

**Title** *Fusarium* infection and mycotoxin contents of oats under different tillage treatments

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#### **Abstract**

*Fusarium* infection and mycotoxin contents of oat 'Belinda', 'Freja', 'Roope' and 'Veli' were studied in Finland in a field trial in 2004–2006 under autumn ploughing and direct drilling. The infection of developing kernels was investigated from panicle emergence until harvest. Trichothecene mycotoxins were analysed in grain 2-3 weeks before harvest and at harvest. The weather in 2004 was very rainy and cool, in 2005 warm and less rainy, while in 2006 it was warm and dry. *Fusarium* infection was detected immediately after panicle emergence on all cultivars. The first species identified was a T-2/HT-2- producing species *F. langsethiae*, but also *F. poae* was found in the early stages of kernel development. The deoxynivalenol-producing species *F. culmorum* and *F. graminearum* colonized the kernels later. In 2005 and 2006, *F. poae* was most abundant in autumn-ploughed plots. Direct drilling increased the infection of *F. avenaceum* and reduced *F. culmorum*. Tillage did not have much effect on *F. graminearum* and *F. sporotrichioides* infections. However, it increased *F. langsethiae* infection. Direct drilling decreased DON and NIV contents in grain, but seemed to increase T-2/HT-2 contents of oats. The amounts of DON detected were not high, the highest contents being 790 mg/kg on 'Roope' in 2006. T-2/HT-2 toxins were detected on all the cultivars, the amounts being highest in 'Belinda', 950 mg/kg in 2006. The nivalenol contents were high in 2005 due to heavy *F. poae* infection.