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BOOK REVIEWS AND NOTES

Long-term Projections of Supply and Demand for Agricultural Products in Israel: I. General View and Summary, Yair Mundlak. Jerusalem: Falk Project for Economic Research in Israel, The Faculty of Agriculture—The Hebrew University, 1964. Pp. 224.

This volume summarizes and analyzes the results of a study of long-term projections of supply and demand for Israeli agriculture obtained by a research team directed by Dr Yair Mundlak. The major part of the project consisted of investigations into specific branches of Israeli agriculture and these appear in a separate volume. In the present volume the methodology and general approach adopted to project quantities of agricultural products to be produced and consumed in Israel for the years 1965 and 1975 (if competitive conditions prevail) are discussed. Mundlak's discussion and evaluation of his methodology and of the policy implications of his results should prove of interest to Australian readers.

A major portion of the book is devoted to an analysis of the major trends and relationships between the more important variables in the development of agriculture in Israel over the period 1949 to 1961. This analysis is used to support the hypothesis that the major variables affecting supply and demand can be used in a general explanation of the development of agriculture in Israel.

Proceeding from this hypothesis, Mundlak constructs a simultaneous equation model of the Israeli agricultural sector. The model consists of demand and supply equations for each of the branches of agriculture and restrictions for those resources which are assumed to be exogenous. One of the assumptions made is that of perfect competition which, amongst other things, implies perfect knowledge and perfect mobility of resources. In the case of labour the latter may well be erroneous when one considers the development of agriculture in other countries.

Mundlak then discusses the methods used to estimate the parameters in his model, and drawing upon the results of the branch studies he presents the results. The demand functions are estimated by ordinary least squares regression methods using both time series and cross section data. One criticism that can be made is that no estimate of the sampling variance of the estimated price, income and cross elasticities is given. However, the parameter estimates are subjected to the "Student's" t test. Much less success was obtained in estimating supply equations by regression techniques. This was more apparent for those products which have a relatively long production period. For this reason the reviewer wonders why the author did not attempt to fit a distributed-lag or similar model. For those branches of agriculture in which regression methods were inadequate the supply information was gained from simulation studies on a sample of farms using mathematical programming. A check on the efficiency of the estimated functions for prediction purposes was made as more recent data became available. In most cases the level of error was below 10 per cent.

The method adopted to obtain 1965 supply and demand projections is essentially one of aggregating the results of the various studies on individual branches of agriculture which were reached on a partial equilibrium basis.

Mundlak reaches his final projections via an iterative procedure rather than by a simultaneous approach. The method chosen involved a considerable degree of subjective judgement. A considerable section of this analysis is thus devoted to elucidating and evaluating the many assumptions made. Finally the results are checked for their plausibility.

Projections for 1975 are reached by following a similar line of analysis. These projections are given in less detail and involve a greater degree of error. In fact this section of the book is not entirely convincing and did not come up to the reviewer's expectations after reading the earlier part of the book.

This volume should prove of value to anyone considering projection studies. The methodology and theory is clearly and convincingly written and from the example used a guide can be found on how to put theory to practical use.

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J. W. FREEBAIRN

The Principles and Practice of Agricultural Research, S. C. Salmon and A. A. Hanson. London: Leonard Hill, 1964. Pp. xi, 384. 75s. (Stg) or 116s (Aust.).

The first of four sections of text in this book reviews historically the progress of research mainly, but not exclusively, in agriculture. The treatment lacks great detail, but is effective in placing the role of research in perspective with other sources of progress. To some extent also, this section is integrated with the remainder of the book through the numerous cross-references to historical examples.

A second section, "The Philosophy of Research", deals with the nature of science, methods of research, sources of error and rules of evidence. The chapter on methods illustrates the lack of clear-cut divisions between different methodologies, while a later chapter on evidence and proof provides a discursive but useful outline of some of the problems of making recommendations on the basis of incomplete evidence.

A full section is devoted to statistical methods in research. The treatment in this section is in parts at an uneven level, and often merits the comment by the authors in their preface (p. v) that "It is recognised that the discussion of the statistical method is somewhat advanced for the beginner and not advanced enough for the more sophisticated." A relatively detailed treatment of analysis of variance and least significant differences contrasts with a very superficial "comparison of average and standard deviations". Discussion of binomial standard errors proceeds without any definition of the term "binomial" (p. 160).

Despite the later inclusion of a chapter on methods of research in agricultural economics, the relevance of production economics to a discussion of desirable intervals between treatment levels in experiments (p. 257) is ignored. Similarly on p. 275 a statement that farmers usually use rates "less than optimum" immediately precedes an explanation that they use the lower rates because they are more profitable. Some qualification of the term "optimum" would be highly desirable in a text that attempts to cover

"all fields of agricultural research" (p. v). More generally, the problem of differences in jargon used by workers in different fields is ignored throughout the text.

The final major section is on "Techniques in Agricultural Research", and includes chapters on selection and management of experiment sites; on size, shape and replication of plots; on experiments with farm animals; and on experimental design. Each of these chapters is less than exhaustive, but frequent references to particular research projects provide a useful review of many of the problems that can arise. Occasionally recommendations by the authors need some qualification: for example the discussion of management of grazing experiments on p. 304 recommends a level of technical perfection which could, for some experiments, produce results that would be misleading for practical application.

In view of the authors' aim to relate research in all fields of agriculture, it is unfortunate that agricultural economics is relegated to the final chapter. The discussion (pp. 305-6) of relationships amongst stocking rates, production per acre and production per animal would be considerably improved if attention were given to the problem of finding an economic optimum, as well as a technical optimum.

The chapter on research methods in agricultural economics provides an outline of the fields of activity covered by this discipline, but the role of economics in inter-disciplinary research and in the planning and analysis of technical experiments receives no mention. The book concludes with tables of formulae, statistical tables, an unclassified bibliography of about 400 items, and a relatively comprehensive index.

As must be expected of a text that attempts to cover such a wide range of research methods, the treatment is open to criticism in many places. Despite this, it is desirable reading for those who will later be concerned with more detailed treatment of methodology in specific fields; and it can be recommended strongly for readers such as agricultural college students or diplomates who receive little formal training in research methodology but whose work brings them in frequent contact with research or the published results of research. Those without previous knowledge of statistics will appreciate the frequent use of cross-referencing which should allow them to minimize time spent on the statistical chapters, but refer back to these from the applied chapters on techniques of research.

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Irrigation, Its Profitable Use for Agricultural and Horticultural Crops, Sylvia Laverton. London: Oxford University Press, 1964. Pp. x, 166, 34s. 9d.

Mrs Laverton has done an excellent job of bringing together, from widely scattered sources, information on the various aspects of spray irrigation in the United Kingdom. This has hitherto only been available in a variety of reports, bulletins, conference proceedings and scientific papers. It should be made clear however that this is a book which has been written specifically for British conditions, the major part of it consisting of empirical findings of local application only thus rendering the book of limited interest to Australians.

The author has, in a modest sized volume, dealt with many subjects having a bearing on irrigation. After an introductory chapter on the vagaries of the British climate which explain why irrigation has a place there, successive chapters deal with fundamental relationships between water, plant and soil, how irrigation need is estimated, water resources, equipment for irrigation, costs and returns, deciding when to irrigate and how much water to apply, some husbandry aspects of irrigation, frost protection by irrigation, and liquid manure irrigation. The sources of data used for the book are listed in a comprehensive annotated bibliography of some 200 references.

The chapter dealing with how irrigation need is estimated and the supporting tables showing average values of potential transpiration for various parts of the United Kingdom serves to indicate how much more information on the subject is available in that country than there is in Australia.

The two chapters of most potential interest to the economist, "What it costs to irrigate" and "Profits from irrigation", in fact have little relevance to Australia as the data presented are empirical findings specific to United Kingdom conditions. Even apart from the currency differences the physical basis of the findings are also quite different due to variations in soils, climate and so on.

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G. MASON

Methods of Farm Management Investigations for Improving Farm Productivity (Revised Edition), FAO Agricultural Development Paper No. 80; W. Y. Yang, Rome: Food and Agricultural Organization of the United Nations, 1965. Pp. xiv, 258. \$3.50 (U.S.), or 17s. 6d. (Stg).

This edition of this useful handbook substantially follows the first edition which was published under the same title but as FAO Agricultural Development Paper No. 64 in 1958. The comments in a book note in this *Review*¹ still apply.

As noted by the author, the main effort in revision has been to:

- "1. Include more examples from studies made in the developing areas.
2. Give more concrete descriptions to show the steps and procedures for making farm plans and budgets.
3. Add illustrations on the use of linear programming techniques for the solving of cost minimization problems.
4. Bring the material in the book up to date."

(P. v of 1965 edition.)

Numbering of pages has been changed and typography has been improved, but binding is poor for a book that is likely to be used frequently. The bibliography has been expanded slightly (although only five of the new inclusions have appeared since the previous edition).

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¹ This *Review*, Vol. 28, No. 1 (March, 1960), pp. 75-76.