

# Cultivation and identification of bacteria isolated from the microbiome of common bean cultivated in Amazon black earth.

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The plant microbiome is composed of a complex network of microorganisms that play a crucial role in plant development and health. Beneficial microorganisms can be found in fertile soils, such as Amazonian terra preta (ADE), an anthropic soil that harbors a high and complex diversity of microorganisms. Research has shown that these microorganisms can improve soil fertility, promote plant growth, and increase their resistance to disease and environmental stress. The discovery and prospection of beneficial microorganisms in the ADE offer a promising perspective for sustainable agriculture. With the use of these microorganisms, it is possible to reduce the use of chemical products and promote agricultural practices that are more harmonious with the environment. This study aimed to cultivate, identify and analyze the biological potential of bacteria isolated from the microbiome of bean plants grown in the ADE. In total, we obtained 283 colonies that were preserved in glycerol at -80° C. To verify the viability of these isolates, the following culture media were used: BHI, ISP2, AIA and TSA, which were poured into 90 mm Petri dishes, divided into four quadrants. After being inoculated on plates and kept in BOD at a temperature of ± 28° C for 10 days, 17 viable isolates were obtained, which were then cultivated in NB culture medium, under constant agitation in a shaker incubator at ± 28° C for 2 days. After growth in NB medium, the isolates were centrifuged and the pellets preserved at -20° C. Of these isolates, 8 were submitted to amplification of 16S gene for identification. The 17 bacterial isolates belong to the actinobacteria, proteobacteria and firmicute phyla and can act on plant development by providing greater availability of nutrients to plants. This information will be fundamental for the advancement of knowledge about the plant-microorganism interaction. In addition to the development of strategies that explore the potential of these bacteria grown in ADE soil to understand still unclear factors that interfere with the composition, structural and functional diversity of the plant microbiome.

**Key words:** microbiome, Amazon black earth, bacteria.

## Cultivo e identificação de bactérias isoladas do microbioma do feijoeiro comum cultivado em terra preta amazônica.

O microbioma vegetal, uma rede complexa de microrganismos cruciais para a saúde e crescimento das plantas, prospera em solos férteis como a terra preta amazônica (ADE). Esses microrganismos melhoram a fertilidade do solo, estimulam o crescimento e aumentam a resistência a doenças. Este estudo teve como objetivo cultivar, identificar e avaliar microbioma de feijoeiro cultivado em ADE. Após o isolamento de 283 colônias, obtivemos 17 isolados viáveis que foram submetidos à amplificação do gene 16S. Esta pesquisa avança nossa compreensão das interações planta-microorganismo e explora o potencial bacteriano do ADE para moldar a diversidade do microbioma vegetal.

**Palavras-chave:** microbioma, terra preta amazônica, bactérias.

Acknowledge: This work was developed with support from the Serrapilheira Institute, CAPES and FAPEMIG.