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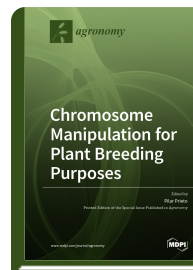
Chromosome Manipulation for Plant Breeding Purposes

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The ability to exploit the potential of wild relatives carrying beneficial traits is a major goal in breeding programs. However, it relies on the possibility of the chromosomes from the crop and wild species in interspecific crosses to recognize, associate, and undergo crossover formation during meiosis, the cellular process responsible for producing gametes with half the genetic content of their parent cells. Unfortunately, in most cases, a barrier exists preventing successful hybridization between the wild and crop chromosomes. Understanding the mechanisms controlling chromosome associations during meiosis are of great interest in plant breeding and will allow chromosome manipulation to introduce genetic variability from related species into a crop. In addition to interspecific hybrids, other materials, such as natural and synthetic polyploids and introgression lines derived from allopolyploids, among others, are powerful tools in the framework of plant breeding. For example, an extra pair of alien chromosomes in the full genome complement of a crop species has been frequently used as a first step to access genetic variation from the secondary gene pool in breeding programs. In addition, such introgression lines are also pivotal in the study of interspecific genetic interactions, in the chromosomal location of genetic markers, and in the study of chromosome structure and behavior in somatic and meiotic cells. Contained in this Special Issue are accounts of original research, including new tools to identify chromosome introgressions and the development and characterization of introgression lines and interspecific hybrids carrying desirable agronomic traits for plant breeding purposes. Also included are reviews about the chromosome engineering of tropical cash crops and the effect of chromosome structure on chromosome associations and



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