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**EFFECT OF DIFFERENT SUGAR BEET PRE-CROPS AND
AGRICULTURAL PRACTICES ON SOIL INOCULUM DENSITIES
OF *RHIZOCTONIA SOLANI***

**Influence de différentes cultures précédentes et de méthodes culturales
sur le potentiel d'inoculation de *Rhizoctonia solani* dans le sol /
Einfluß verschiedener Zuckerrübenvorfrüchte und pflanzenbaulicher
Methoden auf das *Rhizoctonia solani*-Inokulumpotenzial im Boden**

ABSTRACT

Rhizoctonia solani (Kühn) is the causal agent of late crown and root rot in sugar beet (*Beta vulgaris* subsp. *vulgaris*). In a 4-year field study we analyzed the effect of maize and winter wheat as well as various agricultural practices on the soil inoculum density of *R. solani*. The field trial started in 2009 when all plots were inoculated with *R. solani* infested barley and sugar beet was cultivated on each plot. After sugar beet harvest plant residues were either mulched or removed. In 2010 and 2011 the trial consisted of a fully randomised block design growing maize and winter wheat, while maize plots were further split respectively their residue management regimes (silage and grain maize). In 2012 sugar beet was grown on all plots again. *R. solani* inoculum soil densities were monitored monthly using root damage indices of maize or sugar beet and indicator plants (broad bean: *Vicia faba*). At the end of every season soil samples were also taken and analyzed using a molecular assay which combined quantitative real time-PCR (qPCR) and a quinoa (*Chenopodium quinoa*) seed baiting technique (quinoa-qPCR assay). The results showed that consecutive mulching of maize and sugar beet debris produced highest *Rhizoctonia* inoculum levels in the soil and highest sugar beet root rot due to *R. solani*. Moreover, growing silage maize and winter wheat instead of grain maize reduced the risk of late crown and root rot of sugar beet and might be a measure to decrease the *R. solani* inoculum potential in the soil. Also, broad beans as indicator plants as well as the developed molecular quinoa-qPCR assay are good methods for routine monitoring of *R. solani* soil densities.
