

Pathogenicity and histological response of alder to *Phytophthora* and *Halophytophthora* species

Cristina Vieites-Blanco^{1,2*}, Michele Colangelo^{3,4}, J. Julio Camarero⁴, Maria Caballol^{1,2}, Francisco José García Breijo⁵, Dora Štraus^{1,2} & Jonàs Oliva^{1,2}

¹Dept. Agricultural and Forest Sciences and Engineering, University of Lleida, 25198, Lleida, Spain

²Joint Research Unit CTFC – Agrotecnio, 25198, Lleida, Spain

³School of Agricultural, Forest, Food and Environmental Sciences, Univ. Basilicata, Potenza, Italy

⁴Instituto Pirenaico de Ecología (IPE-CSIC), Zaragoza, Spain

⁵Departamento de Ecosistemas Agroforestales. Escuela Técnica Superior de Ingeniería Agronómica y del Medio Natural (ETSIAMN) Universitat Politècnica de València (UPV), 46022, València, Spain

*Corresponding author. E-mail address: cristina.vieites@udl.cat

ESM 3 Comparison of correlations (Spearman coefficients) between *Phytophthora* and *Halophytophthora* species for the variables lesion length, tyloses and hyphae in phloem and xylem and altered fibers/vessels and axial and ray parenchyma cells (with Astra blue ('AB') and Safranin ('S') or Iodide ('I') staining) of inoculated alder saplings. Significance levels: *** $p \leq 0.001$; ** $p \leq 0.01$; * $p \leq 0.05$. Significant values ($p \leq 0.05$) are shown in bold face

		Lesion length	Tyloses	Hyphae in xylem	Hyphae in phloem
<i>Phytophthora</i> species	Tyloses	-0.12	-	-	-
	Hyphae in xylem (AB, S)	-0.08	0.40***	-	-
	Hyphae in phloem (AB, S)	0.49***	0.30**	0.37**	-
	Altered fibers and vessels	0.39**	-0.15*	-0.06	0.06
	Altered ray cells (AB,S)	0.39**	0.34**	0.19	0.31**
	Altered axial cells (AB,S)	0.17	0.12	-0.09	-0.11
	Altered ray cells (I)	0.04	0.39**	0.03	-0.04
	Altered axial cells (I)	0.04	0.31*	-0.05	0.06
<i>Halophytophthora</i> species	Tyloses	-0.26	-	-	-
	Hyphae in xylem (AB, S)	-0.27	0.91***	-	-
	Hyphae in phloem (AB, S)	-0.14	0.68**	0.74**	-
	Altered fibers and vessels	0.37	0.38	0.35	0.04
	Altered ray cells (AB,S)	0.41	0.24	0.30	0.35
	Altered axial cells (AB,S)	0.20	0.60	0.68*	0.2
	Altered ray cells (I)	-0.32	0.77**	0.74*	0.33
	Altered axial cells (I)	-0.54	0.16	0.06	-0.41