

Title Comparison of deterioration of rye samples stored at different storage regimes
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Abstract

The main objective of the study was to compare the deterioration of rye (*Secale cereale* L.) samples stored at different temperatures and moisture contents without decline in moisture throughout the study against the previously reported results of declining moisture content of samples stored at the same temperatures and initial moisture contents during 16 wk storage.

Germination, appearance of visible and invisible microflora, and grain free fatty acid values (FAV) were determined for samples at 10.0, 12.5, 15.0 and 17.5% moisture content (wet mass basis) stored at 10, 20, 30 and 40°C for 16 wk. The germination, moisture content and visible mould were determined every week while fatty acid values were measured every two weeks and invisible mould was measured every 4 weeks.

Germination rate was almost the same for all the moisture content samples stored at 10°C for this and a previous study, but a significant decrease was observed at other temperatures. Fatty acid values remained similar for both sets of storage conditions at 10 and 20°C, whereas at 30 and 40°C, fatty acid values of the rye samples which maintained constant moisture content were high. Visible mould appeared early in the samples whose moisture content was maintained and increased with an increase in temperature and moisture content during the experiment. *Penicillium spp.* and *Aspergillus glaucus* group were the predominant fungal species present under both storage regimes throughout the study.

Samples from the current study (case 1) which retained the initial moisture content throughout the study showed increased deterioration in quality when compared to the samples from a previous (case 2) where there was a decline in moisture content during storage.