

Supplementary Materials

1. Plant Growth and Biomass

Table S1. Two-way ANOVA for the effects of *Blumeria graminis* (P) and *Epichloë* endophyte (E) on plant height, tiller number, dry weight, and fresh weight of *Achnatherum inebrians*.

Treatments	df	Plant heights		Tiller number		Dry weight		Fresh weight	
		F	P	F	P	F	P	F	P
P	1	11.984	0.009	4.052	0.079	18.391	0.000	61.607	0.000
E	1	39.271	0.000	0.122	0.736	12.660	0.007	18.035	0.003
P*E	1	6.417	0.035	0.092	0.770	3.235	0.232	0.087	0.643

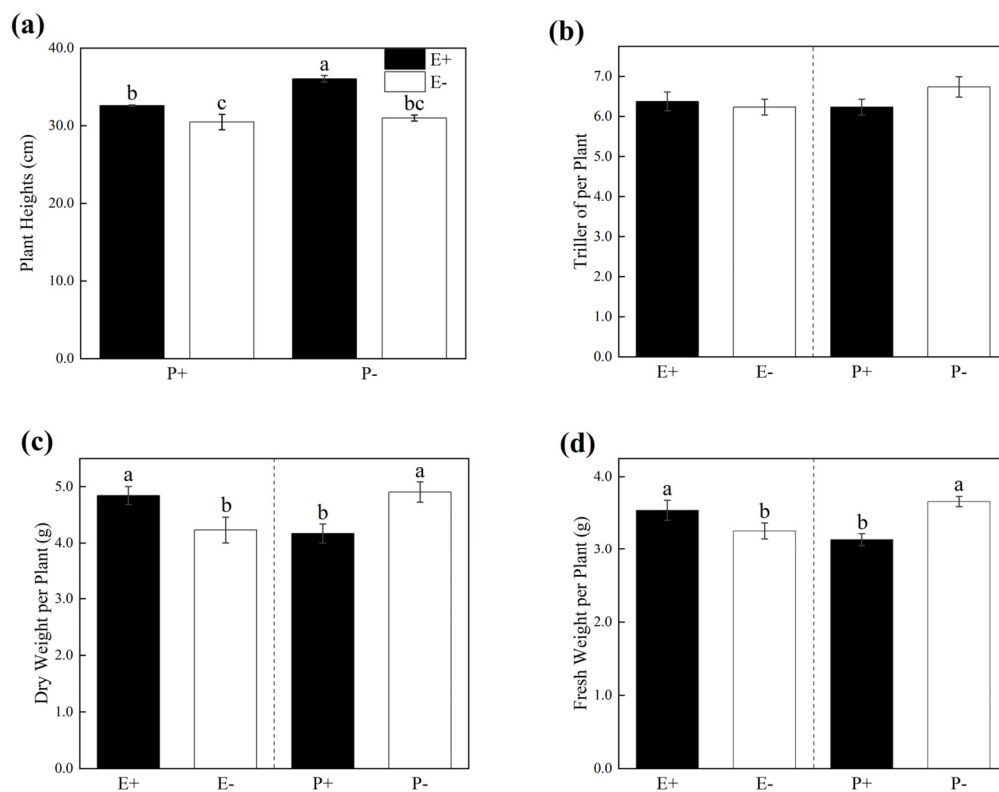


Figure S1: Effects of *Epichloë* endophyte-infected (E+) and *Epichloë* endophyte-free (E-) on plant height (a), tiller number (b), dry weight (c) and fresh weight (d) under the pathogen-inoculated (P+) and non-inoculated (P-). Values are mean±standard error (SE), with bars indicating SE. Columns with non-matching letters indicate a significant difference at $p < 0.05$.

2. Differentially expressed gene (DEG) analysis

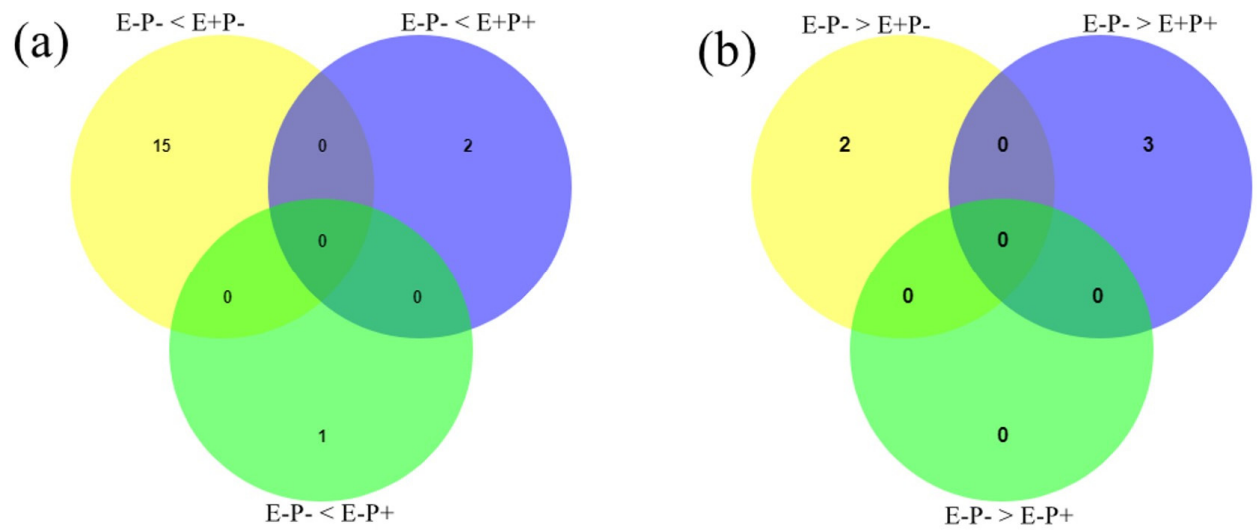


Figure S2: Number of up-regulated (a) and down-regulated (b) plant genes associated with defense responses given the presence of *Epichloë*-infected (E+), the pathogen *Blumeria graminis* (P+) and both fungi (E+P+) on *Achnatherum inebrians* plants. E-: *Epichloë*-free, P-: non-inoculated.

Table S2: Selected unigenes associated with processes of photosynthesis and photosynthesis-antenna proteins identified in the RNA-seq analysis in the present study.

ID	Primers (5'-3')	
	Forward	Reverse
BMK_Unigene_091050	TCCTCCTCCCCTCCACCACTAA	GCGCGCTCTTAGCGATTGGCCG
BMK_Unigene_005773	CCACCACCACCACCACCACCAC	CGCCGCCGCCAGACCGGGGCCC
BMK_Unigene_042588	GGCCTCACCGAACTTGACGCCG	GGGGGGAGAGGCGGAGCAGGCG
BMK_Unigene_082935	GTACGATTACTGATATCGACCA	TGAGACGCTTGGGTGAGGTTCTG
BMK_Unigene_076938	AGGTAGCTCGGGGGCTCACCGG	ACACGGGACACCTCCAGTCTTA
BMK_Unigene_007228	ATACTGTCTCATCTCTTATTTT	TGGGGCACGGGTTGCACGGTAG
BMK_Unigene_075981	ACGGCCTCGCCGAACCTTGACGC	GTGATGTGTCCCTCTCCGAAC
BMK_Unigene_085455	TCATGACAACAGTTTAAATTAG	CGATGATGGCCTCAGCGATTAG
BMK_Unigene_011927	GATCAAAACCCCTCTCCCCCCC	CTACAGAACATGTCACTTTCTG
BMK_Unigene_085681	AAGGAGATCAAGAACGGCCGCC	GTGATTGAAGCCCAGATCCGTG
BMK_Unigene_106981	GGTGAAGGAGATCAAGAACGGC	GCTCCACCCATGTTATAAAGAA
BMK_Unigene_012516	GGCAGTAATAGTTGGTCAGACT	CTGTTTTGTTCCACACTGCCAG
BMK_Unigene_065380	GGTGTCCCACCCGTAGTCACCG	GGCTGGTGTTC AAGTCCCCGCG
BMK_Unigene_081965	GAGAGTGAAATATGGAGAGTCT	ATGTGGATAACCTCCACTGTCTG
BMK_Unigene_103428	GCCGGTAGCAAAGGTGGGTTAT	TTAGTATTTAGTTAGGTATTTG
BMK_Unigene_104654	TTTATCTGATTAGAGCGGAAAG	TTCTCTATCTAGAAGTGGAATA
BMK_Unigene_006566	GGAACCTCAAGCCTCACTCTCGG	ACTGCGTGCCTTGCAATTGCAAC
BMK_Unigene_088235	TTTGCTCTGAAATTTCCGGATA	CTTGAGCACGGCCGCGGAGGCG
BMK_Unigene_065041	CTCGAGAACCTCGCTGACCACA	CATTCTCCTGCGAGTACTCTCA
BMK_Unigene_000884	GCAAAAGATCAGTTTTTTCCAC	GTGGACGAGGCTGGGGTTGCCT
BMK_Unigene_080709	GTTACAGAATAAGTGTTGATCG	ACGTGGACGTCCCCCAAAGAGC
BMK_Unigene_063512	GCTGGACCCAAAGTATTCTGTT	TCACTCTTCCTCTAGTTGTCAG

Table S3: Effect size of net photosynthetic efficiency (NPE) of different grasses under *Epichloë* endophyte infestation.

Name	Effect size	95% confidence intervals (95% CI)
Mean	0.0760	0.0319 to 0.1200
<i>Stipa purpurea</i>	-0.0183	-0.2267 to 0.1901
<i>Lolium perenne</i>	0.2018	0.0866 to 0.317
<i>Festuca sinensis</i>	0.3293	0.1186 to 0.5399
<i>Festuca arizonica</i>	-0.25	-0.3824 to -0.1177
<i>Elymus tangutorum</i>	0.25	0.0429 to 0.4570
<i>Festuca arundinacea</i>	0.0589	-1.7008 to 1.8186
<i>Calamagrostis epigeios</i>	0.107	-0.2372 to 0.4512
<i>Achnatherum sibiricum</i>	-0.0229	-0.1359 to 0.09
<i>Achnatherum inebrians</i>	0.1801	0.0614 to 0.2989
<i>Hordeum brevisubulatum</i>	0.0761	-0.1676 to 0.3197

Table S4: Effect size of net photosynthetic efficiency (NPE) of *Epichloë*-infected (E+) and *Epichloë*-free (E-) grasses under pathogenic fungi inoculation.

Treatment	Effect size	95% confidence intervals (95% CI)
Mean	-0.2246	-0.2514 to -0.1978
E-	-0.2434	-0.2942 to -0.1926
E+	-0.1575	-0.2534 to -0.0616

Supplementary for Material and Methods

Meta-analysis

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