Efficacy of chemical alternatives for disease control on tomato, 2023

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Product	Active ingredients	**Bacterial canker** (*Clavibacter michiganensis*)	**Bacterial speck** (*Pseudomonas syringae* pv.	**Bacterial spot** (*Xanthomonas perforans*)	**Buckeye rot** (*Phytophthora* spp.)	**Damping-off pathogens** (*Pythium* spp., *Fusarium*	**Early blight / Alternaria** (*Alternaria linariae*)	**Fusarium wilt** (*Fusarium oxysporum* f. sp.	**Gray mold/Botrytis** (*Botrytis cinerea*)	**Gray leaf spot** (*Stemphylium* spp.)	**Late blight** (*Phytophthora infestans*)	**Leaf mold** (*Fulvia fulva*)	**Powdery mildew** (*Levellula taurica* and	**Septoria leaf spot** (*Septoria lycopersici*)	**Target spot** (*Corynespora cassiicola*)	**Root-knot nematode** (*Meloidogyne* spp.)	**Southern blight** (*Athelia rolfsii*)	**Verticillium wilt** (*Verticillium* spp.)	**White mold/timber rot** (*Sclerotinia sclerotiorum*)	Notes and Remarks
Serenade Opti/ASO	*Bacillus subtilis strain* QST 713			**													NC			May provide control of early blight and Septoria leaf spot when alternated with Regalia
Double Nickel 55, Double Nickel, LC, Triatholon BA	*Bacillus amyloliquefascien* strain D747	NC	**	*			*					**								
OxiDate 5.0, ZeroTol 2.0, OxiDate 2.0	hydrogen peroxide + peroxyacetic acid			NC			*				NC	**		*						
fixed coppers (various)	various copper formulations	*	**	**			**				**	**		*						
sulfur (various)	sulfur												**							
Serifel	*Bacillus amyloliquefascien* strain MBI 600																			
LifeGard WG	*Bacillus mycoides* isolate J	*	*	*																
Amplitude, Stargus	*Bacillus amyloliquefascien* strain F727 cells and spent fermentation media																			
AVIV	*Bacillus subtilis* strain IAB/BS03																			
Leap ES	*Bacillus thuringeiensis* subsp. *kurstaki* strain ABTS-351 germentation solids, spores, and insecticidal toxins + methyl salicylate			*																
AgriPhage	bacteriophage			NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	
ProBLAD Verde	Banda de lupinus albys doce																			
Contans WG	*Coniothyrium minitans* strain CON/M/91-08																			
Regalia, Regalia CG	extract of *Reynoutria sachalinensis*		*	NC			*					**								May provide control of early blight and Septoria leaf spot when alternated with Serenade Opti
EcoSwing	extract of *Swinglea glutinosa*																			
SoilGard	*Gliocladium virens* strain GL-21		NC	NC	NC		NC		NC	NC	NC	NC	NC	NC	NC					
Vacciplant	laminarin																			
Carb-O-Nator, MilStop	potassium bicarbonate																			
Howler	*Pseudomonas chlororaphis* strain AFS009							NC												
Actinovate AG	*Streptomyces lydicus* WYEC 108		**	*			*					NC								
RootShield WP, RootShield Granules	*Trichoderma harzianum* Rifai strain T-22																			
RootShield WP Plus, RootShield Granules Plus	*Trichoderma harzianum* Rifai strain T-23 + *T. virens* strain G41																			
fixed copper alt. Lifegard	(see above)	*		NC																

**	**Significantly better control than no treatment in more than 50% of studies, minimum of four studies**
*	**Significantly better control than no treatment in two or more studies**
NC	**No control in two or more studies**
	No data

Note: Efficacy data is based on examining at least two published reports evaluating the products alone for efficacy in controlling the disease listed.