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978-0-521-11760-9 - Evolutionary Studies in World Crops: Diversity and Change in the Indian Subcontinent

Edited by Joseph Hutchinson

Frontmatter

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EVOLUTIONARY STUDIES IN WORLD CROPS

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Edited by

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Preface

De Candolle is the father of the study of crop plant evolution. His classic work was the first attempt to set out in order what was known of the botanical history of domesticated plants. It was not until half a century had elapsed that another great botanist, Vavilov, took up the subject and advanced our understanding by his extensive studies of crop plants in their areas of origin, and by the analysis of the distribution of crop plant variability in his classic papers.

Since Vavilov's time there has been no masterly synthesis of our knowledge such as his, but instead a series of individual studies of crop plant species that have broadened our understanding very greatly. In 1962 a series of lectures on Crop Plant Evolution was organised in Cambridge and published as a volume of essays. They contribute to our knowledge of the range of plants on which there are specialists in or near Cambridge. They do not give a broad picture, but this is not the time to paint on a large canvas. In the present state of knowledge surveys of limited areas of the field are more appropriate.

When I was in India from 1933 to 1937, I was impressed above all else with the wealth of material of genetic interest in the long-established crop plant populations of Indian agriculture. When I had the opportunity to return to India, I thought immediately of this wealth, and of the new knowledge that has been built up and its significance for the study of crop plant evolution. I hoped that we might get together the experts in this field and make a collaborative study of the evolution that has gone on in this subcontinent. I found that the time was even more opportune than I had supposed. Not only is there a great wealth of knowledge of the subject, but this is a critical period. For perhaps 4000 years crop plants have been subjected to a farming environment that only changed slowly. In the last few years the environment to which they must adapt has changed very greatly and is in process of changing even more. So we are in a most favourable position to review the results of past selective forces, and to survey the future and the selective forces it will probably bring to bear.

This was the reason for holding a symposium on Crop Plant Evolution at the I.A.R.I. in New Delhi on 10–13 March 1970. It began with a consideration of the history of agriculture. One of the great advances in our knowledge has been the dating by archaeologists of the beginnings of agriculture and of some of the major events in its history. It is possible now, as never before, to set crop plant evolution against the time scale of agricultural development. So we can determine the rate

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of evolution with some precision, and we can safeguard ourselves against historical reconstructions that would have taken more time than was actually available.

There followed consideration of a range of the crops that have evolved in India. They are of diverse origins. First are those, like wheat, that were among the earliest domesticates in west Asia and were brought to India, probably by the first farming immigrants. Then there are the indigenous Indian crops, and the crops of African origin, domesticated in these two continents from the wild, often with the descendants of their wild ancestors growing alongside them. There are some crops that were brought from southeast Asia. Finally, there are the comparatively recent introductions from the Americas. All save those from the Americas are ancient components of Indian agriculture. Indeed, they are so long-established that only in recent years have their origins been worked out. Even now, there is considerable uncertainty about the provenance of some of the crops of the Indo-African group, and it seems preferable for the present not to attempt a definitive classification into an Indian and an African group.

It is doubtful whether any country, even so large a country as India, has so diverse a repertoire of crops. They have all changed and developed in response to the selective forces of Indian agriculture. This was the material for the symposium. Not all Indian crops were discussed. In some, the greater part of the evolutionary changes following domestication have taken place outside India. Some have recently been the subject of authoritative studies published elsewhere. The accounts here published are intended to complement other studies in crop plant evolution, and to set out the impact of the great agrarian cultures of India on the wide range of crop plants on which they depended.

*St. John's College
Cambridge 1973*

J.B. Hutchinson