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Supplementary Material

Integrating seed microbiome knowledge into restoration and *ex situ* conservation of native Australian plants

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Supplementary materials

Table S1: Papers identified in the literature search for seed endophyte or microbiome papers using Scopus database and search term {seed microbiomes} OR {seed endophytes}. Papers are classified as either cultivated, wild or stored seeds, with the host species also identified.

Authors	Title	Host Species	Cultivated OR Wild	Year	Source title	Volume	Issue	DOI
Martinez-Rodriguez A., Macedo-Raygoza G., Huerta-Robles A.X., Reyes-Sepulveda I., Lozano-Lopez J., Garcia-a-Ochoa E.Y., Fierro-Kong L., Medeiros M.H.G., Di Mascio P., White J.F., Jr, Beltran-Garcia M.J.	Agave seed endophytes: Ecology and impacts on root architecture, nutrient acquisition, and cold stress tolerance	*Agave spp.*	Cultivated	2019	Seed Endophytes: Biology and Biotechnology			10.1007/978-3-030-10504-4_8
Truyens S., Beckers B., Thijs S., Weyens N., Cuypers A., Vangronsveld J.	The effects of the growth substrate on cultivable and total endophytic assemblages of Arabidopsis thaliana	*Arabidopsis thaliana*	Cultivated	2016	Plant and Soil	405	1-Feb	10.1007/s11104-015-2761-5
Truyens S., Beckers B., Thijs S., Weyens N., Cuypers A., Vangronsveld J.	Cadmium-induced and trans-generational changes in the cultivable and total seed endophytic community of Arabidopsis thaliana	*Arabidopsis thaliana*	Cultivated	2016	Plant Biology	18	3	10.1111/plb.12415
Kishore G.K., Pande S., Rao J.N., Podile A.R.	Pseudomonas aeruginosa inhibits the plant cell wall degrading enzymes of Sclerotium rolfsii and reduces the severity of groundnut stem rot	*Arachis hypogaea*	Cultivated	2005	European Journal of Plant Pathology	113	3	10.1007/s10658-005-0295-z

Wolfgang A., Zachow C., Muller H., Grand A., Temme N., Tilcher R., Berg G.	Understanding the Impact of Cultivar, Seed Origin, and Substrate on Bacterial Diversity of the Sugar Beet Rhizosphere and Suppression of Soil-Borne Pathogens	*Beta vulgaris*	Cultivated	2020	Frontiers in Plant Science	11		10.3389/fpls.2020.560869
Wassermann B., Abdelfattah A., Wicaksono W.A., Kusstatscher P., Muller H., Cernava T., Goertz S., Rietz S., Abbadi A., Berg G.	The Brassica napus seed microbiota is cultivar-specific and transmitted via paternal breeding lines	*Brassica napus*	Cultivated	2022	Microbial Biotechnology			10.1111/1751-7915.14077
Morales Moreira Z.P., Helgason B.L., Germida J.J.	Environment has a stronger effect than host plant genotype in shaping spring brassica napus seed microbiomes	*Brassica napus*	Cultivated	2021	Phytobiomes Journal	5	2	10.1094/PBIOMES-08-20-0059-R
Rybakova D., Mancinelli R., WikstrÃ¶m M., Birch-Jensen A.-S., Postma J., Ehlers R.-U., Goertz S., Berg G.	The structure of the Brassica napus seed microbiome is cultivar-dependent and affects the interactions of symbionts and pathogens	*Brassica napus*	Cultivated	2017	Microbiome	5	1	10.1186/s40168-017-0310-6
Rybakova D., Wikstrum M., Birch-Jensen F., Postma J., Ehlers R.U., Schmuck M., Kollmann R., Kauhl J., Berg G.	Verticillium wilt in oilseed rape the microbiome is crucial for disease outbreaks as well as for efficient suppression	*Brassica napus subsp. napus*	Cultivated	2020	Plants	9	7	10.3390/plants9070866
Laranjeira S.S., Alves I.G., Marques G.	Chickpea (Cicer arietinum L.) Seeds as a Reservoir of Endophytic Plant Growth-Promoting	*Cicer arietinum*	Cultivated	2022	Current Microbiology	79	9	10.1007/s00284-022-02942-1

	Bacteria							
Mukherjee A., Gaurav A.K., Patel A.K., Singh S., Chouhan G.K., Lepcha A., Pereira A.P.D.A., Verma J.P.	Unlocking the potential plant growth-promoting properties of chickpea (Cicer arietinum L.) seed endophytes bio-inoculants for improving soil health and crop production	*Cicer arietinum*	Cultivated	2021	Land Degradation and Development	32	15	10.1002/ldr.4042
Mukherjee A., Singh B.K., Verma J.P.	Harnessing chickpea (Cicer arietinum L.) seed endophytes for enhancing plant growth attributes and bio-controlling against Fusarium sp.	*Cicer arietinum*	Cultivated	2020	Microbiological Research	237		10.1016/j.micres.2020.126469
Jack A.L.H., Nelson E.B.	A seed-recruited microbiome protects developing seedlings from disease by altering homing responses of Pythium aphanidermatum zoospores	*Cucumis sativus*	Cultivated	2018	Plant and Soil	422	1-Feb	10.1007/s11104-017-3257-2
Kusstatscher P., Adam E., Wicaksono W.A., Bernhart M., Olimi E., Muller H., Berg G.	Microbiome-Assisted Breeding to Understand Cultivar-Dependent Assembly in Cucurbita pepo	*Cucurbita pepo*	Cultivated	2021	Frontiers in Plant Science	12		10.3389/fpls.2021.642027
Adam E., Bernhart M., Muller H., Winkler J., Berg G.	The Cucurbita pepo seed microbiome: genotype-specific composition and implications for breeding	*Cucurbita pepo*	Cultivated	2018	Plant and Soil	422	1-Feb	10.1007/s11104-016-3113-9
Guo J., Bowatte S., Hou F.	Diversity of endophytic bacteria and fungi in seeds of Elymus nutans growing in four locations of Qinghai Tibet Plateau, China	*Elymus nutans*	Cultivated	2021	Plant and Soil	459	1-Feb	10.1007/s11104-020-04608-y
Roberts E.L., Mormile B.,	Fitness attributes of bacterial and fungal seed	*Festuca arundinacea*	Cultivated	2019	Seed Endophytes:			10.1007/978-3-030-10504-4_13

Adamchek C.	endophytes of tall fescue				Biology and Biotechnology			
Gao Y., Chen Y., Luo Y., Liu J., Tian P., Nan Z., Zhou Q.	The microbiota diversity of Festuca sinensis seeds in Qinghai-Tibet Plateau and their relationship with environments	*Festuca sinensis*	Cultivated	2022	Frontiers in Microbiology	13		10.3389/fmicb.2022.956489
Kim J., Roy M., Ahn S.-H., Shanmugam G., Yang J.S., Jung H.W., Jeon J.	Culturable Endophytes Associated with Soybean Seeds and Their Potential for Suppressing Seed-Borne Pathogens	*Glycine max*	Cultivated	2022	Plant Pathology Journal	38	4	10.5423/PPJ.OA.05.2022.0064
Wang X., Wang M., Wang L., Feng H., He X., Chang S., Wang D., Wang L., Yang J., An G., Wang X., Kong L., Geng Z., Wang E.	Whole-plant microbiome profiling reveals a novel geminivirus associated with soybean stay-green disease	*Glycine max*	Cultivated	2022	Plant Biotechnology Journal			10.1111/pbi.13896
Moroenyane I., Tremblay J., Yergeau E.	Soybean microbiome recovery after disruption is modulated by the seed and not the soil microbiome	*Glycine max*	Cultivated	2021	Phytobiomes Journal	5	4	10.1094/PBIOMES-01-21-0008-R
Bziuk N., Maccario L., Straube B., Wehner G., Sorensen S.J., Schikora A., Smalla K.	The treasure inside barley seeds: microbial diversity and plant beneficial bacteria	*Hordeum vulgare*	Cultivated	2021	Environmental Microbiomes	16	1	10.1186/s40793-021-00389-8
Li T., Mann R., Kaur J., Spangenberg G., Sawbridge T.	Transcriptome analyses of barley roots inoculated with novel paenibacillus sp. And erwinia gerundensis strains reveal beneficial early-stage plantâ€“bacteria interactions	*Hordeum vulgare*	Cultivated	2021	Plants	10	9	10.3390/plants10091802
Munkager V., Vestergard M.,	AgNO3 sterilizes grains of barley (Hordeum vulgare)	*Hordeum vulgare*	Cultivated	2020	Plants	9	3	10.3390/plants9030372

Priem A., Altenburger A., de Visser E., Johansen J.L., Ekelund F.	without inhibiting germination a necessary tool for plant microbiome research							
Rahman M.M., Flory E., Koyro H.-W., Abideen Z., Schikora A., Suarez C., Schnell S., Cardinale M.	Consistent associations with beneficial bacteria in the seed endosphere of barley (Hordeum vulgare L.)	*Hordeum vulgare*	Cultivated	2018	Systematic and Applied Microbiology	41	4	10.1016/j.syapm.2018.02.003
Yang L., Danzberger J., Schuler A., Schrader P., Schloter M., Radl V.	Dominant groups of potentially active bacteria shared by barley seeds become less abundant in root associated microbiome	*Hordeum vulgare*	Cultivated	2017	Frontiers in Plant Science	8		10.3389/fpls.2017.01005
Morales Moreira Z.P., Helgason B.L., Germida J.J.	Assembly and potential transmission of the Lens culinaris seed microbiome	*Lens culinaris*	Cultivated	2022	FEMS microbiology ecology	97	12	10.1093/femsec/fiab166
Li T., Mann R., Kaur J., Spangenberg G., Sawbridge T.	Transcriptomics differentiate two novel bioactive strains of Paenibacillus sp. isolated from the perennial ryegrass seed microbiome	*Lolium perenne*	Cultivated	2021	Scientific Reports	11	1	10.1038/s41598-021-94820-2
Tannenbaum I., Rodoni B., Spangenberg G., Mann R., Sawbridge T.	An assessment of the lolium perenne (Perennial ryegrass) seedborne microbiome across cultivars, time, and biogeography: Implications for microbiome breeding	*Lolium perenne*	Cultivated	2021	Microorganisms	9	6	10.3390/microorganisms9061205
Li T., Mann R., Sawbridge T., Kaur J., Auer D., Spangenberg G.	Novel Xanthomonas Species From the Perennial Ryegrass Seed Microbiome Assessing the Bioprotection Activity of Non-pathogenic Relatives of Pathogens	*Lolium perenne*	Cultivated	2020	Frontiers in Microbiology	11		10.3389/fmicb.2020.01991

Clay K.	Effects of fungal endophytes on the seed and seedling biology of Lolium perenne and Festuca arundinacea	*Lolium perenne and Festuca arundinacea*	Cultivated	1987	Oecologia	73	3	10.1007/BF00385251
Zhang H.-L., Jia F., Li M., Yu F., Zhou B., Hao Q.-H., Wang X.-L.	Endophytic Bacillus strains isolated from alfalfa (Medicago sativa L.) seeds: enhancing the lifespan of Caenorhabditis elegans	*Medicago sativa*	Cultivated	2019	Letters in Applied Microbiology	68	3	10.1111/lam.13102
Lopez J.L., Alvarez F., Prancipe A., Salas M.E., Lozano M.J., Draghi W.O., Jofroe E., Lagares A.	Isolation, taxonomic analysis, and phenotypic characterization of bacterial endophytes present in alfalfa (Medicago sativa) seeds	*Medicago sativa*	Cultivated	2018	Journal of Biotechnology	267		10.1016/j.jbiotec.2017.12.020
Johnston-Monje D., Gutirrez J.P., Lopez-Lavalle L.A.B.	Seed-Transmitted Bacteria and Fungi Dominate Juvenile Plant Microbiomes	*Multiple species*	Cultivated	2021	Frontiers in Microbiology	12		10.3389/fmicb.2021.737616
Abdullaeva Y., Ambika Manirajan B., Honermeier B., Schnell S., Cardinale M.	Domestication affects the composition, diversity, and co-occurrence of the cereal seed microbiota	*Multiple species*	Cultivated	2021	Journal of Advanced Research	31		10.1016/j.jare.2020.12.008
Morales Moreira Z.P., Helgason B.L., Germida J.J.	Crop, genotype, and field environmental conditions shape bacterial and fungal seed epiphytic microbiomes	*Multiple species*	Cultivated	2021	Canadian Journal of Microbiology	67	2	10.1139/cjm-2020-0306
Khalaf E.M., Raizada M.N.	Corrigendum: Bacterial seed endophytes of domesticated cucurbits antagonize fungal and oomycete pathogens including powdery mildew [Front. Microbiol., 9, 42, (2018)] DOI: 10.3389/fmicb.2018.0004	*Multiple species*	Cultivated	2018	Frontiers in Microbiology	9	JUN	10.3389/fmicb.2018.00995

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Khalaf E.M., Raizada M.N.	Bacterial seed endophytes of domesticated cucurbits antagonize fungal and oomycete pathogens including powdery mildew	*Multiple species*	Cultivated	2018	Frontiers in Microbiology	9	FEB	10.3389/fmicb.2018.00042
Chen X., Krug L., Yang M., Berg G., Cernava T.	Conventional seed coating reduces prevalence of proteobacterial endophytes in Nicotiana tabacum	*Nicotiana tabacum*	Cultivated	2020	Industrial Crops and Products	155		10.1016/j.indcrop.2020.112784
Chen X., Krug L., Yang H., Li H., Yang M., Berg G., Cernava T.	Nicotiana tabacum seed endophytic communities share a common core structure and genotype-specific signatures in diverging cultivars	*Nicotiana tabacum*	Cultivated	2020	Computational and Structural Biotechnology Journal	18		10.1016/j.csbj.2020.01.004
Mastretta C., Taghavi S., Van Der Lelie D., Mengoni A., Galardi F., Gonnelli C., Barac T., Boulet J., Weyens N., Vangronsveld J.	Endophytic bacteria from seeds of Nicotiana tabacum can reduce cadmium phytotoxicity	*Nicotiana tabacum*	Cultivated	2009	International Journal of Phytoremediation	11	3	10.1080/15226510802432678
Dutta S., Choi S.Y., Lee Y.H.	Temporal Dynamics of Endogenous Bacterial Composition in Rice Seeds During Maturation and Storage, and Spatial Dynamics of the Bacteria During Seedling Growth	*Oryza sativa*	Cultivated	2022	Frontiers in Microbiology	13		10.3389/fmicb.2022.877781
Santos S.S., Rask K.A., VestergÃ¥rd M., Johansen J.L., PriemÃ© A., FrÃ¸slev T.G., GonzÃ¡lez A.M.M., He H., Ekelund F.	Specialized microbiomes facilitate natural rhizosphere microbiome interactions counteracting high salinity stress in plants	*Oryza sativa*	Cultivated	2021	Environmental and Experimental Botany	186		10.1016/j.envexpbot.2021.104430
Radhakrishnan	Phenazine 1-carboxylic	*Oryza sativa*	Cultivated	2021	Probiotics and			10.1007/s12602-021-09844-x

N.A., Ravi A., Joseph B.J., Jose A., Jithesh O., Krishnankutty R.E.	acid Producing Seed Harbored Endophytic Bacteria from Cultivated Rice Variety of Kerala and Its Broad Range Antagonism to Diverse Plant Pathogens				Antimicrobial Proteins			
Matsumoto H., Fan X., Wang Y., Kusstatscher P., Duan J., Wu S., Chen S., Qiao K., Wang Y., Ma B., Zhu G., Hashidoko Y., Berg G., Cernava T., Wang M.	Bacterial seed endophyte shapes disease resistance in rice	*Oryza sativa*	Cultivated	2021	Nature Plants	7	1	10.1038/s41477-020-00826-5
Raj G., Shadab M., Deka S., Das M., Baruah J., Bharali R., Talukdar N.C.	Seed interior microbiome of rice genotypes indigenous to three agroecosystems of Indo-Burma biodiversity hotspot	*Oryza sativa*	Cultivated	2019	BMC Genomics	20	1	10.1186/s12864-019-6334-5
Pal G., Kumar K., Verma A., White J.F., Jr, Verma S.K.	Functional roles of seed-inhabiting endophytes of rice	*Oryza sativa*	Cultivated	2019	Seed Endophytes: Biology and Biotechnology			10.1007/978-3-030-10504-4_11
Walitang D.I., Kim C.-G., Jeon S., Kang Y., Sa T.	Conservation and transmission of seed bacterial endophytes across generations following crossbreeding and repeated inbreeding of rice at different geographic locations	*Oryza sativa*	Cultivated	2019	MicrobiologyOpen	8	3	10.1002/mbo3.662
Eyre A.W., Wang M., Oh Y., Dean R.A.	Identification and characterization of the core rice seed microbiome	*Oryza sativa*	Cultivated	2019	Phytobiomes Journal	3	2	10.1094/PBIOMES-01-19-0009-R
Walitang D.I., Kim K., Madhaiyan M., Kim Y.K., Kang Y., Sa T.	Characterizing endophytic competence and plant growth promotion of bacterial endophytes inhabiting the seed	*Oryza sativa*	Cultivated	2017	BMC Microbiology	17	1	10.1186/s12866-017-1117-0

	endosphere of Rice							
Bell-Dereske L.P., Evans S.E.	Contributions of environmental and maternal transmission to the assembly of leaf fungal endophyte communities	*Panicum virgatum*	Cultivated	2021	Proceedings of the Royal Society B: Biological Sciences	288	1956	10.1098/rspb.2021.0621
Bintarti A.F., Kearns P.J., Sulesky-Grieb A., Shade A.	Abiotic Treatment to Common Bean Plants Results in an Altered Endophytic Seed Microbiome	*Phaseolus vulgaris*	Cultivated	2022	Microbiology Spectrum	10	2	10.1128/spectrum.00210-21
Bintarti A.F., Sulesky-Grieb A., Stopnisek N., Shade A.	Endophytic Microbiome Variation Among Single Plant Seeds	*Phaseolus vulgaris*	Cultivated	2022	Phytobiomes Journal	6	1	10.1094/PBIOMES-04-21-0030-R
Malinich E.A., Bauer C.E.	The plant growth promoting bacterium Azospirillum brasilense is vertically transmitted in Phaseolus vulgaris (common bean)	*Phaseolus vulgaris*	Cultivated	2018	Symbiosis	76	2	10.1007/s13199-018-0539-2
Deckert R.J., Gehring C.A., Patterson A.	Pine seeds carry symbionts: Endophyte transmission re-examined	*Pinus spp.*	Cultivated	2019	Seed Endophytes: Biology and Biotechnology			10.1007/978-3-030-10504-4_16
Bergmann G.E., Busby P.E.	The core seed mycobiome of Pseudotsuga menziesii var. menziesii across provenances of the Pacific Northwest, USA	*Pseudotsuga menziesii var. menziesii*	Cultivated	2021	Mycologia	113	6	10.1080/00275514.2021.1952830
Uren J.M., Zimmerman N.B.	Oaks provide new perspective on seed microbiome assembly	*Quercus ruber*	Cultivated	2021	New Phytologist	230	4	10.1111/nph.17305
Abdelfattah A., Wisniewski M., Schena L., Tack A.J.M.	Experimental evidence of microbial inheritance in plants and transmission routes from seed to phyllosphere and root	*Quercus ruber*	Cultivated	2021	Environmental Microbiology	23	4	10.1111/1462-2920.15392
Torres-Cortas G., Garcia B.J., Compant S., Rezki S., Jones	Differences in resource use lead to coexistence of seed-transmitted microbial populations	*Raphanus sativus*	Cultivated	2019	Scientific Reports	9	1	10.1038/s41598-019-42865-9

P., Proveaux A., Briand M., Roulet A., Bouchez O., Jacobson D., Barret M.								
Thomas P., Shaik S.P.	Molecular Profiling on Surface-Disinfected Tomato Seeds Reveals High Diversity of Cultivation-Recalcitrant Endophytic Bacteria with Low Shares of Spore-Forming Firmicutes	*Solanum lycopersicum*	Cultivated	2020	Microbial Ecology	79	4	10.1007/s00248-019-01440-5
Taffner J., Bergna A., Cernava T., Berg G.	Tomato-Associated Archaea Show a Cultivar-Specific Rhizosphere Effect but an Unspecific Transmission by Seeds	*Solanum lycopersicum*	Cultivated	2020	Phytobiomes Journal	4	2	10.1094/PBIOMES-01-20-0017-R
Kolbas A., Kidd P., Guinberteau J., Jaunatre R., Herzig R., Mench M.	Endophytic bacteria take the challenge to improve Cu phytoextraction by sunflower	*Sunflower*	Cultivated	2015	Environmental Science and Pollution Research	22	7	10.1007/s11356-014-4006-1
Nunes I., Hansen V., Bak F., Bonnichsen L., Su J., Hao X., Raymond N.S., Nicolaisen M.H., Jensen L.S., Nybroe O.	Succession of the wheat seed-associated microbiome as affected by soil fertility level and introduction of Penicillium and Bacillus inoculants in the field	*Triticum aestivum*	Cultivated	2022	FEMS Microbiology Ecology	98	3	10.1093/femsec/fiac028
Abdullaeva Y., Ratering S., Ambika Manirajan B., Rosado-Porto D., Schnell S., Cardinale M.	Domestication Impacts the Wheat-Associated Microbiota and the Rhizosphere Colonization by Seed- and Soil-Originated Microbiomes, Across Different Fields	*Triticum aestivum*	Cultivated	2022	Frontiers in Plant Science	12		10.3389/fpls.2021.806915
Hone H., Mann R., Yang G., Kaur J., Tannenbaum I.,	Profiling, isolation and characterisation of beneficial microbes from the seed microbiomes of	*Triticum aestivum*	Cultivated	2021	Scientific Reports	11	1	10.1038/s41598-021-91351-8

Li T., Spangenberg G., Sawbridge T.	drought tolerant wheat							
Solanki M.K., Abdelfattah A., Sadhasivam S., Zakin V., Wisniewski M., Droby S., Sionov E.	Analysis of stored wheat grain-associated microbiota reveals biocontrol activity among microorganisms against mycotoxigenic fungi	*Triticum aestivum*	Cultivated	2021	Journal of Fungi	7	9	10.3390/jof7090781
Walsh C.M., Becker-Uncapher I., Carlson M., Fierer N.	Variable influences of soil and seed-associated bacterial communities on the assembly of seedling microbiomes	*Triticum aestivum*	Cultivated	2021	ISME Journal	15	9	10.1038/s41396-021-00967-1
Soluch R., Holter N.F., Romero Picazo D., Ãzkurt E., Stukenbrock E.H., Dagan T.	Colonization dynamics of Pantoea agglomerans in the wheat root habitat	*Triticum aestivum*	Cultivated	2021	Environmental Microbiology	23	4	10.1111/1462-2920.15430
Quartana C., Faddetta T., Anello L., Di Bernardo M., Petralia R., Campanella V.	Activity of bacterial seed endophytes of landrace durum wheat for control of Fusarium foot rot	*Triticum aestivum*	Cultivated	2021	Phytopathologia Mediterranea	61	1	10.36253/phyto-12993
Araujo R., Dunlap C., Franco C.M.M.	Analogous wheat root rhizosphere microbial successions in field and greenhouse trials in the presence of biocontrol agents Paenibacillus peoriae SP9 and Streptomyces fulvissimus FU14	*Triticum aestivum*	Cultivated	2020	Molecular Plant Pathology	21	5	10.1111/mpp.12918
Gerna D., Roach T., Mitter B., Staggl W., Kranner I.	Hydrogen peroxide metabolism in interkingdom interaction between bacteria and wheat seeds and seedlings	*Triticum aestivum*	Cultivated	2020	Molecular Plant-Microbe Interactions	33	2	10.1094/MPMI-09-19-0248-R

Ridout M.E., Schroeder K.L., Hunter S.S., Styer J., Newcombe G.	Priority effects of wheat seed endophytes on a rhizosphere symbiosis	*Triticum aestivum*	Cultivated	2019	Symbiosis	78	1	10.1007/s13199-019-00606-6
Shao J., Miao Y., Liu K., Ren Y., Xu Z., Zhang N., Feng H., Shen Q., Zhang R., Xun W.	Rhizosphere microbiome assembly involves seed-borne bacteria in compensatory phosphate solubilization	*Zea mays*	Cultivated	2021	Soil Biology and Biochemistry	159		10.1016/j.soilbio.2021.108273
Dos Santos L.F., Souta J.F., De Paula Soares C., Da Rocha L.O., Santos M.L.C., Grativol C., Roesch L.F.W., Olivares F.L.	Insights into the structure and role of seed-borne bacteriome during maize germination	*Zea mays*	Cultivated	2021	FEMS Microbiology Ecology	97	4	10.1093/femsec/fiab024
Figueiredo Dos Santos L., Fernandes Souta J., de Paula Soares C., Oliveira da Rocha L., Luiza Carvalho Santos M., Grativol C., Fernando Wurdig Roesch L., Lopes Olivares F.	Insights into the structure and role of seed-borne bacteriome during maize germination	*Zea mays*	Cultivated	2021	FEMS microbiology ecology	97	4	10.1093/femsec/fiab024
Chowdhury S., Lata R., Kharwar R.N., Gond S.K.	Microbial endophytes of maize seeds and their application in crop improvements	*Zea mays*	Cultivated	2019	Seed Endophytes: Biology and Biotechnology			10.1007/978-3-030-10504-4_21
Bodhankar S., Grover M., Hemanth S., Reddy G., Rasul S., Yadav	Maize seed endophytic bacteria: dominance of antagonistic, lytic enzyme-producing Bacillus spp.	*Zea mays*	Cultivated	2017	3 Biotech	7	4	10.1007/s13205-017-0860-0

S.K., Desai S., Mallappa M., Mandapaka M., Srinivasarao C.								
Sheibani-Tezerji R., Naveed M., Jehl M.-A., Sessitsch A., Rattei T., Mitter B.	The genomes of closely related Pantoea ananatis maize seed endophytes having different effects on the host plant differ in secretion system genes and mobile genetic elements	*Zea mays*	Cultivated	2015	Frontiers in Microbiology	6	MAY	10.3389/fmicb.2015.00440
Johnston-Monje D., Raizada M.N.	Surveying Diverse Zea Seed for Populations of Bacterial Endophytes	*Zea mays*	Cultivated	2013	Molecular Microbial Ecology of the Rhizosphere	1		10.1002/9781118297674.ch42
Johnston-Monje D., Raizada M.N.	Conservation and diversity of seed associated endophytes in Zea across boundaries of evolution, ethnography and ecology	*Zea mays*	Cultivated	2011	PLoS ONE	6	6	10.1371/journal.pone.0020396
Bergmann G.E., Leveau J.H.J.	A metacommunity ecology approach to understanding microbial community assembly in developing plant seeds	Metacommunity approach	Metacommunity approach	2022	Frontiers in Microbiology	13		10.3389/fmicb.2022.877519
Vannucchi F., Imperato V., Saran A., Staykov S., Dahaen J., Sebastiani L., Vangronsveld J., Thijs S.	Inoculated seed endophytes modify the poplar responses to trace elements in polluted soil	Not suitable	Not suitable	2021	Agronomy	11	10	10.3390/agronomy11101987
Jonkers W., Gundel P.E., Verma S.K., White J.F.	Editorial: Seed Microbiome Research	Review	Review	2022	Frontiers in Microbiology	13		10.3389/fmicb.2022.943329
Samreen T., Naveed M., Nazir M.Z., Asghar H.N., Khan M.I., Zahir	Seed associated bacterial and fungal endophytes: Diversity, life cycle, transmission, and application potential	Review	Review	2021	Applied Soil Ecology	168		10.1016/j.apsoil.2021.104191

Z.A., Kanwal S., Jeevan B., Sharma D., Meena V.S., Meena S.K., Sarkar D., Devika O.S., Parihar M., Choudhary M.								
Ayesha M.S., Suryanarayana n T.S., Nataraja K.N., Prasad S.R., Shaanker R.U.	Seed Treatment With Systemic Fungicides: Time for Review	Review	Review	2021	Frontiers in Plant Science	12		10.3389/fpls.2021.654512
Wassermann B., Rybakova D., Adam E., Zachow C., Bernhard M., Muller M., Mancinelli R., Berg G.	Studying seed microbiomes	Review	Review	2021	Methods in Molecular Biology	2232		10.1007/978-1-0716-1040-4_1
Hemapriya M., Nataraja K.N., Suryanarayana n T.S., Shaanker R.U.	Threshing Yards: Graveyard of Maternally Borne Seed Microbiome?	Review	Review	2020	Trends in Ecology and Evolution	35	11	10.1016/j.tree.2020.08.010
Rana K.L., Kour D., Kaur T., Devi R., Yadav N., Rastegari A.A., Yadav A.N.	Biodiversity, phylogenetic profiling, and mechanisms of colonization of seed microbiomes	Review	Review	2020	New and Future Developments in Microbial Biotechnology and Bioengineering: Trends of Microbial Biotechnology for Sustainable Agriculture and Biomedicine Systems: Diversity and Functional			10.1016/B978-0-12-820526-6.00007-5

					Perspectives			
Verma S.K., Kharwar R.N., White J.F.	The role of seed-vectored endophytes in seedling development and establishment	Review	Review	2019	Symbiosis	78	2	10.1007/s13199-019-00619-1
Verma S.K., White J.F., Jr	Seed endophytes: Biology and biotechnology	Review	Review	2019	Seed Endophytes: Biology and Biotechnology			10.1007/978-3-030-10504-4
Sahadevan N., Radhakrishnan E.K., Mathew J.	Mechanism of interaction of endophytic microbes with plants	Review	Review	2019	Seed Endophytes: Biology and Biotechnology			10.1007/978-3-030-10504-4_12
Holland M.A.	Thinking about PPFM bacteria as a model of seed endophytes: Who are they? Where did they come from? What are they doing for the plant? What can they do for us?	Review	Review	2019	Seed Endophytes: Biology and Biotechnology			10.1007/978-3-030-10504-4_2
Wassermann B., Adam E., Cernava T., Berg G.	Understanding the indigenous seed microbiota to design bacterial seed treatments	Review	Review	2019	Seed Endophytes: Biology and Biotechnology			10.1007/978-3-030-10504-4_5
Sreejith S., Aswani R., Radhakrishnan E.K.	Agriculturally important biosynthetic features of endophytic microorganisms	Review	Review	2019	Seed Endophytes: Biology and Biotechnology			10.1007/978-3-030-10504-4_20
Verma P.	Seed endophytes in crop plants: Metagenomic approaches to study the functional roles and interactions	Review	Review	2019	Seed Endophytes: Biology and Biotechnology			10.1007/978-3-030-10504-4_23
Li H., Parmar S., Sharma V.K., White J.F., Jr	Seed endophytes and their potential applications	Review	Review	2019	Seed Endophytes: Biology and Biotechnology			10.1007/978-3-030-10504-4_3
Hardoim P.	The ecology of seed microbiota	Review	Review	2019	Seed Endophytes: Biology and Biotechnology			10.1007/978-3-030-10504-4_6
Newcombe G.,	A Hypothetical Bottleneck	Review	Review	2018	Frontiers in	9		10.3389/fmicb.2018.01645

Harding A., Ridout M., Busby P.E.	in the Plant Microbiome				Microbiology			
Shahzad R., Khan A.L., Bilal S., Asaf S., Lee I.-J.	What is there in seeds? Vertically transmitted endophytic resources for sustainable improvement in plant growth	Review	Review	2018	Frontiers in Plant Science	9		10.3389/fpls.2018.00024
Nelson E.B.	The seed microbiome: Origins, interactions, and impacts	Review	Review	2018	Plant and Soil	422	1-Feb	10.1007/s11104-017-3289-7
Shade A., Jacques M.-A., Barret M.	Ecological patterns of seed microbiome diversity, transmission, and assembly	Review	Review	2017	Current Opinion in Microbiology	37		10.1016/j.mib.2017.03.010
Muller-Stover D., Nybroe O., Baraibar B., Loddo D., Eizenberg H., French K., Sonderskov M., Neve P., Peltzer D.A., Maczey N., Christensen S.	Contribution of the seed microbiome to weed management	Review	Review	2016	Weed Research	56	5	10.1111/wre.12218
Truyens S., Weyens N., Cuypers A., Vangronsveld J.	Bacterial seed endophytes: Genera, vertical transmission and interaction with plants	Review	Review	2015	Environmental Microbiology Reports	7	1	10.1111/1758-2229.12181
Welbaum G.E.	Molecular profiling of microbial communities associated with seeds: An introduction to seminar number 12	Review	Review	2012	Acta Horticulturae	938		10.17660/ActaHortic.2012.938.1
Liu D., Cai J., He H., Yang S., Chater C.C.C., Yu F.	Anemochore Seeds Harbor Distinct Fungal and Bacterial Abundance, Composition, and Functional Profiles	Multiple species	Stored seeds	2022	Journal of Fungi	8	1	10.3390/jof8010089
Chandel A., Mann R., Kaur J., Norton S.,	Implications of Seed Vault Storage Strategies for Conservation of Seed	*Glycine max*	Stored seeds	2021	Frontiers in Microbiology	12		10.3389/fmicb.2021.784796

Edwards J., Spangenberg G., Sawbridge T.	Bacterial Microbiomes							
Mitter B., Pfaffenbichler N., Flavell R., Compant S., Antonielli L., Petric A., Berninger T., Naveed M., Sheibani-Tezerji R., Maltzahn G., Sessitsch A.	A new approach to modify plant microbiomes and traits by introducing beneficial bacteria at flowering into progeny seeds	Techniques paper	Techniques paper	2017	Frontiers in Microbiology	8	JAN	10.3389/fmicb.2017.00011
Mehrabi M., Asgari B., Zare R.	Description of Allocanariomyces and Parachaetomium, two new genera, and Achaetomium aegilopis sp. nov. in the Chaetomiaceae	Unsuitable	Unsuitable	2020	Mycological Progress	19	12	10.1007/s11557-020-01636-x
Araya J.P., GonzÃ¡lez M., Cardinale M., Schnell S., Stoll A.	Microbiome Dynamics Associated With the Atacama Flowering Desert	Unsuitable	Unsuitable	2020	Frontiers in Microbiology	10		10.3389/fmicb.2019.03160
Lin Q., Xu Z., Li M., Wang Y., Li L.	Spatial differences in Casuarina equisetifolia L. endophyte community structure	*Casuarina equisetifolia*	Wild	2022	Annals of Microbiology	72	1	10.1186/s13213-022-01685-5
Tarquinio F., Attlan O., Vanderklift M.A., Berry O., Bissett A.	Distinct Endophytic Bacterial Communities Inhabiting Seagrass Seeds	*Halophila ovalis*	Wild	2021	Frontiers in Microbiology	12		10.3389/fmicb.2021.703014
Mascot-Gomez E., Flores J., Lopez-Lozano N.E.	The seed-associated microbiome of four cactus species from Southern Chihuahuan Desert	Multiple species	Wild	2021	Journal of Arid Environments	190		10.1016/j.jaridenv.2021.104531
Jeong S., Kim T.-M., Choi B., Kim Y., Kim E.	Invasive Lactuca serriola seeds contain endophytic bacteria that contribute to drought tolerance	*Lactuca serriola*	Wild	2021	Scientific reports	11	1	10.1038/s41598-021-92706-x

Liang D., Guo J., Hou F., Bowatte S.	High level of conservation and diversity among the endophytic seed bacteriome in eight alpine grassland species growing at the Qinghai Tibetan Plateau	Multiple species	Wild	2021	FEMS Microbiology Ecology	97	6	10.1093/femsec/fiab060
Frani I., Eschen R., Allan E., Hartmann M., Schneider S., Prospero S.	Drivers of richness and community composition of fungal endophytes of tree seeds	Multiple species	Wild	2020	FEMS Microbiology Ecology	96	9	10.1093/femsec/fiaa166
Dai Y., Li X.-Y., Wang Y., Li C.-X., He Y., Lin H.-H., Wang T., Ma X.-R.	The differences and overlaps in the seed-resident microbiome of four Leguminous and three Gramineous forages	Multiple species	Wild	2020	Microbial Biotechnology	13	5	10.1111/1751-7915.13618
Tripathi A., Awasthi A., Singh S., Sah K., Maji D., Patel V.K., Verma R.K., Kalra A.	Enhancing artemisinin yields through an ecologically functional community of endophytes in Artemisia annua	*Artemisia annua*	Wild	2020	Industrial Crops and Products	150		10.1016/j.indcrop.2020.112375
Zhang X.-G., Sun Q.-Y., Tang P., Ma G.-Y., Guo G.-J., Guo S.-J., Ma X.-D.	A new mixed inhibitor of adenosine deaminase produced by endophytic Cochliobolus sp. from medicinal plant seeds	Multiple species	Wild	2020	Folia Microbiologica	65	2	10.1007/s12223-019-00723-1
Rodri-guez C.E., Antonielli L., Mitter B., Trognitz F., Sessitsch A.	Heritability and functional importance of the setaria viridis bacterial seed microbiome	*Setaria viridis*	Wild (invasive)	2020	Phytobiomes Journal	4	1	10.1094/PBIOMES-04-19-0023-R
Durlik K., Zarnowiec P., Piwowarczyk R., Kaca W.	Culturable endophytic bacteria from Phelipanche ramosa (Orobanchaceae) seeds	*Phelipanche ramosa*	Wild	2020	Seed Science Research			10.1017/S0960258520000343
Wassermann B., Cernava T., Muller H., Berg C., Berg G.	Seeds of native alpine plants host unique microbial communities embedded in cross-kingdom networks	Multiple species	Wild	2019	Microbiome	7	1	10.1186/s40168-019-0723-5

Girsowicz R., Moroenyane I., Steinberger Y.	Bacterial seed endophyte community of annual plants modulated by plant photosynthetic pathways	Multiple species	Wild	2019	Microbiological Research	223-225		10.1016/j.micres.2019.03.001
del Carmen Molina M., White J.F., Jr, Kingsley K.L., GonzÃ¡lez-BenÃ-tez N.	Seed endophytes of Jasione Montana: Arsenic detoxification workers in an eco-friendly factory	*Jasione montana*	Wild	2019	Seed Endophytes: Biology and Biotechnology			10.1007/978-3-030-10504-4_17
Gao T., Shi X.-Y.	Taxonomic structure and function of seed-inhabiting bacterial microbiota from common reed (Phragmites australis) and narrowleaf cattail (Typha angustifolia L.)	*Phragmites australis and Typha angustifolia*	Wild (invasive)	2018	Archives of Microbiology	200	6	10.1007/s00203-018-1493-3
Torres-Cortes G., Bonneau S., Bouchez O., Genthon C., Briand M., Jacques M.-A., Barret M.	Functional microbial features driving community assembly during seed germination and emergence	*Raphanus sativus and Phaseolus vulgaris*	Cultivated	2018	Frontiers in Plant Science	9		10.3389/fpls.2018.00902
Chen H., Wu H., Yan B., Zhao H., Liu F., Zhang H., Sheng Q., Miao F., Liang Z.	Core microbiome of medicinal plant salvia miltiorrhiza seed: A rich reservoir of beneficial microbes for secondary metabolism?	*Salvia miltiorrhiza*	Wild	2018	International Journal of Molecular Sciences	19	3	10.3390/ijms19030672
Gao T., Shi X.	Preparation of a synthetic seed for the common reed harboring an endophytic bacterium promoting seedling growth under cadmium stress	*Phragmites australis*	Wild (invasive)	2018	Environmental Science and Pollution Research	25	9	10.1007/s11356-018-1200-6
Sanchez-Lopez A.S., Pintelon I., Stevens V., Imperato V., Timmermans J.-P., GonzÃ¡lez-ChÃ¡vez C.,	Seed endophyte microbiome of crotalaria pumila unpeeled: Identification of plant-beneficial methylobacteria	*Crotalaria pumila*	Wild (invasive)	2018	International Journal of Molecular Sciences	19	1	10.3390/ijms19010291

Carrillo-GonzÃ¡lez R., Van hamme J., Vangronsveld J., Thijs S.								
Shearin Z.R.C., Filipek M., Desai R., Bickford W.A., Kowalski K.P., Clay K.	Fungal endophytes from seeds of invasive, non-native Phragmites australis and their potential role in germination and seedling growth	*Phragmites australis*	Wild (invasive)	2018	Plant and Soil	422	1-Feb	10.1007/s11104-017-3241-x
Sanchez-Lopez A.S., Thijs S., Beckers B., Gonzalez-Chavez M.C., Weyens N., Carrillo-Gonzalez R., Vangronsveld J.	Community structure and diversity of endophytic bacteria in seeds of three consecutive generations of Crotalaria pumila growing on metal mine residues	*Crotalaria pumila*	Wild (invasive)	2018	Plant and Soil	422	1-Feb	10.1007/s11104-017-3176-2
Alibrandi P., Cardinale M., Rahman M.M., Strati F., Cin P., de Viana M.L., Giamminola E.M., Gallo G., Schnell S., De Filippo C., Ciaccio M., Puglia A.M.	The seed endosphere of Anadenanthera colubrina is inhabited by a complex microbiota, including Methylobacterium spp. and Staphylococcus spp. with potential plant-growth promoting activities	*Anadenanthera colubrina*	Wild	2018	Plant and Soil	422	1-Feb	10.1007/s11104-017-3182-4
Geisen S., Kostenko O., Cnossen M.C., ten Hooven F.C., Vreu B., van der Putten W.H.	Seed and root endophytic fungi in a range expanding and a related plant species	*Centaurea* spp.	Wild (invasive)	2017	Frontiers in Microbiology	8	AUG	10.3389/fmicb.2017.01645
Truyens S., Jambon I., Croes S., Janssen J.,	The Effect of Long-Term Cd and Ni Exposure on Seed Endophytes of Agrostis capillaris and	*Agrostis capillaris*	Wild (Hyperaccumulator)	2014	International Journal of Phytoremediation	16	7-Aug	10.1080/15226514.2013.837027

Weyens N., Mench M., Carleer R., Cuypers A., Vangronsveld J.	Their Potential Application in Phytoremediation of Metal-Contaminated Soils							
Liu D., Lin L., Zhang T., Xu Q., Wang M., Gao M., Bhople P., Pritchard H.W., Yang X., Yu F.	Wild Panax plants adapt to their thermal environment by harboring abundant beneficial seed endophytic bacteria	*Wild panax*	Wild (crop relative)	2022	Frontiers in Ecology and Evolution	10		10.3389/fevo.2022.967692
Chandel A., Mann R., Kaur J., Norton S., Auer D., Edwards J., Spangenberg G., Sawbridge T.	The Role of Soil Microbial Diversity in the Conservation of Native Seed Bacterial Microbiomes	*Glycine clandestina*	Wild (crop relative)	2022	Microorganisms	10	4	10.3390/microorganisms10040750
Choi B., Jeong S., Kim E.	Variation of the seed endophytic bacteria among plant populations and their plant growth-promoting activities in a wild mustard plant species, Capsella bursa-pastoris	*Sinapis arvensis*	Wild (crop relative)	2022	Ecology and Evolution	12	3	10.1002/ece3.8683
Mackin H.C., Shek K.L., Thornton T.E., Evens K.C., Hallett L., McGuire K.L., Peterson M.L., Roy B.A.	The black box of plant demography: how do seed type, climate and seed fungal communities affect grass seed germination?	*Festuca roemeri and Danthonia californica*	Wild (crop relative)	2021	New Phytologist	231	6	10.1111/nph.17532
Idbella M., Bonanomi G., De Filippis F., Amor G., Chouyia F.E., Fechtali T., Mazzoleni S.	Contrasting effects of Rhizophagus irregularis versus bacterial and fungal seed endophytes on Trifolium repens plant-soil feedback	*Trifolium repens*	Wild (crop relative)	2021	Mycorrhiza	31	1	10.1007/s00572-020-01003-4

Tyc O., Putra R., Gols R., Harvey J.A., Garbeva P.	The ecological role of bacterial seed endophytes associated with wild cabbage in the United Kingdom	*Brassica oleracea*	Wild (crop relative)	2020	MicrobiologyOpen	9	1	10.1002/mbo3.954
Durand A., Leglize P., Lopez S., Sterckeman T., Benizri E.	Noccaea caerulescens seed endosphere: a habitat for an endophytic bacterial community preserved through generations and protected from soil influence	*Noccaea caerulescens*	Wild (Hyperaccumulator)	2022	Plant and Soil	472	1-Feb	10.1007/s11104-021-05226-y
Parmar S., Sharma V.K., Li T., Tang W., Li H.	Fungal Seed Endophyte FZT214 Improves Dysphania ambrosioides Cd Tolerance Throughout Different Developmental Stages	*Dysphania ambrosioides*	Wild (Hyperaccumulator)	2022	Frontiers in Microbiology	12		10.3389/fmicb.2021.783475

Table S2: Taxonomy assigned, voucher specimen and Genbank accessions for the fungal species isolated from the seed of *Banksia serrata*, *B. ericifolia*, *Petrophile pulchella*, *Microlaena stipoides* and *Themeda triandra.*

Voucher specimen	**GenBank accession**	**Isolates**	**Phylum**	**Class**	**Order**	**Family**	**Genus**	**Species**
RBG7302	ON989656	1	Ascomycota	Arthoniomycetes	Arthoniales	Arthoniaceae	*Arthonia*	sp.
RBG7299	ON989653	5	Ascomycota	Dothideomycetes	Botryosphaeriales	Botryosphaeriaceae	*Botryosphaeria*	*dothidea*
RBG7313	OP437802	1	Ascomycota	Dothideomycetes	Botryosphaeriales	Botryosphaeriaceae	*Diplodia*	*mutila*
RBG7314	OP437803	3	Ascomycota	Dothideomycetes	Botryosphaeriales	Botryosphaeriaceae	*Neofusicoccum*	*parvum*
RBG7226	ON989580	57	Ascomycota	Dothideomycetes	Botryosphaeriales	Botryosphaeriaceae	*Neofusicoccum*	*macroclavatum*
RBG7263	ON989617	13	Ascomycota	Dothideomycetes	Botryosphaeriales	Botryosphaeriaceae	*Neofusicoccum*	*australe*
RBG7271	ON989625	5	Ascomycota	Dothideomycetes	Botryosphaeriales	Botryosphaeriaceae	*Neofusicoccum*	*protearum*
RBG7315	OP437804	1	Ascomycota	Dothideomycetes	Capnodiales	Cladosporiaceae	*Cladosporium*	*halotolerans*
RBG7277	ON989631	17	Ascomycota	Dothideomycetes	Capnodiales	Cladosporiaceae	*Cladosporium*	*perangustrum*
RBG7316	OP437805	2	Ascomycota	Dothideomycetes	Capnodiales	Cladosporiaceae	*Cladosporium*	*sphaerospermum*
RBG7317	OP437806	9	Ascomycota	Dothideomycetes	Dothideales	Aureobasidiaceae	*Aureobasidium*	*melanogenum*
RBG7248	ON989602	12	Ascomycota	Dothideomycetes	Pleosporales	Anteagloniaceae	*Anteaglonium*	sp.

RBG7318	OP437807	1	Ascomycota	Dothideomycetes	Pleosporales	Astrosphaeriellaceae	*Pseudopithomyces*	*chartarum*
RBG7319	OP437808	1	Ascomycota	Dothideomycetes	Pleosporales	Coniothyriaceae	*Neoconiothyrium*	*persooniae*
RBG7273	ON989627	6	Ascomycota	Dothideomycetes	Pleosporales	Cucurbitariaceae	*Neocucurbitaria*	sp.
RBG7280	ON989634	4	Ascomycota	Dothideomycetes	Pleosporales	Didymellaceae	*Epicoccum*	*italicum*
RBG7321	OP437810	23	Ascomycota	Dothideomycetes	Pleosporales	Didymellaceae	*Epicoccum*	*sorghinum*
RBG7322	OP437811	11	Ascomycota	Dothideomycetes	Pleosporales	Didymellaceae	*Phoma*	*herbarum*
RBG7323	OP437812	1	Ascomycota	Dothideomycetes	Pleosporales	Lentitheciaceae	*Keissleriella*	*gloeospora*
RBG7324	OP437813	1	Ascomycota	Dothideomycetes	Pleosporales	Pleosporaceae	*Alternaria*	*solani*
RBG7325	OP437814	1	Ascomycota	Dothideomycetes	Pleosporales	Pleosporaceae	*Alternaria*	*brassicae*
RBG7326	OP437815	6	Ascomycota	Dothideomycetes	Pleosporales	Pleosporaceae	*Alternaria*	sp.
RBG7327	OP437816	83	Ascomycota	Dothideomycetes	Pleosporales	Pleosporaceae	*Alternaria*	*alternata*
RBG7328	OP437817	2	Ascomycota	Dothideomycetes	Pleosporales	Pleosporaceae	*Bipolaris*	*cynodontis*
RBG7329	OP437818	3	Ascomycota	Dothideomycetes	Pleosporales	Pleosporaceae	*Curvularia*	*petersonii*
RBG7330	OP437819	1	Ascomycota	Dothideomycetes	Pleosporales	Pleosporaceae	*Exserohilum*	*rostratum*
RBG7331	OP437820	5	Ascomycota	Dothideomycetes	Pleosporales	Pleosporaceae	*Pyrenophora*	*triseptata*
RBG7338	OP437827	4	Ascomycota	Dothideomycetes	Pleosporales	Pleosporaceae	*Pyrenophora*	*nisikadoi*
RBG7221	ON989575	24	Ascomycota	Dothideomycetes	Pleosporales	Pleosporales fam incertae sedis	*Heleiosa*	*barbatula*
RBG7320	OP437809	1	Ascomycota	Dothideomycetes	Pleosporales	Pleosporales fam *incertae sedis*	*Phialophorophoma*	*litoralis*
RBG7332	OP437821	1	Ascomycota	Dothideomycetes	Pleosporales	Sporormiaceae	*Preussia*	sp.
RBG7283	ON989637	1	Ascomycota	Eurotiomycetes	Chaetothryriales	Herpotrichiellaceae	*Capronia*	sp.
RBG7333	OP437822	1	Ascomycota	Eurotiomycetes	Chaetothyriales	Herpotrichiellaceae	*Cladophialophora*	*mycetomatis*
RBG7334	OP437823	1	Ascomycota	Eurotiomycetes	Chaetothyriales	Herpotrichiellaceae	*Exophiala*	*oligosperma*
RBG7236	ON989590	12	Ascomycota	Eurotiomycetes	Chaetothyriales	Herpotrichiellaceae	*Exophiala*	*bergeri*
RBG7284	ON989638	1	Ascomycota	Eurotiomycetes	Chaetothyriales	Herpotrichiellaceae	*Rhinocladiella*	*atrovirens*
RBG7335	OP437824	2	Ascomycota	Eurotiomycetes	Eurotiales	Aspergillaceae	*Aspergillus*	*cibarius*
RBG7336	OP437825	1	Ascomycota	Eurotiomycetes	Eurotiales	Aspergillaceae	*Aspergillus*	*fumigatus*
RBG7337	OP437826	2	Ascomycota	Eurotiomycetes	Eurotiales	Aspergillaceae	*Aspergillus*	*cristatus*
RBG7339	OP437828	1	Ascomycota	Eurotiomycetes	Eurotiales	Aspergillaceae	*Aspergillus*	sp.
RBG7340	OP437829	2	Ascomycota	Eurotiomycetes	Eurotiales	Aspergillaceae	*Penicillium*	*spinulosum*
RBG7341	OP437830	3	Ascomycota	Eurotiomycetes	Eurotiales	Aspergillaceae	*Penicillium*	*oxalicum*

RBG7342	OP437831	2	Ascomycota	Eurotiomycetes	Eurotiales	Aspergillaceae	*Penicillium*	*griseum*
RBG7343	OP437832	2	Ascomycota	Eurotiomycetes	Eurotiales	Aspergillaceae	*Penicillium*	*ortum*
RBG7344	OP437833	3	Ascomycota	Eurotiomycetes	Eurotiales	Aspergillaceae	*Penicillium*	*cairnsense*
RBG7345	OP437834	3	Ascomycota	Eurotiomycetes	Eurotiales	Aspergillaceae	*Penicillium*	*raistrickii*
RBG7346	OP437835	3	Ascomycota	Eurotiomycetes	Eurotiales	Aspergillaceae	*Penicillium*	*brevicompactum*
RBG7172	ON989526	199	Ascomycota	Eurotiomycetes	Eurotiales	Aspergillaceae	*Penicillium*	*glabrum*
RBG7186	ON989540	258	Ascomycota	Eurotiomycetes	Eurotiales	Aspergillaceae	*Penicillium*	*citreonigrum*
RBG7229	ON989583	27	Ascomycota	Eurotiomycetes	Eurotiales	Aspergillaceae	*Penicillium*	*citrinum*
RBG7244	ON989598	15	Ascomycota	Eurotiomycetes	Eurotiales	Aspergillaceae	*Penicillium*	*fellutanum*
RBG7267	ON989621	8	Ascomycota	Eurotiomycetes	Eurotiales	Aspergillaceae	*Penicillium*	*steckii*
RBG7268	ON989622	6	Ascomycota	Eurotiomycetes	Eurotiales	Aspergillaceae	*Penicillium*	*crustosum*
RBG7269	ON989623	5	Ascomycota	Eurotiomycetes	Eurotiales	Aspergillaceae	*Penicillium*	*catalonicum*
RBG7270	ON989624	3	Ascomycota	Eurotiomycetes	Eurotiales	Aspergillaceae	*Penicillium*	*chermesinum*
RBG7275	ON989629	3	Ascomycota	Eurotiomycetes	Eurotiales	Aspergillaceae	*Penicillium*	*amaliae*
RBG7281	ON989635	12	Ascomycota	Eurotiomycetes	Eurotiales	Aspergillaceae	*Penicillium*	sp.
RBG7290	ON989644	2	Ascomycota	Eurotiomycetes	Eurotiales	Aspergillaceae	*Penicillium*	*sumatraense*
RBG7347	OP437836	1	Ascomycota	Eurotiomycetes	Eurotiales	Thermoascaceae	*Paecilomyces*	*maximus*
RBG7348	OP437837	3	Ascomycota	Eurotiomycetes	Eurotiales	Trichocomaceae	*Rasamsonia*	sp.
RBG7349	OP437838	1	Ascomycota	Eurotiomycetes	Eurotiales	Trichocomaceae	*Talaromyces*	*funiculosus*
RBG7350	OP437839	45	Ascomycota	Eurotiomycetes	Eurotiales	Trichocomaceae	*Talaromyces*	*chloroloma*
RBG7289	ON989643	1	Ascomycota	Eurotiomycetes	Eurotiales	Trichocomaceae	*Talaromyces*	*delawarenis*
RBG7296	ON989650	3	Ascomycota	Eurotiomycetes	Eurotiales	Trichocomaceae	*Talaromyces*	*muroii*
RBG7351	OP437840	1	Ascomycota	Eurotiomycetes	Phaeomoniellales	Phaeomoniellaceae	*Neophaeomoniella*	*zymoides*
RBG7304	ON989658	1	Ascomycota	Eurotiomycetes	Phaeomoniellales	Phaeomoniellaceae	*Phaeomoniella*	sp.
RBG7255	ON989609	6	Ascomycota	Leotiomycetes	Helotiales	Dermateaceae	*Pezicula*	*eucalyptigena*
RBG7294	ON989648	2	Ascomycota	Leotiomycetes	Helotiales	Helotiales fam *incertae sedis*	*Acidomelania*	*panicicola*
RBG7134	ON989488	618	Ascomycota	Leotiomycetes	Helotiales	Helotiales fam *incertae sedis*	*Banksiamyces*	sp.
RBG7198	ON989552	163	Ascomycota	Leotiomycetes	Helotiales	Helotiales fam *incertae sedis*	*Banksiamyces*	sp.
RBG7303	ON989657	1	Ascomycota	Leotiomycetes	Helotiales	Mollisiaceae	*Mollisia*	*minutella*

RBG7352	OP437841	1	Ascomycota	Pezizomycetes	Pezizales	Pezizaceae	*Peziza*	*ostracoderma*
RBG7353	OP437842	1	Ascomycota	Pezizomycetes	Pezizales	Pezizaceae	*Plicaria*	*trachycarpa*
RBG7354	OP437843	1	Ascomycota	Pezizomycetes	Pezizales	Sarcosomataceae	*Pseudoplectania*	*africana*
RBG7287	ON989641	1	Ascomycota	Pezizomycetes	Pezizales	Sarcosomataceae	*Pseudoplectania*	*affinis*
RBG7355	OP437844	2	Ascomycota	Sordariomycetes	Boliniales	Boliniaceae	*Camaropella*	*pugillus*
RBG7261	ON989615	2	Ascomycota	Sordariomycetes	Boliniales	Boliniaceae	*Camarops*	*rogersii*
RBG7356	OP437845	5	Ascomycota	Sordariomycetes	Calosphaeriales	Calosphaeriaceae	*Jattaea*	*algeriensis*
RBG7357	OP437846	1	Ascomycota	Sordariomycetes	Calosphaeriales	Calosphaeriaceae	*Jattaea*	*leucospermi*
RBG7291	ON989645	1	Ascomycota	Sordariomycetes	Calosphaeriales	Calosphaeriaceae	*Jattaea*	sp.
RBG7279	ON989633	2	Ascomycota	Sordariomycetes	Chaetosphaeriales	Chaetosphaeriaceae	*Phaeostalagmus*	*cyclosporus*
RBG7358	OP437847	1	Ascomycota	Sordariomycetes	Coniochaetales	Coniochaetaceae	*Coniochaeta*	*luteorubra*
RBG7359	OP437848	3	Ascomycota	Sordariomycetes	Diaporthales	Diaporthaceae	*Diaporthe*	*infecunda*
RBG7360	OP437849	4	Ascomycota	Sordariomycetes	Diaporthales	Diaporthaceae	*Diaporthe*	*velutina*
RBG7276	ON989630	2	Ascomycota	Sordariomycetes	Diaporthales	Diaporthaceae	*Diaporthe*	*heveae*
RBG7361	OP437850	5	Ascomycota	Sordariomycetes	Diaporthales	Diaporthaceae	*Diaporthe*	*leucaspermi*
RBG7362	OP437851	26	Ascomycota	Sordariomycetes	Diaporthales	Diaporthaceae	*Diaporthe*	*eucalyptorum*
RBG7233	ON989587	12	Ascomycota	Sordariomycetes	Diaporthales	Diaporthaceae	*Diaporthe*	*lithocarpus*
RBG7363	OP437852	1	Ascomycota	Sordariomycetes	Diaporthales	Diaporthaceae	*Diaporthe*	*vawdreyi*
RBG7257	ON989611	6	Ascomycota	Sordariomycetes	Diaporthales	Valsaceae	*Cytospora*	*eucalypticola*
RBG7239	ON989593	12	Ascomycota	Sordariomycetes	Diaporthales	Valsaceae	*Cytospora*	*austromontana*
RBG7364	OP437853	4	Ascomycota	Sordariomycetes	Glomerellales	Glomerellaceae	*Colletotrichum*	*endophyticum*
RBG7365	OP437854	6	Ascomycota	Sordariomycetes	Hypocreales	Bionectriaceae	*Clonostachys*	*rosea*
RBG7366	OP437855	2	Ascomycota	Sordariomycetes	Hypocreales	Clavicipitaceae	*Claviceps*	*pusilla*
RBG7367	OP437856	1	Ascomycota	Sordariomycetes	Hypocreales	Clavicipitaceae	*Metarhizium*	*brunneum*
RBG7368	OP437857	1	Ascomycota	Sordariomycetes	Hypocreales	Cordycipitaceae	*Simplicillium*	*sympodiophorum*
RBG7369	OP437858	1	Ascomycota	Sordariomycetes	Hypocreales	Hypocreales fam *incertae sedis*	*Fusariella*	*hughesii*
RBG7370	OP437859	18	Ascomycota	Sordariomycetes	Hypocreales	Hypocreales fam *incertae sedis*	*Sarocladium*	*strictum*
RBG7371	OP437860	1	Ascomycota	Sordariomycetes	Hypocreales	Hypocreales fam *incertae sedis*	*Sarocladium*	*summerbellii*
RBG7372	OP437861	2	Ascomycota	Sordariomycetes	Hypocreales	Hypocreales fam *incertae sedis*	*Sarocladium*	*spinificis*
RBG7373	OP437862	11	Ascomycota	Sordariomycetes	Hypocreales	Hypocreales fam *incertae sedis*	*Sarocladium*	*terricola*

RBG7374	OP437863	2	Ascomycota	Sordariomycetes	Hypocreales	Hypocreales fam *incertae sedis*	*Sedecimiella*	*taiwanensis*
RBG7375	OP437864	1	Ascomycota	Sordariomycetes	Hypocreales	Nectriaceae	*Fusarium*	*solani*
RBG7376	OP437865	1	Ascomycota	Sordariomycetes	Hypocreales	Nectriaceae	*Fusarium*	*incarnatum*
RBG7377	OP437866	4	Ascomycota	Sordariomycetes	Hypocreales	Nectriaceae	*Fusarium*	*poae*
RBG7378	OP437867	8	Ascomycota	Sordariomycetes	Hypocreales	Nectriaceae	*Fusarium*	*graminearium*
RBG7278	ON989632	6	Ascomycota	Sordariomycetes	Hypocreales	Nectriaceae	*Fusarium*	*oxysporum*
RBG7300	ON989654	5	Ascomycota	Sordariomycetes	Hypocreales	Nectriaceae	*Fusarium*	*nygamai*
RBG7379	OP437868	10	Ascomycota	Sordariomycetes	Hypocreales	Nectriaceae	*Fusarium*	*lateritium*
RBG7380	OP437869	2	Ascomycota	Sordariomycetes	Hypocreales	Nectriaceae	*Fusarium*	*sarcochroum*
RBG7381	OP437870	1	Ascomycota	Sordariomycetes	Hypocreales	Nectriaceae	*Fusarium*	*chlamydosporum*
RBG7382	OP437871	5	Ascomycota	Sordariomycetes	Hypocreales	Nectriaceae	*Fusarium*	sp.
RBG7383	OP437872	1	Ascomycota	Sordariomycetes	Hypocreales	Nectriaceae	*Nalanthamala*	*vermoesenii*
RBG7384	OP437873	1	Ascomycota	Sordariomycetes	Hypocreales	Nectriaceae	*Volutella*	*consors*
RBG7286	ON989640	2	Ascomycota	Sordariomycetes	Hypocreales	Ophiocordycipitaceae	*Purpureocillium*	*lilacinum*
RBG7385	OP437874	2	Ascomycota	Sordariomycetes	Hypocreales	Sarocladiaceae	*Parasarocladium*	*debrunyii*
RBG7288	ON989642	1	Ascomycota	Sordariomycetes	Microascales	Microascaceae	*Microascus*	*intricatus*
RBG7386	OP437875	3	Ascomycota	Sordariomycetes	Microascales	Microascaceae	*Scedosporium*	*apiospermum*
RBG7387	OP437876	5	Ascomycota	Sordariomycetes	Sordariales	Cephalothecaceae	*Phialemonium*	*dimorphosporum*
RBG7388	OP437877	1	Ascomycota	Sordariomycetes	Sordariales	Cephalothecaceae	*Phialemonium*	*inflatum*
RBG7389	OP437878	1	Ascomycota	Sordariomycetes	Sordariales	Cephalothecaceae	*Phialemonium*	*guarroi*
RBG7293	ON989647	7	Ascomycota	Sordariomycetes	Sordariales	Chaetomiaceae	*Chaetomium*	*globosum*
RBG7295	ON989649	1	Ascomycota	Sordariomycetes	Sordariales	Chaetomiaceae	*Chaetomium*	*homopilatum*
RBG7390	OP437879	1	Ascomycota	Sordariomycetes	Sordariales	Chaetomiaceae	*Dichotomopilus*	*funicola*
RBG7391	OP437880	1	Ascomycota	Sordariomycetes	Sordariales	Lasiosphaeriaceae	*Cercophora*	sp.
RBG7392	OP437881	3	Ascomycota	Sordariomycetes	Sordariales	Lasiosphaeriaceae	*Fimetariella*	*rabenhorstii*
RBG7393	OP437882	1	Ascomycota	Sordariomycetes	Sordariomycetes *incertae sedis*	Sordariomycetes *incertae sedis*	*Xylomelasma*	sp.
RBG7394	OP437883	2	Ascomycota	Sordariomycetes	Togniniales	Togniniaceae	*Phaeoacremonium*	*argentinense*
RBG7274	ON989628	2	Ascomycota	Sordariomycetes	Togniniales	Togniniaceae	*Phaeoacremonium*	*africanum*
RBG7285	ON989639	9	Ascomycota	Sordariomycetes	Togniniales	Togniniaceae	*Phaeoacremonium*	sp.
RBG7395	OP437884	1	Ascomycota	Sordariomycetes	Trichosphaeriales	Trichosphaeriaceae	*Nigrospora*	sp.

RBG7396	OP437885	1	Ascomycota	Sordariomycetes	Trichosphaeriales	Trichosphaeriaceae	*Nigrospora*	*sacchari*
RBG7397	OP437886	1	Ascomycota	Sordariomycetes	Trichosphaeriales	Trichosphaeriaceae	*Nigrospora*	*gorlenkoana*
RBG7398	OP437887	5	Ascomycota	Sordariomycetes	Trichosphaeriales	Trichosphaeriaceae	*Nigrospora*	*oryzae*
RBG7272	ON989626	11	Ascomycota	Sordariomycetes	Trichosphaeriales	Trichosphaeriaceae	*Nigrospora*	*sphaerica*
RBG7399	OP437888	1	Ascomycota	Sordariomycetes	Xylariales	Apiosporaceae	*Arthrinium*	sp.
RBG7400	OP437889	1	Ascomycota	Sordariomycetes	Xylariales	Apiosporaceae	*Arthrinium*	sp.
RBG7401	OP437890	1	Ascomycota	Sordariomycetes	Xylariales	Apiosporaceae	*Arthrinium*	*kogelbergense*
RBG7402	OP437891	1	Ascomycota	Sordariomycetes	Xylariales	Bartaliniaceae	*Bartalinia*	*robillardoides*
RBG7403	OP437892	1	Ascomycota	Sordariomycetes	Xylariales	Microdochiaceae	*Microdochium*	sp.
RBG7404	OP437893	1	Ascomycota	Sordariomycetes	Xylariales	Microdochiaceae	*Microdochium*	*bolleyi*
RBG7298	ON989652	2	Ascomycota	Sordariomycetes	Xylariales	Sporocadaceae	*Heterotruncatella*	*spadicea*
RBG7405	OP437894	1	Ascomycota	Sordariomycetes	Xylariales	Sporocadaceae	*Neopestalotiopsis*	*clavispora*
RBG7213	ON989567	52	Ascomycota	Sordariomycetes	Xylariales	Sporocadaceae	*Pestalotiopsis*	*knightiae*
RBG7301	ON989655	1	Ascomycota	Sordariomycetes	Xylariales	Sporocadaceae	*Sarcostroma*	*restionis*
RBG7406	OP437895	5	Ascomycota	Sordariomycetes	Xylariales	Xylariales *incertae sedis*	*Anthostomelloides*	*brabeji*
RBG7259	ON989613	5	Ascomycota	Xylonomycetes	Symbiotaphrinales	Symbiotaphrinaceae	*Symbiotaphrina*	*sanguinea*
RBG7407	OP437896	1	Basidiomycota	Agaricomycetes	Agaricales	Radulomycetaceae	*Radulomyces*	*notabilis*
RBG7408	OP437897	9	Basidiomycota	Agaricomycetes	Agaricales	Schizophyllaceae	*Schizophyllum*	*commune*
RBG7292	ON989646	2	Basidiomycota	Agaricomycetes	Polyporales	Ganodermataceae	*Perenniporia*	sp.
RBG7409	OP437898	1	Basidiomycota	Agaricomycetes	Polyporales	Meruliaceae	*Phlebia*	*acerina*
RBG7410	OP437899	1	Basidiomycota	Agaricomycetes	Polyporales	Phanerochaetaceae	*Sporotrichum*	*columbiense*
RBG7411	OP437900	3	Basidiomycota	Ustilaginomycetes	Ustilaginales	Ustilaginaceae	*Anthracocystis*	*flocculosa*
RBG7412	OP437901	1	Basidiomycota	Ustilaginomycetes	Ustilaginales	Ustilaginaceae	*Anthracocystis*	*apludae*
RBG7413	OP437902	1	Basidiomycota	Ustilaginomycetes	Ustilaginales	Ustilaginaceae	*Anthracocystis*	*hwangensis*
RBG7414	OP437903	3	Basidiomycota	Ustilaginomycetes	Ustilaginales	Ustilaginaceae	*Kalmanozyma*	sp.
RBG7415	OP437904	7	Basidiomycota	Ustilaginomycetes	Ustilaginales	Ustilaginaceae	*Pseudozyma*	sp.
RBG7416	OP437905	3	Basidiomycota	Ustilaginomycetes	Ustilaginales	Ustilaginaceae	*Sporisorium*	sp.
RBG7282	ON989636	1	Mucoromycota	Mortierellomycetes	Mortierellales	Mortierellaceae	*Mortierella*	*lignicola*
RBG7417	OP437906	1	Mucoromycota	Mucoromycetes	Mucorales	Rhizopodaceae	*Rhizopus*	*stolonifer*
RBG7418	OP437907	1	Mucoromycota	Mucoromycetes	Mucorales	Rhizopodaceae	*Rhizopus*	*microsporus*

RBG7252	ON989606	8	Mucoromycota	Mucoromycetes	Mucorales	Syncephalastraceae	*Syncephalastrum*	*racemosum*