

Supporting Information

Glyphosate Resistance Technology Has Minimal or No Effect on Maize Mineral Content and Yield

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Table S1. ICP-MS Instrumental Settings

Plasma Parameters	
cool gas flow	16 L min ⁻¹
aux. gas flow	1.0 L min ⁻¹
sample gas flow	1.1 L min ⁻¹
RF power	1250 W
Data Acquisition Parameters	
Low Resolution (LR)	⁷ Li, ⁹ Be, ⁸⁵ Rb, ⁸⁸ Sr, ¹¹¹ Cd, ¹³³ Cs, ¹³⁷ Ba, ²⁰⁵ Tl, ²⁰⁸ Pb, ²³⁸ U
Medium Resolution (MR)	²⁴ Mg, ²⁷ Al, ⁴⁴ Ca, ⁵¹ V, ⁵² Cr, ⁵⁵ Mn, ⁵⁶ Fe, ⁵⁹ Co, ⁶⁰ Ni, ⁶³ Cu, ⁶⁶ Zn, ⁶⁹ Ga
High Resolution (HR)	⁷⁵ As, ³⁹ K, ⁷⁸ Se
mass window	20% LR; 150% MR; 200% for HR
points per peak	50 for LR; 20 for MR
scan type	E-scan
integration time	10 ms
passes and runs	3 and 2

Table S2. Chemical characteristics of soils from glyphosate history and no-history fields at Stoneville, MS in 2013 and 2014.^{a,b,c}

Soil characteristics	Glyphosate history field			No-history field		
	Non-GR, no Gly	GR, Gly	no GR + Gly	Non-GR, no Gly	GR, no Gly	GR + Gly
pH (water)	7.05 a	6.98 a	7.04 a	6.22 a	6.25 a	6.17 a
Organic matter, %	0.76 a	0.74 a	0.77 a	1.13 a	1.08 a	1.12 a
CEC, mequiv/100 g	12.6 a	11.8 a	11.6 a	12.91 a	12.50 a	13.33 a
P, kg/ha	82.6 a	95.7 a	89.6 a	117.3 a	106.4 a	105.3 a
K, kg/ha	418.3 a	388.1 a	399.0 a	484.7 a	439.3 a	437.1 a
Mg, kg/ha	826.6 a	775.3 a	796.3 a	743.4 a	716.5 a	731.9 a
Ca, kg/ha	3952 a	3694 a	3668 a	3125 a	3016 a	3113 a
S, mg/kg	89.1 a	87.4 a	91.6 a	117.1 a	112.4 a	116.7 a
B, mg/kg	18.7 a	18.1 a	18.7 a	18.9 a	18.4 a	18.7 a
Zn, mg/kg	39.7 a	37.8 a	38.8 a	41.4 a	40.6 a	41.1 a
Mn, mg/kg	319 a	268 a	291 a	305 a	281 a	344 a
Fe, g/kg	11.5 a	11.1 a	11.4 a	11.4 a	11.2 a	11.5 a
Cu, mg/kg	12.4 a	11.0 a	11.1 a	12.9 a	12.2 a	12.0 a
As, mg/kg	5.8 a	5.6 a	5.7 a	7.7 a	7.4 a	7.7 a
Al, g/kg	9.1 a	8.9 a	9.2 a	9.5 a	9.3 a	9.3 a
Ba, mg/kg	131.7 a	127.1 a	129.7 a	125.7 a	123.2 a	126.9 a
Cd, mg/kg	0.24 a	0.23 a	0.23 a	0.26 a	0.25 a	0.26 a
Co, mg/kg	7.04 a	6.26 a	6.62 a	6.96 a	6.52 a	7.72 a
Cr, mg/kg	12.5 a	12.4 a	12.8 a	13.1 a	12.9 a	12.8 a
Ni, mg/kg	15.8 a	14.6 a	15.2 a	14.8 a	14.4 a	15.1 a
Pb, mg/kg	7.4 a	6.8 a	7.2 a	8.0 a	7.7 a	8.2 a
Se, mg/kg	0.63 a	0.70 a	0.67 a	0.70 a	0.67 a	0.78 a
Sr, mg/kg	23.9 a	23.3 a	24.0 a	22.9 a	22.6 a	22.9 a

^aAbbreviations: GR, glyphosate-resistant; Non-GR, non-glyphosate-resistant; Gly, glyphosate; CEC, Cation Exchange capacity.

^bP, K, Mg, and Ca are Mehlich-3 extractable; all others are total sorbed metals by EPA 3050 method.

^cMeans within a row for each field followed by same letter are not significantly different at $\alpha = 0.05$.

Table S3. Chemical characteristics of soils from glyphosate history and no-history fields at Urbana, IL in 2013. ^{a,b,c}

Soil characteristics	Glyphosate history field			No-history field		
	Non-GR, no Gly	GR, no Gly	GR + Gly	Non-GR, no Gly	GR, no Gly	GR + Gly
pH (water)	5.70 a	5.90 a	5.88 a	6.70 a	6.63 a	6.68 a
Organic matter, %	2.21 a	2.21 a	2.19 a	5.13 a	4.73 a	5.17 a
CEC, mequiv/100 g	21.3 a	20.9 a	21.1 a	19.6 a	20.3 a	20.2 a
P, ppm	65.8 a	68.4 a	60.4 a	139.0 a	110.8 a	146.3 a
K, ppm	161 a	163 a	177 a	475 a	455 a	516 a
Mg, ppm	364 a	369 a	374 a	279 a	292 a	288 a
Ca, ppm	2340 a	2330 a	2440 a	2930 a	2810 a	2970 a
S, ppm	172 a	173 a	176 a	522 a	506 a	537 a
B, ppm	25.2 a	26.1 a	25.5 a	27.8 a	28.2 a	28.3 a
Zn, ppm	47.0 a	47.7 a	48.1 a	70.0 a	71.8 a	72.9 a
Mn, ppm	1002 a	1050 a	851 a	808 a	868 a	680 b
Fe, ppm	16900 a	16900 a	16700 a	16100 a	16200 a	15700 a
Cu, ppm	12.9 a	12.8 a	13.2 a	17.5 a	17.6 a	18.4 a
As, ppm	8.0 a	8.2 a	7.9 a	7.2 a	7.5 a	6.8 a
Al, ppm	14500 a	14700 a	14900 a	14700 a	14700 a	14600 a
Ba, ppm	160 a	158 a	148 a	161 a	176 a	154 a
Co, ppm	13.9 a	13.9 a	13.4 a	10.6 a	10.6 a	9.3 a
Cr, ppm	16.3 a	16.8 a	16.4 a	16.6 a	16.8 a	16.7 a
Ni, ppm	13.3 a	13.6 a	13.0 a	15.6 a	15.9 a	16.1 a
Pb, ppm	22.1 a	22.3 a	20.3 a	24.6 a	26.4 a	24.4 a
Sr, ppm	12.1 a	12.4 a	12.5 a	19.5 a	17.2 a	17.9 a

^aAbbreviations: GR, glyphosate-resistant; Non-GR, non-glyphosate-resistant; Gly, glyphosate; CEC, Cation Exchange capacity.

^bP, K, Mg, and Ca are Mehlich-3 extractable; all others are total sorbed metals by EPA 3050 method.

^cMeans within a row for each field followed by same letter are not significantly different at $\alpha = 0.05$.