

Publication

Non-target effects of bioinoculants on rhizospheric microbial communities of *Cajanus cajan***JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)****ID** 2683629**Author(s)** Gupta, Rashi; Mathimaran, Natarajan; Wiemken, Andres; Boller, Thomas; Bisaria, Virendra S.; Sharma, Shilpi**Author(s) at UniBasel** [Boller, Thomas](#) ; [Wiemken, Andres M.](#) ; [Natarajan, Mathimaran](#) ;**Year** 2014**Title** Non-target effects of bioinoculants on rhizospheric microbial communities of *Cajanus cajan***Journal** Applied soil ecology**Volume** 76**Pages / Article-Number** 26-33**Keywords** Bioinoculants, *Cajanus cajan*, ARISA, qPCR, Rhizosphere

"Bioinoculants" have become a useful, environment-friendly tool in agriculture to increase crop yield. Previous work has shown that *Cajanus cajan*, India's most important pulse, can profit considerably from applications of the three bioinoculants, viz. *Bacillus megaterium* MTCC 453, *Pseudomonas fluorescens* LPK2 and *Trichoderma harzianum* MTCC 801. For careful "risk assessment", it is of interest to investigate the effect of application of such bioinoculants not only on the target crop, but also on the indigenous rhizospheric microbial community of that particular plant. To do so *C. cajan* treated with bioinoculants, individually as well as in combinations, was grown in pots under field conditions. Fingerprinting, using automated ribosomal spacer analysis showed distinct, highly diverse bacterial and fungal rhizospheric communities, which were differently influenced by the applied bioinoculants. Two important groups of soil microbes, actinomycetes and beta-proteobacteria, were quantified using qPCR and shown to be little affected by the bioinoculants. Additionally, rhizosphere populations of groups to which the inoculants belonged were enumerated on selective media. An increase in abundance of phosphate solubilizing *Bacillus* sp. (73%), *Pseudomonas* sp. (42%), and fungi (53%) was observed with triple inoculation at maturity, as compared to control plants. Thus, there was no negative impact of the bioinoculants used in the study on specific groups of indigenous microbial community. (C) 2013 Elsevier B.V. All rights reserved.

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