Title  Fate and activity of fungal biocontrol agents (BCAs) on strawberry
Keywords  strawberry; biocontrol

Abstract

Fungal BCAs against grey mould are being used at flowering in strawberries. The objective of an ongoing project is to study the fate and activity of selected BCAs from application until harvest and consumption. The activity of BCAs based on *Trichoderma harzianum* and *Clonostachys rosea* against the grey mould pathogen, *Botrytis cinerea*, was examined on flowers using strains with reporter genes encoding either GFP or DsRed fluorescence. Approximately 70% of both *C. rosea* and *B. cinerea* conidia germinated on flower tissue while only 20% of *T. harzianum* conidia germinated within 24 hours at 20°C. Dual inoculation of the fungi showed that *C. rosea* significantly reduced both *B. cinerea* and *T. harzianum* germination on flowers. In addition, *C. rosea* significantly reduced grey mould symptoms. The fate of BCAs after application to the flowering plants, approximately $10^4$ CFU/flower, was studied in field trials. Quantification of the BCAs on berries developed from inoculated flowers showed that less than 160 CFU/berry of either *T. harzianum* or *C. rosea* were recovered one month later. High density (worst case) inoculation of berries with *T. harzianum* and *C. rosea* showed no increase in CFU density on the berries after four day incubation at 20°C. Sub-samples of these berries will be analysed for presence of microbial metabolites. Data on fate and activity of BCAs on strawberries both pre-harvest and post-harvest will aid risk assessment of BCAs by pointing out the kind of assessment studies needed to ensure safe use of BCAs.
Biological control agents (BCAs) are potential alternatives for the chemical fungicides presently used in agriculture to fight plant diseases. Coniothyrium minitans is an example of a promising fungal BCA. It is a naturally occurring parasite of the fungus Sclerotinia sclerotiorum, a wide-spread pathogen which substantially reduces the yield of many crops. This review describes, exemplified by C. minitans, the studies that need to be carried out before a fungal BCA is successfully introduced into the market. The main aspects considered are the biology of C. minitans, the development of a produ