

Chemical Control/New Products

Success* Insect Control: A New Mode of Action for Orchard Insect Pest Management

Mike Shaw and Barat Bisabri
DowElanco, Indianapolis, IN

Keywords: spinosad, Success

Spinosad, the active ingredient in Success insect control, has evolved from a promising lead to an exciting new insecticide with intriguing properties, to the first product in a new class of insect management products. Throughout this evolution, the critical attribute of superior efficacy has been the centerpiece for field characterization, with the ongoing belief that spinosad would prove to be a new insect control solution for pests that have developed resistance to conventional insecticide technology. DowElanco's Insect Management Group (IMG) Discovery scientists now confirm that spinosad does indeed have a novel mode of action (MOA).

Spinosad causes excitation of the insect nervous system, leading to involuntary muscle contractions, prostration with tremors, and finally paralysis. These effects are consistent with the activation of nicotinic acetylcholine receptors by a mechanism that is clearly novel and unique among known insect control products (including all known insecticides). Spinosad also has effects on GABA receptor function that may contribute further to its insect activity. The reason for the extraordinary margin of selectivity toward certain insects over mammals and other non-target organisms is not fully understood.

The MOA of spinosad is unique and should offer a new solution for target pests that have developed target site resistance to other compounds. Studies using laboratory and field populations have demonstrated no known incidence of cross resistance. Developing and supporting pest management strategies to minimize the possibility of resistance development for spinosad is a very high priority for DowElanco.

* Trademark of DowElanco