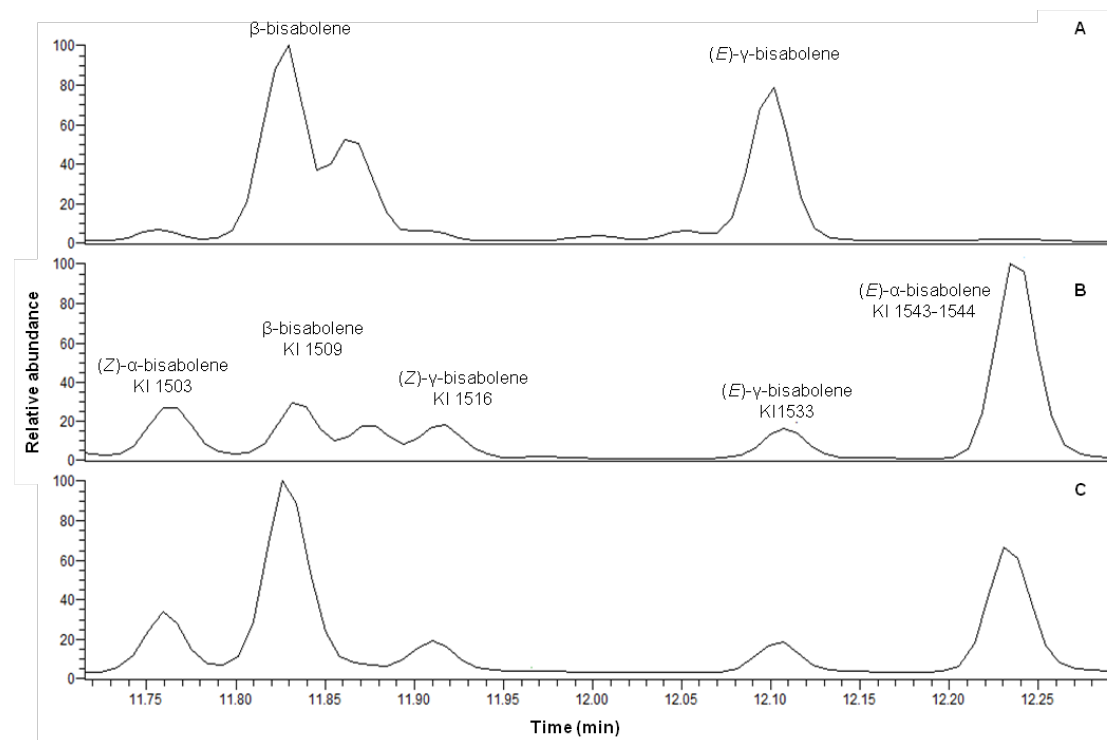


Supporting Information

S1 Table: Origin of indicator strains.

Species	Origin	Reference
Fungi		
<i>Flammulina velutipes</i> MG091201_01, FSU10496	Wood, Jena, Germany	IPF culture collection Frankfurt/M, Germany
<i>Ganoderma lucidum</i> MG100717_01, FSU:SF:013592	Wood, Königsfeld, Germany	IPF
<i>Pleurotus ostreatus</i> MG091105_01, FSU:9962	Wood, Jenaprießnitz, Germany	IPF
<i>Kuehneromyces mutabilis</i> MG091108_02, FSU:9992	Wood, Göttingen, Germany	IPF
Bacteria		
<i>Pseudomonas fluorescens</i> DSM-50090, JMRC:ST036370	United Kingdom	Leibniz Institute DSMZ – German Collection of microorganisms and cell cultures
<i>Erwinia amylovora</i> S59/5, DSM- 30165, JMRC:ST:035608	<i>Pyrus communis</i> , United Kingdom	DSMZ
<i>Serratia marcescens</i> SM1, JMRC:ST036371	Germany	DSMZ



S1 Fig. Identification of bisabolenes by comparison with Kovats retention indices (KI). Chromatograms of bisabolene fraction of (A) *S. commune thn* strain, (B) bisabolene mixture (Alfa Aesar GmbH & Co KG, Karlsruhe, Germany), (C) synthetic bisabolene reference standard.

S2 Table. Composition of bacterial community in wood colonized by *S. commune*.

Phylum	Class	Family	Genus	Reads		
Acidobacteria	Acidobacteriia	<i>Acidobacteriaceae</i>	<i>Acidobacterium</i>	167		
	Blastocatellia	<i>Blastocatellaceae</i>	<i>Blastocatella</i>	19		
	Holophagae	<i>Holophagaceae</i>	<i>Holophaga</i>	52		
Actinobacteria	Acidimicrobiia	<i>Acidimicrobiaceae</i>	<i>Acidimicrobium</i>	25		
			<i>Ilumatobacter</i>	24		
	Actinobacteria	<i>lamiaceae</i>	<i>lamia</i>	40		
			<i>Dermabacteraceae</i>	<i>Brachybacterium</i>	18	
			<i>Geodermatophilaceae</i>	<i>Blastococcus</i>	86	
			<i>Kineosporiaceae</i>	<i>Kineococcus</i>	17	
			<i>Microbacteriaceae</i>	<i>Pseudoclavibacter</i>	54	
				<i>Frigoribacterium*</i>	51	
				<i>Arthrobacter</i>	285	
				<i>Micromonospora</i>	242	
				<i>Rhodococcus</i>	19	
				<i>Nocardioides</i>	44	
				<i>Friedmanniella</i>	34	
				<i>Nocardioides</i>	23	
				<i>Marmoricola</i>	20	
				<i>Pseudonocardiaceae</i>	<i>Actinomycesospora</i>	48
					<i>Alloactinosynnema</i>	27
					<i>Amycolatopsis</i>	19
		<i>Streptomycetaceae</i>	<i>Streptomyces</i>	67		
		<i>Thermomonosporaceae</i>	<i>Actinomadura</i>	23		
	Thermoleophilia	<i>Conexibacteraceae</i>	<i>Conexibacter</i>	56		
			<i>Solirubrobacteraceae</i>	<i>Solirubrobacter</i>	27	
	Bacteroidetes	Bacteroidia	<i>Marinilabiliaceae</i>	<i>Anaerophaga</i>	20	
<i>Chitinophagia</i>				<i>Chitinophaga</i>	107	
Cytophagia		<i>Chloroflexaceae</i>	<i>Niastella</i>	70		
			<i>Sediminibacterium</i>	39		
			<i>Segetibacter</i>	26		
			<i>Chloroflexus</i>	18		
			<i>Ohtaekwangia</i>	41		
			<i>Flexibacter</i>	27		
			<i>Cytophaga</i>	25		
			<i>Hymenobacteraceae</i>	<i>Hymenobacter</i>	54	
			Saprospira	<i>Haliscomenobacteraceae</i>	<i>Haliscomenobacter</i>	27
			Sphingobacteriia	<i>Sphingobacteriaceae</i>	<i>Pedobacter</i>	233
Chloroflexi	Dehalococcoidia	<i>Dehalococcoidaceae</i>	<i>Dehalococcoides</i>	22		
	Thermomicrobia	<i>Sphaerobacteraceae</i>	<i>Sphaerobacter</i>	39		
Firmicutes	Bacilli	<i>Carnobacteriaceae</i>	<i>Carnobacterium</i>	70		
			<i>Eubacteriaceae</i>	<i>Acetobacterium</i>	41	
	Clostridia		<i>Eubacterium</i>	32		
Gemmatimonadetes	Gemmatimonadetes	<i>Gemmatimonadaceae</i>	<i>Gemmatimonas</i>	124		
Nitrospirae	Nitrospira	<i>Nitrospiraceae</i>	<i>Nitrospira</i>	32		
Planctomycetes	Phycisphaerae	<i>Phycisphaeraceae</i>	<i>Phycisphaera</i>	17		
Proteobacteria	Acidithiobacillia	<i>Acidithiobacillaceae</i>	<i>Acidithiobacillus</i>	50		
			<i>Alphaproteobacteria</i>	<i>Acetobacteraceae</i>	<i>Acidisphaera</i>	48
			<i>Stella</i>	23		
			<i>Saccharibacter</i>	22		
		<i>Beijerinckiaceae</i>	<i>Beijerinckia</i>	28		
			<i>Methyloferula</i>	22		
		<i>Bradyrhizobiaceae</i>	<i>Bradyrhizobium</i>	71		
		<i>Caulobacteraceae</i>	<i>Brevundimonas</i>	67		
			<i>Phenylobacterium</i>	27		
			<i>Caulobacter</i>	50		
		<i>Erythrobacteraceae</i>	<i>Erythrobacter</i>	18		
		<i>Hyphomicrobiaceae</i>	<i>Rhodoplanes</i>	100		
			<i>Hyphomicrobium</i>	59		

		<i>Devosia</i>	93
		<i>Ancalomicrobium</i>	24
		<i>Pedomicrobium</i>	19
		<i>Hirschia</i>	20
	<i>Methylobacteriaceae</i>	<i>Methylobacterium</i>	93
	<i>Phyllobacteriaceae</i>	<i>Mesorhizobium</i>	45
	<i>Rhizobiaceae</i>	<i>Agrobacterium</i>	60
		<i>Rhizobium</i>	23
	<i>Rhodobacteraceae</i>	<i>Rhodobacter</i>	34
	<i>Rhodobiaceae</i>	<i>Parvibaculum</i>	38
	<i>Rhodospirillaceae</i>	<i>Oceanibaculum</i>	45
		<i>Pelagibius</i>	31
		<i>Magnetovibrio</i>	20
	<i>Sphingomonadaceae</i>	<i>Sphingomonas</i>	541
		<i>Kaistobacter</i>	24
		<i>Novosphingobium</i>	40
		<i>Sphingopyxis</i>	18
	<i>Xanthobacteraceae</i>	<i>Pseudolabrys</i>	18
Betaproteobacteria	<i>Burkholderiaceae</i>	<i>Burkholderia</i>	133
		<i>Cupriavidus</i>	78
	<i>Comamonadaceae</i>	<i>Hydrogenophaga</i>	72
		<i>Curvibacter</i>	26
	<i>Gallionellaceae</i>	<i>Sideroxydans</i>	43
	<i>Hydrogenophilaceae</i>	<i>Thiobacillus</i>	37
	<i>Methylophilaceae</i>	<i>Methylotenera</i>	29
	<i>Nitrosomonadaceae</i>	<i>Nitrospira</i>	118
	<i>Oxalobacteraceae</i>	<i>Massilia</i>	313
		<i>Duganella</i>	53
		<i>Herbaspirillum</i>	43
		<i>Noviherbaspirillum</i>	21
	<i>Rhodocyclaceae</i>	<i>Denitratisona</i>	125
		<i>Dechloromonas</i>	32
	<i>Unclassified family</i>	<i>Aquabacterium</i>	87
		<i>Methylibium</i>	27
		<i>Ideonella</i>	26
		<i>Leptothrix</i>	17
Deltaproteobacteria	<i>Anaeromyxobacteraceae</i>	<i>Anaeromyxobacter</i>	19
	<i>Desulfobacteraceae</i>	<i>Desulfobacterium</i>	30
	<i>Desulfobulbaceae</i>	<i>Desulfobulbus</i>	21
	<i>Geobacteraceae</i>	<i>Geobacter</i>	110
	<i>Kofleriaceae</i>	<i>Haliangium</i>	29
	<i>Polyangiaceae</i>	<i>Chondromyces</i>	22
Gammaproteobacteria	<i>Alteromonadaceae</i>	<i>Marinobacte</i>	26
		<i>Alishewanella</i>	17
	<i>Chromatiaceae</i>	<i>Thiorhodovibrio</i>	38
	<i>Ectothiorhodospiraceae</i>	<i>Thiorhodospira</i>	46
	<i>Enterobacteriaceae</i>	<i>Raoultella</i>	5223
		<i>Gibbsiella</i>	55
		<i>Buttiauxella</i>	32
		<i>Enterobacter</i>	22
	<i>Erwiniaceae</i>	<i>Erwinia</i>	19006
		<i>Pantoea</i>	3448
	<i>Methylococcaceae</i>	<i>Methylomonas</i>	30
		<i>Methylomicrobium</i>	28
		<i>Methylobacter</i>	20
	<i>Microbulbiferaceae</i>	<i>Microbulbifer</i>	29
	<i>Moraxellaceae</i>	<i>Acinetobacter</i>	88
		<i>Perlucidibaca</i>	41
		<i>Alkanindiges</i>	18
	<i>Oceanospirillaceae</i>	<i>Marinomonas</i>	18
	<i>Oleiphilaceae</i>	<i>Oleiphilus</i>	29

		<i>Piscirickettsiaceae</i>	<i>Methylophaga</i>	36
		<i>Pseudomonadaceae</i>	<i>Pseudomonas*</i>	76294
			<i>Luteibacter*</i>	863
		<i>Sinobacteraceae</i>	<i>Alkanibacter</i>	146
			<i>Solimonas</i>	139
			<i>Steroidobacter</i>	76
			<i>Nevskia</i>	39
		<i>Thioalkalspiraceae</i>	<i>Thiohalophilus</i>	70
			<i>Thioalkalispira</i>	66
		<i>Thiotrichaceae</i>	<i>Thiothrix</i>	132
			<i>Beggiatoa</i>	61
		<i>Xanthomonadaceae</i>	<i>Thermomonas</i>	137
			<i>Pseudoxanthomonas</i>	119
			<i>Lysobacter</i>	27
			<i>Xylella</i>	21
		<i>Yersiniaceae</i>	<i>Rahnella</i>	46054
		<i>Unclassified family</i>	<i>Alkalimonas</i>	43
	Zetaproteobacteria	<i>Mariprofundaceae</i>	<i>Mariprofundus</i>	1016
Tenericutes	Mollicutes	<i>Acholeplasmataceae</i>	<i>Candidatus</i>	25
Verrucomicrobia	Opitutae	<i>Opitutaceae</i>	<i>Opitutus</i>	22
	Verrucomicrobiae	<i>Verrucomicrobiaceae</i>	<i>Prosthecoacter</i>	81

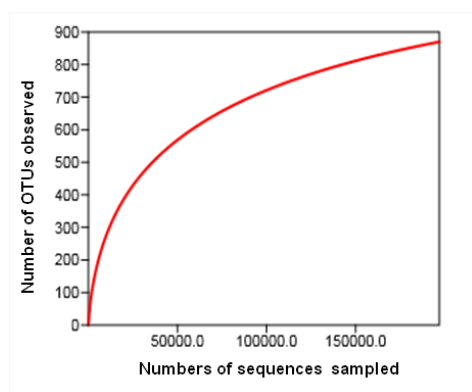
* Cultivated under laboratory conditions

S3 Table. Composition of fungal community in wood colonized by *S. commune*.

Phylum	Class	Family	Genus	Reads		
Ascomycota	Dothideomycetes	<i>Cladosporiaceae</i>	<i>Cladosporium</i>	10		
		<i>Didymellaceae</i>	<i>Didymella</i>	2		
			<i>Peyronellaea</i>	2		
			<i>Phoma</i>	324		
			<i>Leptosphaeriaceae</i>	<i>Leptosphaeria</i>	3	
			<i>Phaeosphaeriaceae</i>	<i>Chaetosphaeronema</i>	2	
			<i>Pleosporaceae</i>	<i>Alternaria</i>	2	
				<i>Curvularia</i>	2	
				<i>Sporormiaceae</i>	<i>Preussia</i>	2
				<i>Unclassified family</i>	<i>Ochrocladosporium</i>	2
	Eurotiomycetes	<i>Aspergillaceae</i>	<i>Penicillium</i>	2		
		<i>Herpotrichiellaceae</i>	<i>Exophiala</i>	6		
		<i>Rhizoglyphaceae</i>	<i>Rhizoglyphus</i>	2		
	Leotiomycetes	<i>Rhizoglyphaceae</i>	<i>Rhizoglyphus</i>	24		
		<i>Unclassified family</i>	<i>Leptodontidium</i>	2		
	Pezizomycetes	<i>Pyronemataceae</i>	<i>Wilcoxina</i>	3		
		<i>Tuberaceae</i>	<i>Tuber</i>	8		
	Saccharomycetes	<i>Saccharomycodaceae</i>	<i>Hanseniaspora</i>	112		
		Sordariomycetes	<i>Coniochaetaceae</i>	<i>Coniochaeta</i>	528	
	<i>Cordycipitaceae</i>		<i>Isaria</i>	5		
	<i>Nectriaceae</i>		<i>Ilyonectria</i>	2		
	<i>Ophiocordycipitaceae</i>		<i>Ophiocordyceps</i>	4		
	<i>Stachybotryaceae</i>		<i>Myrothecium</i>	2		
<i>Togniniaceae</i>	<i>Phaeoacremonium</i>		294			
<i>Unclassified family</i>	<i>Sarocladium</i>		9			
Basidiomycota	Agaricomycetes		<i>Amanitaceae</i>	<i>Amanita</i>	17	
			<i>Boletaceae</i>	<i>Boletellus</i>	6	
			<i>Bondarzewiaceae</i>	<i>Heterobasidion</i>	3	
		<i>Ceratobasidiaceae</i>	<i>Ceratobasidium</i>	4		
			<i>Rhizoctonia</i>	3		
			<i>Cortinariaceae</i>	<i>Flammulaster</i>	22	
			<i>Hygrophoraceae</i>	<i>Hygrocybe</i>	6	
			<i>Schizophyllaceae</i>	<i>Schizophyllum*</i>	34350	
			<i>Serendipitaceae</i>	<i>Serendipita</i>	47	
			<i>Thelephoraceae</i>	<i>Tomentella</i>	5	
			<i>Agaricostilbomycetes</i>	<i>Kondoaceae</i>	<i>Bensingtonia</i>	6
Tremellomycetes	<i>Bulleribasidiaceae</i>	<i>Mingxiaea</i>	21			

		<i>Sirobasidiaceae</i>	<i>Fibulobasidium</i>	5
		<i>Tremellaceae</i>	<i>Tremella</i>	2
Chytridiomycota	Chytridiomycetes	<i>Rhizophydiaceae</i>	<i>Rhizophydium</i>	22
	Monoblepharidomycetes	Unclassified family	<i>Monoblepharella</i>	3
	Unclassified	Unclassified family	<i>Paramicrosporidium</i>	14
	Unclassified	<i>Olpidiaceae</i>	<i>Olpidium</i>	3
Glomeromycota	Glomeromycetes	<i>Diversisporaceae</i>	<i>Redeckera</i>	2
		<i>Glomeraceae</i>	<i>Glomus</i>	9
		<i>Paraglomeraceae</i>	<i>Paraglomus</i>	19
		Unclassified family	<i>Entrophospora</i>	3
		<i>Neocallimastigomycota</i>	<i>Anaeromyces</i>	3
Neocallimastigomycota	Neocallimastigomycota	<i>Basidiobolaceae</i>	<i>Basidiobolus</i>	4
	Zygomycetes	<i>Mortierellaceae</i>	<i>Mortierella</i>	25
Zygomycota	Unclassified			

* Cultivated under laboratory conditions

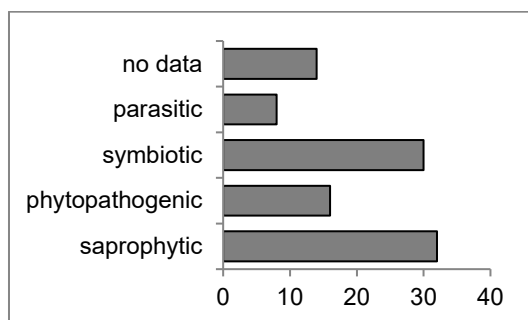


S2 Fig. Rarefaction curve for the microbial community in the mycosphere of *S. commune*.

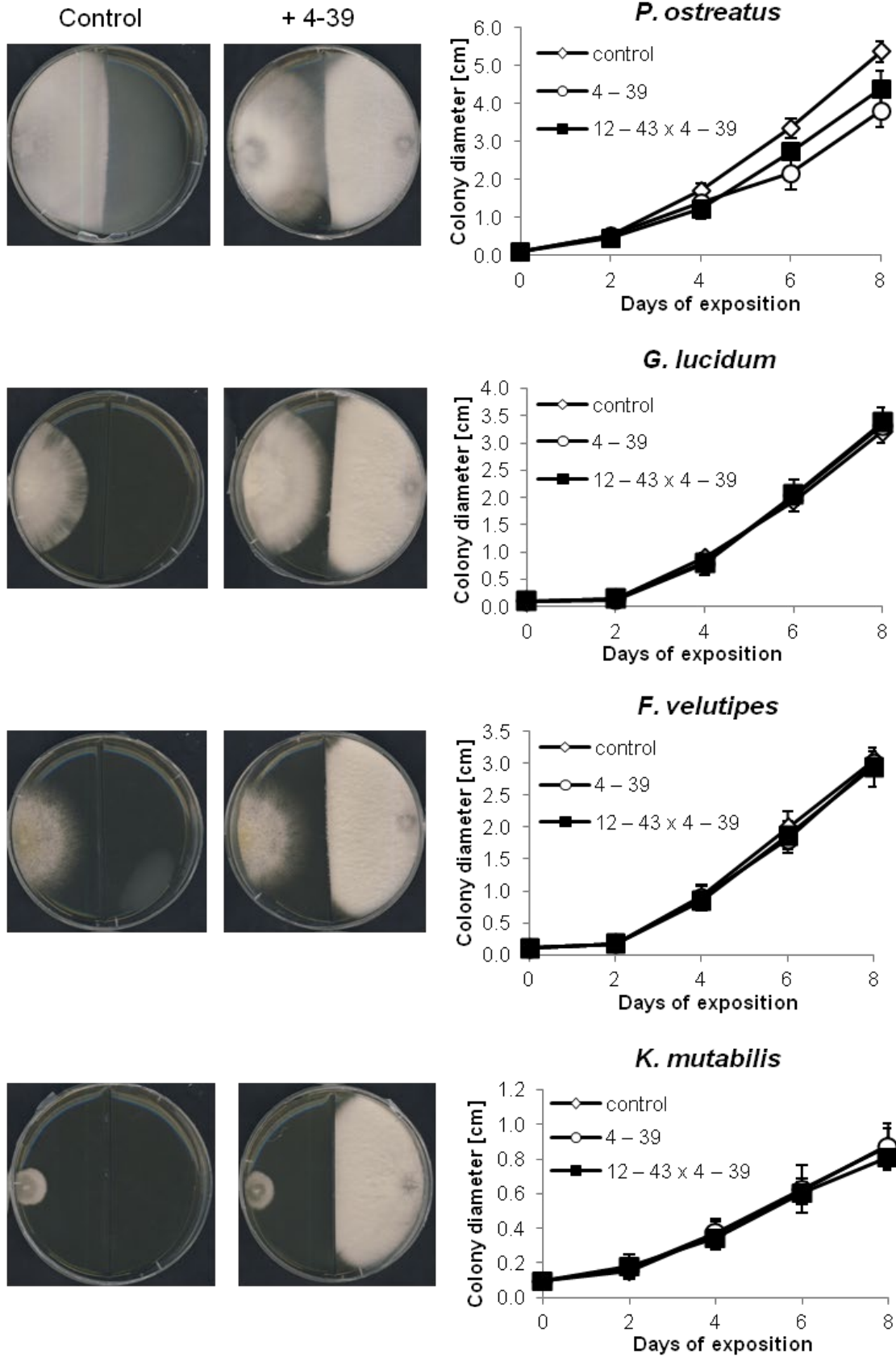
S4 Table. Community characteristics and α -diversity indices.

	Bacterial community	Fungal community
Final high quality read pairs	162,737	35,984
Filtered high quality read pairs	160,145	35,956
OTUs	165	54
H _s	2.249	0.288
E _n	0.057	0.0247
D	0.173	0.913
H _{1-D}	0.827	0.087
Chao1	165	122

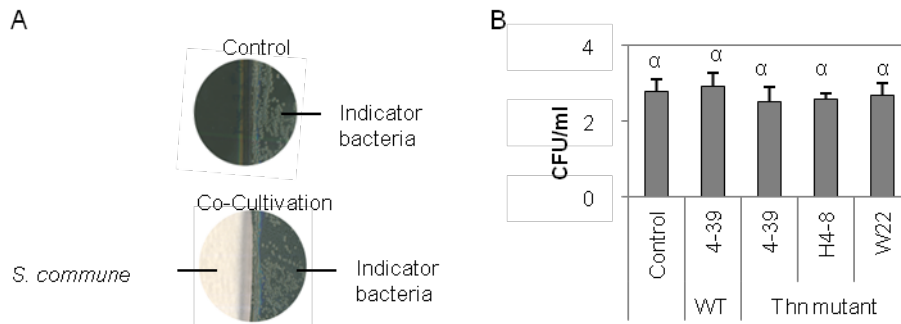
OTUs - operational taxonomic unit, H_s – Shannon's diversity index, E_n – Shannon's equitability, D – Dominance = 1-Simpson's index, H_{1-D} – Simpson's index



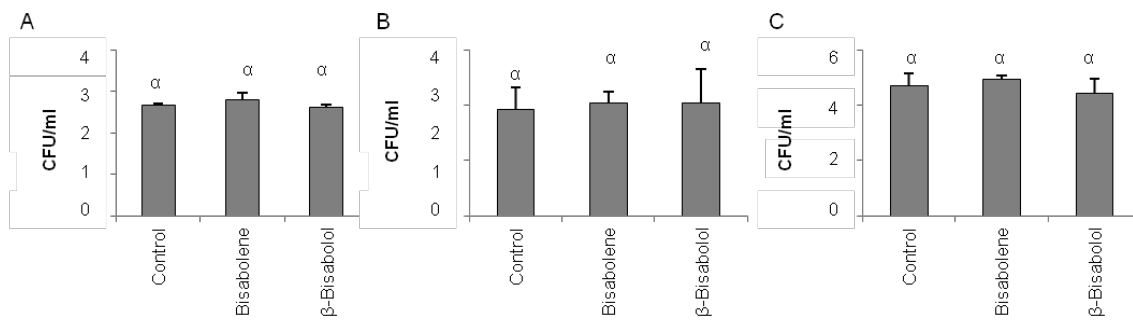
S3 Fig. Different lifestyles (%) of the members of the fungal community.



S4 Fig. Effect of *S. commune* volatile organic compounds (VOCs) on the growth of growth of indicator fungi. n = 10.



S5 Fig. Effect of volatiles produced by *S. commune* wildtype and *thn* mutant strains on the growth of indicator bacteria. (A) Indicator bacteria were grown alone (control) or besides *S. commune* strains (co-cultivation) on Stdl medium. Growth of *S. marcescens* (B) cultivated in the presence of *S. commune*. Data are presented as viable cell numbers (CFU ml⁻¹) in 10⁸; $P < 0.05$ (n = 6).



S6 Fig. Effect of sesquiterpenes on the growth of indicator bacteria. (-)-(1*R*,2*S*) β-Bisabolol (40 mg l⁻¹) and bisabolene (0.6 mg l⁻¹) did not affect the growth of *S. marcescens* (A) and *P. fluorescens* (B) and *E. amylovora* (C). Data are presented as viable cell numbers (CFU ml⁻¹) in 10⁸; $P < 0.05$, n=3.