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SCREENING THE TOLERANCE OF ROMANIAN AND SWEEDEN WILLOW HYBRIDS TO SALINE STRESS

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• Introduction

Willows are deciduous trees and shrubs with more than 450 species worldwide. In Romania, the Danube Delta, the Danube Meadow, and all the other river meadows are areas occupied by willows but no more than 0.5% from the national forest fund. There are protection forests (water protection, stream bank protection, etc.) and production forests. In recent years, the interest in willow short rotation coppice increased, so many hybrids were evaluated for biomass production or phytoremediation. Willow species are known as high-demand water species. In this context, the response of willows to hydric stress is essential for marginal land afforestation.

• Material and method

Experimental design

RO_9892			Inger
RO_1077	Cozia	Pesred	Olof
RO-1082	Fragisal	Robisal	Tordis

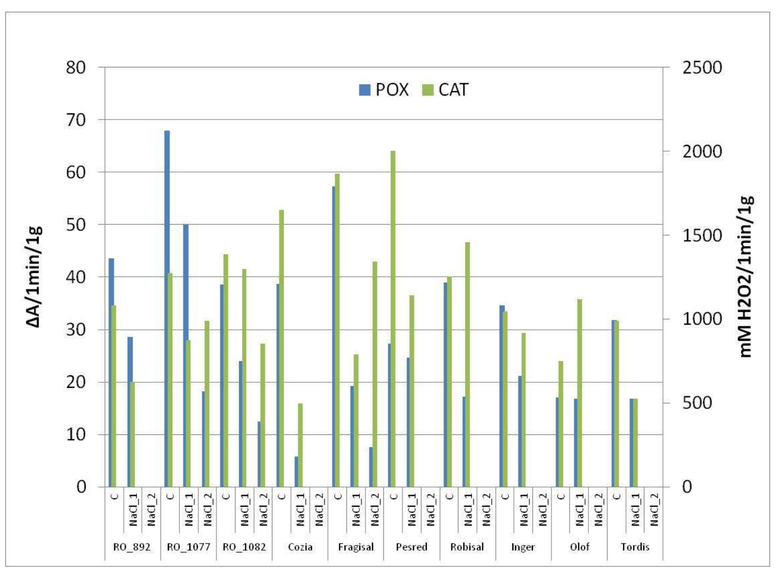
II – NaCl_1-1	II - NaCl_1-4	II - NaCl_1-7
II - NaCl_1-2	II - NaCl_1-5	II - NaCl_1-8
II - NaCl_1-3	II - NaCl_1-6	I - NaCl_1-9

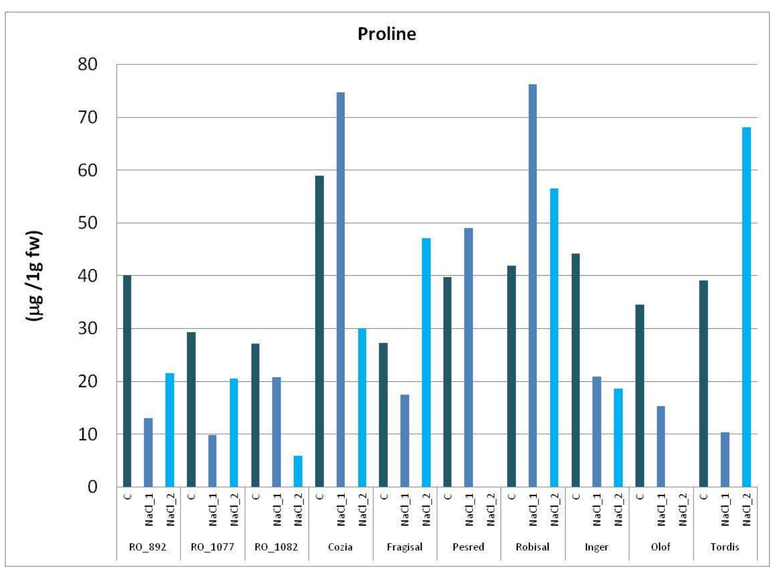
Dry mass

• Results and discussions

Shoots dry mass: cutting initial mass (SDMI), roots dry mass: cutting initial mass (RDMI), shoots dry mass: roots dry mass (S/R) and vitality in hydroponic saline experiment

NaCl treatment	Genotype	SDMI	RDMI	Ratio S/R	Genotype	SDMI	RDMI	Ratio S/R	Genotype	SDMI	RDMI	Ratio S/R	Genotype	SDMI	RDMI	Ratio S/R
NaCl_1	RO_892	1.296905	0.277031	0.213667	Cozia	0.831307	0.401521	0.482333	Pesred	1.874960	0.487007	0.259333	Inger	2.368969	0.461316	0.185333
NaCl_2		1.308456	0.203871	0.156333		1.133932	0.286953	0.252333		1.347600	0.375873	0.285333		1.432984	0.362435	0.254667
NaCl_3		1.134547	0.405478	0.379333		1.156363	0.402616	0.449000		0.906264	0.798882	0.905000		1.739935	0.230636	0.136667
Control		1.669521	0.281065	0.183000		1.281934	0.389155	0.297333		2.033427	0.425870	0.210000		2.094643	0.605342	0.918333
NaCl_1	RO_1077	1.447433	0.369414	0.252667	Fragisal	1.675858	0.581208	0.348667	Robisal	0.879355	0.177831	0.200333	Olof	1.619469	0.303254	0.187333
NaCl_2		1.819249	0.416907	0.225667		1.464259	0.247902	0.179667		1.441180	0.230376	0.078333		1.441383	0.380327	0.261333
NaCl_3		1.074124	0.367279	0.364667		1.393922	0.556961	0.394000		1.408335	0.310992	0.216333		0.963754	0.192818	0.203667
Control		2.826574	0.502200	0.170667		1.233412	0.399430	0.335333		1.715877	0.315382	0.177000		2.198809	0.423654	0.193000
NaCl_1	RO_1082	1.721242	0.639940	0.371000									Tordis	1.091706	0.341143	0.310333
NaCl_2		1.529107	0.490533	0.321667										0.952268	0.331155	0.356667
NaCl_3		0.919168	0.649216	0.690333										1.016312	0.320653	0.315667
Control		2.272650	0.885293	0.394333										0.840888	0.477399	0.654000





The variation of enzymatic activity in NaCl experiment: catalase (CAT); peroxidase (POX); proline (PRO) - roots

• Conclusions

- The response of willow genotypes in terms of biomass index showed the tolerance for the first and second levels of NaCl in the case of genotypes RO1077, RO1082, Pesred and Inger. There was no resistance to the third level of NaCl.
- The enzimatic activity varied with genotype and NaCl level
- No pattern was define for catalase, peroxidase and proline activity

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