

OptiCrop-projektet – WP3**Notat 4: Videnskabelig artikel om resultaterne fra projektet.**

En videnskabelig artikel om resultater fra projektet, hvori bl.a. kandidatgenerne beskrives, er lovet i projektet. Et manuskript er udarbejdet ved udgangen af 2022 og vil blive gjort klar til indsendelse til publicering tidligt i 2023. Manuskriptet er primært baseret på resultaterne fra RNAseq-eksperimenterne og beskriver forskelle mellem højprotein-sorten Ohio og lavprotein-sorter mht. fysiologien i N-remobilisering og ekspresion af kandidatgener. Mulige funktioner af kandidatgenerne diskuteres.

Engelsk sammendrag af artiklen:

Genetics underlying good yield and grain protein content of a hexaploid wheat variety

Authors: Cristiana Paina and Per L. Gregersen, Aarhus University.

Summary:

Breeding activities towards improved wheat yield generally tend to lead to a decline in grain protein content, with the two traits being most often negatively correlated. The cultivar Ohio is a hexaploid wheat variety for which this negative relationship between grain yield and grain protein content appears broken. Here, we focus on the genetic elements determining the good yield and grain protein content, but also the positive grain protein deviation of this variety. We recorded phenotypic data related to nitrogen uptake and remobilization, chlorophyll content and senescence pattern for this variety, analyzed transcriptome data of flag leaf and developing grain, and compared these to other varieties with differences in performance. Patterns and genetic elements (differentially expressed genes and SNPs) specific for Ohio were identified. Although Ohio is used for feed and lacks desired baking qualities, the highlighted genetic elements can be further used to improve grain protein content and develop superior hexaploid wheat varieties.