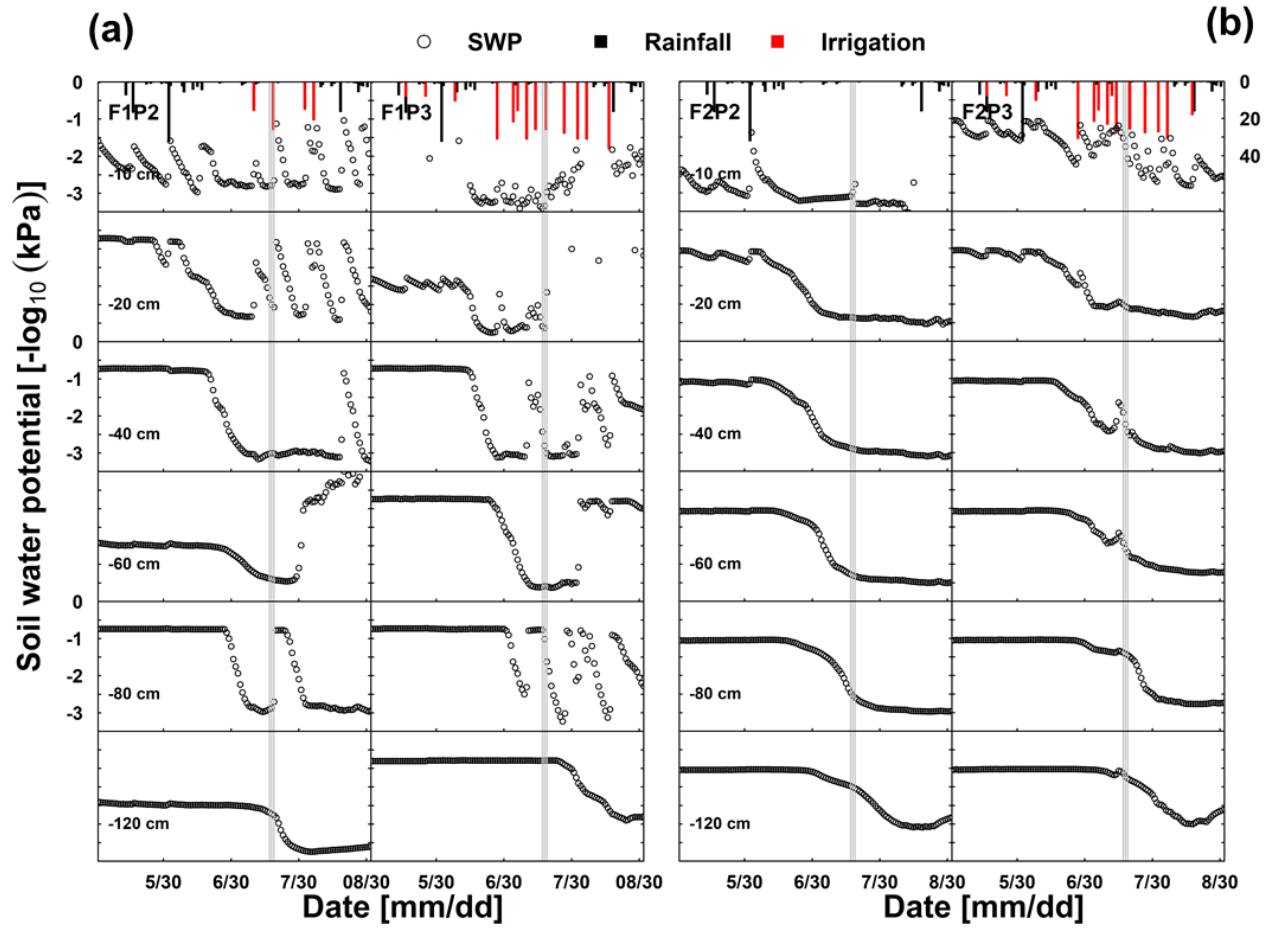Supplementary material 1: Dynamics of soil water potential measured at different soil depths from the (a) stony soil (F1) and (b) silty soil (F2) with the rainfed (P2) and irrigated (P3) plots in the growing season 2017. Black and red vertical bars indicate the rainfall and irrigation, respectively.
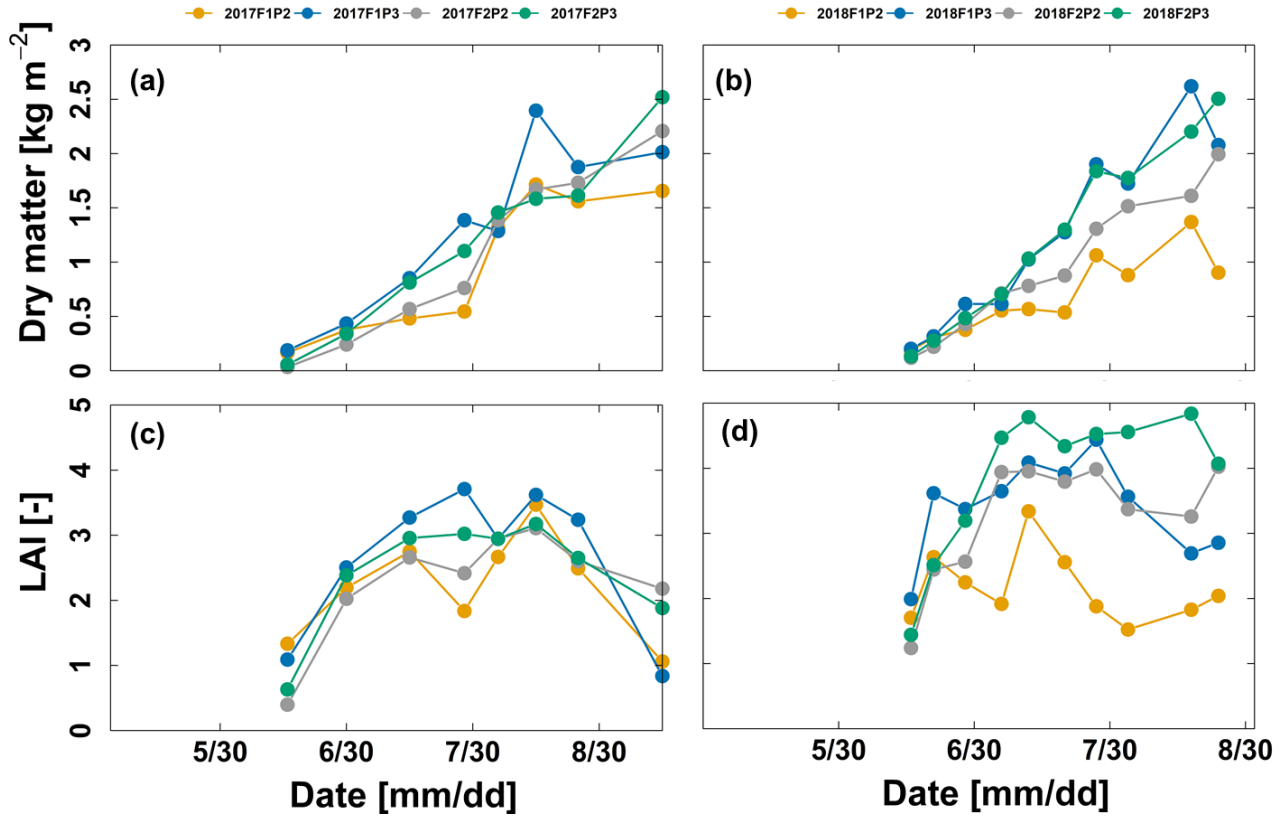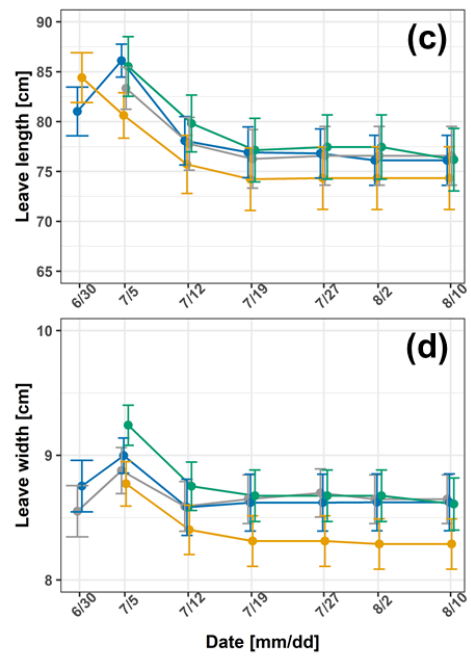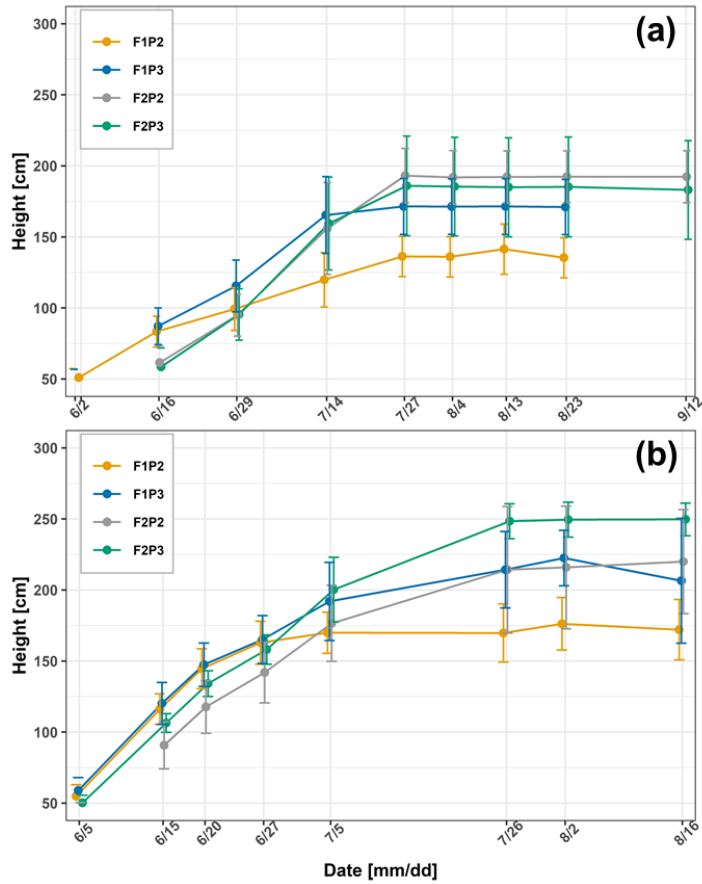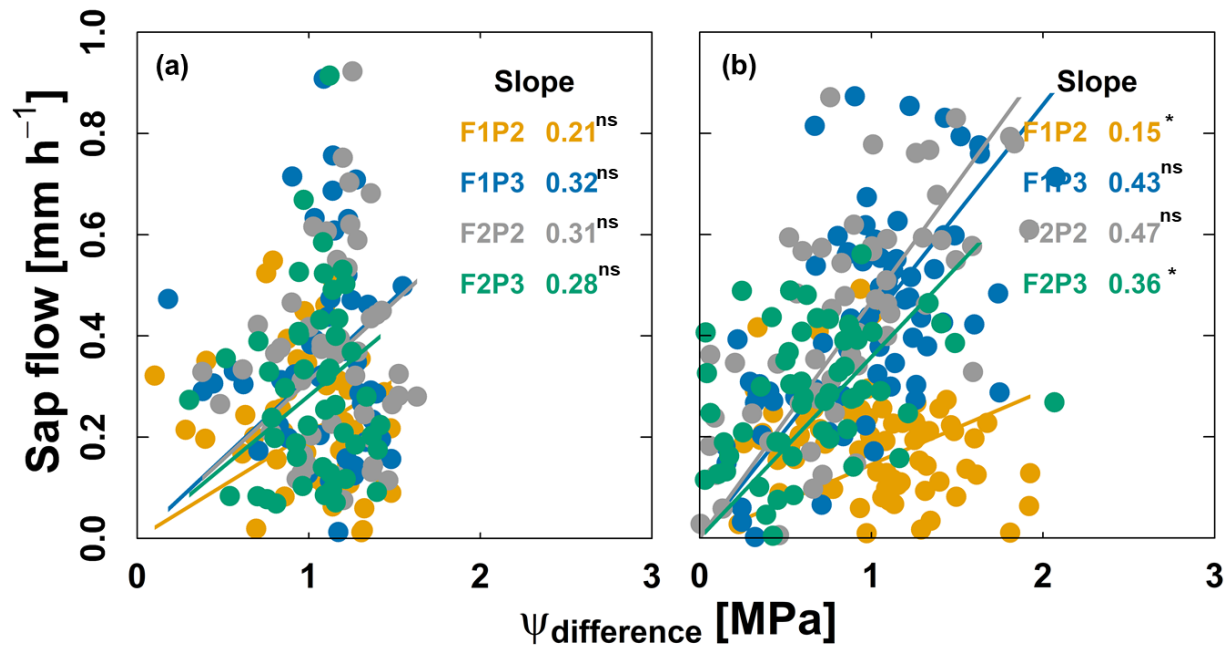
Supplementary material 2: Dynamics of soil water potential measured at different soil depths from the (a) stony soil (F1) and (b) silty soil (F2) with the rainfed (P2) and irrigated (P3) plots in the growing season 2018. Black and red vertical bars indicate the rainfall and irrigation, respectively. Grey bars indicates the three measured days that were shown in Figure 4, 5, and 6.

Supplementary material 3: Dynamics of (a, b) aboveground dry matter and (c, d) leaf area index (LAI) in the two growing seasons 2017 (a, c) 2017 and 2018 (b, d) of from the rainfed (P2) and irrigated (P3) plots of the stony soil (F1) and silty soil (F2). Each point represents the average of two sampling replicates.

Supplementary material 4: Dynamics of (a, b) plant height for 2017 and 2018, respectively while (c, d) are leaves length and leaves width, respectively in 2018 from the rainfed (P2) and irrigated (P3) plots of the stony soil (F1) and silty soil (F2).

Supplementary material 5: Relationship of sap flow and difference of effective soil water potential (ψ_{soil_effec}) and sunlit leaf water potential ($\psi_{difference}$) from measured dates from the rainfed (P2) and irrigated (P3) plots of the stony soil (F1) and silty soil (F2) in the two growing seasons (a) 2017 and (b) 2018. The unit of slope in the linear regression is mm h^{-1} MPa^{-1}. Regression was based on the DEMING approach. The asterisk which are next to the slopes indicate a significant correlation between two variables according to Pearson method (ns: non-significant; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$).

Supplementary material 6. Summary of statistical analysis of dependent variables (midday stomatal conductance – Gs MD, midday leaf photosynthesis – An_{MD}, midday leaf transpiration – E_{MD}) with independent variables (stem hydraulic conductance – K_{stem}, whole plant hydraulic conductance – K_{soil_plant}, root system hydraulic conductance – K_{soil_root}, midday sunlit leaf water potential – $\psi_{sunlitleaf\ MD}$, midday effective soil water potential – $\psi_{soil\_effec,\ MD}$, difference of water potential between root zone and sunlit leaf water potential – $\psi_{difference,\ MD}$) for F1 (stony soil), F2 (silty soil), and P2 (rainfed), and P3 (irrigated) for two growing seasons 2017 (n = 9 days, Supplementary material 7 and Fig. 8) and 2018 (n = 10 days, Supplementary material 8 and Fig. 9). Statistical indexes r is correlation coefficient and pvalue. Bold values indicate the significantly correlation between dependent and independent variables at the probability level of p < 0.05.

| Dependent variable | Independent variable | 2017 | | | | | | | | 2018 | | | | | | | |
| | | F1P2 | | F1P3 | | F2P2 | | F2P3 | | F1P2 | | F1P3 | | F2P2 | | F2P3 | |
		r	pvalue	r	pvalue	r	pvalue	r	pvalue	r	pvalue	r	pvalue	r	pvalue	r	pvalue
Gs_{MD}	$K_{stem\ MD}$	-0.23	0.58	-0.32	0.401	-0.22	0.6	-0.28	0.458	0.29	0.445	0.4	0.29	-0.31	0.499	-0.58	0.226
	$K_{soil\_plant\ MD}$	-0.1	0.812	0.15	0.7	-0.25	0.558	-0.18	0.642	**0.79**	**0.011**	0.48	0.196	0.74	0.059	0.72	0.110
	$K_{soil\_root\ MD}$	-0.06	0.887	-0.24	0.526	-0.05	0.912	0.02	0.968	**0.77**	**0.016**	0.15	0.702	0.2	0.669	**0.9**	**0.015**
	$\psi_{sunlitleaf\ MD}$	-0.11	0.8	-0.44	0.238	-0.38	0.354	-0.29	0.444	0.58	0.098	0.29	0.451	-0.03	0.943	-0.13	0.804
	$\psi_{soil\_effec\ MD}$	0.2	0.63	0.24	0.536	0.3	0.472	0.19	0.622	-0.24	0.54	0.09	0.811	-0.85	0.014	-0.63	0.18
	$\psi_{difference\ MD}$	0.15	0.731	0.44	0.238	0.44	0.276	0.32	0.402	**-0.7**	**0.037**	-0.19	0.628	-0.35	0.439	-0.36	0.48
An_{MD}	$K_{stem\ MD}$	-0.29	0.49	-0.13	0.734	-0.39	0.339	-0.11	0.78	-0.02	0.962	0.25	0.51	0.05	0.921	-0.47	0.352
	$K_{soil\_plant\ MD}$	0.06	0.887	-0.17	0.668	-0.44	0.271	-0.46	0.215	0.65	0.056	0.59	0.094	0.35	0.442	0.52	0.291
	$K_{soil\_root\ MD}$	0.2	0.635	0.05	0.905	-0.07	0.878	-0.46	0.212	**0.72**	**0.028**	0.4	0.289	-0.22	0.64	0.61	0.199
	$\psi_{sunlitleaf\ MD}$	0.25	0.547	0.13	0.743	-0.07	0.876	0.05	0.895	0.23	0.55	-0.21	0.579	-0.41	0.357	-0.33	0.52
	$\psi_{soil\_effec\ MD}$	0.56	0.145	0.38	0.318	0.38	0.35	0.29	0.441	-0.45	0.225	-0.19	0.628	-0.62	0.134	-0.75	0.086
	$\psi_{difference\ MD}$	-0.18	0.673	0.05	0.907	0.23	0.586	0.03	0.948	-0.43	0.25	0.06	0.876	0.06	0.899	-0.33	0.526
E_{MD}	$K_{stem\ MD}$	-0.15	0.726	-0.16	0.686	-0.16	0.71	0.11	0.77	0.26	0.492	0.42	0.257	0.09	0.841	0.56	0.248
	$K_{soil\_plant\ MD}$	0.02	0.968	0.12	0.76	0.04	0.926	-0.1	0.8	**0.81**	**0.008**	0.25	0.522	-0.2	0.662	0.77	0.071
	$K_{soil\_root\ MD}$	0.07	0.865	-0.1	0.789	0	0.998	-0.29	0.443	**0.94**	**0**	0.39	0.299	-0.47	0.288	0.22	0.669
	$\psi_{sunlitleaf\ MD}$	0.13	0.761	-0.22	0.562	-0.54	0.166	-0.61	0.084	0.41	0.27	-0.2	0.602	**-0.77**	**0.042**	**-0.91**	**0.012**
	$\psi_{soil\_effec\ MD}$	0.43	0.282	0.15	0.695	0.31	0.448	0.45	0.224	-0.15	0.695	0.34	0.367	-0.37	0.413	0.21	0.692
	$\psi_{difference\ MD}$	-0.07	0.872	0.24	0.541	0.58	0.135	0.68	0.046	-0.49	0.184	0.4	0.283	0.47	0.293	0.68	0.141
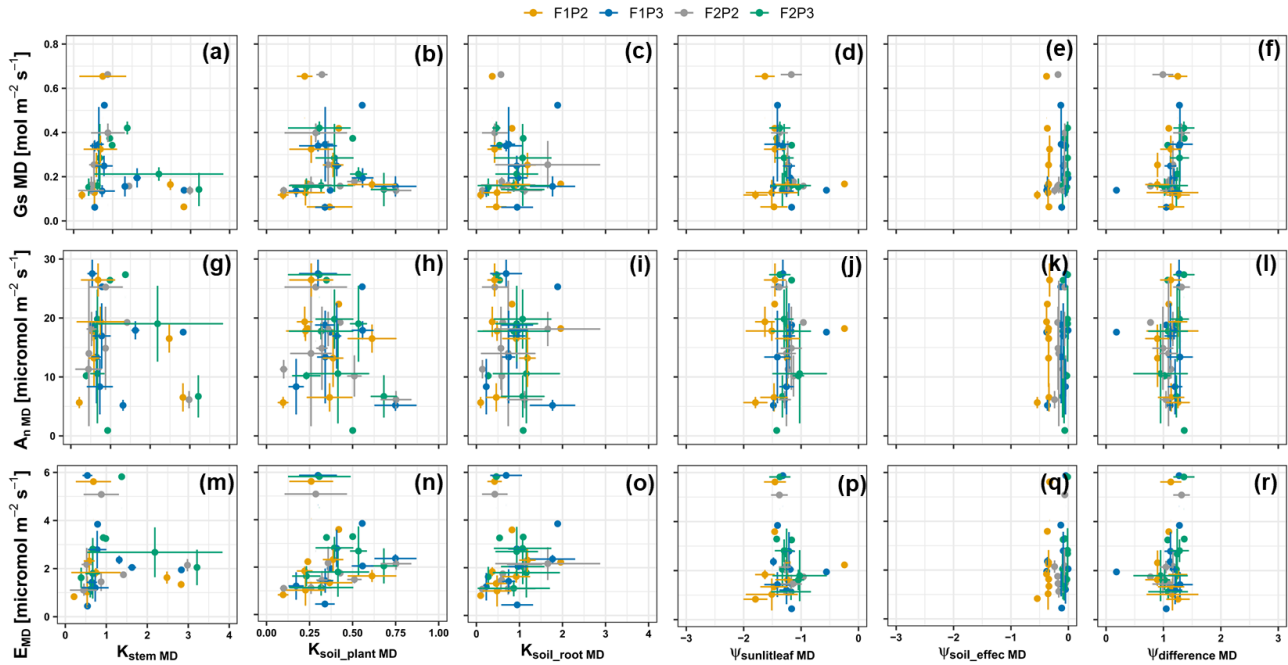
Supplementary material 7: Relationship of midday leaf stomatal conductance (Gs MD) (top panel, a-b-c-d-e-f), photosynthesis ($A_{n\ MD}$) (middle panel, g-h-i-j-k-l), and tranpiration (E_{MD}) (bottom panel, m-n-o-p-q-r) to midday stem hydraulic conductnace ($K_{stem\ MD}$) (a-g-m), plant hydraulic conductance ($K_{soil\_plant\ MD}$) (b-h-n); soil to root hydraulic conductance ($K_{soil\_root\ MD}$) (c-i-o); sunlit leaf water potential ($\Psi_{sunlitleaf\ MD}$) (d-j-p), effective soil water potential ($\Psi_{soil\_effec\ MD}$) (e-k-q) and difference of sunlit leaf and root zone water potential ($\Psi_{difference\ MD}$) (f-l-r) from 9 measured dates from the rainfed (P2) and irrigated (P3) plots of the stony soil (F1) and silty soil (F2) in 2017. The regression was based on the DEMING approach, correlation coefficient, and significant level (pvalues) between two variables were showed in Supplementary material 6. Vertical and horizontal bars represent the standard deviation of 04 hours values at around midday (11, 12, 13, 14, LT).
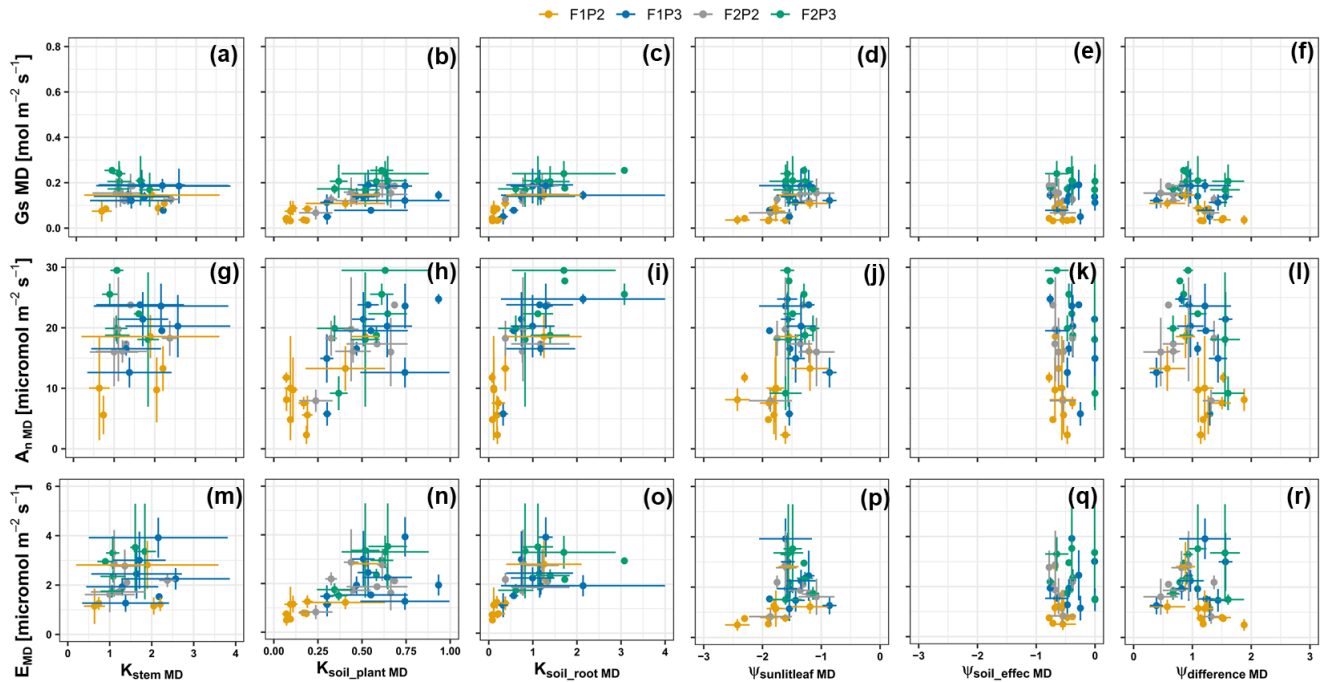
Supplementary material 8: Relationship of midday leaf stomatal conductance (Gs MD) (top panel, a-b-c-d-e-f), photosynthesis ($A_{n\ MD}$) (middle panel, g-h-i-j-k-l), and tranpiration (E_{MD}) (bottom panel, m-n-o-p-q-r) to midday stem hydraulic conductnace ($K_{stem\ MD}$) (a-g-m), plant hydraulic conductance ($K_{soil\_plant\ MD}$) (b-h-n); soil to root hydraulic conductance ($K_{soil\_root\ MD}$) (c-i-o); sunlit leaf water potential ($\Psi_{sunlitleaf\ MD}$) (d-j-p), effective soil water potential ($\Psi_{soil\_effec\ MD}$) (e-k-q) and difference of sunlit leaf and root zone water potential ($\Psi_{difference\ MD}$) (f-l-r) from 9 measured dates from the rainfed (P2) and irrigated (P3) plots of the stony soil (F1) and silty soil (F2) in 2018. The regression was based on the DEMING approach, correlation coefficient, and significant level (pvalues) between two variables were showed in Supplementary material 6. Vertical and horizontal bars represent the standard deviation of 04 hours values at around midday (11, 12, 13, 14, LT).