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THE GROUNDNUT CROP

A scientific basis for improvement

Edited by

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Series foreword

This book is a most welcome addition to the World Crop Series. For although in terms of world figures groundnut annual production (in shell) at 23 506 000 tonnes is second to and well below that of soyabean at 114 011 000 tonnes of grain, it is of special importance in developing countries. Thus about ten times as much of the groundnut crop is produced in developing countries than in developed countries, whereas well over half the production of soyabean is in developed countries (*FAO Yearbook, 1992*). Moreover, the groundnut crop has a special role in sustaining the agricultural systems of the semi-arid tropics where, because of the stressful climates, farming is particularly difficult.

This series recognizes that, because the disciplines contributing to crop improvement are becoming more specialized, it is increasingly difficult for the specialists involved to understand each other's language and perceptions. It is not only a problem for those active in research but is perhaps an even greater difficulty for those who are involved in agricultural development, extension and education to obtain a critical, balanced and up-to-date view of the scientific advances that are contributing to crop improvement.

At the same time it is evident from the way in which research priorities and programmes are being addressed internationally that increasing emphasis is being placed on multidisciplinary projects. Hence, in spite of increased specialization, the need for scientists to understand each other and integrate their efforts is also increasing. The multidisciplinary approach is evident, for example, in the project-based system of organization and management that has been recently introduced in the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT). This is the institute within the system of eighteen International Centres of the Consultative Group for International Agricultural Research which has been given a special responsibility to work on the groundnut crop and also to conserve the world germplasm collection of this species and its wild relatives. It is not surprising, therefore, that several of the authors of this book are ICRISAT scientists. But interest in the crop is not restricted to the semi-arid tropics; and while the major production regions are India, China and Africa (in that order) it is also important elsewhere,

especially in the USA. Scientific expertise in the crop extends even wider and the authors who were invited to contribute to this book by the editor reflect the considerable international interest in groundnuts.

I believe the result of this combined effort will become an essential source of ideas and information for anyone who takes more than a passing interest in this crop. While making no scientific compromises, the language is meant to be comprehensible to anyone with some understanding of biological and agricultural sciences. It should therefore be a considerable aid to the multidisciplinary approaches that are now a feature of agricultural research and development.

E.H. Roberts
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Preface

The event which threw the 'Groundnut Crop' into sharpest relief was undoubtedly the monumental fiasco of the East African Groundnut Scheme, conceived in 1946. What had been an interesting botanical curiosity and the source of useful foods, edible oils and feeding stuffs became the butt of innumerable comedians and to be in any way associated with the crop in the 1950s was to be a sitting target for wits and humorists of every stripe. To be informed within 24 hours of arrival in Northern Rhodesia that I was to devote my attention and energies to this crop made me feel that I had drawn the shortest of short straws. It was some while before gloom and despondency lifted but by the end of my first crop season I realized that in fact I had not been given the metaphorical poisoned chalice but something that was to become an abiding interest, which has remained fresh over a period of 40 years.

Three events in that first season (1954–5) launched me on a course which would over the years give me enormous job satisfaction. Stephen Hoyle of the Nyasaland Department of Agriculture (a groundnut enthusiast if ever there was one) made available to me his own variety collection. Early in 1955 I received from Queensland, in response to a request for groundnut material, several selections of a Bolivian groundnut landrace named Mani Pintar which were to prove extremely interesting. The final gift of the fairy godmother was a copy of *The Peanut – the Unpredictable Legume*, which became my groundnut bible during my spell in Africa, as it did for many others in the groundnut (or peanut) world. It was so successful and highly regarded that its successor *Peanuts – Culture and Uses* did not appear until 1973 – a lapse of 22 years. In the meantime, however, two useful if modest publications were produced in 1967: the PANS (Pest Articles and News Summaries) Manual No. 2, *Pest control in GROUNDNUTS* (published by the Overseas Development Agency in the UK) and *Groundnut Production/Groundnut Research 1954–61* published in Lusaka by the Government Printer, Zambia.

Advances in production technology and research continued at an accelerating pace and in 1982 the American Peanut Research and Education Association (now Society) published *Peanut Science and Technology*, a

successor to its earlier volume, *Peanuts – Culture and Uses*. This organization has since 1974 published its own journal *Peanut Science* which provides a useful vehicle for publication on any aspect of investigation related to the crop. Prior to that date, APREA had published its own untitled journal for a number of years. In addition, the Proceedings of its annual meetings are invaluable sources of information – going back to the early 1960s if one also includes those of its predecessor, the Peanut Improvement Working Group.

The first major work on the groundnut to emerge from the developing world was published in 1988 by the Indian Council of Agricultural Research with a similar format and organization of material to the APREA publications. This very valuable and substantial piece of work is concerned primarily with the Indian context while the corresponding APREA publications address the North American situation. Thus there appears to be scope for a broader approach to the crop, incorporating experience with the groundnut crop in the rest of the world. This was the motivating force behind the present volume, which attempts where possible to break new ground with the presentation of authoritative reviews such as that of Professor Janet Sprent as well as broad geographic coverage of other topics such as breeding and the control of pests and disease.

Any editor setting about the task of assembling a cast of authors does so with a set of ideals in mind, well knowing whom to recruit. The process is beset with trials and disappointments and this volume has had its fair share or more of these. It is with the deepest regret that the death of a major contributor, Keith Middleton, must be recorded. The chapter on Diseases had been fully drafted by the time of his death and was completed by his colleagues at ICRISAT. I count myself privileged and honoured to have met him in the year before his untimely death. He will be sorely missed.

The current depressed state of the world economy has not been without its effects on contributors who had agreed in good faith to produce chapters but in the event were unable to do so. An individual threatened by the horrors of 'rationalization' may not be in the best condition to discharge obligations gladly accepted in happier times. A somewhat fuller coverage had been anticipated but in fairness to contributors who had met the deadlines the decision was taken to proceed, with the editor making an attempt to fill as far as possible the lacunae left by the contributions which failed to materialize.

Acknowledgement must be given to ICRISAT's work on the groundnut crop, guided by Dr J.G. Ryan, its present director, and his predecessor Dr L.D. Swindale. The encouragement given by Dr Y.L. Nene as Deputy Director General is acknowledged gratefully. The experience of editing this work has been very rewarding and has given me a pretext for making contact with those whose work I have long admired but whom otherwise I might never have approached.

J. Smartt
Southampton, October, 1993