



Tropentag, September 16-18, 2015, Berlin, Germany

“Management of land use systems for enhanced food security:  
conflicts, controversies and resolutions”

## Seed Dressing Using Plant Growth-Promoting Rhizobacteria *Bacillus amyloliquefaciens* FZB42 Reduces Aphid's Proliferation in Cotton

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### Abstract

The intensive use of chemical fertilisers leads to soil degeneration and promotes the proliferation of insect pests such as aphids. *Aphis gossypii* (Glov.) is a polyphagous sucking insect which reproduces almost exclusively by parthenogenesis in tropical conditions and has a biological cycle of just 5–6 days, which means it multiplies spectacularly. It is necessary to look for alternative crop fertilisation system enabling reduction of the proliferation of this insect pest. The rhizobacterium *Bacillus amyloliquefaciens* is known as bio-fertiliser. The present work is aimed at assessing the population dynamics of the aphid *Aphis gossypii* Glov. in cotton based on different fertilisation materials, namely: *B. amyloliquefaciens* FZB42 and mineral fertilisers (NPKSB). Three treatments were tested: soaking cotton seeds in the rhizobacterium suspension, application of mineral fertiliser, and control (no fertiliser). To perform this study, cotton plants (Variety H279–1) were grown in 7 L flower pots placed outdoors in the experimental station. The effect of tested fertilisation materials on the populations' dynamics of aphids was assessed in 2 different experiments. For that, we counted the number of aphids on each plant every 3 days.

In general, results showed that the cotton plants fertilised with *B. amyloliquefaciens* FZB 42 attracted significantly fewer aphids compared to those fertilised with NPKSB. At the end of first experiment, aphid mean number per plant was respectively 7.1 ; 22.23 and 72.03 for the control, FZB42 and NPKSB. We suggest conducting trials on this PGPR in field under practical cotton production conditions in West Africa to assess its potentiality as integrated pest management (IPM) component.

**Keywords:** *Aphis gossypii*, aphids, *Bacillus amyloliquefaciens*, Crop protection, PGPR, rhizobacteria