

POTENTIAL APPLICATIONS OF EXOSECT® AUTO - CONFUSION™

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ExoSect Limited was set up to develop patented award winning technology using novel delivery systems based upon electrostatically chargeable powders which adhere to insect cuticles. It has been established that EntoStat™ can be used to deliver an active ingredient (such as a pheromone) onto the cuticle of an insect. The Auto-Confusion™ system developed by ExoSect is a novel approach to lepidopteran mating disruption.

Auto-Confusion™ Concept

Male insects are attracted into the ExoSex™ Dispenser by using the appropriate pheromone formulated with EntoStat™ powder; the EntoStat™ particles adhere to the male when it enters the dispenser. The male will eventually leave the dispenser. The pheromone formulated with the EntoStat™ acts on the pheromone receptive sensors on the male so that they cannot locate calling females. Mating is disrupted.

Standard mating disruption techniques usually rely on the introduction into the atmosphere of amounts of pheromone far in excess of those produced and emitted by natural populations of the pest species. Auto – Confusion™ in addition to having the beneficial features of other pheromone technologies such as reduction of pesticide sprays, being pest specific and fully compatibility with Integrated Crop Management (ICM) programs, also has the advantages that fewer dispensers (point sources) are required (the contaminated males themselves become 'point sources'), the dispensers are easy to set up requiring reduced labour and lower pheromone dosages. Auto - Confusion™ uses equal to or less than quantities released into the environment by populations of insect pests that would subsequently lead to economic damage to the host crop.

Field trials in Apples (Codling Moth), Rice (Rice Stem Borer) and Forestry (Brown Tail Moth) using 1,000 times less pheromone than in commercially available systems have produced highly promising results. ExoSect® Auto – Confusion™ has worldwide market potential against lepidopteran pests of agriculture, forestry and stored products, where the female pheromone components have been identified and are an effective attractant.

New Research Areas

Grape Pests – BBSRC Small Business Research Initiative

ExoSect have recently been awarded a grant from the BBSRC as part of their Small Business Research Initiative to examine the underlying mechanisms whereby Auto-Confusion disrupts mating. The project aims to assess three species of lepidopteran

pest: *Lobesia botrana*, *Eupoecilia ambiguella*, *Endopiza viteana* of the Wine Grape (*Vitis vinifer*) and their behaviour under the influence of Auto-Confusion.

Glasshouses

Horticultural crops are generally high value crops, often with exceptionally high cosmetic standards resulting in low economic damage thresholds. The horticulture industry is active in a move to ICM and reduced agrochemical use. ICM techniques have been adopted to deal with the majority of pests within a glasshouse. Given that semiochemical control strategies are often more expensive yet value adding compared with a traditional prophylactic pesticide approach, only high value crops provide a suitable market for their commercialisation. The general high value of the crop combined with the desire to reduce agrochemical inputs makes horticulture, in particular glasshouses, a potential market for the ExoSect® Auto-Confusion™ technique. Within a glasshouse environment useful semiochemical management tools are not frequently used due to their inconsistent performance. The reason for pheromone monitoring traps inconsistencies has so far not been pinpointed. ExoSect intend to assess the feasibility of the Auto-Confusion technique within protected and unprotected horticultural crops.

Stored Products

Lepidopteran pests of stored products are an extensive problem in food storage and production facilities; their potential to contaminate products has a considerable economic impact. Semiochemical monitoring traps are used on a routine basis within stored product environments, and the use of mass trapping as a management tool has been assessed. ExoSect are currently performing a trial in a stored product environment using the Auto – Confusion technique. Preliminary results will be presented.