Soil quality is undergoing a dramatic process of redefinition. Its meaning has moved beyond soil productivity to encompass environmental quality, food safety, and animal and human health (Parr et al., 1992; Doran & Parkin, 1994; Karlen et al., 1997). Farmers also see the shortcomings of the old definition that limits soil quality to yield potential and nutrient levels. In listening meetings held in Wisconsin, many growers felt that the biological health of the soil was not receiving scientific attention (Kelling, 1989).

Soil health, a more integrative term preferred by some farmers to soil quality, is recognized and assessed by farmers using indicator properties of both soil and nonsoil target systems (Harris & Bezdieck, 1994). While a number of analytical parameters to measure soil quality have been proposed by scientists (Larson & Pierce, 1991; Karlen & Stott, 1994; Doran & Parkin, 1994), farmers' diagnosis of a soil's condition primarily uses qualitative or sensory means in addition to quantitative data (Romig et al., 1995). Granatstein and Bezdieck (1992) suggest that the tools or indices developed to measure soil quality, be they for research, farm, or regulatory purposes, need to integrate both sensory and quantitative aspects.

Descriptive and integrative approaches used by farmers to characterize soil health provide a mechanism for field assessment and monitoring of soil quality by scientists and farmers. Possible descriptive indicators to characterize and monitor soil quality are given by Arshad and Coen (1992) and Reganold et al. (1993), including surface crusting, evidence of erosion, ponding of water, vegetative cover, soil structure, friability, and consistence. Furthermore, the effectiveness of qualitative soil survey techniques has been demonstrated for describing changes in soil surface properties (Grossman & Pringle, 1987), and evaluating land suitability with descriptive indicators (Sharman, 1989).