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Flooding tolerance in poplars and willows

The main area for poplar and willows plantations in Argentina is the Paraná River Delta, where flooding episodes are frequent, and their occurrence will increase with climate change. In my group, we try to understand the mechanisms that enhance poplar and willow tolerance to flooding, at morphological, physiological, biochemical and molecular levels.

We work in close collaboration with the Poplar and Willows Breeding Group from the National Institute for Agricultural Technology (INTA). In our work, we use several of the new genotypes obtained by this group at the INTA Delta Research Station.



Use of willows and poplars to produce biomass for energy

In Argentina, the use of biomass for energy is scarce. There is little information about yield and management practices for Short Rotation Coppice (SRC) plantations with willows and poplars that are well developed in other countries. Because of their rapid growth and high demand for resources, SRC systems are more similar to annual crops than to traditional forest plantations. Our aim is to learn about the factors that determine the productivity and sustainability of SRC systems under local conditions.



Recent Publications

1. Achinelli FG, Martinez S, Bartolozzi M, Doffo G, Rodríguez ME, Luquez VMC (2026) Biomass production in a high-density willow plantation through ten one-year rotation cycles in Central Argentina. *Bosque* 47: e4703. <https://doi.org/10.4206/Bosque.e4703>
2. Mozo I, Luquet M, Luquez VMC (2025) Effects of water submergence depth on nitrogen and phosphorus accumulation and partitioning in young willow plants during flooding and post-stress recovery. *New Forests* 56: 60. <https://link.springer.com/article/10.1007/s11056-025-10131-8>
3. Mozo, I., Monteoliva, S. E., Cerrillo, T., & Luquez, V. M. C. (2024). Flooding tolerance, biomass production, and leaf nitrogen assimilatory efficiency in 29 diverse willows (*Salix* spp.) genotypes during early growth. *Journal of Forest Research*, 1-8. <https://doi.org/10.1080/13416979.2024.2386704>
4. Guillermo Doffo, Corina Graciano, Fabio G. Achinelli, Virginia M.C. Luquez (2024) Nutrient extraction is related to stem diameter distribution, tissue concentration, and yield in an annually harvested *Salix* coppice. *Forest Ecology and Management* 567:122103. <https://doi.org/10.1016/j.foreco.2024.122103>.
5. Luquez VMC, Bartolozzi M, Martínez S (2022) Utilización de álamos y sauces para la producción de biomasa para energía. *Revista de la Facultad de Agronomía La Plata* 121 (1): 1-17. <https://doi.org/10.24215/16699513e091>
6. Mozo I, Rodríguez ME, Monteoliva S, Luquez VMC (2021) Floodwater Depth Causes Different Physiological Responses During Post-flooding in Willows. *Frontiers in Plant Science* 12:575090. doi: 10.3389/fpls.2021.575090.
7. Monteoliva S, Mozo I, Rodríguez ME, Luquez VMC (2021) Impacto de la aplicación de una metodología de marcación del cambium en la evaluación de vasos formados exclusivamente en el xilema bajo tratamiento de estrés hídrico. *Revista de la Facultad de Agronomía, La Plata* 120 (1): 1-12.
8. Rodríguez ME, Mozo I, Cortizo S, Cappa EP, Luquez VMC (2021) Early rooting and flooding tolerance in cuttings from a *Populus deltoides* full-sib family under greenhouse conditions. *Canadian Journal of Forest Research* 51: 732-741.

For a complete list of publications, go to ORCID: <https://orcid.org/0000-0002-8433-909X>