

**Table S4.** Fertilization effects on relative peak area (%) of characteristic peaks in organic matter fractions within free microaggregates in physical-chemical combined grouping in FTIR analysis of Mollisols.

Soil depths	Components	Treatments	Alcohol and phenol -OH 3623 cm <sup>-1</sup>	Aliphatic -CH- 2920 cm <sup>-1</sup>	Aromatic C=C 1620 cm <sup>-1</sup>	Carbohydrate C-O 1030 cm <sup>-1</sup>	1620/2920
0-10 cm	Fm-POM	NoF	12.68±0.29 c	2.03±0.03 c	4.81±0.06 d	80.48±0.59 a	2.37±0.01 b
		CF	11.46±0.27 bc	2.10±0.03 bc	5.02±0.05 c	81.42±0.58 a	2.39±0.02 b
		CF+DM	10.51±0.24 b	2.16±0.04 ab	5.28±0.07 b	82.05±0.62 a	2.44±0.02 a
		CF+2DM	10.22±0.23 a	2.24±0.04 a	5.52±0.07 a	82.02±0.64 a	2.46±0.01 a
	Fm-MOM	NoF	12.06±0.28 a	2.18±0.02 c	4.84±0.05 d	80.92±0.61 a	2.22±0.01 b
		CF	11.06±0.26 ab	2.25±0.03 bc	5.05±0.06 c	81.64±0.63 a	2.24±0.01 b
		CF+DM	10.02±0.31 b	2.34±0.03 ab	5.42±0.06 b	82.22±0.60 a	2.32±0.02 a
		CF+2DM	9.87±0.24 b	2.42±0.04 a	5.63±0.07 a	82.08±0.57 a	2.33±0.02 a
10-20 cm	Fm-POM	NoF	12.08±0.29 a	2.12±0.02 c	4.86±0.05 d	80.94±0.54 a	2.29±0.01 b
		CF	11.05±0.27 ab	2.19±0.03 bc	5.04±0.06 c	81.72±0.55 a	2.30±0.01 b
		CF+DM	10.29±0.31 b	2.25±0.03 ab	5.36±0.07 b	82.10±0.58 a	2.38±0.02 a
		CF+2DM	10.06±0.32 b	2.33±0.04 a	5.57±0.07 a	82.04±0.61 a	2.39±0.02 a
	Fm-MOM	NoF	11.98±0.28 a	2.23±0.03 c	4.98±0.05 d	80.81±0.55 a	2.23±0.01 b
		CF	10.94±0.29 ab	2.32±0.02 bc	5.22±0.06 c	81.52±0.52 a	2.25±0.01 b
		CF+DM	9.85±0.31 bc	2.39±0.03 ab	5.48±0.06 b	82.28±0.56 a	2.29±0.02 a
		CF+2DM	9.69±0.25 c	2.47±0.04 a	5.69±0.07 a	82.15±0.57 a	2.30±0.03 a
20-30 cm	Fm-POM	NoF	11.87±0.28 a	2.18±0.03 b	5.00±0.05 b	80.95±0.58 a	2.29±0.01 b
		CF	10.96±0.29 ab	2.27±0.04 ab	5.21±0.06 b	81.56±0.59 a	2.30±0.01 b
		CF+DM	10.18±0.26 b	2.34±0.04 a	5.48±0.06 a	82.00±0.62 a	2.34±0.02 a
		CF+2DM	9.96±0.21 b	2.39±0.05 a	5.65±0.07 a	82.00±0.64 a	2.36±0.02 a
	Fm-MOM	NoF	11.75±0.25 a	2.29±0.03 c	5.02±0.05 b	80.94±0.54 a	2.19±0.01 b
		CF	10.69±0.27 ab	2.37±0.03 bc	5.23±0.05 b	81.71±0.55 a	2.21±0.01 b
		CF+DM	9.67±0.29 b	2.46±0.04 ab	5.54±0.06 a	82.33±0.52 a	2.25±0.02 a
		CF+2DM	9.58±0.26 b	2.52±0.04 a	5.72±0.07 a	82.18±0.60 a	2.27±0.03 a

Note: Different lowercase letters within the same column represent significant differences for each soil layer in the same component ( $P < 0.05$ , Tukey's HSD test).