

Interactive comment on “Root growth of *Lotus corniculatus* interacts with P distribution in young sandy soil” by B. Felderer et al.

Anonymous Referee #2

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This study investigates the relationship between root growth of the legume *Lotus corniculatus* and soil P distribution on recently restored land in eastern Germany and in the growing chamber. Soil P heterogeneity was created in field plots and in pots in a climate chamber. Some sampling was also conducted on undisturbed soil plots to relate root length density with soil P.

Roots showed preferential growth into the P-fertilized patches in growth-cores installed in the field plots; preferential root allocation was also found in the climate chamber experiment; finally, root length density was negatively correlated with soil P likely because roots depleted P soon after establishing, thus overriding the effect of preferential root allocation in soil P patches.

The present manuscript reports some interesting results but at the same time I have
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to admit these are very limited. The fact that one species allocates more roots in a P-rich patch (as shown here in field plots and pots) is not something new. Knowledge on this species might be lacking, but the gap on this specific species does not warrant publication per se. I believe authors have not worked out what new knowledge this manuscript tells us about allocation patterns to soil-P patches.

My second concern has to do with the negative relationship found between root length density and soil P in non-manipulated field. The explanation (i.e., that roots depleted P soon after establishing, thus overriding the effect of preferential root allocation in soil P patches) given by authors is very plausible, but at the same time is merely speculative because no specific tests are reported. I am OK with such explanation, but wouldn't pay too much attention to it in the discussion because it falls out of the reach of your data.

Overall, the lack of novelty and limitedness of the results led my criticism. If authors believe in the importance of their dataset for BG, I would make a bigger effort to highlight the novelty.

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