

Accepted Manuscript

Aluminium toxicity and phosphate deficiency activates antioxidant systems and up-regulates expression of phosphate transporters gene in ryegrass (*Lolium perenne* L.) plants

Leyla Parra-Almuna, Andrea Diaz-Cortez, Nuria Ferrol, Maria de la Luz Mora



PII: S0981-9428(18)30331-0

DOI: [10.1016/j.plaphy.2018.07.031](https://doi.org/10.1016/j.plaphy.2018.07.031)

Reference: PLAPHY 5354

To appear in: *Plant Physiology and Biochemistry*

Received Date: 2 May 2018

Revised Date: 26 July 2018

Accepted Date: 26 July 2018

Please cite this article as: L. Parra-Almuna, A. Diaz-Cortez, N. Ferrol, M.d.I.L. Mora, Aluminium toxicity and phosphate deficiency activates antioxidant systems and up-regulates expression of phosphate transporters gene in ryegrass (*Lolium perenne* L.) plants, *Plant Physiology et Biochemistry* (2018), doi: 10.1016/j.plaphy.2018.07.031.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Aluminium toxicity and phosphate deficiency activates antioxidant systems and up-regulates expression of phosphate transporters gene in ryegrass (*Lolium perenne* L.) plants

Leyla Parra-Almuna^{1,2}, Andrea Diaz-Cortez¹, Nuria Ferrol³, Maria de la Luz Mora^{1*}

¹Center of Plant, Soil Interaction and Natural Resources Biotechnology, Scientific and Technological Bioresource Nucleus (BIOREN), Universidad de La Frontera, Avenida Francisco Salazar 01145, P.O. Box 54-D, Temuco, Chile.

²Programa de Doctorado en Ciencias de Recursos Naturales, Universidad de La Frontera, Avenida Francisco Salazar 01145, P.O. Box 54-D, Temuco, Chile.

³Departamento de Microbiología del Suelo y Sistemas Simbióticos, Estación Experimental del Zaidín, Consejo Superior de Investigaciones Científicas (CSIC), Profesor Albareda 1, 18008 Granada, Spain.

***Corresponding author:** mariluz.mora@ufrontera.cl

Abstract

Soil acidity, associated with aluminium (Al) toxicity and low phosphorus (P) availability, is considered the most important problem for agricultural production. Even though the Al-P interaction has been widely investigated, the impact of P-nutrition on Al-toxicity still remains controversial and poorly understood. To elucidate further insights into the underlying mechanisms of this interaction in ryegrass (*Lolium perenne* L.), P uptake, antioxidant responses and the gene expression of phosphate transporters were determined. Two ryegrass cultivars with different Al resistances, the Al-tolerant Nui

Download English Version:

<https://daneshyari.com/en/article/8352561>

Download Persian Version:

<https://daneshyari.com/article/8352561>

[Daneshyari.com](https://daneshyari.com)