STIMBR

Stakeholders in Methyl Bromide Reduction

Newsletter to participants
July 2007

Summary of March Meeting

A meeting of STIMBR was held in conjunction with the official opening of Crop & Food's new fumigation facility at Palmerston North on 30 March. The 25 attendees represented a wide range of Government and industry groups. The failure to obtain financial support from funding agencies for a comprehensive strategy to reduce methyl bromide use was a disappointment but a number of alternative approaches were suggested and STIMBR is still optimistic a successful programme can be developed.

The Crop & Food facility was opened by the Hon. Steve Maharey who generously met with STIMBR representatives to discuss the funding issue. The Minister gave a sympathetic hearing and undertook to make further enquiries of his officials. He appreciated the importance of advancing strategies to reduce methyl bromide use and was keen to see Government play its role in the efforts already being undertaken by the wider sector.

Funding for STIMBR to carry out its role in coordinating, reviewing, and lobbying for support for methyl bromide reduction initiatives was seen as critical to its future effectiveness. It is estimated between $10K and $15K is needed annually to maintain the impetus of the group but no mechanism has yet been agreed as to how this can be obtained. Ensis has been first off the block committing $2K of in-kind support providing management and newsletter production services.

The possibility of a voluntary levy on every kilogram of methyl bromide imported into the country has been proposed having the dual advantage of ease of administration and incentive to use as little as possible, although the cost would largely fall on the forest industry which is already making the major contribution to research. However, STIMBR will founder unless this support can be realised.

The best way for STIMBR to obtain substantial funding for research is through FRST (Foundation for Research, Science and Technology). Ensis will be submitting to FRST this year in a bid to create a research programme of the necessary scale to confront this increasingly important issue.

Research Activities

Ongoing funding from the Forest Biosecurity Research Council (FBRC) and Forest Industries Development Agenda (FIDA) is enabling a base level of research activity into alternative treatments. Progress on these research projects is reported below.

Alternative fumigants for used vehicles

Imported motor vehicles and machinery are known to pose a risk of entry for a wide range of biological hazards, including arthropods, molluscs, vertebrates, pathogenic fungi, nematodes, viruses and bacteria. These organisms are often contained in soil, plant and animal debris, and weed seeds that may be present on the vehicle.

This pathway is high-volume, with 170,000 used motor vehicles imported in 2005, and there is currently no single measure that can manage all these hazards in a practical manner. Import health standards to regulate importation of used vehicles are currently being reviewed.

Fumigation with methyl bromide (MB) is one of the current risk management measures for the pathway. Research is required to identify alternative fumigants that:

- Are effective against all life-stages of the main hazard groups.
- Penetrate and treat inaccessible parts of motor vehicles.
- Are cost-effective.
- Will not damage motor vehicles, including safety, structural, functional and aesthetic components.
- Are suited to treating large numbers of motor vehicles.
- Have minimal occupational safety and health and environmental concerns.

Research funded by Biosecurity New Zealand is under way to identify effective fumigants to replace MB for damage-free disinfestation of imported used motor vehicles and equipment.

The first stage of the project was to review the literature and identify the most suitable alternative fumigants for further testing. The resulting review, carried out by Gordon Hosking, recommended two fumigants for further testing, sulfuryl fluoride (SF) and ethane dinitrile (EDN). SF was chosen as the most promising as it is already available in New Zealand.

The second stage of the project was to evaluate the two fumigants. SF was evaluated against the current standard MB treatment.

Crop and Food Research scientists tested the efficacy of SF for control of 15 species of arthropods, gastropods, nematodes and fungi, including two life stages of four insects, comparing three rates of SF with a standard MB treatment. Both SF and EDN were evaluated for potential to damage sensitive car parts. Scientists exposed 20 car components, all considered sensitive to fumigants, and a network interface card, simulating a car computer, to SF and EDN.

Research reports on the study have been prepared and delivered to Biosecurity New Zealand. The reports will be available in a couple of months.

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In-transit log treatment

Research trials are planned to demonstrate the efficacy of treating logs inside the hold of ships while in transit to India. This method would use Phosphine as an alternative to Methyl Bromide. The aim of this research is to ensure adequate penetration of logs and to test the efficacy of Phosphine on a range of insects. Progress on these trials has been slowed by negotiations with Indian quarantine authorities, but the research will go ahead once details have been agreed.

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New light in beetle control

A light trapping system has been developed by Frontline Biosecurity to reduce burnt pine longhorns (Arhopalus ferus) on wood processing sites. The beetles are attracted to ports and processing plants by wood odours and bright lights, and sleep during the day among sawn timber, pulp packages and logs. This behaviour presents a serious export quarantine risk, therefore fumigation or other acceptable treatments are required prior to export.

The light trap is seen as a way of reducing reliance on methyl-bromide during A. ferus flight periods. Using powerful UV rays to attract the insect, the light trap has proven to be successful at catching insects at a paper factory. The simple design consists of large UV light panels with catching troughs containing water and detergent. The beetles typically strike the clear surface of the light panel and drop into the trough. Further research is now under way to refine the system.

Adult A. ferus beetles emerge from November to March and are most active between dusk and midnight. They are strongly attracted to artificial light at night. However, the ultra-violet light traps tested to date have also attracted large quantities of non-target native insect species. A study has been completed to identify which different coloured lights are most attractive to A. ferus. This information is an important first step in reducing the by-catch of other insects.

Results of the study show that A. ferus could be discouraged from wood processing facilities by the adoption of low intensity yellow lights for general site lighting. Judicious placement of UV lights could then trap residual A. ferus attracted to the site whilst minimising excessive non-target insect catches.

Although light management on its own is unlikely to eliminate the quarantine risk, it will reduce populations and contribute towards the overall aim of reducing methyl bromide when used in combination with other treatments.

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Temperature mortality thresholds for insects

A major literature review has been completed of the temperature mortality thresholds of a wide diversity of insect groups. This information is critical in the proposed use of heat treatment for both quarantine and market access risk reduction. Trading partners and quarantine authorities require a high level of confidence in the efficacy of proposed treatments before approval.

The present review supports the contention that mortality thresholds for insects are remarkably consistent and seldom, if ever, exceed 50ºC. Even insects of hot deserts, or those producing heat shock proteins, conform to the general theory that exposure to temperatures in excess of 45ºC leads to rapid death.

These data provide strong support for proposed heat treatment regimes in the order of 55ºC for 10 minutes where direct exposure is involved such as in the case of used vehicles or Arhopalus ferus infestation of sawn timber.

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Where to from here?

The top priority for the STIMBR working group is to secure at least sufficient funding to ensure the organisation's survival and to be able to advance its objectives. Until this is achieved we will make little inroad into the priorities listed in our last newsletter.

We hope to have a proposal to all members within a few days.

In summary, priorities for the working group include:

- expanding STIMBR both within New Zealand and into Australia.
- assembling a summary of all current relevant research being undertaken in both New Zealand and Australia.
- seeking significant research funding.
- urging action by members of parliament and officials in support of our agenda.
- developing a New Zealand specific summary of the implications of methyl bromide reduction, and the benefits to the wider community.

Background to STIMBR - Stakeholders in Methyl Bromide Reduction

STIMBR was formed to bring together a wide range of organisations and individuals with a common interest in progressing alternative strategies to methyl bromide fumigation for enhancing market access of forest produce while reducing reliance on methyl bromide use.

The forestry sector is seriously exposed to any constraints on methyl bromide use, both locally through the New Zealand Government's efforts to reduce ozone-depleting emissions, and internationally through any move by trading partners to reduce their own methyl bromide use.

An aggressive research programme focused on alternative strategies will demonstrate a commitment by the sector to reduce its reliance on methyl bromide, and recognition of the economic and environmental risks of "business as usual". Such a strategy would also be consistent with the sustainability focus of New Zealand plantation forestry.

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