

P-010: Phenotyping of winter oilseed rape with sensor systems under field conditions

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Plant breeding, especially conventional as well as marker assisted selection of suitable genotypes requires labor and time consuming screening of large amounts of plant material in field trials. In order to speed up the phenotyping process and to increase the number of genotypes being tested, new sensor systems have to be introduced.

Innovative non-destructive phenotyping methods to capture factors of yield formation in oilseed rape are used in the interdisciplinary project RapiD.

Within the scope of this project, field trials with winter oilseed rape were conducted at the research station in Brunswick. High phenotypic variability was achieved by plant material that differed in architecture of the crop stand. Therefore nine (season 2017/18) and 16 (season 2018/19) different genotypes, respectively, were tested under 120 and 170 kg ha⁻¹ of mineral nitrogen. During season, plant traits, like field emergence, plant development, beginning of flowering, plant high, amount of flowers and pods, leaf area index and biomass were measured regularly the conventional way. In parallel different spectral sensors (RGB, multispectral, hyperspectral and laserscanning) have been tested and calibrated to destructive field sampling. In a next step sensors will be used on unmanned aerial vehicles (UAV) in order to speed up the phenotyping process.

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