



Biological control of *Verticillium* wilt in cauliflower by the native endophyte *Verticillium tricorpus*.

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Abstract

Verticillium wilt is an important soil-borne disease, affecting many crops worldwide. In Belgium, *Verticillium* wilt causes important losses to cauliflower. The disease is caused by *Verticillium longisporum*. The pathogen produces microsclerotia that are very long-lasting in soil. Soil chemical disinfestation is not rentable for this crop and, additionally, not ecologically sound. In previous research in Belgian fields we found that the presence of *Verticillium tricorpus* in soil was negatively correlated with *Verticillium* wilt of cauliflower. The ability of *V. tricorpus* to protect potato and lettuce against virulent isolates of *Verticillium dahliae* has been reported in the literature. To investigate the interaction of the indigenous *V. tricorpus* with *V. longisporum* in cauliflower, *V. tricorpus* was isolated from the field and tested under controlled conditions. Cauliflower seedlings were inoculated with *V. tricorpus* and *V. longisporum*, using the root-dip method. Disease symptoms were recorded and fungal DNA of both *Verticillium* species in plants was quantified with real-time PCR. *V. tricorpus* did not cause symptoms in single inoculation. Symptoms and colonization of *V. longisporum* were clearly reduced by pre-inoculation with *V. tricorpus*. *V. tricorpus* was detected in roots and stem, although in significantly lower amounts than *V. longisporum*. *V. tricorpus* behaves as an endophyte in cauliflower with potential for development as biological control agent. Currently, we are testing the effect of inoculation of *V. tricorpus* in cauliflower plantlets before transplanting them into naturally infested soil. Disease development and colonization by both *Verticillium* species will be evaluated.