DEVELOPING A SCIENCE-BASED INSECT FUMIGATION SCHEDULE FOR NEW ZEALAND EXPORT LOGS

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The aim of this government-funded research programme (set up in 2012) was to build a comprehensive dataset to support the development of new methyl bromide fumigation schedules for New Zealand export logs, using scientifically rationalised doses.

The programme focused on three forest insects associated with *Pinus radiata* in New Zealand: golden-haired bark beetle, *Hylurgus ligniperda* (F.) (Coleoptera: Scolytidae), black pine bark beetle, *Hylastes ater* (Coleoptera: Curculionidae) and burnt pine longhorn beetle, *Arhopalus ferus* (Coleoptera: Cerambycidae). Following a stepwise approach, (1) a laboratory breeding programme for each target insect was developed, (2) the most tolerant species and life stage was identified, (3) the sorption characteristics of methyl bromide were measured, (4) new fumigation schedules (combinations of dose and duration for different temperatures) were optimized using the most tolerant life stage and (5) the efficacy of these new schedules was confirmed using infested logs.

Our results indicate that methyl bromide use in the treatment of New Zealand export logs could be reduced by up 60%. This represents a potential reduction of up to 190 tonnes of methyl bromide per year, saving almost $1.5m USD. We discuss the highlights of our four year research programme and the potential impacts of our results on methyl bromide usage for New Zealand forestry exports.