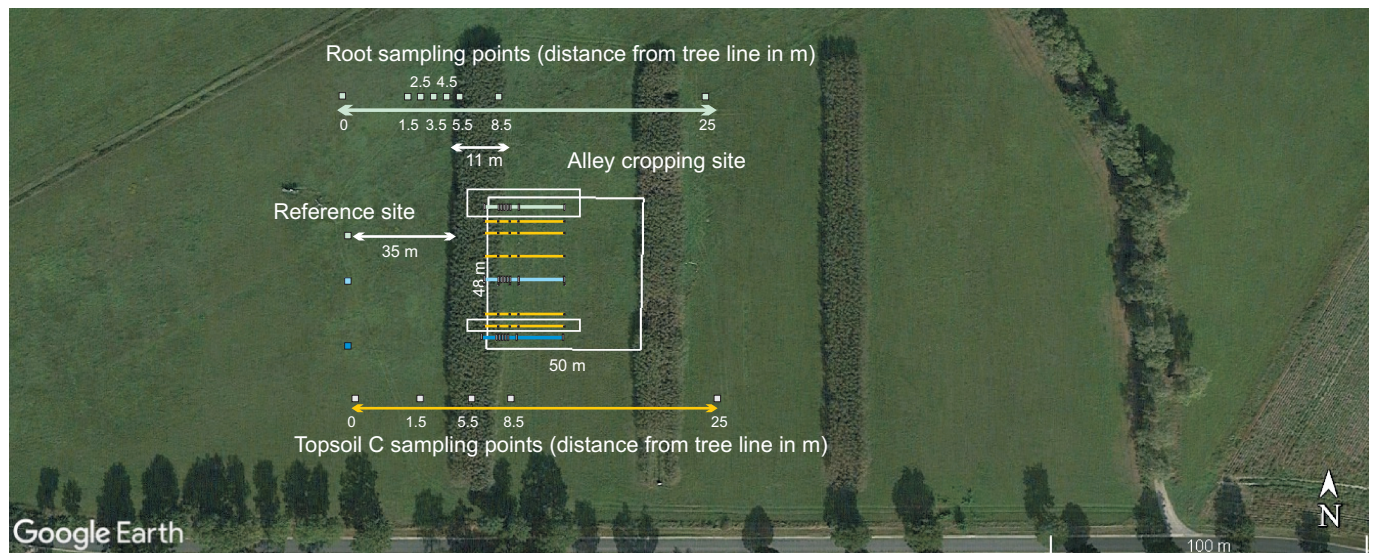# Supplementary Material

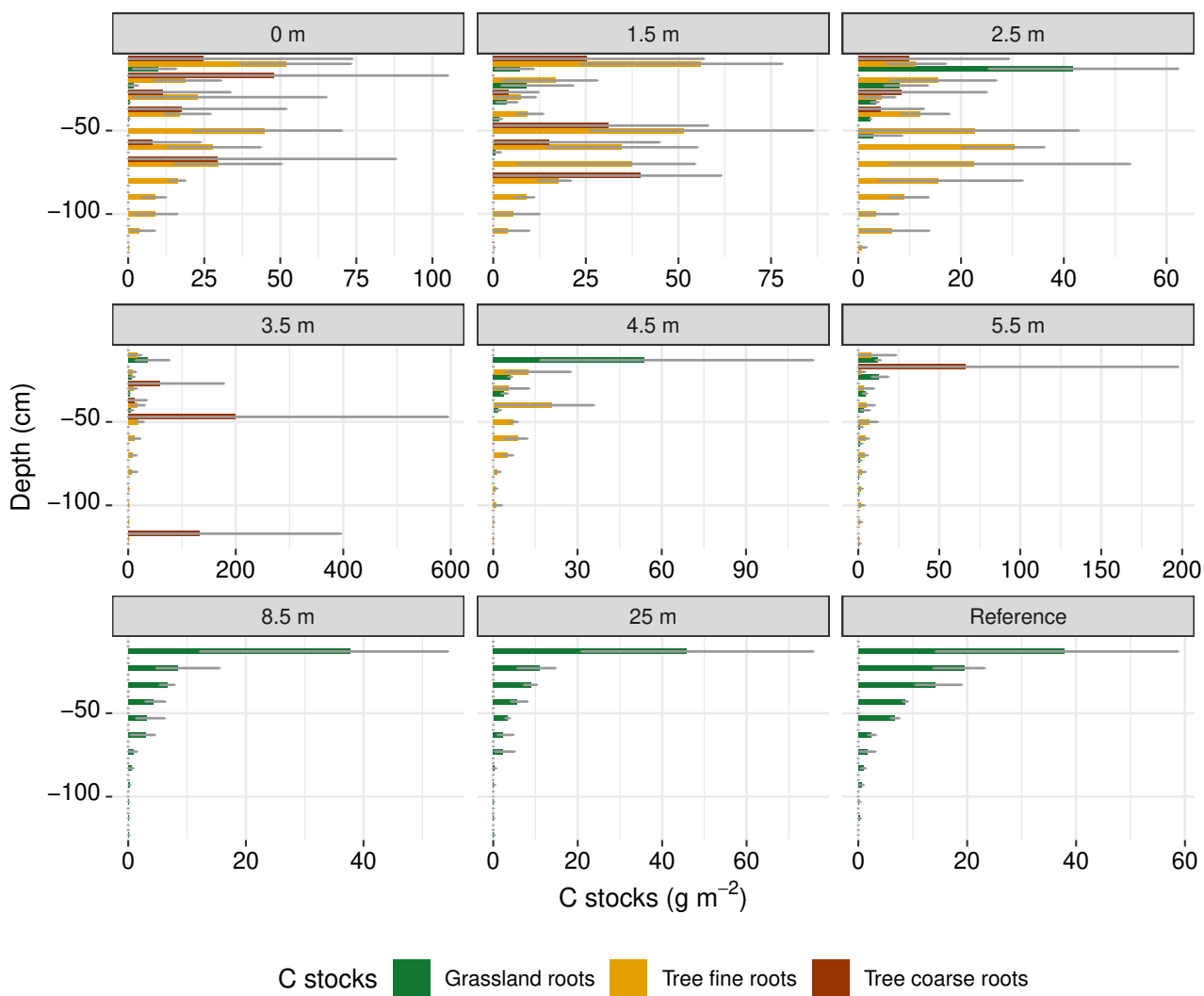## 1 SUPPLEMENTARY TABLES AND FIGURES

Table S1. Mean C stocks ± standard deviation [kg m^{-2}] in two soil depth intervals (0-10 cm and 10-20 cm) at distances 0 m, 1.5 m, 5.5 m, 8.5 m and 25 m to the tree line.

Depth [cm]	0 m	1.5 m	5.5 m	8.5 m	25 m
0-10	11.9 ± 5.4	10.0 ± 2.3	10.5 ± 2.5	10.2 ± 2.9	10.3 ± 1.6
10-20	7.5 ± 3.1	6.9 ± 1.2	7.0 ± 1.5	6.6 ± 1.9	7.1 ± 1.7

Figure S1. Experimental site with three repetitions of root sampling transects (blue lines) along a gradient of distance to the tree line (0 m, 1.5 m, 2.5 m, 3.5 m, 4.5 m, 5.5 m, 8.5 m and 25 m) and the corresponding reference root sampling locations without tree influence (blue squares) in an area of comparable soil properties (thickness of H horizon) in the experimental area (white rectangle). Six topsoil C sampling transects with sampling distances 0 m, 1.5 m, 5.5 m, 8.5 m and 25 m from the tree line are displayed as orange lines. Image source: Google Earth Pro Version 7.3.6.9345, Landsat/Copernicus (September 17, 2020). Location: Mariensee (52°33'52"N 9°27'50"E), eye altitude 335 m.

Figure S2. C stocks [g m^{-2}] in roots along the profile at different distances to the tree line and displayed separately for tree coarse (>2 mm) and fine (≤2 mm) roots and roots of grassland plants. Error bars denote the minimum and maximum measured C stock at the respective distance and root system. Note the different scaling of the x-axis to increase visibility.