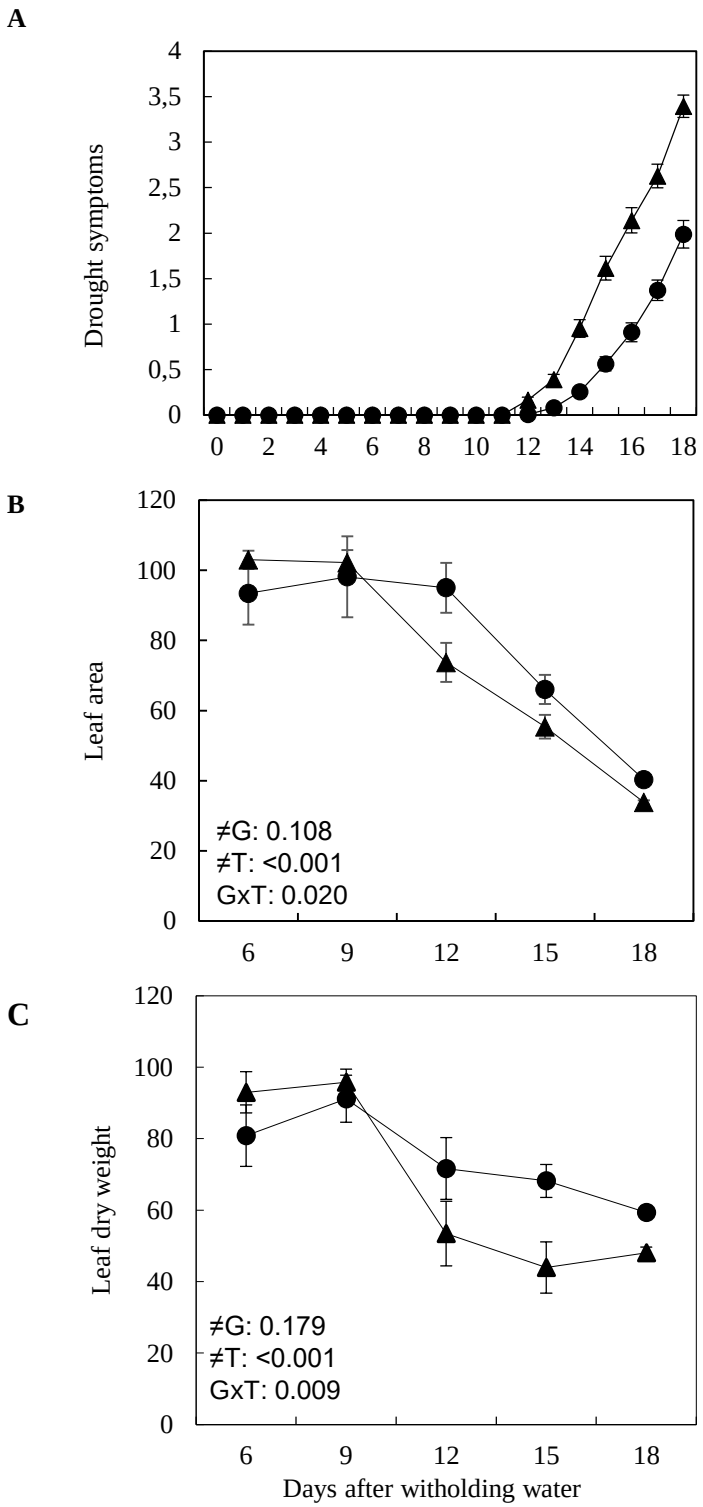
Frontiers in Plant Science

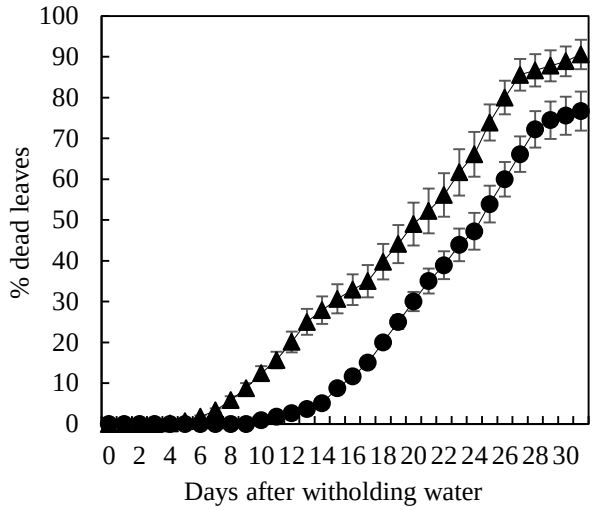
Deciphering root architectural components involved to cope with water deficit in oats

Francisco J Canales[1], Kerstin Nagel[2], Carmen Mülleri[2], Nicolas Rispail[1] and Elena Prats[1]

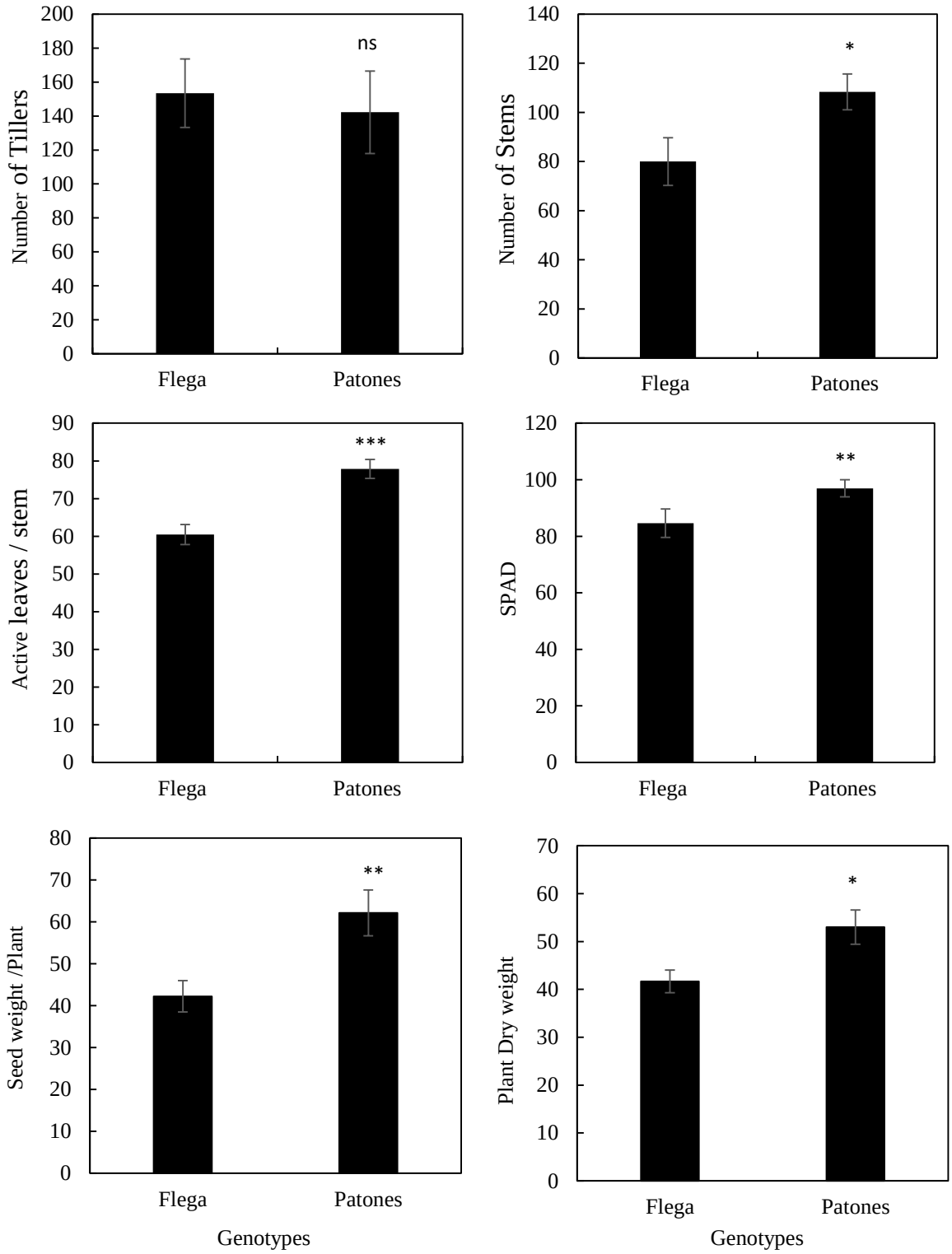
[1] *Institute for Sustainable Agriculture. Spanish Research Council (CSIC). Avda Menendez Pidal s/n. Cordoba 14080. Spain*
[2] *Institute of Bio- and Geosciences. IBG-2: Plant Sciences. Forschungszentrum Jülich GmbH. 52425Jülich. Germany.*



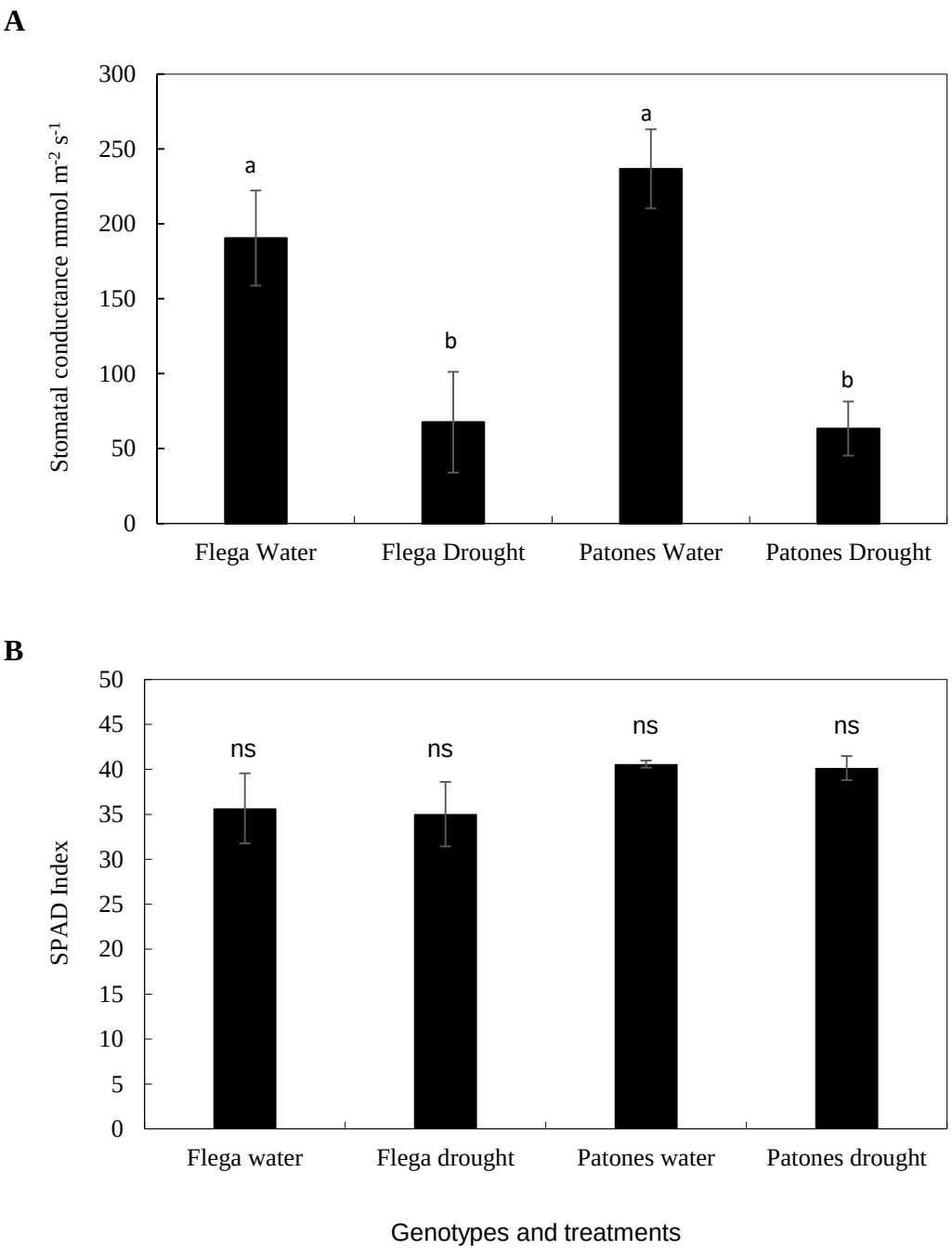
Supplemental Figure 1 Drought related traits assessed in shoots of seedlings growing in pots. A. Visible drought symptoms, B. leaf area and C. Total dry matter of Flega (triangles) and Patones (circles) droughted plants during a time course of water stress. Data are expressed as percentage respect to control plants growing in well-watered conditions and are mean of ten biological replicates + standard error



Supplemental Figure 2 Percentage of dead leaves of Flega and Patones adult plants growing under climatic field conditions during a drought time course. Data are expressed as percentage respect to control plants growing in well-watered conditions and are mean of eight biological replicates ± standard error. ≠G, ≠T and GxT indicate statistical significance for the time course between genotypes (G), sampling times (T) and their interaction, respectively



Supplemental Fig. 3 Effect of water deficit on growth, physiologycal and yield parameters of Flega and Patones adult plants under field conditions during a drought time course. Data are expressed as percentage respect to control plants growing in well-watered conditions and are mean of eight biological replicates ± standard error. *, **, *** indicate significant differences at $P<0.05$, 0.01 and 0.001, respectively.



Supplemental Figure 4 A. Stomatal conductance and B. SPAD Index of flag leaves of Flega and Patones, well watered and exposed to water stress plants. For each plant the physiological parameters were measured in all stems and averaged. Data are mean of eight biological replicates ± standard error. Different letters indicate significant differences at $P<0.001$

Supplemental Table 1. Shoot and root traits of well-watered Flega and Patones adult plants growth under climatic field conditions.

	Flega water	**Patones water**
	Shoot traits	
Number of tillers	4,75 ± 0,76	3,75 ± 0,22
Number of stems	15,50 ± 2,08	17,00 ± 2,56
Active leaves / stem	4,50 ± 0,30	4,61 ± 0,40
	Root traits	
Total length (m)	662,57 ± 203,69	726,40 ± 71,08
Fine root length	596,82 ± 206,08	680,38 ± 63,25
Ratio coarse/fine	0,08 ± 0,01	0,07 ± 0,00

Supplemental Table 2. PCA loadings of the variables on the first two axes. Numbers in bold indicate the highest coefficient for each axe. The root traits assessed are the total length, the root surface (Surf) and length of fine roots ranging between 0 and 0,5 mm (Fine), in seedlings growing either in pots (seed) or rhizoboxes (Rhi) or in adult plants growing under climatic field conditions (Adult)

	Axis 1	**Axis 2**
Total root length (pot)	-0,03025	**0,6873**
Root Surface (pot)	-0,002274	0,05298
Fine roots (pot)	-0,02904	**0,6555**
Total root length (rhizotron)	-0,00749	0,0935
Root surface (rhizotron)	-0,0007151	0,009676
Fine roots (rhizotron)	-0,005968	0,07298
Total root length (adult)	**0,7428**	-0,1016
Root Surface (adult)	0,06511	-0,1828
Fine roots (adult)	**0,665**	0,1931