

Effect of Environmental Factors and Application Rate on Field Performance of Sprayable Pheromone Formulations

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ABSTRACT Pheromone based mating disruption (MD) is a promising alternative to insecticides for control of oriental fruit moth (*Grapholitha molesta* [Busck]). Several sprayable MD formulations have been developed in recent years, but concerns exist as to the stickiness and longevity of these materials in the field. Lab and field studies were conducted at Michigan State University, USA, with microencapsulated pheromone (3M[®] Canada company, London, Ontario) to compare microcapsule adherence to various plant surfaces, and to determine the effects of rain and sunlight on various formulations of microencapsulated pheromone.

Upon application, the largest deposition of microcapsules on the tree occurs on wood rather than fruit or foliage. Microcapsule abundance on mature foliage prior to field exposure was greatest on the upper leaf surface. Rainfall events of more than 10mm significantly decreased the number of microcapsules on field-exposed leaves. There were significantly fewer microcapsules on field than unexposed foliage for all MEC treatments in at least one weather event with a rainfall of 10-87 mm. Significant differences between the number of microcapsules on field exposed or unexposed foliage occurred more frequently following rain events on the upper than the lower surface of leaves. In the weather events without measurable precipitation, only exposure to solar radiation of 3,713 langley (1 wk exposure to sun in July) significantly decreased the total number of microcapsules on leaves.