Creating Abundance: Biological Innovation and American Agricultural Development

The central theme of Creating Abundance is that prior to the 1930s, American agriculture benefited greatly from biological innovations, which included improved cultivars, changes in planting dates, burial or burning of residues to control pests and diseases, and the development of fungicides, insecticides, and fertilizers. Researchers familiar with the history of crops such as wheat and cotton may wonder how the early importance of biological innovation could be undervalued. However, the authors cite sources that assigned primacy to mechanical innovations such as Eli Whitney's cotton gin and Cyrus McCormick's reaper and that only acknowledge a major role for biological innovation starting with the rise in corn yields in the 1930s.

The 13 chapters include introductory and closing chapters. The core arguments are presented in highly readable case studies that deal with the history of wheat, corn, cotton (three chapters), tobacco, California agriculture, livestock (two chapters), dairy production, and draft power. For each topic, the authors largely use historical narratives to document how farmers and society responded to numerous challenges.

While the biological innovation vs. labor-saving innovation provides a coherent theme for the book, an equally compelling story was how central agriculture was to the history of the United States. Thus, any challenge to crop production was a national concern. In 1791, Thomas Jefferson and James Madison toured New York and Connecticut to determine how the Hessian fly was spreading in wheat crops. President Theodore Roosevelt mentioned the introduction of ants from Guatemala for control of boll weevils in his 1904 State of the Union Address. In 1854, Harper's Magazine considered new cotton varieties to be newsworthy, and U.S. agricultural products also were stars of international exhibitions in London and Paris.

Another theme was how standards and efficient test procedures for product quality transformed farming. In the case of cotton, the Smith-Doxey Cotton Classing Act of 1938 provided a mechanism for growers to receive a fairer price, thus providing much greater incentive to manage for high fiber quality. A similar benefit was achieved for dairies with the Babcock test for butterfat in milk.

Overall, the book is well-written, although one finds occasional lapses into economic jargon such as “factor substitution” and “creating public good.” The information is backed by 50 pages of references, which are linked to footnotes on almost every page. A few technical details appear to be muddled. Most notably, the description of a maize seed (p. 77) implies that it is composed of the pericarp, an embryo cell, and an endosperm cell.

One criticism would be that the “American” focus is essentially the U.S. plus a bit of Canada for specific topics like introduction and selection of the wheat cv. Red Fife in Ontario. Introduction of cotton from Mexico is mentioned, but it is unclear what selection process these cottons underwent in the hands of Mexican farmers. Similarly, the chapter on California might have benefitted from a broader treatment of early California and southwestern farming.

Creating Abundance is excellent general reading for agricultural scientists interested in the history of U.S. agriculture. The chapters on wheat, corn, and cotton are solid background reading for anyone working with these crops. The authors have the foundation for a shorter, popular