

Soil science for the use of organic materials on land



WORKING WITH SOIL
setting standards in soil science



Background

A wide range of organic materials including municipal and industrial wastes, livestock manures, and sewage sludge (biosolids) can be applied to land to improve soils, and supply valuable nutrients.

Certain organic materials can be used for agricultural and ecological benefit whilst others may have greater restriction on use within land remediation projects where land will not be used for agricultural production. The reuse, recycling and recovery of a wide range of wastes, by-products and products can have agronomic, economic and environmental benefits.

The legal and regulatory frameworks surrounding the application of organic materials to land is complex and detailed and requires, amongst other things, an informed assessment of potential benefits and risk to the wider environment. A detailed knowledge of the legal and regulatory frameworks is essential for soil scientists and engineers working in this sector.

Professional competence in soil science for the use of organic materials on land builds on foundation skills in field soil investigation, description and interpretation (BSSS PCSS Document 1), and is linked to competency in integrated soil and water management (BSSS PCSS Document 3) and soil science in crop and livestock production (BSSS PCSS Document 10).

Qualifications

Professional soil scientists and engineers with competence in using organic materials 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. They will have, or will be adequately qualified for, full membership of a relevant professional body such as the British Society of Soil Science. The preferred qualification for those advising operations resulting in agricultural benefit is training and certification on the BASIS Fertiliser Advisers Certification and Training Scheme (FACTS), though work prepared by people with relevant academic qualifications, vocational experience, or relevant professional membership is also deemed acceptable.

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For operations resulting in ecological benefit, professional scientists and engineers should ideally hold a preferred qualification, but relevant qualifications, experience, or professional membership are considered acceptable.

Minimum competencies

Skills:

- 1 Competency in the Foundation Skills (field soil investigation, description and interpretation) as per BSSS PCSS Document 1
- 2 The ability to assess both benefits and potential risks to environmental and human receptors from the application of the organic material to an area of land
- 3 The ability to apply the principles of soil science and/or engineering to the relevant aspects of reuse or recovery of the material
- 4 The ability to state comprehensively the benefits of using organic materials taking into account all relevant regulations and guidance specific to the country in which it is to be used
- 5 The ability to carry out a site-specific risk assessment of the proposed activity on statutory and non-statutory designations (such as Nitrate Vulnerable Zones, Groundwater Source Protection Zones, and Sites of Special Scientific Interest)
- 6 The ability to interpret laboratory analysis of the organic material to be used and of the receiving soil and to determine a suitable application rate for its intended purpose

- 7 For applications to agricultural land, the ability to interpret the additions of plant nutrients through spreading 'waste' materials in relation to recommendations in the AHDB's Nutrient Management Guide (RB209)
- 8 The ability to communicate soil science and the finding of the work accurately and informatively, verbally and in writing at all stages of the project

Knowledge:

- 1 Knowledge of the soils present within the study area, or of the chief sources of such information
- 2 Knowledge of relevant national laws, regulations and guidance including Codes of Good Agricultural Practice and Animal Byproduct Regulations where relevant
- 3 An adequate understanding of the role of soil as a physical, chemical and biological system in accepting and using organic materials
- 4 Knowledge and understanding of the potential impact of machinery used in the application of organic materials to land and how risks can be minimised
- 5 An awareness of the importance of systems of quality assurance and control in all aspects of professional work

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