Utilization of Rhizobacteria for Increased Growth of Sweetpotato

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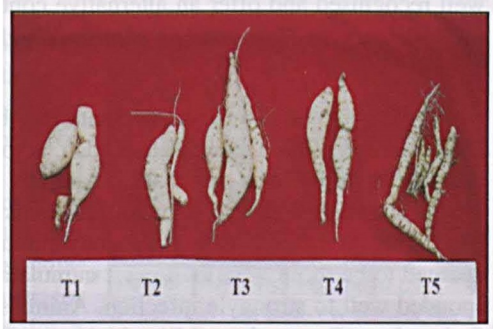
Commercial production of sweetpotato requires high fertilizer input that can finally lead to environmental problem and high production cost. One of the methods to sustain production of sweetpotato is through application of beneficial micro organisms such as plant growth-promoting rhizobacteria (PGPR). Application of *Azospirillum sp* and several rhizobacterial strains has been known to positively influence growth and yield of several field crops. These bacteria enhance plant growth through mechanisms such as N_2-fixation and production of phytohormones such as indole 3- acetic acid (IAA). The following studies aimed to determine the beneficial effect of utilizing *Azospirillum* and IAA producing rhizobacterial strains on growth and yield of sweetpotato. Separate glasshouse and field experiments were conducted to evaluate the performance of *Azospirillum brasilense* Sp7 and IAA producing rhizobacterial strains isolated from roots of locally grown sweetpotato on sweetpotato. The effect of fertilizer nitrogen and tryptophan as a precursor to IAA biosynthesis on plant growth and yield was also evaluated.



Effect of Azospirillum and L-tryptophan on sweetpotato storage roots development

Effect of Azospirillum on sweetpotato yield

Our studies showed that inoculation of sweetpotato Gen-Gendut with *Azospirillum* Sp7 significantly increased yield of tubers. Plants inoculated with the bacteria together with tryptophan and 1/3 of N gave the highest tuber dry weight compared to non-inoculated plants. Inoculation also increased the uptake of N, P and K in shoots and production of IAA in soil. Application of 1/3 N to inoculated plant resulted in growth comparable to that with full fertilization. Inoculation of plants with SPR100 strain in the presence of tryptophan produced higher shoot growth and tuber yield and promoted early tuber development. Utilization of rhizobacteria has the potential to increase growth and yield of sweetpotato at reduced N fertilizer application.

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