

Preface

Plant breeders are engaged in changing and improving qualitative, quantitative and quasi-quantitative traits. Breeding methodologies for improving a trait depend on the genetic architecture of that trait. Further, choice of a breeding method depends on the breeding system. Practical plant breeding products include improved pure breeding lines, populations, hybrids, composites and synthetics. The conventional breeding methods include pedigree, bulk, single seed descent, dihaploidy and backcross. Population improvement methods include various inter and intra-population improvement methods. Hybrid development can be facilitated using male sterility and self incompatibility mechanisms. Use of estimates of inbreeding coefficient and coefficient of coancestry can be used in improving prediction of the performance of hybrids being developed. Heterotic pools for developing hybrids are being constituted and the molecular mechanism underlying host-pathogen recognition is now recognized. Mutation breeding is employed in creating variability and developing variety in annual as well as perennial crops.

With the advent of recombinant DNA technology and molecular marker technology conventional breeding methods are now being supplemented by the non-conventional methods for improving traits. The non-conventional technology includes transgenic technology (for developing resistant variety against pathogens and insects in general and development of fruits as a source of oral vaccines or drugs in particular), terminator technology, hybrid development technology, etc. Tissue culture techniques are being used to multiply annual as well as perennial crops. Germplasm collection and conservation has got much relevance today when the diversity is being eroded.

This book ends with a chapter on 'Participatory approach in plant breeding and intellectual property rights (IPR). Participatory approach of breeding has got relevance these days as the farmers (or the users) will get the opportunity to select the right type of variety for themselves and further, it will help breeders in prioritization of breeding objective. Conversant with IPR is essential in this era of free trade.

I would like to thank Mr. N. K. Mehra, Publisher and Managing Director, Narosa, New Delhi for his suggestion to write this book on plant breeding.

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