Ference Technical Bulletin

Innovative Technology for Annual Bluegrass Weevil Control

Ference® insecticide is targeted to control all larval stages (one through five) of annual bluegrass weevil (ABW). Ference contains the active ingredient, cyantraniliprole, which offers an innovative technology to superintendents with an effective and flexible control option for ABW.

PEST SPECTRUM

- Annual bluegrass weevil (Larval stages 1-5): 12 - 20 fl oz/A
- Billbugs: 8 - 16 fl oz/A
- European crane fly: 8 - 16 fl oz/A
- White grubs: 8 - 16 fl oz/A
- Turf caterpillars: 2 - 16 fl oz/A
- Chinch bugs (suppression only): 8 - 20 fl oz/A

Cyantraniliprole Insecticide Profile

- Group 28 class of chemistry – anthranilic diamide
- Absorbed via roots and systemically translocates through the plant
- Provides rapid cessation of feeding to quickly protect plant from insect damage
- Translaminar movement protects entire leaf surface
- For use on all turfgrass sites including tees, roughs, fairways, greens and collars. Please see label for additional use sites.
- Favorable environmental and toxicological profile
- Registered by the US Environmental Protection Agency under its Reduced Risk Program*

*A reduced risk pesticide use is defined as one which may reasonably be expected to accomplish one or more of the following: (1) reduces pesticide risks to human health; (2) reduces pesticide risks to non-target organisms; (3) reduces the potential for contamination of valued, environmental resources, or (4) broadens adoption of IPM or makes it more effective. Ference qualifies under one or more of the above criteria.
How does cyantraniliprole work?

Mode of Action
Cyantraniliprole is a second generation active ingredient from the anthranilic diamide class of chemistry. This class was inspired by research into the insecticidal properties of ryanodine, a natural substance found in the bark of trees and shrubs of the genus *Ryania*. Cyantraniliprole acts through ingestion and contact activity. Ference stops larvae turf-feeding damage within minutes after ingestion; larvae will not pupate, die within hours to days depending on insect life stage and species.

Systemic and Translaminar Activity
Cyantraniliprole is a synthetic compound that affects the ryanodine receptors in the insect muscle fiber, shown in the image below. It acts through ingestion and contact activity. Ference is in GROUP 28 of the EPA’s Insecticide and Acaricide Groups. It is recommended to water in or transplant drench with water immediately after application.

Integrative Pest Management (IPM) Programs
Ference is in GROUP 28 of the EPA’s Insecticide and Acaricide Groups. Based on Target Site of Action (EPA PR Notice 2001-5) and may be used in rotational resistance management programs. While research continues on additional programs, ABW is a complex pest that requires rotation of chemistries and a programmatic approach. For example, the ABW program timing chart below uses Acelonet® insecticide in the first generation because its long residual will also provide season-long control of grubs and lepidopteran pests with this application. Ference is used in the later generations to provide effective control of the asynchronous summer populations. Ference will control larvae inside the stem (1-2 instar) and larvae outside of the stem (3-5 instar).

Visual Translocation of Ference
- Applied as transplant drench (root uptake) in tomatoes (systemic).
- Plants were harvested at 1, 3, 7, 14 and 28 days after treatment.
- Leaves were cut from the main stem and pressed flat for two or more days, mounted on 20 cm x 20 cm glass plates, covered with mylar film and exposed to imaging plates for 48 hours, which were then scanned using a Fuji Phosphorimager.

Comparative Specimen Label
- Ference® Insecticide
- Acre® AC EC insecticide

**FERENCE DELIVERS CONSISTENT CONTROL**

Late Instar ABW Larvae, 2010
- Treatment was in every trial
- Each treatment was in every trial
- Average across three trials performed in MA, NH, PA in 2011
- Each treatment was in every trial
- ABW program timing chart below uses Acelepryn® insecticide in the first generation because its long residual will also provide season-long control of grubs and lepidopteran pests with this application. Ference is used in the later generations to provide effective control of the asynchronous summer populations. Ference will control larvae inside the stem (1-2 instar) and larvae outside of the stem (3-5 instar).

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Ference Applied for ABW Control at Oviposition (Peak Egg lay)

- Average across four trials in NJ, PA

Head-to-Head Comparisons of Three Billbug Trials

- Average across three trials performed in NE, OH, PA
- Each treatment was in every trial

FORMULATION DETAILS

- Formulation: Suspension concentrate (SC)
- Contains 1.67 pounds of active ingredient per gallon
- Use rate: 0.026 to 0.261 lb ai/A (2 - 20 fl oz/A)
- Maximum amount of active ingredient for turfgrass: 0.42 lb/A/year
- Odor: None
- Solubility: Water – 14.24 mg/L
- Volatility: Not volatile
- Stability: Stable in water up to pH of 9

TO LEARN MORE ABOUT FERENCE, please visit GreenCastOnline.com/Ference, WeevilTrak.com or call 1-866-SYNGENTA (796-4368).

#DominateABW