

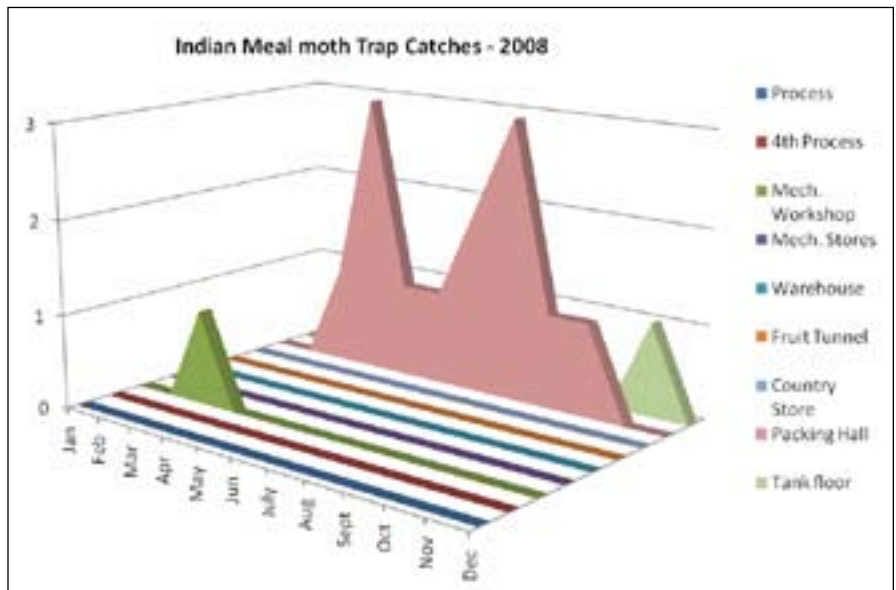
# Dismate PE – a safe food moth control system based on mating disruption without using chemical pesticides

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**F**ood moths are very important pests of stored grains throughout the world, often causing severe qualitative losses and quantitative degradations in the food industry. The larvae of these moths feed on dry fruits, cereals, chocolate, nuts and legumes in storage. The Montreal Protocol banning ozone-depleting gases, such as methyl bromide has left the food industry with less effective tools for pest control. The need to develop biorational pest management technologies in stored-products, such as those using insect pheromone, is greater than ever.

Pheromone baited traps are widely and successfully used in monitoring infestations of stored products. The use of the pheromones for suppressing pest populations through mating disruption for food moths of the family Pyralidae can provide an effective alternative control rather than monitoring. Using one single pheromone Z,E-9,12-Tetradecadienyl acetate (ZETA or TDA) for all species of *Ephestia* and *Plodia interpunctella* present in stored products, Russell IPM have developed a control system, Dismate PE.

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The enclosed environment of storage facilities provide an ideal area for the application of mating disruption as the sources of infestation from the external environment is limited; i.e. immigration of mated females from untreated areas.

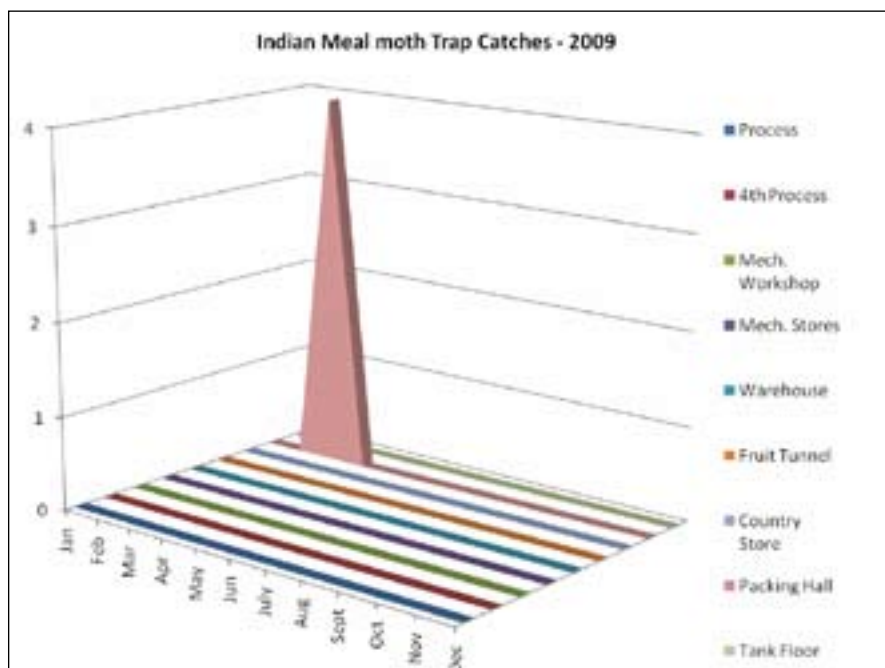
Dismate PE mating disruption system releases of large quantity nature-identical insect pheromone capable of disrupting the communications between the male and female leading to failed mating and subsequent and gradual reduction in the food moth population. Dismate PE can be

used as a reliable alternative to the Methyl Bromide fumigation product. Dismate PE system for the control of food moths have been evaluated in several food processing and manufacturing facilities across in the UK and Europe. The data which was showing significant and continuous decline in the moth population was also showing direct correlation between the pheromone trap catch trends with the female egg laying behaviour.

Dismate PE system has been evaluated over 10 years in a breakfast cereal manufacture facilities in the United Kingdom. In 2008 a very low level of *Plodia / Ephestia* population was recorded in pheromone traps in the factory. Throughout the year the moth population never exceeded more than 3 moths / week. The factory had significantly lower levels of moth population and was controlled significantly.

In 2009 at the same trial site pheromone traps recording showed a complete absence of moths for 10 months of the year and only one to two moths per week in the months of March and April. This is indicative that Dismate PE induces a substantial disruption to the moth's mating behaviour resulting a significantly reduction in moth population.

Dismate PE system has recently tested in flour mills in three European locations. The application of the Dismate PE dispensers decreased the number



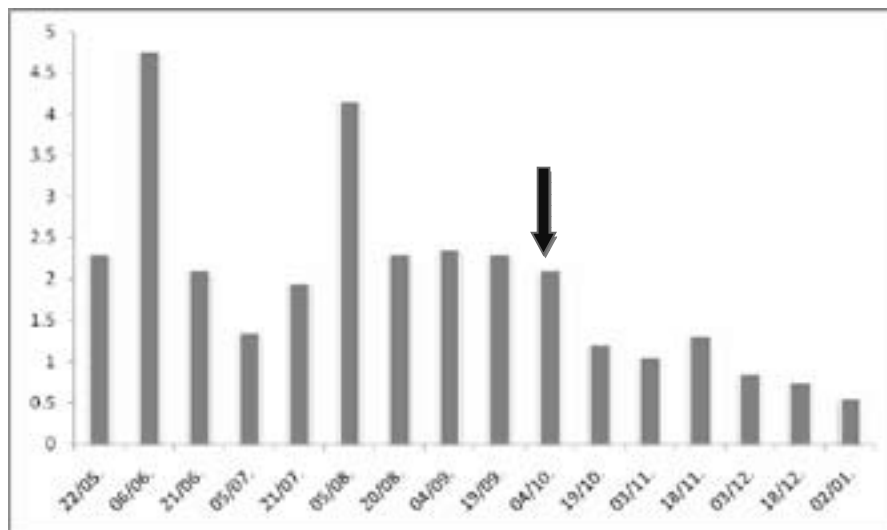
## Pesticide survey set by USDA

Officials at the U.S. Department of Agriculture have initiated surveys to collect information about pesticides used by fruit growers and general farming practices employed by barley producers.

Beginning in October, the USDA's National Agricultural Statistics Service will contact growers in 12 states, including California, to collect information on pesticides used, acres treated and rates applied to more than 20 fruit crops. NASS will interview 3,000 growers nationwide, including 109 barley producers in California, about chemical use, pest management and irrigation practices for barley and sorghum.

The Fruit Chemical Use Survey, last conducted in 2009, will provide facts about chemical use in U.S. fruit production. The barley production survey, the first since 2003, will likewise provide vital information about current farming practices. As with all NASS surveys, information provided by respondents is confidential by law.

Survey results will be published in the Fruit Chemical Usage report to be released in July 2012 and available on the NASS website at [nass.usda.gov/](http://nass.usda.gov/). Reports and additional information can also be obtained by calling the NASS hotline at +1 (800) 727-9540.

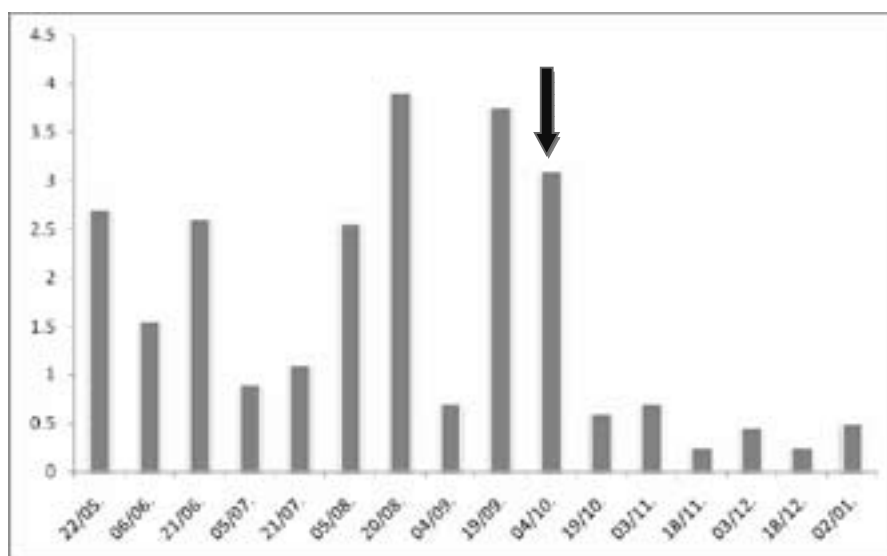


of moths in the pheromone traps to <2 moths/trap. This reduction was rather gradual, while very few adults were found during November and, especially, December. In the graph above the arrow indicates the date of the placement of the Dismate PE dispensers.

Oviposition traps were also used to monitor larval activity at same locations. In the Dismate PE-treated area, the number of larvae recorded was significantly low. This consistency is an additional indication that the overall oviposition was notably reduced due to the application of the Dismate PE systems. In the graph below, the arrow indicates the date of the placement of the Dismate PE dispensers.

The data indicates the substantial downward trend of the Indian meal moth, *Plodia interpunctella* population in factories managed by the Dismate PE system. It was clearly shadowed a drop in the tendency of females laid eggs in the protected area. Most significantly, annual trends of customer complaints relating to Indian meal moth, *Plodia interpunctella* were extensively reduced during trial period. The pheromone and oviposition trap data have been correlated with consumer complaints reduction.

In one location wide application of Dismate PE for twelve months, the impact on the Indian meal moth, *Plodia interpunctella* population was



significantly higher than the effect of four Methyl bromide treatments routinely applied every year prior to the Dismate PE application. Above trial results in the UK and Europe have clearly indicated that Dismate PE can be used as an effective cost efficient system for controlling *Plodia* / *Ephestia* and other food moths.

The Dismate PE system is now registered in the UK, Ireland, Germany and USA for food moth control. Registrations in other European countries are under process and will be announced upon completion. For more information on Dismate PE and recent developments please visit <http://www.confusedmoth.com>.