

Combined effect of high temperature and drought on yield and malting quality of barley

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Abstract

Spring barley varieties Tolar and Marthe were grown under the standard conditions and stress conditions with a combined effect of high temperature and drought in three experiments conducted in the greenhouse of phy-totron type. The results showed that growing under the stress conditions led to reduced yield, grain quality and malt quality. This effect was observed both in the individual years and on average for the entire study period. Average yield of grain declined by ca 53% and retention above 2.5 mm screen decreased by ca 28% ($P = 0.001$). Further, average content of proteins rose by 3.7% while starch content decreased by 5.1% ($P = 0.01$). In malt samples, average extract and friability were reduced by 5.8% and 15%, respectively, and average protein content increased by 3.8% ($P = 0.01$). The growing conditions were a dominant factor in the conducted experiments.

Keywords: grain quality; abiotic stress; malt quality

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