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Stable soil organic matter: a comparison of CNPS ratios in Australian and International soils

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The carbon, nitrogen, phosphorus and sulphur ratios (C:N:P:S) were investigated for a series of soils to test the hypothesis that soil organic matter, or more probably the stable portion of it, has constant ratios of C:N:P:S. A constant ratio, if established, would provide an excellent tool to evaluate the feasibility, cost and strategies to sequester soil C in terrestrial ecosystems. Freshly-collected Australian soils from three states were analysed for total C, N, P, organic P (OP) and S and the ratios were compared with values for soils from numerous locations around the globe using data from the scientific literature.
Overall there seems to be strong evidence that the C:N:OP:S ratios are constant for the stable portion of the soil organic matter and these are consistent across a wide range of global soils. With further refinement in analysing for OP the C:N:OP:S ratio provides a basis with which to determine the level to which the availability of N, P and S may be limiting C sequestration in terrestrial ecosystems.