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PARNA 12/25: A new species of the emerging genus *Diella* with potential to promote plant growth

B. F. R. Jesuino¹, L. N. Almeida¹, M. P. S. Figueiredo¹, S. M. Tupy¹, G. C. Gonçalves¹, R. S. Duarte¹, M. F. Santana^{1*}.

¹Universidade Federal de Viçosa – Campus Viçosa, Viçosa, Minas Gerais.

*Contact of the correspondent author: mateus.santana@ufv.br

The agricultural trend towards more sustainable practices has increasingly led to a rise in the use of biological fertilizers to reduce the use of harmful chemicals. Because of this, the search for plant growth-promoting bacteria (PGPB) has intensified. Among the microbial diversity of the soil, the emerging genus *Diella* has emerged as a group of interest due to its versatile metabolic potential, although knowledge about its taxonomic and functional diversity is still incipient. Therefore, we investigated the potential for plant growth promotion (PGP) of the PARNA 12/25 strain, whose genome was previously analyzed in a prior study by the research group, which detected, through *in silico* analyses, that the isolate was a new species and its potential as a biofertilizer. For the *in vitro* validation of this study, tests were performed on biological fixation of atmospheric nitrogen using nitrogen-free semi-solid medium (NFb), ammonia production using Nessler's reagent and peptone water, phosphate solubilization using Norris Glucose Nitrogen Free medium, potassium solubilization using Aleksandrov medium, siderophore production using CAS medium, and IAA production using the Salkowski colorimetric method. These assays revealed that the PARNA 12/25 isolate had positive results in all assays performed, except for phosphate solubilization, which validates the PGPTs of this new *Dyella* species and shows the importance of prospecting for new isolates with versatile metabolism. Therefore, the next steps are to perform *in vivo* validation of the use of PARNA 12/25 as a biofertilizer, a trend that contributes to the sustainability and transformation of the field.

KEYWORDS: Biofertilizers, Sustainability, Nitrogen fixation, Siderophores, IAA.

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