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Review of *The Agricultural Revolution of the 20th Century* by Don Paarlberg and Philip Paarlberg

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The Agricultural Revolution of the 20th Century. Don Paarlberg and Philip Paarlberg. Ames: Iowa State University Press. 2000. xvi+144 pp. References, index. \$54.95 cloth, \$29.99 paper.

This perceptive, richly illustrated yet compact book is a real jewel. Its span is broad, briefly reaching back to the turn of the century, then carefully documenting the development of modern industrial agriculture. It does not stop there, however. After showing us how the unprecedented scientific and technological advances of the twentieth century triggered the agricultural revolution, it moves on to international dimensions and the functioning of US public agricultural policies. Then, against this storybook background, the authors share their gaze into the twenty-first century.

The Paarlbergs accurately observe that “if a farmer from Old Testament times could have visited an American farm in 1900, he would have recognized and had the skill to use most of the tools he saw: the hoe, the plow, the harrow, the rake.” Illustrative of the rapidity of change that followed during the twentieth century: the minutes required to produce a bushel of corn dropped from over eighty to two; the time required to earn one dollar in farm income dropped from seventy to four minutes of labor; farm population fell from twenty-nine to five million (from 39% to 1.5% of the US total); and the share of their income Americans spent on food dropped from 25 to under 14 percent.

The book attributes agriculture’s remarkable productivity gains in large measure to “a revolution not of swords and guns but of test tubes and microscopes.” Hence chapters 2 through 6 deal with mechanization, chemical advances, biological changes, information systems, and management (the integration of disciplines).

The authors give additional life to their analysis by conveying their views on controversial issues, be they in the area of science and technology or governmental programs. They see little scientific basis for concern about genetically modified organisms (GMOs). They *are* concerned about ground water pollution but go on to show why “high-input agriculture with its chemicals . . . is more a friend than a foe of conservation causes.” They hold that basic patterns of production have been altered through governmental policies (some wise, many not) such as the Homestead Act, price supports, subsidies, and production controls. The painful consequences of agriculture’s innate volatility are spelled out in words and numbers. For example, “in the great depression from 1929 to 1932 U.S. net farm income fell from \$6.3 to \$1.9 billion slowing the agricultural revolution to a creep.”

During the World War I period, vast areas of the Great Plains were plowed up to produce wheat for export. Farm prices doubled. Land prices rose 70 percent. "Then came disaster. European farm production recovered. Exports shriveled. The price of wheat fell from over \$2 to under \$1 a bushel." Then came the dust bowl and the painful forced migration westward of the displaced depicted in Steinbeck's *Grapes of Wrath*.

The agricultural revolution enabled US farmers to help feed hungry people abroad and contributed directly and indirectly to the life-saving green revolution in Asia. Today America's five million farmers feed a US population of some 270 million plus many millions overseas. No, say the Paarlbergs, the export market is hardly a panacea, but the US has the capacity to meet its own and potential export needs "without running out of food or sustainably productive farm land."

Now that fleets of self-propelled combines make their seasonal harvest journey from south to north in the Great Plains, and the sod shanty on the western prairie has been replaced by an air conditioned home in town, has the cherished family farm no future? "The shift of farming from a way of life to a form of business," say the Paarlbergs, "was perhaps the greatest agricultural change from the 19th to the 20th century." If so, will family farms survive? "Maybe," say the authors, "if we redefine them . . . to allow for renting land, borrowing money, earning off-farm income, hiring labor, and contracting with integrating firms."

The agricultural revolution has been good for American consumers. Has it been equally good for farmers? To the winners, those in the commercial agricultural sector, yes. In 1989 the top 6 percent of US farms had net cash incomes from farming averaging \$52,000 and a net worth of \$1,331,000. The lower 70 percent of farms, the losers, had average net cash from incomes of \$200 and net worths of \$212,000. The latter, mostly part-time farmers, had an average of \$30,000 per year off-farm income. Thus farm people are no longer less well off than non-farm families. "Because the agricultural revolution boosted yields, replaced expensive inputs, captured economies of scale and increased farm size, in 1998 average per capita incomes of farm and non-farm people were virtually the same. Further, mean net worth of farm families was roughly 4 times as great as that of non-farm families."

Looking ahead into the twenty-first century the Paarlbergs see in the continuation of the agricultural revolution (as in the earlier industrial revolution) the further gradual separation of the ownership of the farm from its management. And that, they conclude, "is not a bad prospect." On balance

this outlook is an optimistic one, but one beset with continuing unresolved problems.

As noted, the authors divide farmers into three groups: the winners, the contenders, and the losers. Then they add a fourth group—those who have said good-bye to agriculture, the agricultural alumni. Because of its readability, uncluttered presentation of relevant data, and inclusion of some forty-five story-telling photographs, *The Agricultural Revolution of the 20th Century* should be of broad interest to these agricultural alumni. Many communities are now creating agricultural museums, reseeding prairie grasses, and establishing period demonstration farms. This book belongs in these places, too, as it does in the hands of anyone interested in rural America's yesterday, today, and tomorrow. **Lowell Hardin**, *International Program in Agriculture, Purdue University*.