

Title:

Effects of long-term mowing on the fractions and chemical composition of soil organic matter in a semiarid grassland

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Table S1¹³C-NMR assignments and potential sources of functional groups

Chemical shift (ppm)	Assignment	Compounds derived	Potential sources	References
45 – 0	Alkyl C	Terminal methyl, long-chain aliphatics, fatty acids, acetate, polymethylene, waxes, cutins, suberins, lipids, hemcellulose, tannin, lignin, resins, peptide side-chain	Microbial biomass (cellular residues), litter, roots, plant derived biopolymers (plant roots residues)	Mathers et al., 2007; Mao et al., 2008
60 – 45	<i>N</i> -alkyl / methoxyl C	amino acids, lignin and peptide residues,	Microbial biomass, degraded products of plant litter	Mathers et al., 2007
90 – 60	<i>O</i> -alkyl/C2 – C6	Carbohydrates, celluloses, hemicellulose, polysaccharides, alcohols, amino sugars, side-chain of lignin	Root exudates, bacterial biomass, plant litter	Kögel-Knabner, et al., 2002;
110 – 90	di- <i>O</i> -alkyl / anomeric C	Anomeric C1 of celluloses, tannin and lignin components	Plant litter	Mathers et al., 2007
140 – 165	Aryl C	Polyphenols, lignin, tannin components, C- and H- submitted, aromatic C olefinic C	Litter, roots, charcoal	Mathers et al., 2007
165 – 140	<i>O</i> -aryl C	Phenols, lignin/tannin components/indicators, suberin, O- and N- substituted aromatic C, olefinic C, black carbon	Plant litter,	Panettieri, et al., 2014; Mathers et al., 2007
190 – 165	Carboxyl C	Carboxylic acids, amide and ester C, organic acids		Mathers et al., 2007

210 – 190	Ketone C	Carbonyl C groups, organic acids, ketones, quinone and aldehydes	Mathers et al., 2007
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Table S2 Descriptions of 10% HF-treated SOM samples and bulk soil samples under different mowing managements

Treatments	10% HF-treated SOM samples			Bulk soil samples		
	TC	TN	C/N	TC	TN	C/N
	g kg ⁻¹			g kg ⁻¹		
M0	39.4±2.3 b	3.8±0.0 b	10.4 b	17.9±0.6 b	1.7±0.0 ab	10.6
M1/2	39.5±0.6 b	3.9±0.4 b	10.1 b	20.5±1.6 a	1.9±0.4 ab	10.8
M1	43.2±1.1 a	4.1±0.5 a	10.5 b	21.7±0.3 a	2.0±0.0 a	11.0
M2	32.8±0.5 c	2.7±0.2 c	12.1 a	17.8±0.8 b	1.4±0.0 b	12.8