

# Another option for insect control

A single product combining two active ingredients may help superintendents by controlling more than one type of insect pest in a single application.

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In recent years the development of new classes of insecticides, including insect growth regulators and neonicotinyls, has changed the way superintendents approach insect control on golf courses. Gone are the days of multiple broad-spectrum insecticide applications. Today, most insecticides are designed to target a specific insect or insect complex and are used primarily in a preventive manner before an infestation occurs. These insecticides, including Arena (clothianidin), Merit (imidacloprid), Mach 2 (halofenozide) and others under development have given superintendents longer treatment windows and the ability to effectively control subsurface-feeding insects such as white grubs and billbugs (Figure 1). However, many of these active ingredients are not broad-spectrum and are less effective for controlling surface-feeding insects.

Synthetic pyrethroids, including Tempo Ultra (beta-cyfluthrin), Talstar (bifenthrin), Tempo (cyfluthrin), DeltaGard (deltamethrin), Scimitar (lambda-cyhalothrin), Astro (permethrin) and others, provide an effective option for controlling surface-feeding insects such as chinch bugs, billbug adults, cutworms and sod webworms, but are typically less effective against subsurface feeders. Most of these pyrethroids lack the residual activity to control pests over the long term.



Photos courtesy of Tom Eickhoff

**Figure 1.** Newer insecticides, including Arena (clothianidin), Merit (imidacloprid), Mach 2 (halofenozide) and others under development, target specific insects or insect complexes and have given superintendents longer treatment windows and the ability to effectively control subsurface-feeding insects such as billbug larvae (left) and white grubs (right).

Allectus, a product that is a combination of two previously registered active ingredients, imidacloprid and bifenthrin, has been approved for insect control on commercial and residential lawns, parks, athletic fields, golf courses and sod farms. The insecticide is available in granule and soluble concentrate formulations. According to the product label, some of the insect pests controlled are annual bluegrass weevils, ants, billbugs, chinch bugs, cutworms, Japanese beetle adults, sod webworms and white grubs.

### Product use

Allectus application rates on turf range from 50 to 125 pounds/acre (56.0-140.1

kilograms/hectare) for granular formulations and 1.1 to 4.5 pints/acre (1.3-5.3 liters/hectare) for Allectus GC SC formulations. As with any insecticide, instructions, restrictions, guidelines and precautions found on the label should be followed for optimal pest control. These include:

- For optimal control of subsurface feeders (billbug larvae, annual bluegrass weevils and white grubs), Allectus should be applied before egg hatch of the target pest, followed by sufficient irrigation or rainfall to move the active ingredient through the thatch.
- Applications for control of surface-feeding pests can be made when infestations meet or exceed economic levels as determined

by scouting and/or recommendations of local Extension personnel or other qualified specialists, or when anticipated based on site records.

- Applications should not be made when turfgrass areas are saturated with water because adequate distribution of the active ingredient cannot be achieved under these conditions.
- Avoid applications to highly compacted or steep sloping areas where rainfall or irrigation will be unable to penetrate vertically in the soil profile.
- The total amount of product applied must not exceed 9.0 pints or 250 pounds/acre/year (10.5 liters or 280.2 kilograms/hectare/year).
- Do not apply through irrigation systems.
- Not for use in nurseries, commercial greenhouses or on grasses grown for seed.
- Do not apply by air.
- Following application, avoid mowing the turfgrass area until irrigation or rain has washed the insecticide from the grass blades.
- When using the SC formulation for surface-feeding insects such as armyworms, chinch bugs, cutworms and sod webworms, irrigation should be delayed for 24 hours after application.

## Current research

The development of pesticides that contain combinations of previously registered



**Figure 2.** Trials at the University of Nebraska–Lincoln have shown that Talstar with the single active ingredient bifenthrin, and Allectus, a combination product containing bifenthrin and imidacloprid, are equally effective in controlling chinch bugs in buffalograss.

products allows superintendents to capitalize on the strengths of two different active ingredients in a one-shot treatment that addresses multiple insect problems. For instance, a promising combination of active ingredients could include a synthetic pyrethroid for controlling surface-feeding insects and a neonicotinyl for control of subsurface feeders. Research conducted at the University of Nebraska compared active ingredient combinations with individually applied products for efficacy against the western chinch bug, *Blissus occiduus*, in buffalograss (*Buchloe dactyloides*) and southern masked chafer, *Cyclocephala lurida*, in Kentucky bluegrass (*Poa pratensis*).

Our studies were conducted as randomized complete block designs with four to five

CHINCH BUG CONTROL, 2004					
Treatments		Rate		Chinch bug control 2004	
Trade name	Common name	Pounds/1,000 square feet	Kilograms/hectare	Chinch bugs/square foot*	% control 10 DAT†
Allectus GC	Bifenthrin + Imidacloprid	2.8	136.7	0.4 a	99
Merit 0.5 G	Imidacloprid	1.38	67.4	11.0 b	71
Talstar EZ GC	Bifenthrin	2.3	112.3	0.0 a	100
Untreated	—	—	—	38.0 c	—

Note. Chinch bug life stage at application: 20% first instar, 40% second instar, 20% third instar, 20% fourth instar.  
\*Values in the same column followed by different letters are significantly different from each other.  
†DAT, day(s) after treatment.

**Table 1.** Control of chinch bug in buffalograss with turfgrass insecticides near Mead, Neb., 2004.

## RESIDUAL CONTROL, 2005

Treatments		Rate		Chinch bug control 2005			
Trade name	Common name	Product/1,000 square feet	Product/hectare	Chinch bugs/square foot*	% control 1 DAT†	Chinch bugs/square foot*	% control 63 DAT†
Allectus GC	Bifenthrin + imidacloprid	2.8 pounds	136.7 kilograms	0.25 a	99	0.0 a	100
Allectus GC	Bifenthrin + imidacloprid	2.3 pounds	112.3 kilograms	1.0 a	95	0.0 a	100
Merit 0.5 G	Imidacloprid	1.4 pounds		8.25 b	55	5.5 b	57
Merit 2 F	Imidacloprid	0.46 fluid ounce	1.5 liters	8.25 b	55	4.25 b	67
Talstar EZ GC	Bifenthrin	2.3 pounds	112.3 kilograms	0.75 a	96	0.5 a	96
Talstar GC F	Bifenthrin	0.88 ounce	2.8 liters	0.75 a	96	0.0 a	100
Untreated	—	—	—	18.5 c	—	12.8 c	—

Note. Chinch bug life stage at application: 50% egg hatch.  
\*Values in the same column followed by different letters are significantly different from each other.  
†DAT, day(s) after treatment.

**Table 2.** Residual control of chinch bug in buffalograss near Mead, Neb., 2005.

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replications. The plot size was 5 feet × 5 feet (1.5 meters × 1.5 meters) on either buffalograss (chinch bug) or Kentucky bluegrass (southern masked chafer). Plots were evaluated by counting the number of surviving insects in a treated plot and comparing this number to those present in untreated plots. Granular products were applied with a hand shaker; liquid products were applied using a CO<sub>2</sub> backpack sprayer.

## *Chinch bugs*

Both Talstar EZ GC (bifenthrin) and Allectus GC provided excellent control of western chinch bug (Table 1). In 2004, both Talstar EZ GC and Allectus GC had reduced chinch bug numbers by 99%-100% at 10 days after treatment. In 2005, both Talstar (EZ GC and GC F) alone and Allectus GC provided quick knockdown of chinch bugs (≥95% control) one day after treatment and provided excellent residual control (≥96% at 63 days after treatment) as well (Table 2, Figure 2). Neither Merit 0.5 G nor Merit 2 F alone had the knockdown ability or the residual activity of either Talstar formulation or Allectus GC.

## *White grubs*

Preliminary research conducted at the University of Nebraska suggests that, in comparison to other products such as Talstar, Merit, Mach 2 and Dylox (trichlorfon), Allectus GC may be effective for controlling

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- ▶ **Two existing active** ingredients, bifenthrin and imidacloprid, have been combined into a single product designed to control both surface-feeding and subsurface-feeding insects on turf.
- ▶ **Research at the** University of Nebraska has shown that the new product, Allectus, is just as effective as bifenthrin in controlling chinch bug in buffalograss. One year of data suggest that Allectus may be as effective as imidacloprid in controlling southern masked chafer in Kentucky bluegrass, but these data should be considered preliminary.
- ▶ **A combination product** may save time, labor and money if it means that superintendents need to apply only one product rather than two or more.

southern masked chafer grubs in Kentucky bluegrass. Our data suggest that Allectus GC acts very much like Merit alone on southern masked chafer and therefore should provide acceptable control. However, with only one year of data for Allectus GC on southern masked chafer, further research is needed to confirm these results. In research conducted at other universities, Allectus GC also provided white grub control when applied as a preventive treatment.

## Management strategies

Why should superintendents use a combination product when its constituents work equally well? A combination product may be a useful option for superintendents who desire the potential for multiple insect control. Just as combinations of herbicides have been used for several years to expand the spectrum of weeds

controlled in turfgrass areas, so, too, may combinations of herbicides be useful for superintendents who routinely encounter combinations of subsurface and surface feeders.

A combination product containing both bifenthrin and imidacloprid could be used to provide immediate control of the surface-feeding sod webworms or chinch bugs, for example, and still provide the residual activity needed to control white grubs later in the season. A combination product may also offer new management options for pests like billbugs where both the adult and immature stages are targets for control. Under these conditions, the active ingredient bifenthrin should provide effective adult control, and the active ingredient imidacloprid should control the immature billbugs as they feed in the stem and later in the crown of the plant.

## Summary

The combination of imidacloprid and bifenthrin offers superintendents a new option for pest control. The ability to address several pest problems in a single application not only saves money in terms of the pesticide inventory required, but also in the reduced labor costs. Superintendents who want to try any new product should first test the product in a small area to evaluate its effectiveness on their turf.

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**Figure 3.** Recent research conducted at the University of Nebraska—Lincoln investigated the effectiveness of pesticides for controlling surface- and subsurface-feeding insects.

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