

# *Bidens pilosa* L. rhizobacteria as plant growth inhibitors

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Weeds have a great influence on maize productivity. Among these, *Bidens pilosa* L. stands out because of its capacity to compete for and accumulate high levels of nitrogen, phosphorus, and micronutrients. The objective of this work was to characterize the bacteria isolated from the rhizosphere of *B. pilosa* L. as to their ability to promote or inhibit the growth of maize (*Zea mays* L.) and the host plant under greenhouse conditions. One hundred ninety-one isolates with different morphological characteristics were obtained and purified from the rhizosphere soil of *B. pilosa*. Maize and *B. pilosa* seeds were inoculated by immersion in bacterial suspensions in nutrient broth with an O.D. adjusted to 0.6 at 560 nm. A control treatment, without inoculation, was also included. Sowing was carried out by planting three seeds of maize and ten seeds of *B. pilosa* per pot filled with commercial horticultural substrate. After emergence, seedlings were thinned to keep one maize and three *B. pilosa* seedlings per pot. After thinning, a booster inoculation was performed for both plant species. Maize and *B. pilosa* cultivation lasted 22 and 60 days, respectively. After this, the shoots and roots were harvested and dried to constant weight. Maize inoculation with rhizospheric bacterial isolates resulted in significant differences in shoot (SDM), root (RDM), and total dry matter (TDM) for 79% of the isolates. The maximum gains for SDM, RDM and TDM corresponded, respectively, to 120, 130, and 103%. For *B. pilosa*, approximately 13% of the isolates tested showed a growth promoting effect with significant increases in SDM, RDM and TDM, corresponding to 89, 54, and 53%, respectively. Sixty-two percent of the isolates tested showed an inhibitory effect on *B. pilosa* growth, leading to decreases of 9 to 76% in SDM, 20 to 79% in RDM, and 18 to 77% in TDM. The rhizosphere of *B. pilosa* contains plant growth inhibiting bacteria that have a potential for use in the integrated management of weeds and in the prospection of new bioherbicides.

**Key words:** rhizobacteria; weed; *Bidens pilosa* L..

## Rizobacterias de *Bidens pilosa* L. inibidoras do crescimento vegetal

Foram testadas 191 colônias bacterianas da rizosfera do picão-preto (*Bidens pilosa* L.) quanto à capacidade de promover ou inibir o crescimento do milho e do picão-preto. Os resultados mostraram que 79% dos isolados promoveram o crescimento do milho. Para o picão-preto, aproximadamente 13% dos isolados promoveram o crescimento da planta e cerca de 62% dos isolados apresentaram efeitos inibitórios. A rizosfera de picão-preto contém bactérias promotoras e inibidoras do crescimento vegetal. As bactérias inibidoras do crescimento do picão-preto apresentam potencial de uso no manejo integrado de plantas daninhas e na prospecção de novos bio-herbicidas.

**Palavras-chave:** rizobactéria; planta daninha; *Bidens pilosa* L..

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