

Cotton Insecticide Target Efficacy, Impact on Non-Target Arthropods & Other Pesticide Risks. Insecticides have been screened for efficacy against target pests, *Lygus hesperus*, *Bemisia argentifolii* (MEAM1; silverleaf whitefly, SWF), and *Euschistus servus* (brown stink bug); as well as for their impact on non-target beneficial arthropods including >20 predators common in Arizona cotton. Those insecticides with full selectivity or safety towards these beneficial predators are in green; those that are partially selective or safe are in yellow; broad spectrum insecticides are in red. Some insecticides pose environmental and human health risks that require mitigations such as buffer zones and additional personal protective equipment (PPE). IRAC group numbers to facilitate rotation of chemistry and SWF resistance risks are also shown.

| Product Name | Common Name | IRAC No. ¹ | Chemical Group | Lygus Bug | Silverleaf Whitefly | Brown Stink Bug | Risk to Aquatic Life | Risk to Wildlife | Risk to Pollinators | Inhalation Risk | SWF, Risk of Resistance |
|--------------------------------|---------------------------|-----------------------|------------------------------|-----------|---------------------|-----------------|----------------------|------------------|---------------------|-----------------|-------------------------|
| Carbine | flonicamid | 29 | Feeding inhibitor | ★★★★ | | | | | | | |
| Courier | buprofezin | 16 | Chitin inhibitor | | ★★★★ (N) | | | | | | under investigation |
| Exirel / Benevia | cyantranilprole | 28 | Diamide | | ★★★★ | | | | | | |
| Knack / Farewell | pyriproxyfen | 7C | Juvenoid | | ★★★★ (E,N) | | | | | | mild–moderate |
| Oberon ² | spiromesifen | 23 | Lipid synthesis inhibitor | | ★★★★ (N) | | | | | | under investigation |
| PQZ | pyrifluquinazon | 9B | Pyridine azomethine | | ★★★★ | | | | | | |
| <i>Sefina Inscalis</i> | <i>afidopyropen</i> | <i>9D</i> | <i>Pyropene</i> | | ★★★ | | | | | | |
| Sivanto prime | flupyradifurone | 4D | Butenolide | | ★★★★ | | | | | | |
| Transform | sulfoxaflor | 4C | Sulfoxamine | ★★★★ | * | | | | | | |
| Assail / Intruder ³ | acetamiprid | 4A | Neonicotinoid | | ★★★★ | | Yes | | | | moderate–severe |
| Belay | clothianidin ⁴ | 4A | Neonicotinoid | ★★ | ★★ | | Yes | | Yes | | |
| Centric | thiamethoxam ⁴ | 4A | Neonicotinoid | | ★★ | | Yes | | Yes | | |
| Venom | dinotefuran | 4A | Neonicotinoid | | ★★★ | | Yes | | Yes | | |
| Acephate | acephate | 1B | Organophosphate | ★★★ | | * | | Yes | Yes | | |
| Bidrin | dicrotophos ⁵ | 1B | Organophosphate | * | | * | Yes | Yes | Yes | Yes | |
| Cormoran | novaluron + acetamiprid | 15 + 4A | Chitin inhibitor | ★★ | ★★ | * (N) | Yes | | | | |
| Diamond / Mayhem | novaluron | 15 | Chitin inhibitor | * | * | * (N) | Yes | | | | |
| Synergized pyrethroids | various ⁶ | 3A + 1B | Pyrethroid + organophosphate | | ★★ | | Yes | Yes | Yes | | moderate–severe |
| Vydate C-LV | oxamyl ⁵ | 1A | Carbamate | ★★★★ | | | Yes | Yes | Yes | Yes | |

Background color: **Green** = Fully selective and safe to beneficials; **Yellow** = Partially selective or safe to beneficials; **Red** = broad spectrum, not safe to beneficials; *Italics* = based on preliminary testing.

Risks as calculated from ipmPRIME (Jepson et al. 2014); 'Yes' indicates moderate to high risk for the given category

★★★★, Excellent control; ★★★, Good control; ★★, Fair control; ★, Suppression only; E, N = Efficacy against eggs or nymphs only, respectively.

¹ The Insecticide Resistance Action Committee (IRAC) assigns numbers for each unique mode of action or class of chemistry. Many appear on U.S. insecticide labels and are helpful for resistance management.

² At 0.125–0.156 lbs ai / A only; higher rates are more destructive of natural enemies.

³ The State of Arizona has approved a Special Local Needs (SLN) increase in acetamiprid use rates by up to +50% against difficult-to-control whiteflies. Impact to beneficials is more severe at these higher rates.

⁴ This active ingredient can significantly affect bee populations, other pollinators and birds, can persist for years in soils, and can leach into waterways and groundwater.

⁵ This active ingredient is considered highly hazardous by the World Health Organization (WHO Ib), a restricted use pesticide with signal words DANGER and POISON, requiring posting, additional PPE, and closed systems. Avoid if possible.

⁶ Beta-cyfluthrin and zeta-cypermethrin are considered highly hazardous by the World Health Organization (WHO Ib), are restricted use pesticides with signal words WARNING, and should be avoided when possible.

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