

## Supplementary information

**Supplementary Table 1:** An overview of the literature studies that were used for this literature review. For studies that investigated multiple interactions, these different interactions were detailed in separate rows. Detailed are the **soil bacterium** (species and strain), **soil organism type** (NF=nitrogen fixing; PGPR=Plant growth promoting bacteria), **method** (ADD= Field addition; REM= Field species removal; POT= Potted plants in the field), **Plant** (species), **Insect** (species), **Guild** (SH= Sucking herbivore; CH=Chewing herbivore; MT= Mutualist; PO=Pollinator; LM=Leafminer; CF=Cell-content feeder; GM=Gallmaker; SP=Seed predator; PI=Predatory insect), **Enemy** (species) and the **effects on plants, insects and enemies** (indicated by 0 (no effect on respective study organism), +(significant positive effect on respective study organism) or -(significant negative effect on respective study organism), or NA where the interactions were not assessed) and **Reference** (reference to original study).

Soil organism	Type	Method	Plant	Insect	Gld	Enemy	Plant effect	Insect effect	Enemy effect	Reference
<i>Bradyrhizobium japonicum</i>	NF	ADD	<i>Glycine max</i>	<i>Aphis glycines</i>	SH	NA	0	+	NA	Dean, Mescher & De Moraes, 2009
<i>Bradyrhizobium japonicum</i>	NF	ADD	<i>Glycine max</i>	<i>Aphis glycines</i>	SH	NA	0	-	NA	Brunner et al., 2015
<i>Rhizobium</i> DJB1033	NF	POT	<i>Phaseolus lunatus</i>	<i>Tetramorium caespitum</i>	MT	NA	+	-	NA	Godschalx et al., 2015
<i>Pseudomonas fluorescens</i> PF1	PGPR	ADD	<i>Oryza sativa</i>	<i>Cnaphalocrocis medinalis</i>	CH	various parasitoid and spiders	+	-	+	Radja Commare et al., 2002
<i>Pseudomonas fluorescens</i> FP7	PGPR	ADD	<i>Oryza sativa</i>	<i>Cnaphalocrocis medinalis</i>	CH	various parasitoid and spiders	+	-	+	Radja Commare et al., 2002
<i>Bacillus subtilis</i> EPC8	PGPR	ADD	<i>Solanum lycopersicum</i>	<i>Helicoverpa armigera</i>	CH	NA	+	-	NA	Prabhukarthikeyan, Saravanakumar & Raguchander, 2014
<i>Pseudomonas putida</i> 89B-61	PGPR	ADD	<i>Cucumis sativus</i>	<i>Acalymma vittatum</i>	CH	NA	+	-	NA	Zehnder et al, 1997
<i>Pseudomonas putida</i> 89B-61	PGPR	ADD	<i>Cucumis sativus</i>	<i>Diabrotica unidecimpunctata howardi</i>	CH	NA	+	-	NA	Zehnder et al, 1997

<i>Serratia marcescens</i> 90-166	PGPR	ADD	<i>Cucumis sativus</i>	<i>Acalymma vittatum</i>	CH	NA	+	-	NA	Zehnder et al, 1997
<i>Serratia marcescens</i> 90-166	PGPR	ADD	<i>Cucumis sativus</i>	<i>Diabrotica undecimpunctata howardi</i>	CH	NA	+	-	NA	Zehnder et al, 1997
<i>Flavomonas oryzihabitans</i> INR-5	PGPR	ADD	<i>Cucumis sativus</i>	<i>Acalymma vittatum</i>	CH	NA	+	-	NA	Zehnder et al, 1997
<i>Flavomonas oryzihabitans</i> INR-5	PGPR	ADD	<i>Cucumis sativus</i>	<i>Diabrotica undecimpunctata howardi</i>	CH	NA	+	-	NA	Zehnder et al, 1997
<i>Bacillus pumillus</i> INR-7	PGPR	ADD	<i>Cucumis sativus</i>	<i>Acalymma vittatum</i>	CH	NA	+	-	NA	Zehnder et al, 1997
<i>Bacillus pumillus</i> INR-7	PGPR	ADD	<i>Cucumis sativus</i>	<i>Diabrotica undecimpunctata howardi</i>	CH	NA	+	-	NA	Zehnder et al, 1997
<i>Pseudomonas fluorescens</i> Pf1	PGPR	ADD	<i>Oryza sativa</i>	<i>Cnaphalocrocis medinalis</i>	CH	spiders	+	-	+	Saravanakumar et al., 2008
<i>Pseudomonas fluorescens</i> TDK1	PGPR	ADD	<i>Oryza sativa</i>	<i>Cnaphalocrocis medinalis</i>	CH	spiders	+	-	+	Saravanakumar et al., 2008
<i>Pseudomonas fluorescens</i> PY15	PGPR	ADD	<i>Oryza sativa</i>	<i>Cnaphalocrocis medinalis</i>	CH	spiders	+	-	+	Saravanakumar et al., 2008
<i>Pseudomonas fluorescens</i> Pf1	PGPR	ADD	<i>Oryza sativa</i>	<i>Cnaphalocrocis medinalis</i>	CH	damsel flies	+	NA	-	Saravanakumar et al., 2008
<i>Pseudomonas fluorescens</i> TDK1	PGPR	ADD	<i>Oryza sativa</i>	<i>Cnaphalocrocis medinalis</i>	CH	damsel flies	+	NA	-	Saravanakumar et al., 2008
<i>Pseudomonas fluorescens</i> PY15	PGPR	ADD	<i>Oryza sativa</i>	<i>Cnaphalocrocis medinalis</i>	CH	damsel flies	+	NA	-	Saravanakumar et al., 2008
<i>Pseudomonas fluorescens</i> Pf1	PGPR	ADD	<i>Oryza sativa</i>	<i>Holochlora albida</i>	CH	NA	+	NA	-	Saravanakumar et al., 2008
<i>Pseudomonas fluorescens</i> TDK1	PGPR	ADD	<i>Oryza sativa</i>	<i>Holochlora albida</i>	CH	NA	+	NA	-	Saravanakumar et al., 2008

<i>Pseudomonas fluorescens</i> PY15	PGPR	ADD	<i>Oryza sativa</i>	<i>Holochlora albida</i>	CH	NA	+	NA	-	Saravanakumar et al., 2008
<i>Bacillus cereus</i>	PGPR	ADD	<i>Brassica oleracea</i>	<i>Brevicoryne brassicae</i>	SH	<i>Diaraetiella rapae</i> , <i>Coccinella septempunctata</i> , <i>syrphid flies</i>	0	-	-	Gadhav et al., 2016
<i>Bacillus subtilis</i>	PGPR	ADD	<i>Brassica oleracea</i>	<i>Brevicoryne brassicae</i>	SH	<i>Diaraetiella rapae</i> , <i>Coccinella septempunctata</i> , <i>syrphid flies</i>	0	-	-	Gadhav et al., 2016
<i>Bacillus amyloliquefasciens</i>	PGPR	ADD	<i>Brassica oleracea</i>	<i>Brevicoryne brassicae</i>	SH	<i>Diaraetiella rapae</i> , <i>Coccinella septempunctata</i> , <i>syrphid flies</i>	0	-	-	Gadhav et al., 2016

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**Mixtures**

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<i>Pseudomonas fluorescens</i> Pf1, <i>Pseudomonas fluorescens</i> TDK1, <i>Pseudomonas fluorescens</i> PY15	PGPR	ADD	<i>Oryza sativa</i>	<i>Cnaphalocrocis medinalis</i>	CH	spiders	+	-	+	Saravanakumar et al., 2008
<i>Pseudomonas fluorescens</i> Pf1, <i>Pseudomonas fluorescens</i> TDK1, <i>Pseudomonas fluorescens</i> PY15	PGPR	ADD	<i>Oryza sativa</i>	<i>Holochlora albida</i>	CH	NA	+	NA	+	Saravanakumar et al., 2008
<i>Pseudomonas fluorescens</i> Pf1, <i>Pseudomonas fluorescens</i> TDK1, <i>Pseudomonas fluorescens</i> PY15	PGPR	ADD	<i>Oryza sativa</i>	NA	NA	damsselflies	+	NA	+	Saravanakumar et al., 2008

<i>Bacillus cereus</i> , <i>Bacillus subtilis</i> , <i>Bacillus</i> <i>amyloliquefasciens</i>	PGPR	ADD	<i>Brassica</i> <i>oleracea</i>	<i>Brevicoryne</i> <i>brassicae</i>	SH	<i>Diarraetiella</i> <i>rapae</i> , <i>Cocinella</i> <i>septempunctata</i> , <i>syrphid flies</i>	0	-	0	Gadhav et al., 2016
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**Supplementary Table 2:** An overview of the literature studies that were used for this literature review. For studies that investigated multiple interactions, these different interactions were detailed in separate rows. Detailed are the **soil fungus** (species and strain), **soil organism type** (AMF=Arbuscular mycorrhizal fungi; EMF=Ectomycorrhizal fungi; EP=Entomopathogenic fungi), **method** (ADD= Field addition; REM= Field species removal; POT= Potted plants in the field), **Plant** (species), **Insect** (species), **Guild** (SH= Sucking herbivore; CH=Chewing herbivore; MT= Mutualist; PO=Pollinator; LM=Leafminer; CF=Cell-content feeder; GM=Gallmaker; SP=Seed predator; PI=Predatory insect), **Enemy** (species) and the **effects on plants, insects and enemies** (indicated by 0 (no effect on respective study organism), +(significant positive effect on respective study organism) or -(significant negative effect on respective study organism), or NA where the interactions were not assessed) and **Reference** (reference to original study).

Soil organism	Type	Method	Plant	Insect	Gld	Enemy	Plant effect	Insect effect	Enemy effect	Reference
<i>Funneliformis caledonium</i> (syn. <i>Glomus caledonium</i> )	AMF	ADD	<i>Eucalyptus urophylla</i>	<i>Anomala cupripes</i>	CH	NA	-	0	NA	Gange et al., 2005
<i>Funneliformis caledonium</i>	AMF	ADD	<i>Eucalyptus urophylla</i>	Unidentified geometrid	CH	NA	-	0	NA	Gange et al., 2005
<i>Rhizoglossum clarum</i> (syn <i>Glomus clarum</i> )	AMF	ADD	<i>Cucumis sativus</i>	<i>Acalymma vittatum</i>	CH	NA	0	0	NA	Barber et al., 2013
<i>Rhizoglossum custos</i> (syn <i>Glomus custos</i> )	AMF	ADD	<i>Cucumis sativus</i>	<i>Acalymma vittatum</i>	CH	NA	0	0	NA	Barber et al., 2013
<i>Rhizophagus irregularis</i> (syn. <i>Glomus intraradices</i> ) 09	AMF	ADD	<i>Cucumis sativus</i>	<i>Acalymma vittatum</i>	CH	NA	0	0	NA	Barber et al., 2013
<i>Rhizophagus irregularis</i> DAOM 197198	AMF	ADD	<i>Cucumis sativus</i>	<i>Acalymma vittatum</i>	CH	NA	0	0	NA	Barber et al., 2013
<i>Glomus caledonium</i>	AMF	ADD	<i>Eucalyptus urophylla</i>	<i>Strepsicrates spp.</i>	LM	NA	-	0	NA	Gange et al., 2005
<i>Rhizoglossum clarum</i>	AMF	ADD	<i>Cucumis sativus</i>	Honeybees	PO	NA	0	-	NA	Barber et al., 2013

<i>Rhizoglyphus custos</i>	AMF	ADD	<i>Cucumis sativus</i>	Honeybees	PO	NA	0	-	NA	Barber et al., 2013
<i>R. irregularis</i> 09	AMF	ADD	<i>Cucumis sativus</i>	Honeybees	PO	NA	0	-	NA	Barber et al., 2013
<i>Rhizophagus irregularis</i> DAOM 197198	AMF	ADD	<i>Cucumis sativus</i>	Honeybees	PO	NA	0	0	NA	Barber et al., 2013
<i>Rhizoglyphus clarum</i>	AMF	ADD	<i>Cucumis sativus</i>	Bumblebees	PO	NA	0	0	NA	Barber et al., 2013
<i>Rhizoglyphus custos</i>	AMF	ADD	<i>Cucumis sativus</i>	Bumblebees	PO	NA	0	0	NA	Barber et al., 2013
<i>Rhizophagus irregularis</i> 09	AMF	ADD	<i>Cucumis sativus</i>	Bumblebees	PO	NA	0	0	NA	Barber et al., 2013
<i>Rhizophagus irregularis</i> DAOM 197198	AMF	ADD	<i>Cucumis sativus</i>	Bumblebees	PO	NA	0	0	NA	Barber et al., 2013
<i>Rhizoglyphus clarum</i>	AMF	ADD	<i>Cucumis sativus</i>	Lepidoptera	PO	NA	0	0	NA	Barber et al., 2013
<i>Rhizoglyphus custos</i>	AMF	ADD	<i>Cucumis sativus</i>	Lepidoptera	PO	NA	0	0	NA	Barber et al., 2013
<i>Rhizophagus irregularis</i> 09	AMF	ADD	<i>Cucumis sativus</i>	Lepidoptera	PO	NA	0	0	NA	Barber et al., 2013
<i>Rhizophagus irregularis</i> DAOM 197198	AMF	ADD	<i>Cucumis sativus</i>	Lepidoptera	PO	NA	0	0	NA	Barber et al., 2013
<i>Gigaspora margarita</i> 'Central Glass'	AMF	ADD	<i>Glycine max</i>	<i>Thrips</i> spp.	CF	NA	+	-	NA	Ueda et al., 2013
<i>Funneliformis mosseae</i>	AMF	ADD	<i>Lolium perenne</i>	<i>Phlogophora meticulosa</i>	CH	NA	-	-	NA	Vicari et al., 2002
<i>Funneliformis caledonium</i>	AMF	ADD	<i>Eucalyptus urophylla</i>	<i>Anomala cupripes</i>	CH	NA	-	0	NA	Gange et al., 2005
<i>Funneliformis caledonium</i>	AMF	ADD	<i>Eucalyptus urophylla</i>	Unidentified herbivory	CH	NA	-	+	NA	Gange et al., 2005
<i>Rhizophagus irregularis</i>	AMF	ADD	<i>Chamerion angustifolium</i>	Unidentified herbivory	CH	NA	0	0	NA	Wolfe, Husband & Klironomos, 2005

<i>Gigaspora gigantea</i>	AMF	ADD	<i>Chamerion angustifolium</i>	Unidentified herbivory	CH	NA	+	0	NA	Wolfe, Husband & Klironomos, 2005
<i>Gigaspora margarita</i> 'Central Glass'	AMF	ADD	<i>Glycine max</i>	<i>Pleuroptya ruralis</i>	CH	NA	+	0	NA	Ueda et al., 2013
<i>Gigaspora margarita</i> 'Central Glass'	AMF	ADD	<i>Glycine max</i>	<i>Ascotis selenaria</i>	CH	NA	+	0	NA	Ueda et al., 2013
<i>Funneliformis caledonium</i>	AMF	ADD	<i>Eucalyptus urophylla</i>	<i>Strepsicrates spp.</i>	LM	NA	-	0	NA	Gange et al., 2005
<i>Gigaspora margarita</i> 'Central Glass'	AMF	ADD	<i>Glycine max</i>	NA	NA	<i>Orius sauteri</i>	+	NA	-	Ueda et al., 2013
<i>Rhizophagus irregularis</i>	AMF	ADD	<i>Chamerion angustifolium</i>	Pollinating Hymenoptera	PO	NA	0	+	NA	Wolfe, Husband & Klironomos, 2005
<i>Gigaspora gigantea</i>	AMF	ADD	<i>Chamerion angustifolium</i>	Pollinating Hymenoptera	PO	NA	+	+	NA	Wolfe, Husband & Klironomos, 2005
<i>Clareideoglomus claroideum</i> (syn. <i>Glomus claroideum</i> )	AMF	ADD	<i>Geranium sylvaticum</i>	Pollinating Hymenoptera	PO	NA	+	0	NA	Varga & Kytöviita, 2010
<i>Simiglomus hoi</i> (syn. <i>Glomus hoi</i> )	AMF	ADD	<i>G. sylvaticum</i>	Pollinating Hymenoptera	PO	NA	+	-	NA	Varga & Kytöviita, 2010
<i>Clareidoglomus claroideum</i>	AMF	ADD	<i>G. sylvaticum</i>	Pollinating Diptera	PO	NA	+	0	NA	Varga & Kytöviita, 2010
<i>Siniglomus hoi</i>	AMF	ADD	<i>G. sylvaticum</i>	Pollinating Diptera	PO	NA	+	0	NA	Varga & Kytöviita, 2010

<i>Gigaspora margarita</i> 'Central Glass'	AMF	ADD	<i>Glycine max</i>	<i>Aulacorthum solani</i>	SH	NA	+	+	NA	Ueda et al., 2013
<i>Glomus</i> ssp. (CCS Aosta)	AMF	ADD (tunnel)	<i>Solanum lycopersicum</i>	<i>Frankliniella occidentalis</i>	CF	NA	0	0	NA	Colella et al., 2014
<i>Laccaria laccata</i>	EMF	ADD	<i>Eucalyptus urophylla</i>	<i>Anomala cupripes</i>	CH	NA	0	0	NA	Gange et al., 2005
<i>Laccaria laccata</i>	EMF	ADD	<i>Eucalyptus urophylla</i>	unidentified geometrid	CH	NA	0	-	NA	Gange et al., 2005
<i>Laccaria laccata</i>	EMF	ADD	<i>Eucalyptus urophylla</i>	<i>Strepsicrates</i> spp.	LM	NA	0	-	NA	Gange et al., 2005
<i>Laccaria laccata</i>	EMF	ADD	<i>Eucalyptus urophylla</i>	<i>Anomala cupripes</i>	CH	NA	0	-	NA	Gange et al., 2005
<i>Laccaria laccata</i>	EMF	ADD	<i>Eucalyptus urophylla</i>	Unidentified herbivory	CH	NA	0	+	NA	Gange et al., 2005
<i>Laccaria laccata</i>	EMF	ADD	<i>Eucalyptus urophylla</i>	<i>Strepsicrates</i> spp.	LM	NA	0	-	NA	Gange et al., 2005
<i>Pisolithus tinctorius</i>	EMF	ADD	<i>Populus angustifolia x Populus fremontii</i>	<i>Chaitophorus populicola</i>	SH	NA	NA	+	NA	Gehring & Whitham, 2002
<i>Beauveria bassiana</i> B2	EP	ADD	<i>Solanum lycopersicum</i>	<i>Helicoverpa armigera</i>	CH	NA	+	-	NA	Prabhukarthikeyan, Saravanakumar & Raguchander, 2014

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### Mixtures

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Fungi Perfecti; <i>Funnelformis mosseae</i> , <i>Rhizophagus irregularis</i> , <i>Clareidoglomus</i>	AMF	ADD	<i>Baccharis halimifolia</i>	<i>Trirhabda baccharidis</i>	CH	NA	NA	0	NA	Younginger, Barnouti & Moon, 2009
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*clarum*,  
*Funneliformis*  
*monosporus*,  
*Septoglomus*.  
*deserticola*,  
*Paraglomus*  
*brasilianum*,  
*Gigaspora*  
*margarita*,  
*Pisolithus tinctorus*  
and four species of  
*Rhizopogon*

<i>Rhizoglo-</i> <i>mus</i> <i>clarum</i> , <i>Rhizoglo-</i> <i>mus custos</i> , <i>Rhizophagus</i> <i>irregularis</i>	AMF	ADD	<i>Cucumis sativus</i>	<i>Acalymma vittatum</i>	CH	NA	0	+	NA	Barber et al., 2013
Fungi Perfecti	AMF	ADD	<i>Baccharis halimifolia</i>	<i>Neolasioptera lathami</i>	GM	NA	NA	+	NA	Younginger, Barnouti & Moon, 2009
Fungi Perfecti	AMF	ADD	<i>Baccharis halimifolia</i>	<i>Amauromyza maculosa</i>	LM	NA	NA	+	NA	Younginger, Barnouti & Moon, 2009
Fungi Perfecti	AMF	ADD	<i>Baccharis halimifolia</i>	<i>Liriomyza trifolii</i>	LM	NA	NA	+	NA	Younginger, Barnouti & Moon, 2009
Fungi Perfecti	AMF	ADD	<i>Baccharis halimifolia</i>	<i>Amauromyza maculosa</i>	LM	Unidentified parasitoid	+	+	-	Moon, Barnouti & Younginger, 2013
Fungi Perfecti	AMF	ADD	<i>Baccharis halimifolia</i>	<i>Liriomyza trifolii</i>	LM	Unidentified parasitoid	+	+	-	Moon, Barnouti & Younginger, 2013
Fungi Perfecti	AMF	ADD	<i>Baccharis halimifolia</i>	<i>Neolasioptera lathami</i>	GM	Unidentified parasitoid	+	+	-	Moon, Barnouti & Younginger, 2013
INOQ; <i>Clareidoglo-</i> <i>mus etunicatum</i> , <i>Clareidoglo-</i> <i>mus claroideum</i> ,	AMF	ADD	<i>Trifolium pratense</i>	Overall herbivore diversity	NA	NA	+	0 (consumption), - (insect diversity)	NA	Guo et al., 2015

*Rhizophagus  
irregularis*

INOQ	AMF	ADD	<i>Lolium perenne</i>	Overall herbivore diversity	NA	NA	0	0	NA	Guo et al., 2015
<i>Rhizoglo- mus clarum, Rhizoglo- mus custos, Rhizophagus irregularis</i>	AMF	ADD	<i>Cucumis sativus</i>	Honeybees	PO	NA	0	0	NA	Barber et al., 2013
<i>Rhizoglo- mus clarum, Rhizoglo- mus custos, Rhizophagus irregularis</i>	AMF	ADD	<i>Cucumis sativus</i>	Bumblebees	PO	NA	0	0	NA	Barber et al., 2013
<i>Rhizoglo- mus clarum, Rhizoglo- mus custos, Rhizophagus irregularis</i>	AMF	ADD	<i>Cucumis sativus</i>	Lepidoptera	PO	NA	0	+	NA	Barber et al., 2013
<i>Glomus</i> ssp. (CCS Aosta)	AMF	ADD (tunnel)	<i>Solanum lycopersicum</i>	<i>Trialeurodes vaporariorum</i>	SH	NA	0	0	NA	Colella et al., 2014
<i>Glomus</i> ssp. (CCS Aosta)	AMF	ADD (tunnel)	<i>Solanum lycopersicum</i>	<i>Macrosiphom euphorbiae</i>	SH	NA	0	0	NA	Colella et al., 2014
<i>Glomus</i> ssp. (CCS Aosta)	AMF	ADD (tunnel)	<i>Solanum lycopersicum</i>	Unidentified leafhopper	SH	NA	0	0	NA	Colella et al., 2014
Natural mycorrhizal community	AMF	REM	<i>Plantago lanceolata</i>	<i>Arctia caja</i>	CH	NA	+	-	NA	Gange & West 1994
Natural mycorrhizal community	AMF	REM	<i>Leucanthemum vulgare</i>	<i>Chromatomyia syngenesiae</i>	LM	<i>Diglyphus isaea</i>	+	0	-	Gange, Brown & Aplin, 2003
Natural mycorrhizal community	AMF	REM	<i>Leucanthemum vulgare</i>	<i>Chromatomyia syngenesiae</i>	LM	NA	+	+	NA	Gange, Brown & Aplin, 2003

Natural mycorrhizal community	AMF	REM	Tallgrass prairie system of C3 and C4 grasses and forbs.	Herbivore consumption	NA	NA	0	+	NA	Kula & Hartnett, 2015
Natural mycorrhizal community	AMF	REM	<i>Achillea millefolium</i>	Total pollinator visits	PO	NA	0	0	NA	Cahill et al., 2008
Natural mycorrhizal community	AMF	REM	<i>Aster laevis</i>	Total pollinator visits	PO	NA	0	+	NA	Cahill et al., 2008
Natural mycorrhizal community	AMF	REM	<i>Campanula rotundifolia</i>	Total pollinator visits	PO	NA	0	0	NA	Cahill et al., 2008
Natural mycorrhizal community	AMF	REM	<i>Cerastium arvense</i>	Total pollinator visits	PO	NA	-	-	NA	Cahill et al., 2008
Natural mycorrhizal community	AMF	REM	<i>Erigeron philadelphicus</i>	Total pollinator visits	PO	NA	0	0	NA	Cahill et al., 2008
Natural mycorrhizal community	AMF	REM	<i>Solidago missouriensis</i>	Total pollinator visits	PO	NA	0	+	NA	Cahill et al., 2008
Natural mycorrhizal community	AMF	REM	<i>Plantago lanceolata</i>	<i>Myzus persicae</i>	SH	NA	+	+	NA	Gange & West 1994
<i>Funneliformis mosseae</i> & <i>Rhizophagus irregularis</i>	AMF	POT	<i>Tagetes patula</i>	Pollinating Hymenoptera	PO	NA	0	+	NA	Gange & Smith, 2005
<i>Funneliformis mosseae</i> & <i>Rhizophagus irregularis</i>	AMF	POT	<i>Tagetes erecta</i>	Pollinating Hymenoptera	PO	NA	+	+	NA	Gange & Smith, 2005
<i>Funneliformis mosseae</i> & <i>Rhizophagus irregularis</i>	AMF	POT	<i>Centaurea cyanus</i>	Pollinating Hymenoptera	PO	NA	+	+	NA	Gange & Smith, 2005
<i>Funneliformis mosseae</i> &	AMF	POT	<i>Tagetes patula</i>	Pollinating Diptera	PO	NA	0	+	NA	Gange & Smith, 2005

*Rhizophagus  
irregularis*

<i>Funneliformis mosseae &amp; Rhizophagus irregularis</i>	AMF	POT	<i>Tagetes erecta</i>	Pollinating Diptera	PO	NA	0	+	NA	Gange & Smith, 2005
<i>Funneliformis mosseae &amp; Rhizophagus irregularis</i>	AMF	POT	<i>Centaurea cyanus</i>	Pollinating Diptera	PO	NA	+	+	NA	Gange & Smith, 2005
<i>Glomus</i> spp. & <i>Glomus etunicatum</i> , <i>Clareidoglomus clarum</i> and <i>Entrophospora columbiana</i>	AMF	POT	<i>Populus angustifolia x Populus fremontii</i>	<i>Chaitophorus populicola</i>	SH	NA	NA	-	NA	Gehring & Whitham, 2002

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**Supplementary Table 3:** An overview of the literature studies that were used for this literature review. For studies that investigated multiple interactions, these different interactions were detailed in separate rows. Detailed are the **soil nematode** (species), Type (PPN= plant-parasitic nematode), **method** (ADD= Field addition; REM= Field species removal; POT= Potted plants in the field), **Plant** (species), **Insect** (species), **Guild** (SH= Sucking herbivore; CH=Chewing herbivore; MT= Mutualist; PO=Pollinator; LM=Leafminer; CF=Cell-content feeder; GM=Gallmaker; SP=Seed predator; PI=Predatory insect), Enemy (species) and the **effects on plants, insects and enemies** (indicated by 0 (no effect on respective study organism), +(significant positive effect on respective study organism) or -(significant negative effect on respective study organism), or NA where the interactions were not assessed) and **Reference** (reference to original study).

Soil organism	Type	Method	Plant	Insect	Gld	Enemy	Plant effect	Insect effect	Enemy effect	Reference
Total PPN community	PPN	CORR	<i>Nicotiana tabacum</i>	<i>Manduca sexta</i>	CH	NA	NA	+	NA	Kaplan, Sardanelli & Denno, 2009
<i>Tylenchorhynchus</i> sp.	PPN	CORR	<i>Nicotiana tabacum</i>	<i>Manduca sexta</i>	CH	NA	NA	0	NA	Kaplan, Sardanelli & Denno, 2009
<i>Pratylenchus</i> sp.	PPN	CORR	<i>Nicotiana tabacum</i>	<i>Manduca sexta</i>	CH	NA	NA	0	NA	Kaplan, Sardanelli & Denno, 2009
<i>Xiphinema</i> sp.	PPN	CORR	<i>Nicotiana tabacum</i>	<i>Manduca sexta</i>	CH	NA	NA	0	NA	Kaplan, Sardanelli & Denno, 2009
<i>Heterodera</i> sp.	PPN	CORR	<i>Ammophila arenaria</i>	<i>Schizaphis rufula</i>	SH	NA	-	0	NA	Vandegheuchte, De la Peña & Bonte, 2010
<i>Heterodera glycines</i>	PPN	CORR	<i>Glycine max</i>	<i>Aphis glycines</i>	SH	NA	-	-	NA	Hong, Macguidwin & Gratton, 2011
<i>Heterodera glycines</i>	PPN	CORR	<i>Glycine max</i>	<i>Aphis glycines</i>	SH	NA	0	0	NA	Heeren et al., 2012
<i>Tylenchorhynchus</i> sp.	PPN	CORR	<i>Nicotiana tabacum</i>	<i>Myzus persicae</i>	SH	NA	NA	-	NA	Kaplan, Sardanelli & Denno, 2009

Total PPN community	PPN	CORR	<i>Nicotiana tabacum</i>	<i>Myzus persicae</i>	SH	NA	NA	0	NA	Kaplan, Sardanelli & Denno, 2009
<i>Heterodera glycines</i>	PPN	CORR	<i>Glycine max</i>	<i>Helicoverpa zea</i>	CH	NA	-	+	NA	Alston et al., 1991
<i>Meiloidogyne incognita</i>	PPN	ADD	<i>Nicotiana tabacum</i>	<i>Manduca sexta</i>	CH	NA	NA	0		Kaplan, Sardanelli & Denno, 2009
<i>Meiloidogyne incognita</i>	PPN	ADD	<i>Nicotiana tabacum</i>	<i>Spodoptera exigua</i>	CH	NA	NA	0		Kaplan, Sardanelli & Denno, 2009
<i>Meiloidogyne incognita</i>	PPN	ADD	<i>Nicotiana tabacum</i>	<i>Epytrix spp.</i>	CH	NA	NA	+		Kaplan, Sardanelli & Denno, 2009
<i>Heterodera schachtii</i>	PPN	ADD	<i>Lathyrus vernus</i>	Unidentified herbivory	CH	NA	-	+	NA	Vockenhuber et al., 2013
<i>Meiloidogyne incognita</i>	PPN	ADD	<i>Nicotiana tabacum</i>	<i>Myzus persicae</i>	SH	NA	NA	-		Kaplan, Sardanelli & Denno, 2009
<i>Meiloidogyne incognita</i>	PPN	ADD (tunnel)	<i>Glycine max</i>	<i>Pseudoplusia includens</i>	CH	NA	0	0	NA	Carter-Wientjes et al., 2004

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**Supplementary Table 4:** An overview of the literature studies that were used for this literature review. For studies that investigated multiple interactions, these different interactions were detailed in separate rows. Detailed are the **soil arthropod** (species), **soil organism taxon** (C= Coleopteran soil insect; D= Dipteran soil insect), **method** (ADD= Field addition; REM= Field species removal; POT= Potted plants in the field), **Plant** (species), **Insect** (species), **Guild** (SH= Sucking herbivore; CH=Chewing herbivore; MT= Mutualist; PO=Pollinator; LM=Leafminer; CF=Cell-content feeder; GM=Gallmaker; SP=Seed predator; PI=Predatory insect), **Enemy** (species) and the **effects on plants, insects and enemies** (indicated by 0 (no effect on respective study organism), +(significant positive effect on respective study organism) or -(significant negative effect on respective study organism), or NA where the interactions were not assessed) and **Reference** (reference to original study).

Soil organism	Type	Method	Plant	Insect	Gld	Enemy	Plant effect	Insect effect	Enemy effect	Reference
<i>Hylobius transversovittatus</i>	C	ADD	<i>Lythrum salicaria</i>	<i>Galerucella californiensis</i>	CH	NA	0	0	NA	Hunt-Joshi & Blossey, 2004
<i>Diabrotica virgifera virgifera</i>	C	ADD	<i>Zea mays</i>	<i>Ostrinia nubilalis</i>	CH	<i>Macrocentrus grandii</i>	-	-	-	White & Andow, 2006
<i>Agriotes</i> spp.	C	ADD	<i>Clinopodium vulgare</i>	<i>Stephensia brunnichella</i>	LM	Unidentified Microgastrinae	NA	-	-	Staley et al., 2007
<i>Hylobius transversovittatus</i>	C	POT	<i>Lythrum salicaria</i>	<i>Galerucella californiensis</i>	CH	NA	0	0	NA	Hunt-Joshi & Blossey, 2004
<i>Cebrio gypsicola</i>	C	POT	<i>Moricandia moricandioides</i>	Total Chewing herbivores ( <i>Pontia daplidice</i> ; <i>Euchloe crameri</i> ; <i>Pieris rapae</i> ; <i>Pieris brassicae</i> )	CH	NA	-	-	NA	Megías & Müller, 2010
<i>Acalymma vittatum</i> (larval)	C	POT	<i>Cucumis sativus</i>	Total herbivory	CH	NA	-	0	NA	Barber et al., 2015
<i>Agriotes</i> spp.	C	POT	<i>Plantago lanceolata</i> (Low IG)	Herbivore damage	CH	NA	+	+	NA	Wurst et al., 2008

<i>Agriotes</i> spp.	C	POT	<i>Plantago lanceolata</i> (High IG)	Herbivore damage	CH	NA	+	-	NA	Wurst et al., 2008
<i>Morica hybrida</i>	C	POT	<i>Moricandia moricandioides</i>	Total Chewing herbivores ( <i>Pontia daplidice</i> ; <i>Euchloe crameri</i> ; <i>Pieris rapae</i> ; <i>Pieris brassicae</i> )	CH	<i>Cotesia kazak</i>	0	-	+	Megías & Müller, 2010
<i>Agriotes</i> spp.	C	POT	<i>Sinapis arvensis</i>	Total pollinator visits	PO	NA	+	+	NA	Poveda et al., 2003
<i>Agriotes</i> spp.	C	POT	<i>Sinapis arvensis</i>	Total pollinator visits	PO	NA	0	+	NA	Poveda et al., 2005
<i>Acalymma vittatum</i> (larval)	C	POT	<i>Cucumis sativus</i>	Total pollinator visits	PO	NA	-	-	NA	Barber et al., 2015
<i>Cebrio gypsicola</i>	C	POT	<i>Moricandia moricandioides</i>	Total seed predators	SP	NA	-	-	NA	Megías & Müller, 2010
<i>Morica hybrida</i>	C	POT	<i>Moricandia moricandioides</i>	Total seed predators	SP	NA	0	-	NA	Megías & Müller, 2010
<i>Agriotes</i> spp.	C	POT	<i>Sinapis arvensis</i>	<i>Brevicoryne brassicae</i>	SH	NA	0	+	NA	Poveda et al., 2005
<i>Cebrio gypsicola</i>	C	POT	<i>Moricandia moricandioides</i>	Total planthoppers	SH	NA	-	0	NA	Megías & Müller, 2010
<i>Cebrio gypsicola</i>	C	POT	<i>Moricandia moricandioides</i>	Total aphids	SH	NA	-	0	NA	Megías & Müller, 2010
<i>Sitona discoideus</i>	C	POT	<i>Medicago sativa</i>	<i>Acyrtosiphon pisum</i>	SH	NA	+	-	NA	Ryalls et al., 2016
<i>Morica hybrida</i>	C	POT	<i>Moricandia moricandioides</i>	Total planthoppers	SH	NA	0	-	NA	Megías & Müller, 2010
<i>Morica hybrida</i>	C	POT	<i>Moricandia moricandioides</i>	Total aphids	SH	NA	0	0	NA	Megías & Müller, 2010

<i>Agriotes</i> spp.	C	POT	Community ( <i>Achillea millefolium</i> , <i>Leucanthemum vulgare</i> , <i>Plantago lanceolata</i> , <i>Lotus corniculatus</i> , <i>Trifolium pratense</i> , <i>Agrostis capillaris</i> , <i>Dactylis glomerata</i> , <i>Lolium perenne</i> , <i>Festuca rubra</i> )	<i>Chorthippus albomarginatus</i>	CH	NA	0	0	NA	Borgström et al., 2017
<i>Delia radicum</i>	D	POT	<i>Brassica nigra</i>	<i>Phyllotreta</i> ssp.	CH	NA	NA	-	NA	Soler et al., 2009
<i>Delia radicum</i>	D	POT	<i>Brassica nigra</i>	<i>Pieris rapae</i>	CH	NA	NA	0	NA	Soler et al., 2009
<i>Delia radicum</i>	D	POT	<i>Brassica nigra</i>	NA	PI	<i>Chrysoperla carnea</i>	NA	NA	0	Soler et al., 2009
<i>Delia radicum</i>	D	POT	<i>Brassica nigra</i>	<i>Brevicoryne brassicae</i>	SH	NA	NA	-	NA	Soler et al., 2009
<i>Delia radicum</i>	D	POT	<i>Brassica nigra</i>	<i>Myzus persicae</i>	SH	NA	NA	0	NA	Soler et al., 2009
<i>Delia radicum</i>	D	ADD (tunnel)	<i>Brassica oleracea</i> subsp. <i>Italica</i> (var. <i>Monaco</i> )	<i>Pieris brassicae</i>	CH	NA	0	0	NA	Pierre et al., 2013
<i>Delia radicum</i>	D	ADD (tunnel)	<i>Brassica oleracea</i> subsp. <i>Italica</i> (var. <i>Monaco</i> )	<i>Pieris rapae</i>	CH	NA	0	0	NA	Pierre et al., 2013
<i>Delia radicum</i>	D	ADD (tunnel)	<i>Brassica oleracea</i> subsp. <i>Italica</i> (var. <i>Monaco</i> )	<i>Plutella xylostella</i>	CH	NA	0	0	NA	Pierre et al., 2013
<i>Delia radicum</i>	D	ADD (tunnel)	<i>Brassica oleracea</i> subsp. <i>Italica</i> (var. <i>Monaco</i> )	<i>Mamestra brassicae</i>	CH	NA	0	0	NA	Pierre et al., 2013

<i>Delia radicum</i>	D	ADD (tunnel)	<i>Brassica oleracea</i> <i>subsp. Italica</i> (var. <i>Monaco</i> )	<i>Brevicoryne</i> <i>brassicae</i>	SH	NA	0	+	NA	Pierre et al., 2013
<i>Delia radicum</i>	D	ADD (tunnel)	<i>Brassica oleracea</i> <i>subsp. Italica</i> (var. <i>Monaco</i> )	<i>Myzus persicae</i>	SH	NA	0	0	NA	Pierre et al., 2013

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### Mixtures

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<i>Morica hybrida &amp; Cebrio gypsicola</i>	C	POT	<i>Moricandia moricandioides</i>	Total Chewing herbivores ( <i>Pontia daplidice</i> ; <i>Euchloe crameri</i> ; <i>Pieris rapae</i> ; <i>Pieris brassicae</i> )	CH	NA	0	-	NA	Megías & Müller, 2010
<i>Morica hybrida &amp; Cebrio gypsicola</i>	C	POT	<i>Moricandia moricandioides</i>	Total planthoppers	SH	NA	0	0	NA	Megías & Müller, 2010
<i>Morica hybrida &amp; Cebrio gypsicola</i>	C	POT	<i>Moricandia moricandioides</i>	Total aphids	SH	NA	0	-	NA	Megías & Müller, 2010
Total soil arthropods		REM	Tallgrass prairie	Unspecified	CH	NA	NA	+	NA	Evans, 1991
Total soil arthropods		REM	Tallgrass prairie	Unidentified Orthoptera	CH	NA	NA	0	NA	Evans, 1991
Total soil arthropods		REM	Tallgrass prairie	Unidentified Coleoptera	CH	NA	NA	0	NA	Evans, 1991
Total soil arthropods		REM	Tallgrass prairie	Ants	MT	NA	NA	-	NA	Evans, 1991
Total soil arthropods		REM	Grassland community	Total insect number	NA	NA	NA	+	NA	Masters, Brown & Gange, 1993
Total soil arthropods		REM	Tallgrass prairie	NA	PW	Unspecified Parasitica	NA	NA	0	Evans, 1991
Total soil arthropods		REM	Tallgrass prairie	NA	PI	Unidentified entomophagous	NA	NA	0	Evans, 1991

Total soil arthropods	REM	Tallgrass prairie	NA	PI	Unspecified Arachnida	NA	NA	0	Evans, 1991
Total soil arthropods	REM	Tallgrass prairie	NA	PI	Unidentified predatory insects	NA	NA	0	Evans, 1991
Total soil arthropods	REM	<i>Cirsium palustre</i>	<i>Terrelia ruficauda</i>	SP	<i>Pteromalus elevatus</i> and <i>Torymus chloromerus</i>	-	+	+	Masters, Jones & Rogers, 2001
Total soil arthropods	REM	Tallgrass prairie	Unspecified	SH	NA	NA	+	NA	Evans, 1991
Total soil arthropods	REM	Tallgrass prairie	Unidentified Auchenorrhyncha	SH	NA	NA	+	NA	Evans, 1991
Total soil arthropods	REM	Tallgrass prairie	Unidentified Sternorrhyncha	SH	NA	NA	0	NA	Evans, 1991
Total soil arthropods	REM	Grassland community	Aphids	SH	NA	NA	+	NA	Masters, 1995

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**Combinations**

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<i>Bacillus subtilis</i> EPC8 + <i>Beauveria bassiana</i> B2	Mix	ADD	<i>Solanum lycopersicum</i>	<i>Helicoverpa armigera</i>	CH	NA	+	-	NA	Prabhukarthikeyan, Saravanakumar & Raguchander, 2014
Effective Microorganisms (EM); <i>Lactobacillus plantarum</i> , <i>Lactobacillus casei</i> , <i>Streptococcus lactis</i> , <i>Sacchermoyces</i> spp., <i>Rhodopseudomonas plastris</i> , <i>Rhodobacter sphaerodes</i> and <i>Streptomyces</i> spp.	Mix	ADD	<i>Zea mays</i>	Overall herbivore diversity	NA	Overall predator diversity	0	0	-	Megali et al., 2015

<i>Bradyrhizobium japonicum</i> + <i>Delfia acidovorans</i>	Mix	ADD	<i>Glycine max</i>	<i>Aphis glycines</i>	SH	NA	-	-	NA	Brunner et al., 2015
<i>Bradyrhizobium japonicum</i> + <i>Azospirillum brasilense</i>	Mix	ADD	<i>Glycine max</i>	<i>Aphis glycines</i>	SH	NA	0	0	NA	Brunner et al., 2015
Micosat F	Mix	ADD	<i>Solanum lycopersicum</i>	<i>Trialeurodes vaporariorum</i>	SH	NA	0	0	NA	Colella et al., 2014
Micosat F	Mix	FINOC	<i>Solanum lycopersicum</i>	<i>Macrosiphon euphorbiae</i>	SH	NA	0	0	NA	Colella et al., 2014
Micosat F	Mix	FINOC	<i>Solanum lycopersicum</i>	<i>Frankliniella occidentalis</i>	SH	NA	0	0	NA	Colella et al., 2014
Micosat F	Mix	FINOC	<i>Solanum lycopersicum</i>	Unidentified leafhopper	SH	NA	0	0	NA	Colella et al., 2014
<i>Pseudomonas fluorescens</i> TDK1, <i>Pseudomonas fluorescens</i> PF1, <i>Beauveria bassiana</i> B2, <i>Beauveria bassiana</i> B4	PGPR	FINOC	<i>Arachis hypogaea</i>	<i>Aproaerema modicella</i>	LM	NA	NA	-	NA	Senthilraja et al., 2010

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