

PROJECT TITLE

High-throughput phenotyping of buckwheat for the purpose to identify the drought-resistant varieties

CONSORTIUM

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SUMMARY OF THE REPORT

BuckPheno represents the first attempt to identify buckwheat genotypes, which maintain their growth and productivity under drought stress conditions with the use of automated phenotyping. For this purpose, six genotypes with different origins were grown under three water regimes: well-watered, mid drought stress, and severe drought stress. In addition to automated phenotyping, manual measurements of chlorophyll fluorescence-based parameters, carbon assimilation, leaf optical properties, and chlorophyll content by hand-held equipment were used to increase the understanding of data obtained through hyperspectral and chlorophyll fluorescence imaging units. This unique combination of approaches resulted in the outstanding dataset, which will be useful for the identification of phenotypic traits that can be used for fast screening of a large number of plants for drought-resistant or tolerant varieties breeding. Additionally to the planned experiment, some other experiments were conducted, for the purpose to add some additional information from hyperspectral and visible light images and increase the value of data obtained in the main experiment.