

**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. <sup>1</sup>	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
Applaud	buprofezin	16	Chitin inhibitor		**** (N)						under investigation
Benevia	cyantraniliprole	28	Diamide		****						
Knack / Stone	pyriproxyfen	7C	Juvenoid		**** (E,N)						mild–moderate
Oberon <sup>2</sup>	spiromesifen	23	Lipid synthesis inhibitor		**** (N)						under investigation
Movento	spirotetramat	23	Lipid synthesis inhibitor		**** (E,N)						
Piriflu	pyrifluquinazon	9B	Pyridine azomethine		****						
Sivanto prime	flupyradifurone	4D	Butenolide		****						
Toretto	sulfoxaflor	4C	Sulfoxamine	****	*						
Turbine	flonicamid	29	Feeding inhibitor	****							
Versys	afidopyropen	9D	Pyropene		***						
Actara	thiamethoxam <sup>4</sup>	4A	Neonicotinoid		**		Yes		Yes		
Aval / Rescate <sup>3</sup>	acetamiprid	4A	Neonicotinoid		****		Yes				moderate–severe
Clutch	clothianidin <sup>4</sup>	4A	Neonicotinoid	**	**		Yes		Yes		
Venom	dinotefuran	4A	Neonicotinoid		***		Yes		Yes		
Acephate	acephate	1B	Organophosphate	***		*		Yes	Yes		
Dicrotophos	dicrotophos <sup>5</sup>	1B	Organophosphate	*		*	Yes	Yes	Yes	Yes	
Massada	novaluron	15	Chitin inhibitor	*	*	* (N)	Yes				
Scarlet	novaluron + acetamiprid	15 + 4A	Chitin inhibitor	**	**	* (N)	Yes				
Synergized pyrethroids	various <sup>6</sup>	3A + 1B	Pyrethroid + organophosphate		**		Yes	Yes	Yes		moderate–severe
Vidate	oxamyI <sup>5</sup>	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 (Iepson 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.

<sup>1</sup> 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.

<sup>2</sup> At 140–175 g ai / ha only; higher rates are more destructive of natural enemies.

<sup>3</sup> 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.

<sup>4</sup> 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.

<sup>5</sup> 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.

<sup>6</sup> 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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