

## **Using thermal development models to predict the phenology of key quarantine pests: applying an ecologically-based risk assessment approach to wood exports**

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Before export, all New Zealand grown logs are treated to eliminate infestation by phytosanitary pests. These treatments are applied to comply with phytosanitary requirements of importing countries. Presently, treatments are applied irrespective of actual infestation risk, however we are conducting research to evaluate the necessity of such end point disinfestation treatments. We propose a new approach where phytosanitary treatments are only applied when ecologically-based assessments of phytosanitary risk indicate there is a quarantine risk. Using temperature-based phenological data for a range of pests, along with information on developmental biology, we plan to develop temperature development models that will be used to determine when pest species are present. This will enable the calculation of the time of year when adult pests are expected to be most active, therefore demanding an aggressive disinfestation strategy. In addition, models will also infer times of the year when phytosanitary treatments are not required because the risk of infestation is low. Incorporating ecological information, specific to each pest species of concern, as part of integrated phytosanitary practices allows for scientifically informed phytosanitary pest management. This approach will lead to reductions in use of chemical fumigants as well as guide the development of long-term, sustainable wood exporting practices.

