

**Supplementary Table 1.** Relative abundances of the functions with top-20 at the pathway level 3 at different treatments ( $n = 3/\text{treatment}$ )

Pathway level 3	Description	JX_D	JX_H	YX_D	YX_H
ko01100	Metabolic pathways	16,184,101.57	15,711,212.47	15,880,293.50	14,908,525.08
ko01110	Biosynthesis of secondary metabolites	7,619,281.61	7,416,896.58	7,539,550.85	7,152,465.21
ko01120	Microbial metabolism in diverse environments	4,954,738.50	4,706,611.53	4,778,137.05	4,476,498.42
ko01230	Biosynthesis of amino acids	2,920,368.64	2,869,775.19	2,902,162.85	2,754,180.14
ko01200	Carbon metabolism	2,594,129.30	2,534,000.96	2,557,826.27	2,445,129.48
ko02010	ABC transporters	2,117,757.11	2,028,598.19	1,972,815.78	1,740,548.00
ko02020	Two-component system	1,587,206.86	153,3631.17	1,557,196.73	1,335,280.74
ko02024	Quorum sensing	1,496,196.33	1,429,853.13	1,476,631.36	1,324,888.18
ko03010	Ribosome	1,436,516.25	1,423,708.80	1,450,308.05	1,387,226.38
ko00230	Purine metabolism	1,240,359.17	1,204,524.31	1,210,116.33	1,134,100.22
ko00190	Oxidative phosphorylation	1,084,136.36	1,051,417.94	1,090,486.44	1,017,312.95
ko00630	Glyoxylate and dicarboxylate metabolism	989,172.22	958,293.22	979,861.62	939,040.50
ko00620	Pyruvate metabolism	992,251.26	966,959.90	973,163.48	922,480.64
ko00010	Glycolysis / Gluconeogenesis	917,196.89	890,998.05	892,934.27	852,025.16
ko00260	Glycine, serine and threonine metabolism	888,712.21	869,232.73	863,690.85	829,109.78
ko01212	Fatty acid metabolism	853,231.89	798,964.54	836,776.63	780,037.19
ko00720	Carbon fixation pathways in prokaryotes	782,892.16	763,577.50	786,606.80	763,827.45
ko00520	Amino sugar and nucleotide sugar metabolism	773,338.03	766,787.20	762,719.57	743,882.48
ko00280	Valine, leucine and isoleucine degradation	790,229.80	729,074.40	757,283.24	720,783.53
ko00650	Butanoate metabolism	781,298.18	731,844.85	745,471.22	702,740.96

JX\_D, Jiuxiang infested soil; JX\_H, Jiuxiang uninfested soil; YX\_D, Yuxi infested soil; YX\_H, Yuxi uninfested soil.