

Classification of Certis USA products by Fungicide (FRAC) and Insecticide Resistance Action Committees (IRAC), according to mode of action.

Committee	Active ingredient	Product(s)	Code	Mode of action/target site
FRAC				
	<i>Bacillus amyloliquefaciens</i> D747	Double Nickel, Amylo-X, Triathlon BA	44	Microbial disruptors of pathogen cell membranes
	<i>Bacillus mycoides</i> isolate J	LifeGard	P06	Microbial inducers of plant resistance
	Copper hydroxide	Kocide, ManKocide	M1	Multi-site contact activity
	Copper octanoate	Cueva	M1	Multi-site contact activity
	Mancozeb	ManKocide	M3	Multi-site contact activity
	Neem oil	Trilogy, Triact	NC	Not classified
	Polyoxin-D zinc salt	OSO	19	Chitin synthase inhibitor
	Potassium bicarbonate	Carb-O-Nator	NC	Not classified
	<i>Trichoderma (Gliocladium) virens*</i>	SoilGard	BM02	Biologicals with multiple modes of action (see note*)
IRAC				
	Azadirachtin	Neemix, Azatin-O	UN	Unknown or uncertain mode of action
	<i>Bacillus thuringiensis</i>	Javelin, Deliver, Agree, CryMax, Condor, etc.	11A	Microbial disruptors of insect midgut membranes
	Spinosad	Seduce	5	Nicotinic acetylcholine receptor allosteric modulators
	Baculoviruses	Cyd-X, Madex, Gemstar, Spod-X		Exempt
	Insecticidal soap	Des-X		Exempt
	<i>Isaria fumosorosea</i>	PFR-97, Preferal		Exempt
	Neem oil	Trilogy, Triact		Exempt
Not in FRAC or IRAC lists				
	Peroxyacetic acid	Rendition		
	Potassium silicate	Sil-MATRIX		
	<i>Purpureocillium lilacinum</i>	MeloCon		

Sources: FRAC website: <http://www.frac.info/home> IRAC website: <http://www.irac-online.org>

*NOTE: FRAC has established a new MoA group for 2017, BM: Microbials with multiple modes of action. FRAC Group BM02 was established for *Trichoderma* spp. but currently the only example listed by FRAC is *T. atroviridae* strain SC1.

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