



Supervisor's statement on the doctoral thesis of Julián Cárdenas

Julián came from Colombia after a rather complex process of recognizing the field of study and obtaining a visa in 2017, with knowledge focused more on plant physiology. Here, he developed a work entitled Effect of soil C:N:P stoichiometry on plant-microbe-soil interactions. It is based on two published papers and one manuscript, into which we are incorporating comments from the reviewers and which will be sent to the journal Rhizosphere soon.

The area of research to which Julián has devoted himself, namely the interactions of plants with their soil environment, requires a relatively broad perspective. In addition to a soil biologist's traditional view on the rate of transformation of carbon and nutrients in the soil, it includes an understanding of the mechanisms by which the plant influences the soil microbial community and its activity directly (through the flow of organic substances and nutrients into the soil during the season) and after its death through the input of litter. Julián had always willingly and independently studied literature even marginally related to the subject. This gave him a good basis for planning experiments that focused on topics that had been little studied and undescribed. At the same time, it often distracted him from the main goals of the work and sometimes led to unnecessary obsession with many detailed results. Given the complexity of the topic, he had to think about how to present the data in an understandable way. To this end, he used a combination of the trait-based approach, which helped generalize the effects of different plant species on soil, and ecological stoichiometry, which is based on definable ratios of elements required for the growth and metabolism of plants and soil microorganisms. He also tried and adopted many ways of statistical evaluation of the multivariate data.

As a supervisor, I would like to note that Julián did a lot of work in the laboratory and was proficient in both routine and more complex methods of soil biology, including the use of stable isotopes (to label plants, soil pools, and monitor selected processes) and subsequent relatively complex calculations. After joining our lab, he initially participated in ongoing experiments, but later planned more on his own. He processed the data independently, presented the manuscripts for discussion, and always collaborated honestly on them. The process of bringing the texts to publication readiness was rather slow due to the lack of anchoring and deep literature studies, and thus much data still awaits editing and publication.

Overall, I was satisfied with Julián's work. I know that he has decided to leave the scientific world and likely work in the commercial sphere. I wish him a successful defense and good luck in his future career.

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