SUPPLEMENTARY MATERIALS

Table S1. Basic physicochemical properties of the cultivated soil layer

Soil depth (cm)	Mechanical composition (%)			Available nitrogen (mg/kg)	Available phosphorus (mg/kg)	Available potassium (mg/kg)	Organic matter (mg/kg)	pH
	Sand	Silt	Clay	AN	AP	AK	OM	
0-20	21.8	56.3	21.9	163.30±10.52	20.61±2.94	187.92±18.93	29.87±4.54	6.74±0.19

Table S2. Basic physicochemical properties of organic fertilizers

N/%	P_2O_5/%	K_2O/%	OM/%
5.05	2.75	1.50	31.2

P_2O_5, K_2O, and OM are phosphorus pentoxide, potassium oxide, and organic matter, respectively.

Table S3. Biochar composition

Organic carbon (g/kg)	O (g/kg)	N (g/kg)	P (g/kg)	K (g/kg)	Si (g/kg)	Mg (g/kg)	Ca (g/kg)	pH
598	166	7.85	1.33	17.0	60.0	2.00	3.00	8.69

Table S4. Fertilization amount for soybean

Treatment	N (kg/ha)	P_2O_5 (kg/ha)	K_2O (kg/ha)	Biochar (kg/ha)	Organic fertilizer (kg/ha)
SCN	46	64	33	0	0
SCB	46	64	33	4000	0
SCO	46	64	33	0	15000
SCBO	46	64	33	4000	15000

Table S5. Effect of different fertilization regimes on soil organic carbon pool

	L	LI	CPI	CPMI
SCN	1.01±0.03b	1.00±0.00b	1.00±0.00c	100.00±0.00c
SCB	1.05±0.07b	1.08±0.07b	1.42±0.02a	152.31±8.47b
SCO	1.31±0.07a	1.34±0.08a	1.32±0.03b	176.30±6.75a
SCBO	0.97±0.02b	1.00±0.02b	1.40±0.01a	139.38±3.17b

L: carbon pool activity; LI: carbon pool activity index; CPI: carbon pool index; CPMI: carbon pool management index

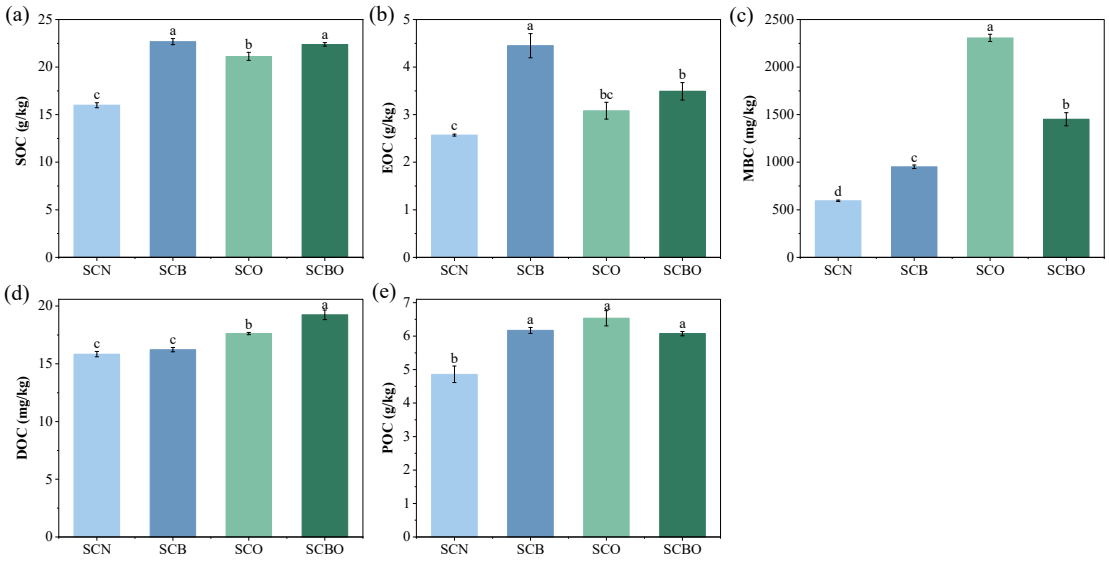


Figure S1. Effect of different fertilization regimes on SOC and its labile components.

Note: The data in the figures are mean value ± standard error; different lowercase letters indicate different treatments reaching a significant difference level of 5%.

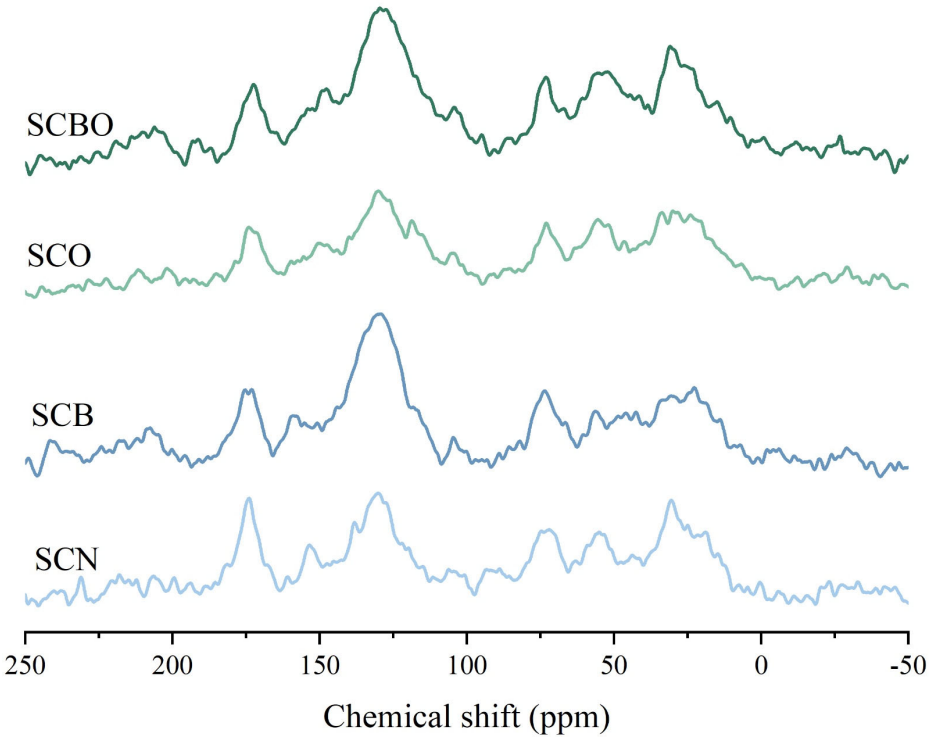


Figure S2. ^{13}C-NMR spectra of soil under different fertilization regimes.

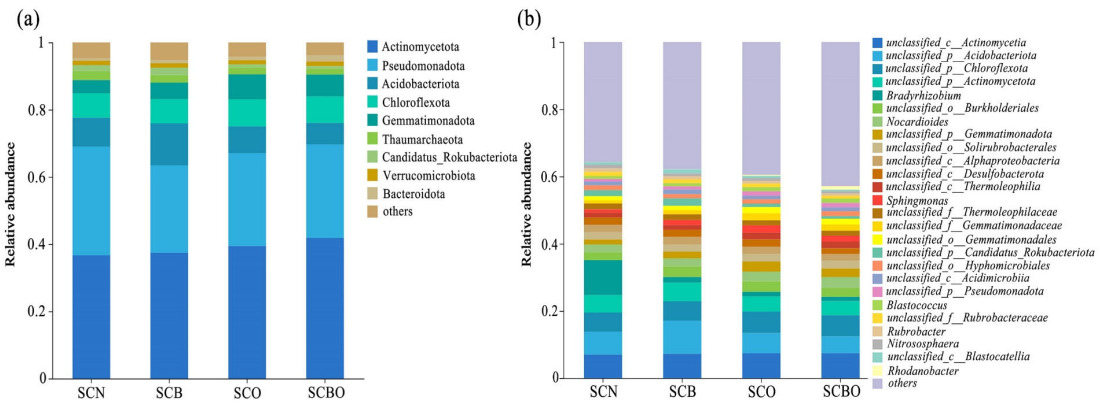


Figure S3. Microbial community composition under different fertilization regimes at (a) the phylum level and (b) the genus level.

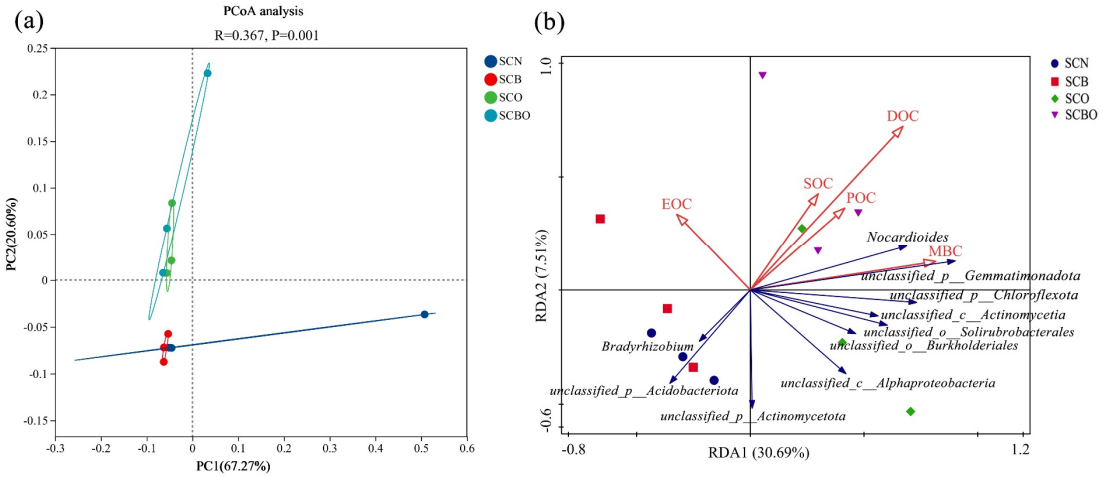


Figure S4. (a) PCoA of microbial communities at the genus level under different fertilization regimes; (b) RDA showing the relationship between labile organic carbon fractions and the top 10 most abundant microbial genera.