

Title: STUDYING THE PANGENOME OF FLUORESCENT PSEUDOMONAS SPP. OBTAINED FROM SOIL AND RHIZOSPHERE OF SUGARCANE

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Pseudomonas is a large genus known for its ubiquity in the environment, including soil, water, and plant surfaces, and is one of the most effective in colonizing the rhizosphere. Certain strains act by suppressing plant diseases in agricultural and natural environments. The ecological and metabolic characteristic of this genus is huge, not surprisingly extending to the genomic sequence level. Despite its importance in soil, so far few genomes have been sequenced. Here we aim at describing the pan genome (the sum of the shared and strain unique genes across all the compared genomes) of fluorescent *Pseudomonas*, so we can understand better the ecological relations that these organisms establish in the soil. Differences in the unique genes of close related bacteria could be a partial answer of local adaptation to particular or niches (i.e. bulk soil versus rhizosphere). To do so, we obtained, so far, 34 isolates of *Pseudomonas* in Pseudomonas Agar Base medium (21 from bulk soil and 13 from rhizosphere). The 16SrDNA sequencing revealed the presence of three groups; two in both environments (*P. fluorescens*/*P. koreensis* and *P. plecoglossicida*/*P. monteilii*), while the group affiliated to *P. putida* was exclusively found in the rhizosphere. BOX-PCR analysis indicated a deeper variation on genome contents of these isolates, clustering 7 genotypes (some exclusive in soils or rhizosphere composing 23 BOX profiles). We will further sequence the complete genome of such isolates using Illumina HiSeq platform, following assembly and annotation. With this approach we hope to determine the stable regions in the genomes as well as those more prone to alteration determined by niche occupancy. This study will greatly increase the knowledge of the complex association between genetic background and ecology of these species, allowing innovative inferences about the microbial role in sugarcane development. We will also gain insights on how to use these communities to benefit sugarcane production, through a sustainable plant production system.

Key-words: *Pseudomonas* spp., pangenome, rhizosphere

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