

Supplementary information

Restoration of long-term monoculture degraded tea orchard by green and goat manures applications system

Yuhang Jiang^{1, 2, 3*}, Yasir Arafat^{1, 2, 3*}, Puleng Letuma^{2, 3}, Liaqat Ali¹, Muhammad Tayyab², Muhammad Waqas,^{2, 3}, Yanchun Li^{1, 2, 3}, Weiwei Lin^{1, 2, 3}, Sheng Lin^{1, 2, 3**}, Wenxiong Lin^{1, 2, 3**}

¹College of life Science, Fujian Agriculture and Forestry University, Fuzhou 35002, China

²Key Laboratory of Fujian Province for Agroecological process and safety monitoring, Fujian Agriculture and Forestry University, Fuzhou 35002, China

³Institutes of Agroecology, Fujian Agriculture and Forestry University, Fuzhou 35002, China

*These authors contributed equally to this work

**Corresponding authors, e-mail: lwxfafu.edu.cn and lsjk1958@163.com

Table S1. Nutrient content in the green manure (Leguminous crops) and goat manure

Treatments	TN (g·kg ⁻¹)	TP (g·kg ⁻¹)	TK (g·kg ⁻¹)
Egyptian clover	20.2±2.34 ^e	2.46±0.07 ^f	6.34±0.03 ^b
Winter Pea	25.24±0.91 ^d	2.83±0.09 ^e	5.8±0.07 ^c
Hairy Vetch	28.19±0.17 ^c	4.82±0.06 ^b	8.62±0.09 ^a
Alfalfa	29.59±1.05 ^b	3.57±0.11 ^d	5.79±0.03 ^c
Laredo Soybean	31.21±0.28 ^a	5.4±0.04 ^a	5.48±0.08 ^c

Note: TN, TP, TK, represents total Nitrogen, total Phosphorus and total Potassium respectively. The data mean ± standard deviation, and different letters in same columns show significant difference determined by Tukey's test ($P \leq 0.05$ n=4).



Figure S1. Green and goat manure application system: (a) intercropping of Laredo soya bean with tea plantation (b) green manure application to tea orchard (c) goat manure (d) goat manure application to tea orchard

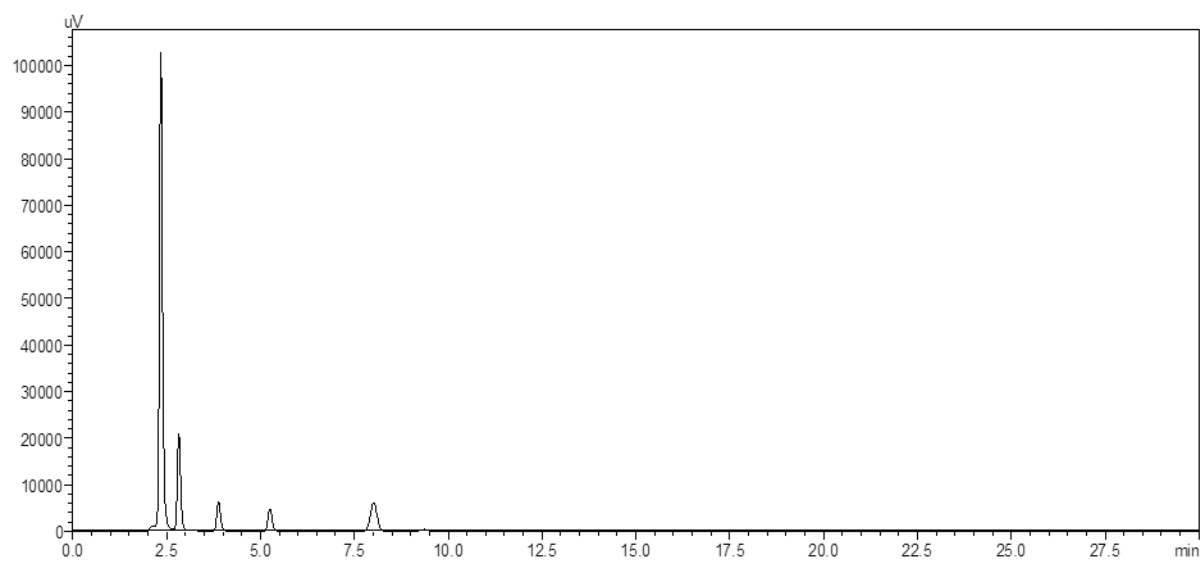


Figure S2. Five low molecular organic acid chromatograms (from left to right are: oxalic acid, tartaric acid, malic acid, acetic acid, citric acid)

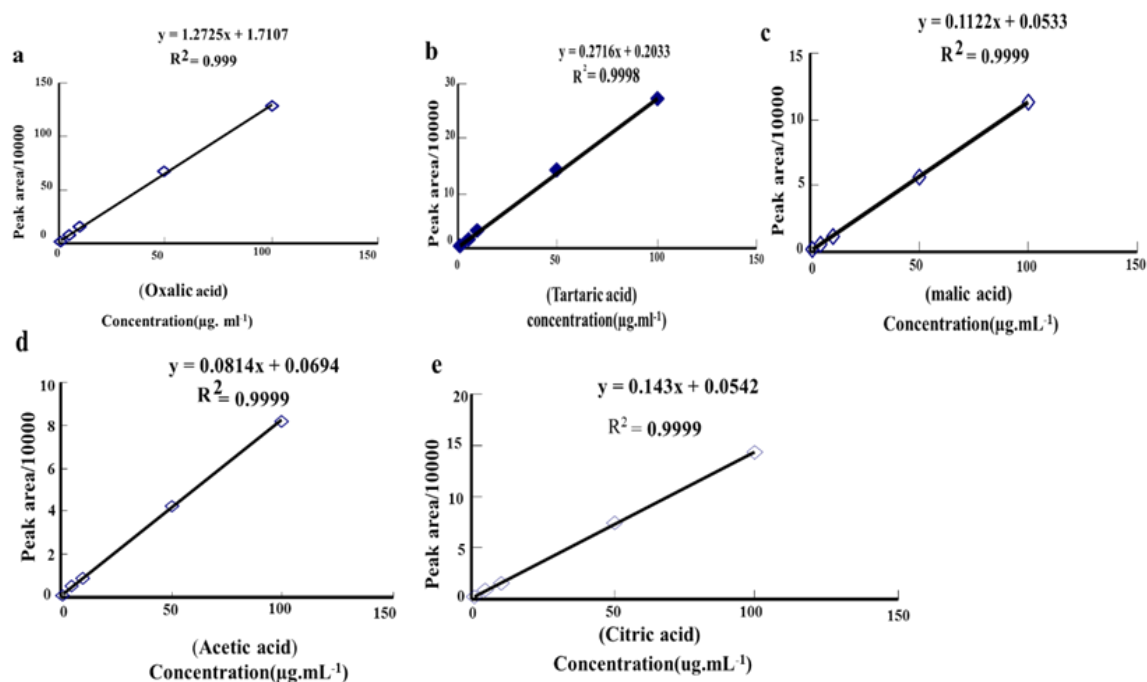


Figure S3. Standard curve for five kinds of low molecule weight organic acids: (a)Oxalic acid(b) Tartaric acid (c) Malic acid (d) Acetic acid (e) Citric acid

Table S2. Standard curve regression equation of different components: Y: The chromatograph peak area; y: absorbance; x: concentration ($\mu\text{g}\cdot\text{mL}^{-1}$)

(Components)	Regression equation	Correlation coefficient (R^2)
Tea ployphenols	$Y=6574.9x+2443.2$	0.9996
Theanine	$Y=48429x+13234$	0.9999
Caffeine	$Y=34629x-3763.2$	0.9999
Free amino acid	$y = 0.0452x + 0.1105$	0.9981

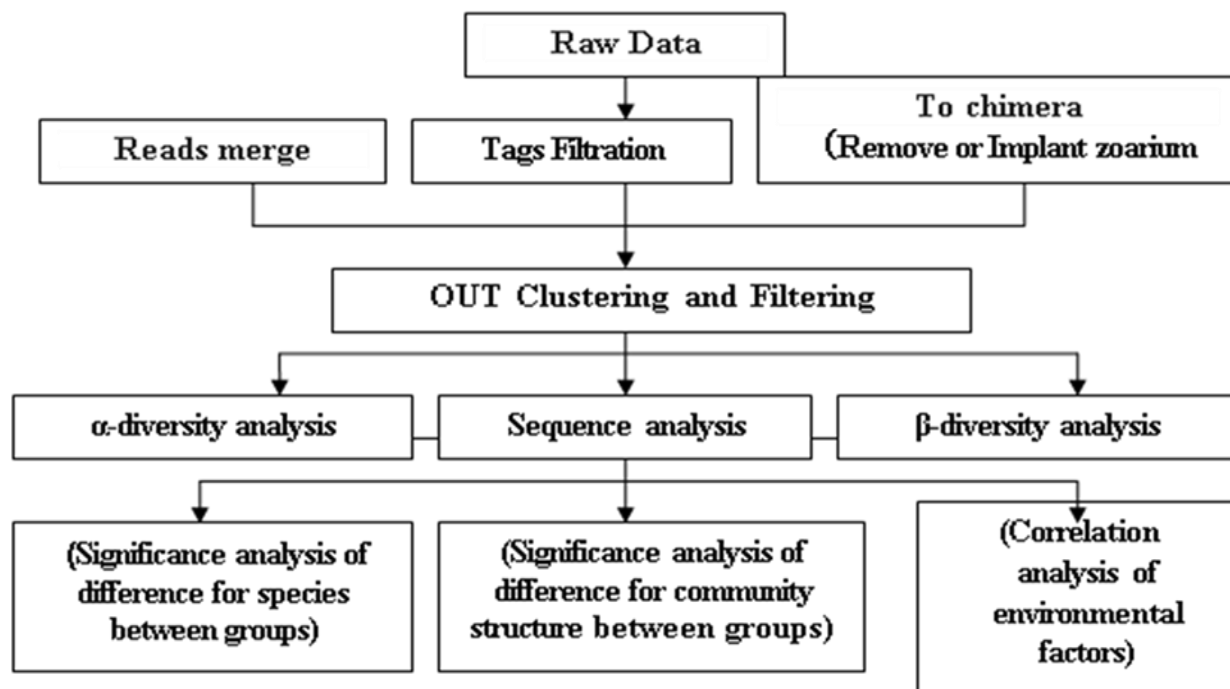


Figure S4. Sequencing Data Processing Analysis Flow