Nitrogen Use in Organic Farming

Organic farming is a form of agriculture that has been practiced throughout the history of mankind. This system of farming depends primarily upon indigenous soil organic matter, crop residues, legumes, and animal manures as sources of N for crop production (USDA, 1980b). Until widespread use of chemical fertilizers became common within the last few decades, most agricultural production enterprises could, to a large degree, be classified as organic-farming systems.

In this chapter, we will review the sources of N used in organic farming systems, discuss the relative availability of these sources, how availability is affected by management practices, and attempt to summarize knowledge of the effects of organic farming on soil biology and N transformations. On many of these subjects, little or no scientific information was available to the authors. Because of lack of specific data, we are drawing on data from related experiments (such as tillage methods) that have some application to organic farming.

I. HISTORICAL CONSIDERATIONS

The requirements for N in crop production can be met by various means. In prehistoric agriculture, and even today in some cultures, N for crop production was provided almost entirely by mineralization of indigenous soil organic N. Systems of shifting cultivation were employed wherein cropping of a soil was discontinued after several decades, at which time the nutrient-supplying power of the soil was reduced. However, as the availability of

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1 Contribution from the Agricultural Research Service, USDA.