

Organic Farming: Impacts on Soil, Food, and Human Health

Patrick M. Carr¹, Kathleen Delate², Xin Zhao³,

Cynthia A. Cambardella⁴, Pattie L. Carr⁵, and Joseph R. Heckman⁶

¹North Dakota State University, Dickinson Research Extension Center

²Iowa State University, Departments of Agronomy and Horticulture

³University of Florida, Department of Horticultural Sciences

⁴USDA-ARS National Laboratory for Agriculture and the Environment

⁵Dickinson State University, Wellness Program

⁶Rutgers University, Department of Plant Biology and Pathology

Summary

The importance of responsible stewardship in managing soil is a central tenet of organic farming. Organic farmers believe that practices which stimulate biology and overall quality of soil enhance production of healthy and nutritious crops. Few involved in agriculture would argue this point. Nevertheless, disagreement exists among agriculturists about the relative importance that should be placed on organic farming for meeting global food needs in the 21st century. Organic farming proponents insist that careful management of on-farm ecological processes creates soil capable of supplying adequate amounts of nutritious food for a growing world population, with reduced need for off-farm inputs. Critics contend that organic farming can degrade soils and will contribute to the underproduction of food crops that are no more nutritious than foods grown using synthetic agrichemicals (i.e., conventional farming), if adopted on a large scale. This chapter was not written to settle the debate, but to provide a historical context for the belief that organic methods promote soil health, compare organic and conventional farming systems for impacts on soil quality and crop production, and summarize comparisons in food quality between the two farming systems. While detailed discussion of these three topics cannot occur in a single chapter, enough information is provided to give readers with limited knowledge of organic farming a better understanding of why consideration of this farming method is appropriate in a discussion about soil and its relation to human health. Although organic farming is practiced globally, space limitations restrict most of the focus in this chapter to organic farming within the USA.

*The full book chapter will be published in 2012 in **Soils and Human Health** by the Taylor and Francis Group.*