Supplementary material

Table S1. Sampling locations and coordinates of the sampling sites

Australia Soil Classification (ASC)	Location	Land use	Latitude	Longitude
Chromosol	Westwood (Cobbitty)	Unimproved pasture	-33.9959200	150.6543300
Dermosol	Landsdowne (Cobbitty)	Uncultivated land	-34.0235600	150.6630700
Tenosol	Narrabri (W2)	Conservational forest	-30.1355780	149.5337300
Brown Sodosol	Nowley (L Paddock)	Pasture	-31.3524340	150.0848330
Kandosol	Kiama	Grassland	-34.6770976	150.8258704
Chromosol	Braidwood	Native vegetation	-35.2730061	149.8993475
Dermosol	Cooma 1	Native pasture	-36.2300804	148.9899509
Dermosol	Cooma 2	Native pasture	-36.2459748	149.0307088
Dermosol	Coolringdon	Pasture	-36.3014335	148.9491106
Kandosol	Batlow	Forest	-35.5328325	148.1400089
Ferrosol	Tumbarumba	Pasture	-35.7406295	147.9849792
Chromosol	Wagga Wagga	Wheat field	-35.0274214	147.3338049
Kandosol	Sandigo (Narrandera)	Lucerne field	-35.9445395	146.6295168
Chromosol	Boree Creek	Canola field	-35.0357503	146.7280297
Kurosol	Grabben Gullen	Pasture	-34.6376901	149.3349216
Kurosol	Crookwell	Pasture	-34.4716016	149.4360090
Tenosol	Bathurst 1	Pasture	-33.3905737	149.4757577
Tenosol	Bathurst 2	Pasture	-33.4300890	149.3162021
Chromosol	Molong 1	Pasture	-33.1414672	148.9169831
Chromosol	Molong 2	Wheat field	-33.0292863	148.8694772
Dermosol	Wellington	Native grassland	-32.5274320	148.9528288
Dermosol	Dunedoo	Wheat field	-32.1047098	149.4090662
Tenosol	Mount Wilson	Conservational forest	-33.5188875	150.3604813
Ferrosol	Mount Tomah	Conversational forest	-33.5372431	150.4240973
Kandosol	Condobolin	Conservation forest	-33.0836540	147.2947170
Kandosol	Narromine	Pasture	-32.3409570	148.1184690
Kandosol	Coonabarabran	Forest	-31.3494030	149.3154480
Tenosol	Baradine	Forest (National Park)	-30.8857431	149.2635272
Tenosol	The Pilliga	Forest (National Park)	-30.6107310	149.3147380
Ferrosol	Inverell	Forest	-29.7538058	151.0428390
Ferrosol	Tabulam	Pasture	-28.9001668	152.6331904
Ferrosol	Clovass	Olive plantation	-28.8510260	153.1617260
Ferrosol	Casino	Forest	-28.8193435	153.0806690
Ferrosol	Guyra	Pasture	-30.1968190	151.6428116
Ferrosol	Armidale	Pasture	-30.5119000	151.5974604
Dermosol	Murrurundi	Pasture	-31.7544310	150.8060334
Tenosol	Somersby	Forest	-33.3556950	151.2879754

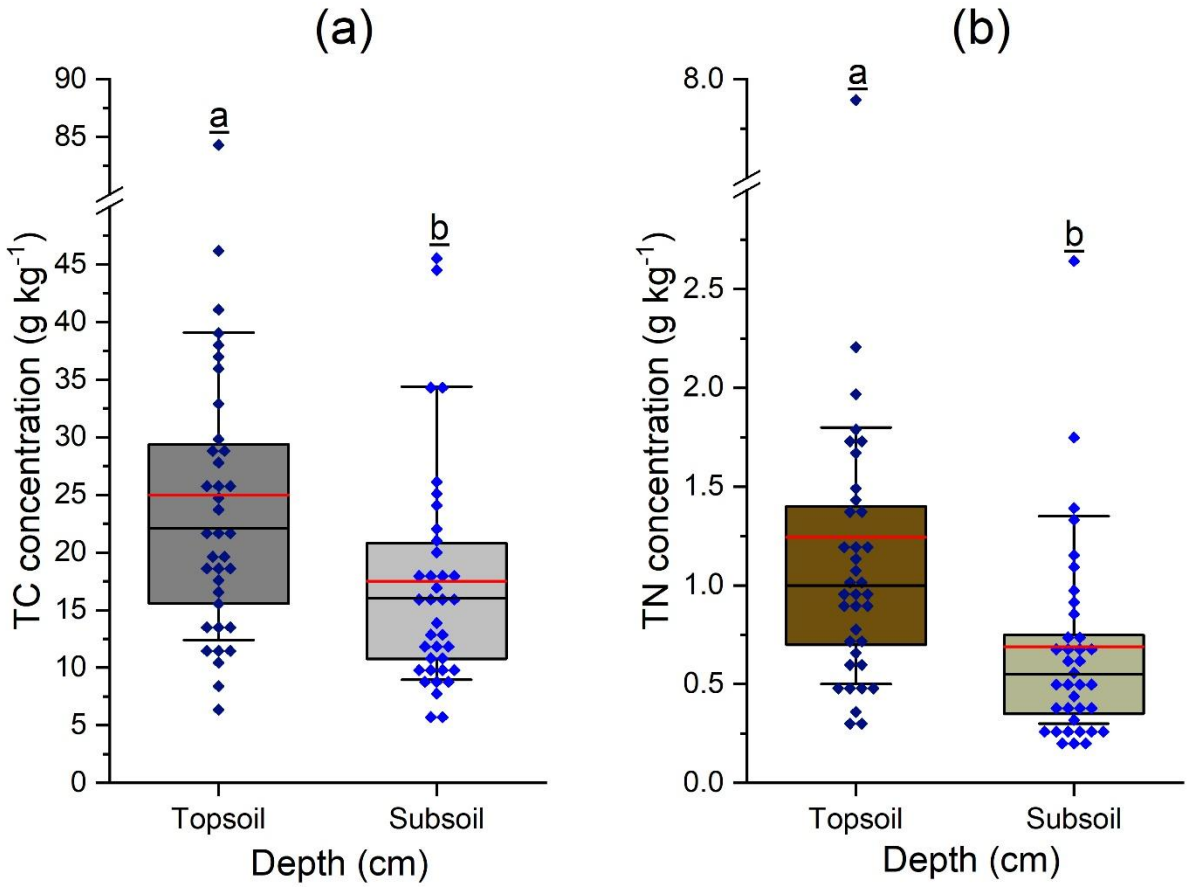

Figure S1. Concentrations of total carbon (TC) and total nitrogen (TN) in topsoils (0-20 cm) and subsoils (20-40 cm). Boxes comprise of the 25th and 75th percentiles, whiskers extend from the 10th to 90th percentiles. Red and black bars indicate the mean and the median values, respectively. Dark blue and navy-blue diamonds show the data for individual samples, the symbols are displaced horizontally to avoid overlaps. Different letters indicate significant differences in the mean values of samples from different depths based on Tukey-Kramer HSD test ($p<0.01$).

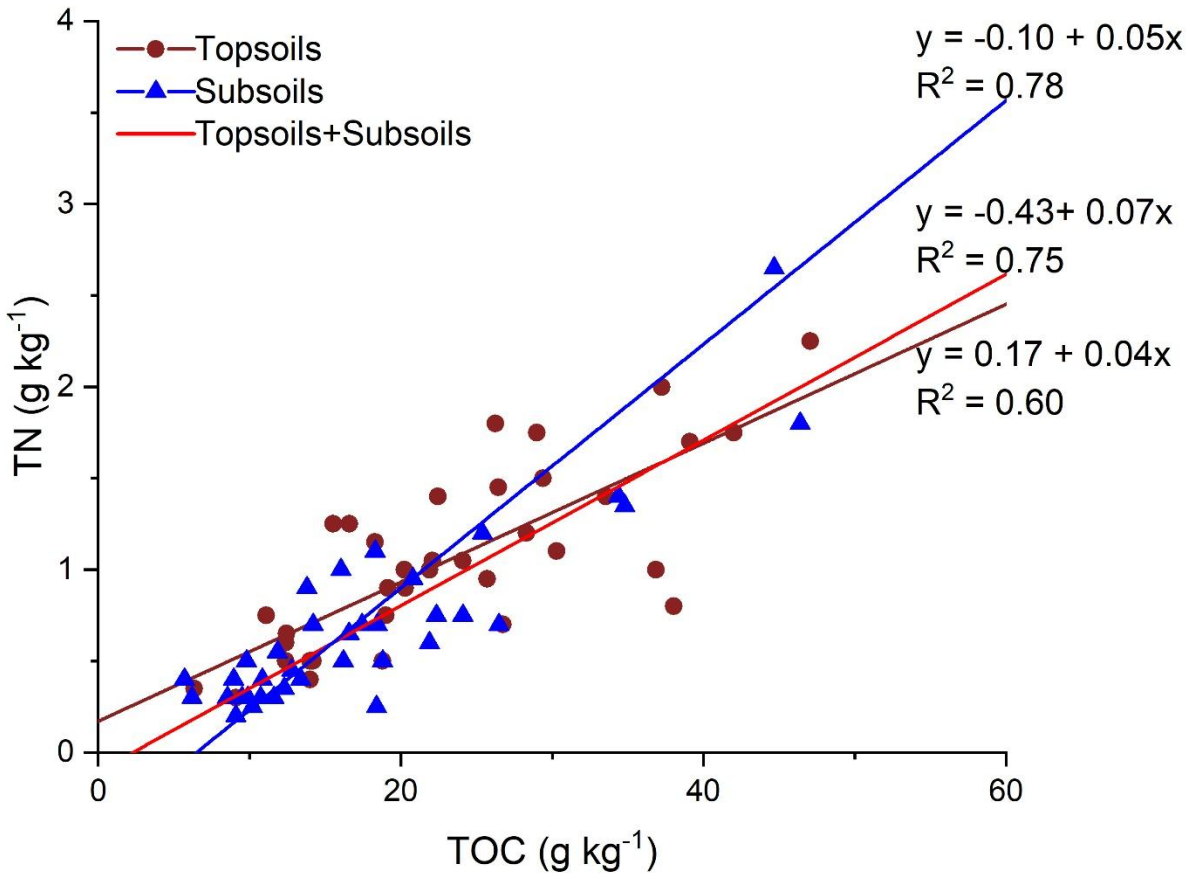

Figure S2. Relationship between concentration of total organic carbon (TOC) and total nitrogen (TN) in soils. The brown filled circles and brown line indicate data points and regression line, respectively, for the topsoils. The blue triangles and blue line indicate data points and regression line, respectively, for the subsoils while the red line indicate regression line for both the topsoils and subsoils. An outlier was removed from the topsoils.

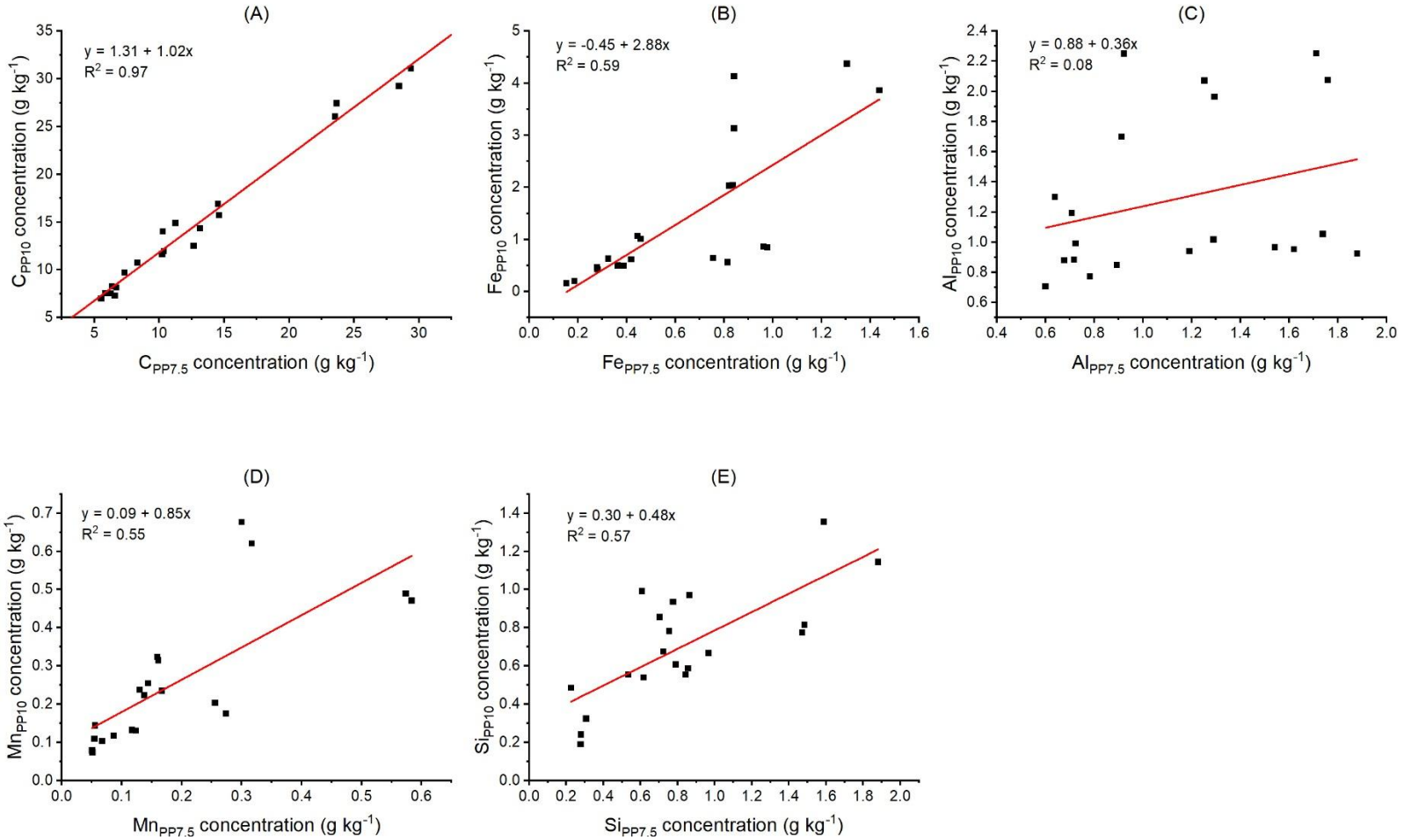

Figure S3. Linear regression showing relationships between C_{PP10} and $C_{PP7.5}$, and between the extractable metals at pH 10 and pH 7.5. All regression slopes were statistically significant at $p < 0.001$ except for the regression slope of Al_{PP}. C_{PP10}; sodium pyrophosphate extractable carbon at pH 10, $C_{PP7.5}$; sodium pyrophosphate extractable carbon at pH 7.5, Fe_{pp10}; sodium pyrophosphate extractable iron at pH 10, $Fe_{pp7.5}$; sodium pyrophosphate extractable iron at pH 7.5, Al_{pp10}; sodium pyrophosphate extractable aluminium at pH 10, $Al_{pp7.5}$; sodium pyrophosphate extractable aluminium at pH 7.5, Mn_{pp10}; sodium pyrophosphate extractable manganese at pH 10, $Mn_{pp7.5}$; sodium pyrophosphate extractable manganese at pH 7.5, Si_{pp10}; sodium pyrophosphate extractable silicon at pH 10, $Si_{pp7.5}$; sodium pyrophosphate extractable silicon at pH 7.5. Red line indicates the regression line in the figures.

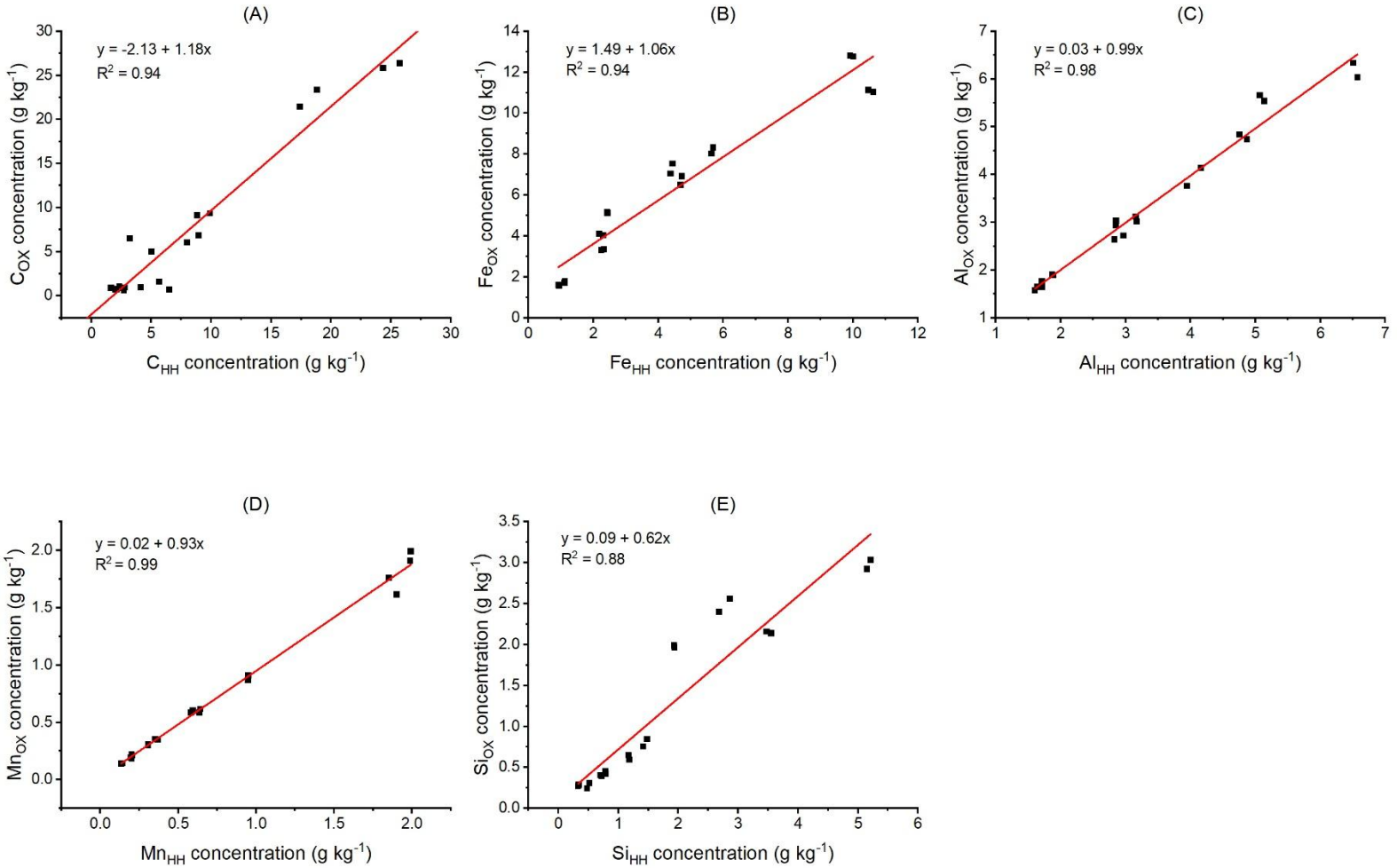

Figure S4. Linear regression showing relationships between C_{OX} and C_{HH}, and between the extractable metals. All regression slopes were statistically significant at $p < 0.001$. C_{OX}; ammonium oxalate extractable carbon, C_{HH}; hydrochloric acid-hydroxylamine extractable carbon, Fe_{OX}; ammonium oxalate extractable iron, Fe_{HH}; hydrochloric acid-hydroxylamine extractable iron, Al_{OX}; ammonium oxalate extractable aluminium, Al_{HH}; hydrochloric acid-hydroxylamine extractable aluminium, Mn_{OX}; ammonium oxalate extractable manganese, Mn_{HH}; hydrochloric acid-hydroxylamine extractable manganese, Si_{OX}; ammonium oxalate extractable silicon, Si_{HH}; hydrochloric acid-hydroxylamine extractable silicon. Red line indicates the regression line in the figures.

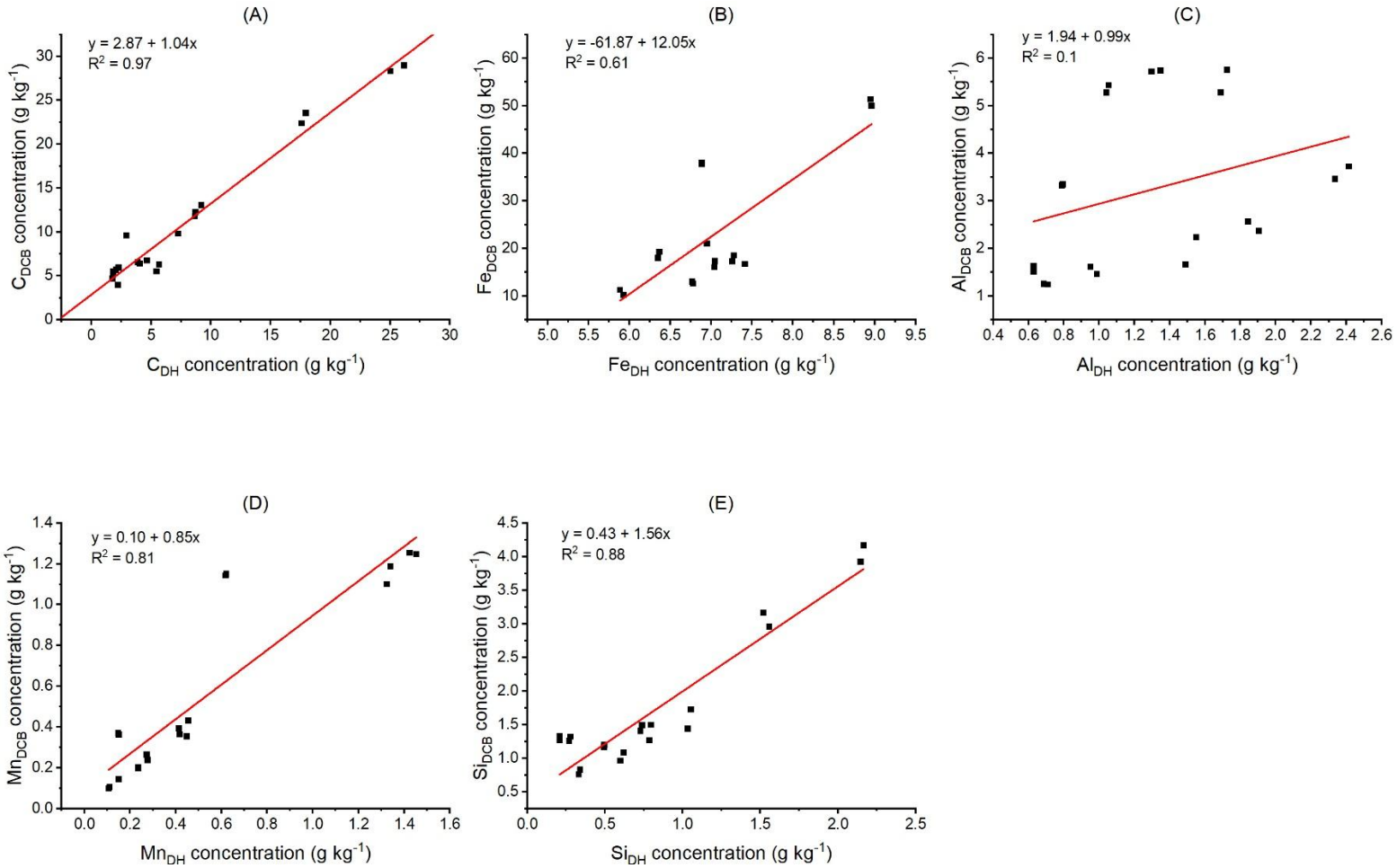

Figure S5. Linear regression showing relationships between C_{DCB} and C_{DH}, and between the extractable metals. All regression slopes were statistically significant at $p < 0.001$ except for Fe and Al slopes. C_{DCB}; dithionite-citrate-bicarbonate extractable carbon, C_{DH}; dithionite-hydrochloric acid extractable carbon, Fe_{DCB}; dithionite-citrate-bicarbonate extractable iron, Fe_{DH}; dithionite-hydrochloric acid extractable iron, Al_{DCB}; dithionite-citrate-bicarbonate extractable aluminium, Al_{DH}; dithionite-hydrochloric acid extractable aluminium, Mn_{DCB}; dithionite-citrate-bicarbonate extractable manganese, Mn_{DH}; dithionite-hydrochloric acid extractable manganese, Si_{DCB}; dithionite-citrate-bicarbonate extractable silicon, Si_{DH}; dithionite-hydrochloric acid extractable silicon. Red line indicates the regression line in the figures.