

Evidences

Study #4476

Contributing Projects:

- P882 - IWYP Hub
- P1367 - Evaluate and characterize high yield potential lines at key NARS
- P1354 - Development of novel, high-throughput phenotyping assays to accelerate breeding for priority traits
- P1225 - IWYP- Research Projects
- P1926 - IWYP- Speeding the adjustment of photosynthesis to shade-sun transitions to increase yield potential in the fields

Part I: Public communications

Type: Other MELIA activity

Status: Completed

Year: 2021

Title: Gene-based mapping of trehalose biosynthetic pathway genes reveals association with source- and sink-related yield traits in a spring wheat panel

Commissioning Study: IWYP, BBSRC, MasAgro, WHEAT

Part II: CGIAR system level reporting

Links to the Strategic Results Framework:

Sub-IDOs:

- Reduced smallholders production risk
- Reduce pre- and post-harvest losses, including those caused by climate change

Is this OICR linked to some SRF 2022/2030 target?: Yes

SRF 2022/2030 targets:

- # of more farm households have adopted improved varieties, breeds or trees

Description of activity / study: Trehalose 6- phosphate (T6P) is a key plant signal for regulating carbon use and allocation. Little is known about the contribution of trehalose phosphate synthase (TPS) and trehalose phosphate phosphatase (TPP) genes to achieving a carbon allocation balance that ultimately helps maximize expression of grain yield through the mediation of T6P. A wealth of information on natural variation of TPS and TPP genes related to yield potential was generated, which confirms T6P's role in resource allocation, in affecting grain number and other traits. This opens up the possibility for translational research to explore natural genetic variation in these enzymes and incorporate their alleles into elite wheat backgrounds, thereby achieving a better understanding of how to deploy them in mainstream breeding. These results have high translational potential to most crop species, since the regulation of partitioning of carbon to edible structures is a fundamental yield determinant.

Geographic scope:

- Global

Comments: <Not Defined>

Links to MELIA publications:

- <https://doi.org/10.1002/fes3.292>