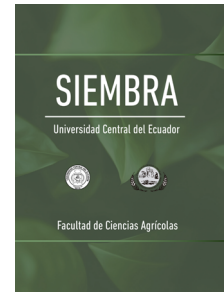


*Domestication and genetic improvement of the Lima bean and the response of the rhizosphere microbiome, studies in Brazil*

*Domesticación y mejoramiento genético del frijol lima y la respuesta del microbioma de la rizósfera, estudios en Brasil*



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Plants modulate the soil microbiota and select a specific microbial community in the rhizosphere. However, plant domestication and breeding reduce genetic diversity, and it can bring impact on the associated microbiome assembly. Indeed, studies about the microbial communities in the rhizosphere of genus *Phaseolus vulgaris* have shown the influence of domestication on microbial groups in the rhizosphere, such as decreased Bacteroidetes and increased Proteobacteria. Regarding to Lima bean (*Phaseolus lunatus*), its domestication has promoted a “founder effect” that significantly reduces the genetic diversity in domesticated genotypes. It has brought changes in the microbiome of rhizosphere in genotypes of Lima bean. Our first study assessing the microbiome of rhizosphere from domesticated genotypes has shown different genotypes recruiting distinct microbial groups in the rhizosphere. Recently, our study assessed the microbiome of rhizosphere in wild, semi-domesticated, and domesticated genotypes of Lima bean and found a significant effect of domestication on microbial community in the rhizosphere. Firstly, the similarity of microbial community decreased from domesticated to wild genotypes. Second, specific microbial groups were found in rhizosphere in wild, semi-domesticated, and domesticated genotypes. Third and more interestingly, the complexity of microbial connections decreased from wild to domesticated genotypes. Altogether, it shows that the process of domestication significantly changes the structure and composition of microbial communities and reduces their complexity of connections in the rhizosphere of Lima bean. These shifts on microbial communities in the rhizosphere of genotypes during plant domestication could influence the performance of plants and their responses to biotic and abiotic factors.

**Keywords:** Microbial ecology, domestication syndrome, 16S rRNA gene, plant-microbe interaction.

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