The following documents were distributed during the Biocontrols II Session at the 2020 Empire State Producers Expo on January 14, 2020.

The session was moderated by: Amara Dunn (NYSIPM) Elizabeth Buck (Cornell Vegetable Program) Anna Wallis (Plant Pathology & Plant-Microbe Biology, School of Integrative Plant Science, Cornell University)

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Note: The following information is not a substitute for a pesticide label. The label is the law, and you must read and follow the label of any pesticide you are using. Laws and labels change. It is your responsibility to use pesticides legally. Trade names used here are for convenience only; no endorsement of products is intended, nor is criticism of unnamed products implied. For questions about pesticide use, regulations, and safety, contact the Cornell Pesticide Management Education Program: pmep_webmaster@cornell.edu.

Biological Source Active Ingredient Examples of Product Names Small Tree Pool ORR-List of User) Soft- Hard- Description Virus / Prop Core farvourn NV-virus dematar LC Yes	This information is r	not a substitute for a pesticide label. Always re	ead and follow all pesticide labels. Trade names	used are	for con	venience	only.						
Boding JournSamaSamaSamaNumObtaDubleNumDubleNumDubleNumDubleNumDubleNumDubleNumDubleNumDubleNumDubleNumDubleNumDubleNumDubleNumDubleNumDubleNum<						Green-				Soft-	Hard-		
Biological Source Active Ingredient Examples of Product Names Fruit Use? Options? Fund Bacters Insect Charpitanse Net Urus / Phane Com Earworm NPV-virus strain BV-0003 Heicover Yes Ves Yes Ves				Small	Tree	house	OMRI-Listed			bodied	bodied		
Virus / NewConcarsorm NPV-virus strain BV-000Gendar LC vorusVes <th< td=""><td>Biological Source</td><td>Active Ingredient</td><td>Examples of Product Names</td><td>Fruit</td><td>Fruit</td><td>Use?</td><td>Options?</td><td>Fungi</td><td>Bacteria</td><td>Insects</td><td>insects</td><td>Caterpillars</td><td>Nematodes</td></th<>	Biological Source	Active Ingredient	Examples of Product Names	Fruit	Fruit	Use?	Options?	Fungi	Bacteria	Insects	insects	Caterpillars	Nematodes
Virus / Phase Conting Motion MPAPvartus strain BV-0003 Helicoves Ves		Corn Earworm NPV-virus	Gemstar LC	Yes			Yes					Х	
Virus / Phage Coding Moth granulovirus strain V-22 Mades HP Yes Yes <thyes< th=""> Yes <thyes< th=""> Yes</thyes<></thyes<>		Cotton Bollworm NPV-virus strain BV-0003	Helicovex	Yes		Yes	Yes					Х	
Coding Moth granulovirus CVD X, CVD X, HP Ves	Virus / Phage	Codling Moth granulovirus strain V-22	Madex HP		Yes		Yes					Х	
Beet Armyworm MMPHV strain BV-0004 Spexit Yes		Codling Moth granulovirus	CYD-X, CYD-X HP		Yes		Yes					х	
Peptide / Lipit Immonipid biosurfactant Zonik Yes Yes Yes Yes X L <thl< th=""> L <thl< th=""> L</thl<></thl<>		Beet Armyworm MNPHV strain BV-0004	Spexit	Yes		Yes	Yes					х	
Preprint Band ad Lupinusablus dore (BLAD) polyopetides Fracture Yes Ves Ves<	Pontido / Linid	rhamnolipid biosurfactant	Zonix	Yes	Yes	Yes	Yes	Х					
Indices Price Yes Y		Banda de Lupinus albus doce (BLAD)											
BACTERIALLY DERIVED FRODUCTS Bacillus onyloilogidacies strain D747 (Ba D747) Double Nickel 55 & LC Yes Yes <t< td=""><td>isolates</td><td>polypeptides</td><td>Fracture</td><td>Yes</td><td></td><td></td><td></td><td>Х</td><td></td><td></td><td></td><td></td><td></td></t<>	isolates	polypeptides	Fracture	Yes				Х					
Bacillus amyloliquéfacies Strain MBI 600 Serfiel Yes Yes Yes X <t< td=""><td></td><td></td><td>BACTERIALLY DERIVED</td><td>PRODU</td><td>CTS</td><td></td><td></td><td>-</td><td></td><td></td><td></td><td></td><td></td></t<>			BACTERIALLY DERIVED	PRODU	CTS			-					
amyloliquefieles strain D747 (Ba D747) Double Mickel 55 & LC Yes Yes Yes X X X L L L Bacillus mycoides Isolate1 LifeGard WG Yes Yes Yes Yes X X L<	Bacillus	strain MBI 600	Serifel	Yes	Yes			Х	Х				
Brain F227 Amplitude ST, Stargus Yes Yes Yes Yes Yes X Low Low <thlow< th=""> Low<td>amyloliquefaciens</td><td>strain D747 (Ba D747)</td><td>Double Nickel 55 & LC</td><td>Yes</td><td>Yes</td><td>Yes</td><td>Yes</td><td>Х</td><td>Х</td><td></td><td></td><td></td><td></td></thlow<>	amyloliquefaciens	strain D747 (Ba D747)	Double Nickel 55 & LC	Yes	Yes	Yes	Yes	Х	Х				
Bacillus mycoides isolate1 LifeGard WG Yes Yes Yes Yes X X C C Bacillus pumilus QST 2808 Sonata Aviv Yes Yes Yes Yes X X L C C C Bacillus subtilis strain LAB/BS03 Aviv Yes Yes Yes Yes Yes X X L C C Bacillus subtilis strain OST 713 Cease, Serenade (ASO, MAX, SOIL), Rhapsody Yes Yes Yes Yes Yes X X L C C C Mar. omylofiquefaciens strain F2B24 Taegro, Taegro 2 Yes Yes <td>unyionquejueiens</td> <td>strain F727</td> <td>Amplitude, Amplitude ST, Stargus</td> <td>Yes</td> <td>Yes</td> <td>Yes</td> <td>Yes</td> <td>Х</td> <td></td> <td></td> <td></td> <td></td> <td></td>	unyionquejueiens	strain F727	Amplitude, Amplitude ST, Stargus	Yes	Yes	Yes	Yes	Х					
Bacillus pumilus OGT 2808 Sonata Yes Yes Yes X Image: Constraint of the second secon	Bacillus mycoides	isolate J	LifeGard WG	Yes	Yes	Yes	Yes	Х	Х				
Bacillus subtilisstrain IAB/BS03AvivYesYesYesYesXImage: Constraint	Bacillus pumilus	QST 2808	Sonata	Yes	Yes	Yes		Х					
Bacillus subtilis strain QST 713 Cease, Serenade (ASO, MAX, SOIL), Rhapsody Yes Yes Except Cease X X L L yar. amyloliquefacies strain FZB24 Taegro, Taegro 2 Yes Yes </td <td rowspan="3">Bacillus subtilis</td> <td>strain IAB/BS03</td> <td>Aviv</td> <td>Yes</td> <td>Yes</td> <td>Yes</td> <td>Yes</td> <td>Х</td> <td></td> <td></td> <td></td> <td></td> <td></td>	Bacillus subtilis	strain IAB/BS03	Aviv	Yes	Yes	Yes	Yes	Х					
Image: start of the start of		strain QST 713	Cease, Serenade (ASO, MAX, SOIL), Rhapsody	Yes	Yes	Yes	Except Cease	Х	Х				
Bacillus thuringiensi Bacillus thuringiensi Bacillus thuringiensi Bacillus thuringiensi Bacillus thuringiensi th		var. amyloliquefaciens strain FZB24	Taegro, Taegro 2	Yes	Yes	Yes		Х					
Bacillus thuringiensis subsp. airawai strain ABTS 1857 XenTari Yes Yes Yes Image: Constraint of the strain ABTS 1857 XenTari Yes Yes Yes Image: Constraint of the straint of the		subsp. <i>aizawai</i> strain GC91	Agree WG	Yes	Yes	Yes	Yes					Х	
Bacillus thuringiensissubsp. galleriae strain SDS-502beetleGonel TLC, grubGonel GYesYesYesYesMMMMMMsubsp. kurstaki strain ABTS-351Biobit HP, DiPel DF, DiPel Pro DFYesYesYesYesXX		subsp. <i>aizawai</i> strain ABTS 1857	XenTari	Yes	Yes	Yes						Х	
but mase subsp. kurstaki strain ABTS-351 Biobit HP, DiPel DF, DiPel Pro DF Yes Yes Yes X X X X subsp. kurstaki strain EG7841 Crymax Yes Yes Yes Yes Yes X <td>Bacillus</td> <td>subsp. galleriae strain SDS-502</td> <td>beetleGone! TLC, grubGone! G</td> <td>Yes</td> <td>Yes</td> <td>Yes</td> <td></td> <td></td> <td></td> <td></td> <td>Х</td> <td></td> <td></td>	Bacillus	subsp. galleriae strain SDS-502	beetleGone! TLC, grubGone! G	Yes	Yes	Yes					Х		
International subsp. kurstaki strain EG7841 Crymax Yes Yes Yes Yes Ves Yes Mes	thuringiensis	subsp. <i>kurstaki</i> strain ABTS-351	Biobit HP, DiPel DF, DiPel Pro DF	Yes	Yes	Yes			Х			Х	
subsp. kurstaki strain SA-11Javelin WGYes <td>thanngiensis</td> <td>subsp. <i>kurstaki</i> strain EG7841</td> <td>Crymax</td> <td>Yes</td> <td>Yes</td> <td>Yes</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Х</td> <td></td>	thanngiensis	subsp. <i>kurstaki</i> strain EG7841	Crymax	Yes	Yes	Yes						Х	
subsp. kurstaki strain SA-12DeliverYesYesYesYesYesYesNeNeNeNeNeNeBeauvaria bassianastrain ANT-03 with fermentation solidsBioceres WPYesYesYesYesYesNe		subsp. <i>kurstaki</i> strain SA-11	Javelin WG	Yes	Yes	Yes	Yes					Х	
Beauvaria bassiana strain ANT-03 with fermentation solids Bioceres WP Yes Yes Yes Yes Image: Mail or train flag X		subsp. kurstaki strain SA-12	Deliver	Yes	Yes	Yes	Yes					Х	
Decording bassianaBoteGHA ES, Botanigard Maxx & 22WP, Mycotrol WPO & ESOVes	Beauvaria	strain ANT-03 with fermentation solids	Bioceres WP	Yes	Yes	Yes				Х	Х		
Substraindstrain GHAMycotrol WPO & ESOYesYesYesYesModelXXXXXBurkholderiaB. sp. strain A396Venerate XC, Venerate CGYesYesYesYesYesXXX </td <td>hassiana</td> <td></td> <td>BoteGHAES, Botanigard Maxx & 22WP,</td> <td></td>	hassiana		BoteGHAES, Botanigard Maxx & 22WP,										
BurkholderiaB. sp. strain A396Venerate XC, Venerate CGYesYesYesYesMainXXXXB. rinojensis (heat-killed)MajesteneYesYesYesYesYesYesYesXXXXSaccharopolysop a spinosadSpinosad + iron phosphateBug-N-SluggoYesYesYesYesYesYesXesXXXXXOther bacterial speciesChromobacterium subtsugaeGrandevo, Grandevo WDG & CGYesYesYesYesYesXXXXXX	bussiunu	strain GHA	Mycotrol WPO & ESO	Yes	Yes	Yes				Х	Х	х	
BerninolationB. rinojensis (heat-killed)MajesteneYesYesYesYesYesMajesteneXXSaccharopolyspo a spinosaSpinosad + iron phosphateSeduceYesYesYesYesYesYesXXXXXSpinosad + iron phosphateBug-N-SluggoYesYesYesYesYesYesXXXXXXSpinosyn A and DEntrust, SpinTor 2SCYesYesYesYesYesXXXXXXOther bacterial speciesPseudomonas chloraphis subsp.Grandevo, Grandevo WDG & CGYesYesYesYesYesYesXXXXXX	Burkholderia	B. sp. strain A396	Venerate XC, Venerate CG	Yes	Yes	Yes	Yes			Х		Х	
Spinosad Seduce Yes Yes Yes Yes Yes X X X Spinosad Spinosad + iron phosphate Bug-N-Sluggo Yes Yes Yes Yes Yes X X X X Spinosad Spinosad + iron phosphate Bug-N-Sluggo Yes Yes Yes Yes Yes X X X X Other bacterial species Chromobacterium subtsugae Grandevo, Grandevo WDG & CG Yes Yes Yes Yes Xes X X X X	Burkholucilu	B. rinojensis (heat-killed)	Majestene	Yes		Yes	Yes						Х
Saccharopolysing a spinosa Spinosad + iron phosphate Bug-N-Sluggo Yes Yes Yes Yes Yes X, slugs And Spinosyn A and D Entrust, SpinTor 2SC Yes Yes Yes Entrust X	Sacharonolymor	Spinosad	Seduce	Yes	Yes	Yes	Yes				Х	х	
Spinosur Spinosyn A and D Entrust, SpinTor 2SC Yes Yes Entrust M X X X Other bacterial species Chromobacterium subtsugae Grandevo, Grandevo WDG & CG Yes Yes Yes Yes Yes X X X X	saccharopolyspor	Spinosad + iron phosphate	Bug-N-Sluggo	Yes	Yes	Yes	Yes				X, slugs		
Other bacterial species Chromobacterium subtsugae Grandevo, Grandevo WDG & CG Yes Yes Yes Yes X X	u spiriosu	Spinosyn A and D	Entrust, SpinTor 2SC	Yes	Yes		Entrust			Х		Х	
species Pseudomonas chloraphis subsp.	Other besterict	Chromobacterium subtsugae	Grandevo, Grandevo WDG & CG	Yes	Yes	Yes	Yes			Х		Х	
aurantiaca strain AES009 Zio Yes Yes X	species	Pseudomonas chloraphis subsp.	Ζίο	Yes		Yes		х					

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					Green-				Soft-	Hard-		
			Small	Tree	house	OMRI-Listed			bodied	bodied		
Biological Source	Active Ingredient	Examples of Product Names	Fruit	Fruit	Use?	Options?	Fungi	Bacteria	Insects	insects	Caterpillars	Nematodes
	Canola Oil, Capsicum oleoresin, Garlic Oil	Captiva Prime	Yes	Yes	Yes				Х			
		Neemix 4.5, Molt-X, Aza-Direct, AzaGuard,								Young		
	Azadirachtin/neem	Azatrol EC	Yes	Yes	Yes	Yes			Х	Stages	Х	Х
	Neem oil	Triact 70, Trilogy	Yes	Yes	Yes	Yes	Х		Х			
Plant Derived	Azadirachtin + pyrethrum	Azera Insecticide	Yes	Yes	Yes	Yes			Х	Х	Х	
	Pyrethrum	Pyganic Crop Protection EC 5.0 II/EC 1.4 II	Yes	Yes	Yes	Yes			Х	Х	Х	
	Swinglea glutinosa (citrus species) extract	EcoSwing	Yes	Yes	Yes	Yes	Х					
	R. sachalinensis (Giant Knotweed) extract	Regalia, Regalia CG, Regalia RX	Yes	Yes	Yes	Yes	Х					
	Tea Tree Oil	Timorex Gold, Timorex Act	Yes		Yes		Х					
	Phosporous acid and salts	e.g., Kphite, Prophyt	Yes	Yes			Х					
Inorganic	Polyoxin D zinc salt	Affirm WDG, Oso 5% SC, Ph-D	Yes	Yes	Yes		Х					
(Mineral) Derived	Potassium bicarbonate	Kaligreen, Milstop	Yes	Yes	Yes	Yes	Х					
	Potassium silicate	Carbon Defense, Sil-Matrix	Yes	Yes	Yes	Sil-Matrix	Х		Х			
FUNGALLY DERIVED PRODUCTS												
						Pvent,						
Gliocladium	G. catenulatum strain J1446	Pvent, Prestop, Prestop WG	Yes	Yes	Yes	Prestop WG	Х					
	G. virens GL-21	SoilGard	Yes		Yes	Yes	х					
Isaria	I. fumosorosea	Preferal	Yes	Yes	Yes				Х			
fumosorosea	strain 97	PFR-97 20% WDG	Yes	Yes	Yes	Yes			Х	Х	Х	
	S. lydicus WYEC 108	Actinovate AG, Actinovate STP	Yes	Yes	Yes	Yes	Х					
Streptomyces	<i>S. lydicus</i> WYEC 108 + molybdenum + iron											
	+ humic acid	Actino-Iron	Yes	Yes	Yes		х					
	Trichoderma and related genera	SoilGard, Tenet WP	Yes	Yes	Yes	Yes	Х					
	080)	Bio-Tam 2.0	Yes	Yes	Yes	Yes	Х					
Trichoderma	T. harzianum strain T-22	RootShield WP, RootShield AG	Yes	Yes	Yes		Х					
	T. harzianum strain T-22 and T. virens											
	strain G-41	RootShield Plus WP	Yes	Yes	Yes		х					
	Aureobasidium pullulans strain DSM											
	14940 and 14941	Blossom Protect, Botector	Yes	Yes	Yes		х	Х				
	Metarhizium brunneum/anisopliae	Met 52	Yes		Yes				Х			
Other fungal	Myrothecium verrucaria - dried											
species	fermentation solids & solubles	Ditera DF	Yes	Yes								Х
	Paecilomyces lilacinus	MeloCon WG	Yes	Yes		Yes						Х
	Ulocladium oudemansii strain U3	Botrystop	Yes	Yes	Yes		Х					

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			Cole						Root	Green-	
Biological Source	Active Ingredient	Examples of Product Names	Crops	Solanaceae	Cucurbits	Alliums	Legumes	Greens	Crops	house	OMRI Options?
		BACTERIALLY DERIVED F	RODUCTS	5							
Bacillus	strain MBI 600	Serifel	Х	Х			Х	Х	Х	No	
amylolique-	strain D747 (Ba D747)	Double Nickel 55 & LC	Х	Х	Х	Х	Х	Х	Х	Х	Х
faciens	strain F727	Amplitude, Amplitude ST, Stargus	Х	Х	Х	Х	Х	Х	Х	Х	Х
Bacillus mycoides	isolate J	LifeGard WG	Х	Х	Х		Х	Х	Х	Х	Х
Bacillus pumilus	QST 2808	Sonata	Х	Х	Х	Х	Х	Х	Х	Х	
	strain IAB/BS03	Aviv	Х	Х	Х	Х	Х	Х	Х	Х	Х
Racillus subtilis		Cease, Serenade (ASO, MAX, SOIL),									Serenade,
This information is Biological Source Bacillus amylolique- faciens Bacillus mycoides Bacillus pumilus Bacillus subtilis Bacillus subtilis Bacillus subtilis Bacillus	strain QST 713	Rhapsody	Х	Х	Х	Х	Х	Х	Х	Х	Rhapsody
	var. amyloliquefaciens strain FZB24	Taegro, Taegro 2	Х	Х	Х	Х	Х	Х	Х	Х	
	subsp. <i>aizawai</i> strain GC91	Agree WG	Х	Х	Х	Х	Х	Х	Х	Х	Х
	subsp. <i>aizawai</i> strain ABTS 1857	XenTari	Х	Х	Х	Х	Х	Х	Х	Х	
	subsp. galleriae strain SDS-502	beetleGone! TLC, grubGone! G	Х	Х	Х		Х	Х	Х	Х	
	subsp. <i>israelensis</i> strain AM 65-52	Gnatrol WDG	Х	Х	Х			Х		Х	
Bacillus	subsp. <i>kurstaki</i> strain ABTS-351	Biobit HP, DiPel DF, DiPel Pro DF	Х	Х	Х	Х	Х	Х	Х	Х	
thuringiensis	subsp. kurstaki ABTS-351 + methyl salicylate	Leap ES		Х						Х	
Bacillus subtilis Bacillus thuringiensis Beauvaria bassiana Burkholderia	subsp. <i>kurstaki</i> strain EG7841	Crymax	Х	Х	Х	Х	Х	Х	Х	Х	
	subsp. <i>kurstaki</i> strain SA-11	Javelin WG	Х	Х	Х	Х	Х	Х	Х	Х	Х
	subsp. <i>kurstaki</i> strain SA-12	Deliver	Х	Х	Х	Х	Х	Х	Х	Х	Х
	subsp. tenebrionis strain SA-10	Trident		Х							Х
Beauvaria	strain ANT-03 with fermentation solids	Bioceres WP	Х	Х	Х	Х	Х	Х	Х	Х	
hassiana		BoteGHAES, Botanigard Maxx & 22WP,									
	strain GHA	Mycotrol WPO & ESO	Х	Х	Х	Х	Х	Х	Х	Х	
Burkholderia	B. sp. strain A396	Venerate XC, Venerate CG	Х	Х	Х	Х	Х	Х	Х	Х	Х
Durknorderna	B. rinojensis (heat-killed)	Majestene	Х	Х	Х	Х	Х	Х	Х	Х	Х
Saccharopoly	Spinosad	Seduce	Х	Х	Х	Х	Х	Х	Х	Х	Х
snora sninosa	Spinosad + iron phosphate	Bug-N-Sluggo	Х	Х	Х	Х	Х	Х	Х	Х	Х
<i>Spora Spinosa</i>	Spinosyn A and D	Entrust, SpinTor 2SC	Х	Х	Х	Х	Х	Х	Х		Entrust
	Chromobacterium subtsugae	Grandevo, Grandevo WDG & GC CG	Х	Х	Х	Х	Х	Х	Х	Х	Х
Other bacterial	Pasteuria nishizawae PN1	Clariva PN					Х		Х		
species	<i>Pseudomonas chloraphis</i> subsp. <i>aurantiaca</i> strain AFS009	Zio	x	Х	х	х	х	х	х	х	

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			Cole						Root	Green-	
Biological Source	Active Ingredient	Examples of Product Names	Crops	Solanaceae	Cucurbits	Alliums	Legumes	Greens	Crops	house	OMRI Options?
		FUNGALLY DERIVED PR	ODUCTS								
											Pvent, Prestop
Gliocladium	G. catenulatum strain J1446	Pvent, Prestop, Prestop WG	Х	Х	Х	Х	Х	Х	Х	Х	WG
	G. virens GL-21	SoilGard			Х			Х		Х	Х
Isaria	I. fumosorosea	Preferal			Х					Х	
fumosorosea	strain 97	PFR-97 20% WDG		Х	Х		Х	Х		Х	Х
Juniosofoscu	strain FE 9901	NoFly WP			Ye	es (Greenh	ouse/Indo	or use on	ly)	-	
	S. griseoviridis strain K61	PreFence		Х			Х			Х	Х
	S. lydicus WYEC 108	Actinovate AG, Actinovate STP	Х	Х	Х	Х	Х	Х	Х	Х	Х
Streptomyces	S. lydicus WYEC 108 + molybdenum + iron +										
	humic acid	Actino-Iron	Х	Х	Х	Х	Х	Х	Х	Х	
	S. sp. strain K61	Mycostop	Х	Х		Х	Х	Х	Х	Х	
	Trichoderma and related genera	SoilGard, Tenet WP	Х	Х	Х	Х	Х	Х	Х	Х	Х
	T. asperellum (ICC 012) & T. gamsii (ICC 080)	Bio-Tam 2.0	Х	Х	Х	Х	Х	Х	Х	Х	Х
Trichoderma	T. harzianum strain T-22	RootShield WP, RootShield AG	Х	Х	Х	Х	Х	Х	Х	Х	
	T. harzianum strain T-22 and T. virens strain G-										
	41	RootShield Plus WP	Х	Х	Х	Х	Х	Х	Х	Х	
	Aureobasidium pullulans strain DSM 14940 and										
	14941	Blossom Protect, Botector			Х			Х		Х	
	Coniothyrium minitans	Contans WG	Х	Х	Х	Х	Х	Х	Х	Х	Х
Other fungal	Metarhizium brunneum/anisopliae	Met 52		Х		Х		Х		Х	
species	Myrothecium verrucaria - dried fermentation										
	solids & solubles	Ditera DF	Х	Х	Х		Х	Х	Х		
	Paecilomyces lilacinus	MeloCon WG	Х	Х	Х	Х		Х	Х		Х
	Ulocladium oudemansii strain U3	Botrystop	Х	Х	Х	Х	Х	Х	Х	Х	
	Corn Earworm NPV-virus	Gemstar LC	Х	Х	Х	Х	Х	Х	Х		Х
Virus / Phage	Cotton Bollworm NPV-virus strain BV-0003	Helicovex	Х	Х	Х	Х	Х	Х	Х	Х	Х
th do / thage	Beet Armyworm MNPHV-virus strain BV-0004	Spexit	Х	Х	Х	Х	Х	Х	Х	Х	Х
	Unspecified Bacteriophages (8 strains)	AgriPhage, AgriPhage CMM		Х						Х	

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			Cole						Root	Green-	
Biological Source	Active Ingredient	Examples of Product Names	Crops	Solanaceae	Cucurbits	Alliums	Legumes	Greens	Crops	house	OMRI Options?
	Canola Oil, Capsicum oleoresin, Garlic Oil	Captiva Prime	Х	Х	Х	Х	Х		Х	Х	
											Neemix 4.5, Aza-
		Neemix 4.5, Molt-X, Aza-Direct, AzaGuard,									Direct, Azatrol
	Azadirachtin/neem	Azatrol EC	Х	Х	Х	Х	Х	Х	Х	Х	EC
	Neem oil	Triact 70, Trilogy	Х	Х	Х	Х	Х	Х	Х	Х	Х
Plant Derived	Azadirachtin + pyrethrum	Azera Insecticide	Х	Х	Х	Х	Х	Х	Х	Х	Х
	Pyrethrum	Pyganic Crop Protection EC 5.0 II/EC 1.4 II	Х	Х	Х	Х	Х	Х	Х	Х	Х
	Swinglea glutinosa (citrus tree species) extract	EcoSwing	Х	Х	Х	Х	Х	Х	Х	Х	Х
	Reynoutria sachalinensis (Giant Knotweed)										
	extract	Regalia, Regalia CG, Regalia RX	Х	Х	Х	Х	Х	Х	Х	Х	Х
	Tea Tree Oil	Timorex Gold, Timorex Act	Х	Х	Х	Х	Х	Х	Х	Х	
	Phosporous acid and salts	e.g., Kphite, Prophyt	Х	Х	Х	Х	Х	Х	Х	Х	
Inorganic	Polyoxin D zinc salt	Affirm WDG, Oso 5% SC, Ph-D	Х	Х	Х	Х	Х	Х	Х	Х	
(Mineral) Derived	Potassium bicarbonate	Kaligreen, Milstop	Х	Х	Х	Х	Х	Х	Х	Х	Х
	Potassium silicate	Carbon Defense, Sil-Matrix	Х	Х	Х	Х	Х	Х	Х	Х	Sil-Matrix
Pentide / Linid	rhamnolipid biosurfactant	Zonix	Х	Х	Х	Х	Х	Х	Х	Х	Х
Isolates	Banda de Lupinus albus doce (BLAD)										
13014103	polypeptides	Fracture		Х							

This information is not a substitute for a pesticide label. Always read and follow all pesticide labels. Trade names used are for convenience only.

Biological Source	Active Ingredient	Examples of Product Names	Fungi	Bacteria
	Neem oil	Triact 70, Trilogy	Х	
Plant Derived	Swinglea glutinosa (citrus tree species) extract	EcoSwing	Х	
Biological Source Plant Derived Virus / Phage Inorganic (Mineral) Derived Peptide / Lipid Isolates Bacillus amyloliquefaciens Bacillus mycoides Bacillus pumilus Bacillus subtilis Bacillus subtilis Gliocladium Streptomyces Trichoderma Other fungal species	Reynoutria sachalinensis (Giant Knotweed) extract	Regalia, Regalia CG, Regalia RX	Х	
	Tea Tree Oil	Timorex Gold, Timorex Act	Х	
Virus / Phage	Unspecified Bacteriophages (8 strains)	AgriPhage, AgriPhage CMM		Х
	Phosporous acid and salts	e.g., Kphite, Prophyt	Х	
Inorganic (Mineral)	Polyoxin D zinc salt	Affirm WDG, Oso 5% SC, Ph-D	Х	
Derived	Potassium bicarbonate	Kaligreen, Milstop	Х	
	Potassium silicate	Carbon Defense, Sil-Matrix	Х	
Pontido / Linid Isolatos	rhamnolipid biosurfactant	Zonix	Х	
replice / Lipid Isolales	Banda de Lupinus albus doce (BLAD) polypeptides	Fracture	Х	
	BACTERIALLY DERIVED PR	DDUCTS		
Bacillus	strain MBI 600	Serifel	Х	Х
Bacillus amyloliquefaciens	strain D747 (Ba D747)	Double Nickel 55, Double Nickel LC	Х	Х
uniyionquejuerens	strain F727	Amplitude, Amplitude ST, Stargus	Х	
Bacillus mycoides	isolate J	LifeGard WG	Х	Х
Bacillus pumilus	QST 2808	Sonata	Х	
	strain IAB/BS03	Aviv	Х	
Plant Derived4Virus / Phage4Inorganic (Mineral) Derived4Peptide / Lipid Isolates4Bacillus amyloliquefaciens5Bacillus mycoides6Bacillus subtilis4Bacillus subtilis4Bacillus subtilis5Bacillus thuringiensis5Cher Bacteria4Cher Bacteria6Cher Bacteria6Cher Bacteria6Cher Bacteria6Cother fungal species6Other fungal species6	strain QST 713	Cease, Serenade (ASO, MAX, SOIL), Rhapsody	Х	Х
	var. amyloliquefaciens strain FZB24	Taegro, Taegro 2	Х	
Bacillus thuringiensis	subsp. <i>kurstaki</i> ABTS-351 + methyl salicylate	Leap ES		Х
Other Bacteria	Pseudomonas chloraphis subsp. aurantiaca strain AFS009	Zio	Х	
	FUNGALLY DERIVED PRO	DUCTS		
Gliocladium	<i>G. catenulatum</i> strain J1446	Pvent, Prestop, Prestop WG	Х	
	G. virens GL-21	SoilGard	Х	
	S. griseoviridis strain K61	PreFence	Х	
Strentomyces	S. lydicus WYEC 108	Actinovate AG & STP	Х	
Plant Derived Inorganic (Mineral) Inorganic (Mineral) Inorganic (Mineral) Derived Inorganic (Mineral) Peptide / Lipid Isolates Inorganic (Mineral) Bacillus amyloliquefaciens Inorganic (Mineral) Bacillus mycoides Inorganic (Mineral) Bacillus fuuringiensis Inorganic (Mineral) Gliocladium Inorganic (Mineral) Streptomyces Inorganic (Mineral) Trichoderma Inorganic (Mineral) Other fungal species Inorganic (Mineral)	S. lydicus WYEC 108 + molybdenum + iron + humic acid	Actino-Iron	Х	
Bacillus thuringiensis Other Bacteria Gliocladium Streptomyces	S. sp. strain K61	Mycostop	Х	
	Trichoderma and related genera	SoilGard, Tenet WP	Х	
Trichoderma	T. asperellum (ICC 012) & T. gamsii (ICC 080)	Bio-Tam 2.0	Х	
menouermu	T. harzianum strain T-22	RootShield WP, RootShield AG	Х	
	T. harzianum strain T-22 and T. virens strain G-41	RootShield Plus WP	Х	
	Aureobasidium pullulans strain DSM 14940 and 14941	Blossom Protect, Botector	Х	Х
Other fungal species	Coniothyrium minitans	Contans WG	Х	
Bacillus subtilis Bacillus thuringiensis Other Bacteria Gliocladium Streptomyces Trichoderma Other fungal species	Ulocladium oudemansii strain U3	Botrystop	Х	

This information is not a subs	titute for a pesticide label. Always read and follow the labe	el. Trade names used are for convenience only.	Soft-	Hard-		
Biological Source	Active Ingredient	Examples of Product Names	bodied	bodied	Caterpillars	Nematodes
	Canola Oil, Capsicum oleoresin, Garlic Oil	Captiva Prime	Х			
		Neemix 4.5, Molt-X, Aza-Direct, AzaGuard,		Young		
This information is not a subst Biological Source Plant Derived Inorganic Mineral Derived Bacillus thuringiensis Beauvaria bassiana Burkholderia Saccharopolyspora spinosa Other bacterial species Virus / Phage Isaria fumosorosea Other fungal species	Azadirachtin/neem	Azatrol EC	Х	Stages	Х	Х
	Neem oil	Triact 70, Trilogy	Х			
	Azadirachtin + pyrethrum	Azera Insecticide	Х	Х	х	
This information is not a sub Biological Source Plant Derived Inorganic Mineral Derived Bacillus thuringiensis Beauvaria bassiana Burkholderia Saccharopolyspora spinosa Other bacterial species Virus / Phage Isaria fumosorosea Other fungal species	Pyrethrum	Pyganic Crop Protection EC 5.0 II/EC 1.4 II	Х	Х	Х	
Inorganic Mineral Derived	Potassium silicate	Carbon Defense, Sil-Matrix	Х			
	BACTERIALL	Y DERIVED PRODUCTS			-	
	subsp. <i>aizawai</i> strain GC91	Agree WG			Х	
Bacillus thuringiensis	subsp. <i>aizawai</i> strain ABTS 1857	XenTari			Х	
	subsp. galleriae strain SDS-502	beetleGone! TLC, grubGone! G		Х		
	subsp. israelensis strain AM 65-52	Gnatrol WDG	Х			
Racillus thuringionsis	subsp. <i>kurstaki</i> strain ABTS-351	Biobit HP, DiPel DF, DiPel Pro DF			Х	
bucinus tituringiensis	subsp. kurstaki ABTS-351 + methyl salicylate	Leap ES			Х	
	subsp. <i>kurstaki</i> strain EG7841	Crymax			Х	
This information is not a subst Biological Source Plant Derived Inorganic Mineral Derived Bacillus thuringiensis Beauvaria bassiana Burkholderia Saccharopolyspora spinosa Other bacterial species Virus / Phage Isaria fumosorosea Other fungal species	subsp. <i>kurstaki</i> strain SA-11	Javelin WG			Х	
	subsp. <i>kurstaki</i> strain SA-12	Deliver			Х	
	subsp. tenebrionis strain SA-10	Trident		Х		
Beauvaria bassiana	strain ANT-03 with fermentation solids	Bioceres WP	Х	Х		
	strain GHA	BoteGHA ES, Botanigard & Mycotrol	Х	Х	Х	
Burkholderia	B. sp. strain A396	Venerate XC, Venerate CG	Х		Х	
Durkholderid	B. rinojensis (heat-killed)	Majestene				Х
Saccharopolycoora	Spinosad	Seduce		Х	Х	
socchuropolysporu	Spinosad + iron phosphate	Bug-N-Sluggo		X, slugs		
spiriosu	Spinosyn A and D	Entrust, SpinTor 2SC	Х		Х	
Other bacterial species	Chromobacterium subtsugae	Grandevo, Grandevo WDG & CG	Х		Х	
Other bacterial species	Pasteuria nishizawae PN1	Clariva PN				Х
	Corn Earworm NPV-virus	Gemstar LC			Х	
Virus / Phage	Cotton Bollworm NPV-virus strain BV-0003	Helicovex			Х	
	Beet Armyworm MNPHV-virus strain BV-0004	Spexit			Х	
	FUNGALLY	DERIVED PRODUCTS	-	-	-	-
Isaria fumosorosea	1 fumosorosea strain 97	Preferal	Х			
isunu juniosoroseu		PFR-97 20% WDG	Х	Х	Х	
isuriu jumosoroseu	Metarhizium brunneum/anisopliae	Met 52	Х			
Other fungal species	Myrothecium verrucaria fermentation products	Ditera DF				Х
	Paecilomyces lilacinus	MeloCon WG				Х

This information is not a substitute for a pesticide label. Always read and follow all pesticide labels. Trade names used are for convenience only.

Biological Source	Active Ingredient	Examples of Product Names	Fungi	Bacteria
	Neem oil	Triact 70, Trilogy	Х	
Plant Derived	Swinglea glutinosa (citrus tree species) extract	EcoSwing	Х	
Biological Source Plant Derived Virus / Phage Inorganic (Mineral) Derived Peptide / Lipid Isolates Bacillus amyloliquefaciens Bacillus mycoides Bacillus pumilus Bacillus subtilis Bacillus subtilis Gliocladium Streptomyces Trichoderma Other fungal species	Reynoutria sachalinensis (Giant Knotweed) extract	Regalia, Regalia CG, Regalia RX	Х	
	Tea Tree Oil	Timorex Gold, Timorex Act	Х	
Virus / Phage	Unspecified Bacteriophages (8 strains)	AgriPhage, AgriPhage CMM		Х
	Phosporous acid and salts	e.g., Kphite, Prophyt	Х	
Inorganic (Mineral)	Polyoxin D zinc salt	Affirm WDG, Oso 5% SC, Ph-D	Х	
Derived	Potassium bicarbonate	Kaligreen, Milstop	Х	
	Potassium silicate	Carbon Defense, Sil-Matrix	Х	
Pontido / Linid Isolatos	rhamnolipid biosurfactant	Zonix	Х	
replice / Lipid Isolales	Banda de Lupinus albus doce (BLAD) polypeptides	Fracture	Х	
	BACTERIALLY DERIVED PR	DDUCTS		
Bacillus	strain MBI 600	Serifel	Х	Х
Bacillus amyloliquefaciens	strain D747 (Ba D747)	Double Nickel 55, Double Nickel LC	Х	Х
uniyionquejuerens	strain F727	Amplitude, Amplitude ST, Stargus	Х	
Bacillus mycoides	isolate J	LifeGard WG	Х	Х
Bacillus pumilus	QST 2808	Sonata	Х	
	strain IAB/BS03	Aviv	Х	
Plant Derived4Virus / Phage4Inorganic (Mineral) Derived4Peptide / Lipid Isolates4Bacillus amyloliquefaciens5Bacillus mycoides6Bacillus subtilis4Bacillus subtilis4Bacillus subtilis5Bacillus thuringiensis5Cher Bacteria4Cher Bacteria6Cher Bacteria6Cher Bacteria6Cher Bacteria6Cother fungal species6Other fungal species6	strain QST 713	Cease, Serenade (ASO, MAX, SOIL), Rhapsody	Х	Х
	var. amyloliquefaciens strain FZB24	Taegro, Taegro 2	Х	
Bacillus thuringiensis	subsp. <i>kurstaki</i> ABTS-351 + methyl salicylate	Leap ES		Х
Other Bacteria	Pseudomonas chloraphis subsp. aurantiaca strain AFS009	Zio	Х	
	FUNGALLY DERIVED PRO	DUCTS		
Gliocladium	<i>G. catenulatum</i> strain J1446	Pvent, Prestop, Prestop WG	Х	
	G. virens GL-21	SoilGard	Х	
	S. griseoviridis strain K61	PreFence	Х	
Strentomyces	S. lydicus WYEC 108	Actinovate AG & STP	Х	
Plant Derived Inorganic (Mineral) Inorganic (Mineral) Inorganic (Mineral) Derived Inorganic (Mineral) Peptide / Lipid Isolates Inorganic (Mineral) Bacillus amyloliquefaciens Inorganic (Mineral) Bacillus mycoides Inorganic (Mineral) Bacillus fuuringiensis Inorganic (Mineral) Gliocladium Inorganic (Mineral) Streptomyces Inorganic (Mineral) Trichoderma Inorganic (Mineral) Other fungal species Inorganic (Mineral)	S. lydicus WYEC 108 + molybdenum + iron + humic acid	Actino-Iron	Х	
Bacillus thuringiensis Other Bacteria Gliocladium Streptomyces	S. sp. strain K61	Mycostop	Х	
	Trichoderma and related genera	SoilGard, Tenet WP	Х	
Trichoderma	T. asperellum (ICC 012) & T. gamsii (ICC 080)	Bio-Tam 2.0	Х	
menouermu	T. harzianum strain T-22	RootShield WP, RootShield AG	Х	
	T. harzianum strain T-22 and T. virens strain G-41	RootShield Plus WP	Х	
	Aureobasidium pullulans strain DSM 14940 and 14941	Blossom Protect, Botector	Х	Х
Other fungal species	Coniothyrium minitans	Contans WG	Х	
Bacillus subtilis Bacillus thuringiensis Other Bacteria Gliocladium Streptomyces Trichoderma Other fungal species	Ulocladium oudemansii strain U3	Botrystop	Х	

This information is not a subs	titute for a pesticide label. Always read and follow the labe	el. Trade names used are for convenience only.	Soft-	Hard-		
Biological Source	Active Ingredient	Examples of Product Names	bodied	bodied	Caterpillars	Nematodes
	Canola Oil, Capsicum oleoresin, Garlic Oil	Captiva Prime	Х			
		Neemix 4.5, Molt-X, Aza-Direct, AzaGuard,		Young		
This information is not a subst Biological Source Plant Derived Inorganic Mineral Derived Bacillus thuringiensis Beauvaria bassiana Burkholderia Saccharopolyspora spinosa Other bacterial species Virus / Phage Isaria fumosorosea Other fungal species	Azadirachtin/neem	Azatrol EC	Х	Stages	Х	Х
	Neem oil	Triact 70, Trilogy	Х			
	Azadirachtin + pyrethrum	Azera Insecticide	Х	Х	Х	
This information is not a sub Biological Source Plant Derived Inorganic Mineral Derived Bacillus thuringiensis Beauvaria bassiana Burkholderia Saccharopolyspora spinosa Other bacterial species Virus / Phage Isaria fumosorosea Other fungal species	Pyrethrum	Pyganic Crop Protection EC 5.0 II/EC 1.4 II	Х	Х	Х	
Inorganic Mineral Derived	Potassium silicate	Carbon Defense, Sil-Matrix	Х			
	BACTERIALL	Y DERIVED PRODUCTS			-	
	subsp. <i>aizawai</i> strain GC91	Agree WG			Х	
Bacillus thuringiensis	subsp. <i>aizawai</i> strain ABTS 1857	XenTari			Х	
	subsp. galleriae strain SDS-502	beetleGone! TLC, grubGone! G		Х		
	subsp. israelensis strain AM 65-52	Gnatrol WDG	Х			
Racillus thuringionsis	subsp. <i>kurstaki</i> strain ABTS-351	Biobit HP, DiPel DF, DiPel Pro DF			Х	
bucinus tituringiensis	subsp. kurstaki ABTS-351 + methyl salicylate	Leap ES			Х	
	subsp. <i>kurstaki</i> strain EG7841	Crymax			Х	
This information is not a subst Biological Source Plant Derived Inorganic Mineral Derived Bacillus thuringiensis Beauvaria bassiana Burkholderia Saccharopolyspora spinosa Other bacterial species Virus / Phage Isaria fumosorosea Other fungal species	subsp. <i>kurstaki</i> strain SA-11	Javelin WG			Х	
	subsp. <i>kurstaki</i> strain SA-12	Deliver			Х	
	subsp. tenebrionis strain SA-10	Trident		Х		
Beauvaria bassiana	strain ANT-03 with fermentation solids	Bioceres WP	Х	Х		
	strain GHA	BoteGHA ES, Botanigard & Mycotrol	Х	Х	Х	
Burkholderia	B. sp. strain A396	Venerate XC, Venerate CG	Х		Х	
Durkholderid	B. rinojensis (heat-killed)	Majestene				Х
Saccharopolycoora	Spinosad	Seduce		Х	Х	
socchuropolysporu	Spinosad + iron phosphate	Bug-N-Sluggo		X, slugs		
spiriosu	Spinosyn A and D	Entrust, SpinTor 2SC	Х		Х	
Other bacterial species	Chromobacterium subtsugae	Grandevo, Grandevo WDG & CG	Х		Х	
Other bacterial species	Pasteuria nishizawae PN1	Clariva PN				Х
	Corn Earworm NPV-virus	Gemstar LC			Х	
Virus / Phage	Cotton Bollworm NPV-virus strain BV-0003	Helicovex			Х	
	Beet Armyworm MNPHV-virus strain BV-0004	Spexit			Х	
	FUNGALLY	DERIVED PRODUCTS	-	-	-	-
Isaria fumosorosea	1 fumosorosea strain 97	Preferal	Х			
isunu juniosoroseu		PFR-97 20% WDG	Х	Х	Х	
isuriu jumosoroseu	Metarhizium brunneum/anisopliae	Met 52	Х			
Other fungal species	Myrothecium verrucaria fermentation products	Ditera DF				Х
	Paecilomyces lilacinus	MeloCon WG				Х

Empire State Producers Expo - January 14, 2020

Crop: _____

Setting: _____

Target pest: _____

Biopesticide you would like to use in 2020: _____

How does this fit into your broader integrated pest management (IPM) plan:

This biopesticide...

is registered in NY yes no	label includes my pest yes no
label includes my crop yes no	label includes my setting yes no

What is the **application timing** for this biopesticide (for target crop/pest)?

Time during the growing season: ______

Time of day: ______

Weather considerations: _____

The **restricted-entry interval (REI)** for this biopesticide is:

The **pre-harvest interval (PHI)** for this biopesticide is: ______

Any concerns with REI/PHI and application timing?

How will you mix and apply the product?

Required **personal protective equipment (PPE)** for mixing AND applying:

Application rate (i.e., per acre or per gallon):

Volume of water for application (gallons per acre):

Do you need to use any specific spray nozzles to apply this product?

Does the spray pressure matter? If so, what should it be?

Should adjuvant(s) be used? If so, which and how much?

Are there any products this biopesticide is not tank-mix compatible with?

What precautionary statements does the label have?

Signal word, potential human hazards:

Potential environmental hazards or effects on non-target organism:

How will you mitigate potential risks?

What are the storage conditions the product needs?

Max./min. temperature: ______

Shelf life: _____

References for more information on this biopesticide (factsheets or usage guides, growers with experience using product, industry representatives)

Biopesticides Workshop: Make a plan to use biopesticides on your farm in 2020 Empire State Producers Expo - January 14, 2020

Crop:snap beans
Setting:field
Target pest:white mold (<i>Sclerotinia sclerotiorum</i>)
Biopesticide you would like to use in 2020: Double Nickel LC
How does this fit into your broader integrated pest management (IPM) plan:
This biopesticide
is registered in NY \underline{X} yes no label includes my pest \underline{X} yes no
label includes my crop <u>X</u> yes <u>no</u> label includes my setting <u>X</u> yes <u>no</u>
What is the application timing for this biopesticide (for target crop/pest)?
Time during the growing season:
Time of day:
Weather considerations:
The restricted-entry interval (REI) for this biopesticide is:
The pre-harvest interval (PHI) for this biopesticide is:
Any concerns with REI/PHI and application timing?

How will you mix and apply the product?

Required **personal protective equipment (PPE)** for mixing AND applying:

Application rate (i.e., per acre or per gallon):

Volume of water for application (gallons per acre):

Do you need to use any specific spray nozzles to apply this product?

Does the spray pressure matter? If so, what should it be?

Should adjuvant(s) be used? If so, which and how much?

Are there any products this biopesticide is not tank-mix compatible with?

What precautionary statements does the label have?

Signal word, potential human hazards:

Potential environmental hazards or effects on non-target organism:

How will you mitigate potential risks?

What are the storage conditions the product needs?

Max./min. temperature: ______

Shelf life: _____

References for more information on this biopesticide (factsheets or usage guides, growers with experience using product, industry representatives)

Empire State Producers Expo - January 14, 2020

Crop:snap beans							
Setting:field							
Farget pest:white mold (<i>Sclerotinia sclerotiorum</i>)							
Biopesticide you would like to use in 2020: Double Nickel LC							
How does this fit into your broader integrated pest management (IPM) plan:							

A variety of cultural practices can help minimize losses from white mold (rotation, wider row spacing for improved air flow, not over-applying N fertilizer, appropriate plant density).

Know the history of white mold in your field. Successful white mold management depends on timing fungicide applications correctly (at 10% bloom and a week later) to protect blossoms. If weather conditions are not favorable for disease at this time, it's possible that no fungicide is needed. Similarly, to maximize the effectiveness of any fungicide, be sure it is applied at the correct time.

This biopesticide...

is registered in NY	_X_	yes _	no	label includes my pest	_X_	yes	no

... label includes my crop <u>X</u> yes <u>no</u> ... label includes my setting <u>X</u> yes <u>no</u>

What is the **application timing** for this biopesticide (for target crop/pest)?

Time during the growing season: _____10% bloom and ~1 week later______

Time of day: ______any_____

Weather considerations: <u>(according to manufacturer) needs to dry on foliage/flowers</u> before rain; tolerates UV for 7 days; temps typical of NY growing season are fine_____

The **restricted-entry interval (REI)** for this biopesticide is: _____4 hr_____

The **pre-harvest interval (PHI)** for this biopesticide is: <u>0 days</u>

Any concerns with REI/PHI and application timing? 10% bloom (and 1 week later) should be well ahead of harvest

How will you mix and apply the product?

Required **personal protective equipment (PPE)** for mixing AND applying: Applicators and other handlers: long-sleeved shirt, long pants, waterproof gloves, shoes plus socks. Mixers/loaders & applicators: dust/mist filtering respirator at least N-95, R-95, or P-95

Application rate (i.e., per acre or per gallon): Pethybridge program: 1 or 2 qt/A

Volume of water for application (gallons per acre): Pethybridge program used ~25 gal/A

Do you need to use any specific spray **nozzles** to apply this product? Pethybridge program used TeeJet 8002VS flat fan nozzles

Does the spray pressure matter? If so, what should it be? Pethybridge program used 36-38 psi

Should **adjuvant(s)** be used? If so, which and how much? Pethybridge program applied with a spreader (polysorbate-20) at 0.01% v/v. Manufacturer suggests avoiding silicon spreaders.

Are there any products this biopesticide is **not tank-mix compatible** with? Do not tank mix with antibiotics, peracetic acids, or hydrogen peroxides; generally biologically compatible with fertilizers, insecticides, herbicides, and fungicides. Avoid silicon spreaders.

What precautionary statements does the label have?

Signal word, potential human hazards: Caution; prolonged or frequent skin exposure can cause allergic reaction. Avoid contact with eyes, clothes. Avoid breathing spray mist.

Potential environmental hazards or effects on non-target organism: Do not apply to water

How will you mitigate potential risks?

What are the storage conditions the product needs?

Max./min. temperature: room temp, away from extreme heat

Shelf life: <u>2 yr for dry formulation</u>

References for more information on this biopesticide

(factsheets or usage guides, growers with experience using product, industry representatives)

Pethybridge, Gugino, Kikkert. 2019. Efficacy of Double Nickel LC (*Bacillus amyloliquefaciens* D747 Strain) for management of white mold in snap and dry bean. Plant Health Progress 20:61-66. <u>https://apsjournals.apsnet.org/doi/10.1094/PHP-01-19-0006-RS</u>

Empire State Producers Expo - January 14, 2020

Crop: <u>Apple</u>

Setting: Orchard

Target pest: _____ Erwinia amylovora (fire blight)

Biopesticide you would like to use in 2020: _____ Regalia + Double Nickel ______

How does this fit into your broader integrated pest management (IPM) plan:

Regalia is a formulation of *Reynoutria sachalinensis* (knot weed) plant extract. It acts by inducing host defenses. It must be applied prior to infection events, i.e. prior to bloom. This is used in replacement of streptomycin.

Double Nickel LC is a formulation of *Bacillus amyloliquefaciens* strain D747. The bacteria is believed to act by competing for the same biological niche as *E. amylovora*, and via the production of antimicrobial metabolites which kill the pathogen. It is applied at bloom when blossoms are open to inhibit growth and kill the pathogen during this critical infection window. In this way, the product is a replacement for streptomycin.

This biopesticide...

is registered in NY ye	es no	C	label includes my pest yes	_no
label includes my crop	_yes	no	label includes my setting yes	no

What is the **application timing** for this biopesticide (for target crop/pest)?

Time during the growing season: _____

Time of day: ______

Weather considerations: _____

The **re-entry interval (REI)** for this biopesticide is: ______

The **pre-harvest interval (PHI)** for this biopesticide is: ______

Any concerns with REI/PHI and application timing?

How will you mix and apply the product?

Required personal protective equipment (PPE): _____

Field application rate (per acre or per gallon): ______

Volume (gallons per acre): _____

Does the spray **pressure** matter? If so, what should it be?_____

Should **adjuvant(s)** be used? If so, which?______

Are there any products this biopesticide is **not tank-mix compatible** with?

What precautionary statements does the label have?

What are the potential impacts on non-target organisms?

How will you mitigate potential non-target effects?

What are the storage conditions the product needs?

Max./min. temperature: _____

Shelf life: _____

References for more information on this biopesticide

Empire State Producers Expo - January 14, 2020

Crop: Apple

Setting: Orchard

Target pest: _____ Erwinia amylovora (fire blight) _____

Biopesticide you would like to use in 2020: <u>Regalia + Double Nickel LC (DN)</u>

How does this fit into your broader integrated pest management (IPM) plan:

Regalia is a formulation of *Reynoutria sachalinensis* (knot weed) plant extract. It acts by inducing host defenses. It must be applied prior to infection events, i.e. prior to bloom. This is used in replacement of streptomycin.

Double Nickel LC (DN) is a formulation of *Bacillus amyloliquefaciens* strain D747. The bacteria is believed to act by competing for the same biological niche as *E. amylovora*, and via the production of antimicrobial metabolites which kill the pathogen. It is applied at bloom when blossoms are open to inhibit growth and kill the pathogen during this critical infection window. In this way, the product is a replacement for streptomycin.

This biopesticide...

is registered in NY <u>X</u> yes no	label includes my pest <u>X</u> yes no
label includes my crop <u>X</u> yes no	label includes my setting <u>X</u> yes no

What is the **application timing** for this biopesticide (for target crop/pest)?

Time during the growing season: <u>Regalia: 7-14 days pre-bloom (at pink), then every 2 weeks</u> <u>DN: at bloom for blossom protection. May be applied every 7 days for shoot blight protection</u>

Time of day: <u>NA</u>______

Weather considerations: <u>Double Nickel LC performs better when applied under warm, dry</u> conditions (favors the colonization of the bacteria).

The **re-entry interval (REI)** for this biopesticide is: <u>4 hours</u>

The **pre-harvest interval (PHI)** for this biopesticide is: <u>0 days</u>

Any concerns with REI/PHI and application timing? None

How will you mix and apply the product?

Required **personal protective equipment (PPE)**: <u>Long sleeved shirt, long pants, shoes plus socks,</u> waterproof gloves, protective eyewear for Regalia

Field application rate (per acre or per gallon): <u>Regalia: 1-4 qt/A</u> <u>DN: 0.5-6qt/100gal (Cox trials: 1qt)</u>

Volume (gallons per acre): <u>dilute = 400 gal/acre (2X = 200 gal/acre)</u>

Does the spray **pressure** matter? If so, what should it be? <u>No</u>

Should adjuvant(s) be used? If so, which? _____ Regalia: It is recommended to be applied with Regulaid (48 fl oz/A) DN: "Tank mix or rotate with copper-based fungicides at label rates for improved control." It is recommended to be applied with Cueva (2qt/A)

Are there any products this biopesticide is **not tank-mix compatible** with? **None – jar test recommended prior to use**

What precautionary statements does the label have?

Regalia:

- Moderate eye irritant
- Do not apply directly to water

DN:

- Prolonged exposure may cause allergies
- Avoid: contact with eyes, clothing, breathing
- Do not apply directly to water

What are the potential impacts on **non-target organisms**?

None

How will you mitigate potential non-target effects?

What are the storage conditions the product needs?

Store in a cool dry place, avoid freezing Max./min. temperature: <u>NA</u>_____

Shelf life: Regalia: 3yr

References for more information on this biopesticide

Empire State Producers Expo - January 14, 2020

Crop: <u>Apple</u>_____

Setting: Orchard

Target pest: _____ Erwinia amylovora (fire blight)

Biopesticide you would like to use in 2020: <u>Regalia</u>

How does this fit into your broader integrated pest management (IPM) plan:

Regalia is a formulation of *Reynoutria sachalinensis* (knot weed) plant extract. It acts by inducing host defenses. It must be applied prior to infection events, i.e. prior to bloom. This is used in replacement of streptomycin.

This biopesticide...

is registered in NY	yes	no	label includes my pest yes	no

... label includes my crop ____ yes ____ no ____ ... label includes my setting ____ yes ____ no

What is the **application timing** for this biopesticide (for target crop/pest)?

Time during the growing season: _____

Time of day: _____

Weather considerations: ______

The **re-entry interval (REI)** for this biopesticide is: ______

The **pre-harvest interval (PHI)** for this biopesticide is: ______

Any concerns with REI/PHI and application timing?

How will you mix and apply the product? Required personal protective equipment (PPE): _____ Field application rate (per acre or per gallon): _____ Volume (gallons per acre): _____ Does the spray **pressure** matter? If so, what should it be?_____ Should adjuvant(s) be used? If so, which? ______ Are there any products this biopesticide is not tank-mix compatible with? What precautionary statements does the label have? What are the potential impacts on non-target organisms? How will you mitigate potential non-target effects? What are the storage conditions the product needs? Max./min. temperature: _____ Shelf life: References for more information on this biopesticide

Empire State Producers Expo - January 14, 2020

Crop: Apple

Setting: Orchard

Target pest: _____ Erwinia amylovora (fire blight)_____

Biopesticide you would like to use in 2020: <u>Regalia</u>

How does this fit into your broader integrated pest management (IPM) plan:

Regalia is a formulation of *Reynoutria sachalinensis* (knot weed) plant extract. It acts by inducing host defenses. It must be applied prior to infection events, i.e. prior to bloom. This is used in replacement of streptomycin.

This biopesticide...

- ... is registered in NY <u>X</u> yes ____ no ... label includes my pest <u>X</u> yes ____ no
- ... label includes my crop X yes no ... label includes my setting X yes no

What is the application timing for this biopesticide (for target crop/pest)?

Time during the growing season: 7-14 days pre-bloom (at pink), then every 2 weeks

Time of day: <u>NA</u>

Weather considerations: __NA__

The **re-entry interval (REI)** for this biopesticide is: <u>4 hours</u>

The **pre-harvest interval (PHI)** for this biopesticide is: <u>0 days</u>

Any concerns with REI/PHI and application timing? None

How will you mix and apply the product?

Required personal protective equipment (PPE): <u>Long sleeved shirt, long pants, shoes plus socks,</u> waterproof gloves, protective eyewear_____

Field application rate (per acre or per gallon): <u>1-4 qt/A</u>

Volume (gallons per acre): <u>dilute = 400 gal/acre (2X = 200 gal/acre)</u>

Does the spray **pressure** matter? If so, what should it be? <u>No</u>

Should **adjuvant(s)** be used? If so, which? _____ <u>Apply with adjuvant that improves spreading, not penetration</u> In Cox lab trials, it is applied with Regulaid (48 fl oz/A)

Are there any products this biopesticide is **not tank-mix compatible** with? None – jar test recommended prior to use

What precautionary statements does the label have? Moderate eye irritant Do not apply directly to water

What are the potential impacts on **non-target organisms**? None

How will you mitigate potential non-target effects?

What are the **storage conditions** the product needs? **Store in a cool dry place, avoid freezing** Max./min. temperature: <u>NA</u>

Shelf life: <u>3yr</u>_____

References for more information on this biopesticide

Empire State Producers Expo - January 14, 2020

Crop: <u>leafy greens</u>

Setting: greenhouse

Target pest: _____aphids_____

Biopesticide you would like to use in 2020: ______Mycotrol______

How does this fit into your broader integrated pest management (IPM) plan:

This biopesticide...

is registered in NY	_X_ yes _	no	label includes my pest	_X_ yes	no

... label includes my crop \underline{X} yes ____ no ____ ... label includes my setting \underline{X} yes ____ no

What is the **application timing** for this biopesticide (for target crop/pest)?

Time during the growing season: _____

Time of day: ______

Weather considerations: _____

The **restricted-entry interval (REI)** for this biopesticide is:

The **pre-harvest interval (PHI)** for this biopesticide is: ______

Any concerns with REI/PHI and application timing?

How will you mix and apply the product?

Required **personal protective equipment (PPE)** for mixing AND applying:

Application rate (i.e., per acre or per gallon):

Volume of water for application (gallons per acre):

Do you need to use any specific spray nozzles to apply this product?

Does the spray pressure matter? If so, what should it be?

Should adjuvant(s) be used? If so, which and how much?

Are there any products this biopesticide is not tank-mix compatible with?

What precautionary statements does the label have?

Signal word, potential human hazards:

Potential environmental hazards or effects on non-target organism:

How will you mitigate potential risks?

What are the storage conditions the product needs?

Max./min. temperature: ______

Shelf life: _____

References for more information on this biopesticide (factsheets or usage guides, growers with experience using product, industry representatives)