

Supplementary material

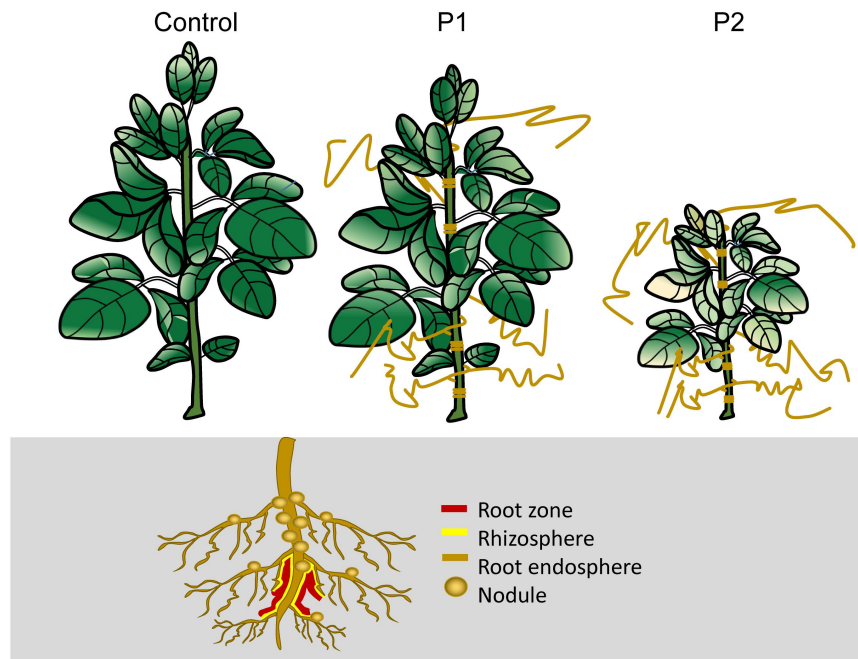


Figure S1. The sketch of three soybeans with three parasitism status (Control, P1, P2) and three rhizocompartments (root zone soil, rhizosphere soil and root endosphere).

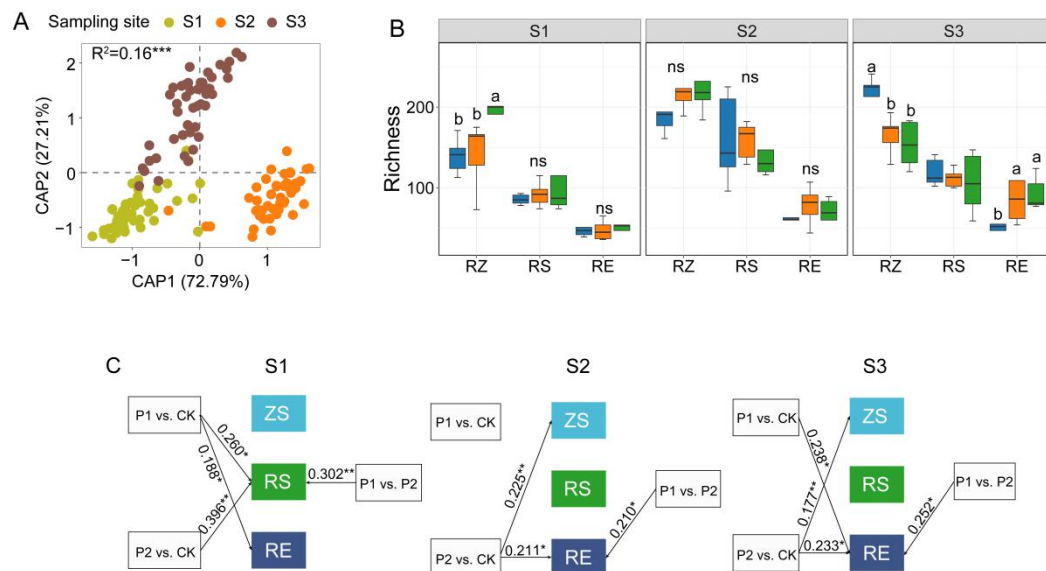


Figure S2. The effect of dodder parasitism on the root-associated fungal community of host in each sampling site. (A) Constrained analysis of principal coordinates (CAP) based on Bray-Curtis distances, showing the compositional variation explained by sampling site. (B) Boxplot showing differences in richness index among groups, with different letters indicating significant difference ($P < 0.05$). (C) Different effects of parasitism (P1 vs. CK, P2 vs. CK, P1 vs. P2) on the fungal communities of soybean in each sampling site. BS, Bulk soil; ZS, root zone soil; RS, rhizosphere

soil; RE, root endosphere, CK, control.

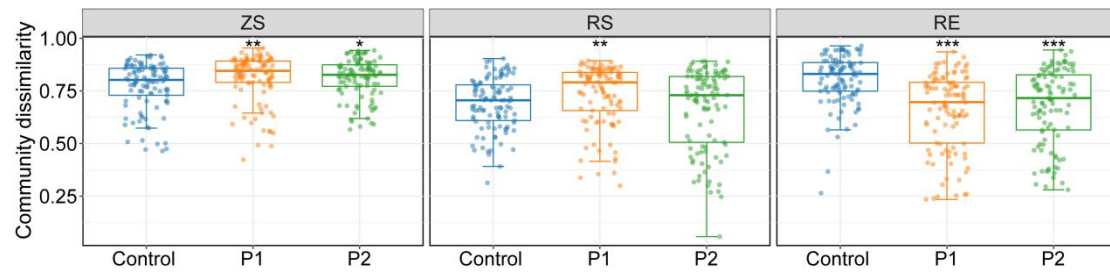


Figure S3. The variation in the dissimilarity (Bray-Curtis distance) of the fungal community in each root compartment among different parasitism statuses. ZS, root zone soil; RS, rhizosphere soil; RE, root endosphere.

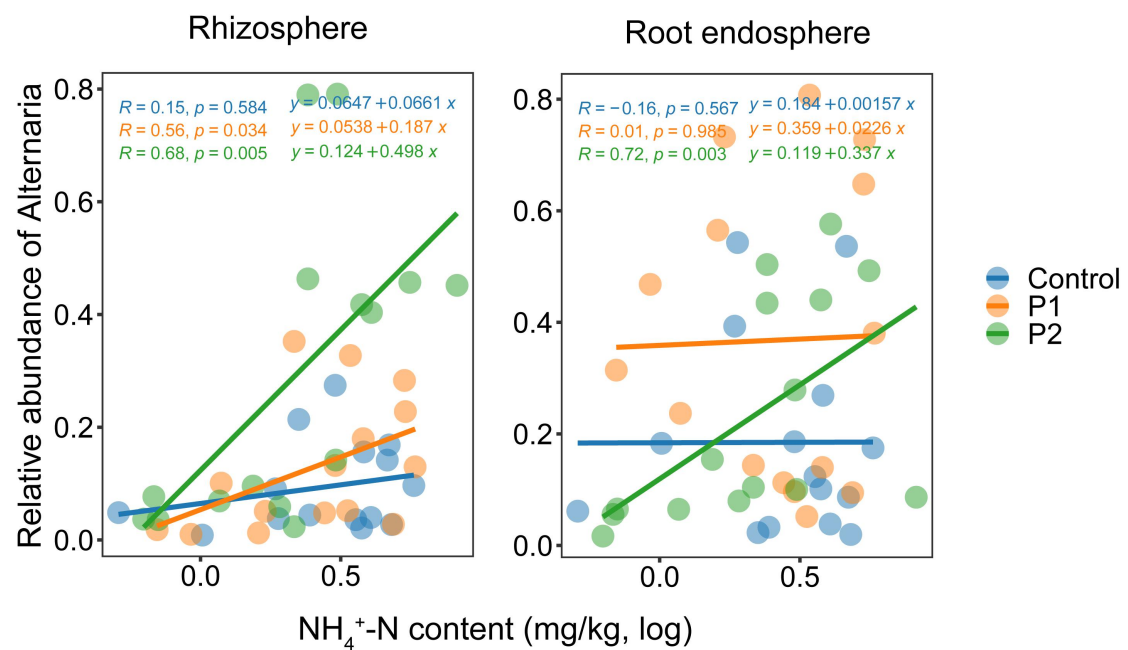


Figure S4. The relationship between soil $\text{NH}_4^+\text{-N}$ content and the relative abundance of *Alternaria*. The line represents the linear regression of the ordinary least squares model.

Table S1. The core flavonoid metabolites that significantly enriched under both P1 and P2 conditions based on the differential enrichment analysis and the K-means clustering analysis.

id	Formula	Compounds	Class I	Class II	CAS	kegg_map
mws1068	C15H10O6	Kaempferol (3,5,7,4'-Tetrahydroxyflavone)	Flavonoids	Flavonols	520-18-3	ko00941,ko00944,ko01100,ko01110
pme1662	C16H14O5	5,4'-Dihydroxy-7-methoxyflavanone (Sakuranetin)	Flavonoids	Flavanones	2957-21-3	ko00941,ko01110
Lmqn003210	C17H14O5	5-Hydroxy-6,7-dimethoxyflavone	Flavonoids	Flavones	740-33-0	--
mws0066	C16H12O7	Isorhamnetin	Flavonoids	Flavonols	480-19-3	--
pmp001223	C20H18O5	Psoralenol	Flavonoids	Isoflavones	70522-30-4	--
mws1474	C18H16O7	5,7-Dihydroxy-3',4',5'-trimethoxyflavone	Flavonoids	Flavones	18103-42-9	--
mws0055	C20H20O7	Tangeretin (4',5,6,7,8-Pentamethoxyflavone)	Flavonoids	Flavones	481-53-8	--
pmp000413	C21H20O10	Genistein-8-C-glucoside*	Flavonoids	Isoflavones	66026-80-0	--
MWSHY0008	C21H20O10	Apigenin-6-C-glucoside (Isovitexin)*	Flavonoids	Flavonoid carbonoside	38953-85-4	ko00944
Hmpp003270	C21H20O11	Luteolin-4'-O-glucoside*	Flavonoids	Flavones	6920-38-3	--
MWSHY0136	C21H20O11	Kaempferol-3-O-glucoside*	Flavonoids	Flavonols	480-10-4	ko00944,ko01110
pme1598	C22H24O11	Hesperetin-5-O-glucoside	Flavonoids	Flavanones	69651-80-5	--
Hmcp002207	C22H22O11	Isorhamnetin-7-O-glucoside*	Flavonoids	Flavonols	6743-96-0	--

Hmgrp002148	2 C22H22O1 2	Nepetin-7-O-alloside*	Flavonoids	Flavones	-	--	
mws1292	C26H28O1 4	Isoschaftoside	Flavonoids	Flavonoid carbonosid e	52012-29- 0	--	
Lmtp002474	C26H28O1 4	Apigenin-6-C-(2"-glucosyl)arabinoside	Flavonoids	Flavonoid carbonosid e	-	--	
Hmgrp003641	C28H32O1 4	Chrysoeriol-6-C-rhamnoside-7-O-rhamnoside	Flavonoids	Flavonoid carbonosid e	-	--	
mws1290	C30H26O1 3	Kaempferol-3-O-(6"-p-Coumaroyl)glucoside (Tiliroside)*	Flavonoids	Flavonols	20316-62- 5	--	
Hmjn004446	C30H26O1 3	Luteolin-7-O-(6"-caffeoyl)rhamnoside*	Flavonoids	Flavones	-	--	
MWSHY008 0	C27H30O1 5	Luteolin-7-O-neohesperidoside (Lonicerin)*	Flavonoids	Flavones	25694-72- 8		ko00944
MWSslk254	C27H30O1 5	Kaempferol-3-O-glucorhamnoside*	Flavonoids	Flavonols	40437-72- 7	--	
MWSHY006 1	C27H30O1 5	Kaempferol-3-O-neohesperidoside*	Flavonoids	Flavonols	32602-81- 6	--	
mws1661	C28H32O1 5	Diosmetin-7-O-rutinoside (Diosmin)	Flavonoids	Flavones	520-27-4	--	
Hmgrp002121	C31H28O1 3	Hispidulin-7-O-(6"-O-p-Coumaroyl)Glucoside	Flavonoids	Flavones	-	--	

Lmdp004267	C30H26O14	Quercetin-3-O-(6"-O-p-Coumaroyl)glucoside	Flavonoids	Flavonols	-	--
pme0001	C28H34O15	Hesperetin-7-O-neohesperidoside(Neohesperidin)	Flavonoids	Flavanones	13241-33-3	ko00941
HJAP120	C28H32O16	Rhamnetin-3-O-Rutinoside*	Flavonoids	Flavonols	-	--
Lmhp003217	C28H32O16	2'-Hydoxy,5-methoxyGenistein-O-rhamnosyl-glucoside*	Flavonoids	Isoflavones	-	--