Supplements

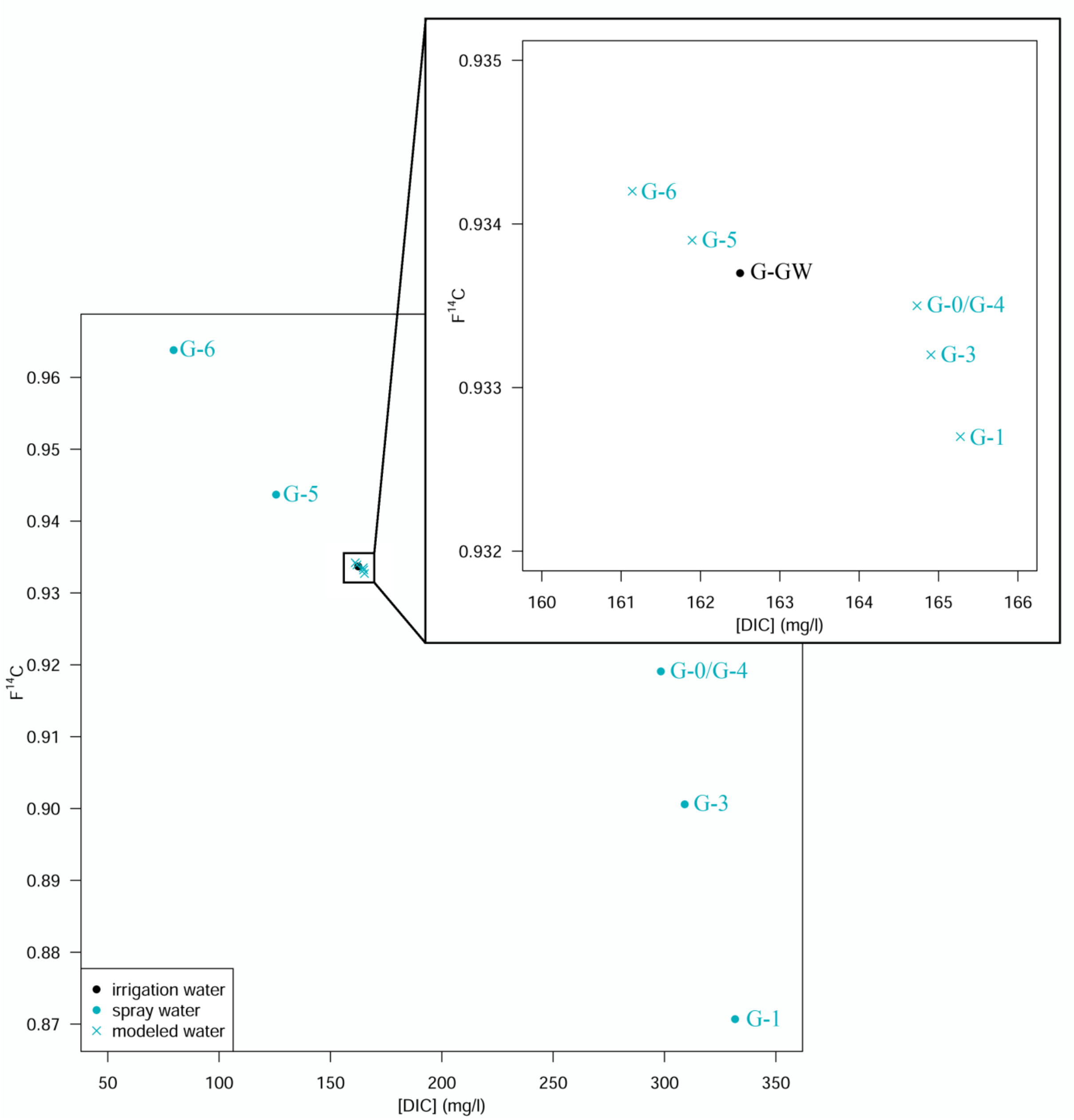

Figure S1 Relationship between DIC concentration measured in the spray and irrigation water samples as well as DIC concentration, calculated for the mixed water (irrigation and spray water) according to Eq. 6, and radiocarbon concentration ($F^{14}C$) in the spray water, irrigation water, and modeled water (see Eq. 5) for irrigation water G-GW and spray water of group 1 (mineral salt solution; control G-0 (“control 1”), G-3 (“brackish-like”), G-1 (“marine-like”), G-2 (“≫marine”)) and group 2 (control G-4 (“control 2”), Schlei water next to Haithabu (G-5, “Schlei”), Baltic Sea water next to Fehmarn (G-6, “Baltic”)), respectively.

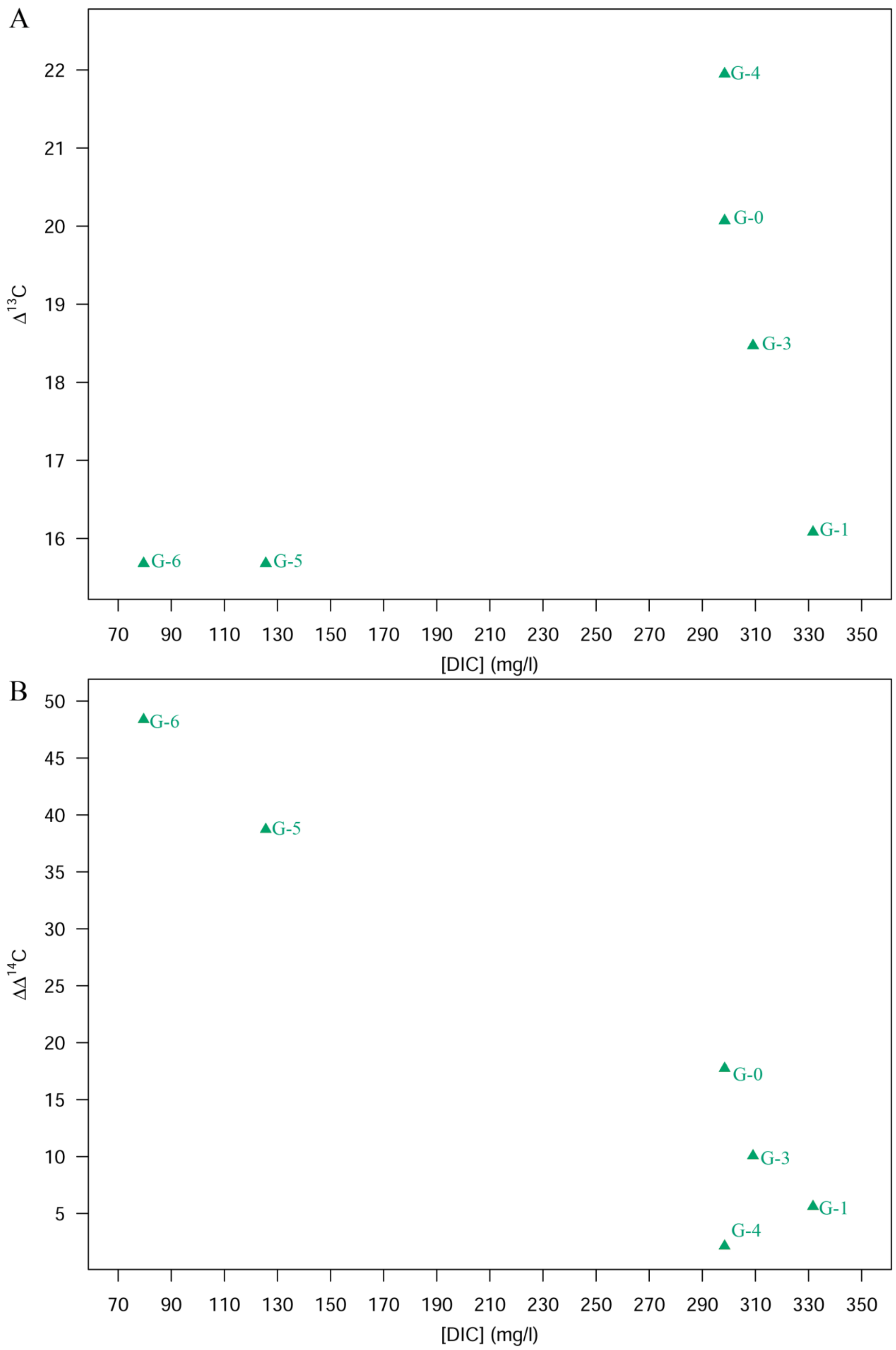

Figure S2 Relationship between [DIC], measured as mg CO_2/l, in the spray water samples (see Table 1) and discrimination against (A) ^{13}C ($\Delta^{13}C$) and (B) ^{14}C ($\Delta\Delta^{14}C$) for plants of group 1 (mineral salt solution; control G-0 (“control 1”), G-3 (“brackish-like”), G-1 (“marine-like”), G-2 (“≫marine”)) and group 2 (control G-4 (“control 2”), Schlei water next to

Haithabu (G-5, “Schlei”),Baltic Sea water next to Fehmarn (G-6, “Baltic”)), respectively (see Table 3).

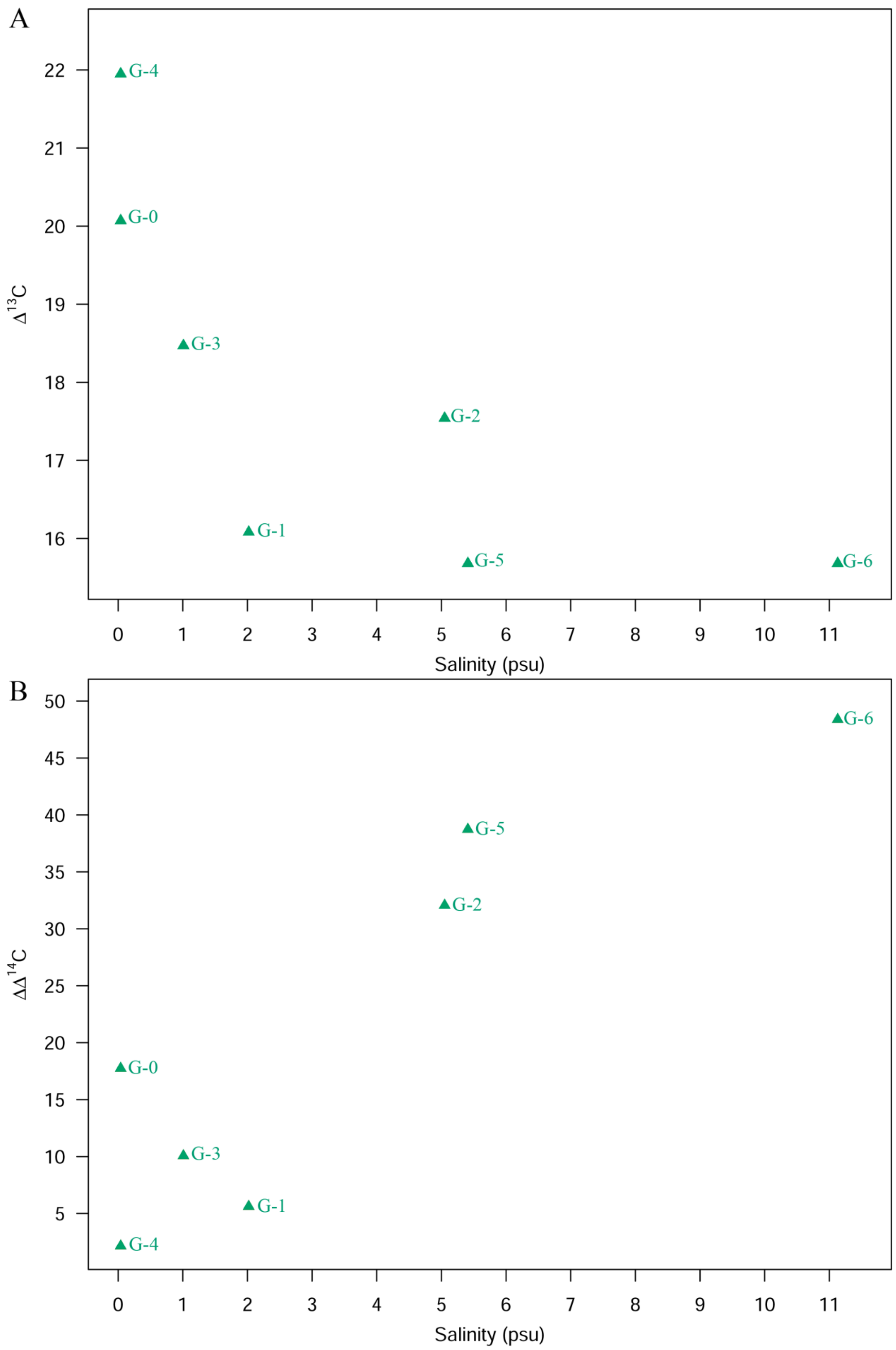

Figure S3 Relationship between salinity (psu; see Table 1) of the spray water samples and discrimination against (A) ^{13}C ($\Delta^{13}C$) and (B) ^{14}C ($\Delta\Delta^{14}C$) for plants of group 1 (mineral salt solution; control G-0 (“control 1”), G-3 (“brackish-like”), G-1 (“marine-like”), G-2

(“≫marine”)) and group 2 (control G-4 (“control 2”), Schlei water next to Haithabu (G-5, “Schlei”), Baltic Sea water next to Fehmarn (G-6, “Baltic”)), respectively (see Table 3).

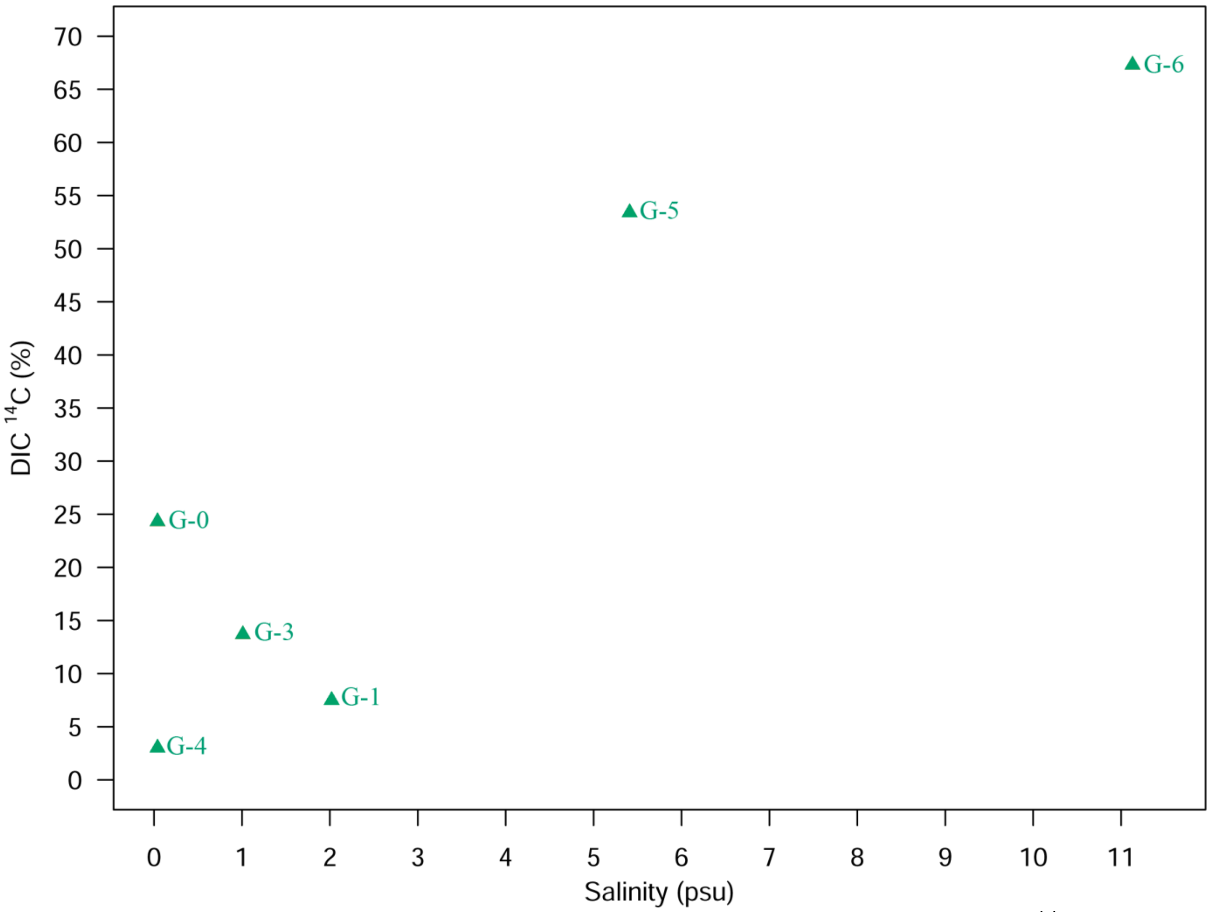

Figure S4 Relationship between salinity (psu; see Table 1) and percentage of ^{14}C in plants originating from water DIC (DIC ^{14}C (%); see Table 2) for plants of group 1 (mineral salt solution; control G-0 (“control 1”), G-3 (“brackish-like”), G-1 (“marine-like”), G-2 (“≫marine”)) and group 2 (control G-4 (“control 2”), Schlei water next to Haithabu (G-5, “Schlei”), Baltic Sea water next to Fehmarn (G-6, “Baltic”)), respectively.

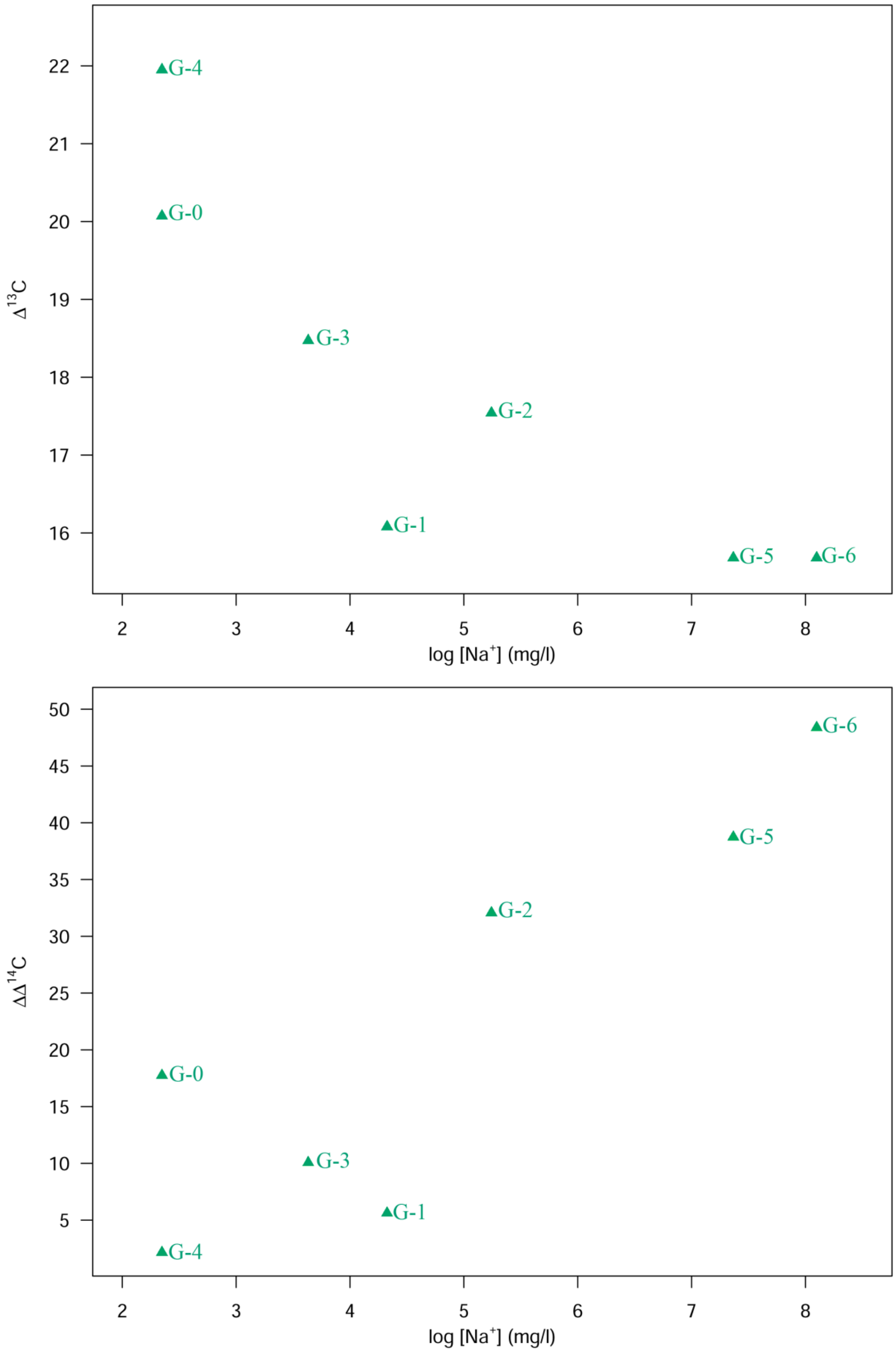

Figure S5 Relationship between logarithmized [Na^+] (see Table 1) and discrimination against (A) ^{13}C ($\Delta^{13}C$) and (B) ^{14}C ($\Delta\Delta^{14}C$) for plants of group 1 (mineral salt solution; control G-0 ("control 1"), G-3 ("brackish-like"), G-1 ("marine-like"), G-2 ("≫marine")) and group 2 (control G-4 (“control 2”), Schlei water next to Haithabu (G-5, “Schlei”), Baltic Sea water next to Fehmarn (G-6, “Baltic”)), respectively (see Table 3).

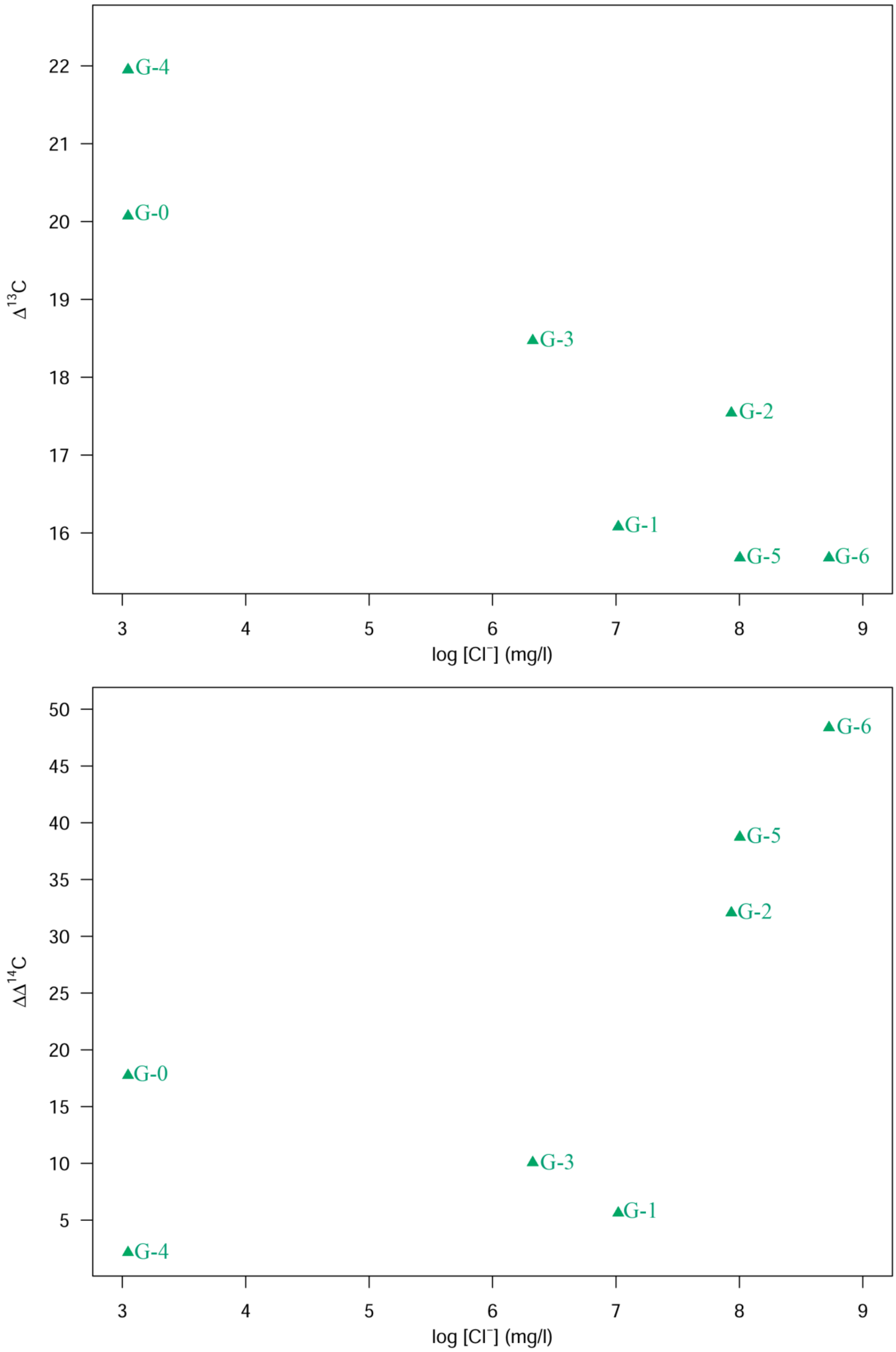

Figure S6 Relationship between logarithmized [Cl^-] (see Table 1) and discrimination against (A) ^{13}C ($\Delta^{13}C$) and (B) ^{14}C ($\Delta\Delta^{14}C$) for plants of group 1 (mineral salt solution; control G-0 ("control 1"), G-3 ("brackish-like"), G-1 ("marine-like"), G-2 ("≫marine")) and group 2 (control G-4 ("control 2"), Schlei water next to Haithabu (G-5, "Schlei"), Baltic Sea water next to Fehmarn (G-6, "Baltic")), respectively (see Table 3).

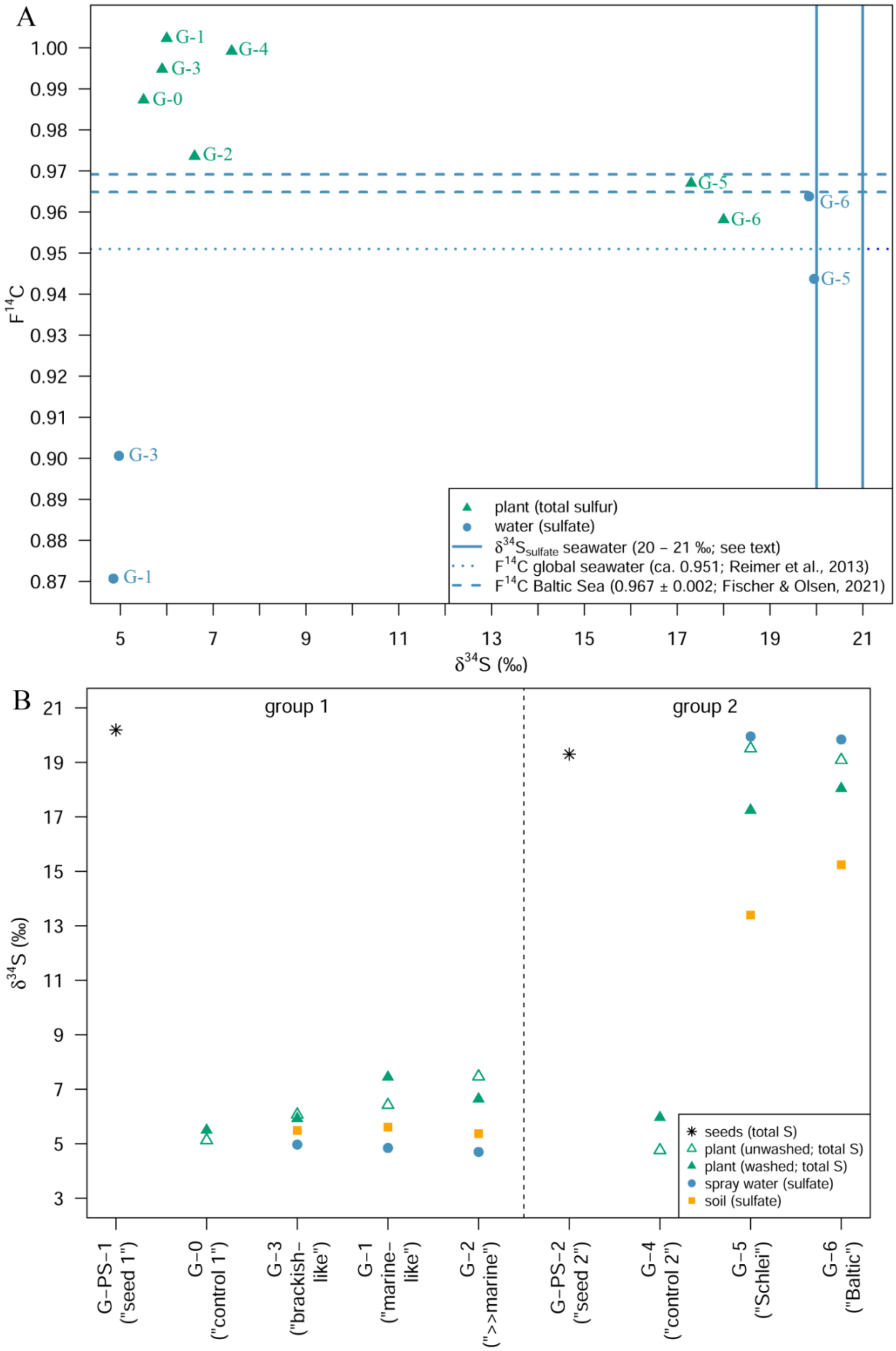

Figure S7 (A) $F^{14}C$ plotted against $\delta^{34}S$ for beach grass leaves (total sulfur; washed) and spray water (inorganic sulfate; $[SO_4^{2-}]$ concentration below detection level for tap water samples G-0/G-4 ("control 1"/"control 2") and G-GW (irrigation water)) for group 1 (mineral salt solution; control G-0 ("control 1"), G-3 ("brackish-like"), G-1 ("marine-like"), G-2

("≫marine")) and group 2 (control G-4 ("control 2"), Schlei water next to Haithabu (G-5, "Schlei"), Baltic Sea water next to Fehmarn (G-6, "Baltic")), respectively. (B) $\delta^{34}S$ data for total sulfur in beach grass seeds (untreated; group 1: G-PS-1 ("seed 1"), group 2: G-PS-2 ("seed 2")) and plant leaves (unwashed and washed) as well as for inorganic sulfate in spray water and soil for group 1 and group 2 (see above; modified after Göhring et al. 2023a); see Tables 2 and S1.

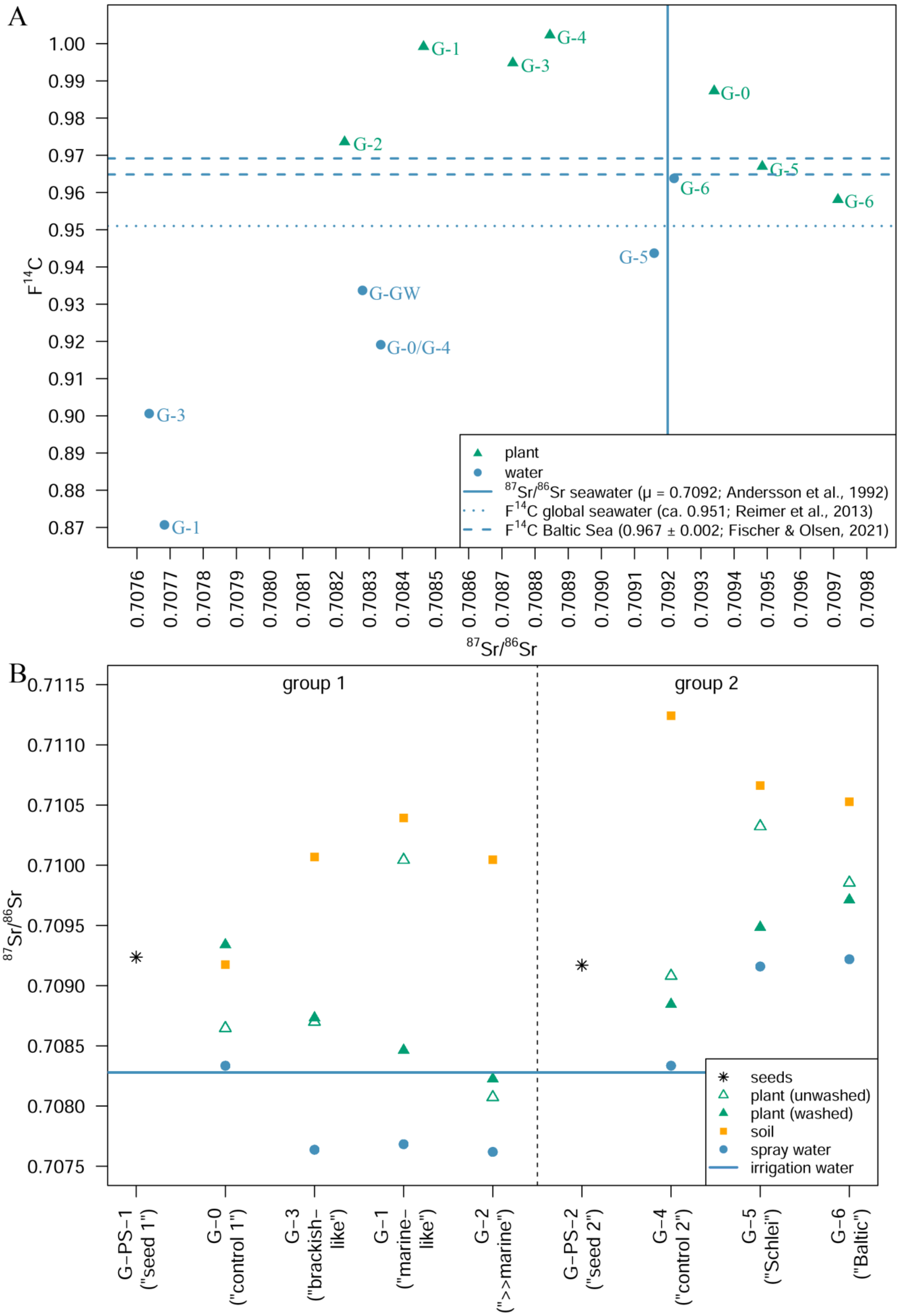

Figure S8 (A) $F^{14}C$ plotted against $^{87}Sr/^{86}Sr$ for beach grass leaves (washed), spray water, and irrigation water (G-GW) for group 1 (mineral salt solution; control G-0 ("control 1"), G-3 ("brackish-like"), G-1 ("marine-like"), G-2 ("≫marine")) and group 2 (control G-4 ("control

2”), Schlei water next to Haithabu (G-5, “Schlei”),Baltic Sea water next to Fehmarn (G-6, “Baltic”)), respectively. (B) $^{87}Sr/^{86}Sr$ data for beach grass seeds (untreated; group 1: G-PS-1 (“seed 1”), group 2: G-PS-2 (“seed 2”)) and plant leaves (unwashed vs. washed as well as for spray water, irrigation water, and soil for group 1 and group 2 (see above; modified after Göhring et al. 2023a); see Tables 2 and S1.

Table S1 Overview of $\delta^{13}C$ (plant α-cellulose, spray water/irrigation water DIC[b]), $\delta^{34}S$ (plant total sulfur, spray water/irrigation water sulfate) and $^{87}Sr/^{86}Sr$ (plant, spray water/irrigation water) in the greenhouse treatment groups (group 1: “control 1” G-0, “brackish-like” G-3, “>>marine” G-2, “marine-like” G-1; group 2: control G-4, “Schlei” G-5, “Baltic” G-6; irrigation water G-GW). nd = not determinable ([SO_4^{2-}] below detection level)

sample id	**plant**			**water**		
	$\delta^{13}C_{cellulose}$[a]	**$\delta^{34}S_{total\ S}$[a]**	**$^{87}Sr/^{86}Sr$[a]**	**$\delta^{13}C_{DIC}$[b]**	**$\delta^{34}S_{sulfate}$[a]**	**$^{87}Sr/^{86}Sr$[a]**
G-0	-28.0	5.5	0.709340	-4.6	nd	0.708335
G-3	-26.5	5.9	0.708733	-5.7	4.97	0.707637
G-1	-24.2	7.4	0.708464	-4.6	4.85	0.707683
G-2	-25.6	6.6	0.708226	na	4.7	0.707619
G-4	-29.8	6.0	0.708845	-4.6	nd	0.708335
G-5	-23.8	17.3	0.709485	-1.5	19.95	0.709159
G-6	-23.8	18.0	0.709713	0.4	19.84	0.709219
G-GW	-	-	-	-3.6	nd	0.708280

[a] data from Göhring et al. (2023a)

[b] data measured via AMS, thus, can only be understood as tendency