PROJECT: RE-TILLER

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PROJECT TITLE

Tillering dynamics of drought-stressed barley genotypes under different re-watering regimes

CONSORTIUM

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SUMMARY OF THE REPORT

One future challenge of agriculture will be maintaining food security in times of climate change. Generally, different climate models concertedly predict that precipitation events will decrease in quantity while they increase in intensity. This will lead to more extended periods of drought, followed by periods of heavy rainfall. Future plant breeding, therefore, has to account for the genotypes' survival during drought and a good recovery ability after rainfall events. In cereals, the production of additional tillers after suffering from drought has been observed as one concept to respond to the re-availability of water – the so-called re-tillering. This has also been observed in drought stress experiments with the wild barley nested association mapping (NAM) population HEB-25, which has been established as a toolbox to mine naturally occurring alleles with respect to replenishing the barley breeding pool with valuable resources. Within the frame of the RE-TILLER project, we investigated the re-tillering behavior of selected HEB-25 lines in different drought and re-watering scenarios in the LemnaTec Scanalyzer system. This enabled non-invasive phenotyping of plant architecture and biomass in high-throughput under automated watering according to the implemented drought and re-watering scenarios. Ultimately, this will contribute to understanding the re-tillering capacity, a rarely investigated trait, and propose possible directions for future barley breeding.