



Supplemental Figure S3.1. Sources of variation for ionic traits in fresh sweet corn kernels. The figure shows the decomposition of phenotypic variance into respective components: green for environment (Env), light yellow for set within environment [Set(Env)], light purple for block within set within environment [B(Env×Set)], red for genotype (Geno), blue for genotype-by-environment interaction (Geno×Env), orange for ICP run, light green for sample, pink for kernel weight, yellow for row within environment, purple for column within environment, and gray for residual error variance (Residual). Variance component estimates were calculated for all random effects from the full model (Equation 1). The table below indicates which random effects were significant (*) according to a likelihood ratio test ($\alpha = 0.05$).

	Boron	Cadmium	Calcium	Copper	Iron	Magnesium	Manganese	Molybdenum	Nickel	Phosphorus	Potassium	Rubidium	Strontium	Sulfur	Zinc	Fe/P	Mg/P	Zn/P	Anthesis	PC1	PC2
Boron		0.01	0.32	0.11	-0.05	0.09	0.11	-0.03	<0.01	0.06	0.22	0.13	0.29	0.22	-0.02	-0.11	0.06	-0.07	0.05	0.17	-0.04
Cadmium	0.84		0.08	0.26	0.05	0.20	0.01	-0.08	-0.09	0.18	0.12	-0.07	0.11	0.16	0.10	-0.06	0.02	<0.01	-0.12	-0.02	-0.07
Calcium	<0.01	0.09		0.18	0.01	0.23	0.29	-0.04	0.10	0.08	0.15	0.06	0.72	0.22	0.05	-0.04	0.19	0.01	0.08	0.02	-0.09
Copper	0.03	<0.01	<0.01		0.37	0.25	0.28	-0.03	0.16	0.35	0.25	0.12	0.17	0.23	0.25	0.21	-0.13	0.07	-0.24	-0.10	0.04
Iron	0.33	0.35	0.88	<0.01		0.28	0.27	0.07	0.16	0.38	0.07	0.05	0.10	0.13	0.56	0.86	-0.13	0.44	-0.32	-0.26	-0.09
Magnesium	0.06	<0.01	<0.01	<0.01	<0.01		0.34	-0.03	0.11	0.68	0.25	-0.04	0.21	0.26	0.43	-0.06	0.42	0.11	-0.21	-0.08	-0.16
Manganese	0.02	0.90	<0.01	<0.01	<0.01	<0.01		0.02	0.21	0.22	0.11	0.07	0.35	0.23	0.23	0.16	0.17	0.13	-0.10	0.09	-0.03
Molybdenum	0.51	0.11	0.43	0.50	0.18	0.50	0.63		-0.01	0.05	0.05	-0.07	0.03	0.06	0.13	0.05	-0.10	0.12	0.13	0.01	0.02
Nickel	0.95	0.07	0.05	<0.01	<0.01	0.02	<0.01	0.83		0.13	0.10	0.19	0.12	0.10	0.17	0.11	-0.01	0.11	0.05	-0.03	0.13
Phosphorus	0.22	<0.01	0.11	<0.01	<0.01	<0.01	<0.01	0.30	<0.01		0.35	-0.07	0.07	0.27	0.53	-0.11	-0.36	0.02	-0.28	-0.18	-0.08
Potassium	<0.01	0.01	<0.01	<0.01	0.19	<0.01	0.03	0.29	0.04	<0.01		0.33	0.11	0.19	0.06	-0.11	-0.10	-0.15	-0.16	0.04	-0.03
Rubidium	<0.01	0.19	0.27	0.02	0.34	0.42	0.16	0.17	<0.01	0.15	<0.01		0.08	0.05	<0.01	0.09	0.02	0.04	0.13	0.10	-0.04
Strontium	<0.01	0.03	<0.01	<0.01	0.06	<0.01	<0.01	0.49	0.02	0.14	0.03	0.12		0.27	0.06	0.05	0.17	0.01	0.11	0.11	-0.07
Sulfur	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	0.24	0.04	<0.01	<0.01	0.32	<0.01		0.18	-0.01	<0.01	0.05	-0.13	-0.09	-0.01
Zinc	0.67	0.04	0.32	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	0.21	0.99	0.25	<0.01		0.33	-0.10	0.84	-0.18	-0.33	-0.08
Fe/P	0.03	0.27	0.44	<0.01	<0.01	0.25	<0.01	0.28	0.02	0.03	0.02	0.09	0.33	0.86	<0.01		0.04	0.47	-0.20	-0.20	-0.06
Mg/P	0.23	0.67	<0.01	<0.01	0.01	<0.01	<0.01	0.04	0.83	<0.01	0.04	0.63	<0.01	0.96	0.06	0.43		0.12	0.12	0.17	-0.11
Zn/P	0.19	0.93	0.86	0.14	<0.01	0.03	0.01	0.01	0.02	0.72	<0.01	0.40	0.82	0.37	<0.01	<0.01	0.02		-0.02	-0.28	-0.04
Anthesis	0.28	0.01	0.12	<0.01	<0.01	<0.01	0.05	0.01	0.36	<0.01	<0.01	<0.01	0.03	0.01	<0.01	<0.01	0.01	0.72		0.41	0.22
PC1	<0.01	0.64	0.64	0.04	<0.01	0.11	0.07	0.83	0.58	<0.01	0.46	0.04	0.03	0.07	<0.01	<0.01	<0.01	<0.01	<0.01		<0.01
PC2	0.43	0.17	0.08	0.40	0.09	<0.01	0.59	0.70	<0.01	0.12	0.50	0.47	0.17	0.78	0.10	0.26	0.03	0.43	<0.01	1.00	

Supplemental Figure S3.2. Correlation matrix for BLUPs of the 15 ionic traits and three ratios from fresh kernels in sweet corn. Also included BLUPs for days to anthesis and the first two principal components. Pearson correlation coefficients (r) are presented in the upper triangle, while the corresponding P -values for the significance of associations ($\alpha = 0.05$) are displayed below the diagonal.