

One PhD scholarship available at Instituto de Ciencias Forestales (ICIFOR, INIA-CSIC), Madrid, Spain.

Project: PID2022-140521OB-C32 PLASTICPINE. Evaluación multidimensional de la plasticidad adaptativa en ensayos genéticos de pinos mediterráneos: caracterización morfométrica mediante sensores LiDAR aerotransportados. (*Multidimensional evaluation of adaptive plastic responses in genetic trials of Mediterranean pines: morphometric characterisation through airborne LiDAR scanning*).

Background: The supporting research project aims at enlarging our knowledge on the role of phenotypic plasticity both on past evolutionary processes and on how populations of Mediterranean pines (*P. halepensis*, *P. pinaster* and *P. sylvestris*) will respond to future global change. The exploration of the integrated phenotype and its coordinated plastic responses is fundamental for the purpose of disentangling the extent and nature of morpho-physiological adaptations at the intraspecific level. This is a current issue for understanding forest functioning and dynamics in the context of global change. Phenotypic integration commonly defines the disposition of several traits to evolve jointly during the divergence of populations, but its study has received little attention so far, especially in long-lived organisms. In this proposal, we will bring this analysis to a multi-site exploration in three species to characterise plastic changes in the integrated phenotype of Mediterranean pines and its adaptive role.

PhD training program. The training program aims at exploring the multi-trait phenotype-genotype association and the genetic basis of such relationships. We will take advantage of the multi-dimensional phenotypes obtained in the project (with emphasis in data from airborne LiDAR scanning) for the different species, and also the existing arrays to genotype the material in the genetic field tests. We will use the techniques already applied in previous national and European projects and extend them with the new information generated in this proposal. This approach requires the skills of the candidate both in quantitative genetics and genomics to deal with massive information. The candidate will also deal with the application of the results in managing genetic resources, especially in topics such as assisted migration and adaptive potential of the populations. The candidate may participate in the PhD program at University of Valladolid (Data Science applied to Forest management), in which the research team is involved (or other appropriate program at Madrid universities), and with different courses in data management, statistical analysis and modelling with special attention to EU EvolTree network. Stages and exchanges with international research groups working in similar tasks will be encouraged.

Applicant requisites: BS and MS degrees in forestry, agronomy, biology or related fields and meeting the requirements to enrol in a doctorate course in Spain (the candidate must be enrolled prior to contract signature). We are looking for a highly motivated person, skilled enough in scientific writing (in addition to be fluent in standard English writing and speaking), to engage this highly novel research work. Computational skills in R will be advantageous, as well as a valid driver's license.

Please send your CV, including contact details for 2 referees, a one page statement describing your research interests (preferably in English, but Spanish is also allowed) and addresses of two senior researchers for reference to: climent@inia.csic.es CC to alia@inia.csic.es

Contract details: The PhD scholarship will be for 3 + 1 years, starting in 2024. The student will be offered a full-time working contract with a gross salary about 1,700 € month. Doctorate course fees and stages will be also covered.

Please, be aware that this is a pre-official call communication. All candidates will be required to fulfil the official application when published at CSIC web, expected between end of September and early October 2023.

Relevant links:

<https://www.csic.es/es/formacion-y-empleo/oportunidades-para-la-carrera-investigadora/pre2023-evaluacion-multidimensional>

<https://www.researchgate.net/profile/J-Climent>

<https://www.inia.es/investigacion/forestal/Ecolog%20y%20Gen%20a9tica/Pages/Home.aspx>

<https://www.inia.es/investigacion/forestal/Ecolog%20y%20Gen%20a9tica/Gen%20a9tica%20de%20poblaciones%20y%20evoluci%20n/Pages/Home.aspx>

<https://www.aei.gob.es/en/announcements/announcements-finder/proyectos-generacion-conocimiento-2022/convocatoria>