Table S1. References in Figure A1.

No.	Title	Years	Study Region	Ecosystem Types	C	N	P	C/N	C/P	N/P
1	Altered litter inputs modify carbon and nitrogen storage in soil organic matter in a lowland tropical forest	2021	Barro Colorado Nature Reserve, Panama	Natural forests	√	√		√		
2	C:N:P stoichiometry as an indicator of Histosol drainage in lowland and mountain forest ecosystems	2021	Poland	Natural forests	√	√	√	√	√	√
3	C:N:P stoichiometry in terrestrial ecosystems in China	2021	China	Natural forests				√	√	√
4	C:N:P stoichiometry of different soil components after the transition of temperate primary coniferous and broad-leaved mixed forests to secondary forests	2022	Liangshui National Nature Reserve, Yichun City, Heilongjiang Province	Natural forests				√	√	√
5	Carbon, nitrogen, and phosphorus stoichiometry of organic matter in Swedish forest soils and its relationship with climate, tree species, and soil texture	2022	Swedish forest	Natural forests	√	√	√	√	√	√
6	Depth-dependent soil C-N-P stoichiometry in a mature subtropical broadleaf forest	2020	Zhejiang Tiantong National Forest Park, East China	Natural forests	√	√	√	√	√	√
7	Dissolved and gaseous nitrogen losses in forests controlled by soil nutrient stoichiometry	2021	Mountain areas of the Czech Republic	Natural forests	√	√	√	√		√
8	Driving factors for soil C:N ratio in woody plant communities across northeastern Qinghai-Tibetan Plateau	2023	Northeast Qinghai-Tibet Plateau, China	Natural forests				√		
9	Dynamics in C, N, and P stoichiometry and microbial biomass following soil depth and vegetation types in low mountain and hill region of China	2021	Hilly area of Liaoning Province, China	Natural forests	√	√	√	√	√	√
10	Dynamics of carbon, nitrogen, and phosphorus stocks and stoichiometry resulting from conversion of primary broadleaf forest to plantation and secondary forest in subtropical China	2020	Fujian province China	Natural forests	√	√	√	√	√	√
11	Effects of Different Forest Types on Stoichiometric Characteristics of Carbon, Nitrogen, and Phosphorus in Tropical Soils, China	2024	Jianfengling National Nature Reserve, Hainan Province, China	Natural forests	√	√	√	√	√	√
12	Fast-decaying plant litter enhances soil carbon in temperate forests but not through microbial physiological traits	2022	East US	Natural forests	√	√		√		
13	Linkage of fine and coarse litter traits to soil microbial characteristics and nitrogen mineralization across topographic positions in a temperate natural forest	2021	Lusheng Forest Research Station, Kyoto University, Japan	Natural forests	√	√	√	√	√	√
14	Mountain agriculture in Southeast Brazil: Soil attributes and organic matter as soil chemical quality indicators	2025	Southeastern Brazil	Natural forests	√	√	√	√	√	√
15	Patterns and driving factors of soil ecological stoichiometry in typical ecologically fragile areas of China	2022	Typical ecologically fragile areas in China	Natural forests	√	√	√	√	√	√
16	Plant community structure and environmental factors regulate N-P stoichiometry of soil and leaves of larch forests in northern China	2025	Larch forest in northern China	Natural forests		√	√			√

17	Planted forests intensified soil microbial metabolic nitrogen and phosphorus limitation on the Loess Plateau, China	2022	Chinese loess plateau	Natural forests	√	√	√	√	√	√
18	Responses of soil carbon, nitrogen, and phosphorus stoichiometry to afforestation of severely desertified land in northern China	2025	Severe desertification areas in northern China	Natural forests	√	√	√	√	√	√
19	Revealing horizontal and vertical variation of soil organic carbon, soil total nitrogen and C:N ratio in subtropical forests of southeastern China	2021	Zhejiang Province, Southeastern China	Natural forests	√	√		√		
20	Soil nitrogen pool drives plant tissue traits in alpine treeline ecotones	2020	Northeastern Tibetan plateau	Natural forests	√	√	√	√	√	√
21	Soil type modulates the response of C, N, P stocks and stoichiometry after native forest substitution by exotic plantations	2021	Southern Chile	Natural forests	√	√	√	√	√	√
22	Temperature patterns of soil carbon, nitrogen, phosphorus stoichiometry along the 400 mm isohyet in China	2021	China	Natural forests	√	√	√	√	√	√
23	The effect of soil depth on stoichiometry was greater than that of elevation in Abies georgei var. Smithii forest in Southeastern Tibet, China	2025	Sejila Mountain, southeastern Tibet, China	Natural forests	√	√	√	√	√	√
24	The effect of soil physical structure in soil carbon and nitrogen distribution under different land use types in typical forest grassland transition zone on Loess Plateau, China	2025	Chinese loess plateau	Natural forests	√	√		√		
25	The influence of elevated CO_2 and soil depth on rhizosphere activity and nutrient availability in a mature Eucalyptus woodland	2023	Sydney, Australia	Natural forests	√	√		√		
26	Understory Vegetation Regulated the Soil Stoichiometry in Cold-Temperate Larch Forests	2025	Cold temperate zone of Northeast China	Natural forests	√	√	√	√	√	√
27	Variations in Soil C, N, P Stocks and Stoichiometry With Soil Depth and Forest Types in Qilian Mountains of Northwest China	2022	Qilian Mountains in Northwest China	Natural forests	√	√	√	√	√	√
28	What Is the Effect of Long-Term Revegetation on Soil Stoichiometry? Case Study Based on In Situ Long-Term Monitoring on the Loess Plateau, China	2025	Chinese loess plateau	Natural forests	√	√	√	√	√	√
29	C:N:P stoichiometry responses to 10 years of nitrogen addition differ across soil components and plant organs in a subtropical Pleioblastus amarus forest	2021	Liujiang, Sichuan	Tree plantations	√	√	√	√	√	√
30	Changes in plant-soil-microbe C-N-P contents and stoichiometry during poplar shelterbelt degradation	2024	Dengkou County, Inner Mongolia Autonomous Region, China	Tree plantations	√	√	√	√	√	√
31	Changes in Soil C, N, and P Concentrations and Stoichiometry in Karst Trough Valley Area under Ecological Restoration: The Role of Slope Aspect, Land Use, and Soil Depth	2021	Longtan Trough Valley, Youyang, Chongqing, China	Tree plantations	√	√	√	√	√	√
32	Changes in soil C–N–P stoichiometry after 20 years of typical artificial vegetation restoration in semiarid continental climate zones	2022	China Loess Plateau Shenmu Erosion and Environment Station	Tree plantations	√	√	√	√	√	√
33	Comparison of soil microbial community between planted woodland and natural grass vegetation on the Loess Plateau	2020	Qingyang City, Gansu Province, China	Tree plantations	√	√	√	√	√	√
34	Contrasting conifer species productivity in relation to soil carbon, nitrogen and phosphorus stoichiometry of British Columbia perhumid rainforests	2020	Vancouver Island, Southwest Canada	Tree plantations	√	√	√	√	√	√

35	Differential Responses of Soil Extracellular Enzyme Activity and Stoichiometric Ratios under Different Slope Aspects and Slope Positions in Larix olgensis Plantations	2022	Greater Khingan Mountains, China	Tree plantations	√	√	√	√	√	√
36	Distribution of soil nutrients under typical artificial vegetation in the desert–loess transition zone	2021	Liudaogou watershed, Shenmu City, Shaanxi Province, China	Tree plantations	√	√	√	√	√	√
37	Drought and vegetation restoration patterns shape soil enzyme activity and nutrient limitation dynamics in the loess plateau	2025	Chinese loess plateau	Tree plantations	√	√	√	√	√	√
38	Effect of planting method on C:N:P stoichiometry in soils, young silver fir (*Abies alba* Mill.) and stone pine (*Pinus cembra* L.) in the upper mountain zone of Karpaty Mountains	2021	Viswa Forest Region, Southern Poland	Tree plantations	√	√	√	√	√	√
39	Effects of stand structure and soil depth on soil properties in Cryptomeria japonica plantations	2025	Lushan National Nature Reserve, Jiangxi Province, China	Tree plantations	√	√	√	√	√	√
40	Effects of three cropland afforestation practices on the vertical distribution of soil organic carbon pools and nutrients in eastern China	2020	Dongtai City, Jiangsu Province, China	Tree plantations	√	√	√	√		
41	How C:N:P stoichiometry in soils and plants responds to succession in *Robinia pseudoacacia* forests on the Loess Plateau, China	2020	Chinese loess plateau	Tree plantations	√	√	√	√	√	√
42	Planted forests intensified soil microbial metabolic nitrogen and phosphorus limitation on the Loess Plateau, China	2022	Chinese loess plateau	Tree plantations	√	√	√	√	√	√
43	Plant–Soil–Microbial Carbon, Nitrogen, and Phosphorus Ecological Stoichiometry in Mongolian Pine-Planted Forests Under Different Environmental Conditions in Liaoning Province, China	2025	Liaoning China	Tree plantations	√	√	√	√	√	√
44	Revealing the nutrient limitation and cycling for microbes under forest management practices in the Loess Plateau—Ecological stoichiometry	2020	Yanchuan County, Shaanxi Province, China	Tree plantations	√	√	√	√	√	√
45	Soil C, N, P and K stoichiometry affected by vegetation restoration patterns in the alpine region of the Loess Plateau, Northwest China	2020	Alpine region of Loess Plateau in China	Tree plantations	√	√	√	√	√	√
46	Soil C:N:P Stoichiometric Characteristics and Soil Quality Evaluation under Different Restoration Modes in the Loess Region of Northern Shaanxi Province	2022	Wuqi County, Yan'an City, Shaanxi Province	Tree plantations	√	√	√	√	√	√
47	Soil Carbon and Nitrogen Pools and Their Storage Characteristics under Different Vegetation Restoration Types on the Loess Plateau of Longzhong, China	2024	Dingxi City, Longzhong Loess Plateau, China	Tree plantations	√	√	√	√		
48	Soil carbon, nitrogen, and phosphorus stoichiometry and its influencing factors in Chinese fir plantations across subtropical China	2023	subtropics of China	Tree plantations	√	√	√	√	√	√
49	Stand structure and functional attributes of agarwood (*Aquilaria malaccensis* Lam.) based smallholder farms in Northeast India	2020	Assam, northeast India	Tree plantations	√	√		√		
50	Stoichiometry of carbon, nitrogen, and phosphorus in soil: Impacts of soil development and land use across the catchment scale	2025	The lower reaches of the Yangtze river	Tree plantations	√	√	√	√	√	√
51	Twenty years of afforestation of former agricultural lands with silver birch plantations	2023	Estonia	Tree plantations	√	√	√	√		

	affects vertical distribution of SOC and macronutrients in the topsoil layer										
52	Vertical variations in enzymatic activity and CNP stoichiometry in forest soils under the influence of different tree species	2025	Southwest Poland	Tree plantations	√	√	√	√	√	√
53	Characterising Soil Ecological Stoichiometry in Different Vegetation in Southwest China Karst	2025	Karst of southwest China	Grasses	√	√	√	√	√	√
54	Desertification Reduces Organic Carbon Content and Nutrient Availability in Dryland Soils: Evidence From a Survey in the Amu Darya River Basin	2025	Amu Darya River Basin, Central Asia	Grasses	√	√	√	√	√	√
55	Divergent mechanisms driving microbial necromass in topsoil and subsoil along an altitudinal gradient on the Loess Plateau	2025	Maxian Mountain, Loess Plateau, China	Grasses	√	√	√	√	√	√
56	Divergent mechanisms driving nutrient stoichiometry in surface and deep soils of desert ecosystems on the Qinghai–Tibetan plateau	2024	Desert area of Qinghai–Tibet Plateau	Grasses	√	√	√	√	√	√
57	Ecological Stoichiometric Characteristics of Soil at Different Depths in a Karst Plateau Mountain Area of China	2020	Karst plateau mountainous area of Guizhou Province, China	Grasses	√	√	√	√	√	√
58	Encroachment of shrubs into subalpine grasslands in the Pyrenees changes the plant-soil stoichiometry spectrum	2020	Central Pyrenees, Spain	Grasses	√	√	√	√	√	√
59	Enzymatic stoichiometry in degraded soils after two decades of restoration in a Brazilian semiarid region	2024	Iraukuba City, Ceará State, Brazil	Grasses	√	√	√	√	√	√
60	Litter removal effectively alleviates the nitrogen limitation in grazing exclusion alpine meadows	2025	Qilian Mountain, Mole Town, Qilian County, Qinghai Province, China	Grasses	√	√	√	√	√	√
61	Patterns and drivers of carbon, nitrogen and phosphorus stoichiometry in Southern China's grasslands	2021	Southern grasslands of China	Grasses	√	√	√	√	√	√
62	Soil C, N and P contents and their stoichiometry as affected by typical plant communities on steep gully slopes of the Loess Plateau, China	2022	Ansai County, Loess Plateau, China	Grasses	√	√	√	√	√	√
63	Soil ecological stoichiometry reveals microbial nutrient limitation with alpine meadow degradation in northeastern Tibetan Plateau	2024	Qinghai–Tibet Plateau of China	Grasses	√	√	√	√	√	√
64	Soil nutrient stoichiometry on linear sand dunes from a temperate desert in Central Asia	2020	Gurbantunggut Desert, China	Grasses	√	√	√	√	√	√
65	The Characteristics of Soil C, N and P and Stoichiometric Ratios as Affected by Land-Use in a Karst Area, Southwest China	2023	Mashan County, Guangxi, Southwest China	Grasses	√	√	√	√	√	√
66	Influence of tree species on carbon, nitrogen, and phosphorus stocks and stoichiometry under different soil regeneration scenarios on reclaimed and afforested mine and post-fire forest sites	2022	Southern Poland	Mining areas	√	√	√	√	√	√
67	Patterns and Driving Mechanisms of Soil Organic Carbon, Nitrogen, and Phosphorus, and Their Stoichiometry in Limestone Mines of Anhui Province, China	2024	Anhui China	Mining areas	√	√	√	√	√	√
68	Responses of soil stoichiometry and soil enzyme activities in the different distance around opencast coal mine of the Hulun Buir Grassland of China	2024	Hulunbuir grassland, China	Mining areas	√	√	√	√	√	√

69	Revegetation type affected soil C, N, P stocks and stoichiometry in a reclaimed mine area in Shanxi province, China	2023	Central Shanxi Province, China	Mining areas	√	√	√	√	√	√
70	Soil nutrient variations among different land use types after reclamation in the Pingshuo opencast coal mine on the Loess Plateau, China	2020	Pingshuo Open-pit Coal Mine, Shanxi, China	Mining areas	√	√	√	√	√	√
71	The linkage of 13C and 15N soil depth gradients with C:N and O:C stoichiometry reveals tree species effects on organic matter turnover in soil	2020	Rhineland, Germany	Mining areas	√	√		√		
72	Effects of different management approaches on the stoichiometric characteristics of soil C, N, and P in a mature Chinese fir plantation	2020	Huitong County, Hunan Province, China	Fires	√	√	√	√	√	√
73	Fire affects asymbiotic nitrogen fixation in southern Amazon forests	2020	Mato Grosso, Brazil	Fires	√	√	√	√	√	√
74	Recoupling of Soil Carbon, Nitrogen, and Phosphorus Cycles along a 30 Year Fire Chronosequence in Boreal Forests of China	2025	Greater Khingan Mountains, China	Fires	√	√	√	√	√	√
75	Seasonal changes in soil carbon storage capacity and glomalin-related soil protein under different agricultural activities, abandonment, and wildfire occurrence in Mediterranean region	2022	Northeastern Spain	Fires	√	√	√	√	√	√
76	Soil-vegetation relationships in Mediterranean forests after fire	2021	Iberian Peninsula, Spain	Fires	√	√	√	√	√	√
77	Ecological stoichiometric characteristics of soil SOC, TN, and TP under different restoration methods in QiXing river wetland	2021	Heilongjiang China	Wetlands	√	√	√	√	√	√
78	Resource stoichiometry, vegetation type and enzymatic activity control wetlands soil organic carbon in the Herbert River catchment, North-east Queensland	2021	Northeast Queensland, Australia	Wetlands	√	√	√	√	√	√
79	Responses of Ecological Stoichiometry of Plants and Soils to Degradation Levels in Alpine Wetlands of the Qinghai-Tibet Plateau	2025	Alpine wetland in Qinghai–Tibetan plateau	Wetlands	√	√	√	√	√	√
80	Spatial Distribution Characteristics of Soil Carbon, Nitrogen, and Phosphorus in the Daqing Oilfield Area, China	2025	Daqing Oilfield Area, China	Wetlands	√	√	√	√	√	√
81	Close-to-Nature management shifts soil phosphorus availability and P-cycling genes in Chinese fir systems	2024	Fenyi County, Jiangxi Province	Near-natural restoration	√	√	√		√	√
82	Depth-Dependent C-N-P Stocks and Stoichiometry in Ultisols Resulting from Conversion of Secondary Forests to Plantations and Driving Forces	2021	Yunfu City, Guangdong Province, China	Near-natural restoration	√	√	√	√	√	√
83	Diversity and Structure of Soil Microbial Communities in Chinese Fir Plantations and *Cunninghamia lanceolata*–Phoebe bournei Mixed Forests at Different Successional Stages	2023	Yongfeng County, Ji'an City, Jiangxi Province	Near-natural restoration	√	√	√	√	√	√
84	Effects of close-to-nature management of plantation on the structure and ecological functions of soil microorganisms with different habitat specialization	2023	Tianjin Baxian Mountain	Near-natural restoration	√	√	√	√		
85	Linkage between Leaf–Litter–Soil, Microbial Resource Limitation, and Carbon-Use Efficiency in Successive Chinese Fir (*Cunninghamia lanceolata*) Plantations	2023	Beijianghe Forest Farm, Rongshui County, Liuzhou, Guangxi	Near-natural restoration	√	√	√	√	√	√
86	The advantage of afforestation using native tree species to enhance soil quality in degraded forest ecosystems	2024	Inner Mongolia Chifeng City, Hebei Chengde City	Near-natural restoration	√	√	√	√	√	√

			Weichang Manchu and Mongolian Autonomous County								
87	Tree–litter–soil system C:N:P stoichiometry and tree organ homeostasis in mixed and pure Chinese fir stands in south subtropical China	2024	Experimental Center of Tropical Forestry, China Academy of Forestry, Chongzuo, Guangxi	Near-natural restoration	√	√	√	√	√	√
88	Understory vegetation management regulates soil carbon and nitrogen storage in rubber plantations	2023	Xishuangbanna Nabanhe National Nature Reserve, Yunnan Province	Near-natural restoration	√	√		√		
89	Whole-tree harvesting improves the ecosystem N, P and K cycling functions in secondary forests in the Qinling Mountains, China	2024	Qinling National Forest Ecosystem Research Station	Near-natural restoration	√	√	√	√	√	√