

Genotypic variability and ear metabolism in field-grown durum wheat: identification of new traits for grain yield improvement



R. Martínez-Peña ¹, B. Gil-Pérez ¹, I. Arous-González ¹, A. Gracia-Romero ², S. C. Kefauver ², M. Höhne ³, B. Encke ³, R. Morcuende ⁴, J. L. Arous ², N. Aparicio ¹, R. Vicente ^{3,5}

¹Agro-technological Institute of Castilla y León (ITACyL), Valladolid, Spain.

²Integrative Crop Ecophysiology Group, Section of Plant Physiology, Faculty of Biology, Universitat de Barcelona, Barcelona, Spain.

³Institute of Molecular Plant Physiology, Potsdam-Golm, Germany.

⁴Abiotic Stress Department, Institute of Natural Resources and Agrobiology of Salamanca, IRNASA-CSIC, Salamanca, Spain. Max Planck.

⁵Instituto de Tecnologia Química e Biológica António Xavier, Universidade Nova de Lisboa, Oeiras, Portugal.

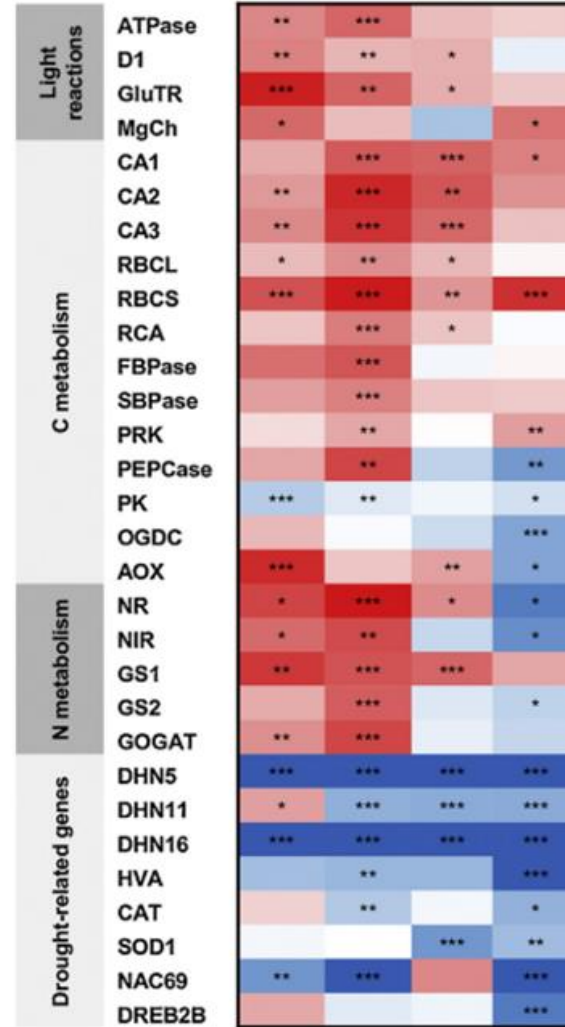


“The deficit in genetic gains in recent decades may be viewed as a clear indication of the need of breeding programs in Spain to ensure future cultivar enhancement”

Chairi et al. (2018) *Field Crops Research*

Water stress

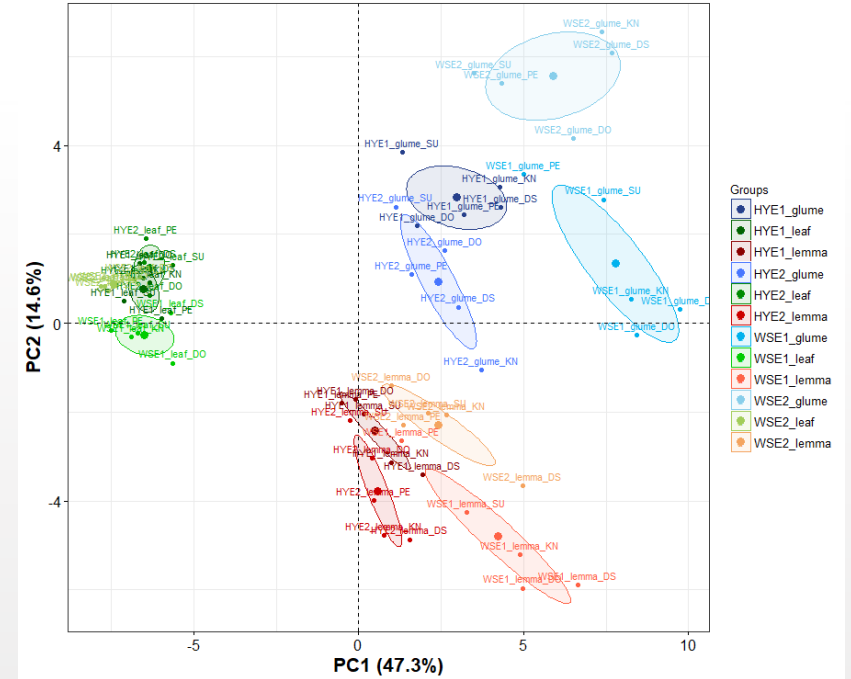
Rainfed vs Irrigated



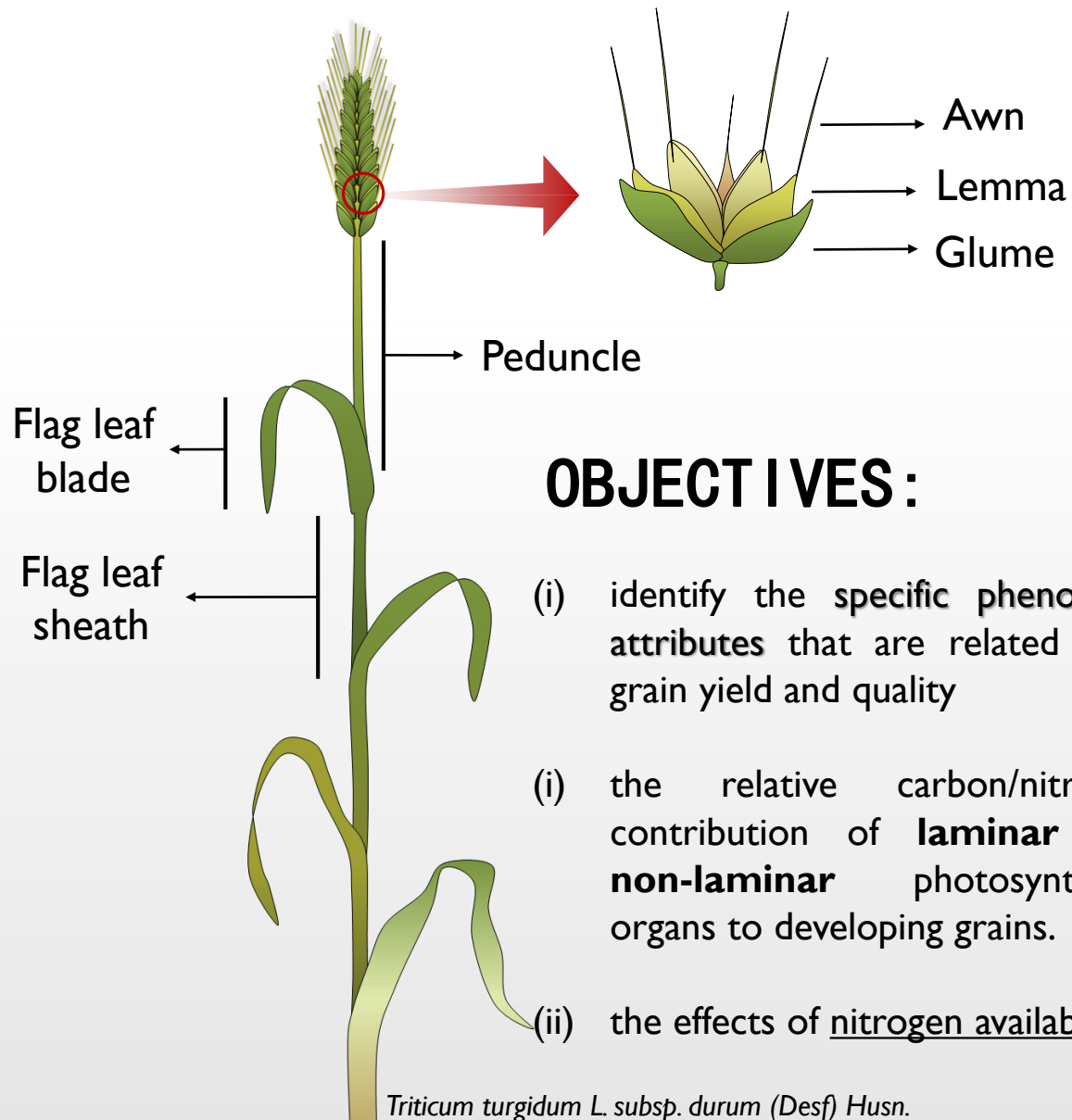
Vicente et al. (2018) *Environ Exp Bot*

Metabolome (GC-TOF-MS)

Principal Component Analysis: anthesis
Environment x Organ x Cultivar



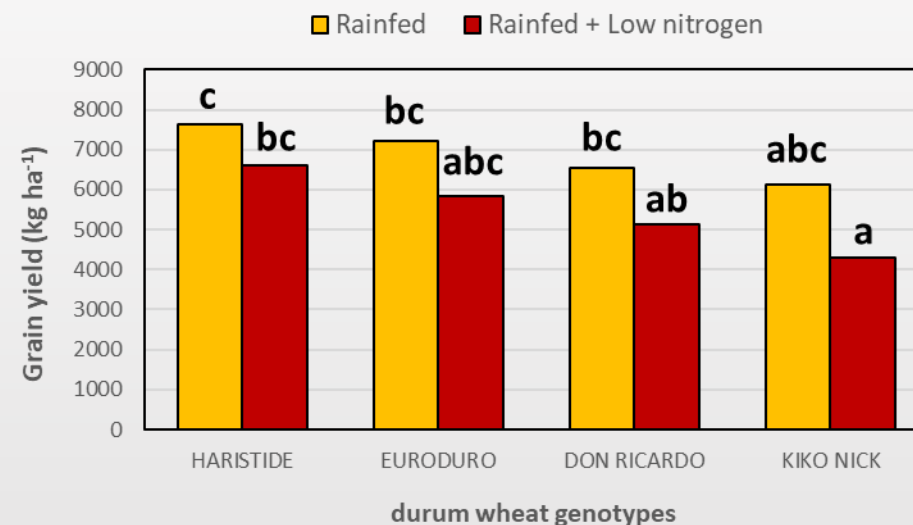
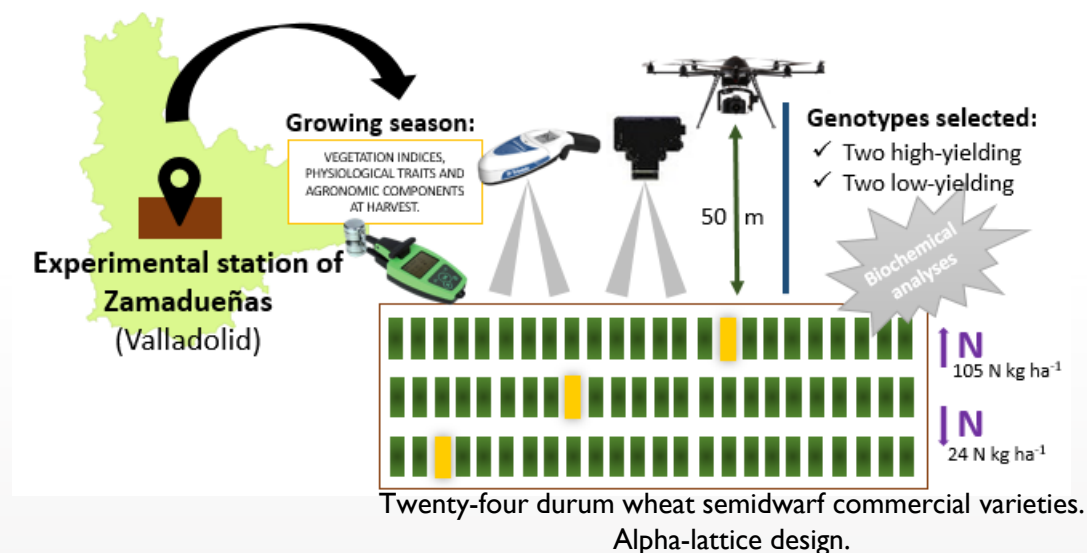
Vergara et al. (2020) *Cells*



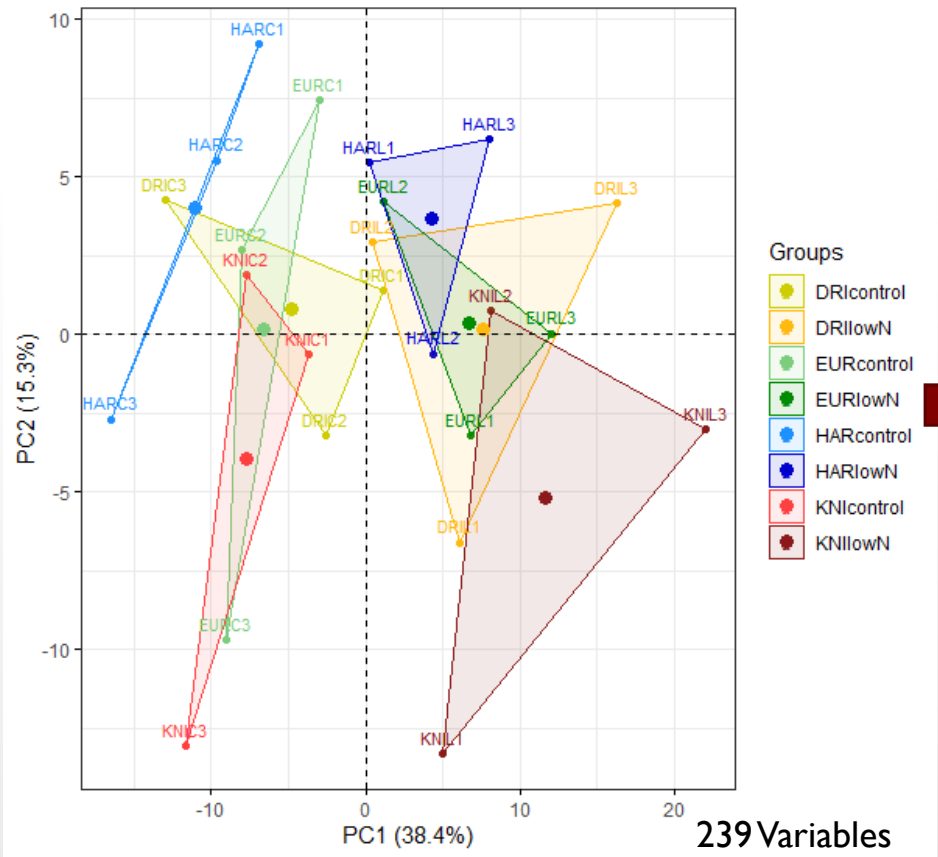
OBJECTIVES:

- (i) identify the specific phenotypic attributes that are related with grain yield and quality
- (i) the relative carbon/nitrogen contribution of **laminar** and **non-laminar** photosynthetic organs to developing grains.
- (ii) the effects of nitrogen availability.

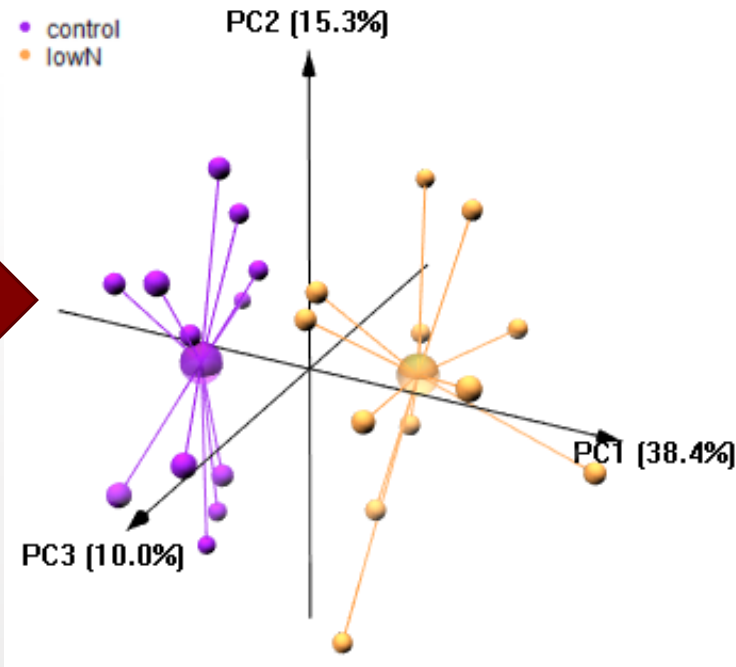
MATERIALS AND METHODS



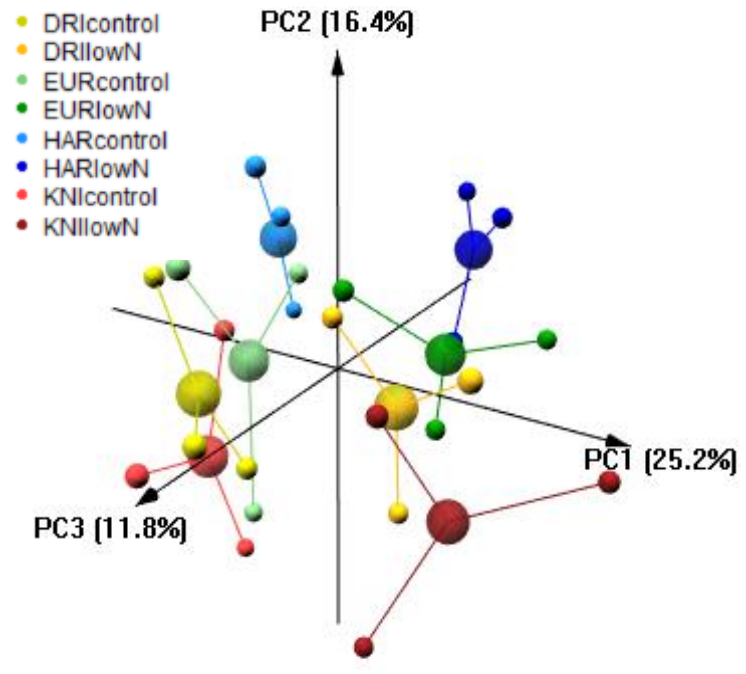
CROP SEASON 2017/2018: PHYSIOLOGICAL TRAITS



NITROGEN EFFECT



GENOTYPE VARIABILITY



Thank you!



INSTITUTO
TECNOLÓGICO
AGRARIO



Junta de
Castilla y León



UNIVERSITAT DE
BARCELONA



IRNASA
Instituto de Recursos Naturales
y Agrobiología de Salamanca



UNIVERSIDADE
NOVA
DE LISBOA

Max - Planck - Institut
für Molekulare Pflanzenphysiologie

Founded by:

PID2019-106650RB-C22



GOBIERNO
DE ESPAÑA

MINISTERIO
DE CIENCIA, INNOVACIÓN
Y UNIVERSIDADES



Activar Windows