New White Grub Chemistry: What Does it Mean for You?

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The enactment of the Environmental Protection Agency's Food Quality Protection Act (FQPA) of 1996 dramatically reduced, and continues to impact, the number of pesticides registered in the turf and ornamental area. As a result, fewer products are currently available; thus choices of products are more limited. Furthermore, only a limited number of turf and ornamental products have been developed and made commercially available by agricultural chemical companies. Of these, only a couple white grub insecticides have been registered and are commercially available; they include halofenozide (Mach 2) and clothianidin (Arena).

Mach 2 is an insect growth regulator (IGR) that controls most white grub species associated with turf. Its mode of action is by means of disrupting the normal molting (growth) process that is regulated by insect growth hormones. Following either contact or ingestion, Mach 2 functions by forcing white grubs to prematurely molt (grow) to the next larval stage before they are physiologically ready (mature). Because water retention is critical to most insects, Mach 2 exploits this critical requirement by making the grubs vulnerable to water loss during the premature molting process. Additionally, Mach 2 also causes the white grubs to stop feeding upon contact or ingestion. Because of its mode of action, mortality typically occurs 7-14 days after contact or ingestion.

Most recently (2005), Arvesta Company introduced the new white grub insecticide Arena. Arena's active ingredient is clothianidin; it is a neonicotinoid (i.e., nicotine analogues) insecticide similar to imidacloprid (Merit). Arena is an acetyl-cholinesterase inhibitor which disrupts the normal neurological processes of an insect. Arena works through contact (absorption) or ingestion; after exposure, the targeted insect stops feeding and dies soon. Arena also works systemically within the plant to provide season-long residual control of certain insects. As a result, it can be applied up to 60 day prior to the pest presence.

Currently, there are a few agricultural chemical companies in the process of developing and testing a number of experimental compounds for control of white grubs. Should the data associated with any of these products prove to be promising and the United States EPA find any of these compounds to be acceptable for registration based on their compound profile criteria, it is plausible that one of these experimental products may be made commercially available in the near future adding to our limited number of white grub control products currently registered .