

Seminario de Análisis Numérico y Modelamiento Matemático de Estudiantes

Applications of Multivariate Analysis and Mathematical Modeling in Plant Biotechnology and Ecology

In Forestry, Plant Biotechnology, and Natural Resource Conservation, there is a wide range of deterministic models in which numerical solutions to differential equations play a very important role. On the other hand, the availability of data and the need to study it, for example through multivariate analysis, is also key when designing experiments and making decisions in forestry sciences. In this context, several examples of applications of mathematical modeling and statistical analysis will be presented.

References

- [1] L.M. Guedes, J. Ortiz, A.S.F.P. Moreira, D.C. Oliveira, L. Rodríguez-Cerda, F. Montero, E. Gavilán, N. Aguilera. Allelochemical Stress Induced by the Invasive Species *Teline monspessulana* Disrupts Antioxidant Defenses and Morphoanatomy in *Quillaja saponaria* *Physiologia Plantarum* 177-6 (2025), published online November 2025.
- [2] N. Flores, R. Rodríguez, R. Alzamora, E. Gavilán, E. Acuña, F. Balocchi. Comparison of three daily rainfall-runoff models with multiple regression analysis for catchment parameters in Biobío, Chile *Hydrological Sciences Journal* (2025), published online September 2022.
- [3] L.M. Guedes, C. I. Pérez, S. Torres, M. Rivas, E. Gavilán, N. Aguilera. Alkaloids and antioxidant mechanisms in galls: insights from *Peumus boldus*-*Dasineura* sp. interactions *Plant Biology* 27 (2025), pp. 1079-1086.

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12:30 – 13:30 horas
Auditorio Hermann Alder
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