EFFICACY OF MeBr ALTERNATIVES AGAINST FOREST PESTS POTENTIALLY IMPORTED TO US VIA CHILE

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In response to log supply cut backs from federal lands in the Pacific Northwest (PNW), PNW saw mills have expressed interest in importing raw materials from the Southern Hemisphere, including radiata pine (Pinus radiata D. Dm.) logs from Chile. Importing raw logs carries the inherent danger of accidentally introducing exotic pests. Chilean imports are of particular concern because of the ecological equivalence between the two regions; pests that exist in Chile are potentially capable of establishing viable populations in PNW forests. USDA Animal and Plant Health Inspection Service, in cooperation with the Forest Service, has evaluated pest-specific risks in a pest-risk assessment for Chilean log exports.

Anticipating a potential phaseout of methyl bromide, and U.S. forest industry interest in importing logs from Chile, investigators conducted studies on alternatives to methyl bromide for phytosanitation treatments. While quarantine uses of methyl bromide are currently exempted from phaseout plans, the evaluation of other current and experimental quarantine treatments provides valuable data on alternatives. This project field-tested prophylactic surface treatments against two bark beetle species and a blue-staining fungus the USDA Forest Service pest-risk assessment identified by the pest-risk assessment as potentially damaging organisms likely to enter the United States on Chilean logs. The beetles are Hylastes ater (Paykull) (Coleoptera: Scolytidae) and Hylurgus ligniperda (F.) (Coleoptera: Scolytidae) and the blue-stain fungus, Ophiostoma pilifera (Fr.:Fr.) Syd. & P. Syd (=Ceratocystis pilifera [Fries] C. Monroe).

Several locally available phytosanitary products were field tested in Chile to identify alternatives to methyl bromide for the treatment of whole-logs destined for the United States. Pilot studies were conducted using P. radiata bolts (28 cm x 0.75 m) from which the best treatments were identified. Results from the pilot study were carried over into field studies conducted on export-sized logs handled under industrial conditions. Results showed that a combination surface treatment of 'Timber-Treat'â and 'NP-1'â protected debarked logs against hitchhiking bark beetles and blue-stain fungi completely for two months, degrading to 90% efficacy after four months of environmental exposure. 'Timber-Treat' â and 'NP-1'â were applied as a combined spray treatment in the pilot studies and as a combined dip in the export-sized log studies. In a third test, a methyl bromide or a 'Vikane'â fumigation treatment followed the surface treatment of 'Timber-Treat'â and 'NP-1'â to determine if the fumigants degraded the efficacy of the surface treatment. The was no observable affect on the surface treatments by the fumigants.

Surface treatments used in this study can be applied to freshly harvested trees without placing an undue burden on the current log handling procedures in Chile. Immediately after harvesting and the mandatory debarking required for export, logs can be sent through a dip tank or ring sprayers to apply the surface treatment.

'Vikane' â does not degrade the efficacy of the 'Timber-Treat'â and 'NP-1'â surface treatment, so a post-dip fumigation is possible. The surface treatment establishes a prophylactic chemical barrier against pest organisms, while a subsequent sterilizing fumigation would insure that any pest organisms immediately on or under the surface treatment are destroyed. Logs treated in this fashion could be fumigated on shore and then loaded aboard ships.

While the surface treatment and subsequent fumigation satisfactorily protects debarked logs from hitchhiking bark beetle and airborne blue-stain fungi, the point must be emphasized that the surface treatment is a single facet of an integrated pest management program. In addition to the development of effective surface treatments, information on the bark beetles' life cycles under Chile's environmental conditions must be collected. Documenting the bark beetles' dispersal habits and development is necessary for timing harvesting and transportation operations, in order to reduce the exposure of export logs to dispersing pest organisms.