Postdoctoral Fellowship
University of Sao Paulo

Job Title	Postdoctoral Fellowship
Department	Soil Science
Institution	University of Sao Paulo PIRACICABA, , Brazil
Date Posted	Sep. 19, 2025
Application Deadline	Oct. 15, 2025
Position Start Date	Available immediately
Job Categories	Post-Doc
Academic Field(s)	Agronomy/Plant & Soil Sciences
Job Website	https://ccarbon.usp.br/postdoctoral-opportunities/
Apply Online Here	https://docs.google.com/forms/d/e/1FAIpQLSeCygB1GkJjCr42135kB4ksVtpmrE3s1BQZ3aPARuQ/viewform
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Job Description	

Postdoctoral Fellowship
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Lead Institution

CCARBON – Center for Carbon Research in Tropical Agriculture (University of São Paulo)

Supervisor

Prof. Dr. Paulo Sergio Pavinato (ESALQ/USP)

Host Institution

ESALQ/USP, Piracicaba, São Paulo, Brazil

Fellowship

Postdoctoral fellowship funded by FAPESP.

Stipend: R$ 12.570,00 per month

Duration

36 months (full-time dedication/40 hours per week)

Expected Start Date

Immediate

Project Title

Plant drought stress tolerance according to phosphorus availability in soil profile

Abstract

Fertilizer application has significantly increased agricultural productivity worldwide by raising critical nutrient levels in soils to meet crop demands. However, for nutrients like phosphorus (P), only a small fraction is absorbed by plants. Moreover, water scarcity stands out as the most common abiotic stress on crops, reducing their performance and restricting both plant growth and productivity on a global scale. This research aims to investigate the main crop responses to drought stress under distinct P available levels in the soil (high, adequate and restrictive), with the ultimate goal to mitigate nutritional stress and enhance nutrient accumulation in plant tissues, resulting in better crop production and more carbon accumulation in the soil profile. In this sense, this research will develop new insights about plant tolerant to water stress under distinct soil P availability levels. In cooperation with other projects

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already established in glasshouse and in the field under water stress and P levels, plant parameters will be evaluated like stomata density, net CO? assimilation rate, stomatal conductance, transpiration and internal carbon concentration. Also, water content, chlorophyll a and b content, anti-oxidative enzymatic activity and plant biometric parameters will be evaluated. The ultimate goal is to deliver at least three research papers with a deep understanding of the physiological plant effects under drought stress and P nutrient limitations for crop production.

Project Description and Objectives
The postdoctoral fellow will investigate the main crop responses to drought under distinct P available levels in the soil (high, adequate and restrictive), with the ultimate goal to mitigate nutritional stress and enhance nutrient accumulation in plant tissues, resulting in better crop production and more carbon accumulation in the soil profile.

Core responsibilities
The research plan here proposed is to develop new insights about plant tolerant to water stress under distinct soil P availability levels. In cooperation with other projects already established in glasshouse, planned to be established from our research group at ESALQ/USP, besides some ongoing cooperation field trials (Fundação MT, Fundação ABC, etc.). Field experience in studies about nutrient management and crop development are recommended for applicants.
The main evaluations proposed are plant physiological parameters like stomata density (Frantová et al. 2024), net CO? assimilation rate (?mol CO? m?² s?¹), stomatal conductance (mol H?O m?² s?¹), transpiration (mmol H?O m?² s?¹) and internal carbon concentration (Mazar et al., 2024, and Zhang et al. 2024). Also, water content, chlorophyll a and b content (Barbosa et al., 2022), anti-oxidative enzymatic activity (Junior et al., 2017) and plant biometric parameters will be evaluated. It is well desired that the new postdoc has some experience in lab devices to evaluate the parameters mentioned above.
Moreover, quantitative data will be analyzed using descriptive statistics followed by Analysis of Variance (ANOVA) and mean comparison tests. Data integration and interpretation will follow "element-based" and "route-based" approaches (Jamil et al., 2020), with multivariate statistical techniques such as Principal Component Analysis (PCA) and Partial Least Squares Regression (PLSR) used to extract information physiological plant data, variance, and covariance. On this sense, candidates with some experience on such statistics are very welcomed.

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Deliverables
Generate a database and produce an interpretative meta-analysis about plant stress tolerance under P restrictions.
Reproducible code repository (training/inference/validation).
Technical report and at least three manuscript submissions; contributions to partner training and outreach.

EEO/AA Policy

Follow the University of Sao Paulo (USP) and São Paulo Research Foundation (FAPESP) for requirements in a postdoc position.

Contact Information

Please reference Academickeys in your cover letter when applying for or inquiring about this job announcement.

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