

Research Review

Agriculture in the Twenty-First Century

John W. Rosenblum (editor). New York:
John Wiley & Sons, 1983, 415 pp., \$27.50.

Reviewed by Charles V. Moore*

"As the world's population approaches 6 billion in the year 2000 the productivity and imagination of agriculturalists will be taxed as never before. Although there is more food being produced today than ever before, 70 to 80 percent of the earth's inhabitants exist on substandard diets, and 10 percent are near starvation" (p. xi). What a well-written preface to a book about agriculture in the 21st century. What a challenge. How succinctly the problem of increased population is coupled with the problem of distribution. What reader would not want to complete this book to find out how such overwhelming problems are going to be solved?

Arthur R. Tanco, Jr., Minister of Agriculture, Republic of the Philippines, who wrote the prologue, motivates us further by admonishing us not to "allow the approaching drums of war to deafen us to the cries of the hungry, for hunger has killed more people than all the wars put together" (p. 1).

This is a book about agriculture and food. It is organized into five sections with 42 authors contributing 20 chapters based on a symposium at the Colgate Darden Graduate School of Business Administration of the University of Virginia. Any symposium organizer would be hard put to bring together a more impressive group of authors. Among the 42 contributors are 20 deans, directors, presidents, or vice presidents of colleges of agriculture, agricultural experiment stations, institutes, or their equivalents. In addition, a half-dozen department chairmen or holders of endowed chairs in universities have contributed their best thoughts. If these people don't have the answers, there probably aren't any.

Unlike many editors of symposia proceedings, this one has done a commendable job of introducing each section with a brief overview of the papers contained therein with an attempt to show how these papers interrelate and contribute to the sectional thrust.

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Section 1 sets the stage, focusing on natural resources and agriculture with chapters on land, soil, forestry, energy, and public policy. Agricultural economists will find little new in this section, the old questions of property rights and limiting them for the public good, soil erosion, and multiple use of forest lands are predicted to still be with us in the next century. Missing is any recognition of the debate with the so-called school of public choice, which is flexing its political muscles of late and whose advocates within Federal resource management agencies have pressed for the sale of public lands, rapid expansion of oil and mineral leasing, and creation of markets for traditionally nonmarket goods. The reader will receive the first inkling from this section that the book's focus is not necessarily on world agriculture and global food supplies when clearly all contributors limit their remarks to domestic resource problems.

From section 2, "Agricultural Research and Technology," and section 3, "The Farmer of Tomorrow," one gets the sense that there is no food problem—that 70 to 80 percent of the world's population are not existing on substandard diets or that 10 percent are not at or near starvation dietary levels. The only apparent limiting factors are the lack of research funds, technical personnel, and computer software. Contributions in these two sections become the choreography for a technological pep rally complete with pom-pom shakers and marching bands. Technology will win tonight! One can even conjure up visions of a sub-Saharan peasant farmer in the next century sitting at his Apple II keyboard optimizing next year's production matrix.

Social scientists who, through dint of hard work and perseverance or by skipping willy nilly, somehow reach section 4, "Financing Agriculture," will be amply rewarded with some very perceptive contributions, especially from Walter Minger, senior vice president of Bank of America, who writes on "Capital Investment and the Business of Agriculture." Minger's forecast is, in this review's opinion, right on the mark: "an increased debt burden and the

cost of carrying such heavy liabilities will force the use of options other than the traditional farm financing instruments. Many farm and agribusiness balance sheets will be restructured to reflect the interests of owners, investors, short-term lenders, trade creditors, medium and long-term lenders, lessors, partners and joint venturers" (p 259). This chapter alone is worth the price of the book.

With their vigor renewed, agricultural economists should be able to sail through the final section of the book, "The World Expectations for Agriculture." Dr Gale Johnson's chapter on "Agriculture and U S Trade Policy," introduces the reader for the first time to the realization that everything doesn't always turn out the best in this, the best of all possible worlds. Policies that extend the self-interest of developed nations are often detrimental to the economic growth of developing countries. An excellent amplifying chapter by W Arthur Lewis, "Developed and Developing Countries," further develop these policy conflicts.

The book ends on an upbeat note with an epilog which views agriculture of the 21st century as a giant cornucopia driven by the engine of technological innovation. Plants will produce their own fertilizer and livestock pests will die of starvation because of the lack of compatible hosts. Crops will grow in hitherto inhospitable environments, and a lonesome corporate farmer will prepare to plant the back 4,000 by slipping a floppy disk into the farm's computer.

Those who delight in reading tracts which gaze through an almost Pollyannish crystal ball at a potential cornucopia of food and fiber, which may burst forth from our agricultural research establishments, can no doubt pass many pleasant hours reading this book. Those seeking solutions to world hunger and the maldistribution of food, even within our domestic environs, should probably look elsewhere. Those in search of tractable research topics in the areas of structure, finance, and trade policy should be stimulated by last two sections of this book, which I recommend to them.

Prospects for Soviet Grain Production

Brigitta Young. Boulder, Colo Westview Press, 1984, 216 pp , \$20 (paper).

Reviewed by Jim Cole*

In *Prospects for Soviet Grain Production*, Brigitta Young, a graduate student at the University of Wisconsin, has produced a primer on agricultural problems that have persisted in the Soviet Union since the Revolution. As such, the title is somewhat misleading.

The book begins with an interesting and informative three chapters. The first details long-term geographical and geological problems that have plagued Soviet planners. It includes subsections on land use, weather conditions, and soil types. But the technical degree of the material presented in these chapters is probably too high for most readers. Furthermore, information which is merely reproduced here is readily available and probably already sitting on most Soviet researchers' bookshelves. Throughout this section, Young uses Paul Lydolph's *Geography of the USSR Topical Analysis* and the *USSR Agricultural Atlas* published by the Central Intelligence Agency (CIA) in 1974. One citation which would prove to be a useful reference is Nyle Brady's *The Nature and Properties of Soils*, which contains everything you ever wanted to know about soils in the Soviet Union and the world.

The second chapter, "Statistical Problems," is surprisingly short. Although noting that some agricultural data are missing from long-term series, the text fails to mention that since 1981 the Soviets have not provided grain production or yield data, which they agreed to do when they signed the U.S.-USSR Agriculture Agreement. Thus, some years that might prove the most interesting of all have been omitted from Young's analysis. Other data, as Young points out (Soviet grain stocks data, for example), have never been published.

The most valuable and interesting portion of the book is the third chapter which puts the grain production problem into perspective. Whereas D. Gale Johnson and Karen McConnell Brooks in *Prospects for Soviet Agriculture in the 1980s* (see *Agricultural*

Economics Research, Winter 1984, Vol. 36, No. 1, pp 23-24) considered Soviet agriculture from the fifties to the present, Young presents information about the history of Soviet agriculture from the post-Revolutionary period to the present with some interesting grain trade data from the early 20th century.

In an attempt to assess the impact of external forces on Soviet agricultural performance, Young devotes a chapter of her book to a "Critique of Recent Western Analyses of Soviet Grain Shortfalls." This critique, however, is limited to a discussion of the author's dissatisfaction with the CIA grain production model and a "computer" model that she and colleague Jill Auburn put together to test the impact of weather on grain production and to test if the marginal returns to grain production regarding technological inputs (in particular, fertilizer) are diminishing. Young does not discuss U.S. Department of Agriculture methodologies currently used by the Economic Research Service, the Foreign Agricultural Service, and the World Agricultural Outlook Board.

Young and Auburn encountered problems with the model from the start. Weather data (temperature and precipitation) were gathered from only one weather station per region, Kiev, for example; was the surrogate for "Southern European USSR and the Ukraine." Furthermore, after unsuccessful attempts to solve multicollinearity problems (using fertilizer use and tractors as separate variables), Young and Auburn used fertilizer use alone to represent technological development. Even so, they were able to explain only half the variation in yields. Young concludes that the model was unable to substantiate either the claim that weather is the chief limiting determinant of Soviet grain production or the idea that marginal returns for agricultural inputs in the USSR are diminishing. That is the difficulty of using statistical models to estimate Soviet grain production.

Prospects for Soviet Grain Production tends to preach as it informs, and relies heavily on existing publications. Only in rare instances are any Russian-language sources noted, and in those cases they are used for data only—not concepts. Considering the expensive price tag on the book, I expected more.

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Closing the Cereals Gap with Trade and Food Aid

Barbara Huddleston, Research Report No. 43,
International Food Policy Research Institute,
Washington, D.C., 1984, 107 pp., free upon request.

Reviewed by Mathew Shane*

Barbara Huddleston's report which focuses on developing the magnitude of food aid and trade with developing countries both historically and to 1990 is an important effort on an important subject. It should be put on the "must" reading list for anyone interested in questions relating to food aid. Although it is a research publication intended primarily for other agricultural economists in the food aid and development assistance areas, the implications of the analysis are extremely important for policymakers as well. Being an ambitious effort, it has both the strengths and weaknesses of such efforts.

On the positive side, the author develops and presents the first consistent series on world food aid and trade in cereals over a 20-year period, 1961-81. The trends, composition, growth rates, and import dependence ratios are thoroughly presented and analyzed based on major geographic regions—Asia, Latin America, North Africa/Middle East, and Sub-Saharan Africa—as well as high-, middle-, and low-income developing countries. Huddleston includes data on 99 countries in her study.

Some of her conclusions merit serious consideration by policymakers in donor countries:

- For all income groups and for all regions except for Sub-Saharan Africa, food aid per capita declined after the early sixties. [F]ood aid per capita in low-income countries is now less than half of what it was 20 years ago, and total imports of cereals per capita declined for this group alone (p. 25).
- Although most countries want to provide enough food to eliminate hunger and malnutrition, not all have equal success in doing so. [Indeed in] 1977-79 average per capita intake was less than 90 percent of the FAO/WHO standard [in 28 countries] (pp. 35-36).

- 27 countries had seriously inadequate per capita food supplies in 1977-78. For 14 of them current consumption is less than it was in 1961-63 (p. 38).
- Of countries with adequate food supplies, 21 received food aid and 14 did not. Those receiving food aid accounted for 38 percent of total food aid at that time. Two of them, Egypt and the Republic of Korea, took 30 of that 38 percent (p. 38).
- If the mean for per capita food aid had been higher for low-income countries with inadequate food availabilities and lower for middle- and high-income countries with adequate food availabilities, the seriousness of the food supply problem could have been reduced even with no increase in food aid. It does appear, however, that on the whole, large quantities of food aid are flowing to countries that need it, though in insufficient amounts (p. 40).

The results support the conclusion, which is emerging from global hunger studies, that the world is divided into countries that are successful at development and those that are not. Those that have developed an economic base over the past 20 years can look forward to vigorous growth and trade, whereas those that have not will face increasingly serious difficulties. For the policymakers involved with development prospects in the third world, one must be concerned with how we can define food aid and development assistance programs which encourage the less successful developing countries to get into a long-term self-sustaining development path rather than become long-term welfare recipients. The factual background presented in this report provides a foundation upon which such program decisions can be made.

These are the strong points of the report, and Huddleston and the International Food Policy Research Institute (IFPRI) should be commended on the analysis. However, some problems also flow from a report with multiple objectives. Much of it is

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devoted to the problems with and resolutions of issues related to data derivations and procedures. Although these issues are important for professionals, indeed ERS' own efforts on *Food Aid Needs and Availability* are of this sort, some reorganization of the material might have made Huddleston's research more useful to a broader audience.

Another issue of fundamental importance that she does not seriously address is why some countries

end up requiring food aid and others do not. What distinguishes successful countries from unsuccessful ones? Until we can answer these questions, all our aid efforts will remain somewhat of a shot in the dark.

I look forward to the further studies which should develop out of this one at IFPRI, and I appreciate its depth and perspective.

In Earlier Issues

Increased specialization of production tends to decrease the elasticity of supply because equipment and skills tend to become highly specialized and less mobile. Other things equal, the greater the specialization, the more unstable the returns. The relevant price spreads become narrower and given percentage changes in price for commodities bought and sold can cause a larger percentage change in returns.

Allen B. Paul
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