ALTERNATIVE QUARANTINE TREATMENTS FOR HITCHHIKING SNAILS

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Quarantine significant snails in the family Hygromiidae were exposed to alternative treatment measures in separate experiments in an effort to replace methyl bromide for treatment of imported tile. The invasive snails *Cernuella cisalpina* and *Xerolenta obvia* were field collected in Norfolk, Virginia and Detroit, Michigan, respectively, and tested against the fumigant sulfuryl fluoride in the laboratory at 16, 24, 32, 40, 48, 56, and 64 g/m3 concentrations over a 24 hour period. The same snail species were also exposed to radiofrequency (RF) energy during trials at PSC, Inc., a privately contracted RF equipment supplier based in Cleveland, Ohio. RF testing parameters included voltage, electrode height, tile height, snail location on tile, and exposure time.

Sulfuryl fluoride was found to be highly effective against *C. cisalpina* and *X. obvia* for all CT products based on 24 hour treatment time. This result compares favorably with methyl bromide schedule T403-a-2-1 in the USDA Treatment Manual. Radiofrequency (RF) results were not as consistent, but effective treatment times in terms of minutes were achievable.

Advantages of sulfuryl fluoride include:

1. Methyl bromide replacement with another fumigant. A relatively easy transition due to same class of treatment;
2. No depletion of ozone;
3. Less sorptive than methyl bromide;
4. Penetrates faster than methyl bromide;
5. Degasses faster than methyl bromide;
6. Cost of SF a bit higher at this point, but would expect it to be lower with increased use and acceptance;
7. SF is commonly used already, mainly as a structural pest fumigant. Experienced users are common.

Radiofrequency remains an expensive, technically complex alternative, but has demonstrated potential for efficacy on durable products such as tile. Relationship of product density and airspace between electrodes is a critical parameter in determining overall treatment effectiveness on pests.