

S7T5**The impact of biostimulants on drought stress tolerance in barley**

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Abstract

Drought is one of the most important factors for crop losses in agriculture. In addition, the amount of conventional plant protection products decreased dramatically in the last few decades because of their negative ecological consequences. For this reason, biostimulants are gaining more importance because of their environment-friendly property. Biostimulants are products containing natural substances and/or microorganisms leading to increasing abiotic and biotic stress tolerance.

The aim of this study is to investigate the drought stress tolerance as well as the resistance against *Blumeria graminis* infection in barley (*Hordeum vulgare* L) in response to the treatment with different biostimulants. Therefore, ten diverse reacting genotypes were selected to analyze drought stress parameters like water use efficiency and biomass. For the *priming* treatment three biologicals have been selected from a pool of 21 tested substances in a preliminary experiment. Drought stress was induced by 20 % water capacity at the third-leaf stage for six weeks followed by a two weeks re-watering phase to investigate the recovery ability of the drought-stressed plants under greenhouse and field conditions with and without treatment with biostimulants.

Preliminary results show a high repeatability of 0.87 and an increase in biomass under drought stress up to 77% by applying extract of burdock.

Furthermore, the effect of biostimulants on genotype specific performance under drought is tested on a gravimetric based phenotyping facility. The comparison to established reference trials in the field complete the presented investigations with a deeper insight into the effect of the biostimulants on drought response of barley.

