PHENOTYPIC VARIATION OF A *Triticum monococcum* L. CORE COLLECTION

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INTRODUCTION

Einkorn (*Triticum monococcum* L.), a hulled diploid wheat, for thousands of years was the staple food of European agricultural populations. Today it is cropped only in marginal areas of the Mediterranean region.
Its good nutritional properties propose it as a perfect candidate for the manufacturing of new and special foods. CRA-SCV maintains an einkorn collection of more than 1600 accessions, domesticated and wild, which harbour a wide pool of genetic variability of the *Triticum* genus.
Aim of the research was to perform the phenotypic and molecular characterisation of a core collection, in order to identify the best allelic variants for production and quality.

MATERIALS AND METHODS

169 einkorn accessions, representing the variation observed in the whole collection and selected following geographic and qualitative criteria, were cropped during the 2010-11 and 2011-12 growing seasons in two Po plain locations, S. Angelo Lodigiano and Lodi. The genotypes were characterised for 24 morpho-physiological traits of plant, spike and kernel, as well as for their genetic diversity (microsatellites and AFLP).
This poster reports the results of the first year of testing; microsatellites characterisation (two microsatellites for each chromosome arm) was also completed, while AFLP fingerprinting is under way.

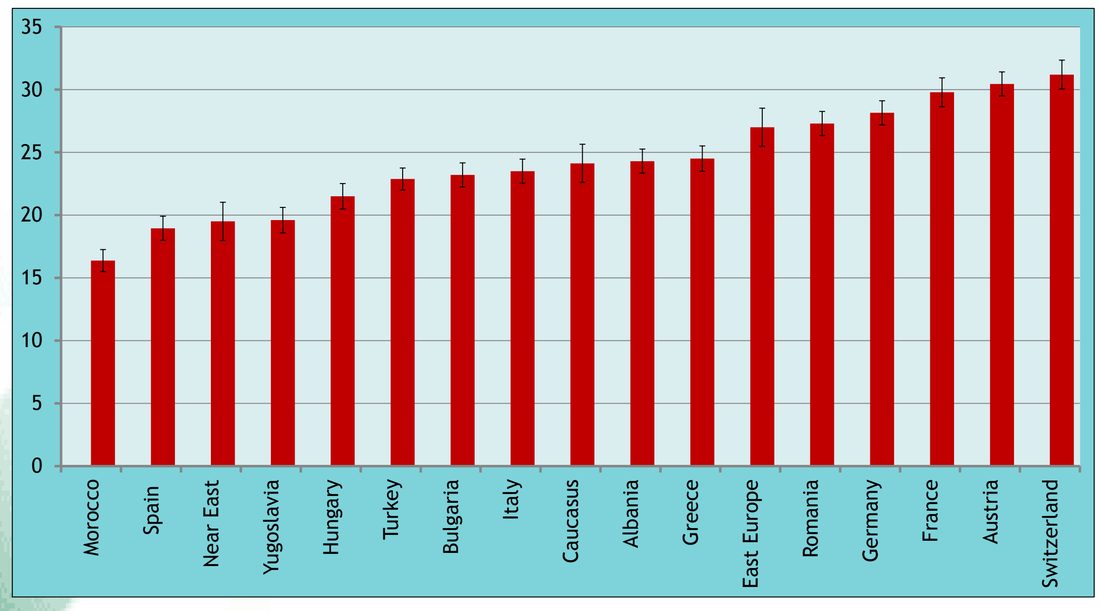

Figure 1. **Heading date of einkorns by country of origin**

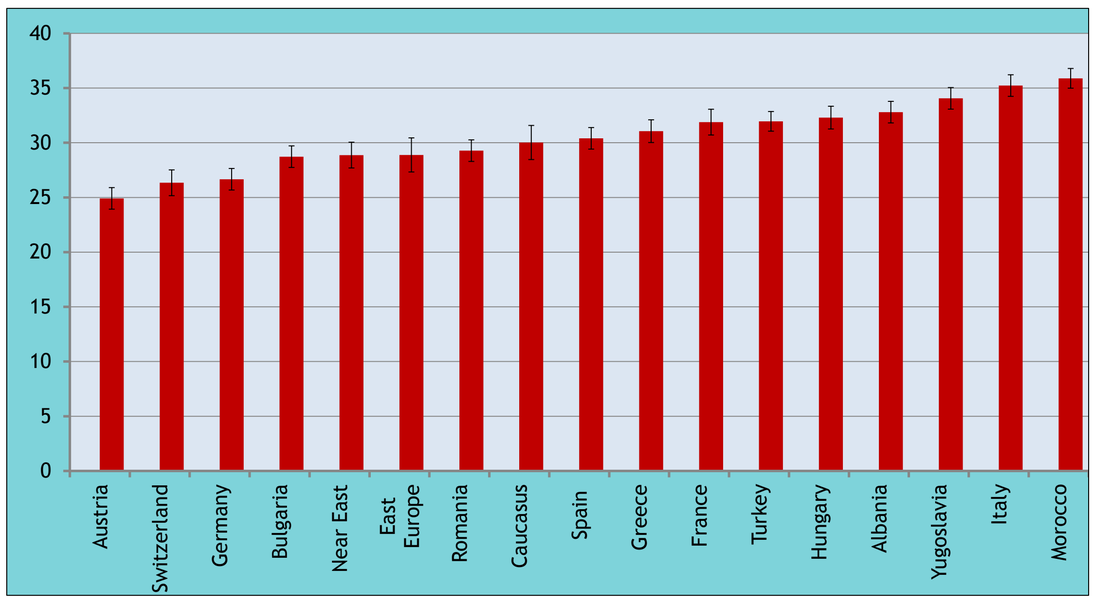

Figure 2. **Thousand kernels weigth of einkorns by country of origin**

RESULTS AND DISCUSSION

The ANOVA (not presented) showed the existence of significant differences between locations and among samples of different origin for most traits; the location x origin interaction was often not significant. In general, heading date was earlier for einkorns from continental Europe than for those from Mediterranean countries (Figure 1). On the contrary, 1000 kernels weight of southern Europe samples was higher than those of northern regions (Figure 2). Overall, spikes length (Figure 3) ranged from 5 to 10 cm; although einkorns from different countries were significantly different, no clear south-north gradient was observed (Figure 4). On the contrary, the number of spikelets per spike increased from south to north (Figure 5). Other traits with significant differences among samples from different origin were seed length, protein content and SDS sedimentation volume.

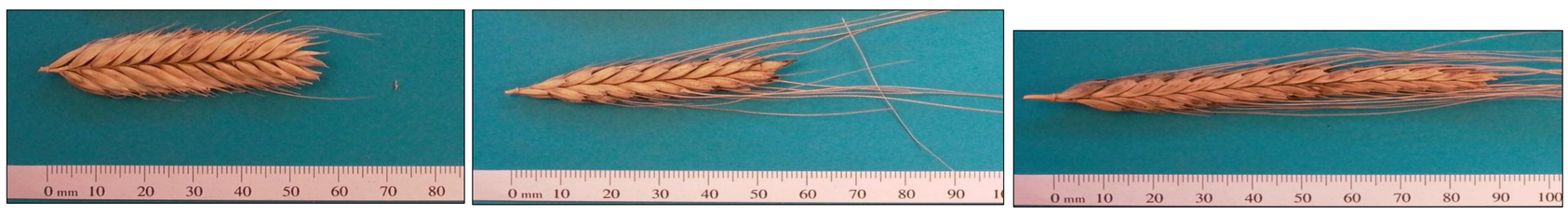

Figure 3. **Einkorn spikes**

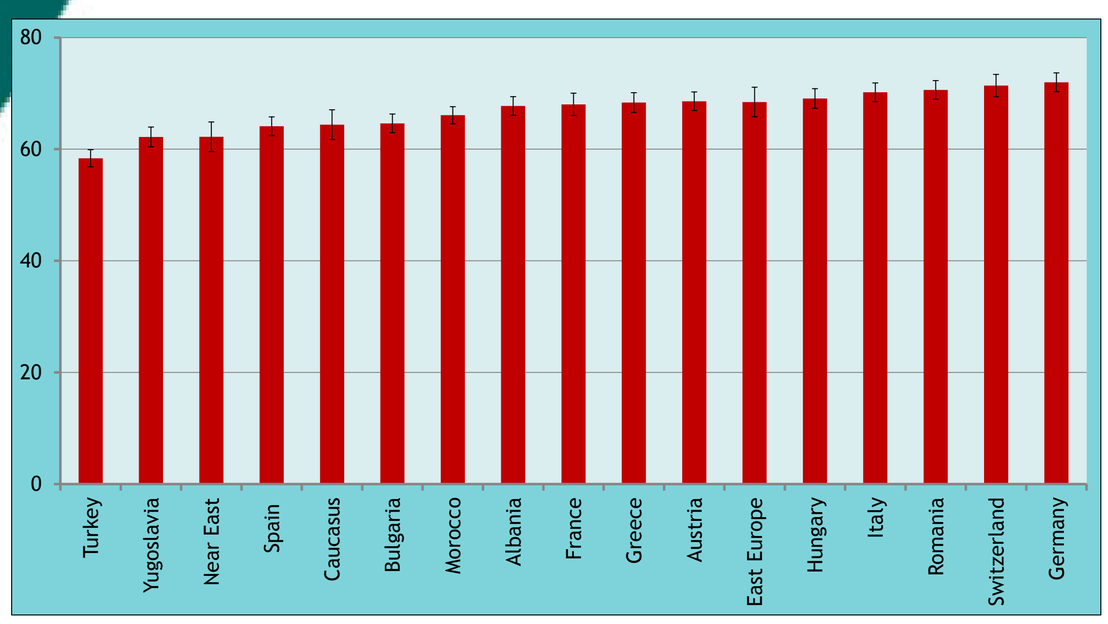

Figure 4. **Spike length of einkorns by country of origin**

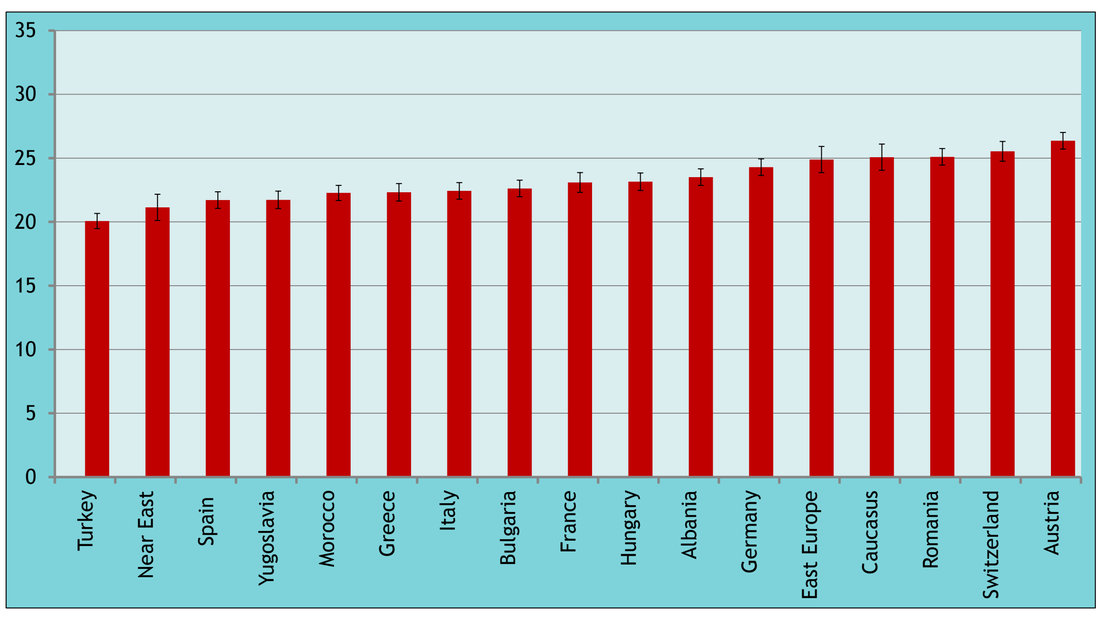

Figure 5. **N° spikelets per spike of einkorns by country of origin**

CONCLUSIONS

A broad phenotypical variation was observed among einkorn accessions for all the main morpho-physiological traits scored; association mapping combining morpho-physiological and molecular data is under way.

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