

Plate J-K, Scholz A, Goßmann M, Bandte M, Büttner C, 2011:

First studies to increase quality and quantity of asparagus and the biological control of plant pathogens by *Enterobacter radicincitans*

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“Plant growth promoting bacteria” (PGPB) occurring in the phyllos- and rhizosphere of plants are proved for several crop plants to increase their uptake of nutrients and to restrict infections by respective plant pathogens (Compant et al. 2005). This study is aimed to investigate this growth promoting effect of the PGPBs *E. radicincitans* and *B. amyloliquefaciens* on quality and quantity of *Asparagus officinalis* with regard on infections of *Fusarium spp.*. In consideration of the previous crop, asparagus and canola, respectively, a field trial was designed and set up in march 2009. The asparagus plants were treated with *E. radicincitans* and *B. amyloliquefaciens* by dipping the roots into a suspension of bacteria, watering the plants after planting or a combination of these two methods. Neither after the first nor the second vegetation period an effect of PGPB’s on the parameters dry mass, fresh mass or numbers of shoots, could be observed. For evaluating a possible impact of *E. radicincitans* and *B. amyloliquefaciens* on the infection of asparagus plants by *Fusarium spp.*, dual-culture tests and a greenhouse trial were applied. The dual-culture tests showed, that *E. radicincitans* does not inhibit the radial growth of *Fusarium spp.* isolates in contrast to *B. amyloliquefaciens*. To verify these results *in vivo*, a greenhouse trial was conducted. Three cultivars of asparagus were used and plants were treated with suspensions of *E. radicincitans* and *B. amyloliquefaciens* by dipping the seeds, dipping the roots or watering the plants. Two weeks after the application of the bacteria the plants were watered with suspensions of *Fusarium oxysporum* and *Fusarium proliferatum*. Two month after the application of *Fusarium spp.* asparagus plants were harvested and evaluated. None of the different applications resulted in significant effects on the fresh mass, dry mass or number of shoots. Investigations on the colonization of *E. radicincitans* in asparagus plants by real-time PCR are in hand.

COMPANT S, DUFFY B, NOWAK J, CLEMENT C, BARKA EA, 2005: Use of Plant Growth-Promoting Bacteria for Biocontrol of Plant Diseases: Principles, Mechanisms of Action, and Future Prospects. Applied and Environmental Microbiology 71, 9, 4951-4959.