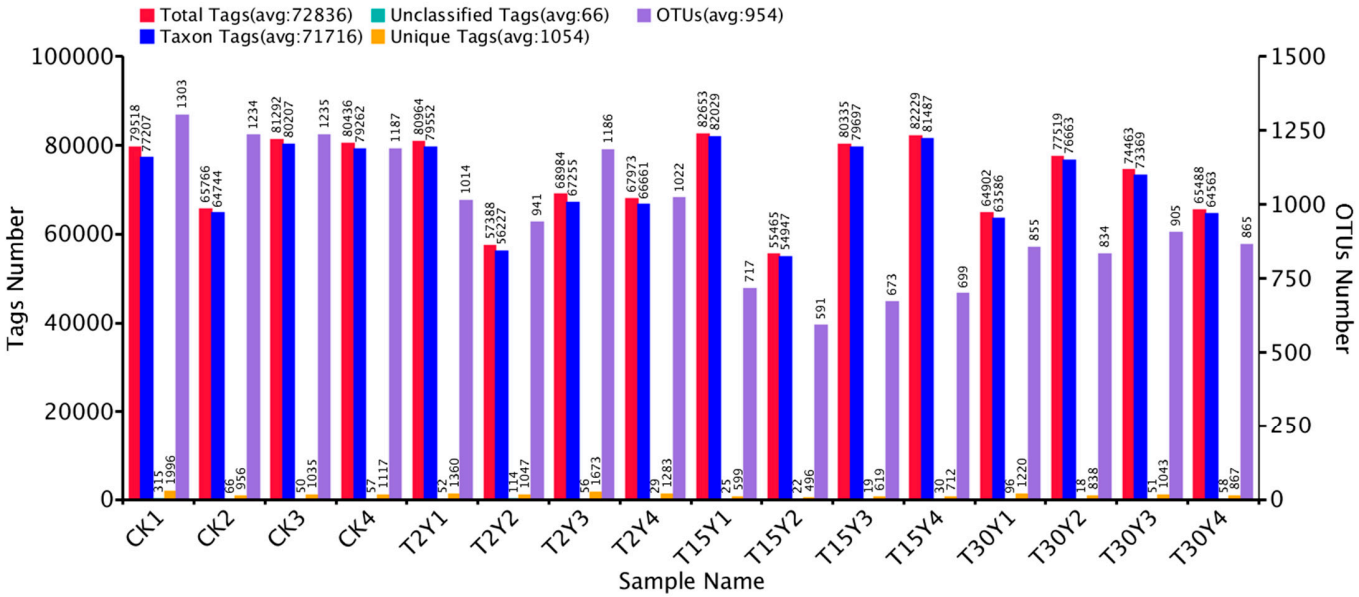


Figure S1. An operational classification unit (OTU) analysis of soil samples collected from the control and three-time series tea fields. The horizontal axis represents the sample name, the first vertical axis represents the tag number, and the second vertical axis represents the OTU number. “CK”, “T2Y”, “T15Y” and “T30Y” represent fields that have been continuously planted for 0, 2, 15 and 30 years, respectively.

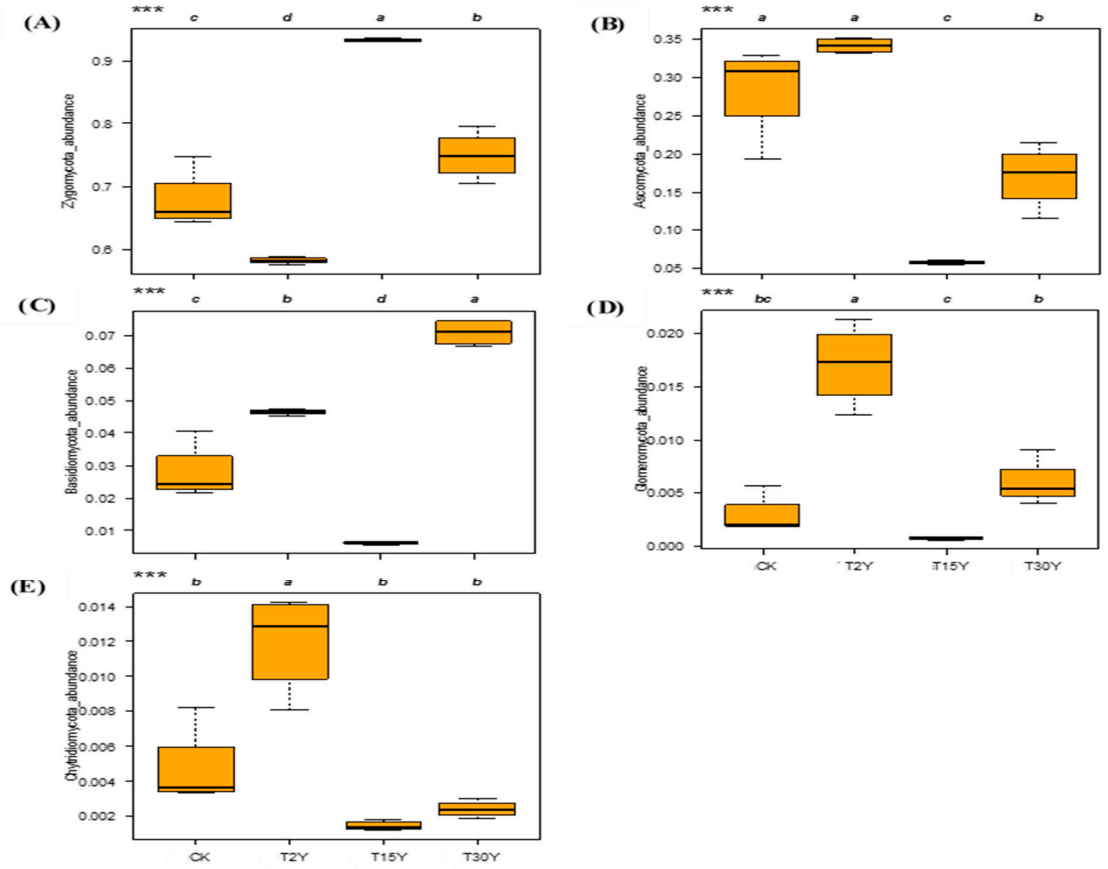
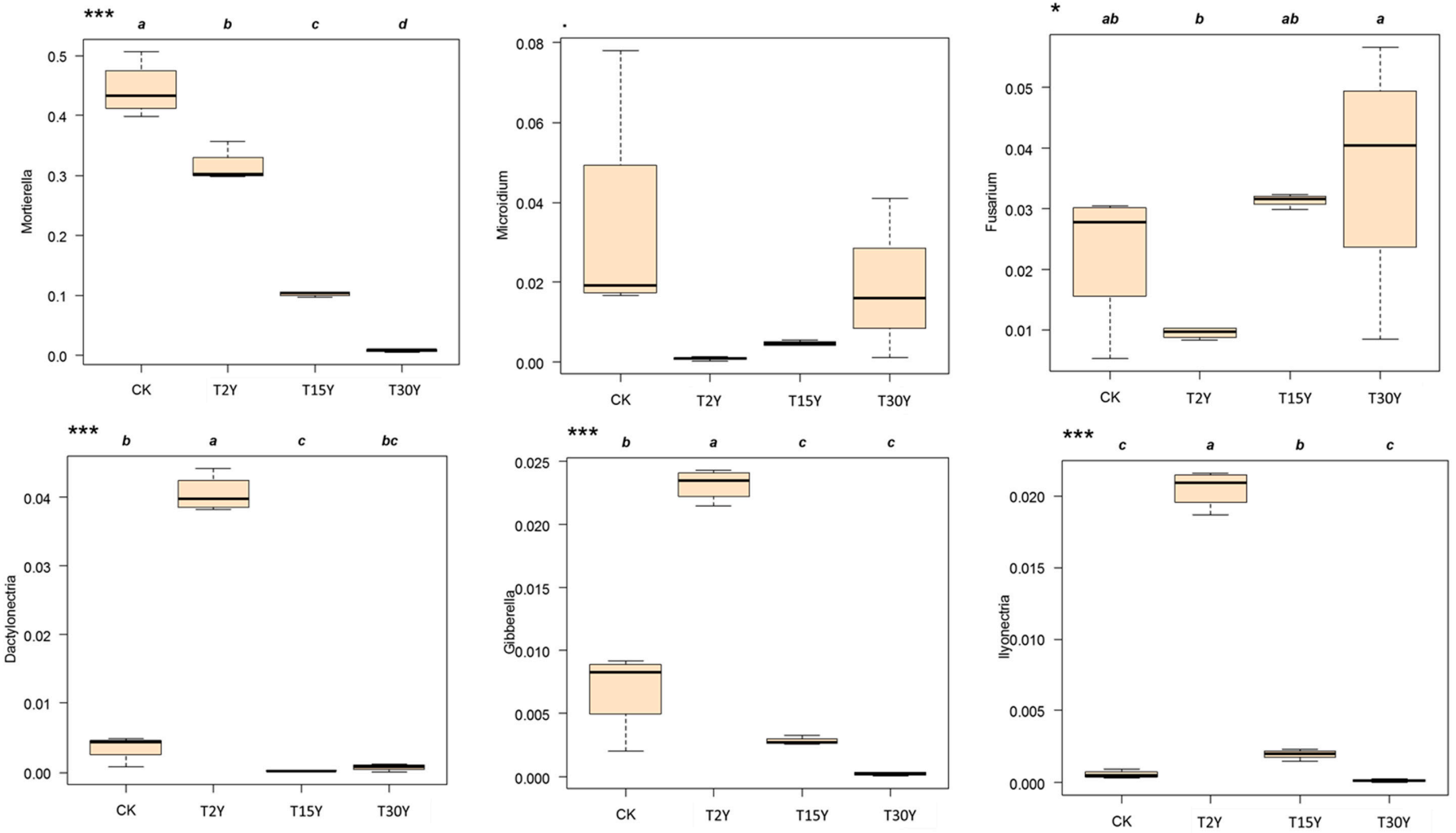


Figure S2. Box plots representthe relative abundance of fungal phyla in control and three series of tea fields. A: *Zygomycota*; B: *Ascomycota*; C: *Basidiomycota*; D: *Glomeromycota*; E: *Chytridiomycota*. Error bars with different lowercase letters indicate significant differences among treatments based on the LSD test ($P < 0.05$). “CK”, “T2Y”, “T15Y” and “T30Y” represent fields consecutively planted for 0, 2, 15 and 30 years, respectively.


***
a
b
c
d
Mortierella
0.5
0.4
0.3
0.2
0.1
0.0
CK
T2Y
T15Y
T30Y
.
Microidium
0.08
0.06
0.04
0.02
0.00
CK
T2Y
T15Y
T30Y
*
ab
b
ab
a
Fusarium
0.05
0.04
0.03
0.02
0.01
CK
T2Y
T15Y
T30Y
***
b
a
c
bc
Dactylonectria
0.04
0.03
0.02
0.01
0.00
CK
T2Y
T15Y
T30Y
***
b
a
c
c
Gibberella
0.025
0.020
0.015
0.010
0.005
0.000
CK
T2Y
T15Y
T30Y
***
c
a
b
c
Ilyonectria
0.020
0.015
0.010
0.005
0.000
CK
T2Y
T15Y
T30Y

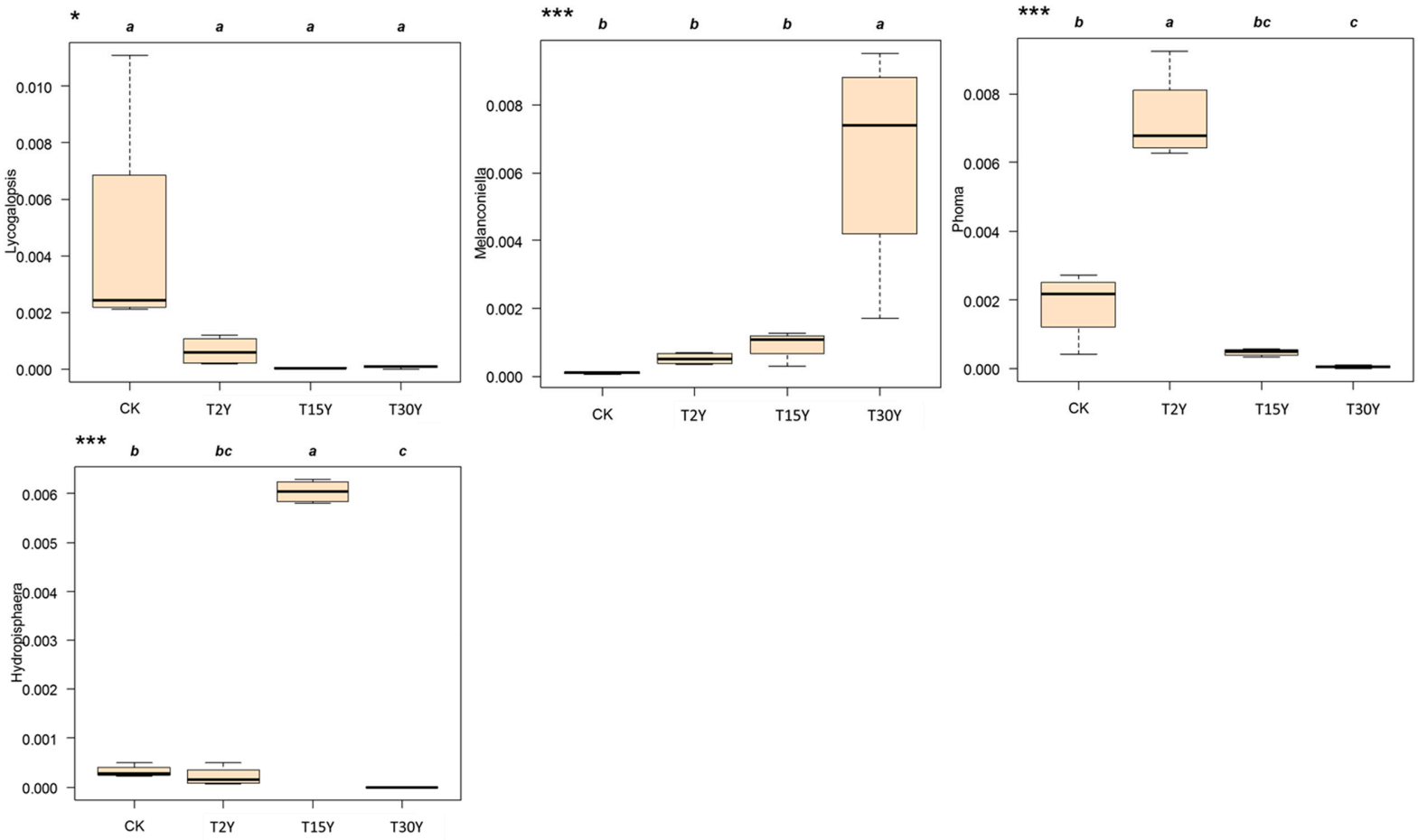
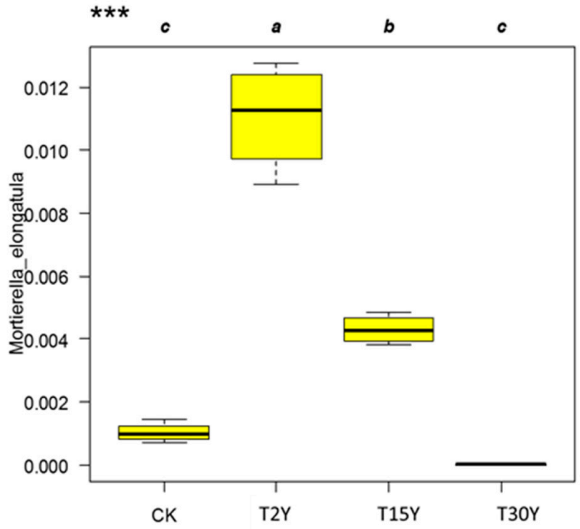
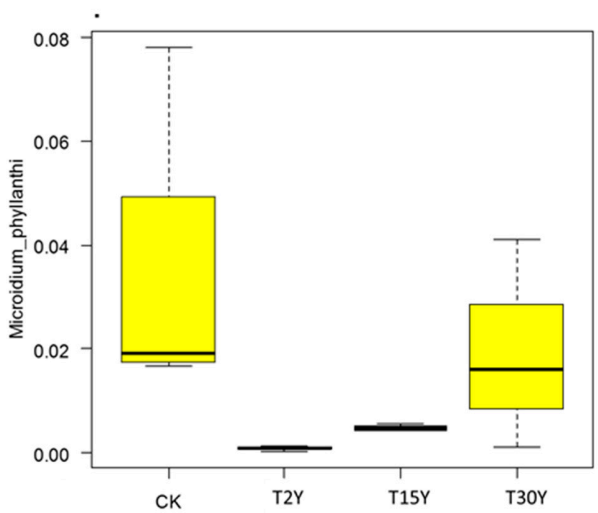
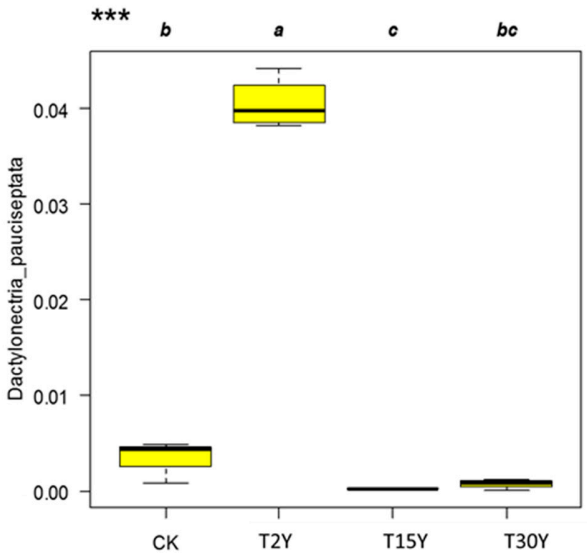
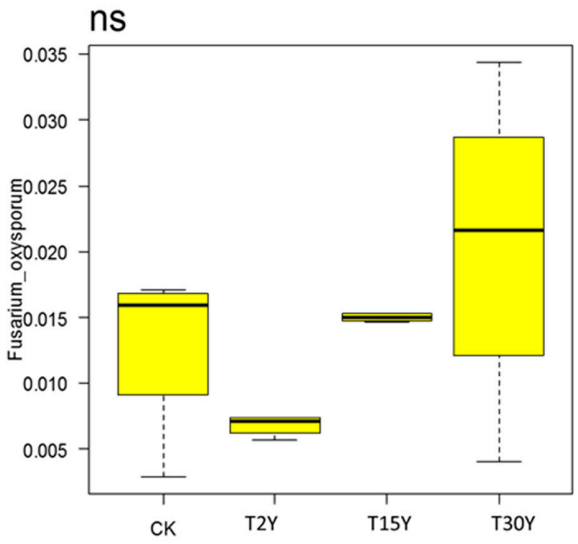


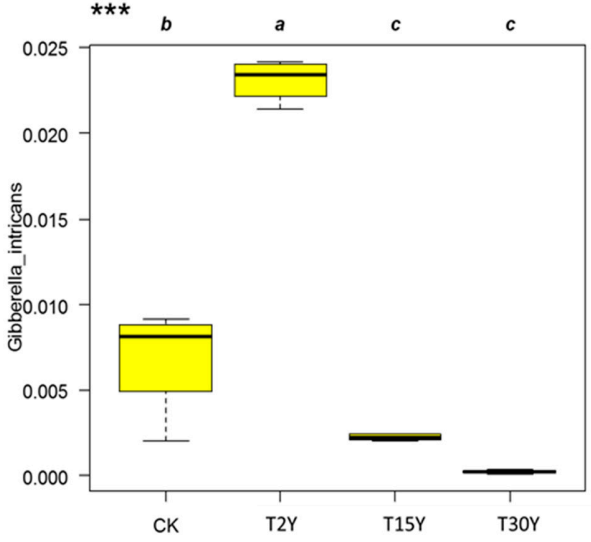
Figure S3. Box plots represent the relative abundance of top fungal generain control and three series of tea fields. Error bars with different lowercase letters indicate significant differences among treatments based on the LSD test ($P < 0.05$, $*P < 0.01$, $*** P < 0.001$)). "CK", "T2Y", "T15Y" and "T30Y" represent fields consecutively planted for 0, 2, 15 and 30 years, respectively.

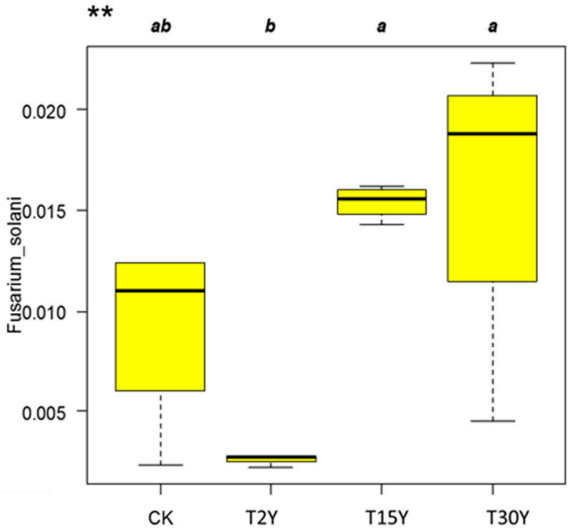

***
c
a
b
c
Mortierella_elongatula
0.012
0.010
0.008
0.006
0.004
0.002
0.000
CK
T2Y
T15Y
T30Y


.
Microidium_phyllanthi
0.08
0.06
0.04
0.02
0.00
CK
T2Y
T15Y
T30Y


***
b
a
c
bc
Dactylonectria_pauciseptata
0.04
0.03
0.02
0.01
0.00
CK
T2Y
T15Y
T30Y


ns
Fusarium_oxysporum
0.035
0.030
0.025
0.020
0.015
0.010
0.005
CK
T2Y
T15Y
T30Y


***
b
a
c
c
Gibberella_intricans
0.025
0.020
0.015
0.010
0.005
0.000
CK
T2Y
T15Y
T30Y


**
ab
b
a
a
Fusarium_solani
0.020
0.015
0.010
0.005
CK
T2Y
T15Y
T30Y

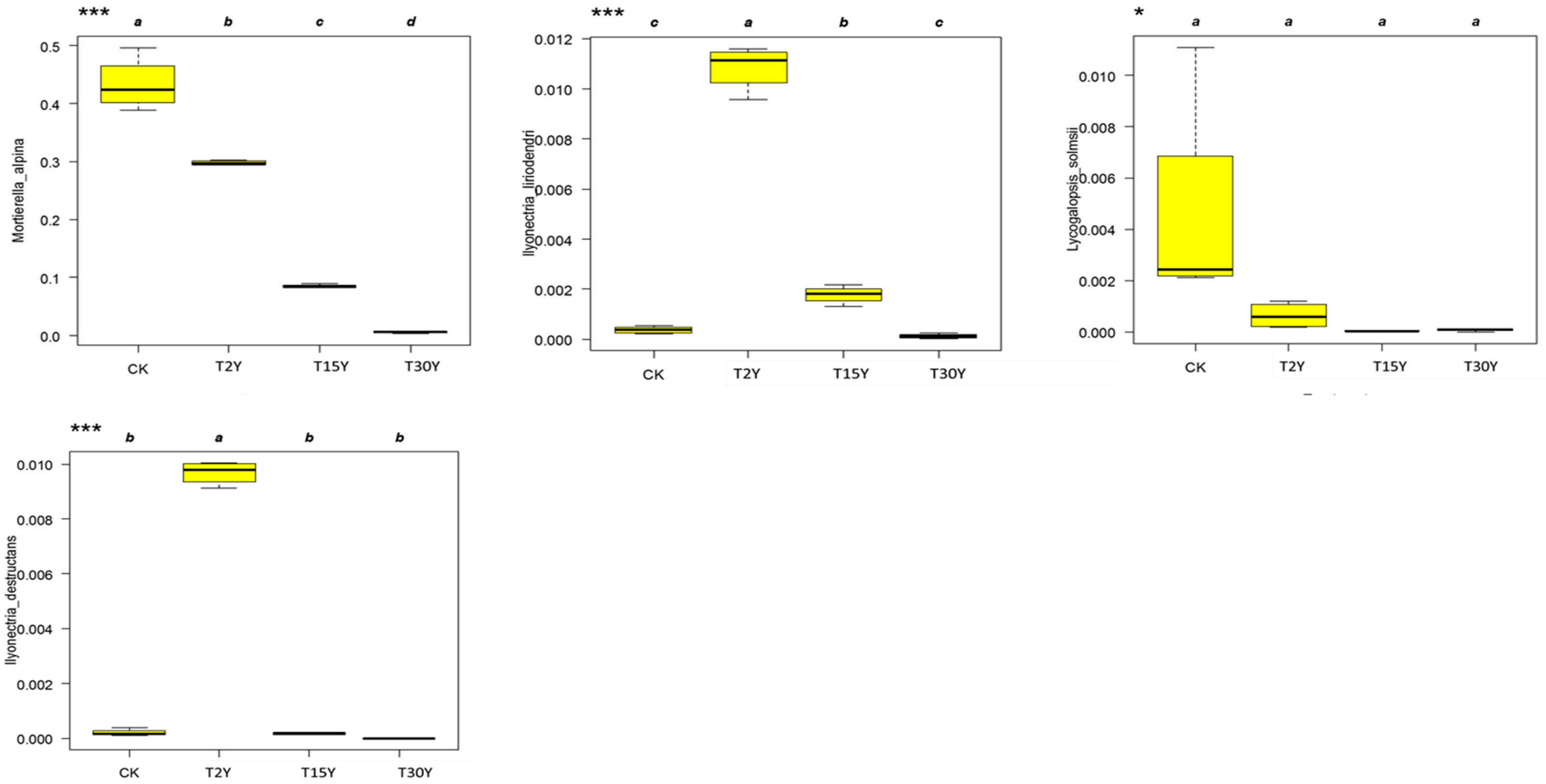


Figure S4. Box plots represent the relative abundance of top fungal species in the control and three series of tea fields. Error bars with different lowercase letters indicate significant differences among treatments based on the LSD test ($P < 0.05$, $*P < 0.01$, $*** P < 0.001$)). "CK", "T2Y", "T15Y" and "T30Y" represent fields consecutively planted for 0, 2, 15 and 30 years, respectively.

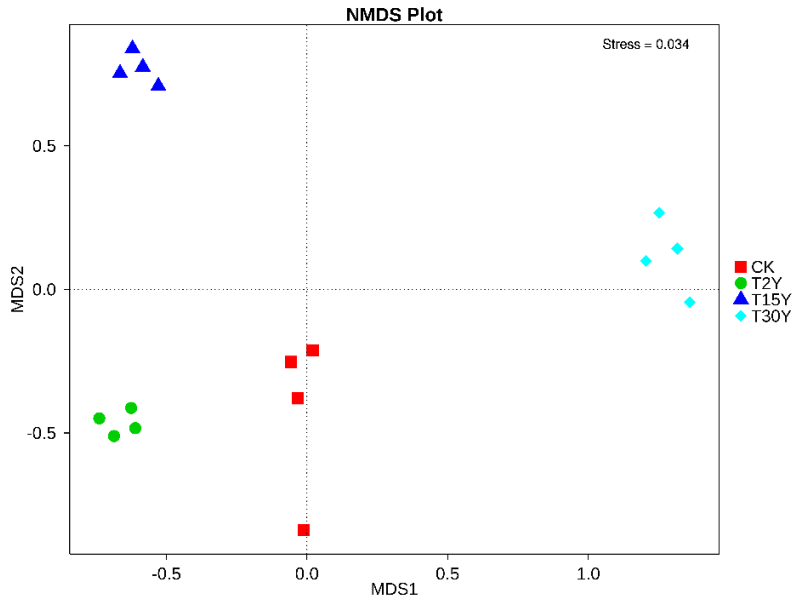


Figure S5. Non-metric multidimensional scaling graphs (NMDS) showing differences of fungal communities between the analyzed soil samples obtained from control and three-time series tea plantations. “CK," "T2Y", "T15Y" and "T30Y" represent fields consecutively planted for 0, 2, 15 and 30 years, respectively.

Table S1. Pearson's correlation between continuous cropping and abundant taxa of fungi (phyla, genera and species) in control and different age monoculture tea fields. * Shows the significance level at $P < 0.05$ and ** shows significance level at $P < 0.01$.

Phylum	Time	Genus	Time	Species	Time
Zygomycota	0.43	*Mortierella*	-0.96**	*Mortierella_alpina*	-0.95**
Ascomycota	-0.55	*Microidium*	0.65*	*Microidium_phyllanthi*	0.651*
Basidiomycota	0.41	*Fusarium*	0.70*	*Dactylonectria_pauciseptata*	-0.83**
Glomeromycota	-0.60*	*Dactylonectria*	-0.83**	*Fusarium_oxysporum*	0.65*
Chytridiomycota	-0.76**	*Gibberella*	-0.89**	*Gibberella_intricans*	-0.88**
Incertae_sedis_Fungi	0.75**	*Ilyonectria*	-0.88**	*Fusarium_solani*	0.73**
Neocallimastigomycota	-0.66*	*Lycogalopsis*	-0.59*	*Mortierella_elongatula*	-0.96**
		Melanconiella	0.77**	*Ilyonectria_liriodendri*	-0.90**
		Phoma	-0.85**	*Lycogalopsis_solmsii*	-0.59*
		Hydropisphaera	-0.07	*Ilyonectria_destructans*	-0.85**

Table S2. Species functions

Species	Effect on plants	Plants	References
Mortierella alpina	Suppress corm rot disease, Improve morphological and physiological traits of plants Reduced the biotic and	Saffron crocus (*Crocus sativus*)	(Wani et al., 2017)
Fusarium oxysporum	Cause root rot and wilt	Tea	(Huu Phong et al., 2016).
Fusarium solani	Cause collar canker, dieback disease	Tea	(Sinniah et al., 2017).
Microidium phyllanthi	Cause powdery mildew	Chamber bitter	(Tam et al., 2015).
Gibberella intricans	Trichothecene-producing plant pathogen	wide range of plant species	(Salch and Beremand, 1993).
Ilyonectria liriodendri	Cause black foot disease	Grape	(Pathrose et al., 2014)
Dactylonectria pauciseptata	Cause black foot disease	Grape	(Piperkova et al., 2017)
	Cause Root Rot disease	Plum	

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