

Combined treatments to reduce *Septoria tritici* in wheat and their impact on crop yield and its components

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Field experiments were conducted to analyze the effect of *Trichoderma harzianum* as natural biofungicide of *Septoria tritici* in wheat. The effect of two biocontrol strains of *T. harzianum* alone or in combination with a fungicide were evaluated on the severity of leaf blotch of wheat (LBW) with different application techniques at three growth stages (seedling, tillering, heading). The impact of these treatments on spikes number/ m², grains per spike, thousand kernel weight (g) and grain yield (kg ha⁻¹) were studied. Plants of Buck 55CL2 variety received different treatments: control plants inoculated with *S. tritici*; plants from coated seeds with the strains (Th5cc, Th118) of *T. harzianum* and inoculated with the pathogen; plants from coated seeds and spray application on leaves of conidial suspension of *T. harzianum* alone or in combination with an aerial fungicide (Amistar Xtra) sprayed 7 days before the inoculation with the pathogen. With respect to severity, at seedling and tillering, only necrotic tissue development was assessed by the low incidence of pycnidia. At heading, only the pycnidial coverage percentage was assessed because of high incidences of necrosis in all treatments. With only coated seed treatment the reduction in the pycnidial coverage percentage was maintained until heading stage ($p \geq 0.05$). Lower values of necrosis were obtained when seeds were coated with the antagonist and seedlings were also sprayed with half-doses of fungicide ($p \geq 0.05$). When applying the single antagonist the use of the strain Th5cc is recommended with 3 applications (coated seed and two spray applications at tillering and heading) that decreases the pycnidial coverage until heading ($p \geq 0.05$). The analysis of the yield components showed that spikes /m² and thousand kernel weights were altered by the combined treatment ($p \geq 0.05$).