

Adult Western Corn Rootworm Control With Steward® EC Insecticide

The Billion-Dollar Bug

In the central Corn Belt of the U.S., western corn rootworm (WCR) (*Diabrotica virgifera*) is widely regarded as the most significant insect pest in corn. This beetle is often called the “billion-dollar bug” due to damage caused by adults and larvae, and the cost of controlling both life stages. This yield-limiting pest requires an effective combination of integrated pest management (IPM) strategies, including use of foliar-applied insecticides like Steward® EC insecticide for adult control.



Daren Mueller, Iowa State University, Bugwood.org

Steward EC insecticide delivers reliable control of WCR when applied properly. Primary exposure is through ingestion with some contact activity. Adult WCR behaviors – feeding, egg laying and mobility – are affected within zero to four hours of ingestion, and this product resists wash off once dried. There is minimal impact to many key beneficial insects and predators, and there is no flaring of spider mites. Steward EC insecticide has been formulated to help eliminate mixing, handling and clean up issues and contains both an oil solvent and a surfactant package that provides optimal leaf wetting and surfactant characteristics for excellent crop protection.

An effective and properly timed foliar insecticide application of Steward EC insecticide can suppress the number of eggs laid and reduce potential WCR larval feeding problems in the future. Three factors are important to consider when applying Steward EC insecticide:

1. **Proper Timing:** Treatments are usually started when more than 10% of the females are gravid. It is not advisable to make treatments too early since more females will emerge to lay eggs and newly emerged silks and foliage will not be protected. It is not advisable to make treatments too late since egg laying will already be complete.
2. **Good Coverage:** Because this product needs to be consumed, it needs to get to where the adult WCR are feeding. It is recommended that 3-5 gal./A are applied by aerial applications.
3. **Proper Rate:** Field efficacy trials have shown Steward EC insecticide provides excellent knockdown and control at rates of 6-10 fl. oz./A. If high adult WCR numbers are present and longer residual control is needed, the higher rate should be used.



Inside this issue Summer 2024

- ✓ **Management of Adult Western Corn Rootworms**
- ✓ **Steward® EC insecticide**
- ✓ **2024 Update and Recommendations**

Cori Woelk
Western KS
405-370-7469

Jared Miller
West Central KS
785-826-0098

Matt Stucky
South Central KS
620-386-0989

Chase Hageman
Central KS
620-388-4262

Kevin Lee
E. KS & W. MO
785-424-5564

Greg Justice
OK
405-747-0475

Brandon Paetzold
OK Panhandle & NW TX
806-674-5200

Charlcey Plummer
N. TX
405-641-0116

Technical Service Manager
V. Bruce Steward, Ph.D.
Choctaw, OK
913-339-8586

Steward® EC Insecticide is Highly Effective

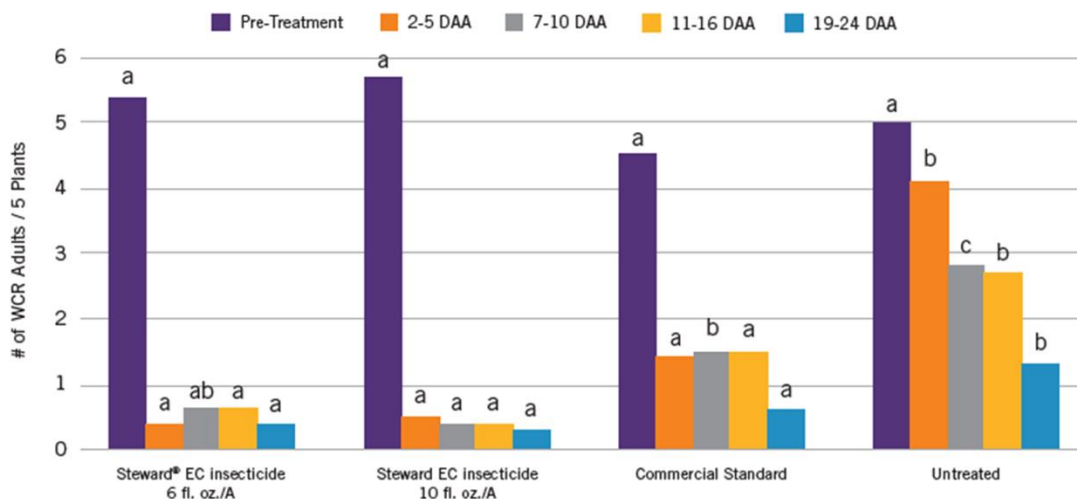
The active ingredient in Steward® EC insecticide, indoxacarb, has selectively low dermal and oral toxicity to mammals. Indoxacarb works primarily through ingestion, breaking down into a highly toxic metabolite inside the gut. Thus, Steward EC insecticide provides fast and long-lasting control of adult corn rootworms.

Economic thresholds and application timing: Economic thresholds vary with location, cropping history and corn variety, specifically regarding traired hybrids. In general, however, treatment is warranted when there are one to two beetles per plant in continuous corn. Steward EC insecticide should be applied when 10% of females are gravid, keeping in mind that the goal is to reduce the number of eggs laid in the soil.

Product Attributes	Steward® EC Insecticide
Active Ingredient:	Indoxacarb
Insecticide Class:	Oxadiazine, IRAC Group 22A
Recommended Rates:	6 – 10 fl. oz./A
Re-entry Interval (REI):	12 hours
Benefits Provided:	Reduces the number of eggs laid and potential WCR problems in the future. Controls Lepidopteran and other corn pests. Minimal impact to many key beneficial insects and predators.

WESTERN CORN ROOTWORM ADULT CONTROL

Summary of 19 trials from 2013-2016



Commercial Standard = Asana® XL insecticide @ 9.6 fl. oz./A; Brigade® 2EC insecticide/miticide @ .30 fl. oz./1,000 linear feet of row; Dimethoate 400 EC insecticide @ 0.6 – 1.0 pt./A; PennCap-M® insecticide @ 32 fl. oz./A; PennCap-M insecticide @ 32 fl. oz./A + Onager® miticide @ 12 fl. oz./A; Pilot® 4E insecticide @ 16 fl. oz./A; Voltage® insecticide @ 16 fl. oz./A; Warrior II insecticide with Zeon Technology® @ 1.92 fl. oz./A

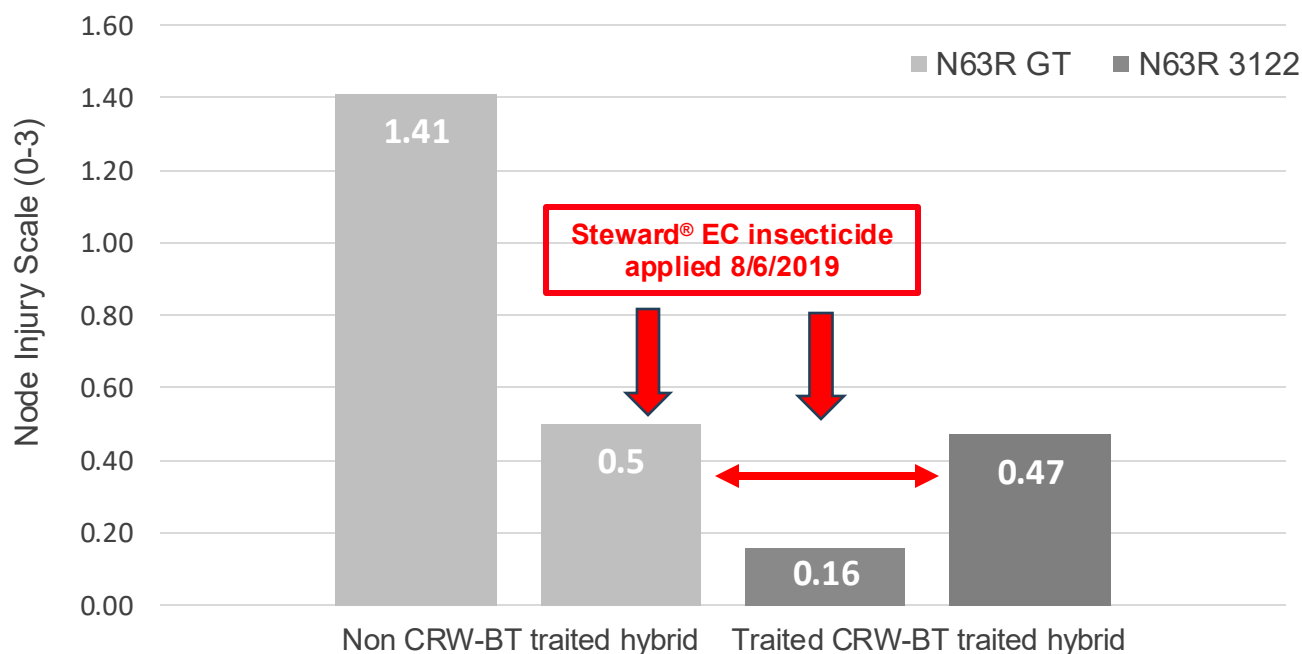
Asana® XL insecticide, Brigade® 2EC insecticide/miticide, PennCap-M® insecticide, Pilot® 4E insecticide, Voltage® insecticide and Warrior II with Zeon Technology® insecticide are Restricted Use Pesticides.

Steward® EC Insecticide is Highly Effective

Adult foliar-applied insecticide treatments such as Steward® EC insecticide can drastically reduce WCR egg numbers and ultimately larvae the following year. The research trial below shows a Steward EC insecticide application made the prior year can reduce larval feeding in conventional corn (0.5) to similar levels of just using Bt traited corn (0.47).

IOWA STATE UNIVERSITY, DR. GASSMANN, JOHNSON FARM, AMES, IA

Planted: 5/1/20; Hybrids Planted: Syngenta N63R GT and N63R 3122; Evaluated: 7/27/20



Node-Injury Scale: Oleson, J.D., Y. Park, T.M. Nowatzki, and J.J. Tollefson. 2005. *J. Econ Entomol.* 98(1): 1-8.

NIS = Node Injury Scale:

Economic threshold guidelines:

- If NIS < 0.25, no economic loss
- If NIS 0.25-0.75, economic loss dependent
- If NIS > 0.75, economic loss likely

The Steward EC insecticide application applied the prior year resulted in the conventional hybrid root ratings looking similar to the Bt traited hybrid the following year.

The EPA label for Steward EC insecticide contains the following statements: This product is highly toxic to bees exposed to direct treatment on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds if bees are foraging the treatment area.

Asana® XL insecticide, Brigade® 2EC insecticide/miticide, Pilot® 4E insecticide, PennCap-M® insecticide, Voltage® insecticide and Warrior II with Zeon Technology® insecticide are Restricted Use Pesticides. Always read and follow all label directions, precautions and restrictions for use. Some products may not be registered for sale or use in all states. FMC, the FMC logo, Brigade and Steward are trademarks of FMC Corporation or an affiliate. Asana is a trademark of Valent U.S.A. LLC Agricultural Products. Onager is a trademark of Gowan Company, LLC. Pilot is a trademark of Gharda Chemicals Limited. Voltage is a trademark of Innvictis Crop Care, LLC. Warrior II with Zeon Technology insecticide is a trademark of Syngenta Crop Protection, LLC. PennCap-M is a trademark of United Phosphorus, Inc. ©2024 FMC Corporation. All rights reserved. 94_24-FMC-3456 05/24