

REPORT

1. INTRODUCTION

Soil erosion and sediment deposition represent a serious threat worldwide, because of their impact on both sustainable agricultural production and environmental conservation. Soil erosion has an immediate deleterious effect on the long-term productivity of soil in several ways, i.e., through the loss of nutrient-rich arable layer, accumulation of toxic salts or acids, and the incorporation of potentially growth-limiting factors of the subsoil into the rooting zone. In many cases, soil erosion causes a progressive decline in soil productivity; this decline however is far more pronounced in agro-ecosystems which rely on indigenous fertility than those with high input technology where this impact is masked by higher fertilizer inputs.

Soil erosion causes not only on-site degradation of a non-renewable natural resource but also off-site problems such as downstream sediment deposition in residential areas and nearby road ditches, pollution of water courses with various agrochemicals adsorbed on the sediments and eutrophication of the water bodies.

Despite the fact that erosion and deposition are well documented throughout the history of agriculture and a half-century of research into the causes and effects of erosion has been performed, considerable uncertainty exists about the extent, magnitude and actual rates of erosion and deposition, as well as on their economic and environmental consequences. Many methods, including models for predictions have been developed and used to obtain qualitative and quantitative data on patterns and rates of erosion/deposition. The existing classical techniques have significant limitations. The use of radionuclides in soil erosion/deposition research overcomes many of the problems associated with the traditional approaches and they have been used successfully in several developed countries. Among these, the Cs-137 technique allows the assessment of both soil loss and deposition in the same watershed without the need for long-term financial commitments.

Based on the recommendations of an Advisory Group Meeting held in April 1993 at the Vienna International Centre, proposals for two Co-ordinated Research Programmes were developed: a CRP on Soil Erosion by the Soil and Water Management & Crop Nutrition Section of the Joint FAO/IAEA Division and a CRP on Sedimentation by the Isotope Hydrology Section of the Division of Physical and Chemical Sciences of the IAEA.

A Consultants Meeting on "The Use of Isotopes in Studies on Soil Erosion" was held in November 1995 at the IAEA Headquarters in Vienna to further elaborate on the objectives and workplan of the CRP and refine the existing methodologies (refer to IAEA Report CT-2665). The Panel further recommended the co-ordinated implementation of the CRP on Soil Erosion (D1.50.05) with the CRP on Sedimentation (F3.10.01).

This report describes the First Research Co-ordination Meeting of both CRP's held together in the IAEA Headquarters in Vienna, from 11 to 15 November 1996. In addition to methodological issues of the Cs-137 technique and experimental protocols, this report also contains a short write-up and a workplan of the CRPs.