



Figure S1. The rarefaction curve (A) and the abundance ranking of operational taxonomic units (OTUs) (B) of Chinese yam rhizosphere fungi under different foliar fertilizer. CK, spray with water; F1, NPK foliar fertilizer; F2, NPK+Fe-Mn-Zn foliar fertilizer; F3, Fe-Mn-Zn foliar fertilizer.

Table S1. Mantel tests showing correlations (R values) between MAE, MIE, plant growth parameters, active ingredients parameters, soil physicochemical parameters and fungi community composition.

Variable	MAE	MIE	PGI	PAIC	PMA	PMI	SEA	SMA	SMI	SPC	Fungi
MAE	1										
MIE	-0.07	1									
PGI	0.35***	0.05	1								
PAIC	0.14*	0.17*	0.13*	1							
PMA	0.26**	0.07	0.16*	0.11*	1						
PMI	-0.13*	0.25*	-0.08	-0.18*	-0.12*	1					
SEA	0.15*	0.02	0.11*	0.03	-0.06	-0.02	1				
SMA	0.11*	0.05	0.05	0.08	0.01	0.03	-0.06	1			
SMI	-0.16*	0.13*	-0.13*	-0.04	-0.10*	0.14*	0.09	-0.04	1		
SPC	-0.12*	0.10*	-0.21**	0.03	0.04	0.08	-0.15*	-0.06	0.04	1	
Fungi	0.08	-0.07	0.17*	0.05	-0.15*	-0.05	0.18*	-0.22**	0.13*	0.20**	1

Table S2. Optimal range of soil parameters for yam growth under foliar fertilizer treatment.

	Total samples	Range	Mean±SD	Sub-optimum		Optimum		Super-Optimum		Optimum range
				Sample	%	Sample	%	Sample	%	
Organic matter(mg/g)	20	8.64~11.84	10.24±1.37	8	40	10	50	2	10	9.0~11.5
pH	20	7.78~8.13	7.95±0.08	10	50	6	30	4	20	7.8~8.1
Available N(mg/kg)	20	54.71~71.82	62.25±4.61	8	40	5	25	7	35	60.0~68.0
Available P(mg/kg)	20	6.42~8.41	7.45±0.73	12	60	8	40	0	0	6.5~8.0

Available										
K(mg/kg)	20	88.64~ 115.91	100.85±7.70	4	20	11	55	5	25	95.0~102.0
Fe (g/kg)	20	18.83~26.67	23.19±2.94	10	50	4	20	6	30	20.0~24.0
Mn(g/kg)	20	0.29~0.61	0.42±0.11	15	75	5	25	0	0	0.3~0.5
Zn (g/kg)	20	0.059~0.094	0.075±0.014	3	15	13	65	4	20	0.06~0.08

Note: The setting of the optimal range mainly refers to the comprehensive evaluation of yam growth morphology and rhizosphere soil parameters in this study.