

Commercially used invertebrate biocontrol agents in the EPPO region - ref. Epso standard PM 6/3 - Appendix I

Red text = organism registered in Norway (<http://mattilsynet.no/planter/plantevernmidler/preparatlister>)

Green text = organism recorded naturally in Norway (<http://artskart.artsdatabanken.no/FaneArtSok.aspx>)

* = Not re-registered in Norway ** = Application rejected in Norway (in 2001)

Updated October 2019

New organisms in EPPO in 2017-2019 = 4 stk

Scientific name	English/ Norwegian Name	Taxonomy	Target pests (ENG)	Target pests (NO)	Origin	Distribution	Introduced	Used in EPPO countries	Use	Optimal climate	Manufacturers	Norwegian importer	Norwegian evaluation
<i>Adalia bipunctata</i> **	Two spot ladybird/ To-prikket marihøne	Coccinellidae	Aphididae	Bladlus	Palaeartic?	Widespread	1998	Belgium, Denmark, Germany, Italy, Netherlands, Portugal, Slovenia, Switzerland	Indoors	19-27 °C	KOPPERT B.V. Biobest NV Borregaard	-	Recorded naturally in Norway. Agronomic efficacy not sufficiently documented + risk of genetic mixing (and infection of micro-organisms)
<i>Aleochara bilineata</i>	Egg-eating rove beetle	Staphylinidae	<i>Delia antiqua</i> , <i>Delia radicum</i> (= <i>Delia brassicae</i>)	Løkflue og kålflue	Northern and Middle Europe, Canada and USA	Widespread	1997 (in Netherlands)	Netherlands, some other European countries	Outdoors	20°C, 60 % RF, >16 hours day (LD)		-	Recorded naturally in Norway
<i>Atheta coriaria</i>	Greenhouse Rove Beetle	Staphylinidae (rove beetles)	Thripidae, Sciaridae, Ephydriidae (shore flies)	Trips, hærmygg, vannfluer	Europe, Northern Asia, North America, Oceania	Widespread in EPPO region	2002 (Biobest)	Belgium, France, Germany, Netherlands, Poland, Spain, Switzerland, United Kingdom	Indoors	> 8°C >85% RH?	Biobest NV Syngenta Bioline	-	Recorded naturally in Norway
<i>Chilocorus baileyi</i>	Scale predator beetle	Coccinellidae	Diaspididae	Panserskjoldlus	Australia	Not established	1985	Belgium, France, Netherlands	Indoors			-	
<i>Chilocorus bipustulatus</i>	Heather ladybird	Coccinellidae	Diaspididae, Coccidae (<i>Saissetia oleae</i>)	Panserskjoldlus, skallskjoldlus	South Palaeartic	Widespread (South and Central)	1959	Belgium, France, Greece, Israel, Italy, Netherlands, Turkey	Outdoors/ indoors	>12 °C		-	Recorded naturally in Norway
<i>Chilocorus circumdatus</i>	Scale predator beetle	Coccinellidae	Diaspididae	Panserskjoldlus	S. E. Asia	Not established	1985	Belgium, France, Netherlands	Indoors			-	
<i>Chilocorus nigrita</i>	-	Coccinellidae	Diaspididae, Asterolecaniidae	Panserskjoldlus, o.a. skjoldlus	South Asia	Not established	1985	Belgium, Denmark, France, Germany, Netherlands, UK	Indoors	>12 °C		-	
<i>Coccinella septempunctata</i>	Seven spot ladybird/ sju-prikket marihøne	Coccinellidae	Aphididae	Bladlus	Palaeartic	Widespread	1980	France, Germany, Portugal, Slovenia	Outdoors	>11 °C		-	Recorded naturally in Norway
<i>Cryptolaemus montrouzieri</i>	Australian ladybird beetle	Coccinellidae	<i>Planococcus citri</i>	"Citrus ull-lus"	Australia	Mediterranean area	1985	Austria, Belgium, Czechia, Denmark, Finland, France, Germany, Greece, Guernsey, Ireland, Italy, Jersey, Netherlands, Norway, Poland, Portugal, Russia, Slovakia, Spain, Sweden, Switzerland, Tunisia, UK	Outdoors/ indoors	>16 °C	KOPPERT B.V. Biobest NV BioProduction ApS Syngenta Bioline Borregaard	LOG AS NORGRØ AS VEKSTMIJLØ AS	Used before 2000. Registered 2001 and 2007
<i>Delphastus catalinae</i>	Whitefly ladybeetle	Coccinellidae	Aleyrodidae (<i>Trialeurodes vaporariorum</i> , <i>Bemisia tabaci</i>)	Mellus	Nearctic/ Neotropic	Widespread in C/S- Europe, America, E-Asia	1993	Belgium, Czechia, Denmark, Finland, France, Germany, Greece, Jordan, Netherlands, Poland, Russia, Spain, Tunisia, UK (restricted under license)	Indoors	> 20°C	KOPPERT B.V. Biobest NV Borregaard	-	
<i>Propylea quatuordecimpunctata</i>	Fourteen-spotted ladybeetle/ Sjakkbrettmarihøne	Coccinellidae	Aphids belonging to the superfamily of Aphidoidea	Bladlus	Palearctic region	Widespread	2018	Belgium, Italy, Luxembourg, the Netherlands, Spain, UK and Benelux	Indoors/ outdoors	>14 °C		-	
<i>Rhyzobius lophanthae</i>	Lady beetle scale destroyer	Coccinellidae	Diaspididae (<i>Pseudalacaspis pentagona</i>), <i>Quadraspidiotus perniciosus</i> , <i>Chrysomphalus</i>	Panserskjoldlus	Australia	Mediterranean, Russia	1980	Belgium, Denmark, Germany, Greece, Israel, Italy, Netherlands, Portugal, Switzerland, Turkey	Indoors			-	
<i>Rodolia cardinalis</i>	Vedalia beetle	Coccinellidae	<i>Icerya purchasi</i>	Sitruskjoldlus	Australia	Mediterranean area, CIS	1980?	Belgium, Netherlands	Outdoors/ indoors			-	

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<i>Scymnus rubromaculatus</i>	-	Coccinellidae	Aphididae	Bladlus	Central-Europa	Finland, Estonia, Lithuania	1990	Belgium, France, Netherlands, Portugal	Indoors			-	
<i>Stethorus punctillum</i>	Spider mite destroyer	Coccinellidae	<i>Panonychus ulmi</i>	Fruktremidd	Palaeartic	Widespread	1995	Belgium, France, Germany, Netherlands, Portugal, Spain, Sweden.	Indoors			-	Recorded naturally in Norway
<i>Aphidoletes aphidimyza</i>	Aphid predator/ Aphid gall-midge/ Bladlusgallmygg	Cecidomyiidae	Aphididae (<i>Aphis gossypii</i> , <i>Myzus persicae</i> , <i>Macrosiphum</i> , <i>Aulacorthum</i>)	Bladlus	Central Europe, Palaeartic	Widespread	1985	Austria, Belgium, Czechia, Denmark, Finland, France, Germany, Greece, Guernsey, Hungary, Ireland, Italy, Jersey, Jordan, Lithuania, Malta, Morocco, Netherlands, Norway, Poland, Portugal, Spain, Slovakia, Slovenia, Sweden, Switzerland, Tunisia, UK	Outdoors/ Indoors	18-28 °C > 16 °C at night RF > 60%	KOPPERT B.V. Biobest NV BioProduction ApS Syngenta Bioline Borregaard	LOG AS NORGRO AS VEKSTMIJLØ AS	Used before 2000. Registered 2001 and 2007
<i>Episyrphus balteatus</i>	dobbeltbåndet blomsterflue	Syrphidae	Aphididae	Bladlus	Europa	Widespread	1995	Belgium, Denmark, Germany, Italy, Netherlands, Portugal, Slovenia	Outdoors/ indoors		KOPPERT B.V. BioProduction ApS	-	Recorded naturally in Norway
<i>Feltiella acarisuga</i>	Red spider mite gall midge predator/ Middgallmygg	Cecidomyiidae	<i>Tetranychus urticae</i> , <i>T. cinnabarinus</i>	Spinnmidd	W. Europe/ Mediterranean	Widespread	1995	Belgium, Czechia, Denmark, Finland, France, Germany, Guernsey, Ireland, Italy, Lithuania, Netherlands, Norway, Poland, Spain, (Sweden), Switzerland, UK	Indoors	> 15 °C	KOPPERT B.V. Biobest NV BioProduction ApS Syngenta Bioline Borregaard	LOG AS NORGRO AS VEKSTMIJLØ AS	Occur naturally, but not recorded. Used before 2000. Registered 2001 and 2007
<i>Sphaerophoria rueppellii</i>	Steppekuhaleflue	Syrphidae	Aphididae but also whiteflies, thrips and spider mites	Bladlus, trips, mellus og spinnmidd	Palaeartic and Afrotropical regions	Mediterranean region	2012	Spain	Indoors/ outdoors	25°C-35°C Larvae need moist microclimate	Biobest NV	-	Recorded naturally in Norway
<i>Anthocoris nemoralis</i>	Flower bug	Anthocoridae	Psyllidae (orchards)	Plantesugere	Palaeartic	Widespread	?	Belgium, Denmark, Germany, Israel, Netherlands, Slovenia	Outdoors	> 10 °C	BioProduction ApS Syngenta Bioline Borregaard	-	Recorded naturally in Norway
<i>Anthocoris nemorum</i>	Common flowerbug/ Vanlig nebbtege	Anthocoridae	Cacopsylla pyri, thrips	Pæresuger, trips	Palaeartic	Widespread	1992	Belgium, Denmark, France, Italy, Jersey, Netherlands, Slovenia, UK	Outdoors	> 10 °C		-	Recorded naturally in Norway
<i>Macrolophus pygmeus</i> (<i>syn. M. caliginosus</i>)	Capsid bug/ Bladtege	Miridae	Aleyrodidae	Veksthusmellus og bomullsmellus. Den kan også bekjempe sommerfuglegg, bladlus, spinnmidd, trips og minêrfluelarver	Palaeartic	Widespread	1990	Austria, Belgium, Czechia, Denmark, Finland, France, Germany, Greece, Guernsey, Hungary, Ireland, Italy, Jordan, Lithuania, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Spain, Sweden, Switzerland, Tunisia, Turkey, UK (restricted under license)	Indoors (Not cherry tomato and Gerbera)	> 15 °C (10- 27 °C)	KOPPERT B.V. Biobest NV BioProduction ApS Syngenta Bioline Borregaard	LOG AS NORGRO AS VEKSTMIJLØ AS	Used before 2000. Registered 2001 and 2007
<i>Orius albidipennis</i>	Minute pirate bug/ rovtege	Anthocoridae	Thrips	Trips	Mediterranean, palaeartic	Mediterranean	1991	Belgium, France, Israel, Italy, Netherlands, Spain	Indoors			-	
<i>Orius laevigatus</i> *	Minute pirate bug/ rovtege	Anthocoridae	Thripidae (<i>Frankliniella occidentalis</i> , <i>Thrips tabaci</i>)	Trips (amerikansk blomstertrips, nelliktrips)	Palaeartic (except north)	Widespread (except north)	1991	Austria, Belgium, Czechia, Denmark, Finland, France, Germany, Greece, Guernsey, Hungary, Ireland, Israel, Italy, Jersey, Jordan, Lithuania, Malta, Morocco, Netherlands, Poland, Portugal, Slovakia, Spain, Switzerland, Tunisia, UK	Indoors	15-30 °C	KOPPERT B.V. BioProduction ApS Syngenta Bioline Borregaard	-	Used before 2000. Risk of establishment.
<i>Orius majusculus</i>	Minute pirate bug/ rovtege	Anthocoridae	Thripidae (<i>Frankliniella occidentalis</i> , <i>Thrips tabaci</i>)	Trips (amerikansk blomstertrips, nelliktrips)	Palaeartic	Widespread	1991	Austria, Belgium, Czechia, Denmark, Finland, France, Germany, Greece, Guernsey, Israel, Italy, Jersey, Lithuania, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, (Sweden), Switzerland, UK	Indoors	>16 hours day (LD) 16-25 °C 50-80% RF	BioProduction ApS Syngenta Bioline Borregaard	LOG AS NORGRO AS VEKSTMIJLØ AS	Recorded. Used before 2000. Registered 2001 and 2007
<i>Picromerus bidens</i>	Spiked Shieldbug/ Breitege	Pentatomidae	Lepidoptera	Sommerfugler	Palaeartic (also established in Nearctic)	Widespread	1990	CIS countries (Armenia, Azerbaijan, Belarus, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, and Uzbekistan), Germany, Poland, Russia, Slovenia,	Outdoors/ Indoors			-	Recorded naturally in Norway

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<i>Podisus maculiventris</i> **	Spined soldier bug	Pentatomidae	Lepidoptera, <i>Leptinotarsa decemlineata</i>	Sommerfugler og Coloradobilje	North and South America	Not established	1996	Belgium, Bulgaria, Denmark, Finland, France, Greece, Italy, Netherlands, Russia, Spain	Outdoors/ Indoors		Biobest NV	-	Risk of genetic mixing and establishment in Norway + the agronomic efficacy is not sufficiently documented
<i>Acerophagus maculipennis</i> (syn. <i>Pseudaphycus maculipennis</i>)	-	Encyrtidae	Pseudococcidae (<i>Pseudococcus affini</i> = <i>P. viburni</i>)	Ull-lus (Veksthus-ullskjoldlus)	Palaeartic	Widespread (south)	1980	Belgium, France, Germany, Netherlands, Spain	Indoors		ENTOCARE (KOPPERT?)	-	
<i>Anagrus atomus</i>	Leafhopper predator	Mymaridae	Cicadellidae	Sikader	Palaeartic	?	1994	Belgium, France, Germany, Guernsey, Jersey, Netherlands, Spain, UK	Indoors			-	
<i>Anagrus fusciventris</i>	Long-tailed mealybug parasitoid	Encyrtidae	Pseudococcidae	Ull-lus	Australia	Not present	1990	Belgium, Denmark, France, Germany, Netherlands, Spain	Indoors			-	
<i>Anagrus pseudococci</i>	Citrus mealybug parasitoid	Encyrtidae	Pseudococcidae	Ull-lus	Mediterranean	Not present	1995	France, Czechia, Greece, Italy, Netherlands, Portugal, Spain	Indoors/ outdoors		KOPPERT B.V.	-	
<i>Aphelinus abdominalis</i> *	Aphid parasitic wasp	Aphelinidae	Aphididae (<i>Macrosiphum euphorbiae</i> , <i>Aulacorthum solani</i>)	Bladlus (potetbladlus, grønnflekke veksthusbladlus)	Europe	Widespread	1992	Austria, Belgium, Bulgaria, Czechia, Denmark, Finland, France, Germany, Greece, Guernsey, Ireland, Italy, Jersey, Jordan, Netherlands, Poland, Spain, (Sweden), Switzerland, Tunisia, UK	Indoors	20-30 °C	KOPPERT B.V. Biobest NV BioProduction ApS Syngenta Bioline	-	Recorded. Used before 2000. Risk of genetic mixing and establishment in Norway
<i>Aphidius colemani</i>	Aphid parasitic wasp	Braconidae	Aphididae (<i>Aphis gossypii</i> , <i>Myzus persicae</i> , <i>M. nicotianae</i>)	Bladlus (agurkbladlus, ferskenbladlus)	North Africa, Middle East, India	Mediterranean area	1992	Austria, Belgium, Czechia, Denmark, Finland, France, Germany, Greece, Guernsey, Hungary, Ireland, Italy, Jersey, Jordan, Lithuania, Malta, Morocco, Netherlands, Norway, Poland, Portugal, Slovakia, Spain, Sweden, Switzerland, Tunisia, Turkey, UK	Indoors	>13 °C < 30 °C	KOPPERT B.V. Biobest NV BioProduction ApS Syngenta Bioline Borregaard	LOG AS NORGRO AS VEKSTMILJØ AS	Recorded, and used before 2000 and registered 2001 and 2007
<i>Aphidius ervi</i>	Aphid parasitic wasp	Braconidae	Aphididae (<i>Aulacorthum solani</i> , <i>Macrosiphum euphorbiae</i>)	Bladlus (potetbladlus, grønnflekke veksthusbladlus)	Palaeartic	Widespread	1995	Belgium, Czechia, Denmark, Finland, France, Germany, Greece, Guernsey, Hungary, Ireland, Italy, Jersey, Lithuania, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, UK	Indoors/ outdoors	>10 °C < 30 °C	KOPPERT B.V. Biobest NV BioProduction ApS Syngenta Bioline Borregaard	LOG AS NORGRO AS VEKSTMILJØ AS	Recorded, used before 2000 and registered 2001 and 2007
<i>Aphidius matricariae</i>	Aphid parasitic wasp	Braconidae	<i>Myzus persicae</i>	Ferskenbladlus	Holarctic	Widespread in temperate regions	1990	Austria, Belgium, Germany, Guernsey, Jersey, Netherlands, Poland, Portugal, Slovakia, Slovenia, UK	Indoors		KOPPERT B.V. Syngenta Bioline Biobest NV Borregaard	-	Recorded and used before 2000
<i>Aphytis diaspidis</i>		Aphelinidae	Diaspididae, <i>Quadraspidiotus perniciosus</i> , <i>Pseudaulacaspis pentagona</i>	Panserskjoldlus (San José skjoldlus, m.fl.)	California	Mediterranean	?	Netherlands	Indoors			-	
<i>Aphytis holoxanthus</i>	Red scale parasitoid	Aphelinidae	Diaspididae	Panserskjoldlus	Asia	Mediterranean	1996	Belgium, Czechia, France, Netherlands, Spain	Indoors			-	
<i>Aphytis lingnanensis</i>	Red scale parasitoid	Aphelinidae	<i>Aonidiella aurantii</i> , <i>Chrysomphalus dictyospermi</i>	Skjoldlus	Probably eastern Asia (widely established elsewhere)	Mediterranean	?	Greece, Italy, Spain	Indoors/ outdoors			-	
<i>Aphytis melinus</i>	Red scale parasitoid	Aphelinidae	<i>Aonidiella aurantii</i>	Skjoldlus	India/ Pakistan	Mediterranean	1985	Belgium, Czechia, Denmark, France, Greece, Italy, Portugal, Spain	Indoors/ outdoors			-	
<i>Aprostocetus hagenowii</i>	Cockroach wasp	Eulophidae	Blattidae (<i>Periplaneta spp.</i>)	Kakerlakker	?	Romania	1993	Belgium, France, Germany, Netherlands, Spain	Indoors			-	

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<i>Bracon hebetor</i>	grain moth parasitoid	Braconidae	Lepidoptera (on stored products)	Sommerfugllarver (på matvarer på lager)	India, New England	Mediterranean area (mostly Eastern)	1980	Many (including Germany, Portugal)	Indoors			-	
<i>Coccophagus lycimnia</i>	-	Aphelinidae	Coccidae	Skallskjoldlus	Cosmopolitan	Mediterranean	1988	Belgium, Denmark, France, Germany, Netherlands, Portugal, Spain, (Sweden)	Indoors			-	
<i>Coccophagus rusti</i>	-	Aphelinidae	Coccidae	Skallskjoldlus	Cosmopolitan	Mediterranean	1988	Belgium, France, Netherlands, Spain	Indoors			-	
<i>Coccophagus scutellaris</i>	-	Aphelinidae	Coccidae	Skallskjoldlus	Cosmopolitan	Widespread	1986	Belgium, France, Netherlands, Portugal, Spain	Indoors			-	
<i>Comperiella bifasciata</i>	-	Encyrtidae	Diaspididae (<i>Chrysomphalus aonidium</i> , <i>Aonidiella aurantii</i>)	Panserskjoldlus	California/ South China	Mediterranean	1985	Belgium, Greece, Netherlands	Indoors/ outdoors			-	
<i>Cotesia marginiventris</i>	-	Braconidae	Lepidoptera (Noctuidae)	Sommerfugler (natlfly)	America	?	1993	Belgium, France, Netherlands, Spain	Indoors			-	
<i>Dacnusa sibirica</i>	Leaf miner parasitoid/ Minerflue-snylteveps	Braconidae	Agromyzidae (<i>Liriomyza</i> spp.)	Minerfluer	Palaearctic, Europe	Widespread, temperate regions	1981	Austria, Belgium, Bulgaria, Czechia, Denmark, Finland, France, Germany, Guernsey, Italy, Jersey, Jordan, Malta, Morocco, Netherlands, Norway, Poland, Portugal, Slovakia, Spain, Sweden, Switzerland, UK	Indoors/ outdoors (celery, lettuce)	10- 25 °C	KOPPERT B.V. BioProduction ApS Syngenta Bioline Borregaard	LOG AS NORGRO AS VEKSTMIJLØ AS	Used before 2000. Registered 2001 and 2007
<i>Diglyphus isaea</i>	Leaf miner parasitoid/ Minerflue-snylteveps	Eulophidae	Agromyzidae (<i>Liriomyza</i> spp.)	Minerfluer	Palaearctic	Widespread	1984	Austria, Belgium, Czechia, Denmark, Finland, France, Germany, Hungary, Italy, Jordan, Malta, Morocco, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, Tunisia, Turkey, UK	Indoors/ outdoors	>18 °C + LD	KOPPERT B.V. Biobest NV BioProduction ApS Syngenta Bioline Borregaard	LOG AS NORGRO AS VEKSTMIJLØ AS	Used before 2000. Registered 2001 and 2007
<i>Encarsia citrina</i>	-	Aphelinidae	Diaspididae	Panserskjoldlus	Cosmopolitan	Mediterranean	1984	Belgium, France, Germany, Netherlands, Spain	Indoors			-	
<i>Encarsia formosa</i>	Glasshouse whitefly parasitoid/ Mellus-snylteveps	Aphelinidae	Aleyrodidae (<i>Trialeurodes vaporariorum</i> , <i>Bemisia tabaci</i>)	Mellus	Southern nearctic	Widespread	1930	Austria, Belgium, Bulgaria, Czechia, Denmark, Finland, France, Germany, Hungary, Ireland, Italy, Jordan, Lithuania, Malta, Morocco, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, Tunisia, Turkey, UK	Indoors	> 16- 17 °C	KOPPERT B.V. Biobest NV Syngenta Bioline Borregaard	LOG AS NORGRO AS VEKSTMIJLØ AS	Used before 2000. Registered 2001 and 2007
<i>Encyrtus aurantii</i>	-	Encyrtidae	Coccidae	Skallskjoldlus	Palaearctic	Widespread (south)	1980	Belgium, France, Germany, Netherlands, Spain	Indoors			-	
<i>Encyrtus infelix</i>	-	Encyrtidae	Coccidae	Skallskjoldlus	Afrotropical region	Israel	1992	Belgium, Denmark, France, Netherlands, Spain	Indoors			-	Used before 2000
<i>Ephedrus cerasicola</i>	-	Braconidae	Aphididae (<i>Aphis frangulae</i> , <i>A. gossypii</i> , <i>Aulacorthum circumflexum</i> , <i>Aulacorthum solani</i> , <i>Myzus cerasi</i> , <i>M. nicotinae</i> , <i>M. ornatus</i> , <i>M. persicae</i> , <i>Nasonovia ribisnigri</i> , <i>m.fl</i>)	Bladlus	Naturally throughout Europe	Widespread	1999	Belgium, Denmark, Finland, France, Germany, Netherlands, UK	Indoors		Finnes i Bladlusnylteveps- MIX preparater fra f.eks. KOPPERT og BioProduction	-	Recorded naturally in Norway
<i>Eretmocerus eremicus</i>	Whitefly parasitoid/ Mellus-snylteveps	Aphelinidae	<i>Bemisia tabaci</i>	Bomullsmellus	Southern nearctic	Mediterranean	1994	Belgium, Czechia, Denmark, Finland, France, Germany, Greece, Guernsey, Hungary, Italy, Lithuania, Malta, Morocco, Netherlands, Norway, Poland, Portugal, Slovakia, Spain, Sweden, Switzerland, Tunisia, Turkey	Indoors	> 19- 20 °C	KOPPERT B.V. Biobest NV BioProduction ApS Syngenta Bioline Borregaard	LOG AS ¹⁾ NORGRO AS VEKSTMIJLØ AS	Used before 2000. Registered 2001 and 2007
<i>Eretmocerus mundus</i>	Whitefly parasitoid/ Mellus-snylteveps	Aphelinidae	<i>Bemisia tabaci</i>	Bomullsmellus	South Europe	Mediterranean	1996	Denmark, Germany, Italy, Netherlands, Portugal, Spain	Indoors	> 14 °C	Biobest NV BioProduction ApS Syngenta Bioline Borregaard	-	

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<i>Gyranusoidea litura</i>	-	Encyrtidae	<i>Pseudococcus longispinus</i>	"Langfrynset ull-lus"	Africa	France, Spain	1990	Belgium, France, Netherlands	Indoors			-	
<i>Leptomastidea abnormis</i>	-	Encyrtidae	Pseudococcidae	Ull-lus	Palaeartic	Widespread	1984	Austria, Belgium, Denmark, Germany, Guernsey, Israel, Italy, Jersey, Netherlands, Spain, Switzerland, Turkey, UK	Indoors			-	
<i>Leptomastix dactylopii*</i>	-	Encyrtidae	<i>Planococcus citri</i>	"Sitrus ull-lus"	Neothropic	Mediterranean	1992	Austria, Belgium, Czechia, Denmark, Finland, France, Germany, Greece, Guernsey, Ireland, Italy, Jersey, Netherlands, Norway, Poland, Portugal, Spain, UK	Indoors/ outdoors		KOPPERT B.V. BioProduction ApS Borregaard	-	Used before 2000. Application not submitted
<i>Leptomastix epona</i>	-	Encyrtidae	Pseudococcidae (<i>Pseudococcus viburni</i>)	Ull-lus (veksthud ull-lus)	Palaeartic	Widespread (south)	1992	Belgium, Denmark, France, Germany, Guernsey, Jersey, Netherlands, Spain, UK	Indoors			-	
<i>Metaphycus flavus</i>	-	Encyrtidae	Coccidae, (<i>Saissetia oleae</i> , <i>Coccus hesperidum</i>)	Skallskjoldlus	Nearctic	Mediterranean	1999	Germany, Netherlands, Switzerland	Indoors			-	
<i>Metaphycus helvolus</i>	-	Encyrtidae	Coccidae (<i>Saissetia oleae</i> , <i>Coccus hesperidum</i>)	Skallskjoldlus	South Africa (also established in Nearctic)	Greece, Italy	1992	Austria, Belgium, Denmark, France, Germany, Greece, Israel, Italy, Netherlands, Spain, Switzerland	Indoors/ outdoors			-	
<i>Metaphycus lounsburyi</i>	-	Encyrtidae	Coccidae (<i>Saissetia oleae</i>)	Skallskjoldlus	California, Australia, Hawaii, South Africa	Mediterranean	1997	Denmark, France, Italy, Netherlands	Indoors/ outdoors			-	
<i>Metaphycus swirskii</i>	-	Encyrtidae	Coccidae	Skallskjoldlus	East Africa?	France, Greece (Crete), Israel, Italy (probably Mediterranean region)	1992	Belgium, France, Netherlands, Spain	Indoors			-	
<i>Microterys nietneri</i>	-	Encyrtidae	Coccidae (<i>Saissetia oleae</i>)	Skallskjoldlus	California, Pakistan	Italy	1987	Belgium, Denmark, France, Germany, Greece, Israel, Netherlands, Spain, former-Yugoslavia	Indoors/ outdoors			-	
<i>Opius pallipes</i>	-	Braconidae	<i>Liriomyza bryoniae</i>	"Tomatminerflue"	Palaeartic?	Widespread	1980	Belgium, Czechia, Denmark, France, Germany, Greece, Guernsey, Jersey, Lithuania, Netherlands, Poland, Spain, UK	Indoors			-	
<i>Praon volucre</i>	-	Braconidae	Aphididae	Bladlus	Palaeartic	Widespread	?	Belgium, Guernsey, Jersey, Netherlands, Slovenia, UK	Indoors			-	Recorded naturally in Norway
<i>Scutellista caerulea</i>	-	Pteromalidae	Coccidae (<i>Saissetia oleae</i> , <i>S. coffeae</i> , <i>Ceroplastes rusci</i>)	Skallskjoldlus	Africa	Mediterranean	1990	Belgium, Denmark, France, Netherlands, Switzerland	Indoors			-	
<i>Tetracnemoidea peregrina</i>	-	Encyrtidae	Pseudococcidae	Ull-lus	North America	Israel	1992	Belgium, France, Israel, Netherlands, Spain	Indoors/ outdoors			-	
<i>Tetracnemoidea brevicornis</i>	-	Encyrtidae	Pseudococcidae	Ull-lus	?	Italy	1992	Belgium, France, Netherlands, Spain	Indoors			-	
<i>Thripobius javae</i>	Glasshouse thrips parasitoid	Eulophidae	Thysanoptera (<i>Heliothrips</i> spp.)	Trips	Tropical and subtropical areas of Africa, Asia and Australia	Israel	1995	Belgium, Denmark, France, Germany, Netherlands	Indoors			-	
<i>Trichogramma brassicae*</i>	Lepidopteran egg parasitoid	Hymenoptera	Lepidoptera (<i>Ostrinia nubilalis</i>)	Sommerfugler	Europe	Widespread	1980	Austria, Belgium, Czechia, Denmark, Finland, France, Germany, Greece, Italy, Jersey, Jordan, Netherlands, Slovakia, Spain, Switzerland, UK	Indoors/ outdoors	13-21 °C, 50- 80 % RF	BioProduction ApS Syngenta Bioline Borregaard	-	Used before 2000. Risk of establishment + unclear systematics + can attack endangered species.
<i>Trichogramma cacoeciae</i>	-	Trichogrammatidae	Lepidoptera	Sommerfugler	Europe	Widespread	1980	Denmark, France, Germany, Hungary	Outdoors			-	
<i>Trichogramma dendrolimi</i>	-	Trichogrammatidae	Lepidoptera	Sommerfugler	Europe	Widespread	1985	Germany, Slovakia	Outdoors			-	

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Scientific name	English/ Norwegian Name	Taxonomy	Target pests (ENG)	Target pests (NO)	Origin	Distribution	Introduced	Used in EPPO countries	Use	Optimal climate	Manufacturers	Norwegian importer	Norwegian evaluation
<i>Trichogramma evanescens</i>	Moth egg parasitoid	Trichogrammatidae	Lepidoptera (including stored products)	Sommerfugler	Europe	Widespread	1993	Austria, Belgium, Czechia, Denmark, Finland, France, Germany, Greece, Italy, Jersey, Jordan, Netherlands, Portugal, Slovakia, Spain, Tunisia, UK	Indoors/ outdoors			-	http://www.gartnertidende.dk/frugtbaer/nvheder/2017/snyltehvepse-begraenser-tab-efter-aebleviklere#:Wc1ZlyOMZB
<i>Trichogramma pintoii</i>	-	Trichogrammatidae	Lepidoptera (<i>Ostrinia nubilalis</i> , <i>Helicoverpa armigera</i> , <i>Cydia nigricana</i> , <i>Cydia pomonella</i> , <i>Cydia funebrana</i> , <i>Plutella xylostella</i> , <i>Mamestra brassicae</i> , <i>Lacanobia oleracea</i>)	Sommerfugler	Palaeartic, Near East, Nearctic, Neotropical- & Oriental region,	Widespread	2002 (Hungary)	Belarus, Czech Republic, Hungary, Moldova, Poland, Russia, Slovakia, Ukraine, Uzbekistan	Indoors/ outdoors			-	
<i>Trichopria drosophilae</i>	-	Diapriidae	Pupal parasitoid of <i>Drosophila suzukii</i>	Pupper av <i>Drosophila suzukii</i>	Worldwide, mainly in tropical/ Mediterranean/ warmer temperate climatic areas	France, Germany, Greece, Israel, Italy, Morocco, the Netherlands, Spain	2015 (Italy)	Italy (by 2015), Spain (2017) and Switzerland (2017)	Outdoors/ Indoors		Biplanet		
<i>Chrysoperla carnea</i> *	Green lacewing/ Vintergulløye Vanlig gulløye	Chrysopidae	Aphididae etc.	Bladlus, m.fl.	Cosmopolitan	Widespread	1987	Austria, Belgium, Czechia, Denmark, Finland, France, Germany, Greece, Guernsey, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, UK	Outdoors/ indoors	12- 35 °C	KOPPERT B.V. Biobest NV BioProduction ApS Syngenta Bioline Borregaard	-	Recorded. Used before 2000. Applied in 2001 but not registered because of risk of genetic mixing and unclear systematics. Applied 2nd time in 2012. Conducted a survey of the species in Norway in 2013-2014, and had a new risk assessment in 2014. The products were registered 2015.
<i>Franklinothrips megalops</i>	-	Aeolothripidae	Thysanoptera	Trips	Africa, Israel, India	Israel, Tunisia	1992	Belgium, France, Netherlands, Spain	Indoors		Borregaard	-	
<i>Franklinothrips vespiformis</i>	-	Aeolothripidae	Thysanoptera	Trips	Asia	Israel, Portugal	1990	Belgium, Denmark, France, Germany, Israel, Netherlands, Portugal, Switzerland	Indoors			-	
<i>Karnyothrips melaleucus</i>	-	Phlaeothripidae	Coccidae, Diaspididae (<i>Howardia biclavus</i>)	Skallskjoldlus, panserskjoldlus	Pantropical	Portugal (Madeira)	1994	Belgium, Denmark, France, Netherlands, Spain	Indoors			-	
<i>Amblydromalus (syn. Typhlodromalus) limonicus</i>	-	Phytoseiidae	Thrips and whiteflies (mainly Bemisia tabaci)	Trips og mellus (hovedsakelig bomullsmellus)	North, Central and South America, Hawaii, New Zealand and Australia	Established in north-east Spain	2010	Austria, Belgium, Denmark, England, Finland, France, Germany, Ireland, the Netherlands, Poland, Russia and Ukraine	Indoors/ outdoors	Active at temp. > 13 °C	KOPPERT B.V. Syngenta Bioline Borregaard	-	
<i>Amblyseius (Neoseiulus) andersoni</i>	-	Acarina	<i>Aculops lycopersicae</i> , <i>Aculus schlechtendali</i> , <i>Panonychus ulmi</i> , <i>Phytonemus pallidus</i> , <i>Polyphagotarsonemus latus</i> , <i>Tetranychus urticae</i> , <i>T. cinnabarinus</i>	Galmidd, dvergmidd og spinnmidd	Palaeartic and Nearctic	Widespread	2006	France, Guernsey, Italy, Netherlands, Poland, Slovenia, Spain, UK, (Sweden)	Indoors/ outdoors	Active at temp. > 6- 8 °C	Biobest NV BioProduction ApS Syngenta Bioline Borregaard	-	Not found in Norway, but in Sweden (Skåne). NIBIO conduct a survey in 2016 to check if we can find the species naturally in Norway.
<i>Amblyseius (Neoseiulus) barkeri</i>	Thrips predatory mite/ Trips-rovmidd	Phytoseiidae	Thysanoptera (<i>Thrips tabaci</i> , <i>Frankliniella occidentalis</i>), Tarsonemidae	Trips og dvergmidd	Europe	Widespread	1981	Austria, Belgium, Denmark, France, Germany, Italy, Netherlands, Slovakia, Switzerland	Indoors		BioProduction ApS Syngenta Bioline	-	Recorded. Used before 2000

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<i>Amblyseius (Neoseiulus) degenerans</i>	Thrips predatory mite/ Trips-rovmidd	Phytoseiidae	Thysanoptera	Trips	Africa/ Mediterranean	Mediterranean	1993	Belgium, Czechia, Denmark, Finland, France, Germany, Greece, Hungary, Italy, Jersey, Netherlands, Poland, Spain, Switzerland, Tunisia, Turkey, UK	Indoors	20-25 °C 60- 90 % RF	Biobest NV Borregaard	-	Used before 2000
<i>Amblyseius (Typhlodromus) swirskii</i>	Spider mite predatory mite / Mellus-rovmidd	Phytoseiidae	<i>Bemisia tabaci</i> , <i>T. vaporariorum</i> , <i>Frankliniella occidentalis</i>	Bomullsmellus, veksthusmellus og amerikansk blomstertrips	East of Mediterranean region (Israel, Italy, Cyprus, Greece and Egypt)	Mediterranean	2005	Austria, Belarus, Belgium, Denmark, Finland, France, Germany, Greece, Guernsey, Hungary, Israel, Italy, Jersey, Morocco, the Netherlands, Norway, Poland, Spain, Sweden, Turkey, UK	Indoors/ outdoors		KOPPERT B.V. Biobest NV BioProduction ApS Syngenta Bioline Borregaard	LOG AS NORGRO AS VEKSTMILJØ AS	Registered 2006
<i>Cheyletus eruditus</i>	Storage mite predator	Cheyletidae	Storage mites, spider (foliage) mites	Lagermidd og spinnmidd	Indigenous	Belgium, Israel, Netherlands	1985	Belgium, Czechia, France, Germany, Netherlands	Indoors			-	
<i>Euseius gallicus</i>	-	Phytoseiidae	Whiteflies (Aleyrodidae) and thrips (Thysanoptera)	Mellus og trips	Indigenous	Belgium, France, Germany, Netherlands, Tunisia, Turkey	2010	Belgium, France, Germany, Netherlands, Poland and Ukraine	Indoors			-	
<i>Hypoaspis aculeifer</i>	Fungus gnat predatory mite/ Jordrovmidd	Laelapidae	Sciaridae, <i>Rhizoglyphus echinopus</i>	Hærmygg og løkmidd	Europe	Widespread	1995	Belgium, Czechia, Denmark, Finland, France, Germany, Greece, Guernsey, Ireland, Italy, Netherlands, Norway, Poland, Portugal, Spain, Switzerland, UK	Indoors	15- 32 °C (optimal: 25 °C)	KOPPERT B.V. BioProduction ApS	LOG AS NORGRO AS	Recorded. Used before 2000. Registered 2001 and 2007
<i>Macrocheles robustulus</i>	soil-dwelling predatory mite	Acarina	Soil-dwelling larvae of Sciaridae, Thysanoptera (and eggs of Duponchelia)	Jordlevende stadier av hærmygg og trips, og egg av vinkelpyralide	Indigenous (the habitat is restricted to moist soil and manure/dung)	Widespread	2010	Austria, Belgium, Denmark, Finland, France, Germany, Italy, The Netherlands, Poland, Russia, Spain, UK, Ukraine	Indoors		Koppert B.V.	-	
<i>Metaseiulus occidentalis</i>	-	Phytoseiidae	Tetranychidae	Spinnmidd	Nearctic	?	1991	Denmark, France, Greece, Guernsey, Jersey, Netherlands, Poland, Spain, UK	Indoors/ outdoors			-	Used before 2000
<i>Neoseiulus californicus</i> (non-diapausing strain only)	Thrips predatory mite/ Trips-rovmidd	Phytoseiidae	Tetranychidae	Spinnmidd	S.N. America/ California, Mediterranean	Israel	1985	Belgium, Czechia, Denmark, Finland, France, Germany, Greece, Guernsey, Ireland, Israel, Italy, Jersey, Malta, Netherlands, Poland, Portugal, Slovenia, Spain, Switzerland, Tunisia, UK (restricted under license)	Indoors/ outdoors	15-30 °C og 60-70 % RF	KOPPERT B.V. Biobest NV BioProduction ApS Syngenta Bioline Borregaard	-	Used before 2000. Uncertainties about distribution and cold tolerance. Risk of establishment.
<i>Neoseiulus cucumeris</i>	Thrips predatory mite/ Trips-rovmidd	Phytoseiidae	Thysanoptera (<i>T. tabaci</i> , <i>F. occidentalis</i>)	Trips (nelliktrips, amerikansk blomstertrips)	Cosmopolitan	Widespread (not present in Sweden, Finland, Norway)	1985	Austria, Belgium, Czechia, Denmark, Finland, France, Germany, Greece, Guernsey, Hungary, Ireland, Israel, Italy, Jersey, Jordan, Lithuania, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, Tunisia, Turkey, UK	Indoors/ outdoors	15-30 °C og 50-90 % RF	KOPPERT B.V. Biobest NV BioProduction ApS Syngenta Bioline Borregaard	LOG AS NORGRO AS VEKSTMILJØ AS	Recorded. Used before 2000. Registered 2001 and 2007
<i>Phytoseiulus persimilis</i>	Red spider mite predatory mite/ Midd-rovmidd	Phytoseiidae	Tetranychidae (<i>Tetranychus urticae</i>)	Spinnmidd (veksthusspinnmidd)	Mediterranean	Southern Europe	1968	Austria, Belgium, Czechia, Denmark, Finland, France, Germany, Greece, Guernsey, Hungary, Ireland, Italy, Jersey, Jordan, Lithuania, Malta, Morocco, Netherlands, Norway, Poland, Portugal, Slovakia, Spain, Sweden, Switzerland, Tunisia, Turkey, UK	Indoors/ outdoors	20-28 °C og 75-85 % RF	KOPPERT B.V. Biobest NV BioProduction ApS Syngenta Bioline Borregaard	LOG AS NORGRO AS VEKSTMILJØ AS	Recorded. Used before 2000. Registered 2001 and 2007
<i>Stratiolaelaps scimitus</i> (Syn. <i>Hypoaspis miles</i>)	Fungus gnat predatory mite/ Jordrovmidd	Laelapidae	Sciaridae, <i>Rhizoglyphus echinopus</i>	Hærmygg og løkmidd	Palearctic	Widespread	1994	Belgium, Czechia, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Jersey, Netherlands, Norway, Poland, Portugal, Spain, Sweden, Switzerland, UK	Indoors	15- 32 °C (optimal: 25 °C)	KOPPERT B.V. Biobest NV BioProduction ApS Syngenta Bioline Borregaard	LOG AS NORGRO AS VEKSTMILJØ AS	Used before 2000. Registered 2001 and 2007

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Scientific name	English/ Norwegian Name	Taxonomy	Target pests (ENG)	Target pests (NO)	Origin	Distribution	Introduced	Used in EPPO countries	Use	Optimal climate	Manufacturers	Norwegian importer	Norwegian evaluation
<i>Transeius</i> (syn. <i>Amblyseius</i>) <i>montdorensis</i>	Thrips predatory mite	Phytoseiidae	Aleyrodidae (<i>Trialeurodes</i> spp. and <i>Bemisia</i> spp.), thrips (<i>Frankinella occidentalis</i> and <i>Thrips tabaci</i>) and Eriophyidae (<i>Aculops lycopersici</i>)	Mellus, trips og gallmidd	Pacific Islands and western areas of the Australian mainland	-	2004	Belgium, Denmark, Finland, France, Germany, Greece, the Netherlands, Poland, Romania, Spain, UK, Norway, Sweden,	Indoors/ outdoors	Active > 12 °C. Optimal: 20-27 °C og 60-65 % RF	KOPPERT B.V. Biobest NV BioProduction ApS Syngenta Bioline Borregaard	NORGRO AS	Registered 2017
<i>Typhlodromus pyri</i>	Fruit tree predatory mite/ Middrovmidd	Phytoseiidae	<i>Panonychus ulmi</i> , <i>Tetranychus urticae</i> , <i>Eriophyes vitis</i> , <i>Epitrimerus vitis</i>	Fruktremidd, veksthuspinnmidd	Europe/Nearctic	Widespread	1985	Austria, Belgium, Czechia, Denmark, France, Germany, Hungary, Portugal, Slovakia, Slovenia	Outdoors	15-30 °C	BioProduction ApS	-	Recorded. Used before 2000
<i>Heterorhabditis bacteriophora</i>**	Beneficial nematode/ Nyttenematode	Heterorhabditidae	Vine weevils (<i>Otiorhynchus</i> spp.)	Rotsnutebiller	South and central Europe/ North America	South and central Europe	1984	Austria, Belgium, France, Germany, Italy, Netherlands, Slovenia, Switzerland, Norway	Indoors/ outdoors	12-30 °C	KOPPERT B.V. Biobest NV BioProduction ApS Syngenta Bioline Becker Underwood Borregaard	-	Used before 2000, but not recorded in Norway (in survey 2014). Registered 2015.
<i>Heterorhabditis megidis</i>	Beneficial nematode/ Nyttenematode	Heterorhabditidae	Vine weevils (<i>Otiorhynchus</i> spp.)	Rotsnutebiller	Europe	Widespread	1984	Austria, Belgium, Czechia, Denmark, Finland, France, Germany, Greece, Guernsey, Ireland, Italy, Jersey, Netherlands, Norway, Poland, Slovakia, Spain, Switzerland, Tunisia, UK	Indoors/ outdoors	18-25 °C	The species is not anymore for sale in Europe/ Norway (replaced by <i>H. bact.</i>).	LOG AS NORGRO AS VEKSTMILJØ AS	Used before 2000. Registered 2001 and 2007.
<i>Phasmarhabditis hermaphrodita</i>	Beneficial nematode/ Nyttenematode	Phasmarhabditidae	Slugs	Snegler	Central Europe	Widespread (except in Northern countries)	1984	Belgium, Denmark, France, Germany, Guernsey, Italy, Jersey, Netherlands, UK, Sweden, Norway	Indoors/ outdoors	5-25 °C (optimal: 15-20 °C)	Biobest NV Becker Underwood Borregaard	LOG AS NORGRO AS VEKSTMILJØ AS	Recorded 2001 and registered 2005?
<i>Steinernema carpocapsae</i>*	Beneficial nematode/ Nyttenematode	Steinernematidae	Vine weevils (<i>Otiorhynchus</i> spp.), Sciaridae, soil insects (and codling moth)	Rotsnutebiller, hærmygglarver, sommerfugllarver o.a. insekter i jord	Europe (Holarctic)	Widespread	1984	Belgium, Denmark, France, Germany, Guernsey, Italy, Jersey, Netherlands, Portugal, Slovenia, Sweden, UK	Indoors/ outdoors	18-25 °C (pH = 3-5)	KOPPERT B.V. Biobest NV BioProduction ApS Syngenta Bioline Becker Underwood	-	Used before 2000. Recorded 2001 (after the evaluation). New application submitted 2016. MT has not reach a decision (per September 2017).
<i>Steinernema feltiae</i>	Beneficial nematode/ Nyttenematode	Steinernematidae	Melolonthidae, Sciaridae etc.	Hærmygglarver, oldenborrelarver	Europe (Holarctic)	Widespread	1984	Austria, Belgium, Czechia, Denmark, Finland, France, Germany, Greece, Guernsey, Ireland, Italy, Jersey, Netherlands, Norway, Poland, Slovakia, Slovenia, Spain, Sweden, Switzerland, UK	Indoors/ outdoors	18-25 °C	KOPPERT B.V. Biobest NV BioProduction ApS Syngenta Bioline Becker Underwood Borregaard	LOG AS NORGRO AS VEKSTMILJØ AS	Used before 2000. Registered 2001 and 2007
<i>Steinernema glaseri</i>	White grub parasitic nematode/ Nyttenematode	Steinernematidae	Soil insects like Coleoptera (eg. Japanese beetle), and some Lepidoptera, Orthoptera, etc.	Insekter i jord (biller, sommerfugllarver, etc.)	Argentina, Brazil, China, Czech Republic, Palestine, Portugal, Republic of Korea, Slovak Republic, Spain, Switzerland, the USA	Czech Republic, Portugal, Slovak Republic, Spain, Switzerland	2004	Belgium, Netherlands	Indoors/ outdoors	Optimal: 25-35 °C	(Praxis), (Greenfire), (Intrachem)	-	Expensive to produce. Occasionally "lose" its bacterial symbiote. Difficult to contain within formulations. Additional technological advances are needed.
<i>Steinernema kraussei</i>	Beneficial nematode/ Nyttenematode	Steinernematidae	<i>Otiorhynchus sulcatus</i> and other <i>Otiorhynchus</i> species	Veksthusnutebille, o.a. rotsnutebille-arter	Throughout Europe and North America	Widespread	2001 (in Ireland)	Ireland, Norway, Slovenia, most of other European countries	Indoors/ outdoors	5-30 °C	KOPPERT B.V. Biobest NV BioProduction ApS Syngenta Bioline Becker Underwood	LOG AS NORGRO AS	Recorded 2001 and registered 2008

1) Mix of *Dacnusa sibirica* and *Diglyphus isaea*

Microbial biocontrol agents against plant pests - ref. EU Pesticides database

Updated September 2019

Red text = organism registered in Norway (<http://www.mattilsynet.no/plantevernmidler/godk.asp>)

Green text = organism (not subsp. or strain) recorded naturally in Norway (http://www.entomologi.no/journals/nje/2002-1/NJE_49_01_2002.pdf)

Scientific name	Classification	Authorised in EU countries ¹⁾	Introduced	Target pests (ENG/ latin name)	Target pests (NO name)	Use	Optimal climate	Products	Manufacturer	Norwegian evaluation
<i>Adoxophyes orana granulovirus</i> strain BV-0001	Virus	AT, BE, DE, DK, FR, IT, PL, UK	2004/ 2013	Summer fruit tortrix (<i>Adoxophyes orana</i>)	Fruktskallvikler	Outdoors	-	Capex	Andermatt	-
<i>Bacillus thuringiensis</i> subsp. <i>Aizawai</i> strains GC-91 and ABTS-1857	Bacterium	AT, BE, BG, CY, DE, DK, EL, ES, FI, FR, IT, LU, NL, PL, PT, SE, SI, UK	2008	Lepidoptera	Sommerfugllarver	Indoors/ outdoors	> 12 < 30 °C	Turex 50 WP Xentari WG	Certis USA Valent Biosciences	Turex 50 WP is tested in cucumber in 1996 (not GEP-trials) and cauliflower in 2012-2016. Turex is applied for authorization in Norway 2012. VKM publised the risk assessment May 2016. MT will reach a desicion when they receive the new EU-MRLs
<i>Bacillus thuringiensis</i> subsp. <i>israelensis</i> (serotype H-14) strain AM65-52	Bacterium	AT, DE, DK, ES, NL, SE, UK	2009	Sciarids	Hærmygglarver	Indoors	> 12 < 30 °C	Vectobac 12 AS = Gnatrol	Sumitomo	Vectobac 12 AS is tested in poinsettia in 1999. Not registered in 2002, because of insufficient tox documentation.
<i>Bacillus thuringiensis</i> subsp. <i>Kurstaki</i> strains ABTS 351, PB 54, SA 11, SA12 and EG 2348	Bacterium	AT, BE, BG, CY, CZ, DE, DK, EL, ES, FR, HR, HU, IE, IT, LT, LU, NL, PL, PT, RO, SE, SI, SK, UK	2009	Lepidoptera	Sommerfugllarver	Indoors/ outdoors	> 12 < 30 °C	Dipel	Sumitomo	Dipel is tested in Norway in 2003 and 2004.
<i>Beauveria bassiana</i> strain 147	Fungus	FR (CY, ES, IT)	1993	American palm borer (<i>Paysandisia archon</i>) + the palm weevil (<i>Rhynchophorus ferrugineus</i>)	Sommerfugllarver og snutebiller	Palm trees - Indoors/ outdoors	The strain is not able to grow at 37 °C and above (EFSA 2015)	Ostrinil	Arysta LifeScience S.A.S	
<i>Beauveria bassiana</i> ATCC 74040 and GHA	Fungus	AT, BE, CY, DE, DK, EL, ES, FR, HU, IE, IT, LU, NL, PT, SE, SI, UK (FI)	2009	Aphididae, Thysanoptera, Aleyrodidae,	Bladlus, trips og mellus	Indoors/ outdoors	< 30 °C and no prolonged water contact	BotaniGard 22WP/ Naturalis	Mycotech Europe/ Certis CBC (Europe)	Strain GHA is recorded and testet in Norway against thrips and whiteflies
<i>Cydia pomonella granulovirus</i>	Virus	AT, BE, BG, CZ, DE, DK, EL, ES, FI, FR, HR, HU, IT, LU, NL, PL, PT, RO, SE, SI, SK, UK, (IE)	2009	Codling moth (<i>Cydia pomonella</i>)	Eplevikler	Outdoors (incl. home garden use)	> 15 °C Avoid precipitation and sunlight directly after treatment	Madex	Andermatt	Madex is agronomic evaluated in Norway in 2009. The application was withdrawn by Felleskjøpet in 2015. NLR applied for off-label in 2016. MT asked NLR to apply for Conserve instead.
<i>Helicoverpa armigera nucleopolyhedrosis virus</i> (HearNPV)	Virus	EL, ES, FR, IT, PT, (AT, HU)	2006/ 2013	<i>Helicoverpa armigera</i>	Pestfagerfly (karanteneskadedyr i Norge)	Indoors	Avoid temperatures above 30°C	HELICOVEX	Andermatt	-

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Scientific name	Classification	Authorised in EU countries ¹⁾	Introduced	Target pests (ENG/ latin name)	Target pests (NO name)	Use	Optimal climate	Products	Manufacturer	Norwegian evaluation
<i>Isaria fumosorosea</i> Apopka strain 97 (syn. <i>Paecilomyces fumosoroseus</i>)	Fungus	BE, CY, EL, FI, FR, NL, PL, PT, SE, (IT)	2001	Whiteflies (<i>Trialeurodes vaporariorum</i>)	Mellus (veksthusmellus)	Indoors	< 35 °C (optimal: 20-28 °C)	PreFeRal WG	Thermo Trilogy Corporation/ BioBest	PreFeRal WG is registered in Norway since 2002 (by NORGRO)
<i>Lecanicillium muscarium</i> (Ve6) (syn. <i>Verticillium lecanii</i>)	Fungus	BE, DK, ES, FR, IT, NL, PT, UK	2009	Whiteflies, thrips, aphids (except <i>Macrosiphoniella sanborni</i>)	Mellus, trips, bladlus (unntatt krysantemum-bladlus)	Indoors/ outdoors	18-28°C and 70-80% RF for several days after application	Mycotal	L.O.G.	Mycotal and Vertalec were registered in Norway, but withdrawn in 2004 because MT required documentation on the toxins produced by the fungus during infection. Vertalec (<i>L. longisporum</i> Ve2) was withdrawn in EU because of "its small market" (host range).
<i>Metarhizium anisopliae</i> var. <i>anisopliae</i> strain BIPESCO 5/F52	Fungus	AT, BE, DE, DK, EL, ES, FR, IE, IT, LU, NL, PL, PT, UK	2009	Coleoptera (<i>Phyllopertha</i> , <i>Amphimallon</i> , <i>Otiorhynchus</i> , <i>Strophosoma</i>), Scaridae, Thripidae, Aleyrodidae, Tetranychidae	Biller (oldenborre, rotsnutebille, m.fl.), hærmygg, trips, mellus, spinnmidd	Indoors/ outdoors: vegetables, fruits, herbs, ornamentals, oilseed crops, etc.	> 10 < 35°C (optimal: 20-30°C)	Met52	Novozymes Biologicals	Recorded and tested in Norway
<i>Paecilomyces fumosoroseus</i> Fe9901	Fungus	BE, ES, IT	2005/ 2013	Whiteflies	Mellus	Indoors	< 35 °C (optimal: 23-25 °C)	FuturEco Nofly	FuturEco	-
<i>Spodoptera littoralis nucleopolyhedrosis virus</i>	Virus	ES, FR, IT, PT	2007/ 2013	<i>Spodoptera littoralis</i>	Egyptisk bomullsfløy	Indoors: leafy vegetables, strawberries and ornamentals	-	Littovir	Andermatt	-
<i>Bacillus firmus</i> strain I-1582	Bacterium	DK, EL, ES, FR, IT, NL, PT, SE, UK, (AT, BG, CZ, HU, SI, SK)	2013	Nematodes in cucumber and carrots: f.ex: <i>Meloidogyne incognita</i> and <i>Heterodera carota</i>	Nematoder i agurk og gulrot	Indoors/ outdoors	-	Flocter	Bayer	-
<i>Paecilomyces lilacinus</i> strain 251	Fungus	CY, EL, ES, IT (HU)	2008	Nematodes (<i>Pratylenchus</i> , <i>Globodera</i> , <i>Meloidogyne</i>)	Nematoder	Indoor/ outdoor: cucumber, tomato, zucchini, carrot, pepper, lettuce, strawberry, etc.	< 35 °C (optimal: 25-30°C) and pH 6.5	BioAct DC Prime	Bayer	-

Microbial biocontrol agents against plant diseases - ref. EU Pesticides database

Updated September 2019

Red text = organism registered in Norway (<http://www.mattilsynet.no/plantevernmidler/godk.asp>)

 = NEW organism/ strain in EU 2016-2019

Scientific name	Classification	Origin	Authorised in EU countries ¹⁾	Authorized in EU	Distribution	Target pests	Use	Optimal climate	Products	Manufacturer/ importer	Norwegian evaluation
<i>Ampelomyces quisqualis</i> AQ10	Fungus	1995 USA	BE, CY, DE, DK, EL, ES, FR, IE, IT, LU, NL, SI, SK, UK	2005	Occurs naturally when and where the host is present	Powdery mildew	Grapevine outdoor and vegetables + strawberry indoors	High humidity No growth: T> 37°C Optimal: ??°C	AQ-10 AQ-10 WG	Fargo (http://www.fargo.co.uk/) Ecogen INC, USA	Tested against powdery mildew in cucumber in the 80's (Sundheim)
<i>Aureobasidium pullulans</i> (strains DSM 14940 and DSM 14941)	Fungus	Untreated apple plantation in Germany ('Golden Delicious') in 1989	BE, DE, EL, ES, FR, HU, IT, NL, PL, PT, SI, SK	2014	Ubiquitous, globally distributed	<i>Erwinia amylovora</i> in Pome fruit. Post-harvest fungi (e.g. <i>Penicillium sp.</i> , <i>Geotrichum sp.</i>) in citrus	Outdoors (field) Indoor (storage room)		Blossom protect Deccoferm	Bio-Ferm GmbH	-
<i>Bacillus amyloliquefaciens</i> (former <i>subtilis</i>) strain QST 713	Bacterium		AT, BE, CY, CZ, DE, DK, EE, EL, ES, FI, FR, IE, IT, LT, LU, LV, NL, PL, PT, SE, SI, SK, UK	2007		<i>Uncinula necator</i> and <i>Botrytis cinerea</i> in apple, pear and grapevines; <i>Monilia</i> in stone fruit, <i>Bremia lactucae</i> in lettuce	Indoors/ outdoors	Normal growing conditions (10 to 30°C)	Serenade ASO/ Serenade MAX	BASF/ AgraQuest, US	Serenade ASO is tested against powdery mildew (<i>Podosphaera xanthii</i>) in cucumber in 2012 (Herrero) with good results. Serenade ASO is applied for authorization in Norway 2015 against fungus in different crops in greenhouse, plastic tunnels and field. VKM published the risk assessment May 2016. MT authorized the product in January 2017.
<i>Bacillus amyloliquefaciens</i> strain MBI 600	Bacterium		CZ, DE, EL, ES, FR, LT, NL, PL, PT, SE, UK, (FI, HU, IT)	2016		Grey mould (<i>Botrytis</i> spp.) + Seedling fungal pathogens including <i>Fusarium</i> , <i>Pythium</i> and <i>Rhizoctonia</i> spp.	Indoors/ outdoors in Vines; Table grapes + Wide range of crops including cereals, soybeans, cotton, legumes		SUBTILEX/ Integral Pro	BASF	Applied for testing in 2013 against storage diseases in potato. Tested against <i>Fusarium</i> spp., <i>Phoma</i> spp., <i>Helminthosporium solani</i> og <i>Polyscytatum pustulans</i> in potato trials in 2013 and 2014. Unfortunately, there was no positive effects when treating with Subtilix immediately after harvest.
<i>Bacillus amyloliquefaciens</i> strain FZB24	Bacterium		(AT, CZ, NL, SI, SK)	2017		<i>Pseudoperonospora</i> sp. in cucurbits, <i>Phytophthora infestans</i> in potato, and <i>Botrytis</i> spp. in grapes.	Indoors/ outdoors		TAEGRO	BASF	-
<i>Bacillus amyloliquefaciens</i> subsp. <i>plantarum</i> D747	Bacterium		AT, BE, CY, EL, ES, FR, IT, SI, UK, SE, (SK)	2010/ 2015		<i>Fusarium</i> , <i>Rhizoctonia</i> , <i>Pythium</i> , Powdery Mildew, etc.	Indoors/ outdoors in lettuce, berries, cucurbits, tomato, mushroom, etc.		Amylo-X WG	Mitsui AgriScience International	-
<i>Bacillus pumilus</i> QST 2808	Bacterium		FR (CZ, IE, IT, SI, SK, UK)	2014		Powdery mildew (eg. <i>Erysiphe cichoracearum</i> , <i>Sphaerotheca fuliginea</i>)	Grapes outdoor, Cucumber, melon, Zucchini outdoor/ indoor		Sonata ASO	AgraQuest, US/ Bayer	Sonata ASO is not tested in Norway

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Scientific name	Classification	Origin	Authorised in EU countries ¹⁾	Authorized in EU	Distribution	Target pests	Use	Optimal climate	Products	Manufacturer/ importer	Norwegian evaluation
<i>Candida oleophila</i> O	Fungus		AT, EL, ES, FR, NL, PL, UK (HU, IT)	2013		Post-harvest diseases e.g. Botrytis and Penicillium (apples and pears)	Indoors	Growth at 20°C was fast while growth was delayed at 3°C	Nexy (produktkode: NEX0101)	Bionext sprl	-
<i>Coniothyrium minitans</i>	Fungus		AT, BE, CZ, DE, DK, EL, ES, FR, HU, IE, IT, LU, NL, PL, PT, SE, SK, UK, (FI)	2004		<i>Sclerotinia sclerotiorum</i> and <i>S. minorin</i> lettuce and winter rape	Greenhouse and outdoors (field)	10 – 25 °C with the optimum at 20 °C	Contans	Prophyta Biologischer Pflanzenschutz GmbH	Contans is tested in Norway against <i>Sclerotinia</i> in lettuce in 2015-2016 (Berit Nordskog) and in 2019 (Belachew), with promising results.
<i>Clonostachys rosea</i> strain J1446 (<i>Gliocladium catenulatum</i> strain J1446)	Fungus		AT, BE, CY, DE, DK, EE, ES, FI, FR, IE, NL, SE, UK, (SI)	2005		<i>Pythium</i> , <i>Rhizoctonia</i> , <i>Phytophthora</i> , <i>Fusarium</i> , <i>Didymella</i> , <i>Botrytis</i> , <i>Verticillium</i> , <i>Alternaria</i> , <i>Cladosporium</i> , <i>Helminthosporium</i> and <i>Penicillium</i>	Indoors (after harvest) OR dissemination by bumblebees to protect flowers against Botrytis	15- 25°C and RF 60-80%	Prestop/ Prestop Mix/ Prestop 4B	Verdera/ Biobest	Prestop is tested against <i>Pythium</i> in cucumber in 2008-2009 (Herrero). A product is also tested against fusarium in oat in lab in 2016 and in field in 2016-18 in an EU project (ref. Ingerd Skow Hofgaard)
<i>Phlebiopsis gigantea</i> (several strains)	Fungus		DK, EE, FI, FR, LT, LV, PL, SE, UK, NO	2009		<i>Heterobasidion annosum</i> and <i>H. parviporum</i> (in pine and spruce forests)	Outdoors (field)		Rotstop	Verdera	Rotstop registered in Norway since before 1999
<i>Pseudomonas chlororaphis</i> MA342	Bacterium		AT, BE, DE, DK, ES, FI, FR, IT, LT, LU, NL, PT, SE, UK, (SK)	2004		Seed borne fungal disease in cereal (<i>Pythium aphanidermatum</i>)	Closed systems indoors (seed dressing)	Does not grow above 32°C	Cerall Cedomon Cedress	Bioagri	The Norwegian importer has withdrawn the authorization of the products Cerall and Cedomon in April 2015
<i>Pseudomonas</i> sp. Strain DSMZ 13134	Bacterium		AT, BE, BG, CY, CZ, DE, EL, ES, FR, HR, IE, IT, NL, PL, PT, RO, SE, SI, SK, UK	2014		Soil borne fungi (in potato, vegetables, flowers, etc.) eg. <i>Phytophthora infestans</i> . The strain can also control <i>Heterobasidion</i> spp. in forestry.	Indoors/ outdoors		Proradix WG/	Sourcon-Padena GmbH & Co.KG	Prodadix is not tested in Norway. Ideally we would prefer Norwegian trials before we can recommend approval.
<i>Pythium oligandrum</i> M1	Fungus		CY, CZ, DE, EL, ES, FR, HU, IT, PL, PT, SK, UK	2009		<i>Botrytis</i> , <i>Fusarium</i> , <i>Gaeumannomyces</i> , <i>Ophiostoma</i> , <i>Phialophora</i> , <i>Phoma</i> , <i>Phytophthora</i> , <i>Pseudocercospora</i> , <i>Pythium</i> , <i>Sclerotinia</i> and <i>Verticillium</i>	Outdoors (e.g. oil seed rape, wheat and spring barley in the field)	37°C	Polyversum	Biopreparaty	-
<i>Saccharomyces cerevisiae</i> strain LAS02	Fungus	Natural	No authorisation in place	2016		<i>Monilinia fructigena</i> , <i>Monilinia laxa</i> , <i>Monilinia fructicola</i> , <i>Botrytis</i> spp., <i>Botrytis cinerea</i> , <i>Alternaria</i> spp. <i>Neofabraea alba</i> and <i>Penicillium</i> spp.	Post harvest in pome fruits, stone fruits, grapevine, tomato, strawberries		ALD1202	?	March 2017: Nfsa considers that there is insufficient data of possible impact on antibiotic resistance
<i>Streptomyces lydicus</i> strain WYEC 108	Bacterium		No authorisation in place	2010/ 2015		Seed and soil borne fungi such as <i>Fusarium</i> <i>Pythium</i> <i>Rhizoctonia</i> <i>Phytophthora</i>	Greenhouse and field (e.g. ornamentals, grass, vegetables and herbs)		Actinovate	Natural Industries Ltd.	

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<i>Trichoderma asperellum</i> (syn. <i>T. harzianum</i>) strains ICC012, T25 and TV1	Fungus		DE, EL, ES, FR, IT, PL, PT, (NL)	2009		Preventive action against soil pathogens such as: <i>Pythium</i> , <i>Rhizoctonia</i> , <i>Phytophthora</i> , <i>Phoma</i> , <i>Verticillium</i> and <i>Fusarium</i> spp.	Tomato indoors/ outdoors	The optimum growth and biocontrol activity is from pH 4.5-6 and 20-28 °C	Triatum-P/ TUSAL	Koppert/ Isagro USA	-
<i>Trichoderma asperellum</i> (strain T34)	Fungus		BE, ES, FR, IE, IT, NL, PL, PT, RO, UK, (CZ)	2013		<i>Fusarium</i> on Carnation, <i>Pythium</i> on Solanaceae and Cucurbitaceae crops; Increases the resistance of plants to stress and enhance the growth and development of roots and above-ground plant parts.	Indoors	The optimum growth temperature for T. a. strain T34 is <36°C	T34 Biocontrol	Biocontrol Technologies S.L., Fargro Ltd.)	-
<i>Trichoderma atroviride</i> (formerly <i>T. harzianum</i>) strains IMI 206040 and T11	Fungus		EL, IT, SE	2009		<i>Botrytis cinerea</i> in strawberry and <i>Chondrostereum purpureum</i> in ornamental trees	Indoors/ outdoors	Optimal: 25-30°C No growth: T> 35°C	Binab TF WP, Binab Bär, Binab Potatis, Binab Vector och Binab Växthus	BINAB Bio-Innovation AB/	Tested in 2002. There are few fungicides available to control pathogens like <i>Fusarium</i> and <i>Rhizoctonia</i> in Norway. One can expect the disease control provided by Trianum to be lower compared to chemical fungicides, but if it provides significantly better control compared to untreated plants, Trianum may be an interesting alternative.
<i>Trichoderma atroviride</i> strain I-1237	Fungus		ES, FR, IT, PT, (NL)	2013		<i>Pythium</i> spp. on carrot, <i>Rhizoctonia</i> spp. on potato and lettuce, and <i>Fusarium</i> spp. on ornamentals	Indoors/ outdoors: Foliar/ Soil/ Seed treatment		Tri-Soil	Agrauxine	
<i>Trichoderma atroviride</i> strain SC1	Fungus	Natural	AT, BE, CY, DE, EL, ES, FR, IT, LU, NL, PL, PT, (CZ, HU, SK)	2016		<i>Phaeoaniella chlamydospora</i> , <i>Phaeoacremonium aleophilum</i> , <i>Diplodia seriata</i> , <i>Eutypa lata</i>	Grapes, established vines outdoors and in nurseries		Vintec	Biological Products for Agriculture (Bi-PA N.V.)	
<i>Trichoderma gamsii</i> (formerly <i>T. viride</i>) strain ICC080	Fungus	Isolated from a suppressive soil of central Italy	DE, EL, ES, FR, IT, NL, PL, PT	2009		Preventive action against soil pathogens such as: <i>Pythium</i> , <i>Rhizoctonia</i> , <i>Phytophthora</i> , <i>Phoma</i> , <i>Verticillium</i> and <i>Fusarium</i> spp.	Flowers and ornamentals, Vegetables (e.g. tomato, pepper, salad, celery, eggplant, cucumber), herbs, strawberries	Most cold-tolerant isolate among <i>Trichoderma</i> spp. The optimum for growth and sporulation is pH 4-5 and 23-25 °C	Remedier WP	Isagro USA	-

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Trichoderma harzianum strains T-22 and ITEM 908	Fungus		BE, DK, EE, EL, ES, FR, HU, IE, IT, NL, PL, PT, SE, SK, UK, (FI)	2009		<i>Fusarium</i> spp. <i>Pythium</i> spp. <i>Rhizoctonia</i> spp. <i>Sclerotinia</i> spp. <i>Micradochium</i> spp	Tomato, cucumber, sweet pepper, lettuce, carrots, ornamentals, beans, broccoli, turf, pome/ stone fruits; Indoors/ outdoors	Do not apply at temp. below 10° C since the beneficial fungi will not start growing	Triatum-G	Koppert	
Verticillium albo-atrum WCS850	Fungus	The strain originates from a potato field in Holland.	DE, DK, NL, SE, UK	2009	Indigenous in soils in temperate regions and N-Europe. The strain has no natural dispersal from the site of injection	Prevent Dutch elm disease: Vascular fungus: <i>Ophiostoma novo-ulmi</i>	Elm trees (Ulmus spec.) in field		Dutch Trig	BTL Bomendienst B.V.	Dutch Trig was applied for authorization (mutual recognition) in Mars 2017. MT authorized the product against Dutch elm disease in June 2017.
Mild Pepino Mosaic Virus isolate VC 1	Virus	The strain is isolated from a commercial tomato crop in Germany	NL, SE, UK, (ES, IT)	2017		Pepino mosaic virus	Tomatoes indoors		V10	Valto	-
Mild Pepino Mosaic Virus isolate VX 1	Virus	The strain is isolated from a commercial tomato crop in Belgium	NL, SE, UK, (ES)	2017		Pepino mosaic virus	Tomatoes indoors		V10	Valto	-
Pepino mosaic virus strain CH2 isolate 1906	Virus	The strain is isolated from a commercial tomato crop in Belgium	AT, BE, CZ, DE, EL, ES, FI, FR, HR, HU, IT, NL, PL, SI, SK, UK	2015		Pepino mosaic virus	Tomatoes indoors		PMV-01	De Ceuster N.V.	-
Zucchini Yellow Mosaik Virus, weak strain	Virus	First isolated in France, 1986	FR	2013		Zucchini Yellow Mosaik Virus (ZYMV)	Curcubites - melons, cucumbers, gherkins, squashes, zucchini and marrow		Curbit, AgroGuard	Bio-OZ Bio-technologies Ltd	-