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Book reviews

Japan's beef industry

Japan's Beef Industry: Economics and Technology for the Year 2000 by James R. Simpson et al., CAB International and Biddles Ltd, Guildford, UK, 1996, 207 pp. US\$ 45.00, ISBN 0-85199-105-X.

This is an excellent book on Japan's beef industry dealing with the industry's options in the face of internationalization, growing competition and change of consumer habits in the twenty-first century. However, the book is not just about the economics of beef in Japan; it is altogether an exploration into 'cultural re-identification and economic readjustment' (p. 182). Written in 9 Chapters and divided into 3 Sections, the authors discuss how and whether the ailing beef industry of Japan, whose main means of survival at the present moment is massive government subsidies, will be able to survive. The authors point out that liberalization of trade and appreciation of the Yen have caused Japan's beef industry to lose its competitiveness under a changed agricultural structure: 'implementation of major cost reducing technologies and production methods are needed to improve competitiveness with other countries' (p. 136), rather than continuing with the traditional subsidies program. At the center of the solution is Wagyu cattle, the traditional supplier of beef whose taste and national origin appeals to Japanese consumers. Hence, much of the focus of the book is on technological options that will improve the economic viability of Wagyu-type beef under the current trade regime.

Wagyu breeds were traditionally maintained on farms for draft power. After a depopulation of Wagyu cattle due to mechanization of agriculture, Wagyu started to be raised primarily for beef during the late 1960s and early 1970s. The authors argue that rapid

growth of income, urbanization, and shifts in population structure have led consumers into diversified food habits. They conclude that meat and meat products that compete directly with imports on the basis of price alone cannot be saved by the application of known technologies and other measures to reduce cost of production. On the other hand, product differentiation and market segmentation will allow exploiting and developing niche markets for traditional and preferred products such as Wagyu beef. The book concludes that the current variable genetics and high calf cost are the two major constraints in the development of Wagyu type beef, and that they can be jointly overcome by an embryo transfer (ET) program.

The introductory chapter contains an overview of Japan's agricultural economy, its land and related resource-base, and highlights a continuing trend toward fewer and larger farms, together with persistent downward trend in food self-sufficiency ratios, from 73% in 1965 to 37% in 1993 (calorie basis). Similar trends have been observed in the structure of beef industry. Chapter 2 explains the trends and changes in production, trade and consumption of Japan's livestock during the past three decades.

Chapters 3–5 are devoted to production structure. Chapter 3 explores structural adjustments in the livestock industry, particularly in beef production. Post-war Japan 'embarked on a path of rapid livestock industry growth, led by poultry, followed by pork with beef production lagging behind' (p. 49). A reduction in the number of farms, combined with an increased number of animals or birds per farm, ensued. By the early 1970s, both demand patterns and supply sources were diversified, and domestic beef production has stagnated since 1985. Imported beef reached 58% of total consumption by 1994, up from only 7% in 1965.

Dairy cattle account for more than 70% of domestic production of beef in Japan. Over the years the number of dairy farms have decreased, but the last three decades have also seen a rapid increase in the number of large farms, a trend exhibited by US dairy industry in the 1970s. Comparing figures from other industrialized countries (Australia, New Zealand and USA) that are Japan's main competitors, the authors predict that the number of animals per farm will increase in Japan. Per capita consumption of major animal products (e.g., poultry, pork and seafood) has stabilized in the early 1990s, except for beef. Per capita beef consumption reached 11.6kg in 1994, up from 6.4kg in 1985. A modest increase in per capita consumption of beef is also expected beyond the 1990s.

Chapters 4 and 5 discuss beef production practices during the past few decades and production costs and returns for Japanese-produced Wagyu beef and cow/calf operations, respectively. Chapter 4 also presents an interesting analysis of effects of liberalization of Japan's beef imports on various beef products produced domestically. It shows that the impact has been significant on the prices of those items that compete directly with imported beef. The highest quality Wagyu beef suffered little drop (4%) in price, compared to lower quality Wagyu beef (15–22%) and all grades of cull cow dairy beef (27–27%). A great challenge will be to convince consumers that Wagyu beef is unique, and different from other beef in the retail market. Given that Wagyu are increasingly produced abroad, and domestic Wagyu and imported quality beef are good substitutes, a branded program based on the rapid development of a genetic base that is consistently graded very high is, according to the authors, what is necessary for Japanese beef industry to survive the competition.

Chapter 6 draws attention to the revolution that has taken place in livestock production and marketing in much of the world during the past few decades, and refers to the role of macro economic policies of European countries and the United States in driving the development of their own livestock sector. Chapters 7 and 8, devoted to economic and more extensive technical evaluation of embryo transfer technology, address issues of the competitiveness of the Japanese beef industry in the 21st century under different production scenarios.

Despite a few easily noticeable typographical errors, principally in the tables, this is a book worth reading, especially by those concerned with the economics of food industry in the current transition to free-trade and changing demand patterns. It has provided, as the authors state 'facts and figures of industry structure, potentially useful technological advances, and cost of production as they relate to international competition' (p. x).

MAHFUZUDDIN AHMED

*International Center for Living Aquatic
Resources Management (ICLARM)
Manila, Philippines*

PII: S0169-5150(98)00060-7

Agricultural policies

Regenerating Agriculture: Policies and Practice for Sustainability and Self-Reliance by Jules N. Pretty. Joseph Henry Press, London, 1995, 320 pp. £12.95, ISBN 1-8538-3198-0.

Jules N. Pretty, Director of the Sustainable Agriculture Program at the London-based International Institute for Environment and Development, has added his authoritative voice to the clamorous – yet in many ways still muddled – debate about the merits of sustainable agriculture. Pretty's thesis is that the so-called 'modernist perspective' has so captured the thinking of scientists, policy-makers, and even many farmers, that most of us now take for granted that agriculture in future will be dominated by highly mechanized, commercial production technologies, requiring constant infusions of large quantities of external inputs, especially inorganic fertilizers, chemical pesticides, and fossil fuels. The problem with these technologies, argues Pretty, is that they inflict irreparable damage to the natural resource base upon which agriculture depends and exact crippling social costs on rural communities, making the technologies unsustainable in the long run. Rescuing agriculture will require abandonment of many current practices in favor of more environmentally friendly, resource-conserving technologies designed to make agricultural production systems more reliant on internally gener-

ated inputs. Achieving widespread and lasting acceptance of these technologies will require a fundamental reorientation of research, extensive reorganization of the institutions that support agriculture, and complete redesign of many existing policies.

Chapter 1, *Sustainable Agriculture*, introduces the concept of sustainability and discusses its recent rise to prominence in the development literature. After describing the state of high confusion that currently prevails, Pretty concludes that it is probably pointless to try to formulate a precise definition of a concept that obviously means very different things to different people. Although some readers will be disappointed by Pretty's reluctance to take the conceptual bull by the horns, many will no doubt be relieved to have been spared yet another round in the seemingly endless debate over semantics.

Chapter 2, *The Modernization of Agriculture*, and Chapter 3, *The Environmental and Social Costs of Improvement*, review the rise of modern scientific agriculture and summarize the many attendant costs, environmental as well as social. Chapter 4, *Resource-Conserving Technologies and Processes*, Chapter 5, *Local Groups and Institutions for Sustainable Agriculture*, and Chapter 6, *External Institutions and Partnerships with Farmers* consider in detail what Pretty regards as the three essential conditions for the establishment of a more sustainable agriculture: (1) the availability of technically sound sustainable technologies, (2) the existence of institutions allowing for effective local management of the natural resource base on which agriculture depends, and (3) participation in the technology development process by farmers themselves. Chapter 7, *Linking Process to Impact: The Transition to Sustainable Agriculture*, presents empirical evidence of the potential beneficial impacts of sustainable technologies, citing 20 case studies drawn from developing countries in Asia, Africa, and Latin America. Chapter 8, *Agricultural Policy Frameworks and Institutional Processes*, argues that the policy environment can support the implementation of a more sustainable agriculture. Chapter 9, *Policies That Work for Sustainable Agriculture*, lists 25 policies that are 'known to work' and lays down a challenge to find ways to implement them.

On the whole, this is a very readable book. The material is logically organized, and the writing is for the most part lucid and easy to follow. Pretty avoids

presenting large amounts of quantitative data, but he consistently supports his arguments with empirical examples drawn from industrialized as well as developing countries. Specialists may lament the lack of analytical rigor, especially regarding technical and economic aspects of sustainable agriculture. Nevertheless, the absence of jargon increases the likelihood that the book will appeal to a broad, non-technical readership.

Pretty early on admits that his intention is to share with readers his personal vision of a better, more sustainable agriculture. Considered as a normative piece of work designed to convert readers to a particular point of view, the book makes a useful contribution to the literature on sustainable agriculture. The links between technologies, institutions, and policies are intelligently discussed, and readers are left with a clear sense of the futility in separately addressing these three fundamental ingredients of a productive, sustainable agriculture. The empirical examples drive home the point that many 'alternative' production technologies once dismissed by practitioners of mainstream agriculture have clearly demonstrated their technical, economic, and environmental viability. As such they deserve to be included among the set of potential long-term solutions to the global food production problem.

Yet despite these strengths, the book also suffers from a number of weaknesses. Perhaps because the discussion is pitched at a level designed to make it accessible to a broad audience, the treatment of many topics is disappointingly superficial. Pretty's arguments are generally valid, but often he relies on anecdotal evidence without seriously examining the technical feasibility or economic profitability of the sustainable technologies he is advocating. Many of the specific policy reform proposals are so general as to be practically meaningless, and there is little or no discussion of the political and economic trade-offs their implementation will necessarily imply.

Given Pretty's self-avowed role as an advocate of sustainable agriculture, he can perhaps be forgiven for demonstrating bias in his selection of empirical examples, which consistently associate low-external input technologies with successful outcomes and high-external input technologies with unsuccessful outcomes. Notwithstanding the relentless parade of sustainable agriculture success stories, many readers will

naturally wonder whether there are not also some failures lurking in the background. In a similar vein, while it may serve Pretty's purposes to depict so-called 'industrial' and 'Green Revolution' technologies as having nearly always resulted in environmental damage and social mayhem, it would perhaps have been more even-handed to acknowledge that the dramatic productivity gains achieved through the use of modern plant varieties and other external inputs have been instrumental in meeting the consumption requirements of literally billions of people.

Finally, Pretty remains curiously silent about the long-run potential of low-external-input technologies to generate enough food to meet the needs of a rapidly expanding global population. Most of the case studies he cites as successful examples of sustainable agriculture involve rural communities that produce just enough food to satisfy their own consumption requirements. Pretty side-steps the crucial question of whether low-external-input technologies will provide the means of producing the food surpluses needed to feed not only rural communities, but also the many people living in urban areas who are no longer directly

engaged in food production activities. Even under the most optimistic of circumstances, it seems unlikely that any technology will ever allow large food surpluses to be extracted continuously from a fixed land area without constant replenishment of soil nutrients, water, energy, and other resources. Future agricultural technologies will certainly have to be sustainable, but they will also have to be sufficiently productive to feed the entire global population, including both rural and urban dwellers. Lamentably, Pretty fails to address the crucial question of whether low-external-input technologies are likely to meet the second of these two tests.

MICHAEL L. MORRIS

International Maize and

Wheat Improvement Center (CIMMYT)

Apdo Postal 6-641, Lisboa 27

06600 Mexico City DF, Mexico

Tel.: +52-5726-9091; fax: +52-5726-7558

e-mail: mmorris@cimmyt.mx

PII: S0169-5150(98)00057-7