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Selenium content of Finnish oats in 1997-1999: effect of cultivars and cultivation techniques

Keywords *Avena sativa*, oats, selenium, cereals, cultivars, organic farming, fertilizers,

Abstract

Se-supplemented fertilization is the main factor affecting the selenium (Se) contents of cereals in Finland. Soil and climatic conditions determine the activity of selenate added to soils and bioavailability to plants. In the present study the Se contents and its variation in Finnish oats, the differences between oat cultivars and cultivation techniques were examined. The selenium (Se) contents of oats (*Avena sativa* L.) in Finland were examined during 1997-1999 in 3 types of trial: official variety, organic cultivation variety and organic vs. conventional cultivation trials. Farm samples were also examined. The mean Se contents of oats in official variety trials were 0.110, 0.120 and 0.160 mg kg⁻¹ dry weight (dw) range 0.016-0.460 mg kg⁻¹dw in 1997-1999, respectively. The mean Se contents in farm samples were 0.050 and 0.130 mg kg⁻¹ dw in 1998 and 1999, ranging between < 0.010 and 0.330 mg kg⁻¹ dw. Considerable regional and seasonal variations existed. The Se contents of oats were significantly higher in 1999 probably due to the combined effect of not increased fertilizer level (from 6 to 10 mg Se kg⁻¹ fertilizer) and very low precipitation in 1999. The Se contents of oats were significantly lower in organic cultivation, due to the absence of Se-supplemented fertilization. Significant ($P < 0.001$) cultivar differences were detected in official variety trials. The cultivars Veli and Leila showed higher levels of Se.

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