

ROLE OF RHIZOBACTERIA IN CONTROL OF BEAN ROOT ROT CAUSED BY *Fusarium solani* f. sp. *phaseoli*

X Itamar S. de Melo, Eduardo Lazaretti, Pedro José Valarini, Rosa T. Frighetto

The most important root pathogen of bean in Brazil is *Fusarium solani* f. sp. *phaseoli* which can attack roots of healthy beans growing under fairly normal conditions.

To obtain rhizosphere-competent bacteria which could be used as biocontrol agents, bacteria were isolated from rhizosphere and rhizoplane of bean healthy plants by standard techniques. Nine isolates including *Bacillus subtilis* and *Pseudomonas* spp. were selected for greenhouse and field tests. All these isolates inhibited *in vitro* *Fusarium solani* f. sp. *phaseoli* and *Rhizoctonia solani*.

An isolate of *B. subtilis* inhibited the mycelial growth of several plant pathogenic fungi including *Phytophthora citrophthora*, *Verticillium dahliae*, *Sclerotinia sclerotiorum*. This strain produced an antibiotic substance in an ethyl acetate extract that totally inhibited germination of conidia and the mycelial growth of *Fusarium solani*. Seed bacterization of bean with a cell suspension of *B. subtilis*, reduced significantly infections as compared with the control, promoted the plant growth and, increased the nodulation by *Rhizobium*. In field conditions, with naturally infested soil with *Fusarium solani*, the bacterium reduced the incidence of the disease and increased the grain yield.