

Technical Information Update

Pepper weevil management with DuPont™ Exirel® insect control

DuPont™
Exirel®
 insect control
 powered by
 CYAZYPYR®

Peppers — Southern U.S.

The pepper weevil, *Anthonomus eugenii* Cano, is the most problematic insect pest of pepper crops in the southern United States, causing losses in Florida, Georgia, Texas, New Mexico and California. Bell pepper is the second most important vegetable crop in Florida, generating \$248 and \$207 million in 2012 and 2013, respectively.*

The pepper weevil attacks all varieties of peppers, and it feeds on young leaves, flowers, buds and young fruits. The main damage, however, results when eggs are oviposited in young fruits and the resulting larvae feed inside the fruits, causing fruit drop and significantly reducing marketable fruit.

- Control depends mainly on preventive insecticide applications targeting adults, beginning when adults are first detected using pheromone-baited, yellow sticky traps or through visual scouting in the field.
- Pepper weevil control has relied heavily on the use of neonicotinoid insecticides, DuPont™ Vydate® L insecticide/nematicide, pyrethroids, and various cryolite-based products.
- Growers can now get help to manage this difficult pest with Exirel® insect control from DuPont.
- Exirel® contains Cyazypyr® and was granted reduced-risk classification by the EPA for all registered crops and is selective for beneficial arthropods, except bees.
- Exirel® has been assigned to IRAC group 28 (ryanodine receptor modulators).
- Exirel® impacts insects by impairing muscle function. Intoxicated insects stop feeding rapidly, resulting in excellent plant protection and the reduction of some insect-vectored diseases.

Benefits of DuPont™ Exirel® insect control for pepper weevil management in peppers

- Exirel® provides cross-spectrum control of chewing and sucking pests and has shown great potential for the management of pepper weevil.

- Unique MOA: impairs insect muscles, resulting in rapid feeding cessation, reduced feeding damage and impact on adult and immature life stages, including pest reproduction.
- Non disruptive (does not cause secondary pest flares, such as mites): minimal impact on key natural enemies such as the insidious predatory flower bug (key thrips predator, Orius spp.), lady beetles, predatory mites, parasitic wasps and others.
- Resistance management: Used in rotation with existing MOAs, helps reduce resistance selection to other pepper weevil management products, preserving the long-term viability of available tools.
- Optimized formulation (suspo-emulsion) for improved leaf penetration and rainfastness.
- Favorable environmental, toxicological and worker-protection-standard profiles; short REI and PHI.
- Granted reduced-risk classification by the EPA.
- MRLs established in Canada and other export countries.

For best results on pepper weevil

Apply Exirel® early in the fruiting stage and the pest infestation stage at a rate of 13.5–20.5 oz/A as part of a pepper weevil insecticide program.

Use the high rate when pest pressure is expected to be high and tighten the spray interval based on scouting of weevil adults.

Exirel® is active primarily via ingestion. While mortality can be slow (1–4 days), weevils stop feeding and laying eggs very rapidly, resulting in excellent crop protection.

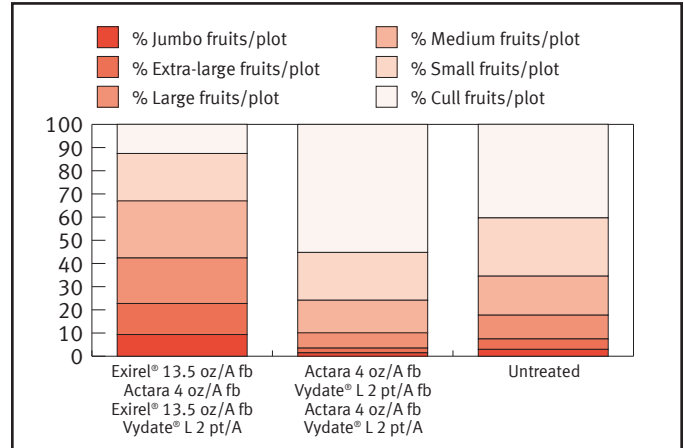
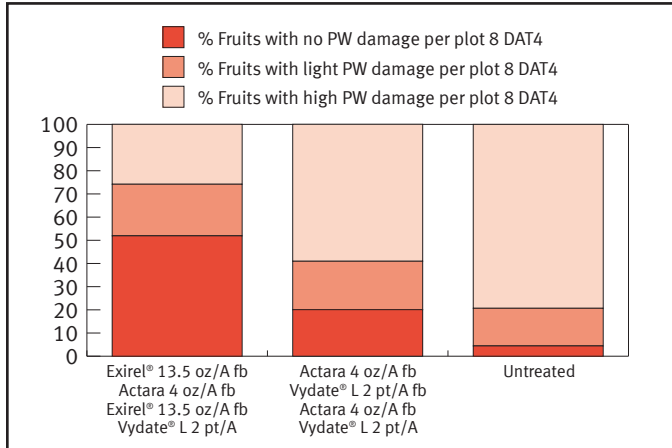
Thorough spray coverage is essential to achieve the best results.

Avoid tank mixing with multiple products unless prior experience of crop safety and good efficacy exists.

* USDA-NASS, 2013

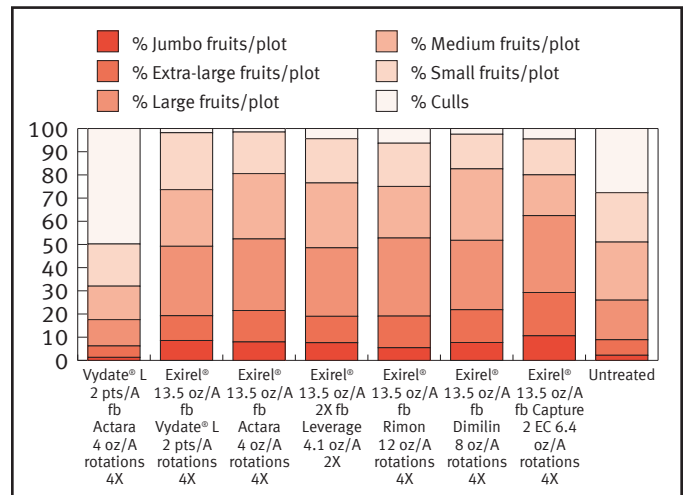
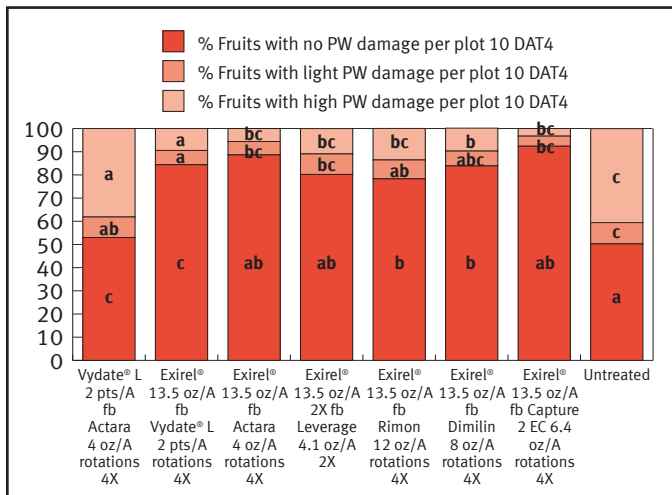
Pepper Weevil Management with Exirel® and Impact on Yield in Bell Peppers in Florida

In this study, the insecticide program that included Exirel® at 13.5 oz/A provided the best protection from pepper weevil (PW) damage and more fruit in the higher size with fewer culls than the standard insecticide program.



Source: SOT-15-704, Dr. John Curtis, Vero Beach Florida, 2015.

In this study, all the insecticide programs that included Exirel® at 13.5 oz/A provided excellent pepper weevil damage protection. Marketable yields were highest in the programs that included Exirel® and Capture, but all programs reduced culls compared to the untreated control group, except for the standard program.



Source: SOT-15-762, Dr. John Curtis, Vero Beach, Florida, 2015

Pepper weevil damage in peppers



Pepper weevil adult searching for a place to lay eggs



Pepper weevil larvae and damage

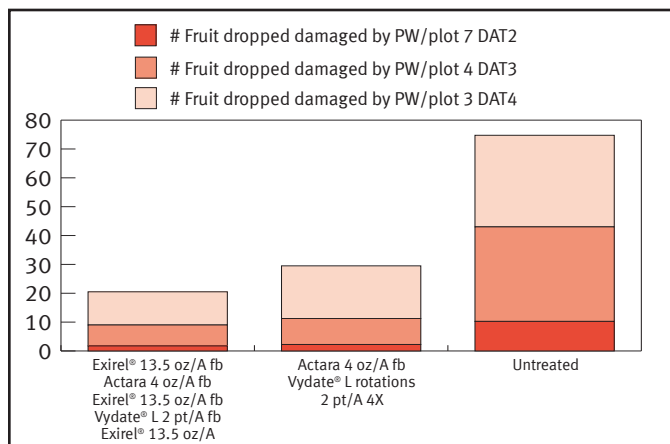
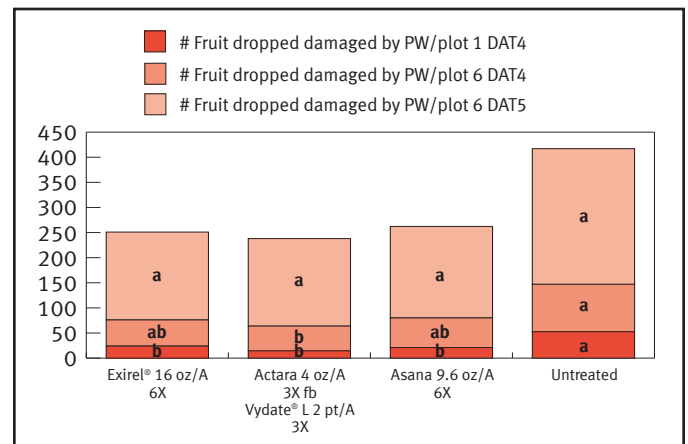
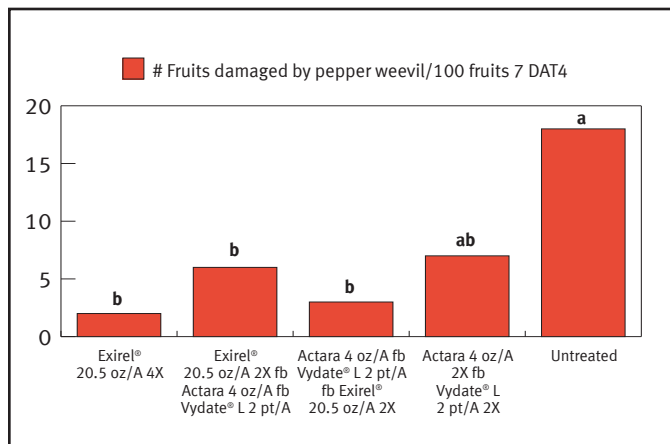


Damaged pepper fruit drops to the ground



Pepper Weevil Management with Exirel® in Bell Peppers in Bradenton, Florida

Exirel® alone at 16–20.5 oz/A or at 13.5–20.5 oz/A in rotation with Vydate® L and Actara provided excellent protection from pepper weevil damage that was comparable to the standard program.

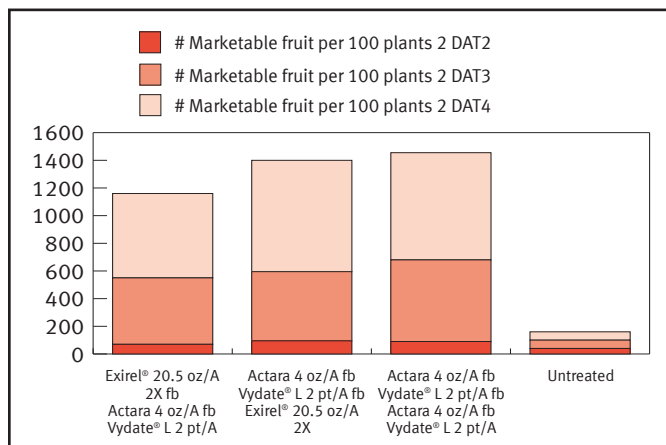
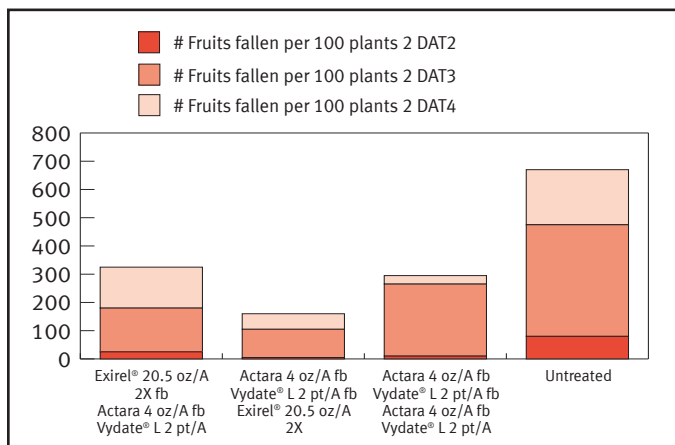


Source: FBA-13-724, FBA-14-859 and FBA-15-718, DuPont Research Station, Bradenton FL, 2013–2014

Do not apply a total of more than 0.4 lb ai/A of Cyazypyr® or cyantraniliprole-containing products per year. Rates that exceed that amount shown here are for research purposes only.

Pepper weevil management with Exirel® and impact on yield in jalapeno peppers in Florida

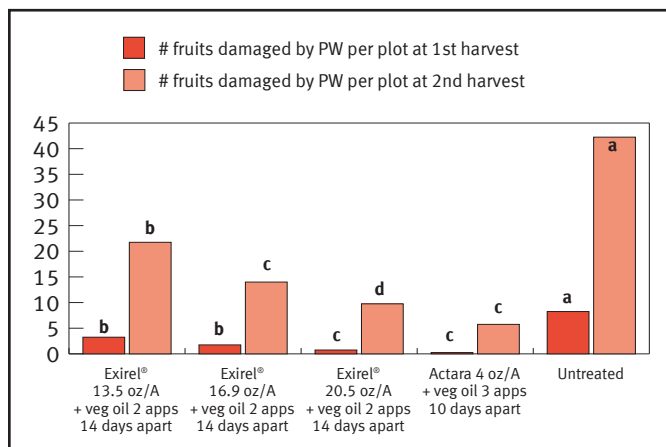
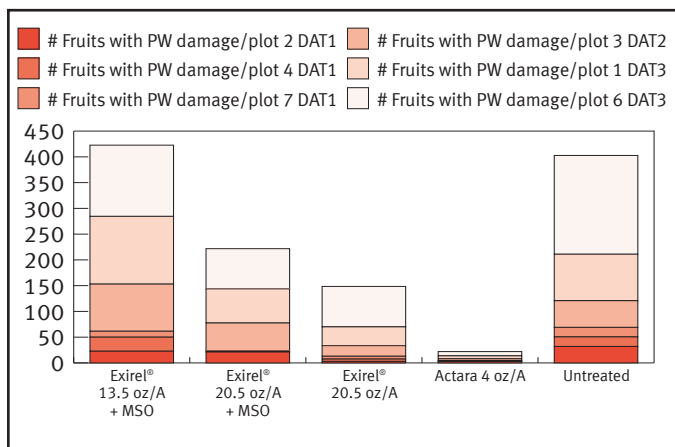
Insecticide programs that included Exirel® at 20.5 oz/A provided excellent protection from pepper weevil damage and similar marketable yields as programs without Exirel® when the program included Exirel® late.



Source: SOT-13-707, Dr. Dak Seal, University of Florida, Homestead FL, 2013

Pepper Weevil Management with Exirel® in Jalapeno Peppers

Exirel® is effective in reducing pepper weevil damage when used at rates of 13.5–20.5 oz/A; higher rates provide better protection, especially under heavy pressure.



Source: SOW-08-057 and SOT-12-005, Dr. Dak Seal, University of Florida, Homestead FL, 2008 and 2012

Do not apply a total of more than 0.4 lb ai/A of Cyazypyr® or cyantraniliprole-containing products per year. Rates that exceed that amount shown here are for research purposes only.

The EPA-registered label contains the statement, "DuPont® Exirel® is highly toxic to bees exposed to direct treatment on blooming crops or weeds. Do not apply this product or allow to drift to blooming crops or weeds if bees are foraging the treatment area." Capture, Leverage, Dimilin, Asana XL and DuPont® Vydate® L are restricted-use pesticides. Some products may not be registered for sale or use in all states. Contact your local DuPont representative for details and availability in your state. **This reference guide is not intended as a substitute for the product label for the product(s) referenced herein. Product labels for the above product(s) contain important precautions, directions for use, and product warranty and liability limitations, which must be read before using the product(s). Applicators must be in possession of the product label(s) at the time of application. Always read and follow all label directions and precautions for use when using any pesticide alone or in tank-mix combinations.**

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Contact your local DuPont retailer or representative to learn how you can produce a more appealing crop at harvest with Exirel™ insect control from DuPont. Visit us at exirel.dupont.com.