

CONTROL OF CAROB MOTH (*ECTOMYELOSIS CERATONIA*) IN FRESH DATES FUMIGATED WITH PROFUME®

R.E. Williams*, Dow AgroSciences LLC, Atascadero, CA

Carob moth (*Ectomyeosis ceratonia*) is controlled in fresh dates by fumigation prior to fruit storage or processing. Methyl bromide (MB) has been the historical fumigant of choice. However, with international reductions in the use of MB, its use in dates has been most recently permitted only under the international Critical Use Exemption (CUE) allowance per the Montreal Protocol. This trial was conducted in November 2008 in a continued effort to assist the California Date Commission in assessing ProFume® gas fumigant (99.8% sulfuryl fluoride [SF], Dow AgroSciences LLC, Indianapolis IN) for carob moth (CM) control and was designed to evaluate the efficacy of dosages of ProFume lower than previously tested for CM control in dates. These trials demonstrated complete (100%) mortality of exposed carob moth eggs and carob moth larvae infesting fresh dates with a 332 oz-h/MCF (g-h/m³) CT (concentration x time) dosage of ProFume at 21°C (70°F) during a 14-h exposure. This dosage would require 1.5 lb/MCF of ProFume, the same dose used with MB, for chambers with a moderate HLT of 20 h and a short, overnight exposure of 16 h.

Chamber fumigation needing a quick overnight turnaround represents ≈ 30% of the production fumigation. The remaining 70% of the fumigations occur in 5.0-MCF stacks of bins under tarps in the open yard, when time is not critical and the tarps may be kept sealed for weeks or even months. With the anticipated 50+ h HLT actually measured with the tarps by this PI in 2007, a fumigation using only 1.3 lb/MCF of ProFume would require 16 h to achieve 300 oz-h/MCF for carob moth control. Further gas savings can occur by extending the exposure time. At 50-h HLT and 72-h exposure, a 300 oz-h/MCF CT dosage for ProFume can be achieved applying only 0.4 lb MCF.

These considerations of CM efficacy at 300 oz-h/MCF CT dosages combined with good HLT, which can be achieved with good structural sealing techniques, demonstrate that ProFume is an equivalent (weight: weight) alternative to MB in fresh dates for short-exposure overnight fumigations. When extended exposures are possible in tarped stacks, ProFume becomes superior (weight: weight) to MB. This research demonstrates that in all aspects (technical, practical & economical), ProFume is a viable alternative to MB for fumigation in dates and is available as an immediate industry replacement for MB.