Multidimensional Thinking: A Prerequisite to Agroecology

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Agroecology employs the principles of ecology to study, understand, and design agricultural systems. One of the most basic principles of ecology is that changing one component changes everything else. Research and teaching in agricultural science is evolving from using only the conventional cause and effect or linear mentality to a holistic approach focusing on sustainability. A holistic orientation requires a more comprehensive way of looking at things, a more multidimensional view. A thought system such as multidimensional thinking is not linear, or even circular, but spherical, including a time dimension. The evolution to this approach is the result of a natural progression in understanding complexity, and even a logical developmental process. Such thinking provides a framework or context into which component technologies can be organized. In this chapter we take up the important task of defining multidimensional thinking. We provide examples from different areas of study, or windows on the agricultural system, that we call disciplines. In conclusion, we discuss multidimensional thinking as it relates to agroecology.

WHAT IS MULTIDIMENSIONAL THINKING?

Multidimensional thinking is difficult to achieve in our discipline-specific departments. In some ways we are like the six blind fellows in the poem by John Godfrey Saxe, “The Blind Men and the Elephant” (Untermeyer, 1963). Each suffers from the same disability (i.e., each is in a specific discipline), and each approaches a different part of the elephant (i.e., specialization). The poem points out that reductionist thinking, even by wise people, does not often give us the complete picture. Each of the wise people is partly in the right, but all are in the wrong in terms of the larger structure and function. These specialists demonstrate that the description of the parts cannot possibly give the whole picture and that linear thinking is sometimes inadequate. The large creature we are trying to understand is agriculture, and the innovative, multidimensional approach described in this book is agroecology.