

# Modern Insecticides, Including Combo Products, Fit Nicely With IPM

By Rick Brandenburg

This installment on the discussion of integrated pest management (IPM) begins with the premise that challenges have emerged as we have new products that have a more favorable environmental profile but might need to be applied in a more preventive manner. We pick up with that concept in part two and look further at newer chemistries and how they fit into what we do each day.

I think it is important that we not overlook the significant differences in the toxicities of today's modern insecticides. If we go back just 10 to 12 years ago, we were using products that had oral LD50 (lethal dose to 50 percent of the test population) to rats and birds that were measured in single digits. The lower the number, the more toxic the compound. A product with an LD50 in the single digits (kilograms/milligrams) is toxic. This included such household insecticides as diazinon. Over the past 10 years, we have seen the emergence of products that are no longer in the single digits. In fact, they aren't even measured in double digits, but rather in hundreds units and a few of them in the thousands. This is a dramatic change in the toxicity of the insecticides we were applying to the turfgrass. Insecticides under development at this time continue that trend and are pushing towards LD50s measured above 10,000. Additionally, the newer products tend to be applied at much lower rates of active ingredient per acre.

A new addition to the insecticide market has further challenged our approach to IPM and the idea of treating only when necessary. Recently, Bayer Environmental Sciences and FMC Corp. released a product called Allectus. This product contained the active ingredients of two popular insecticides Talstar and Merit. There are several perceived benefits to this product that include its broad spectrum of control that has the potential to control both surface and soil insect as did some of the older, more toxic chemistries, such as diazinon.

While the concept of a more broad-spectrum insecticide, such as diazinon, being back on the market might sound very attractive to us, there are a couple of things we should keep in mind. First, broad-spectrum control historically meant a higher level of toxicity to unintended organisms in addition to insects. This could include aquatic organisms, birds, people and pets. This was a characteristic that companies have worked hard to get away from. We should

remember that diazinon uses were severely curtailed and eventually eliminated a number of years ago because there were numerous documented cases of bird kills, particularly on golf courses. While we don't want to regress environmentally to attain broad-spectrum control in our products, some characteristics of the older products are still viewed by turfgrass managers as being very favorable.

Fortunately, when we combine two products that have modern chemistries to obtain a broader spectrum of control, such as addressing surface-feeding and below-ground insects, we don't necessarily increase the hazard or risk. If the two insecticides used in the combination product have favorable environmental profiles, then it is quite likely that the overall concern won't be any greater than that of the product's individual characteristics. This is important to understand as Allectus is one of several combination-type products we are beginning to see in the marketplace.

A second consideration that concerns some people about using combination products is that in some instances, you might be applying two active ingredients and only getting a benefit from one of them. In other words, it might be viewed as a wasted application or simply overkill by others. How often do you have two insects causing a problem in one location? Well, it can and does happen as I have seen fire ants, mole crickets, white grubs, and other insects all pose problems at the same time in one area.

A combination product is going to cost more than a product that contains only one insecticide. Therefore, the vast majority of turfgrass managers are going to take a long, hard look at such products and ask the question as to whether or not they are getting additional benefit from the use of such a product. The answer in some instances will probably be "no", and another, less-expensive product likely will be selected.

In other situations where multiple pests are likely to occur and there is an economic incentive to manage more than one pest with a single application, I think turfgrass managers will look at such products as being valuable tools in their operation. For example, in a home-lawn setting that has a strong likelihood of white grubs, mole crickets, fire ants and chinch bugs, a combination product applied at the proper timing would be an excellent choice. This scenario is seen time and time again in home lawns in the southeastern United States.

A combination product might be a great choice for

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## QUICK TIP

Very few industries spend as much time researching and developing new products as do major chemical companies. Many years go by between a product starting out as an idea and finally completing registration and approval. At Agrium Advanced Technologies, chemical research also plays a major role in new product development. Even though we're recognized as a fertilizer manufacturer, our controlled-release technologies rely on advances in polymer chemistry to perform more economically and efficiently and with much less environmental impact. Those attributes hold true with our continued research into controlled-release pesticides. Old and new chemistries can – and will – benefit from our coating technology.

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scarab grub, black turfgrass atenioides and cutworm protection on golf putting greens or white grubs, mole crickets, fire ants, and even armyworm or webworm populations in other areas on a golf course. The same could be said for athletic fields susceptible to fire ants, armyworms, grubs and mole crickets. There are numerous situations where a single active ingredient might not be able to get the job done. In these situations, the use of a combination product such as Allectus could certainly be the most cost-effective and efficient way to do business. Again, we don't want to introduce new products that might regress environmental stewardship, but the value of a broad-spectrum insecticide for a number of turfgrass settings cannot be overstated.

Some might be critical of the fact that two active ingredients are being applied when in fact only one might be needed. I disagree with the perspective that you are wasting or misapplying one of the active ingredients. If one didn't know that there were two active ingredients, but simply that it was a broad-spectrum insecticide, would it matter?

For example, what if you apply Merit for white grubs (which is also effective against mole crickets) but you don't have mole crickets? Did you waste the broad-spectrum aspects of Merit? Should you have used a product that only controlled white grubs? I think the obvious answer to that is "no." If you use the mentality that Allectus is too broad, then I think you should use that approach for all product selections and use only products that have the most limited spectrum you can find but include the pest you are struggling with. That's not how we do business, nor should we be expected to. I would be concerned if the new products had serious environmental or toxicity issues, but those are not the characteristics of these new products.

Another trend that isn't really new but is becoming more popular on a wider basis is the application of insecticides on a fertilizer carrier. The ability to do two things at once is attractive in almost anything that we do. This saves time and money if we can apply our fertilizer and obtain insect control at the same time. I really like a lot of the newer fertilizer/insecticide combinations. They are easy to apply, and the fertil-

izer acts as a very good carrier that readily releases the insecticide and allows it to get to work. While the application of two things (fertilizer and insecticide) at one time can be a big time saver, savings are only realized if you actually get something out of both products. In other words if it makes sense agronomically to apply fertilizer, then does it also make sense biologically to apply an insecticide? I'm not referring only to whether or not insects are present but whether or not they are present at the life stage that is susceptible to the insecticide. In some cases, the timing might not allow the insecticide to be very effective. Look at the use of fertilizer carries from more than just the cost perspective. Look at it from a biological concept.

We are also seeing more interest in the use of baits. Many fire ant products use the bait approach, and some are very successful. These often are considered to be a key component in IPM as they tend to affect only the pest species and are put out only when the pest species are present and active. There are several efforts underway to go back and take a renewed look at baits for insects such as mole crickets.

I think it is easy to see that our industry continues to make good progress in developing the products that are less toxic to organisms other than insects and more environmentally friendly, yet still do a good job of controlling the insect pest. Our challenge is to develop ways to incorporate these new products into our programs, using them in a timely manner so they are very effective, applying them only when necessary, and using our knowledge of pest biology to make sure timing of application is accurate.

Who said our jobs get any easier? Despite the challenges, we are in better shape than ever to meet the demands for the highest quality turfgrass maintained in the most environmentally friendly manner and addressing any societal concerns over pesticide use. Our industry has made great strides in the past decade, and I look for continued progress in the next one.

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