fumigant penetration and sorption by logs and optimization of rates and durations for New Zealand conditions.