

## BOOK REVIEW

### Evolution of Wild Emmer and Wheat Improvement

E Nevo, AB Korol, A Beiles and T Fahima  
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The book has five parts: I – origin and evolution of wheat, II – population genetics of wild emmer wheat, III – genetic resources of wild emmer for wheat improvement, IV – genomic organization and genetic mapping, and V – conclusion and prospects.

Part I has three chapters that deal with the origins of the wheat genomes, their evolution, and domestication. In part II, the fourth chapter presents population genetic studies performed in the lab of the author and provides exhaustive information on variation based on allozymic variation, RAPDs, and SSRs. This chapter is overloaded with a large number of tables and detailed results that may be of interest only to people actively involved in this very specific area.

The fifth chapter reaches new levels of tiresome detail concerning the microgeography of allozymes and DNA polymorphism in *Triticum dicoccoides*. This chapter is of extreme exclusivity, dealing with studies conducted by Dr Nevo's group to the exclusion of everything else, and mostly summarizes papers on the variation of *T. dicoccoides* in populations collected in Israel. It is extremely detailed in providing documentation on allele frequencies in subpopulations, genetic variation in microclimatic niches, linkage disequilibria between paired allozymes in microclimatic niches, microsatellite diversity, and so on. The chapter seemingly aims at providing all answers to all possible questions, and the reader is provided with huge servings on *T. dicoccoides* genetic diversity in microclimatic niches in the north of Israel.

In part III, the sixth chapter deals mostly with variation found in *T. dicoccoides* in respect to grain

protein quality. The glutenins, amino-acid isozymes, and amylases are described in detail. Again, the information is almost exclusively derived from Nevo's papers, and the rest of the world is conspicuously ignored. Several specific traits such as heat production and sodium uptake are mentioned. Disease resistance polymorphisms in *T. dicoccoides* collected in various regions of Israel are described in extreme detail with no reference to disease resistances found in other places by other groups.

Part IV (Chapters 7 – 9) deals with genome organization and genetic mapping of *T. dicoccoides*. In Chapter 7, the genetic maps of the seven chromosomes of the A and B genomes are presented. The distribution of the molecular markers, structural changes of the chromosomes segregation, and recombination are described in detail. Genetic mapping of agronomically important traits is presented in Chapter 8. An interesting example is the high-density molecular map of stripe rust resistance. The mapping of QTLs for agronomic traits described in detail may contribute to breeding and to the cloning of genes of interest.

The ninth chapter deals with the molecular evolution and ecological stress in wild emmer. Nevo's studies on natural selection and geographical variation are very dominant in this chapter too. The old claims pertaining to a connection between genetic diversity and divergence in wild emmer and biotic and abiotic diversity are presented. Very much is made out of very little, and correlations that can at best explain 4% of the variation are presented as world-shattering discoveries. In conclusion, the book is essentially a summary of Nevo's work on wheat and its relatives.

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