

Use of Heat for Disinfestation and Control of Insects in Dates: Laboratory and Field Trials

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Heat treatment of dates at the time of harvest, was examined as an alternative to fumigation with methyl bromide, which has been phased out in Israel under the Montreal Protocol. In laboratory studies, the influence of 40°, 45°, 50° and 55°C on the levels of disinfestation and mortality of *Carpophilus hemipterus* larvae was examined over a 2-h exposure period. The ratio of the number of insects found outside the feeding sites to the total number of insects, was greatest at 50°C (92.3%), significantly greater than at 40° and 55°C. At 50° and 55°C, 100% mortality was obtained. Since drying temperatures for most date varieties is between 45° and 50°C, and because percent disinfestation and control was most effective at 50°C, these findings were examined under field conditions. Field trials were carried out at a commercial drying station where the crated dates are placed on the ground inside a plastic-clad hothouse. The stacks were covered with plastic liners to form 'drying ducts' through which heated air was sucked using fans positioned at the opposite end of the ducts. It was shown that from 1 to 2 h were required for the dates to reach the set temperature of 50°C. During the following 2-h aeration, the dates were exposed to 50°C heated air, after which an examination of infested dates inserted into the drying ducts, and natural infestations showed that successful control and emigration were obtained. This method produced results comparable to those obtained with methyl bromide fumigation, and was suitable as a replacement technology for infestation control.

KEY WORDS: Dried fruits; nitidulid beetles; heat; insect control; methyl bromide alternatives.

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