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ABSTRACT PROCEEDINGS

POSTER PRESENTATIONS



SPANISH DURUM WHEAT LANDRACES PRESENT WIDE DIFERENCES WITH MODERN VARIETIES AT GENOMIC LEVEL**L Pascual**¹, P Giraldo¹, M López-Fernández¹, H Pérez-Peña¹, R Fite², E Benavente¹, JF Vazquez¹, M Ruiz²*¹Department of Biotechnology-Plant Biology, School of Agricultural, Food and Biosystems Engineering, Universidad Politécnica de Madrid, Madrid, Spain**²Plant Genetic Resources Centre, National Institute for Agricultural and Food Research and Technology, Alcalá de Henares, Madrid, Spain*

One of the main goals for the XXI century breeding is the development of cultivars that can maintain current yields under unfavorable conditions. Wheat landraces that have been grown under diverse and extreme local conditions include variability that will be necessary to achieve this objective; however, their efficient use requires an exhaustive characterization. Spanish durum wheat landraces conserved at National Plant Genetic Resources Center (CRF-INIA) and maintained in the national collection, were collected in the first half of the 20th century. Previous studies have shown the great variability of these materials when compared to other germplasm collections, however, the high throughput genomic characterization of this material has not been fully addressed. In the present study, we have characterized at genomic level a set of durum wheat accessions (*Triticum turgidum*, $2n=4x=28$, AABB) including 191 Spanish landraces selected from the 591 accessions conserved at CRF-INIA and 23 cultivars. DArTseq GBS approach has allowed us to identify 10K SNPs and 40K DArT high-quality markers that were mapped against the currently available bread wheat reference genome. The markers with known location were distributed in all the chromosomes, having a relatively well-balanced genome-wide coverage. The genetic analysis showed that Spanish durum wheat landraces are clustered in different groups, thus representing genetic pools capable to provide different allelic variation. The subspecies had a major impact on the population structure, identifying three different clusters that corresponded to subsps. durum, turgidum and dicoccon. The results showed a wider genetic diversity in landraces when compared to modern varieties, and a clear divergence between landraces and the reference set. Some genomic regions with patterns of variation that differ between landraces and reference varieties could be detected, suggesting the presence of loci selected during crop improvement that could help to target breeding efforts. Finally, to fully exploit the potential of durum wheat Spanish landraces, the collection is being phenotyped for a wide set of traits in order to conduct GWAS analysis.