

Title Influence of harvest date and geographical location on kernel symptoms, fungal infestation and embryo viability of malting barley

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Abstract

This study focused on the influence of harvest timing and geographical location on spring malting barley (potential malting variety) in terms of fungal infestation and seedling viability in symptomatic and asymptomatic kernels. The study was conducted over two consecutive crop years (2003–2004) at four locations in Slovakia. The following categories of the barley kernels were used for the assessment: kernels with black point symptoms (BPK), kernels with black cover on their surface (BCK), pink-colored kernels (PCK) and asymptomatic kernels (AK). The occurrence of various fungi was detected in all kernel categories ranging from 60 to 100%. The most frequent fungal contaminants were members of the genus *Alternaria*, recovered from BPK in the range of 52.6–69.85%, BCK (62.36–73.28%) and AK (55.35–69.58%). The prevalence of *Alternaria* spp. was recorded for each harvest time. Other dematiaceous fungi, *Epicoccum nigrum* and *Cochliobolus sativus* were found with medium frequency in the same three categories. However, *C. sativus* was recovered with a higher frequency in BPK (2.6–25.3%). In PCK, the most commonly recovered fungi were species of *Fusarium* with *F. avenaceum* (59.2–93.2%) as the most prevalent. The infestation of kernels by fungi from other genera showed only low frequency within all the kernel categories investigated. There was no significant influence of the year and location on the proportion of the symptomatic kernel categories. Kernel germination was inhibited to a greater degree in the wetter and colder year. The strongest inhibition of germination ranging from 2.35 to 22.45% was recorded in PCK in all locations and both years. Germination declined from PCK to BCK (43.2–90.32%), and BPK (45.6–91.61%), while it was highest in AK at all harvest times (63–93.6%). This study found that the black covering symptoms (BCK) caused greater damage to viability of the kernels than black point symptoms (BPK). The delayed harvest time resulted not only in increasing numbers of discolored kernels and undesirable symptomatic kernel fractions but also in lower germination of the kernels tested.