

Evaluation of handheld mobile laser scanner systems for the definition of fuel types in structurally complex Mediterranean forest stands

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Supplementary Materials

Table S1. Name, location, point cloud density, and mean georeferenced error of the forest plots. Plot 'zu38' have a 10 m circular radius.

Sector	Plot	Plot center (XY) (ETRS89 / UTM30N)	Points/m ²	Mean georeferenced error (m)
Almudévar	al01	694602,478 4652067,838	71,594.08	0.396
	al02	694567,668 4652104,523	61,510.30	0.138
	al03	710134,071 4663293,626	55,084.31	0.109
	al04	710141,301 4663668,746	55,983.11	0.106
	al08	697328,819 4653490,123	91,474.10	0.146
	al09	697275,282 4653516,272	69,630.07	0.353
Ayerbe	ay04	686687,048 4674577,984	133,259.23	0.058
	ay06	688450,485 4674202,710	89,334.00	0.038
	ay08	686536,466 4674651,836	84,663.50	0.585
	ay12	685055,484 4672393,522	29,699.16	0.036
	ay15	688256,466 4674080,083	80,750.19	0.090
	ay16	688792,329 4674281,699	115,322.61	0.100
	ay17	689248,872 4674261,269	131,697.66	0.155
	ay19	686878,800 4673256,392	119,540.63	0.682
	ay20	686703,732 4673179,904	84,514.25	0.472
	ay22	687240,410 4673227,350	77,658.80	0.360
	ay28	688371,236 4673218,006	82,040.58	0.213
	ay29	688737,669 4673129,789	85,566.76	0.162
	ay30	688775,135 4673342,463	78,094.99	0.134
	ay31	688609,831 4673178,137	78,879.46	0.155
ay47	685130,090 4673135,506	31,830.43	0.205	
ay49	685076,359 4672599,030	52,189.36	0.121	
ay50	685122,505 4672511,905	24,966.82	0.136	
Uncastillo	un12	644240,822 4699753,646	46,152.96	0.133
Villarluengo	vi14	727270,389 4511291,669	49,447.92	0.078
	vi15	727036,262 4511166,454	35,912.14	0.122
	vi16	727080,861 4511157,835	47,463.93	0.086
	vi17	726201,413 4503645,777	26,659.39	0.096
	vi18	726118,381 4503470,237	42,036.27	0.090
	vi19	726672,818 4503511,043	17,187.46	0.080
	vi20	726746,027 4503541,186	18,689.68	0.076
	vi29	725332,834 4506874,651	31,546.16	0.036
	vi30	725369,219 4506806,618	43,004.04	0.082
	vi38	726062,493 4509797,786	50,681.73	0.119
	vi39	725818,588 4509536,031	36,774.11	0.069
vi40	725846,450 4509684,009	32,018.89	0.099	
vi41	726150,472 4509715,661	68,006.40	0.071	
Zuera	zu201	675701,773 4640029,063	49,040.58	0.063
	zu202	675677,700 4640049,351	85,760.62	0.071
	zu30	674321,251 4636134,801	47,760.41	0.123
	zu31	674042,822 4636569,962	77,218.45	0.268
	zu32	673137,179 4637107,172	23,244.28	0.141
	zu38	674071,540 4639208,676	21,633.29	0.064
Average			63,148.10	0.161

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Table S2. Mean height error (in meters) between the three ground classification algorithms tested in the study for each plot.

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Sector	Plot name	CSF-MCC	CSF-LasTools	MCC-LasTools
Almudévar	al01	0.01	0.06	0.07
	al02	0.02	0.02	0.04
	al03	0.02	0.02	0.04
	al04	0.04	0.05	0.09
	al08	0.01	0.02	0.03
	al09	0.00	0.03	0.02
Ayerbe	ay04	0.10	1.84	1.74
	ay06	0.01	0.16	0.17
	ay08	0.05	0.31	0.26
	ay12	0.02	0.10	0.08
	ay15	0.03	0.24	0.20
	ay16	0.10	0.55	0.45
	ay17	0.04	0.39	0.34
	ay19	0.00	0.35	0.35
	ay20	0.03	0.10	0.12
	ay22	0.06	0.28	0.22
	ay28	0.01	0.27	0.26
	ay29	0.01	0.10	0.11
	ay30	0.01	0.12	0.11
	ay31	0.01	0.12	0.13
ay47	0.02	0.01	0.03	
ay49	0.00	0.15	0.16	
ay50	0.02	0.02	0.03	
Uncastillo	un12	0.02	0.17	0.19
Villarluengo	vi14	0.08	0.09	0.16
	vi15	0.03	0.09	0.13
	vi16	0.00	0.17	0.17
	vi17	0.05	0.10	0.15
	vi18	0.03	0.30	0.33
	vi19	0.04	0.13	0.17
	vi20	0.05	0.05	0.10
	vi29	0.07	0.09	0.16
	vi30	0.10	0.15	0.24
	vi38	0.02	0.22	0.24
	vi39	0.03	0.21	0.23
vi40	0.08	0.12	0.20	
vi41	0.02	0.29	0.26	
Zuera	zu201	0.16	0.11	0.27
	zu202	0.11	0.18	0.28
	zu30	0.04	0.06	0.10
	zu31	0.05	0.03	0.08
	zu32	0.13	0.11	0.02
	zu38	0.08	0.11	0.19
Overall mean error		0.04	0.19	0.20

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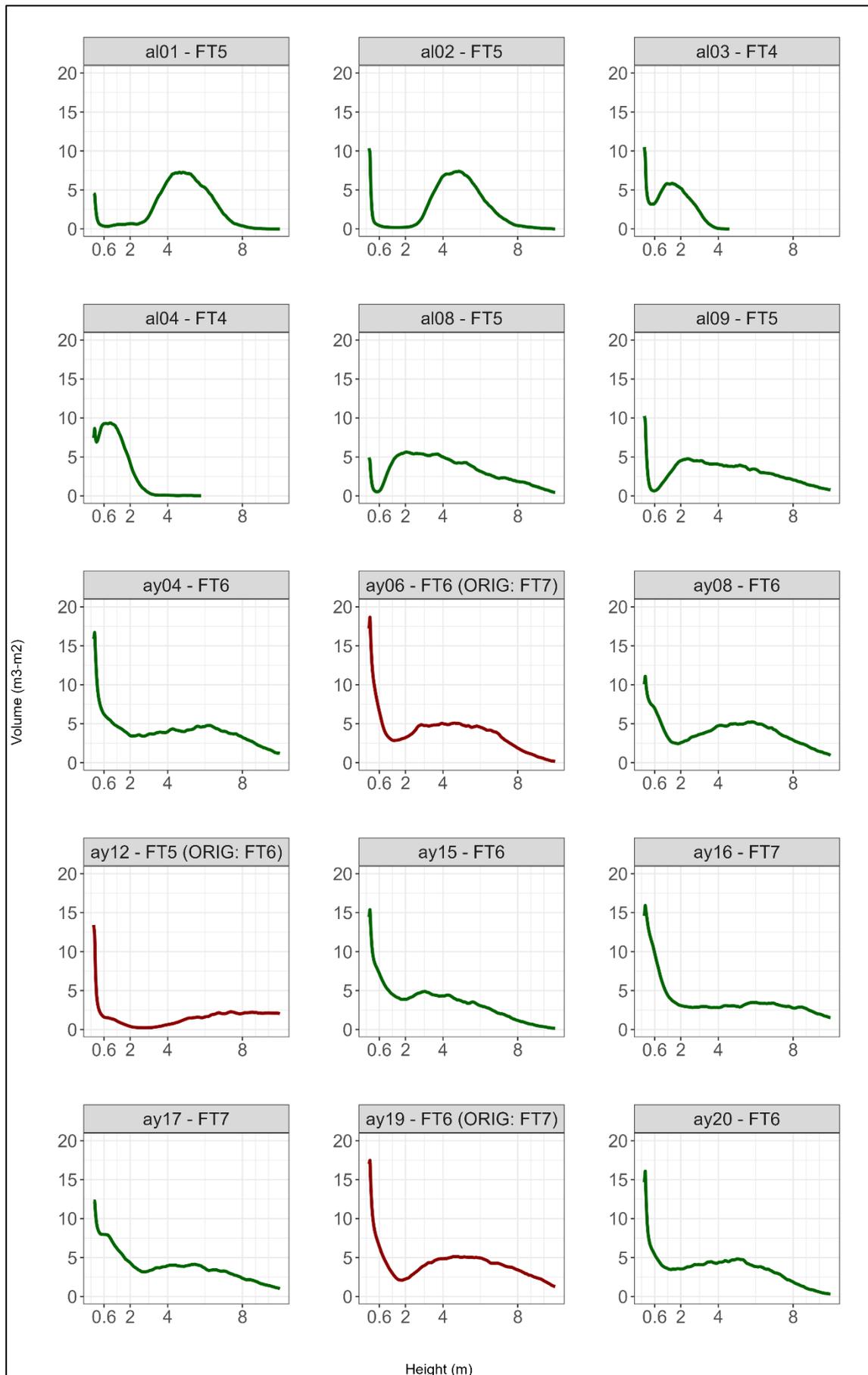


Figure S1. Vertical distribution of the fuel volume of each forest plot every 5 cm (1/3).

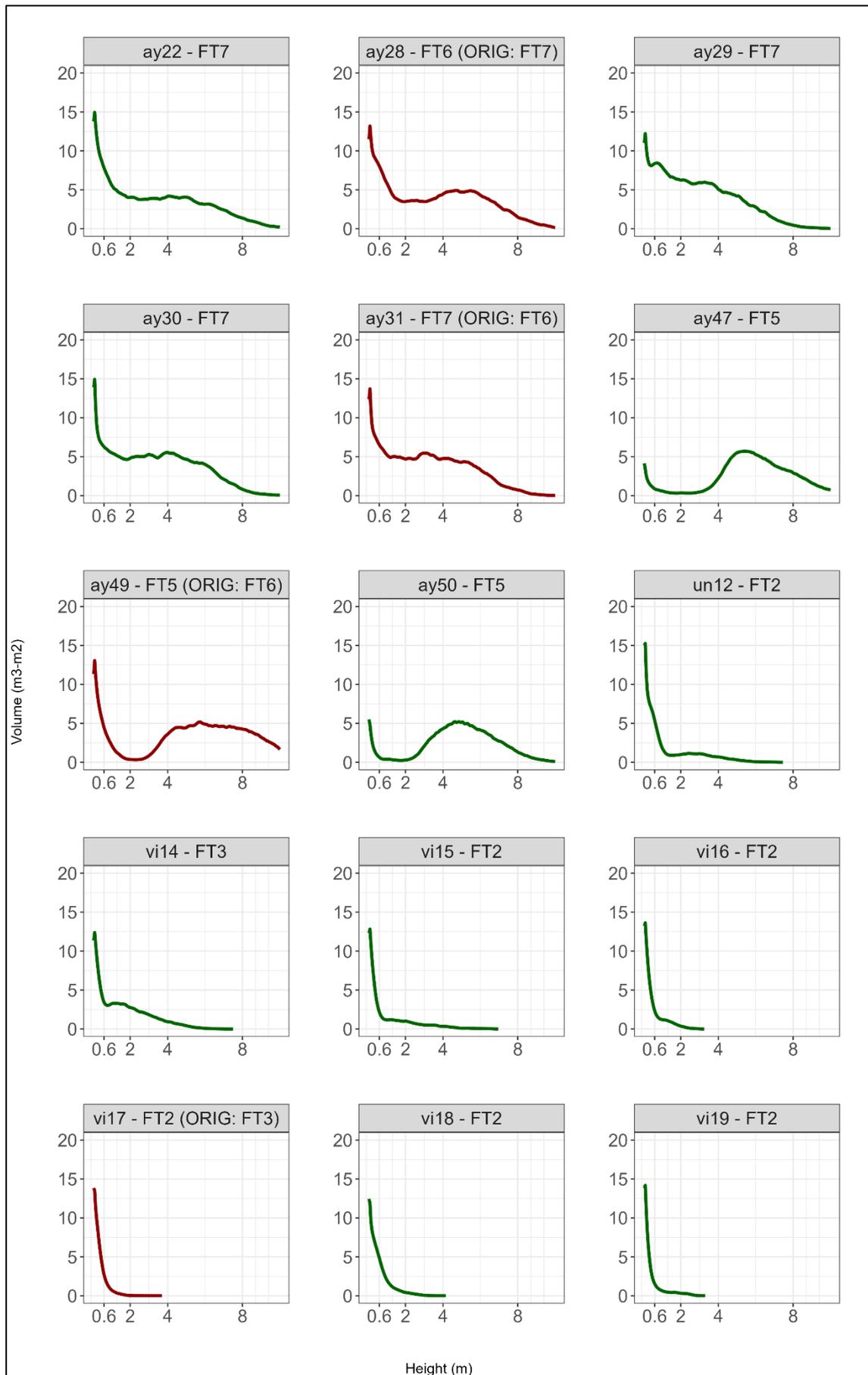


Figure S2. Vertical distribution of the fuel volume of each forest plot every 5 cm (2/3).

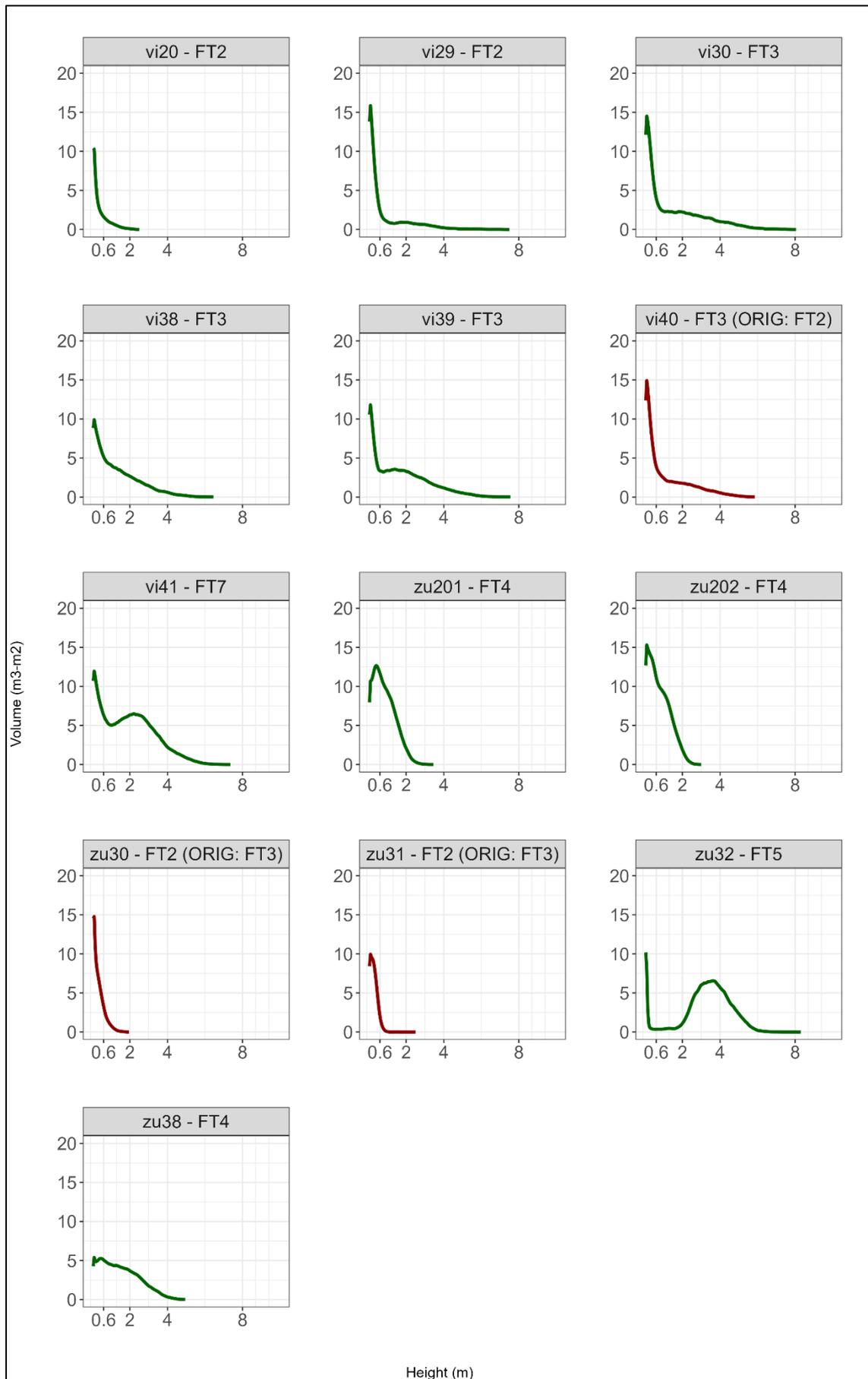


Figure S3. Vertical distribution of the fuel volume of each plot every 5 cm (3/3).