

## Chapter 4.1

# Sustainable Management of Agricultural Resources and the Need for Stakeholder Participation for the Developing of Appropriate Sustainability Indicators: The Case of Soil Quality

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### ABSTRACT

*The past 20 years have seen the rapid expansion of one development theory, that of sustainable development. This theory provided the opportunity for all stakeholders to be able to be involved in development projects. However, regarding issues of sustainable development, there is a historical tendency for these issues to be driven by top-down and technocratic agendas. Nevertheless, it is argued that the various stakeholders should be brought together and allowed to express their perspectives and perceptions, and that they should actively be involved in any developmental process. Within this context, this chapter argues that the adoption of a participatory, inter-disciplinary approach by the scientists/researchers in the development of sustainability indicators (with a focus on soil quality sustainability indicators) for use in agricultural ecosystems, can lead to the development of appropriate assessment tools that are meaningful to farmers and related to their understandings.*

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## INTRODUCTION

During the last years we have witnessed the establishment of a specific development theory, that of sustainable development. It is a theory arguing for the involvement of all stakeholders and has a multi-dimensional, multi-disciplinary focus encompassing economic, social, cultural and environmental issues. This has led this theory to become a dominant paradigm within development (Bossel, 1999; Bell & Morse, 2003). As a result, the concept of sustainable development and issues revolving around it (like indicators) has become the subject of much debate (Pretty, 1995a; Ilbery *et al.*, 1997; O’Riordan & Voisey, 1997; Pretty, 1998; O’Riordan, 2000).

There is much written on sustainable development and the use of sustainability indicators as a tool to help assess the achievement of sustainable development (Bell & Morse, 2003). There are many definitions and the topic of sustainability is value laden and open to a multitude of interpretations (Pretty, 1995a; Pretty, 1998). The literature is vast and expanding rapidly, reflecting the fact that sustainable development is probably one of the biggest challenges in human history (Clayton & Radcliffe, 1996; Ballard, 2000).

Within the debate on issues of sustainable development and sustainability indicators there is a historical tendency for these issues to be driven by top-down and technocratic agendas (Pinfield, 1996; Pretty, 1998). However, given that sustainable development is a contested concept, it is argued that the various stakeholders should be brought together and allowed to express their perspectives and perceptions, in terms of what is meant by ‘sustainable development’ as well as the indicators that are intended to gauge it and that they should actively be involved in any developmental process (Pretty, 1995a; Pretty, 1995b; Pretty, 1998; Pretty, 2002). There are various approaches to doing this, like participatory rural appraisal, most commonly employed in the context of developing countries (Chambers, 1983;

Chambers, 1993), and thus achieving an effective ‘operationalisation’ of indicators (Rigby *et al.*, 2000). However, there is considerable scope for research in this area (Mitchell, 1996; Kasemir *et al.*, 1999; Bell & Morse, 2003).

Much of the literature on sustainable development is focused on technical issues and methodologies and is written in a highly technical language that inhibits comprehension by all but the most technically adept (Nazarea *et al.*, 1998; Morrone & Hawley, 1998). This tends to mean that lay people (like farmers) are somewhat excluded from the process, have limited participation and thus restricted comprehension of the results provided (like definitions and indicator measurements). Scientists, focusing on scientific protocols, tend to avoid adopting a social approach to sustainability issues because it appears to them to be weakening and detracting from the technical methodologies and thus devaluing their science and results (Socolow, 1993; Goodland & Daly, 1996; Hutchcroft, 1996; Stirling, 1999). Especially in the case of sustainability indicators, they often fail to appreciate that indicators are tools rather than answers and that their selection should perhaps be based on people’s values, concerns and dreams as suggested by Kline (2000). Thus there is a need to include people in sustainable development decision-making and not just as passive recipients of someone else’s directives. The answer may rest in utilising bottom-up, participatory, inter-disciplinary approaches that accommodate different perceptions, exchange of ideas and knowledge and dynamic learning (Pretty, 1995b).

Translating this to the development of sustainability indicators, one could argue that effective indicators are not only the result of the application of valid scientific methodology but also “*the outcome of a host of epistemological assumptions made by the indicators developer*” (Bell & Morse, 2003, p.143). A critical reading of the literature pertaining to sustainability indicators shows that the development of conventional indicators is mostly based on a scientific, objective and reductionist

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