

FORMIC ACID FUMIGATOR FOR CONTROLLING VARROA MITES IN HONEY BEE HIVES

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ABSTRACT - The 50% formic acid fumigator (FAF) for varroa mite control was developed as part of a SARE grant (1999-2001). The fumigator was evaluated for five years on 123 colonies in five bee yards in Connecticut, Maryland and West Virginia (USA). Treatments eliminated all mites on adult bees and 90-95% of mites in sealed brood cells. Very few brood or new young adult bees were injured by the treatment. The fumigator is a simple design and the overall cost of treatment is about \$1.00 per hive, or less. The 50% FAF was less toxic to bees compared to other treatments using 65%, 80% or 90% formic acid. The fumigator was applied for 18-24 hours when ambient temperatures were between 15-30°C. In the USA, one treatment in mid-August to mid-September was effective and usually all that was required each year. The 50% FAF used with other essential oil treatments including salt-grease patties with wintergreen, feeding 1:1 syrup with Honey-B-Healthy® (spearmint and lemongrass essential oils), and use of screened bottom boards, together provide a synergistic effect to keep mite numbers at a relatively low level, as part of an integrated pest management (IPM) system.

Key words - Formic acid fumigator, *Varroa destructor* (Anderson & Trueman), *Acarapis woodi* (Rennie), essential oils, salt grease patties, screened bottom boards, Honey-B-Healthy®, IPM, USA.

Abstract # 1

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