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Review of *Future Harvest: Pesticide-Free Farming* by Jim Bender

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Future Harvest: Pesticide-Free Farming. Jim Bender. Lincoln: University of Nebraska Press, 1994. xviii+159 pp. Illustrations, tables, references, and index. $21.00 cloth (ISBN 0-8032-1233-X).

Jim Bender provides the rationale for pursuing pesticide-free farming and a detailed model of conversion based on his experiences on his own 642 acre farm in southeast Nebraska. Reviewing such deeply ingrained characteristics of conventional agricultural systems in the Plains as separation of livestock from crop production, minimal crop diversity, and the lack of multi-year crop rotations, he recommends that conversion be undertaken gradually over several years as more experience is gained with pesticide-free systems.

In preparing for conversion from conventional to pesticide-free agriculture, one must learn to build terraces and waterways to control soil erosion, to rotate and diversify crops, and to incorporate livestock into the rotation. Bender, whose first challenge was battling soil erosion, then farming without pesticides or synthetic fertilizers, stresses that teamwork among farmer, lender, manager, and landowner is essential throughout the conversion process.

The chapter emphasizing weed management examines crop rotation, tillage, planting strategies (such as timing of planting, staggered planting, managing surface residues), and mechanical weed management (rotary hoeing, harrowing, and cultivating). Another chapter offers practical suggestions for incorporating livestock into pesticide-free farming operations. A comparison of pesticide-free and pesticide-oriented farming is the focus of a separate chapter. Pesticide-free systems are designed to minimize costs through the growing of crops that require fewer purchased inputs and to stabilize income through crop selection diversified by type and susceptibility to risks. Producing commodities even in extremely difficult years—by using devastated crops for livestock forage, for example—and minimizing reliance on the federal farm program or crop insurance are also discussed.

Bender in addition explores such basic challenges of pesticide-free farming as grazing management to reduce pasture weed problems; restoration of soil on severely eroded slopes (a challenge shared with conventional systems); controlling livestock parasites through nonchemical means; containing perennial weeds; and securing sufficient nitrogen for wheat and forage sorghum in the rotation.

Future Harvest presents a detailed model of conversion to pesticide-free farming that farmers and others interested in the subject will find

helpful, particularly in southeast Nebraska and surrounding areas, but in other regions as well. The model will be especially valuable to those who lack experience with mechanical methods of weed control and the use of forage legumes in crop rotation. **George E. Ham**, *Agricultural Experiment Station, Kansas State University.*