ETHYL FORMATE: A POTENTIAL ORGANIC FUMIGANT FOR FRESH PRODUCE

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Ethyl formate has been used as a food additive and fumigant since the late 1940s. Ethyl formate (Eranol®) is registered as a larvicide for packed dried fruit in Australia. However, the high vapour pressure (25.6 kPa at 20°C) and flash point of -20°C for ethyl formate renders it flammable and explosive, particularly in large-space spray applications. Using the EnviroSol® Technology, ethyl formate was formulated in liquid carbon dioxide making it non-flammable and reducing the risk of explosion, as well as making it easy to handle and apply. Preliminary bioassays have shown EnviroSol® ethyl formate can effectively control the quarantine insect pests mealy bug (*Pseudococcus longispinus*) and two spotted mite (*Tetranychus urticae*) in organic bananas. For organic apples, the formulation also controlled larvae of light brown apple moth (*Epiphyas postvittana*) and apple leaf curling midge (*Dasineura mali*) at a range of application rates. The application rates achieved with this formulation are higher than for conventional fumigants, probably because the active ingredient is metabolised by the produce. Further work is required to define effective concentration x time product (CT) values for these pests in apples and bananas. No deleterious effects on produce quality have been detected from the EnviroSol® ethyl formate treatments.