Maximizing genetic diversity for better adaptation


The clustering of different germplasm type based on their molecular similarities provided clear indications for breeding, such as the fact that CIMMYT and ICARDA germplasm maintain good diversity within and among each other. Also, landraces from Central and South Asia would represent ideal pools to seek useful alleles and diversity overall.

Effective use of wide crosses in breeding


Adapting germplasm to heat and drought


Genomic selection: a new frontier for breeding


Performances of germplasm across sites


Performance of the international nursery IDYT38b were assessed on the basis of yield potential (G) and yield stability (GxG) to reveal 4 genotypes superior to all others (Zaghmar 2, Deraezizhan, Kunsternik, and Begrazia). Also, an historical set of ICARDA was used to confirm a solid genetic gain of +1.7% per year under drought, and only 0.1% in favorable.

Conclusions

The phenotyping methodologies presented here, used in combination with the association mapping panel described, have unlocked the discovery of several key QTLs for drought and heat adaptation. These QTLs are now driving the crossing program. In addition, the markers are under conversion and validation to KAASP and can then be used for MAS. Finally, GS can be applied to further accelerate the introgression.

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