Article title	Carbon, nitrogen and phosphorus mineralization potential of semiarid Sahelian soils amended with native shrub residues
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Abstract	Two native shrubs (*Piliostigma reticulatum* and *Guiera senegalensis)* commonly coexist with crops in fields throughout the Sahel but aboveground residue is annually coppiced and burned. An alternative, with potential to improve soil quality, would be non-thermal return of residues to soils but information is needed on the potential of residues' to provide nutrients before such systems can be adopted. The objective of this research was to characterize carbon (C), net nitrogen (N) and phosphorus (P) mineralization of shrub residues during decomposition in soil beneath or outside shrub canopies. Two lab incubation (30 °C for 118 days) studies (1 for each shrub species/soil type system) had a 2 by 4 factorial design with two soil sources (beneath or outside the shrub canopy) and four residue soil amendments (leaf, leaf + stem, beef manure, or control of soil only). Soils amended with *P. reticulatum* or *G. senegalensis* leaf residues immobilized N during the first 62 and 76 days, respectively, but later had net release of inorganic N. The addition of stems to leaf amendments for both shrub species resulted in net N immobilization throughout the incubation. Manure had positive but shrub residues negative release of inorganic P. However, if the leached P released at time zero is included in the summation, all amendments released more P than the control. Cumulative net release of C, N or P over the incubation was higher in soil originating from beneath than outside the shrub canopy except for release of P from soil associated with *G. senegalensis*. Residue chemistry was related to nutrient release, particularly high lignin content of stems, which corresponded to N immobilization. Our results suggest that none of the shrub residues when added to soil would potentially provide short-term plant available N and that additional fertilizer would be required for optimal crop yield.
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