

## **NEW EMMER AND SPELT CULTIVARS DEVELOPED BY INTROGRESSION OF SOME USEFUL DURUM AND BREAD WHEAT TRAITS**

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Emmer (*Triticum turgidum* L. subsp. *dicoccum* Schrank) and Spelt (*Triticum aestivum* L. subsp. *spelta*) hulled wheats were the main cereal crops in the Mediterranean basin during the Roman period, progressively replaced with hullless durum (*T. turgidum* subsp. *durum* Desf.) and bread (*T. aestivum* L. subsp. *aestivum* L.) wheat. Despite a number of defects as plant height, low grain yield and low pasta- and bread-making quality, spelt and emmer have been recovered in modern times thanks to their adaptability to poor soils and unfavourable climatic conditions. A breeding program based on crosses emmer x durum and spelt x bread wheat was developed by the C.R.A. Centre for Cereal Research at Foggia (Italy) to release new emmer and spelt cultivars with improved agronomic and qualitative traits for use by grain producers in Italy. During the selection process attention was given to the preservation of key morphological and functional traits of emmer and spelt species such as the tough glumes that tightly enclose the grains giving good protection of the stored grain against pest. The selection process was carried out in high input conditions (with N fertilization of 90 kg ha<sup>-1</sup>) and lead to identify 3 emmer cultivars (Mosè, Padre Pio and Davide) and 4 spelt cultivars (B1030, S2013, S2070 and P12). Our findings provide evidence that the breeding strategies exploiting hullless wheat as donor parent in selection programs aiming to develop hulled wheat cultivars adapted to low-input/organic cropping conditions could be successfully adopted overturning the roles, often adopted in the past, to improve hullless wheats.