

Supplementary material

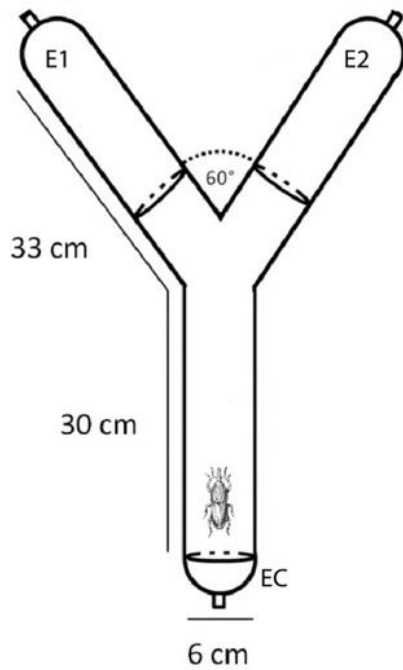


Figure S1. Two-way olfactometer structure. BW behaviour in the olfactometer: E1 represents individuals choosing one stimuli, E2 represents individuals choosing the other stimuli or absence of stimulus and EC indicate individuals not moving from the initial place.

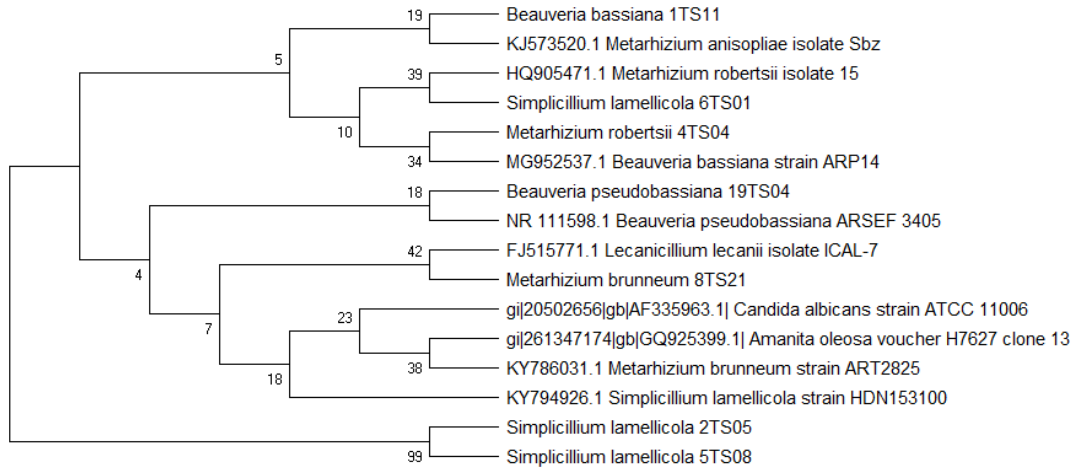


Figure S2. Molecular Phylogenetic analysis of the ITS region by Maximum Likelihood method (Bootstrap consensus tree of 800 replicates), based on the Tamura-Nei model. Branches corresponding to partitions reproduced in less than 50% bootstrap replicates are collapsed. The percentage of replicate trees in which the associated taxa clustered together in the bootstrap test are shown next to the branches [1]. Evolutionary analyses were conducted in MEGA X [2].

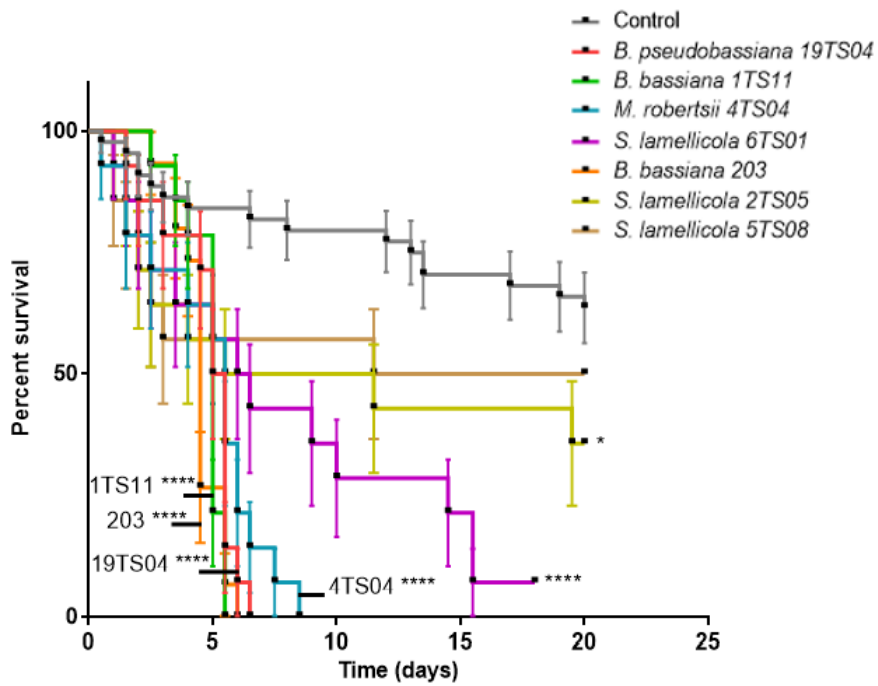


Figure S3. *B. pseudobassiana* 19TS04, *B. bassiana* 1TS11, *M. robertsii* 4TS04, *B. bassiana* 203 and *S. lamellicola* 6TS01 are significantly virulent on *G. mellonella* larvae at room humidity conditions. Asterisks indicate significant differences (* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ and **** $p < 0.0001$) respect to the control.

Table S1. Soil collection from banana fields in the Canary Islands. Abbreviations: Lat. = latitude, Long. = longitude, ASL = altitude, S = sprinkling, D = dripping, Cert. = certification, Int. = integrated production, ECO = ecological crop, Conv. = conventional crop.

Code	Island	SIGPAC	Lat.	Long.	UTM	ASL	Irrigation	Cert.
GS01	La Gomera	38/21/16/9006/2	28°10'24" N	17°11'17" W	28 R 285181 3118341	82	S	No
GS02	La Gomera	38/21/15/13/2	28°10'38" N	17°11'00" W	28 R 285652 3118764	32	S	No
GS03	La Gomera	38/21/15/167/1	28°10'07" N	17°11'31" W	28 R 284790 3117824	83	S	No
PS01	La Palma	38/14/21/64/1	28°30'06" N	17°52'16" W	28 R 218959 3156139	56	S	Int. P
PS02	La Palma	38/7/6/306/1	28°49'49" N	17°47'00" W	28 R 228404 3192365	170	S	Conv.
PS03	La Palma	38/24/13/218/1	28°38'26" N	17°55'09" W	28 R 214628 3171650	267	S	ECO
PS04	La Palma	38/24/26/10/1	28°34'06" N	17°53'36" W	28 R 216961 3163582	69	S	Conv.
PS05	La Palma	38/24/26/82/1	28°33'40" N	17°53'27" W	28 R 217186 3162775	34	S	Conv.
PS06	La Palma	38/14/22/97/4	28°29'31" N	17°52'20" W	28 R 218824 3155063	10	S	Conv.
PS07	La Palma	38/30/7/156/1	28°44'58" N	17°44'11" W	28 R 232781 3183297	185	S	ECO
PS08	La Palma	38/24/13/56/1	28°38'31" N	17°55'21" W	28 R 214306 3171812	250	S	Conv.
PS09	La Palma	38/47/13/560/1	28°40'09" N	17°56'08" W	28 R 213103 3174861	360	S	Conv.
PS10	La Palma	38/30/13/252/1	28°46'44" N	17°45'24" W	28 R 230875 3186607	70	S	Conv.
PS11	La Palma	38/7/6/306/1	28°49'49" N	17°46'58" W	28 R 228459 3192364	160	S	Conv.
PS12	La Palma	38/14/10/36/2	28°29'08" N	17°51'59" W	28 R 219379 3154341	63	S	Conv.
TS01	Tenerife	38/26/3/48/ 1 a 6	28°24'23" N	16°30'50" W	28 R 351703 3143154	215	D	Int. P
TS02	Tenerife	38/31/9/181/2	28°23'28" N	16°34'18" W	28 R 346021 3141533	230	D	No
TS03	Tenerife	38/42/1/32/1	28°22'23" N	16°48'51" W	28 R 322228 3139866	50	D	Int. P
TS04	Tenerife	38/18/3/403/2 a 5	28°23'41" N	16°40'12" W	28 R 336391 3142063	115	D	Int. P
TS05	Tenerife	38/28/5/9065/9	28°24'00" N	16°33'34" W	28 R 347231 3142503	150	D	Int. P
TS06	Tenerife	38/10/5/17/3	28°21'53" N	16°52'32" W	28 R 316197 3139035	60	D	ECO
TS07	Tenerife	38/19/8/9000/136	28°10'48" N	16°47'47" W	28 R 323653 3118448	170	D	ECO
TS08	Tenerife	38/19/7/34/8	28°10'52" N	16°48'02" W	28 R 323245 3118577	135	D	Int. P
TS09	Tenerife	38/1/1/82/1	28°08'54" N	16°47'43" W	28 R 323710 3114937	70	D	Int. P
TS10	Tenerife	38/10/51/4	28°08'42" N	16°47'16" W	28 R 324441 3114557	80	D	Int. P
TS11	Tenerife	38/6/4/214/6	28°01'56" N	16°38'58" W	28 R 337858 3101869	75	D	Int. P
TS12	Tenerife	38/26/1/57/6	28°25'04" N	16°30'43" W	28 R 351910 3144413	100	D	Conv.
TS13	Tenerife	38/26/8/43/1	28°23'29" N	16°32'30" W	28 R 348961 3141526	91	D	Conv.
TS14	Tenerife	38/26/9/91/2	28°23'24" N	16°33'04" W	28 R 348033 3141384	252	D	Conv.
TS15	Tenerife	38/23/1/170/1	28°31'51" N	16°23'47" W	28 R 363375 3156803	75	D	Conv.
TS16	Tenerife	38/10/1/146/10	28°22'44" N	16°50'20" W	28 R 319815 3140550	95	D	Conv.
TS17	Tenerife	38/42/7/6/16	28°22'04" N	16°48'13" W	28 R 323254 3139266	72	D	ECO
TS18	Tenerife	38/23/2/44/3	28°31'38" N	16°23'09" W	28 R 364403 3156391	115	D	Conv.
TS19	Tenerife	38/26/1/29/1	28°24'36" N	16°30'41" W	28 R 351953 3143551	205	D	Conv.
TS20	Tenerife	38/26/2/13/1	28°24'38" N	16°30'52" W	28 R 351655 3143616	175	D	Conv.
TS21	Tenerife	38/19/5/233/1	28°11'36" N	16°49'02" W	28 R 321629 3119956	60	D	Int. P
TS22	Tenerife	38/26/3/50/2	28°24'37" N	16°31'02" W	28 R 351382 3143589	170	D	Int. P
TS23	Tenerife	38/19/2/939/1	28°12'51" N	16°49'57" W	28 R 320164 3122287	30	D	Int. P
CS01	Gran Canaria	35/09/2/111	28°09'28" N	15°39'01" W	28 R 436156 3114851	75	D	Conv.

CS02	Gran Canaria	35/6/6/1/1	28°08'05" N	15°31'36" W	28 R 448281 3112238	145	D	Conv.
CS03	Gran Canaria	35/9/2/103/2	28°09'27" N	15°39'11" W	28 R 435883 3114822	50	D	Conv.
CS04	Gran Canaria	35/6/6/10/1	28°08'01" N	15°31'14" W	28 R 448881 3112113	180	D	Conv.
CS05	Gran Canaria	35/6/8/272/1	28°08'24" N	15°31'03" W	28 R 449184 3112819	135	D	Conv.
CS06	Gran Canaria	35/6/8/455/3	28°08'10" N	15°31'23" W	28 R 448636 3112391	135	D	Conv.
CS07	Gran Canaria	35/9/1/244/1	28°09'11" N	15°39'58" W	28 R 434598 3114337	17	D	Conv.
CS08	Gran Canaria	35/6/7/312/1	28°08'14" N	15°31'36" W	28 R 448282 3112515	135	D	Conv.
CS09	Gran Canaria	35/9/1/260/4	28°08'49" N	15°40'07" W	28 R 434349 3113661	32	D	Conv.
CS10	Gran Canaria	35/9/1/288/1	28°09'03" N	15°39'52" W	28 R 434761 3114090	40	D	Conv.

Table S2. Fungal volatile organic compounds selected for the olfactometry bioassays.

Num.	Compound	Ret. Time (min)	Peak Height 10d	Peak Height 20d	Peak Height 30d	Peak Height 40d	Peak Height 50d	Peak Height 60d	Fungal species
C1	Styrene	18,55	-	-	-	-	-	-	Bb1TS11 Bb203
C2	Benzothiazole	31,00	NA	NA	23152	NA	NA	NA	Bb1TS11 (Bb203)
C3	Camphor	29,11	-	-	-	-	-	-	Bb1TS11
C4	Borneol	29,30	96273	24965	NA	31486	20551	NA	Bb1TS11
C4	Borneol	29,30	52467	48687	39535	39445	66449	40861	Bb203
C5	1,3-dimethoxybenzene	28,75	263989	NA	NA	NA	NA	NA	Ma4TS04
C5	1,3-dimethoxybenzene	28,75	7233098	509769	3583189	3807170	3046943	308330	Pc123
C6	1-octen-3-ol	22,36	26983	385375	141833	28896	NA	NA	Ma4TS04
C6	1-octen-3-ol	22,36	123365	108363	557934	NA	NA	308377	Pc123
C7	3-cyclohepten-1-one	15,20	50086	475717	306136	120587	NA	233415	Bb1TS11
C7	3-cyclohepten-1-one	15,20	274698	246124	103529	NA	NA	NA	Ma4TS04
C7	3-cyclohepten-1-one	15,20	714704	1027453	NA	NA	NA	NA	Pc123
C7	3-cyclohepten-1-one	15,20	179843	704724	147859	330871	239657	263098	Bb203

Table S3. Volatile organic compounds produced by the fungi analysed, in all the times measured. The list is made with a selection of compounds with a match percentage on the databases of at least 50%, without limitations in abundance.

Compound number	Compound name	Retention time (min)	Fungi
1	2-butanone	6,95	Pc123
2	Methyl ethyl, 2-butanone	6,99	Pc123
3	3-methylbutanal	9,10	Pc123
4	2-methylbutanal	9,43	Pc123
5	Dimethyldisulfide	12,60	Pc123
6	3-hydroxy-2-butanone	12,76	Pc123
7	4-methyl-2-pentanone	13,04	Pc123
8	3-methyl-1-butanol	13,28	Ma4TS04
9	2-chloro-octane	13,45	Ma4TS04
10	3-methyl-2-pentanone	13,46	Pc123
11	Cis-1-butyl-2-methylcyclopropane	13,49	Bb1TS11
12	1-octene	13,50	Bb203; Bb1TS11
13	1,3-octadiene	15,20	Ma4TS04; Bb1TS11
14	3-cyclohepten-1-one	15,20	Ma4TS04; Pc123; Bb203; Bb1TS11
15	Methyl-1,4-dioxide-pyrazine	15,24	Bb1TS11
16	(1-methylethenyl) cyclopropene	15,31	Pc123
17	3-hydroxy-2-pentanone	16,41	Pc123
18	Diethylamine-D1	16,41	Pc123
19	2,4-octadiene	16,64	Pc123; Bb203
20	4-methyl-3-hexanone	16,90	Pc123
21	Nonane	17,17	Pc123
22	3-methyl-3-penten-2-one	17,18	Pc123
23	5-methyl-2-hexanone	17,83	Pc123
24	α -pinene	19,40	Pc123; Bb203
25	2-butoxy-ethanol	19,79	Pc123
26	Anisole	19,80	Pc123
27	Methoxybenzene	19,82	Pc123
28	Propionoin	20,01	Pc123
29	2,4-dimethyl-3-hexene	20,54	Pc123
30	3,4-dimethyl-2-hexene	20,55	Pc123
31	Trans-3,4-dimethyl-2-hexene	20,55	Pc123
32	3,5-dimethyl-2-propylthiophene	20,61	Ma4TS04
33	β -pinene	21,20	Pc123; Bb203
34	1- β -pinene	21,24	Ma4TS04

35	2,2,4,6,6-pentamethyl-heptane	21,31	Bb1TS11
36	2-isopropyl-5-oxohexanal	21,42	Pc123
37	6-methyl-2-heptanone	21,42-25,13	Pc123
38	Propyl-cyclohexane	21,69	Pc123
39	Dimethyl-trisulfide	21,79	Pc123
40	(2R*,6R*,8AS*)-6-hydroxyedulan	22,01	Bb203
41	2-methyl-propanamide	22,14	Pc123
42	1-octen-3-ol	22,36	Ma4TS04; Pc123
43	3-octanone	22,40	Pc123; Bb203
44	3-methoxy-benzenamine	22,56	Ma4TS04
45	Trimethyl-pyrazine	22,70	Pc123
46	2-methyl-2-bornene	22,71	Pc123; Bb203; Bb1TS11
47	2,4-dimethyl-methyl ester-hexanoic acid	22,95	Pc123
48	6-methyl-bicyclo[3.3.0]oct-2-en-7-one	23,04	Bb203
49	1-methyl-4-(1-methylethyl)-benzene	23,18	Ma4TS04; Pc123
50	Isocyano-benzene	23,58	Pc123
51	2-(2-ethoxyethoxy)-ethanol	23,60	Ma4TS04; Pc123; Bb203; Bb1TS11
52	2,2,4,4,6,8,8-heptamethyl-nonane	24,26	Bb1TS11
53	2,4-dimethylfuran	24,41	Pc123
54	1,1'-oxybis-heptane	24,77	Bb203
55	2-dodecanone	24,9-34,28	Pc123
56	2-methyl-2-(2-methyl-2-butenyl)-furan	25,47	Pc123
57	Benzenemethanol	25,49	Pc123
58	(2-methyl-1-propenyl)-benzene	25,57	Ma4TS04
59	1-methyl-1H-1,2,4-triazole	25,58	Bb1TS11
60	2,3,3-trimethyl-1-butene	25,58	Bb203
61	2,2-dimethyl-propanal	25,63	Ma4TS04
62	2-methyl-3,4-dihydro-2H-pyran	25,70	Bb1TS11
63	6-methyl-4 5-dihydro.alpha.[2H]-pyran	25,70	Pc123
64	6,7-dimethoxy-2,2-dimethyl-2H-1-benzopyran	26,41	Pc123
65	2-amino-3,5-dibromo-6-methylpyridine	26,49	Ma4TS04
66	3-hydroxymandelic acid ethyl ester di-TMS	26,49	Pc123
67	4-hydroxymandelic acid ethyl ester di-TMS	26,49	Ma4TS04; Pc123; Bb203
68	4-trimethylsilyl-9,9-dimethyl-9-silafluorene	26,49	Pc123
69	p-Trimethylsilyloxyphenyl- bis(trimethylsilyloxy)ethane	26,50	Bb203
70	1-methylallyl(cyclooctatetraene)titanium	27,22	Pc123; Bb1TS11
71	4-octen-3-ol	27,55	Ma4TS04
72	4-fluoro-1,2-xylene	27,90	Ma4TS04; Bb203
73	1-phenyl-2-propanone	28,22	Pc123

74	1,3-dimethoxy-benzene	28,75	Ma4TS04; Pc123
75	2-amino-4-methylpyrimidine	29,14	Pc123
76	Bicyclo[2.2.1]heptane-2-carboxylic acid	29,14	Pc123
77	Borneol	29,30	Bb203; Bb1TS11
78	9H-pyrrolo[3',4':3,4]pyrrolo[2,1-a] phthalazine-9,11(10H)-dione,10-ethyl-8-phenyl	30,54	Ma4TS04
79	1-(2-furanyl)-3-butene-1,2-diol	30,96	Ma4TS04
80	2,4-bis(1,1-dimethylethyl)-phenol	31,00	Ma4TS04; Pc123
81	Benzothiazole	31,00	Bb1TS11
82	2-undecanone	31,15-32,18	Pc123
83	16-oxosalutaridine	31,48	Pc123
84	5-oxoisoboldine	31,48	Ma4TS04
85	4,4-dimethyl-6-benzylamino-dihydro-8H-thiopyrano[4',3':4,5]thieno[2,3-d]pyrimidine	31,50	Ma4TS04; Pc123
86	2-octanone	32,19	Pc123
87	1-ethyl-2-methyl-cyclohexane	33,21	Pc123
88	5-ethyl-3-hydroxy-4-methyl-2(5H)-furanone	33,21	Bb1TS11
89	5-acetyl-2-hydrazino-4-methylpyridine	33,70	Pc123
90	β -elemene	34,61	Pc123
91	2-methoxy-3,8-dioxocephalotax-1-ene	34,86	Pc123
92	Di-amylcyclohexanol	34,97	Pc123
93	Cyclotetradecane	36,68	Pc123
94	(+)-gymnomitrene	37,10	Ma4TS04; Bb1TS11
95	1,4-bis(methylene)-cyclohexane	37,10	Ma4TS04
96	2-tridecanone	37,60	Pc123
97	trans- β -farnesene	37,94	Pc123

References

1. Tamura K. and Nei M. (1993). Estimation of the number of nucleotide substitutions in the control region of mitochondrial DNA in humans and chimpanzees. *Molecular Biology and Evolution* 10:512-526.
2. Kumar S., Stecher G., Li M., Knyaz C., and Tamura K. (2018). MEGA X: Molecular Evolutionary Genetics Analysis across computing platforms. *Molecular Biology and Evolution* 35:1547-1549.