

**Field Baseflow Eluting SOM-rich Sandy Soil to Exacerbate Non-point Source
Pollution of Lake Erhai, Southwest China**

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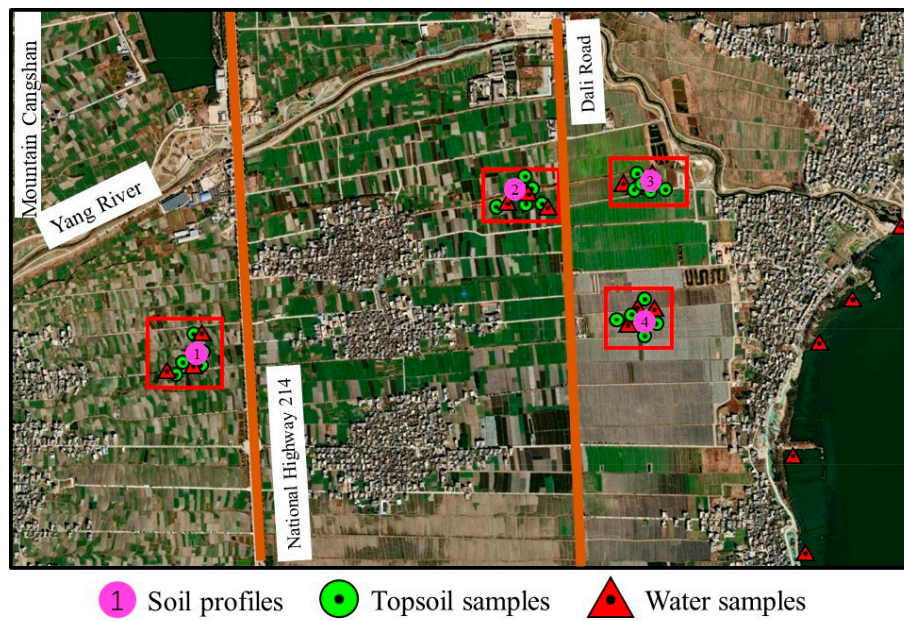


Figure S1. Distributions of sample sites in the Lake Erhai basin.

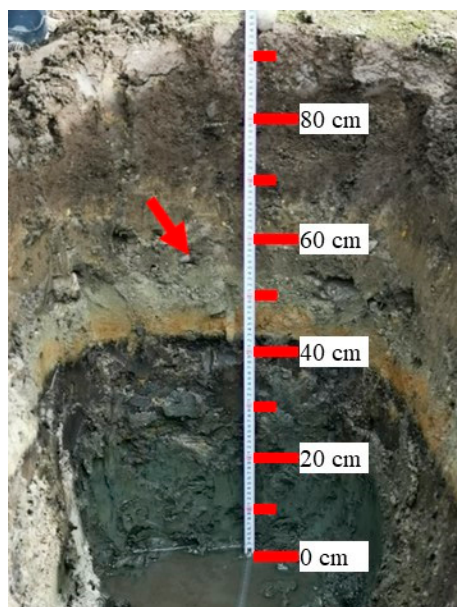


Figure S2. One of soil profiles of agricultural planting area in west bank of Lake Erhai.

The red arrow marks the gravel layer blow about 50 cm blow of topsoil.

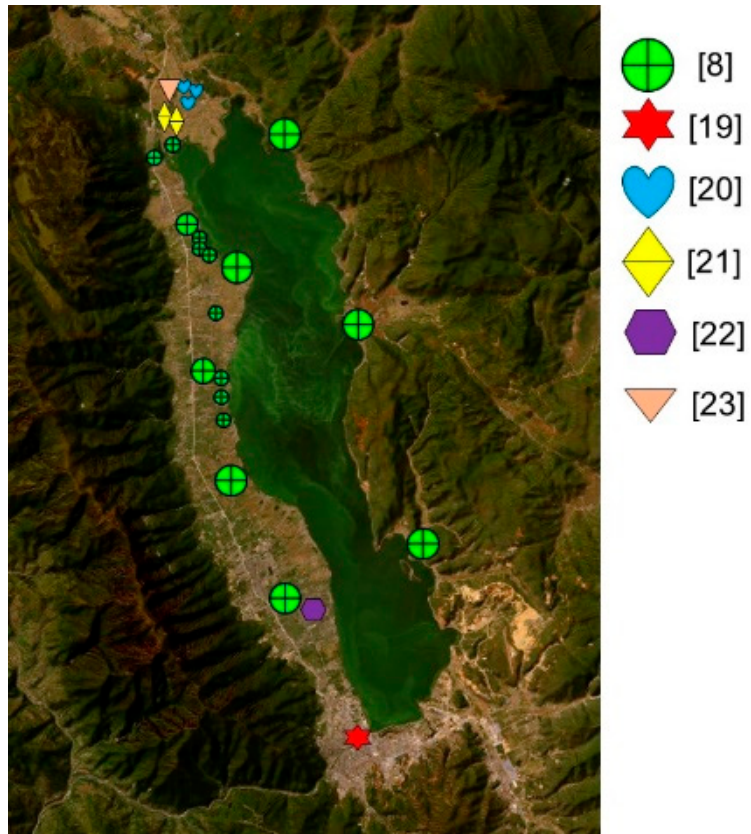


Figure S3. Locations of soil sample sites in literature surveys.



Figure S4. One of soil profiles of agricultural planting area in west bank of Lake Erhai.

The red arrows mark the straw residues in the topsoil.

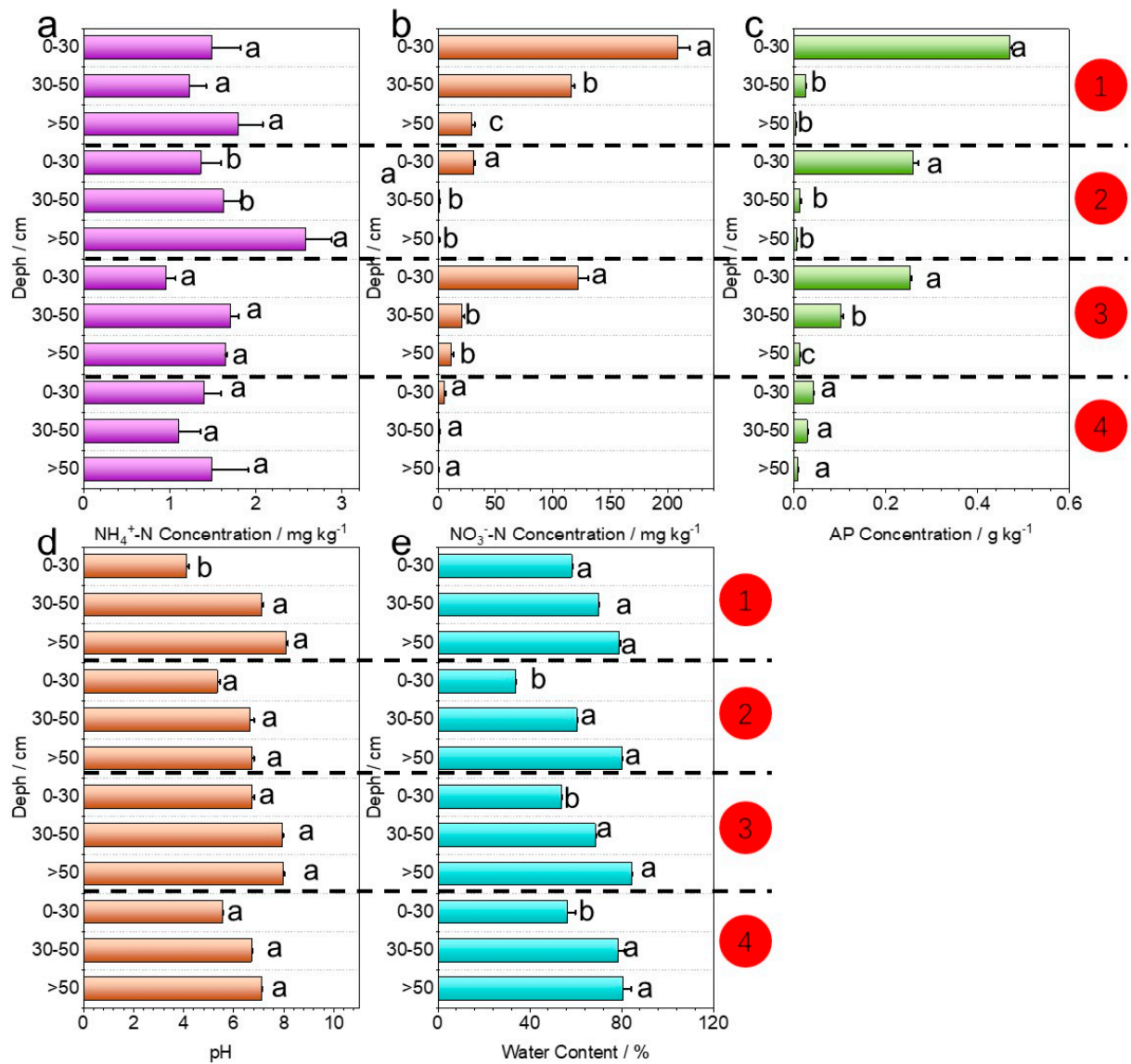


Figure S5. Nutrient concentrations of (a) $\text{NH}_4^+\text{-N}$, (b) $\text{NO}_3^-\text{-N}$ and (c) AP in different soil depth. (d) Soil pH and (e) water content in different soil depth. The serial numbers of soil profiles from 1–4 are distributed from mountain Cangshan to Lake Erhai, with crops of corn, vegetable, tobacco and rice, respectively.

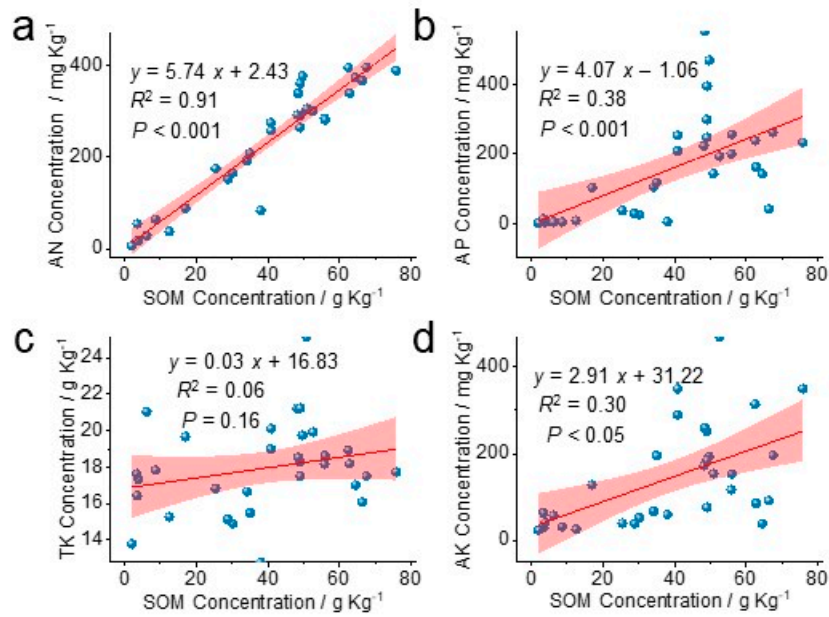


Figure S6. Correlation between SOM concentration with soil nutrient concentrations of (a) AN, (b) AP, (c) TK and (d) AK. The red lines represent fitting line. The pink areas indicate 95% Confidence Band. Significant difference was marked by “ $P < 0.05$ ” and “ $P < 0.001$ ”.

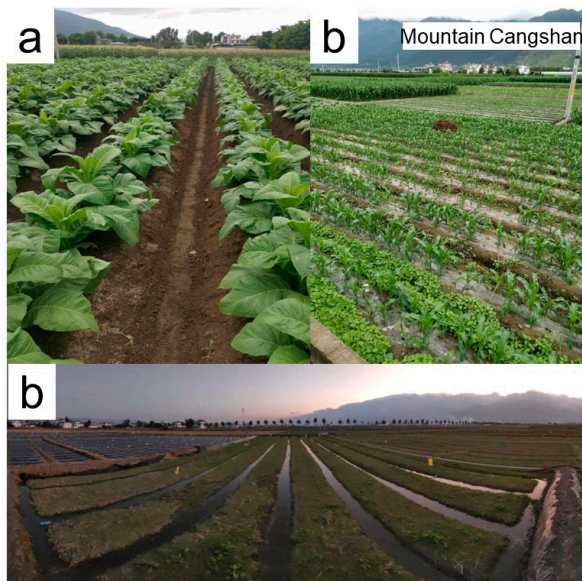


Figure S7. Pictures of the ridge cultivations in (a) tobacco and (b) corn fields and (c) flood irrigation in field.

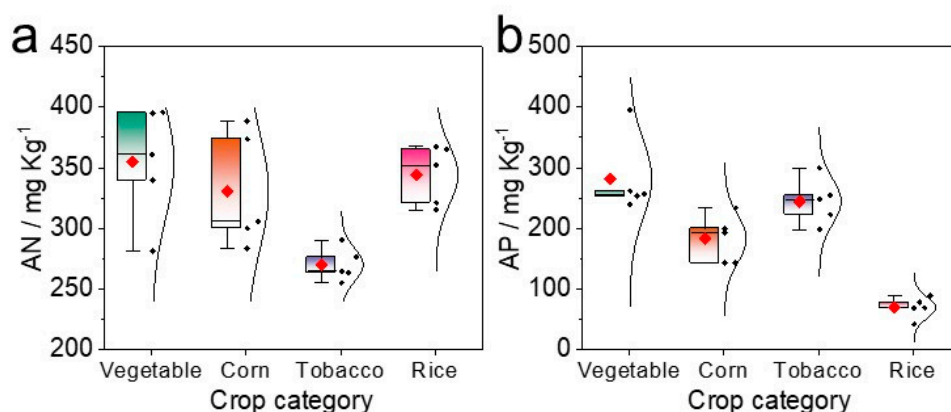


Figure S8. Concentrations of (a) AN and (b) AP in topsoil (0-20 cm) from different crops fields. The red diamond indicates mean values. The solid line represents the median. The up and down boundaries of box means the percentage lines of 75% and 25%, respectively. The right arc represents the distribution of concentrations.

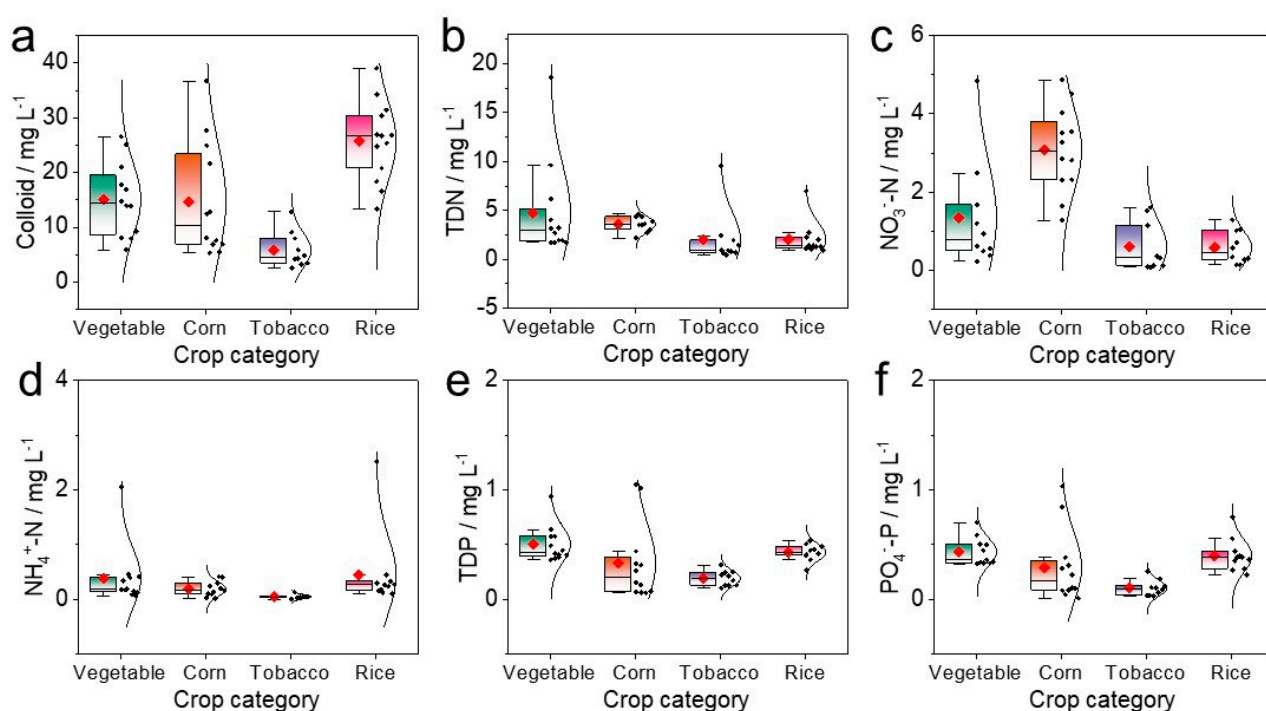


Figure S9. Concentrations of (a) colloid, (a) TDN, (c) NO_3^- -N, (d) NH_4^+ -N, (e) TDP and (f) PO_4^{3-} -P in field baseflow. The red diamond indicates mean values. The solid line represents the median. The up and down boundaries of box means the percentage lines of 75% and 25%, respectively. The right arc represents the distribution of

concentrations.

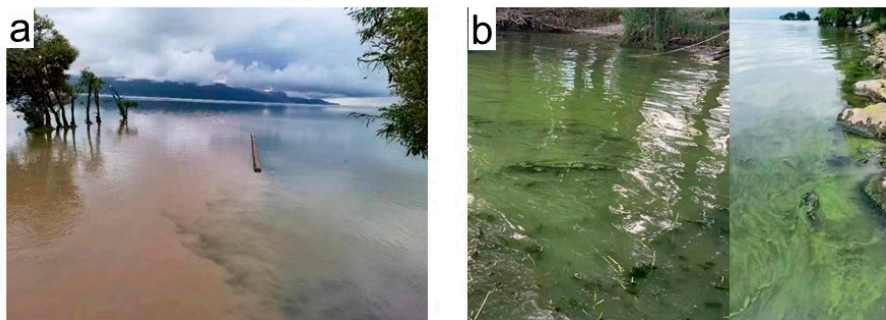


Figure S10. Photos of (a) confluence of Lake Erhai during rainfall on 07/01/2022 and (b) blooms in Lake Erhai after rainfall on 07/03/2022.

Table S1. Water quality grading in Yunnan province, China.

Category / mg L ⁻¹	Class I	Class II	Class III	Class IV	Class V
TP≤	0.02	0.1	0.2	0.3	0.4
TN≤	0.2	0.5	1.0	1.5	2.0

Table S2. Percentages of soil particle size at different depths. Land numbers of soil profiles from

1–4 indicate corn, vegetable, tobacco and rice, respectively.

	Land numbering	1 / %			2 / %			3 / %			4 / %		
		0-30	30-50	>50	0-30	30-50	>50	0-30	30-50	>50	0-30	30-50	>50
Particle size (mm)	>1	1.3	0.9	0.6	2.5	2.4	0	1.7	3	0	2	2.3	1.4
	1-0.5	2	2.8	1.2	3.9	4.6	0.2	3	6.2	0	2.6	3.3	1.6
	0.5-0.25	11	16.8	4.8	11.8	14.4	8.8	11.5	18.8	1.6	7.4	7.8	7.5
	0.25-0.05	22.6	33.9	27.7	28.2	26.6	42.2	22.9	23.4	32	19.8	25.9	33
	0.05-0.02	19.3	18.7	28	19.9	20.1	19.9	18.6	15.8	31.9	18.2	20.7	20.7
	0.02-0.002	29.6	16.3	27.2	22.3	21.6	19	28.1	19.4	24.7	29.6	23.4	21.1
	<0.002	14.3	10.6	10.6	11.3	10.4	9.9	14.2	13.4	9.8	20.5	16.6	14.7

Table S3. The information of fertilizers.

Categories of fertilizer	Nutrients ratio / %			
	N	p	K	Organic matter
Compound fertilizer	15	15	15	--
urea	≥46	--	--	--
Organic fertilizer (chicken manure)		≥ 7		≥50
Organic fertilizer (sheep manure)		≥ 8		≥ 45
microbial fertilizer		≥22		≥ 45