

# Soil science in integrated soil and water management



## Background

The evaluation and management of soil can form an important component of integrated soil and water management. The context of such work can be rural or urban catchment management, farm or forestry-based soil management planning, sustainable urban drainage design or pollution prevention on construction sites.

National water protection legislation lays down a framework for future catchment management aimed at the achievement of legally enforceable water and river quality standards. The control of diffuse and point inputs to water bodies from land is a major challenge to organisations and individuals responsible for applying and enforcing this legislation. Many aspects of the use and management of soil within the catchment of a river, lake or underground aquifer will have a bearing on their water quality and the flows of water to them.

The inherent nature of a soil, as well as the way in which it is used and managed, influences its ability to absorb rainwater. Soil science has a part to play in integrated approaches to flood management and protection in both rural and urban environments.

Professional competence in soil science for integrated soil and water management builds upon foundation skills in field soil investigation, description and interpretation (BSSS PCSS Document 1).

## Qualifications

Professional scientists and engineers with competence in soil science for integrated soil and water management will have graduated in a relevant science subject. They will also have a second degree and/or a number of years of relevant field experience and will have, or be adequately qualified for, full membership of a relevant professional body such as the British Society of Soil Science (BSSS).

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BASSIS® Soil and Water accreditation is evidence of adequate and appropriate knowledge and skills for a professional involved in integrated soil and water management. However, for work involving the provision of advice on pesticide use, the professional scientist/engineer should be BASIS qualified and where advice on crop nutrition is involved, the professional scientist/engineer should be FACTS (Fertiliser Adviser Certification and Training Scheme) qualified.

## Minimum competencies

### Skills:

- 1 Competency in the Foundation Skills (field soil investigation, description and interpretation) as per BSSS PCSS Document 1
- 2 An ability to apply the principles of soil science and/or engineering to the investigation and understanding of the interactions between soil and water that are of relevance to the focus and scale of the project
- 3 The ability to understand soil and water systems and to design and implement a work programme that addresses the client's requirements and leads directly or indirectly to improved understanding and management of the soil-water system
- 4 The ability to communicate soil science accurately and informatively, verbally and in writing, at all stages of the project with clear statements as to the reliability and certainty of the results

### Knowledge:

- 1 Knowledge of the soils present within the study area or of the chief sources of such information
- 2 An understanding of the principles of soil-water relations and of soil hydrology
- 3 An understanding of the fundamentals of soil solute and sediment fate and behaviour
- 4 An understanding of the systems of soil use and management relevant to the project focus. For agricultural catchments, competency in soil science for crop and livestock production (BSSS PCSS Document 10) will be relevant
- 5 Knowledge of the impacts of soil use and management on soil hydrology and solute/sediment fate and behaviour appropriate to the focus of the project

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