Leon V Kochian

List of Publications by Citations

255 papers	25,920 citations	89 h-index	156 g-index
269 ext. papers	28,512 ext. citations	6.7 avg, IF	6.91 L-index

#	Paper	IF	Citations
255	How do crop plants tolerate acid soils? Mechanisms of aluminum tolerance and phosphorous efficiency. *Annual Review of Plant Biology*, **2004**, 55, 459-93	30.7	1220
254	Trehalose accumulation in rice plants confers high tolerance levels to different abiotic stresses. *Proceedings of the National Academy of Sciences of the United States of America*, **2002**, 99, 15898-903	11.5	953
253	The molecular physiology of heavy metal transport in the Zn/Cd hyperaccumulator Thlaspi caerulescens. *Proceedings of the National Academy of Sciences of the United States of America*, **2000**, 97, 4956-60	11.5	623
252	Functional expression of a probable Arabidopsis thaliana potassium channel in Saccharomyces cerevisiae. *Proceedings of the National Academy of Sciences of the United States of America*, **1992**, 89, 3736-40	11.5	603
251	A gene in the multidrug and toxic compound extrusion (MATE) family confers aluminum tolerance in sorghum. *Nature Genetics*, **2007**, 39, 1156-61	36.3	561
250	The Physiology, Genetics and Molecular Biology of Plant Aluminum Resistance and Toxicity. *Plant and Soil*, **2005**, 274, 175-195	4.2	530
249	Aluminium Toxicity in Roots: An Investigation of Spatial Sensitivity and the Role of the Root Cap. *Journal of Experimental Botany*, **1993**, 44, 437-446	7	480
248	Plant Adaptation to Acid Soils: The Molecular Basis for Crop Aluminum Resistance. *Annual Review of Plant Biology*, **2015**, 66, 571-98	30.7	474
247	Organic acid exudation as an aluminum-tolerance mechanism in maize (Zea mays L.). *Planta*, **1995**, 196, 788-795	4.7	422
246	AtALMT1, which encodes a malate transporter, is identified as one of several genes critical for aluminum tolerance in Arabidopsis. *Proceedings of the National Academy of Sciences of the United States of America*, **2006**, 103, 9738-43	11.5	420
245	The cauliflower Or gene encodes a DnaJ cysteine-rich domain-containing protein that mediates high levels of beta-carotene accumulation. *Plant Cell*, **2006**, 18, 3594-605	11.6	392
244	Toxicity of Zinc and Copper to Brassica Species: Implications for Phytoremediation. *Journal of Environmental Quality*, **1997**, 26, 776-781	3.4	364
243	Aluminum-activated citrate and malate transporters from the MATE and ALMT families function independently to confer Arabidopsis aluminum tolerance. *Plant Journal*, **2009**, 57, 389-99	6.9	360
242	Physiological Characterization of Root Zn2+ Absorption and Translocation to Shoots in Zn Hyperaccumulator and Nonaccumulator Species of Thlaspi. *Plant Physiology*, **1996**, 112, 1715-1722	6.6	340
241	Phytoextraction of Cadmium and Zinc from a Contaminated Soil. *Journal of Environmental Quality*, **1997**, 26, 1424-1430	3.4	337
240	Using membrane transporters to improve crops for sustainable food production. *Nature*, **2013**, 497, 60-6	50.4	336
239	The role of iron-deficiency stress responses in stimulating heavy-metal transport in plants. *Plant Physiology*, **1998**, 116, 1063-72	6.6	332

238	Three-dimensional root phenotyping with a novel imaging and software platform. *Plant Physiology*, **2011**, 156, 455-65	6.6	306
237	Characterization of cadmium binding, uptake, and translocation in intact seedlings of bread and durum wheat cultivars. *Plant Physiology*, **1998**, 116, 1413-20	6.6	297
236	Genetic architecture of aluminum tolerance in rice (Oryza sativa) determined through genome-wide association analysis and QTL mapping. *PLoS Genetics*, **2011**, 7, e1002221	6	278
235	Transport properties of members of the ZIP family in plants and their role in Zn and Mn homeostasis. *Journal of Experimental Botany*, **2013**, 64, 369-81	7	277
234	Phytoextraction of Zinc by Oat (Avena sativa), Barley (Hordeum vulgare), and Indian Mustard (Brassica juncea). *Environmental Science & Technology*, **1998**, 32, 802-806	10.3	266
233	Altered Zn compartmentation in the root symplasm and stimulated Zn absorption into the leaf as mechanisms involved in Zn hyperaccumulation in thlaspi caerulescens. *Plant Physiology*, **1998**, 118, 875-83	6.6	266
232	Identification of Thlaspi caerulescens genes that may be involved in heavy metal hyperaccumulation and tolerance. Characterization of a novel heavy metal transporting ATPase. *Plant Physiology*, **2004**, 136, 3814-23	6.6	265
231	Molecular physiology of zinc transport in the Zn hyperaccumulator Thlaspi caerulescens. *Journal of Experimental Botany*, **2000**, 51, 71-79	7	249
230	Critical evaluation of organic acid mediated iron dissolution in the rhizosphere and its potential role in root iron uptake. *Plant and Soil*, **1996**, 180, 57-66	4.2	246
229	Interactive effects of Al, h, and other cations on root elongation considered in terms of cell-surface electrical potential. *Plant Physiology*, **1992**, 99, 1461-8	6.6	246
228	Investigating heavy-metal hyperaccumulation using Thlaspi caerulescens as a model system. *Annals of Botany*, **2008**, 102, 3-13	4.1	241
227	Transport interactions between cadmium and zinc in roots of bread and durum wheat seedlings. *Physiologia Plantarum*, **2002**, 116, 73-78	4.6	241
226	Rapid induction of regulatory and transporter genes in response to phosphorus, potassium, and iron deficiencies in tomato roots. Evidence for cross talk and root/rhizosphere-mediated signals. *Plant Physiology*, **2002**, 130, 1361-70	6.6	239
225	Two functionally distinct members of the MATE (multi-drug and toxic compound extrusion) family of transporters potentially underlie two major aluminum tolerance QTLs in maize. *Plant Journal*, **2010**, 61, 728-40	6.9	222
224	Nitrate-induced genes in tomato roots. Array analysis reveals novel genes that may play a role in nitrogen nutrition. *Plant Physiology*, **2001**, 127, 345-59	6.6	209
223	Role of uranium speciation in the uptake and translocation of uranium by plants. *Journal of Experimental Botany*, **1998**, 49, 1183-1190	7	209
222	Potassium transport in corn roots : I. Resolution of kinetics into a saturable and linear component. *Plant Physiology*, **1982**, 70, 1723-31	6.6	209
221	Spatial coordination of aluminium uptake, production of reactive oxygen species, callose production and wall rigidification in maize roots. *Plant, Cell and Environment*, **2006**, 29, 1309-18	8.4	205

220	Aluminum resistance in the Arabidopsis mutant alr-104 is caused by an aluminum-induced increase in rhizosphere pH. *Plant Physiology*, **1998**, 117, 19-27	6.6	200
219	Aluminum tolerance in maize is associated with higher MATE1 gene copy number. *Proceedings of the National Academy of Sciences of the United States of America*, **2013**, 110, 5241-6	11.5	199
218	How do some plants tolerate low levels of soil zinc? Mechanisms of zinc efficiency in crop plants. *New Phytologist*, **2003**, 159, 341-350	9.8	184
217	Phosphorus and aluminum interactions in soybean in relation to aluminum tolerance. Exudation of specific organic acids from different regions of the intact root system. *Plant Physiology*, **2006**, 141, 674-84	6.6	183
216	Phytochelatin synthesis is not responsible for Cd tolerance in the Zn/Cd hyperaccumulator Thlaspi caerulescens (J. & C. Presl). *Planta*, **2002**, 214, 635-40	4.7	176
215	Elevated expression of TcHMA3 plays a key role in the extreme Cd tolerance in a Cd-hyperaccumulating ecotype of Thlaspi caerulescens. *Plant Journal*, **2011**, 66, 852-62	6.9	170
214	The physiology and biophysics of an aluminum tolerance mechanism based on root citrate exudation in maize. *Plant Physiology*, **2002**, 129, 1194-206	6.6	170
213	Multiple Aluminum-Resistance Mechanisms in Wheat (Roles of Root Apical Phosphate and Malate Exudation). *Plant Physiology*, **1996**, 112, 591-597	6.6	164
212	Aluminum effects on calcium fluxes at the root apex of aluminum-tolerant and aluminum-sensitive wheat cultivars. *Plant Physiology*, **1992**, 98, 230-7	6.6	163
211	Studies of the Uptake of Nitrate in Barley : IV. Electrophysiology. *Plant Physiology*, **1992**, 99, 456-63	6.6	161
210	A patch-clamp study on the physiology of aluminum toxicity and aluminum tolerance in maize. Identification and characterization of Al(3+)-induced anion channels. *Plant Physiology*, **2001**, 125, 292-305	6.6	158
209	Aluminum-resistant Arabidopsis mutants that exhibit altered patterns of aluminum accumulation and organic acid release from roots. *Plant Physiology*, **1998**, 117, 9-18	6.6	158
208	GEOCHEM-EZ: a chemical speciation program with greater power and flexibility. *Plant and Soil*, **2010**, 330, 207-214	4.2	157
207	Low pH, aluminum, and phosphorus coordinately regulate malate exudation through GmALMT1 to improve soybean adaptation to acid soils. *Plant Physiology*, **2013**, 161, 1347-61	6.6	153
206	OPT3 Is a Phloem-Specific Iron Transporter That Is Essential for Systemic Iron Signaling and Redistribution of Iron and Cadmium in Arabidopsis. *Plant Cell*, **2014**, 26, 2249-2264	11.6	152
205	Characterization of AtALMT1 expression in aluminum-inducible malate release and its role for rhizotoxic stress tolerance in Arabidopsis. *Plant Physiology*, **2007**, 145, 843-52	6.6	150
204	Transcriptional regulation of metal transport genes and mineral nutrition during acclimatization to cadmium and zinc in the Cd/Zn hyperaccumulator, Thlaspi caerulescens (Ganges population). *New Phytologist*, **2010**, 185, 114-29	9.8	146
203	Evidence for cotransport of nitrate and protons in maize roots : I. Effects of nitrate on the membrane potential. *Plant Physiology*, **1990**, 93, 281-9	6.6	145

202	Development of a novel aluminum tolerance phenotyping platform used for comparisons of cereal aluminum tolerance and investigations into rice aluminum tolerance mechanisms. *Plant Physiology*, **2010**, 153, 1678-91	6.6	143
201	Molecular characterization and mapping of ALMT1, the aluminium-tolerance gene of bread wheat (Triticum aestivum L.). *Genome*, **2005**, 48, 781-91	2.4	141
200	Mechanisms of Aluminum Tolerance in Wheat : An Investigation of Genotypic Differences in Rhizosphere pH, K, and H Transport, and Root-Cell Membrane Potentials. *Plant Physiology*, **1989**, 91, 1188-96	6.6	137
199	Identification and characterization of aluminum tolerance loci in Arabidopsis (Landsberg erecta x Columbia) by quantitative trait locus mapping. A physiologically simple but genetically complex trait. *Plant Physiology*, **2003**, 132, 936-48	6.6	134
198	High-throughput two-dimensional root system phenotyping platform facilitates genetic analysis of root growth and development. *Plant, Cell and Environment*, **2013**, 36, 454-66	8.4	133
197	Phytoremediation of a Radiocesium-Contaminated Soil: Evaluation of Cesium-137 Bioaccumulation in the Shoots of Three Plant Species. *Journal of Environmental Quality*, **1998**, 27, 165-169	3.4	132
196	Induction of iron(III) and copper(II) reduction in pea (Pisum sativum L.) roots by Fe and Cu status: Does the root-cell plasmalemma Fe(III)-chelate reductase perform a general role in regulating cation uptake?. *Planta*, **1993**, 190, 555	4.7	132
195	Early copper-induced leakage of K(+) from Arabidopsis seedlings is mediated by ion channels and coupled to citrate efflux. *Plant Physiology*, **1999**, 121, 1375-82	6.6	131
194	Aluminum resistance in maize cannot be solely explained by root organic acid exudation. A comparative physiological study. *Plant Physiology*, **2005**, 137, 231-41	6.6	127
193	Zinc efficiency is correlated with enhanced expression and activity of zinc-requiring enzymes in wheat. *Plant Physiology*, **2003**, 131, 595-602	6.6	125
192	Fluxes of h and k in corn roots : characterization and stoichiometries using ion-selective microelectrodes. *Plant Physiology*, **1987**, 84, 1177-84	6.6	125
191	Molecular and biochemical characterization of the selenocysteine Se-methyltransferase gene and Se-methylselenocysteine synthesis in broccoli. *Plant Physiology*, **2005**, 138, 409-20	6.6	123
190	Ammonium Uptake by Rice Roots (III. Electrophysiology). *Plant Physiology*, **1994**, 104, 899-906	6.6	123
189	Development, Characterization, and Application of a Cadmium-Selective Microelectrode for the Measurement of Cadmium Fluxes in Roots of Thlaspi Species and Wheat. *Plant Physiology*, **1998**, 116, 1393-401	6.6	121
188	Kinetics of malate transport and decomposition in acid soils and isolated bacterial populations: The effect of microorganisms on root exudation of malate under Al stress. *Plant and Soil*, **1996**, 182, 239-247	4.2	121
187	Aluminum interaction with plasma membrane lipids and enzyme metal binding sites and its potential role in Al cytotoxicity. *FEBS Letters*, **1997**, 400, 51-7	3.8	119
186	Comparative mapping of a major aluminum tolerance gene in sorghum and other species in the poaceae. *Genetics*, **2004**, 167, 1905-14	4	114
185	Effect of aluminum on cytoplasmic Ca2+ homeostasis in root hairs of Arabidopsis thaliana (L.). *Planta*, **1998**, 206, 378-87	4.7	112

184	Transcriptional profiling of aluminum toxicity and tolerance responses in maize roots. *New Phytologist*, **2008**, 179, 116-128	9.8	111
183	Mechanisms of arsenic hyperaccumulation in Pteris species: root As influx and translocation. *Planta*, **2004**, 219, 1080-8	4.7	110
182	Interaction between Aluminum Toxicity and Calcium Uptake at the Root Apex in Near-Isogenic Lines of Wheat (Triticum aestivum L.) Differing in Aluminum Tolerance. *Plant Physiology*, **1993**, 102, 975-982	6.6	108
181	The role of aluminum sensing and signaling in plant aluminum resistance. *Journal of Integrative Plant Biology*, **2014**, 56, 221-30	8.3	105
180	Potassium Transport in Corn Roots : IV. Characterization of the Linear Component. *Plant Physiology*, **1985**, 79, 771-6	6.6	105
179	Natural variation underlies alterations in Nramp aluminum transporter (NRAT1) expression and function that play a key role in rice aluminum tolerance. *Proceedings of the National Academy of Sciences of the United States of America*, **2014**, 111, 6503-8	11.5	104
178	High- and low-affinity zinc transport systems and their possible role in zinc efficiency in bread wheat. *Plant Physiology*, **2001**, 125, 456-63	6.6	104
177	Genotypic recognition and spatial responses by rice roots. *Proceedings of the National Academy of Sciences of the United States of America*, **2013**, 110, 2670-5	11.5	103
176	Kinetic properties of a micronutrient transporter from Pisum sativum indicate a primary function in Fe uptake from the soil. *Planta*, **2004**, 218, 784-92	4.7	102
175	Aluminum Toxicity in Roots : Correlation among Ionic Currents, Ion Fluxes, and Root Elongation in Aluminum-Sensitive and Aluminum-Tolerant Wheat Cultivars. *Plant Physiology*, **1992**, 99, 1193-200	6.6	99
174	Evidence for Cotransport of Nitrate and Protons in Maize Roots : II. Measurement of NO(3) and H Fluxes with Ion-Selective Microelectrodes. *Plant Physiology*, **1990**, 93, 290-4	6.6	98
173	Phytofiltration of arsenic from drinking water using arsenic-hyperaccumulating ferns. *Environmental Science & Technology*, **2004**, 38, 3412-7	10.3	95
172	Arabidopsis mutants with increased sensitivity to aluminum. *Plant Physiology*, **1996**, 110, 743-51	6.6	95
171	Voltage-dependent Ca2+ influx into right-side-out plasma membrane vesicles isolated from wheat roots: characterization of a putative Ca2+ channel. *Proceedings of the National Academy of Sciences of the United States of America*, **1994**, 91, 3473-7	11.5	95
170	Aluminum Induces a Decrease in Cytosolic Calcium Concentration in BY-2 Tobacco Cell Cultures1. *Plant Physiology*, **1998**, 116, 81-89	6.6	93
169	Phosphate transporters OsPHT1;9 and OsPHT1;10 are involved in phosphate uptake in rice. *Plant, Cell and Environment*, **2014**, 37, 1159-70	8.4	91
168	High affinity k uptake in maize roots: a lack of coupling with h efflux. *Plant Physiology*, **1989**, 91, 1202-11	6.6	91
167	Novel properties of the wheat aluminum tolerance organic acid transporter (TaALMT1) revealed by electrophysiological characterization in Xenopus Oocytes: functional and structural implications. *Plant Physiology*, **2008**, 147, 2131-46	6.6	89

166	Zinc effects on cadmium accumulation and partitioning in near-isogenic lines of durum wheat that differ in grain cadmium concentration. *New Phytologist*, **2005**, 167, 391-401	9.8	89
165	Aluminum effects on the kinetics of calcium uptake into cells of the wheat root apex : Quantification of calcium fluxes using a calcium-selective vibrating microelectrode. *Planta*, **1992**, 188, 414-21	4.7	88
164	Physiological Characterization of a Single-Gene Mutant of Pisum sativum Exhibiting Excess Iron Accumulation: I. Root Iron Reduction and Iron Uptake. *Plant Physiology*, **1990**, 93, 976-81	6.6	88
163	NIP1;2 is a plasma membrane-localized transporter mediating aluminum uptake, translocation, and tolerance in. *Proceedings of the National Academy of Sciences of the United States of America*, **2017**, 114, 5047-5052	11.5	84
162	Identification of RFLP Markers Linked to the Barley Aluminum Tolerance Gene Alp. *Crop Science*, **2000**, 40, 778-782	2.4	84
161	Duplicate and conquer: multiple homologs of PHOSPHORUS-STARVATION TOLERANCE1 enhance phosphorus acquisition and sorghum performance on low-phosphorus soils. *Plant Physiology*, **2014**, 166, 659-77	6.6	83
160	Not all ALMT1-type transporters mediate aluminum-activated organic acid responses: the case of ZmALMT1 - an anion-selective transporter. *Plant Journal*, **2008**, 53, 352-67	6.9	83
159	Putrescine-induced wounding and its effects on membrane integrity and ion transport processes in roots of intact corn seedlings. *Plant Physiology*, **1989**, 90, 988-95	6.6	83
158	Vascular-mediated signalling involved in early phosphate stress response in plants. *Nature Plants*, **2016**, 2, 16033	11.5	80
157	Potassium Transport in Corn Roots : II. The Significance of the Root Periphery. *Plant Physiology*, **1983**, 73, 208-15	6.6	80
156	An Arabidopsis ABC Transporter Mediates Phosphate Deficiency-Induced Remodeling of Root Architecture by Modulating Iron Homeostasis in Roots. *Molecular Plant*, **2017**, 10, 244-259	14.4	79
155	Characterization of cadmium uptake, translocation and storage in near-isogenic lines of durum wheat that differ in grain cadmium concentration. *New Phytologist*, **2006**, 172, 261-71	9.8	79
154	Use of an extracellular, ion-selective, vibrating microelectrode system for the quantification of K(+), H (+), and Ca (2+) fluxes in maize roots and maize suspension cells. *Planta*, **1992**, 188, 601-10	4.7	77
153	Potential for phytoextraction of137 Cs from a contaminated soil. *Plant and Soil*, **1997**, 195, 99-106	4.2	76
152	Uptake and retranslocation of leaf-applied cadmium (109Cd) in diploid, tetraploid and hexaploid wheats. *Journal of Experimental Botany*, **2000**, 51, 221-6	7	76
151	Association and linkage analysis of aluminum tolerance genes in maize. *PLoS ONE*, **2010**, 5, e9958	3.7	75
150	A de novo synthesis citrate transporter, Vigna umbellata multidrug and toxic compound extrusion, implicates in Al-activated citrate efflux in rice bean (Vigna umbellata) root apex. *Plant, Cell and Environment*, **2011**, 34, 2138-48	8.4	74
149	Proteomic analysis of chromoplasts from six crop species reveals insights into chromoplast function and development. *Journal of Experimental Botany*, **2013**, 64, 949-61	7	73

148	Plant Cd2+ and Zn2+ status effects on root and shoot heavy metal accumulation in Thlaspi caerulescens. *New Phytologist*, **2007**, 175, 51-58	9.8	73
147	Identification of Black Bean (Phaseolus vulgaris L.) Polyphenols That Inhibit and Promote Iron Uptake by Caco-2 Cells. *Journal of Agricultural and Food Chemistry*, **2015**, 63, 5950-6	5.7	71
146	Root and shoot transcriptome analysis of two ecotypes of Noccaea caerulescens uncovers the role of NcNramp1 in Cd hyperaccumulation. *Plant Journal*, **2014**, 78, 398-410	6.9	71
145	Role of calcium and other ions in directing root hair tip growth in Limnobium stoloniferum. *Planta*, **1995**, 197, 672	4.7	70
144	Physiological basis of reduced AL tolerance in ditelosomic lines of Chinese Spring wheat. *Planta*, **2001**, 212, 829-34	4.7	67
143	COPT6 is a plasma membrane transporter that functions in copper homeostasis in Arabidopsis and is a novel target of SQUAMOSA promoter-binding protein-like 7. *Journal of Biological Chemistry*, **2012**, 287, 33252-67	5.4	66
142	Direct Measurement of 59Fe-Labeled Fe2+ Influx in Roots of Pea Using a Chelator Buffer System to Control Free Fe2+ in Solution. *Plant Physiology*, **1996**, 111, 93-100	6.6	66
141	Aluminum Interactions with Voltage-Dependent Calcium Transport in Plasma Membrane Vesicles Isolated from Roots of Aluminum-Sensitive and -Resistant Wheat Cultivars. *Plant Physiology*, **1996**, 110, 561-569	6.6	66
140	Potassium Transport in Roots. *Advances in Botanical Research*, **1989**, 15, 93-178	2.2	66
139	The ALMT Family of Organic Acid Transporters in Plants and Their Involvement in Detoxification and Nutrient Security. *Frontiers in Plant Science*, **2016**, 7, 1488	6.2	65
138	Characterization of zinc uptake, binding, and translocation in intact seedlings of bread and durum wheat cultivars. *Plant Physiology*, **1998**, 118, 219-26	6.6	64
137	Targeted expression of SbMATE in the root distal transition zone is responsible for sorghum aluminum resistance. *Plant Journal*, **2013**, 76, 297-307	6.9	63
136	Does Iron Deficiency in Pisum sativum Enhance the Activity of the Root Plasmalemma Iron Transport Protein?. *Plant Physiology*, **1990**, 94, 1353-7	6.6	62
135	Mechanisms of metal resistance in plants: aluminum and heavy metals. *Plant and Soil*, **2002**, 247, 109-119	4.2	61
134	Genetic and physiological analysis of iron biofortification in maize kernels. *PLoS ONE*, **2011**, 6, e20429	3.7	59
133	Transport Interactions between Paraquat and Polyamines in Roots of Intact Maize Seedlings. *Plant Physiology*, **1992**, 99, 1400-5	6.6	59
132	Molecular physiology of zinc transport in the Zn hyperaccumulator Thlaspi caerulescens. *Journal of Experimental Botany*, **2000**, 51, 71-79	7	58
131	Genetic diversity for aluminum tolerance in sorghum. *Theoretical and Applied Genetics*, **2007**, 114, 863-76	6	57

130	Aluminium-organic acid interactions in acid soils. *Plant and Soil*, **1996**, 182, 221-228	4.2	56
129	Maize ZmALMT2 is a root anion transporter that mediates constitutive root malate efflux. *Plant, Cell and Environment*, **2012**, 35, 1185-200	8.4	55
128	Effects of nutrient solution zinc activity on net uptake, translocation, and root export of cadmium and zinc by separated sections of intact durum wheat (Triticum turgidum L. var durum) seedling roots. *Plant and Soil*, **1999**, 208, 243-250	4.2	55
127	Transport kinetics and metabolism of exogenously applied putrescine in roots of intact maize seedlings. *Plant Physiology*, **1992**, 98, 611-20	6.6	55
126	The CTR/COPT-dependent copper uptake and SPL7-dependent copper deficiency responses are required for basal cadmium tolerance in A. thaliana. *Metallomics*, **2013**, 5, 1262-75	4.5	54
125	Potassium Transport in Corn Roots : III. Perturbation by Exogenous NADH and Ferricyanide. *Plant Physiology*, **1985**, 77, 429-36	6.6	53
124	Drosophila ABC transporter, DmHMT-1, confers tolerance to cadmium. DmHMT-1 and its yeast homolog, SpHMT-1, are not essential for vacuolar phytochelatin sequestration. *Journal of Biological Chemistry*, **2009**, 284, 354-362	5.4	50
123	Involvement of multiple aluminium exclusion mechanisms in aluminium tolerance in wheat. *Plant and Soil*, **1997**, 192, 63-68	4.2	50
122	Physiological Genetics of Aluminum Tolerance in the Wheat Cultivar Atlas 66. *Crop Science*, **2002**, 42, 1541-1546	2.4	50
121	Characterization of the high affinity Zn transporter from Noccaea caerulescens, NcZNT1, and dissection of its promoter for its role in Zn uptake and hyperaccumulation. *New Phytologist*, **2012**, 195, 113-23	9.8	49
120	Molecular and physiological analysis of Al^{3+} and H+ rhizotoxicities at moderately acidic conditions. *Plant Physiology*, **2013**, 163, 180-92	6.6	49
119	Genotypic variation in common bean in response to zinc deficiency in calcareous soil. *Plant and Soil*, **2004**, 259, 71-83	4.2	48
118	Influence of varied zinc supply on re-translocation of cadmium (109Cd) and rubidium (86Rb) applied on mature leaf of durum wheat seedlings. *Plant and Soil*, **2000**, 219, 279-284	4.2	48
117	A promoter-swap strategy between the AtALMT and AtMATE genes increased Arabidopsis aluminum resistance and improved carbon-use efficiency for aluminum resistance. *Plant Journal*, **2012**, 71, 327-37	6.9	46
116	Phosphorylation at S384 regulates the activity of the TaALMT1 malate transporter that underlies aluminum resistance in wheat. *Plant Journal*, **2009**, 60, 411-23	6.9	46
115	Possible Involvement of Al-Induced Electrical Signals in Al Tolerance in Wheat. *Plant Physiology*, **1997**, 115, 657-667	6.6	46
114	Shoot biomass and zinc/cadmium uptake for hyperaccumulator and non-accumulator Thlaspi species in response to growth on a zinc-deficient calcareous soil. *Plant Science*, **2003**, 164, 1095-1101	5.3	46
113	The Effect of Acidification and Chelating Agents on the Solubilization of Uranium from Contaminated Soil. *Journal of Environmental Quality*, **1998**, 27, 1486-1494	3.4	46

112	Zinc Absorption from Hydroponic Solutions by Plant Roots **1993**, 45-57		46
111	Uptake of Cesium-137 and Strontium-90 from Contaminated Soil by Three Plant Species; Application to Phytoremediation. *Journal of Environmental Quality*, **2002**, 31, 904	3.4	46
110	Characterization of the transport and cellular compartmentation of paraquat in roots of intact maize seedlings. *Pesticide Biochemistry and Physiology*, **1992**, 43, 212-222	4.9	45
109	Functional, structural and phylogenetic analysis of domains underlying the Al sensitivity of the aluminum-activated malate/anion transporter, TaALMT1. *Plant Journal*, **2013**, 76, 766-80	6.9	43
108	Uptake of cesium-137 and strontium-90 from contaminated soil by three plant species; application to phytoremediation. *Journal of Environmental Quality*, **2002**, 31, 904-9	3.4	43
107	Al Inhibits Both Shoot Development and Root Growth in als3, an Al-Sensitive Arabidopsis Mutant. *Plant Physiology*, **1997**, 114, 1207-1214	6.6	42
106	Aluminum Inhibition of the Inositol 1,4,5-Trisphosphate Signal Transduction Pathway in Wheat Roots: A Role in Aluminum Toxicity?. *Plant Cell*, **1995**, 7, 1913	11.6	42
105	Induction of the Root Cell Plasma Membrane Ferric Reductase (An Exclusive Role for Fe and Cu). *Plant Physiology*, **1997**, 114, 1061-1069	6.6	41
104	High bioavailability iron maize (Zea mays L.) developed through molecular breeding provides more absorbable iron in vitro (Caco-2 model) and in vivo (Gallus gallus). *Nutrition Journal*, **2013**, 12, 3	4.3	40
103	Two citrate transporters coordinately regulate citrate secretion from rice bean root tip under aluminum stress. *Plant, Cell and Environment*, **2018**, 41, 809-822	8.4	39
102	Arabidopsis Pollen Fertility Requires the Transcription Factors CITF1 and SPL7 That Regulate Copper Delivery to Anthers and Jasmonic Acid Synthesis. *Plant Cell*, **2017**, 29, 3012-3029	11.6	39
101	Biochemical and molecular characterization of the homocysteine S-methyltransferase from broccoli (Brassica oleracea var. italica). *Phytochemistry*, **2007**, 68, 1112-9	4	39
100	The roots of future rice harvests. *Rice*, **2014**, 7, 29	5.8	38
99	The Raf-like Kinase ILK1 and the High Affinity K+ Transporter HAK5 Are Required for Innate Immunity and Abiotic Stress Response. *Plant Physiology*, **2016**, 171, 1470-84	6.6	38
98	Adaption of Roots to Nitrogen Deficiency Revealed by 3D Quantification and Proteomic Analysis. *Plant Physiology*, **2019**, 179, 329-347	6.6	38
97	A role for root morphology and related candidate genes in P acquisition efficiency in maize. *Functional Plant Biology*, **2012**, 39, 925-935	2.7	36
96	A method for cellular localization of gene expression via quantitative in situ hybridization in plants. *Plant Journal*, **2007**, 50, 159-75	6.9	36
95	Aluminium-organic acid interactions in acid soils. *Plant and Soil*, **1996**, 182, 229-237	4.2	35

94	Aluminum Effects on Calcium (45Ca2+) Translocation in Aluminum-Tolerant and Aluminum-Sensitive Wheat (Triticum aestivum L.) Cultivars (Differential Responses of the Root Apex versus Mature Root Regions). *Plant Physiology*, **1993**, 102, 85-93	6.6	34
93	Association mapping provides insights into the origin and the fine structure of the sorghum aluminum tolerance locus, AltSB. *PLoS ONE*, **2014**, 9, e87438	3.7	34
92	Uptake and release of cesium-137 by five plant species as influenced by soil amendments in field experiments. *Journal of Environmental Quality*, **2003**, 32, 2272-9	3.4	33
91	Evidence for vacuolar sequestration of paraquat in roots of a paraquat-resistant Hordeum glaucum biotype. *Physiologia Plantarum*, **1997**, 99, 255-262	4.6	32
90	Development and allele diversity of microsatellite markers linked to the aluminium tolerance gene Alp in barley. *Australian Journal of Agricultural Research*, **2003**, 54, 1315		30
89	Evolving technologies for growing, imaging and analyzing 3D root system architecture of crop plants. *Journal of Integrative Plant Biology*, **2016**, 58, 230-41	8.3	30
88	Mechanisms of Micronutrient Uptake and Translocation in Plants. *Soil Science Society of America Book Series*, **2018**, 229-296		29
87	Loss-of-function mutation of the calcium sensor CBL1 increases aluminum sensitivity in Arabidopsis. *New Phytologist*, **2017**, 214, 830-841	9.8	28
86	Salinity stress inhibits calcium loading into the xylem of excised barley (Hordeum vulgare) roots. *New Phytologist*, **1997**, 135, 419-427	9.8	28
85	Incomplete transfer of accessory loci influencing SbMATE expression underlies genetic background effects for aluminum tolerance in sorghum. *Plant Journal*, **2013**, 73, 276-88	6.9	27
84	Measurement of thiol-containing amino acids and phytochelatin (PC2) via capillary electrophoresis with laser-induced fluorescence detection. *Electrophoresis*, **2002**, 23, 81-7	3.6	27
83	The relationship between population structure and aluminum tolerance in cultivated sorghum. *PLoS ONE*, **2011**, 6, e20830	3.7	27
82	Aluminium is essential for root growth and development of tea plants (Camellia sinensis). *Journal of Integrative Plant Biology*, **2020**, 62, 984-997	8.3	26
81	The Transcriptional Landscape of Polyploid Wheats and Their Diploid Ancestors during Embryogenesis and Grain Development. *Plant Cell*, **2019**, 31, 2888-2911	11.6	25
80	A native Zn/Cd pumping P(1B) ATPase from natural overexpression in a hyperaccumulator plant. *Biochemical and Biophysical Research Communications*, **2007**, 363, 51-6	3.4	25
79	The role of shoot-localized processes in the mechanism of Zn efficiency in common bean. *Planta*, **2004**, 218, 704-11	4.7	25
78	Repeat variants for the SbMATE transporter protect sorghum roots from aluminum toxicity by transcriptional interplay in and. *Proceedings of the National Academy of Sciences of the United States of America*, **2019**, 116, 313-318	11.5	25
77	Two tomato non-symbiotic haemoglobin genes are differentially expressed in response to diverse changes in mineral nutrient status. *Plant, Cell and Environment*, **2003**, 26, 673-680	8.4	24

76	The physiology, genetics and molecular biology of plant aluminum resistance and toxicity. *Plant Ecophysiology*, **2005**, 175-195		24
75	Genetic dissection of Al tolerance QTLs in the maize genome by high density SNP scan. *BMC Genomics*, **2014**, 15, 153	4.5	23
74	Investigation of heavy metal hyperaccumulation at the cellular level: development and characterization of Thlaspi caerulescens suspension cell lines. *Plant Physiology*, **2008**, 147, 2006-16	6.6	23
73	Genotypic variation of zinc and selenium concentration in grains of Brazilian wheat lines. *Plant Science*, **2014**, 224, 27-35	5.3	22
72	The genetic architecture of phosphorus efficiency in sorghum involves pleiotropic QTL for root morphology and grain yield under low phosphorus availability in the soil. *BMC Plant Biology*, **2019**, 19, 87	5.3	21
71	Quantitative iTRAQ Proteomics Revealed Possible Roles for Antioxidant Proteins in Sorghum Aluminum Tolerance. *Frontiers in Plant Science*, **2016**, 7, 2043	6.2	21
70	Selectivity of Liquid Membrane Cadmium Microelectrodes Based on the Ionophore N,N,N?,N?-Tetrabutyl-3,6-dioxaoctanedithioamide. *Electroanalysis*, **1998**, 10, 937-941	3	21
69	Differences in whole-cell and single-channel ion currents across the plasma membrane of mesophyll cells from two closely related Thlaspi species. *Plant Physiology*, **2003**, 131, 583-94	6.6	21
68	Involvement of a broccoli COQ5 methyltransferase in the production of volatile selenium compounds. *Plant Physiology*, **2009**, 151, 528-40	6.6	20
67	The molecular basis of potassium nutrition in plants. *Plant and Soil*, **1996**, 187, 81-89	4.2	19
66	Ion Transport Processes in Corn Roots: An Approach Utilizing Microelectrode Techniques **1986**, 402-425		19
65	How high do ion fluxes go? A re-evaluation of the two-mechanism model of K(+) transport in plant roots. *Plant Science*, **2016**, 243, 96-104	5.3	18
64	Envisioning the transition to a next-generation biofuels industry in the US Midwest. *Biofuels, Bioproducts and Biorefining*, **2012**, 6, 376-386	5.3	18
63	Characterization of Paraquat Transport in Protoplasts from Maize (Zea mays L.) Suspension Cells. *Plant Physiology*, **1993**, 103, 963-969	6.6	18
62	Functional characterization and discovery of modulators of SbMATE, the agronomically important aluminium tolerance transporter from Sorghum bicolor. *Scientific Reports*, **2017**, 7, 17996	4.9	17
61	Agricultural approaches to improving phytonutrient content in plants: an overview. *Nutrition Reviews*, **1999**, 57, S13-8	6.4	17
60	Towards an understanding of the molecular basis of plants K+ transport: Characterization of cloned K+ transport cDNAs. *Plant and Soil*, **1993**, 155-156, 115-118	4.2	17
59	Back to Acid Soil Fields: The Citrate Transporter SbMATE Is a Major Asset for Sustainable Grain Yield for Sorghum Cultivated on Acid Soils. *G3: Genes, Genomes, Genetics*, **2015**, 6, 475-84	3.2	16

58	Effects of diclofop and diclofop-methyl on membrane potentials in roots of intact oat, maize, and pea seedlings. *Plant Physiology*, **1991**, 95, 1063-9	6.6	16
57	Emerging Pleiotropic Mechanisms Underlying Aluminum Resistance and Phosphorus Acquisition on Acidic Soils. *Frontiers in Plant Science*, **2018**, 9, 1420	6.2	16
56	Ethylene involvement in the over-expression of Fe(III)-chelate reductase by roots of E107 pea [Pisum sativum L. (brz, brz)] and chloronerva tomato (Lycopersicon esculentum L.) mutant genotypes. *BioMetals*, **1996**, 9, 38	3.4	15
55	Can K + Channels Do It All?. *Plant Cell*, **1993**, 5, 720	11.6	15
54	Effect of inorganic cations and metabolic inhibitors on putrescine transport in roots of intact maize seedlings. *Plant Physiology*, **1992**, 99, 508-14	6.6	15
53	Hydrogen Evolution Catalyzed by Hydrogenase in Cultures of Cyanobacteria. *Zeitschrift Fur Naturforschung - Section C Journal of Biosciences*, **1981**, 36, 87-92	1.7	15
52	Photochemical properties in flag leaves of a super-high-yielding hybrid rice and a traditional hybrid rice (Oryza sativa L.) probed by chlorophyll a fluorescence transient. *Photosynthesis Research*, **2015**, 126, 275-84	3.7	14
51	() contributes to natural variation in aluminum resistance in diverse genetic backgrounds of rice (). *Plant Direct*, **2017**, 1, e00014	3.3	14
50	Aluminium and calcium transport interactions in intact roots and root plasmalemma vesicles from aluminium-sensitive and tolerant wheat cultivars. *Plant and Soil*, **1995**, 171, 131-135	4.2	14
49	Reduction of Fe(III), Mn(III), and Cu(II) chelates by roots of pea (Pisum sativum L.) or soybean (Glycine max). *Plant and Soil*, **1993**, 155-156, 123-126	4.2	14
48	Physiological and molecular analysis of aluminum tolerance in selected Kenyan maize lines. *Plant and Soil*, **2014**, 377, 357-367	4.2	13
47	LeSPL-CNR negatively regulates Cd acquisition through repressing nitrate reductase-mediated nitric oxide production in tomato. *Planta*, **2018**, 248, 893-907	4.7	12
46	Iron biofortification of maize grain. *Plant Genetic Resources: Characterisation and Utilisation*, **2011**, 9, 327-329	1	12
45	Uranium Speciation, Plant Uptake, and Phytoremediation. *Practice Periodical of Hazardous, Toxic and Radioactive Waste Management*, **2001**, 5, 130-135		12
44	AhFRDL1-mediated citrate secretion contributes to adaptation to iron deficiency and aluminum stress in peanuts. *Journal of Experimental Botany*, **2019**, 70, 2873-2886	7	11
43	Genetic variation for root architecture, nutrient uptake and mycorrhizal colonisation in Medicago truncatula accessions. *Plant and Soil*, **2010**, 336, 113-128	4.2	11
42	Genomic regions responsible for seminal and crown root lengths identified by 2D & 3D root system image analysis. *BMC Genomics*, **2018**, 19, 273	4.5	10
41	Zinc Phytoextraction in Thlaspi caerulescens. *International Journal of Phytoremediation*, **2001**, 3, 129-144	3.9	10

40	High affinity promoter binding of STOP1 is essential for early expression of novel aluminum-induced resistance genes GDH1 and GDH2 in Arabidopsis. *Journal of Experimental Botany* , **2021**, 72, 2769-2789	7	10
39	Identification and characterization of suppressor mutants of stop1. *BMC Plant Biology*, **2017**, 17, 128	5.3	9
38	Investigations into the Cation Specificity and Metabolic Requirements for Paraquat Transport in Roots of Intact Maize Seedlings. *Pesticide Biochemistry and Physiology*, **1993**, 45, 62-71	4.9	9
37	Investigating the relationship between aluminium toxicity, root growth and root-generated ion currents **1991**, 769-778		9
36	Exploiting sorghum genetic diversity for enhanced aluminum tolerance: Allele mining based on the Alt locus. *Scientific Reports*, **2018**, 8, 10094	4.9	8
35	The role of root morphology and architecture in phosphorus acquisition: physiological, genetic, and molecular basis **2017**, 123-147		7
34	Focus on plant nutrition. *Plant Physiology*, **2004**, 136, 2437	6.6	7
33	SPATIAL AND TEMPORAL DEVELOPMENT OF IRON(III) REDUCTASE ACTIVITY IN ROOT SYSTEMS OF PISUM SATIVUM (FABACEAE) CHALLENGED WITH IRON-DEFICIENCY STRESS **1993**, 80, 300		7
32	Root Adaptation via Common Genetic Factors Conditioning Tolerance to Multiple Stresses for Crops Cultivated on Acidic Tropical Soils. *Frontiers in Plant Science*, **2020**, 11, 565339	6.2	7
31	Al3+-Ca2+ interactions in aluminum rhizotoxicity. *Planta*, **1993**, 192, 104	4.7	6
30	Low phosphate represses histone deacetylase complex1 to regulate root system architecture remodeling in Arabidopsis. *New Phytologist*, **2020**, 225, 1732-1745	9.8	6
29	Generation of Arabidopsis Mutants by Heterologous Expression of a Full-Length cDNA Library from Tomato Fruits. *Plant Molecular Biology Reporter*, **2009**, 27, 454-461	1.7	5
28	Al3+-Ca2+ interactions in aluminum rhizotoxicity. *Planta*, **1993**, 192, 98	4.7	5
27	A single-population GWAS identified expression level polymorphism caused by promoter variants is associated with variation in aluminum tolerance in a local population. *Plant Direct*, **2020**, 4, e00250	3.3	4
26	Association mapping and genomic selection for sorghum adaptation to tropical soils of Brazil in a sorghum multiparental random mating population. *Theoretical and Applied Genetics*, **2021**, 134, 295-312	6	4
25	Mechanisms of Ion Transport in Plants: K+ as an Example **1988**, 219-232		4
24	Identification of a novel pathway involving a GATA transcription factor in yeast and possibly in plant Zn uptake and homeostasis. *Journal of Integrative Plant Biology*, **2014**, 56, 271-80	8.3	3
23	Molecular and physiological analysis of Arabidopsis mutants exhibiting altered sensitivities to aluminium. *Plant and Soil*, **1997**, 192, 3-7	4.2	3

22	SPATIAL AND TEMPORAL DEVELOPMENT OF IRON(III) REDUCTASE ACTIVITY IN ROOT SYSTEMS OF PISUM SATIVUM (FABACEAE) CHALLENGED WITH IRON-DEFICIENCY STRESS. *American Journal of Botany*, **1993**, 80, 300-308	2.7	3
21	The use of ion-selective microelectrodes for measuring calcium and hydrogen ion transfer between foliar surfaces and simulated rain solutions. *New Phytologist*, **1992**, 121, 179-185	9.8	3
20	Regulation of Iron Accumulation In Food Crops: Studies Using Single Gene Pea Mutants **1992**, 325-344		3
19	Redefining Bstress resistance genesP, and why it matters. *Journal of Experimental Botany*, **2016**, 67, 5588-5591	7	3
18	Developmental and genomic architecture of plant embryogenesis: from model plant to crops. *Plant Communications*, **2021**, 2, 100136	9	3
17	Physiology of Zn Hyperaccumulation in Thlaspi caerulescens **1999**,		2
16	Genetic and Biochemical Analysis of Iron Bioavailability in Maize. *FASEB Journal*, **2006**, 20, A623	0.9	2
15	Mechanisms of metal resistance in plants: aluminum and heavy metals **2002**, 109-119		2
14	Evidence for vacuolar sequestration of paraquat in roots of a paraquat-resistant Hordeum glaucum biotype. *Physiologia Plantarum*, **1997**, 99, 255-262	4.6	2
13	Alternative splicing dynamics and evolutionary divergence during embryogenesis in wheat species. *Plant Biotechnology Journal*, **2021**, 19, 1624-1643	11.6	2
12	Maize Al Tolerance **2009**, 367-380		2
11	Retraction Note: High bioavailablilty iron maize (Zea mays L.) developed through molecular breeding provides more absorbable iron in vitro (Caco-2 model) and in vivo (Gallus gallus). *Nutrition Journal*, **2015**, 14, 126	4.3	1
10	Aluminum Tolerance in Sorghum and Maize **2013**, 83-98		1
9	H+ Currents around Plant Roots **2002**,		1
8	Iron bioavailability from maize-based diets fed to iron deficient broiler chickens. *FASEB Journal*, **2010**, 24, 208.8	0.9	1
7	Integrative Modeling of Gene Expression and Metabolic Networks of Embryos for Identification of Seed Oil Causal Genes. *Frontiers in Plant Science*, **2021**, 12, 642938	6.2	1
6	Sorghum Root Epigenetic Landscape During Limiting Phosphorus Conditions		1
5	Genetic architecture of root and shoot ionomes in rice (Oryza sativa L.). *Theoretical and Applied Genetics*, **2021**, 134, 2613-2637	6	1

4	Molecular and physiological mechanisms of plant tolerance to toxic metals **2014**, 179-201		0
3	Evolutionary divergence in embryo and seed coat development of U's Triangle Brassica species illustrated by a spatiotemporal transcriptome atlas. *New Phytologist*, **2022**, 233, 30-51	9.8	0
2	The molecular basis of potassium nutrition in plants **1997**, 81-89		
1	Biofortified maize (Zea mays L.) provides more bioavailable iron than standard maize: Studies in poultry (Gallus gallus) and an in vitro digestion/Caco-2 model. *FASEB Journal*, **2012**, 26, 1019.1	0.9	