

4. Mike Hales, *Science or Society? The Politics of the Work of Scientists*, Pan Books, London, 1982.
5. John Turney (ed.), *Sci-Tech Report: Current Issues in Science and Technology*, Pluto Press, London, 1984.

**Agro-Research for the Semi-Arid Tropics: North West Australia edited by Russell C. Muchow**

(University of Queensland Press, St. Lucia, 1985) pp. xxii + 608, \$50.00, ISBN 0 7022 1776 X.

North West Australia has a low and erratic rainfall. The soils have low levels of organic matter and are susceptible to erosion by wind and water. Large areas are covered by open forests full of termite riddled trees. Transport difficulties result in high costs in getting the inputs in and the outputs out. The population is sparse — only 120,000 in the Northern Territory. Over most of the region an average man doing light work at 3 o'clock in the afternoon suffers discomfort from the heat for about half the year. At first sight, such an area would not appear to be especially attractive to the agriculturalist. Nevertheless, in March 1983 some two hundred agricultural scientists, economists and administrators gathered in Darwin for a symposium on the agricultural research which has been carried out in the North West of Australia. The papers they heard have been gathered to form this book.

The book is divided into eight parts. The first contains a keynote address by Sir John Crawford on 'The process of agricultural development and the role of agricultural research' and a brief account of the history of agriculture in North West Australia. The second is concerned with the constraints on agricultural development. Williams, Day, Isbell and Reddy discuss soils and climate, pointing out that the estimates which have previously been made of the area with potential for arable farming may have been over optimistic. They also compare the semi-arid tropics in Australia with those in India, Africa and South America and conclude that the former "have differences that require the development of unique agricultural systems". Andrew, Gowland, Holt, Mott and Strickland examine the constraints imposed by vegetation and animals and suggest that they are broadly similar to those in other semi-arid tropical regions. They produce a formidable list of actual and potential pests and diseases, from the purple swamp hen to Java downy mildew, and also stress that organisms which appear benign today may become serious pests in the future.

Part three consists of a review of the research that has been carried out in North West Australia on maize and sorghum, legumes and oilseeds (principally peanuts, soyabeans, mungbeans, sunflower and safflower), cotton, fibre crops for paper pulp production, timber and pulpwood, sugar cane, fruit and vegetables, rice, and improved pasture plants. The results are summarised, sometimes in great detail, and there are discussions of the shortcomings of existing research and suggestions for future work in each paper.

Part four is concerned with subject based research, covering soil surface management, weeds, insects, diseases, irrigation and fertilisers. There are

many pleas for more research, usually arguing that if such research is to be applicable to North West Australia it must be carried out in the region. The next part examines agricultural systems, including beef production, inter-cropping and tropical legume ley farming. There is also a paper which sets out the lessons which agriculturalists might learn from a study of tropical ecology. Finally part six looks at the history and present status of the Ord River Irrigation Scheme and the Agricultural Development and Marketing Authority Scheme in the Daly River Basin, paying particular attention to the contribution of research to the successes and failures encountered in the two schemes.

The last two parts of the book are concerned more with the methodology of research than with reporting the results of it in North West Australia. Dillon and Virmani provide an account of the farming systems approach to research, while Nix produces a critique of the traditional methods of agricultural experimentation. Finally, Henzell reviews some of the problems of carrying out research in North West Australia and assesses the effectiveness of the work that has been done.

The book ends with an account of an evening session of the symposium which was devoted to the problem of technology transfer between Australia and developing countries, and an appendix which brings together a large amount of data on the physical environment of North West Australia. There is no index.

One conclusion that can immediately be drawn from this tedious catalogue of the book's contents is that it provides a comprehensive review of the research that has taken place in the region. And such is the length of the bibliographies which accompany each paper that one cannot imagine that any significant body of work has been left out. Yet there is little discussion of the reason why it was felt necessary to spend public money on doing all this work. Henzell is an exception to this stricture (even so, his remarks on the reasons for research and development occupy less than three pages) and he stresses the comparative disadvantages of the region, concluding that the issues are complex and the purposes of research not precisely defined. Crawford, in his keynote address, also tackles this issue briefly, as do several of the other contributors. Some mention the need to supply local markets. Others imply that demand will increase because the mineral extraction industry is expanding. But there is no systematic analysis of the balance between local and export demand and local and imported supplies, or of the macroeconomic and political implications of agricultural expansion or contraction.

Most of the papers are concerned with the technical problems of producing crops and animals, and pay little attention to the costs and benefits of doing so. Cox and Chapman, in their paper on sugar cane, conclude that "No major problems in commercial sugar-cane production on the Ord are foreseen at this stage". The Western Australian government presumably concurs with this view, having asked a number of private sugar companies to investigate the establishment of sugar cane production there. Yet the real price of sugar on the world market has declined fairly consistently over the last ten years. At the time of writing it is below 4 cents (US 1985) per pound. Is this not a major problem?

The objectives of the symposium and the book are set out in the preface: they are to increase understanding of the problems, increase the efficiency of

research and encourage the scientists working in the region to see themselves as part of the world wide effort to overcome the problems of the semi-arid tropics. Are these objectives achieved? There is certainly an extensive review of the current state of research in the region, which can only assist the attainment of the first two objectives. Whether those already working in the field will learn anything about their own specialised interests is another question. Many of the papers emphasise the differences (especially in population density and the availability of capital) between North West Australia and semi-arid tropical areas in other parts of the world, so the attainment of the third objective is dubious.

Thus this book will appeal most to scientists and agriculturalists who are new to North West Australia, and want to know the story so far. Given the difficulties experienced by many research organisations in retaining staff in the region (Henzell's paper contains the story of one who lasted less than a day), this may produce considerable sales.

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**Marginal Manager — The Changing Role of Supervisors in Australia** by *Peter Gilmour and Russell Lansbury*  
(University of Queensland Press, St. Lucia, Qld., 1984) pp. xii + 179,  
ISBN 0 7022 1686 0.

Robotics, automation, information and communication technologies are forcing structural change on Australian manufacturing industries. This book reviews and analyses a key aspect of the implementation of such change — the role of the first-line manager.

The authors presumably chose the title from their reference to the 1949 American abstract of D.E. Bray's work, *Marginal Men of Industry: The Foreman*. Reading this abstract, one is left wondering just how much change there has been in the intervening thirty-five years. Bray in 1949, and Gilmour and Lansbury in 1984 each talk of the supervisor or first-line manager's 'man in the middle' role and the personal conflict and disruption to managerial organisation that this can produce unless properly understood and managed. Both works also cover the three roles of the first-line manager; supervising subordinates, linking with other management and resolving technical problems.

From that perspective this book is indeed timely because if there has not been much change in the last thirty-five years, there will surely be in the next. Increasing demands for some form of industrial democracy and the accelerating impact of automation and technology in the workplace are just two of the many significant pressures that will change the first-line manager's role.

It is made abundantly clear by the authors that as Australian industry adapts to these pressures, no standard solution in terms of the role of first-line managers will be available as this vitally important industrial role is not executed by a homogenised group within the workforce. The authors identify