

Session 9 : Integrated Pest Management

The present and the future of the use of mating disruption for the control of stored product insects

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Abstract

Mating disruption has been used extensively in Integrated Pest Management (IPM) programs in many crops, and, in this regard, there are numerous commercially available formulations for several species. However, until recently, this technique was not used at the post-harvest stages of durable commodities, despite the fact that the enclosed environment of storage and processing facilities is an additional advantage of the use of this method, as it limits the migration of mated females from neighboring areas. Despite the fact that research during the past decades clearly showed the feasibility of using mating disruption in storage facilities, the first commercial formulations were registered only some years ago. Currently, all available formulations are based on ZETA ([9Z,12E)-tetradecadienyl acetate], also known as TDA) which is the male attractant for major stored product Pyralidae, such as the Mediterranean flour moth, *Ephestia kuehniella* (Zeller) and the Indian meal moth, *Plodia interpunctella* (Hübner). Extensive studies in Europe and elsewhere showed that mating disruption can be used with success for the control of several pyralid moths, at various types of commodities and facilities and at a wide range of geographical zones. Also, the continuous use of mating disruption drastically reduces moth populations, and minimizes the need for insecticidal applications against moths. Apart from the “classical” mating disruption formulations, which are based on dispensers that release pheromone in the facility, ZETA is also used through “auto-confusion”, which is based on cross contamination of unmated males. More recently, a “puffer”-based formulation was developed, which is based on sprayable pheromone. Nevertheless, apart from moths, there are no commercial formulations that can be used for the control of other major stored product insect species, such as beetles, despite the fact that, in many durable commodities, beetles are more important than moths. Recent data, however, showed that 4,6-dimethyl-7-hydroxynonan-3-one, known as serricornin, which is the pheromone of the tobacco beetle, *Lasioderma serricornis* (F.), can be used through mating disruption with promising results. In the case of pyralid moths, it is generally expected that mating disruption will play an important role in IPM strategies in processing facilities in the near future, while there are definitely potentials for the use of this technique in short-lived beetle species.

Keywords: mating disruption, integrated pest management