

Physiological traits that might be relevant for future cereal breeding
16 December 2019 Sala de Graus, Building 1, ETSEA –University of Lleida

The world is in transition from an era of food abundance to one of scarcity. Over the last decade, world grain reserves have fallen by one third. World food prices have more than doubled, triggering a worldwide land rush and ushering in a new geopolitics of food. Food is the new oil. Land is the new gold.

Lester R. Brown, 2012.
Earth Policy Institute-Washington.

Context: Global projections to 2050 indicate (i) a still rather relevant world population growth (c. 3 billion more people to be fed), (ii) increasing meat consumption which requires large amounts of cereals (due to the low efficiency of grain-to-meat conversion), and (iii) greater needs of biofuel production. All these elements lead to dramatically important increases in demand of cereals in the relatively near future. Projections suggest that yield of cereals must increase by at least 50% in the next 3-4 decades. Unlike in the recent past, in the future the use of resources for crop growth such as irrigation water, pesticides and N fertilisers will hardly increase noticeably (they may eventually decrease!). In this context, genetic gains in yield at least similar to, if not larger than, those of the Green Revolution are required. One element that has to be considered for helping to achieve that requirement would be the identification of traits putatively related to cereal yield. Any synergies between researchers analysing these types of traits from the genetic and plant- and crop-physiological levels of organisation would be welcome.

Objective: In this context, the Spanish Network on Physiology for Breeding Cereal Yield and Quality (*FiRCMe*) together with AGROTECNIO (and with the support from the Department of Agriculture of the Government of Catalonia and the School of Agronomy of the University of Lleida), has organised this Workshop aiming to create the framework for presentation of recent research advances in this field, and discussions based on them, from members of the Network together with the invaluable contribution from four overseas highly recognised scientists in this field invited for the event.

Registration: The workshop is open to everyone*, but the space is limited (applications will be accepted on a first come first served basis). If you are interested in attending (beyond those members of the *FiRCMe* network, who are already registered), or have any doubts/questions please send a message before December 13th, to: agrotecnio@udl.cat with copy to slafer@pvcf.udl.cat and savin@pvcf.udl.cat.

* Although there is no specific fee for attending the workshop, please be aware that if you register you commit to cover the expenses for the lunch and the coffee breaks, as it will be ordered for all registered people together beforehand. That cost will be less than 20 € per capita (members of *FiRCMe* network have this cost already covered).

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Program

09.30-09.50	Registration
09.50-10.00	Introduction, I Romagosa & R Savin (AGROTECNIO – Univ Lleida)
10.00-10.45	V Sadras (SARDI, Univ Adelaide, Australia) Capture and efficiency in the use of nitrogen, radiation and water of wheat in low-rainfall environments
10.45-11.05	JL Arous (AGROTECNIO –Univ. Barcelona) Durum wheat phenotyping at UB-ITCAyL: from ideotype to regional adaptation
11.05-11.25	E Barbero (IRNASA - CSIC, Salamanca) Genotypic Variability in wheat grain yield and quality in the future climatic scenario
11.25-11.45	Coffee Break
11.45-12.30	J Palta (CSIRO, Univ Western Australia) Wheat root systems, drought resistance and N capture
12.30-12.50	A Cabeza (EEAD - CSIC, Zaragoza) Shovelomics in barley at commercial stands
12.50-13.10	R Sanchez (AGROTECNIO – Univ Lleida) Are awns truly relevant for cereal yield?
13.10-14.30	Lunch
14.30-15.15	A Hall (IFEVA - Univ. Buenos Aires, Argentina) Roots, cytokinins, and stay green in sunflower: Potentially important issues for cereals
15.15-15.35	G Slafer (AGROTECNIO – Univ Lleida) Is stay green relevant for further raising yield in wheat and barley?
15.35-15.55	S Kefauver (AGROTECNIO – Univ Barcelona) Recent Advancements in UAV Phenotyping for Cereal Crop Breeding
15.55-16.15	M Fernández (EEAD - CSIC, Zaragoza) Photosynthesis efficiency measured in barley crosses with a field fluorimeter
16.15-16.35	Coffee Break
16.35-17.20	R Richards (CSIRO, Australia) Is canopy architecture important for wheat yield?
17.20-17.40	S Ben Mariem (IdAB - CSIC, Pamplona) [CO ₂] x drought interaction on protein remobilizing capacity of durum wheat plants during grain filling
17.40-18.00	A Beral (INRA, Clermont-Ferrand, France) Canopy structure and grain weight determination in wheat
18.00-18.15	General discussion. R. Richards (CSIRO, Australia) & R Savin (AGROTECNIO – Univ Lleida)