

Supplementary Information

Table S1. *tubB* genes featured in Figure 3.

Species	Isolate ^a	Host	<i>tub2</i>
<i>Epichloë amarillans</i>	E273	<i>Agrostis hyemalis</i>	AF457466
<i>E. amarillans</i>	E57 = ATCC 200744	<i>Ag. hyemalis</i>	KF042047
<i>E. amarillans</i>	E4668	<i>Ag. hyemalis</i>	KF042042
<i>E. amarillans</i>	E1087	<i>Elymus virginicus</i>	AF457478
<i>E. amarillans</i>	ATCC 200743	<i>Sphenopholis obtusata</i>	L06958
<i>E. amarillans</i>	ATCC 201670	<i>Sph. obtusata</i>	AF062426
<i>Epichloë baconii</i>	ATCC 76552	<i>Agrostis stolonifera</i>	L06961
<i>E. baconii</i>	ATCC 90167	<i>Agrostis tenuis</i>	L78279
<i>E. baconii</i>	ATCC 200746	<i>Ag. tenuis</i>	AF250733
<i>E. baconii</i>	E1031 = ATCC 200745	<i>Calamagrostis villosa</i>	KF042062
<i>Epichloë brachyelytri</i>	ATCC 200752	<i>Brachyelytrum erectum</i>	L78271
<i>E. brachyelytri</i>	ATCC 200753	<i>Be. erectum</i>	AF250734
<i>E. brachyelytri</i>	ATCC 200754	<i>Be. erectum</i>	AF250735
<i>E. brachyelytri</i>	ATCC 201560	<i>Be. erectum</i>	AF250736
<i>E. brachyelytri</i>	ATCC 201561	<i>Be. erectum</i>	AF062427
<i>E. brachyelytri</i>	E4804	<i>Be. erectum</i>	KF042060
<i>Epichloë bromicola</i>	AL0814	<i>Agropyron repens</i>	GU325782
<i>E. bromicola</i>	AL9121/1	<i>Bromus erectus</i>	AY033378
<i>E. bromicola</i>	AL9607	<i>Bro. erectus</i>	AY033366
<i>E. bromicola</i>	AL9608	<i>Bro. erectus</i>	AY033381
<i>E. bromicola</i>	AL9630	<i>Bro. erectus</i>	AY033382
<i>E. bromicola</i>	AL9631	<i>Bro. erectus</i>	AY033383
<i>E. bromicola</i>	AL9632	<i>Bro. erectus</i>	AY033384
<i>E. bromicola</i>	AL9633	<i>Bro. erectus</i>	AY033385
<i>E. bromicola</i>	ATCC 200749	<i>Bro. erectus</i>	L78289
<i>E. bromicola</i>	E502 = ATCC 200750	<i>Bro. erectus</i>	KF042058
<i>E. bromicola</i>	DEB 9831/4	<i>Bro. erectus</i>	AY033365
<i>E. bromicola</i>	ATCC 201558	<i>Bro. ramosus</i>	KC936102
<i>Epichloë canadensis</i>	CWR 5	<i>Elymus canadensis</i>	JN886778
			JN886777
<i>Epichloë clarkii</i>	ATCC 200741	<i>Holcus lanatus</i>	AF250738
<i>E. clarkii</i>	ATCC 200742	<i>H. lanatus</i>	L78281
<i>Epichloë elymi</i>	E1081	<i>Bromus kalmii</i>	AF457477
<i>E. elymi</i>	E56 = ATCC 201551	<i>Elymus canadensis</i>	KF042052
<i>E. elymi</i>	ATCC 200850	<i>Elymus virginicus</i>	L78273
<i>E. elymi</i>	ATCC 201553	<i>El. virginicus</i>	AF062428
<i>E. elymi</i>	ATCC 201554	<i>El. virginicus</i>	AF250742
<i>E. elymi</i>	ATCC 201556	<i>Elymus hystrix</i>	AF250744
<i>E. elymi</i>	ATCC 201557	<i>El. hystrix</i>	AF250745
<i>E. elymi</i>	E4132	<i>El. hystrix</i>	AF457468
<i>Epichloë festucae</i>	E28	<i>Festuca trachyphylla</i>	L06956
<i>E. festucae</i>	ATCC 201550	<i>Festuca rubra</i> subsp. <i>commutata</i>	L06957
<i>E. festucae</i>	ATCC 90660	<i>F. rubra</i> subsp. <i>commutata</i>	AF250746
<i>E. festucae</i>	ATCC 90661	<i>F. rubra</i> subsp. <i>rubra</i>	L06955
<i>E. festucae</i>	E1157	<i>Koeleria pyramidata</i>	AF250747

Table S1. Cont.

Species	Isolate ^a	Host	tub2
<i>E. festucae</i>	E434	<i>Lolium giganteum</i>	L78286
<i>E. festucae</i>	E2368	<i>F. rubra</i> subsp. <i>rubra</i>	KF042044
<i>E. festucae</i>	F11	<i>Festuca trachyphylla</i>	KF042045
<i>Epichloë glyceriae</i>	E277 = ATCC 200747	<i>Glyceria striata</i>	KF042046
<i>E. glyceriae</i>	E2772 = ATCC 200755	<i>G. striata</i>	L78276
<i>Epichloë poae</i>	e187	<i>Poa secunda</i> subsp. <i>junicifolia</i>	JQ756453
<i>E. poae</i>	ATCC 201667	<i>Poa nemoralis</i>	AF062429
<i>E. poae</i>	ATCC 201668	<i>Poa nemoralis</i>	AF250756
<i>E. poae</i>	E5100	<i>Poa nemoralis</i>	KC936115
<i>E. poae</i>	E5102	<i>Poa nemoralis</i>	KC936114
<i>E. poae</i>	E5361	<i>Poa nemoralis</i>	KC936113
<i>E. poae</i>	E5819	<i>Poa nemoralis</i>	KF042043
<i>E. poae</i>	ATCC 201669	<i>Poa pratensis</i>	L78284
<i>E. poae</i>	E1154 = CBS 102655	<i>Poa pratensis</i>	AF250757
<i>Epichloë sylvatica</i>	ATCC 200748	<i>Brachypodium sylvaticum</i>	L78278
<i>E. sylvatica</i>	ATCC 200751	<i>Bp. sylvaticum</i>	L78291
<i>E. sylvatica</i>	Brhs6402	<i>Bp. sylvaticum</i>	KC936106
<i>E. sylvatica</i>	Brhs6410	<i>Bp. sylvaticum</i>	KC936107
<i>E. sylvatica</i>	Brhs6710	<i>Bp. sylvaticum</i>	KC936108
<i>E. sylvatica</i>	Brhs6914	<i>Bp. sylvaticum</i>	KC936109
<i>Epichloë typhina</i>	E7358	<i>Achnatherum pekingensis</i>	KC936101
<i>E. typhina</i>	ATCC 200738	<i>Anthoxanthum odoratum</i>	L78288
<i>E. typhina</i>	TC1	<i>Brachypodium phoenicoides</i>	AM490796
<i>E. typhina</i>	ATCC 200739	<i>Brachypodium pinnatum</i>	L78292
<i>E. typhina</i>	E5232	<i>Bp. pinnatum</i>	KC936111
<i>E. typhina</i>	E5240	<i>Bp. pinnatum</i>	KC936105
<i>E. typhina</i>	E5303	<i>Bp. pinnatum</i>	KC936112
<i>E. typhina</i>	E5319	<i>Bp. pinnatum</i>	KC936110
<i>E. typhina</i>	ATCC 200740	<i>Dactylis glomerata</i>	L78274
<i>E. typhina</i>	E5261	<i>D. glomerata</i>	KC936130
<i>E. typhina</i>	E5268	<i>D. glomerata</i>	KC936128
<i>E. typhina</i>	E5272	<i>D. glomerata</i>	KC936121
<i>E. typhina</i>	E5333	<i>D. glomerata</i>	KC936132
<i>E. typhina</i>	E5347	<i>D. glomerata</i>	KC936124
<i>E. typhina</i>	E5350	<i>D. glomerata</i>	KC936118
<i>E. typhina</i>	E5070	<i>D. glomerata</i>	KC936122
<i>E. typhina</i>	E5071	<i>D. glomerata</i>	KC936139
<i>E. typhina</i>	E5075	<i>D. glomerata</i>	KC936119
<i>E. typhina</i>	E5076	<i>D. glomerata</i>	KC936129
<i>E. typhina</i>	E5077	<i>D. glomerata</i>	KC936140
<i>E. typhina</i>	E5078	<i>D. glomerata</i>	KC936136
<i>E. typhina</i>	E5079	<i>D. glomerata</i>	KC936141
<i>E. typhina</i>	E5084	<i>D. glomerata</i>	KC936134
<i>E. typhina</i>	E5088	<i>D. glomerata</i>	KC936116
<i>E. typhina</i>	E5089	<i>D. glomerata</i>	KC936137

Table S1. Cont.

Species	Isolate ^a	Host	tub2
<i>E. typhina</i>	E5090	<i>D. glomerata</i>	KC936142
<i>E. typhina</i>	E5092	<i>D. glomerata</i>	KC936120
<i>E. typhina</i>	E5094	<i>D. glomerata</i>	KC936138
<i>E. typhina</i>	E5096	<i>D. glomerata</i>	KC936133
<i>E. typhina</i>	E5142	<i>D. glomerata</i>	KC936123
<i>E. typhina</i>	E5143	<i>D. glomerata</i>	KC936131
<i>E. typhina</i>	E5146	<i>D. glomerata</i>	KC936127
<i>E. typhina</i>	E5159	<i>D. glomerata</i>	KC936135
<i>E. typhina</i>	E8 = ATCC 200736	<i>Lolium perenne</i> subsp. <i>perenne</i>	X52616
<i>E. typhina</i>	E432	<i>L. perenne</i> subsp. <i>perenne</i>	AF250752
<i>E. typhina</i>	ATCC 200851	<i>Phleum pratense</i>	L78280
<i>E. typhina</i>	CBS 102658	<i>Phleum pratense</i>	AF250753
<i>E. typhina</i>	E348 = CBS 102648	<i>Phleum pratense</i>	L78277
<i>E. typhina</i>	E5001	<i>Poa trivialis</i>	KC936103
<i>E. typhina</i>	E5002	<i>Poa trivialis</i>	KC936104
<i>E. typhina</i>	AL0525/2	<i>Puccinellia distans</i>	EU375739
<i>E. typhina</i>	AL9725	<i>Puc. distans</i>	EU375740
<i>E. typhina</i> (syn. <i>E. poae</i>) var. <i>aonikenk</i>	Bs420	<i>Bromus setifolius</i>	AY707694
<i>E. yangzii</i>	Rnj4201	<i>Roegneria kamoji</i>	DQ134039
<i>Epichloë</i> sp.	E3601 = AL9924	<i>Holcus mollis</i>	KF042061
FaTG-2 (G2)	NFe45079	<i>Lolium arundinaceum</i>	X028253
			JX028254
FaTG-2 (G3)	NFe45115	<i>L. arundinaceum</i>	JX028255
			JX028256
FaTG-3	e4074	<i>Lolium</i> sp.	L20308
			L06952
FaTG-3	NFe1100	<i>Lolium</i> sp.	KF030703
			KF030704
FaTG-4	e4305	<i>Festuca arundinacea</i> var. <i>letourneuxiana</i>	KC936117
			KC936143
<i>N. aotearoae</i>	MYA-1193	<i>Echinopogon ovatus</i>	AF323371
<i>N. aotearoae</i>	e899 = MYA-1229	<i>Ec. ovatus</i>	KF042049
<i>N. chisosum</i>	e3609 = ATCC 64037	<i>Achnatherum eminens</i>	AF457470
			AF457471
			AF457472
<i>N. coenophialum</i>	e19 = ATCC 90664	<i>Lolium arundinaceum</i>	KF036272
			KF036273
			KF036274
<i>N. coenophialum</i>	e4163	<i>L. arundinaceum</i>	KF036275
			KF036276
			KF036277
<i>N. coenophialum</i>	e4309	<i>L. arundinaceum</i>	KF036278
			KF036279
			KF036280

Table S1. Cont.

Species	Isolate ^a	Host	tub2
<i>N. funkii</i>	e4096	<i>Achnatherum robustum</i>	AF457489 AF457490
<i>N. gansuense</i>	e7080	<i>Achnatherum inebrians</i>	KF042053
<i>N. gansuense</i>	e7082	<i>A. inebrians</i>	EF422757
<i>N. gansuense</i>	e7083	<i>A. inebrians</i>	EF422759
<i>N. gansuense</i>	e7084	<i>A. inebrians</i>	EF422758
<i>N. gansuense</i>	e7085	<i>A. inebrians</i>	EF422760
<i>N. gansuense</i>	e7086	<i>A. inebrians</i>	EF422761
<i>N. gansuense</i>	e7087	<i>A. inebrians</i>	EF422762
<i>N. gansuense</i>	e7088	<i>A. inebrians</i>	EF422763
<i>N. gansuense</i>	e7090	<i>A. inebrians</i>	EF422764
<i>N. gansuense</i>	e7092	<i>A. inebrians</i>	EF422765
<i>N. gansuense</i> var. <i>inebrians</i>	e817	<i>A. inebrians</i>	AF457495
<i>N. gansuense</i> var. <i>inebrians</i>	e818 = ATCC MYA- 1228	<i>A. inebrians</i>	KF042059
<i>N. lolii</i>	e135 = Lp19	<i>Lolium perenne</i>	KC936144
<i>N. lolii</i> x <i>E. typhina</i> (LpTG-2)	e144 = Lp1	<i>L. perenne</i>	L20304 L78286
<i>N. occultans</i>	Lm2	<i>Lolium multiflorum</i>	AF176268 AF176274
<i>N. occultans</i>	Lrr1	<i>L. rigidum</i> var. <i>rigidum</i>	AF176271 AF176275
<i>N. occultans</i>	Lrr2	<i>L. rigidum</i> var. <i>rigidum</i>	AF176270 AF176276
<i>N. occultans</i>	e992	<i>L. rigidum</i> var. <i>rigidum</i>	AF176271 AF176275
<i>N. occultans</i>	Lro1	<i>L. rigidum</i> var. <i>rottboellioides</i>	AF176269 AF176272
<i>N. sibiricum</i>	MTI-H50	<i>Achnatherum sibiricum</i>	GQ421698
<i>N. sibiricum</i>	MTI-X47	<i>A. sibiricum</i>	GQ421706
<i>N. sibiricum</i>	MTI-X85	<i>A. sibiricum</i>	GQ421707
<i>N. sibiricum</i>	A-LB	<i>A. sibiricum</i>	DQ675589
<i>N. siegelii</i>	E915 = ATCC 74483	<i>Lolium pratense</i>	AF308138 AF308139
<i>N. stromatolongum</i>	Cnj6617	<i>Calamagrostis epigeios</i>	EU526824
<i>N. stromatolongum</i>	Cnj6620	<i>C. epigeios</i>	EU526825
<i>N. uncinatum</i>	E167 = CBS 102646	<i>L. pratense</i>	KF042048
PauTG-1	e55	<i>Poa autumnalis</i>	AF457473 AF457474

^a Strain designations beginning ATCC or MYA are from the American Type Culture Collection, strain designations beginning CBS are from the Centraalbureau voor Schimmelcultures, and other designations are from the laboratories where the strains were isolated.

Table S2. GenBank accession numbers for alkaloid biosynthesis genes.^a

Organism	Strain	<i>EAS</i>	<i>IDT/LTM</i>	<i>LOL</i>
<i>Epichloë amarillans</i>	E57 = ATCC 200744	-	-	JF830812, JF830813
<i>E. amarillans</i>	E4668	KC989564, KC989563	-	KC990436
<i>Epichloë baconii</i>	E1031 = ATCC 200745	KC989571	-	KC990439, KC990440
<i>Epichloë brachyelytri</i>	E4804	JN378894, JN378895, JN378896	-	JF800660, JF800661, JF800659
<i>Epichloë bromicola</i>	E502 = ATCC 200750	-	-	-
<i>Epichloë canadensis</i>	e4815	KC989568, KC989567, KC989566, KC989565, KC989612	-	KC990447, KC990443, KC990444, KC990445, KC990446
<i>E. canadensis</i> ^b	CWR 5	KC989604, KC989603, KC989602	-	KC969638, KC969639, KC969640
<i>E. canadensis</i> ^b	CWR 34	KC989606, KC989605	-	KC969635, KC969636, KC969637
<i>Epichloë elymi</i>	E56 = ATCC 201551	JX439640, JX439641, JX439642	-	-
<i>Epichloë festucae</i>	E2368	JN167225, JN167226, JN167227	JX402753	JF830815, JF830814, JF830816
<i>Epichloë festucae</i>	Fl1	JN177500, JN177501, JN177502	JN613318, JN613319, JN613320	-
<i>Epichloë glyceriae</i>	E277 = ATCC 200747	JN177503, JN177504, JN177505, JN177506	-	JF800664, JF800665, JF800663
<i>Epichloë</i> sp.	E3601 = AL9924	KC989574, KC989573, KC989572,	-	-
<i>Epichloë poae</i>	E4646	-	-	-
<i>E. poae</i>	E5819	JN182230, JN182231, JN182232	-	-
<i>Epichloë typhina</i>	E8 = ATCC 200736	-	-	-

Table S2. Cont.

Organism	Strain	EAS	IDT/LTM	LOL
<i>Neotyphodium</i> sp. FaTG-2, G2 genotype ^b	NFe45079	KC989601,	KC970517,	-
		KC989600,	KC970518,	
		KC989599,	KC970523,	
		KC989598,	KC970524,	
		KC989597,	KC970528,	
		KC989596,	KC970529,	
		KC989595,	KC970541,	
		KC989594,	KC970544,	
		KC989593,	KC970545,	
		KC989592	KC970552,	
			KC970553,	
			KC970560,	
			KC970561,	
			KC970562,	
			KC970563,	
			KC970570,	
<i>Neotyphodium</i> sp. FaTG-2, G3 genotype ^b	NFe45115	KC989591,	KC970525,	-
		KC989590,	KC970530,	
		KC989589,	KC970536,	
		KC989588,	KC970540,	
		KC989587,	KC970543,	
		KC989586,	KC970551,	
		KC989585	KC970559,	
			KC970564,	
<i>Neotyphodium</i> sp. FaTG-3 ^b	NFe1100	-	KC970567	KC969615, KC969616, KC969617, KC969618, KC969619
			KC970522,	
			KC970527,	
			KC970535,	
			KC970539,	
			KC970546,	
			KC970550,	
			KC970558,	
<i>Neotyphodium</i> sp. FaTG-3 <i>Neotyphodium</i> sp. FaTG-4	e4074	-	-	KF027206
	e4305	KC989581, KC989580, KC989579, KC989578, KC989577, KC989576, KC989575	KC970537, KC970573, KC970582, KC970579	-

Table S2. Cont.

Organism	Strain	EAS	IDT/LTM	LOL
<i>Neotyphodium aotearoae</i>	e899 = MYA-1229	-	KC970519, KC970555, KC970574, KC970575, KC970576, KC970577	KC990449, KC990451, KC990450, KC990448,
<i>Neotyphodium chisosum</i>	e3609 = ATCC 64037	-	-	KC990454, KC990455, KC990452, KC990453, KC990456,
<i>Neotyphodium coenophialum</i>	e19 = ATCC 90664	KC989611, KC989610, KC989609, KC989608, KC989607	KC970554	EF012268 KF027203, KF027204, KF027205
<i>N. coenophialum</i>	e4163	KC989570, KC989569	KC970578	KC990458, KC990457, KC990459
<i>N. coenophialum</i>	e4309	-	KC970572, KC970581, KC970584	KC990460, KC990462, KC990461
<i>Neotyphodium funkii</i>	e4096	KF042039, KF042040, KF042041	KC920437, KC920438	-
<i>Neotyphodium gansuense</i>	e7080	-	JN587271	JF800666
<i>N. gansuense</i> var. <i>inebrians</i>	e818 = MYA-1228	JX072969, JX273434	JX072969	-
<i>Neotyphodium occultans</i>	e999	nd	nd	KF039908
<i>N. occultans</i> ^b	Non-culturable From <i>Lolium</i> <i>temulentum</i> GRIN PI 415813	-	KC970520, KC970531, KC970532, KC970533, KC970547, KC970548, KC970557, KC970566	KC969629, KC969630, KC969631, KC969632, KC969633

Table S2. Cont.

Organism	Strain	EAS	IDT/LTM	LOL
<i>Neotyphodium siegelii</i> ^b	e915 = ATCC 74483	-	KC970521, KC970526, KC970534, KC970538, KC970542, KC970569 KC970549, KC970556	KC969627, KC969624, KC969625, KC969626, KC969628
<i>Neotyphodium uncinatum</i>	e167 = CBS 102646	-	-	AY723749, AY723750, AY724686, JX430081, JX430082
<i>Neotyphodium lolii</i>	e135 = Lp19	EF125025	AY742903, DQ443465	-
<i>N. lolii</i> x <i>E. typhina</i>	e144 = Lp1	KC989584, KC989583, KC989613, KC989582	KC970580, KC970583	-
<i>Neotyphodium</i> sp. PauTG-1	e55	-	-	EF012269, EF015399

^a nd = not determined; - = absent; ^b Data generated through amplicon sequencing.

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