

Farmer survey-based agricultural non-point source assessment in the typical regions of the Erhai Lake Basin, China

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SUPPLEMENTARY MATERIALS



Fig. S1 Number of permanent residents in various towns.

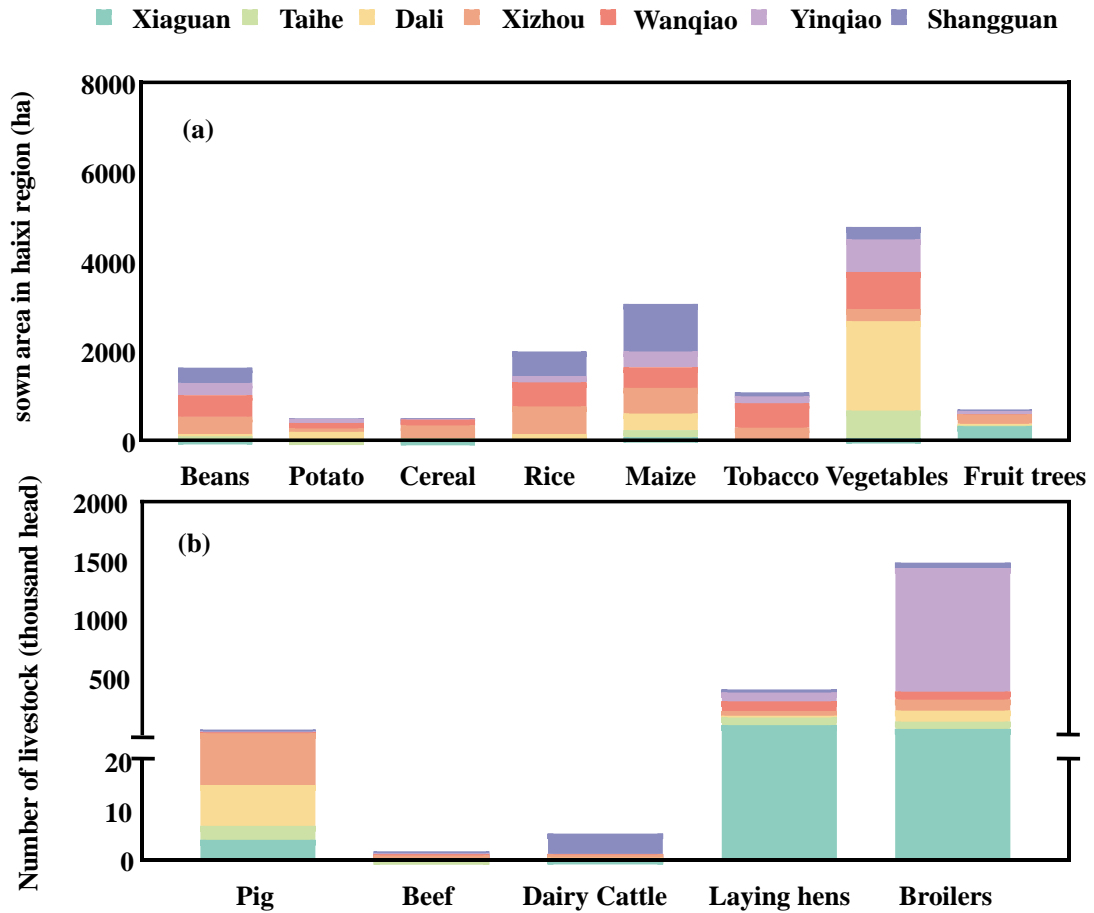


Fig. S2 Crop sown area (a) and number of livestock (b) in Haixi Region of Erhai Lake Basin.

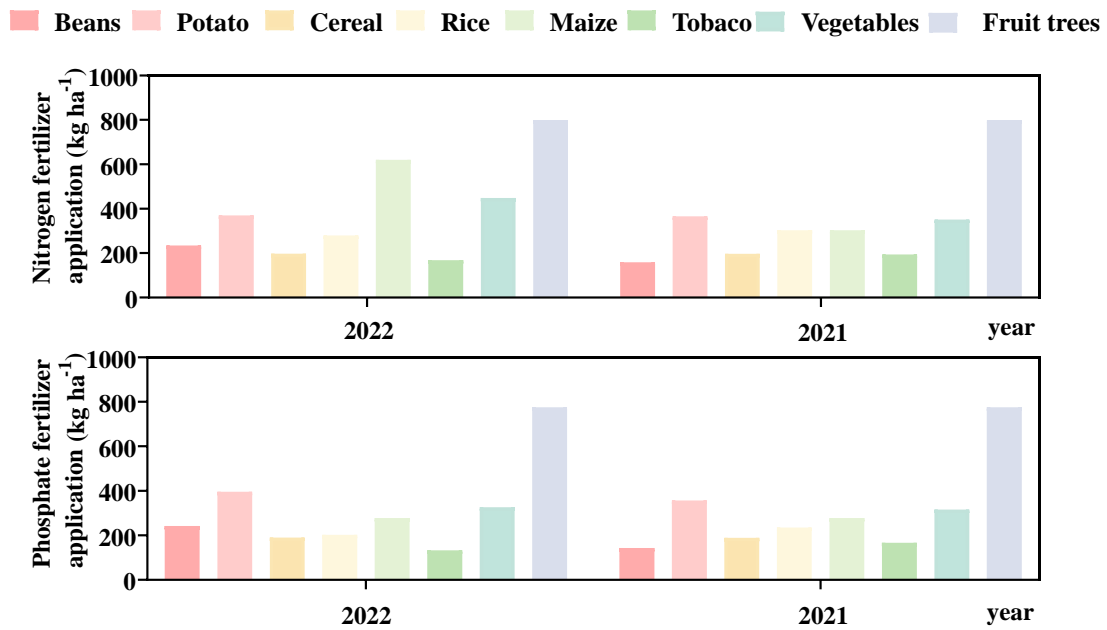


Fig. S3 Nitrogen and phosphate fertilizer application rates for various crop types in 2021–2022.

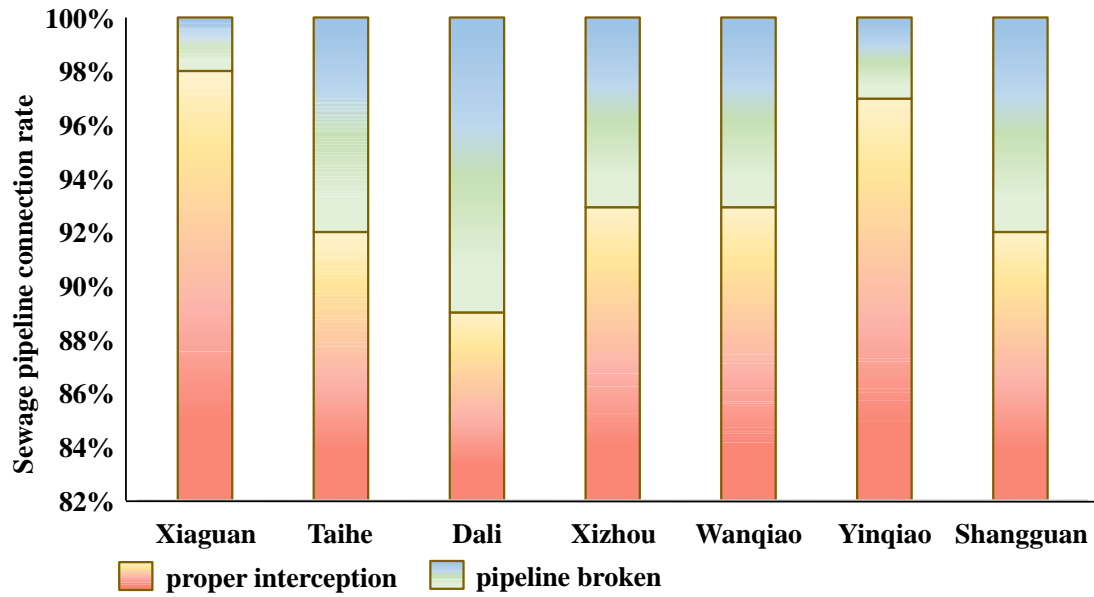


Fig. S4 Water pipeline connection status in each township.

Table S1 Agricultural statistical data and nitrogen and phosphorus losses to environment for the Haixi Region and Erhai Lake Basin

Indicator	Unit	Haixi region	Erhai Lake Basin	Reference
Population	10 ⁴ capita	45	71	[1]
Administrative areas	km ²	670	2565	
Sown area	ha	14,170	50,656	
Livestock unit	10 ⁴ LU	3.52	22.56	[2]
Total N losses to environment	kt	1.9	6.5	
Total P losses to environment	kt	0.13	0.4	

Table S2 Parameters of rural living sewage and pollutant discharge in Dali City, Yunnan Province

Pollution	Sewage discharge coefficient (L per person per day)	Pollutant generation intensity (g per person per day)			
		COD	NH ₃ -N	TN	TP
Discharge coefficient/intensity	30.34	39	4.98	7.14	0.61
Pollutant removal rate	–	64%	53%	46%	47%

REFERENCES

1. People's Government of Dali City (PGDC). Dali City Statistical Yearbook in 2022, 2024. Available at PDGC website on April 17, 2025
2. Zou T T, Meng F L, Zhou J C, Ying H, Liu X J, Hou Y, Zhao Z X, Zhang F S, Xu W. Quantifying nitrogen and phosphorus losses from crop and livestock production and mitigation potentials in Erhai Lake Basin, China. *Agricultural Systems*, 2023, 211: 103745