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## Book Reviews

**Inventory of Agricultural Software in Australia and New Zealand**, G. P. Mickan, Queensland Department of Primary Industries, Brisbane. Pp. ix + 217. \$A15.00 paperbound.

For many computer users a major difficulty is finding the existence and source of computer software appropriate to their specialist needs or applications. Farmers and agricultural workers are not alone with this problem. Retail outlets with staff willing and able to assist users to locate the programs they need, are as common as unicorns. So a publication that endeavours to help the agriculturist find appropriate software fulfils a real need.

This inventory is an update of the 1982 publication *Inventory of Agriculturally-oriented Software in Australia and New Zealand*. It describes over 300 items of applications software. The entries are grouped by nine categories and forty-four subcategories, and detail the general type of system needed for their operation. A description of up to 120 words outlines the use and range of each program.

Three indexes supplement the codified main directory, listing programs by name in alphabetical order, by supplying organisation, and by major category order. Although helpful, these listings would be far more useful if program names were given, rather than code numbers. Price, machine type, and minimum required capacity could also be easily incorporated in these tabulations, to great advantage, whilst the "major category" code listing could be deleted, as it is already included as a prefix to the program code number. An additional appendix including a tabulation of programs by machine type would also avoid having to search each main entry individually to find what programs run on *your* machine.

Without preface or introduction, it is not clear what audience this publication is intended for. As the vast majority of programs listed run only on microcomputers, it is of little use to mainframe or minicomputer users. Yet eleven of the programs run only on

mainframes, and eight only on minicomputers. Further, eleven programs which are included, are not for sale or not available.

Even in the microcomputer group the representation from non-IBM machines is scanty. Nor are machine categories detailed enough. There is not a single, uniform type of IBM microcomputer. There are several versions, and for some programs, particularly those with graphics routines, the type of peripheral equipment is critical. Similarly with Apple IIs or Macintoshes, there are several machines in each group, and software compatibility is not perfect between them. As such, greater machine category detail would be a useful addition.

Some of the entries are spreadsheet templates, but no information is given to show if these, or other programs, can be run "out of the box", or if they require additional specific software for their operation.

For many entries, the operating system required is not stated, nor whether they are supplied on disk, tape, or only as a printed listing, or if they are copy protected.

As several machine-specific microcomputer magazines include thumbnail sketches of several hundred programs available for their particular micros alone, it seems this publication is far from comprehensive in its coverage. As a few spreadsheet, word processing and database programs are listed, why are the main contenders in these fields not included?

These omissions are not necessarily the fault of the author. The inventory was compiled from information supplied on a standard questionnaire circulated freely during 1987. Unfortunately, this passive approach has resulted in an incomplete and patchy response. Some suppliers have obviously included every program in their repertoire. Others have not responded, although their software may be amongst the best. A third of the suppliers have declined to state a price for their

programs. As prices given range from two free programs to two at \$6,500, with a median of \$490, vendors may be risking sales by conjuring false fears of expense with P.O.A. entries.

It is obviously impossible for any compiler to completely test such a range of programs, so reliance must be placed on suppliers to provide informative and comprehensive descriptions. However, operation documentation has always been a problem for computer users. It seems that many suppliers have yet to learn how to describe their wares adequately.

Cyril Catt

*N.S.W. Agriculture and Fisheries, Tocal*

**Simulation and Systems Analysis in Agriculture**, Csaba Csaki, Department of Agricultural Economics, Karl Marx University of Economics, Budapest, Hungary, 1986.

The aim of this book is "to aid micro and macro decision-making and thereby improve the practice of agricultural management by the use of systems simulation and the application of computers". As a frequent user and advocate of such technologies, I therefore looked forward to reading this book with some enthusiasm.

The first two chapters introduce the reader to the standard simulation jargon covering topics such as system hierarchies, model types and the use of random numbers. The important concepts of model construction, verification, validation and sensitivity analysis are briefly covered. Although reasonably comprehensible, I suspect few will feel sufficiently enlightened or motivated to then begin constructing a model of any consequence.

The author acknowledges that most of his own work has been done with other than production systems (p. 60). Some well-known production models are briefly outlined, along with a number of flowcharts, to illustrate how these might be assembled (e.g. J. C. Flinn, The simulation of a crop irrigation system; C. H. Baker and R. D. Horrocks, CORNMOD, a dynamic simulator of corn production; N.

McC. Graham *et al.*, Simulation of growth and production in sheep). An example of the ubiquitous machine breakdown simulation is also presented, this time using combine harvesters.

A major part of the book is devoted to modelling national agricultural systems, with emphasis on centrally planned economies as in Eastern Europe. As Professor Csaki explains "Production and consumption develop in a centrally planned economy fundamentally based on plan targets which express the basic rule of a centrally planned economy". Domestic prices, although their importance is increasing, nevertheless can only be regarded as a means for the realisation of the plan targets. The accomplishment of the plans and the maintenance of the desired development, thus require the continuous intervention of the government, that is, of the economic management authorities.

Integral components of a centrally planned economy are centrally planned food and agriculture systems. The Hungarian Agricultural Model (HAM) was therefore developed to provide a general modelling framework for the study of such a system. The model was used to address the development problems of Hungarian agriculture. It was concluded that Hungarian agriculture reacts slowly to changes in international markets, particularly because of "insufficient efficiency of relations existing between the world market and the producers".

The CMEA Agricultural Model is also described, this covering European CMEA countries (Bulgaria, Czechoslovakia, G.D.R., Hungary, Poland and Rumania) and the Soviet Union (including its Asian territories). This has been used as the basis for projecting agricultural development to the year 2000, using scenarios based on either constant self-sufficiency ratios or on free trade.

This book should, therefore, be of particular interest to economists and students who wish to compare the management philosophies of centrally planned and market economies and deducing how such economies might interact. In this respect, the author is to be complimented on the clarity and frankness

of his exposition.

A number of excellent books and papers on the simulation of crop and livestock production systems have been published in the past five years. Developments in computer hardware and relevant software have also been considerable to say the least. However, none of the papers or models cited in this book postdate 1982, the vast majority being from more than a decade ago. In fact, this book is a revised and enlarged version of one published in Hungary in 1976. Whilst probably very useful and topical at the time, particularly in Eastern Europe, with respect to the simulation and analysis of agricultural production systems it is now well and truly dated.

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**The Economics of Agricultural Policies,**  
Bruce L. Gardner, Macmillan Publishing  
Co., New York, December 1987. Pp. xi +  
387. \$US 42.50. ISBN: 0-02-947760-3.

Gardner states in his Introduction that "The principal aim of this book is to present methods by which some assertions [about the impacts of agricultural policies]... can be evaluated, and by which useful assessments of agricultural policies can be produced... The book presents in detail approaches to modelling the agricultural economy that are helpful in applying both positive and normative economics." (p. 5).

The book is divided into four Parts, and also includes a list of common abbreviations, an extensive reference list and an index. Part One introduces the issues; describes the range of commodity market intervention instruments in both graphical and algebraic terms; and then analyses the current US grains policy package in a supply-demand framework. Gardner makes the point that the study of actual policy packages is far more difficult than the comparative statics of particular policy instruments in particular commodity markets, because:

(a) policies often involve the

simultaneous use of several instruments;

(b) levels of variables (for example the actual value of the loan rate), as well as changes due to a policy, are important; and

(c) there may be spillover impacts on the markets for other commodities and/or inputs.

An emphasis on price theory continues in Part Two, where the author develops models for the *assessment* of the effects of agricultural policies. The important role of input markets is recognised, especially in analysing policies such as acreage controls or input subsidies; the analysis is extended to models of multi-product markets; and the distributional consequences of agricultural policy across market participants are addressed. The author stresses the strong likelihood of spillover effects of a policy change in one market on other markets, input and output, and the need for careful analysis of the full range of impacts.

In Part Three, the emphasis shifts to applied welfare economics, where Gardner develops models for the *evaluation* of agricultural policies. For example, methods of quantifying, aggregating and comparing welfare gains and losses are introduced; the complications of income redistribution due to input market dependencies, factor incomes and interrelated product markets are discussed; and second best policy analysis, where existing imperfections are taken as given, is mentioned. The simple message in this Part is that every policy alternative makes some people better off and some people worse off. As such, methods to objectively measure and compare the gains and losses have to be found, if policy advice is to be relevant and understood by those affected. The art in policy advising is to understand the truth of this message and to use the correct tools to accurately do the measurements and comparisons.

Three sets of special topics are covered in Part Four. These are the influences of variable prices on expected returns and of risk averse decision makers; international trade and the distribution of benefits and costs of policies across nations; and a

chapter on explaining why governments behave as they do. Each of these topics are important, particularly the second in the current international trading environment. However Gardner believes that "... the explanation of government behaviour in agricultural commodity markets, despite suggestive hypotheses, is admittedly at a scientifically primitive stage" (p. 376), and calls for more work in this area.

This book is an impressive and welcome addition to the available texts on the economic analysis of agricultural policies for both input and product markets. The text, tables and figures are all well presented, and the discussion of the basic analytical tools is clear and concise, extensive in treatment and wide ranging in coverage. Graphical, algebraic and econometric approaches all receive attention. Particular emphasis is given to those components of policy analyses which are often put in the "too-hard" basket—international implications of domestic policies, especially price support policies; impacts of policies across related input and output markets; and the income distribution effects of agricultural policies. Gardner does not aim to provide empirical analyses, but the inclusion of more empirical examples would complement the theoretical framework. This would be particularly useful for attempting to translate complex theoretical constructs into an econometric modelling analysis. Overall though, Gardner achieves his objectives for the book with a neat blend of rigour and persuasion.

For Australian readers the total reliance on examples from US agricultural policy may appear as a disadvantage. Yet the basic analytical approaches are broadly applicable to most situations found in Australia and in the other major agricultural countries. Further, many of the policy instruments covered by Gardner (e.g. input or marketing quotas, deficiency payments, import quotas), if not the specific program packages, have direct Australian relevance. For example the book contains over 20 pages directly on deficiency payments analysis, as well as many other indirect references.

The quoted \$US list price may make it an expensive purchase for individuals in

Australia. The book is recommended though for the libraries of university and government departments, and for the libraries of producer organisations and the various commodity and policy Councils given their increasing employment of specialised policy advisors. Gardner's book would also be an excellent reference text for upper undergraduate and postgraduate courses in agricultural policy, trade policy and applied microeconomics.

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**Adaptation and Survival in Australian Agriculture**, Peter J. Higgs, Oxford University Press, Melbourne, 1986. \$A35.00.

This study will become an important reference for all those Australian economists interested in the impact on the farm sector of changes in key macroeconomic policies, developments in other sectors of the economy or changes in the prices of farm commodities on overseas markets.

As a vehicle for his analysis, Higgs uses the now quite well known and respected ORANI general equilibrium model of the Australian economy. Among the exogenous "shocks" examined are a rise in agricultural prices on overseas markets; an expansion of the mineral resources sector (in other words, the familiar "Gregory Thesis" phenomenon); cuts in manufacturing protection; greater reliance on indirect taxation; a change in the exchange rate; and a macroeconomic policy package combining a decline in real wages and an increase in absorption (*i.e.* total domestic demand). In each case, the potential impact on the prices, production and exports of farm commodities and on farm incomes is documented in considerable detail. Some particular emphasis is given to the results for the wool industry, reflecting the partial funding of the project by the Wool Research Trust Fund.

While the subject matter is obviously of interest to many agricultural economists, there is also much in the book which would be of interest to economists more

generally. For example, some detail is provided on the possible macroeconomic effects of the various shocks considered in the analysis—such as the impact on GDP, employment and the balance of trade (given the model closure chosen). Further, the early chapters and parts of the Appendix (which runs to some 50 pages) provide considerable background to the structure of ORANI and the ways in which the model can be manipulated. Indeed, the entire study could be read as a case study in the use of ORANI.

Higgs provides detailed intuitive, and in some cases arithmetic, explanations for many of the numerical results obtained from the ORANI simulations, particularly in those cases where the results appear counter-intuitive. While this approach is highly laudable, some readers may in consequence find parts of the text to be heavy going. Fortunately, the organisation of the material is such that it is relatively easy to skim over this more detailed discussion if it is not of immediate interest. It should also be stressed that, despite the emphasis on detailed explanation, the analysis is pitched at a level which puts it well out of reach of a non-professional audience.

Though the range of issues addressed is extensive, there are some shortcomings. Higgs emphasises the key role played by movements in the real wage in determining the real exchange rate and hence the profitability of the Australian farm sector. However, this seems to have resulted in some understatement of the potential role that could be played by changes in absorption. A case in point is the analysis of a currency devaluation in Chapter 9. There it is strongly suggested that, for a nominal devaluation to be sustained as a real devaluation, it is necessary for real wages to fall. In that analysis, absorption is held fixed. But, of course, it is also possible to engender a decline in the real exchange rate (or to convert a nominal devaluation into a real devaluation) with *given* real wages, if absorption is reduced. Further, a strong argument could be made that the government can exert a greater degree of control over absorption than it can over the real wage level.

A second shortcoming is the limited treatment of the protection issue. In particular, while it is of interest to assess the benefit to the farm sector of reducing the protection given to selected manufacturing industries, it would have been highly desirable to extend the analysis to include reductions in agricultural protection as well.

These weaknesses, while of some significance, should be seen in the overall context of a study which has much to offer a wide cross-section of the profession.

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**Dynamic Programming Applications to  
Agricultural and Natural Resources**, John  
O. S. Kennedy, Elsevier Applied Science  
Publishers, 1986.

John Kennedy's book *Dynamic Programming Applications to Agriculture and Natural Resources* gives attention to dynamic programming methodology and to its application in various areas of agriculture and natural resources. Topics covered in agriculture are scheduling, replacement and inventory management, crop management and livestock management. Topics from natural resources management are land management, forestry management, and fisheries management.

Sections dealing with dynamic programming methodology are clearly and rigorously presented. Mathematical presentation is complemented by empirical examples. In dealing with the various areas of application from agriculture and natural resources, a number of representative applications are presented in considerable detail, together with a listing of a wide range of related applications. Discussions of empirical analysis are enhanced by reference to various computer programs which can be utilized in solving problems which may be stochastic or deterministic, with finite or infinite planning horizon. Empirical results from applications of the various computer programs are quoted. These discussions give the reader an introduction to possible

applications of the computer programs. However, a more detailed working knowledge would require "hands-on" experience.

The book is research orientated. I do not see it as a self-contained text on dynamic programming, nor (as indicated in the preface) was it intended as such. As Dreyfus and Law point out, dynamic programming in its application is as much an art as a science. John Kennedy's book does not provide problems which students of the subject could express in dynamic programming format for themselves and then solve. The development of skills in the art of dynamic programming benefits from such practice.

There is an interesting concluding discussion of the impression that dynamic programming has so far found application more in research than as an operational tool useful in management decisions. It is pointed out that "prerequisites for applying dynamic programming (as an operational tool) which may be lacking are managers' understanding of the technique, relevant data, computer software, and computing power". Are these constraints permanent? It seems a safe assumption that computer software and computer power will continue to develop. John Kennedy points out that the supply of data tends to grow to meet perceived needs, and so lack of data tends to be a short term problem. Depth of understanding of the technique by managers is reduced as a constraint by development of "user-friendly" interactive programs. Another constraint is the "curse of dimensionality". Kennedy discusses some interesting work which has been carried out to reduce the number of values of state variables which need to be "carried" from stage to stage; the discussion also includes work which has been done to show the sensitivity (or lack of it) of results obtained to a simplification of the original problem.

Topics covered in the book are treated very thoroughly, with due regard to economics and agriculture as well as dynamic programming. There is concentration, in the applications considered, on work done in Australia. I regard this as a very good reference book for people interested in the application of

dynamic programming to agriculture or natural resources.

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**Capitalism and the Countryside: the rural crisis in Australia**, Geoffrey Lawrence, Pluto Press, Sydney and London, 1987. Pp. 320. \$A19.95.

In his Preface, Lawrence notes that he draws "upon the perspectives of critical political economy" to conceive of the current Australian rural crisis in structural terms. He argues that this crisis arises from "the declining position of family-farm agriculture in a world of transnational corporate capital" and results from "the unplanned and contradictory nature of world agricultural commodity production and exchange" (p. 3). The author's aim is "to lift the discussion outside the domain of orthodox economic theory and the narrow confines of agricultural economics" (p. 7). Ultimately, Lawrence seeks to establish that "agrarian socialism, albeit in a markedly different form, must *regain* its hegemony if Australian agriculture *and* rural society are to have a future" (p. 5, first emphasis added).

The general argument is sketched in the Preface. Lawrence's assessment of the key elements of the contemporary crisis in Australian agriculture are outlined in chapter 1, containing a brief history of agricultural political economy since 1945; overviews of the contemporary wool, wheat, and dairy industries, and brief comments on the canning fruits, egg, sugar, grapegrowing and rice industries; and a brief analysis of recent farm income data.

In chapter 2, *The Social and Environmental Impact of the Rural Crisis*, Lawrence initially surveys analyses of the impact on farmers of recent decades of agricultural change and the current crisis; continues with analysis of the general impact of these changes in rural areas; and concludes with analysis of the environmental effect of contemporary farming practices.

The “orthodox” view of farm crisis is discussed in chapter 3. “Orthodox” is construed as synonymous with liberal economic theory, which is held to identify causes of the contemporary crisis as excessive government charges for public services to agriculture, unstable agricultural product markets, international protectionism, falling commodity prices, tariffs, wage inflexibility and farm adjustment rigidities. A discussion of the role of the “New Right”, and the current deregulatory crusade, conclude the chapter.

The Political Economy of Australian Agriculture, as outlined in chapter 4, contains a *brief* introduction to Marxist economics and an extension for the modern, internationally-trading world; and a discussion of agriculture within capitalist production, oriented predominantly towards the growth of agribusiness. The last theme is pursued in more detail in chapter 5 which surveys the recent development of agribusiness in Australia and overseas, and discusses its effects for rural society and consumers.

State intervention in Australian agriculture is examined in chapter 6. State intervention since 1945 is documented in the first half of the chapter. The consequences of this intervention are assessed against seven identified goals of agricultural policy: the expansion of agricultural output and sales, increased farm efficiency/productivity, farm income stabilisation, producer compensation for farm-specific problems and spillovers from non-farm policies, balanced settlement of the Australian landmass, and rural/urban equity. Lawrence concludes that state intervention is often inconsistent and contradictory:

At the ideological level the state's role is to convince the farming fraternity that its activities support and perpetuate a system of commercial family-farm agriculture. But at the economic level its role is to enforce increased capital accumulation within agriculture. In doing so the state is acting to destroy the system it claims to be serving.

The focus of *Capitalism and the Countryside* becomes very narrow in chapter 7, with its discussion of Biotechnology and the State. A brief survey of recent Australian developments

in biotechnology precedes a discussion of organisation, ownership, and activities of the state, in the biotechnology field.

In the final chapter, Lawrence turns to the future: Permanent Polarisation or Rural Renaissance, in which he begins by summarising his view of the trends in Australian agriculture and their consequences. Of particular note in this chapter is the critique of “sci-fi” farming. The bulk of the chapter is devoted to a discussion of “radical” agriculture and, finally, “socialist” agriculture. Lawrence concludes with an appendicular critique of neoclassical agricultural economics, which is all the more damning because it is drawn from within the profession (Stent, Kingma) and to which the profession has failed to make any meaningful response. (Despite this critique, Lawrence makes extensive use of agricultural economics literature in his preceding analysis).

What is an appropriate response to *Capitalism and the Countryside*? Lawrence appears to use “crisis” to apply to three, rather distinct phenomena. Firstly, there is the traditional pattern of *relative* rural contraction, most recently articulated in Alan Lloyd's *Rural Economics Study: a report to the Minister for Agriculture and Rural Affairs* (Melbourne, 1986). Secondly, there are major deviations around this trend, induced by climate and government intervention in both Australia and overseas countries. The current major deviation about trend for *some Australian agricultural commodities* is not a crisis of Australian agriculture, but a crisis of agricultural policy in the United States and the European Communities, albeit a crisis for Australian agriculture. Thirdly, arising from the secular relative contraction of agriculture, the current deviation from trend, and changes in the non-rural Australian economy, there have been major changes to the structure of industries servicing Australian agriculture. The implications of these changes are likely to be profound but have, as yet, been largely ignored by (agricultural) economists. Indeed, economists—as a species of minor modern historian, and scavengers on the entrails of the recent past—have enough difficulty understanding the *present*, and are poorly equipped



to essay an understanding as to how the current process of change will take us into the future. Neoclassical blinkers and quantitative icons are additional impedimenta to an understanding of how the present is becoming the future. In this respect, Lawrence has a legitimate grievance against contemporary agricultural economics.

Conversely, however, the rural sociology perspective presented in *Capitalism and the Countryside* contains copious detail on the contemporary state of Australian agriculture—but in a *Blue Poles* style. If neoclassical economics is long on formal modelling, but short on institutional richness, then Lawrence's thesis suffers from the opposite defect. Our objective should surely be to account for as much of the complexity of the world as possible, with as parsimonious a model as possible. There is still a long way to go.

Ignoring the rural sociology jargon, it is possible to translate into orthodox economic terms Lawrence's central thesis:

Family farmers, as members of the petty bourgeoisie, occupy a contradictory class position within advanced capitalism. They operate in the competitive capitalist sector and are therefore structurally unlike most of the firms in the monopoly sector with which they deal. Family farmers do not have vast economic resources at their disposal, they find it difficult to integrate their activities horizontally and vertically, they have limited market power and they must rely—often exclusively—upon their own and their family's labour to produce economic value. As owners of the means of production they share an economic interest with the bourgeoisie in continuing with the present system of economic organisation based upon capitalist relations of production. But as workers employing their own labour in the production of value within a system of commodity exchange they share with members of the proletariat the potential for exploitation by capital. (pp. 257–8)

Unless farm input and agricultural output markets in Australia remain contestable despite recent concentration of ownership, or unless the export demand for Australian farm produce expands by amelioration of US/EC farm policy or some other event, or unless—as proposed by Lawrence—some social(ist) program succeeds in transforming the structure of agriculture and its relations with associated industries, the severe current

economic constraints on many Australian farmers are unlikely to be relaxed.

Additionally, the current biotechnology boom may result in major changes in both the techniques of farming and the demand for farm products, although concurrent changes in intellectual property rights may concentrate the benefits of this technological change in the non-farm sector.

Is the comparative advantage of “family” farming sufficiently great to permit its long-run viability despite its “contradictory class position”? Are the benefits of future farm technological change *whose value is appropriable by farmers* sufficiently great to offset a continuing long-run cost-price squeeze on (family) farming? Here indeed is an interdisciplinary program worth pursuing! Except for those with an *ideological* commitment to the assumptions of Pareto welfare economics, *Capitalism and the Countryside* is worth a read.

David Godden

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**The Economics of Oil Palm, Economics of Crops in Developing Countries No. 2** H. A. J. Moll, Pudoc, Wageningen, The Netherlands, 1987. Pp. 288. ISBN 90 220 0876 2.

This book is the second publication in a series of monographs concerning the economics of tropical and sub-tropical agriculture, instigated by the Department of Development Economics of the Agricultural University in Wageningen. The first was aimed at providing an economic perspective on world production, processing, and trade in coffee.

The author's stated intention is to describe and analyse the oil palm sector and its role in the national economy of producing countries. Microeconomic aspects of production, processing and marketing, and macroeconomic aspects of the sector as a whole are emphasised, with attention also paid to physical and institutional factors that affect the economic performance of the sector. The author sees the book as being useful for specialists, planners and policy makers

with its major use being as a reference work for institutions and people involved in policy making and fieldwork.

It consists of two parts. Part one consists of a general introductory chapter and, in chapter 2, a comparative analysis of the oil palm sector in eight producing countries of the three major producing regions (South-East Asia, West Africa, and Latin America). Part two comprises eight chapters, each providing a detailed description and some assessment of the oil palm industry in one country; these form the basis for the comparative analysis of chapter 2.

In chapter 1 the reader is presented with technical details about the botany and ecology of the oil palm; agronomic and other details of its production; an overview of the processing stages and associated technology; and the characteristics of the products of processing the fresh fruit bunches—crude vegetable oil and palm kernels. Recognising that edible fats and oils of various origins (especially oils from the different oilseeds) are to a considerable degree substitutable for each other, Moll also provides a brief descriptive overview of world production, consumption and trade in vegetable oils. He does not, however, as one might have expected, attempt to assess the effects of the rapidly rising export quantities of palm oil on world prices for vegetable oils, or the importance of government intervention such as tariff and non-tariff barriers, in world trade of edible oils and fats.

Moll tackles the difficult task of inter-country comparisons by adopting a systematic framework. Each chapter in part 2 is structured in the same way:

- (i) background;
- (ii) ecology;
- (iii) history, organisations, and recent developments;
- (iv) production factors and production systems;
- (v) costs and returns;
- (vi) processing;
- (vii) marketing—channels and pricing, domestic consumption, imports and exports;

(viii) supporting services, and government policies; and

(ix) summary of economic parameters.

Each chapter contains many useful maps, flow diagrams, and tables.

Chapter 2, which also follows this framework, is really the crux of the book, and provides some very useful and interesting comparisons of various aspects of the oil palm sector between countries. If any inferences can be drawn from this chapter, they concern the evident competitive advantage of Malaysia and Indonesia in producing oil palm, as corroborated by their role as major exporters of crude oil palm and its fractions. High yields, a high milling efficiency, efficient use of labour, and the availability of wide experience both inside and outside the estates sector, are major reasons for the low costs of production in these two countries. Moll does, however, allude to an emerging problem of increasing labour costs in the estate sector of South-East Asia.

Nevertheless, chapter 2 essentially remains a summary of comparisons, with few conclusions drawn about the future possibilities or limitations of the world oil palm sector. A major contribution would have been to apply a more rigorous economic assessment to the industry structure in each country, with the aim of identifying more closely the constraints on more efficient production and marketing of oil palm and its products and hence suggesting possible policy and technical changes. Others, such as Barlow (1985), have identified a number of technical and socio-economic problems for the future development of the world oil palm industry. Moll does, however, in the summary of each country cases-study, mention the one or two factors which are most likely to influence future growth in production.

Some projections of world supply, demand, and prices in the world vegetable oils market would also have been very useful. Such projections would have suggested to what extent the oil palm sector could enlarge over the longer term, and would have focused attention on the place of palm oil in the world vegetable

oils market. Future trends in world prices will have a considerable influence on the profitability of estate production and on the likely levels of subsidy of the oil palm sector in the less competitive countries of Latin America and West Africa.

In general, Moll's approach makes the book very readable. The balance of practical and economic information, gives it an appeal to a wide audience. Unfortunately, most of the data are only up to 1982, and the pace of events in international trade is such that even the most recent price and quantity data are out of date soon after publication. However, the author's systematic framework for the presentation of data allows updating without too much difficulty.

As with the first book in this series, no index is provided, making quick reference to a topic difficult until the reader is familiar with the layout of each chapter. In spite of these minor points, Moll is to be commended for bringing together such an array of information in a tight, systematic fashion, and the book certainly lives up to the promises made in its preface. A disappointment, nevertheless, is that the analysis was not more forward looking, and it is left to the reader to ponder the longer term future of the world oil palm sector.

Lindsay Jolly,

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Resource Economics. Canberra.*

## Reference

- BARLOW C. (1985). *The Oil Palm Industry*, Research School of Pacific Studies, Australian National University, Canberra.